

**An Exploration and Expansion of Learning and Agency in Ecosystem Restoration Practice: A
Case of Natural Resource Management Programmes in the Blyde Catchment, South Africa**

**Thesis submitted in fulfilment of the requirements of the
Degree of Doctor of Philosophy**

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Dedication

I dedicate this thesis to my mother Joyce Aifheli Thifhulufhelwi, who was forced to quit school many years ago due to traditional beliefs. I made a wish to her as a young boy that when I grow up I will go to university and study many degrees to honour her. I thank God for opening opportunities and His grace that sustained me throughout my years of studying. I also dedicate this PhD to my beloved son Mufunwa, to be the next generation of thinkers who love education and learning for a better future.

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Abstract

This study explores and expands learning processes in restoration natural resource management (NRM) practices. The study uses the theory of expansive learning, developed in the Finnish Cultural-Historical Activity Theory tradition, to examine how expansive learning develops transformative agency that enables practitioners and key stakeholders to envisage new pathways that enhance collective actions to manage natural resources as a sustainability commons for all. The study was conducted in the Blyde River Catchment landscape in the Mpumalanga and Limpopo provinces of South Africa. The study is located in the field of Environment and Sustainability Education, with emphasis on addressing complex socio-ecological issues including degradation of biodiversity and water resources, access to ecosystem services for livelihoods, and capacity development of local stakeholders to become custodians and responsible managers of their own natural resources. Within the field of Cultural-Historical Activity Theory, which this study draws on and is guided by from both a theoretical and methodological perspective, the study straddled third generation Cultural-Historical Activity Theory, with movement in the study evident towards the fourth generation of Cultural-Historical Activity Theory. The study took place over an eight-year period (2016 – 2024), and was divided into two phases, roughly demarcated around this shift in the research process as the expansive learning work expanded and became more complex in the field.

Part I of the study involves exploring the historical context and current initiatives in restoration NRM practice to surface tensions and contradictions constraining collective action at the catchment scale. These contradictions were addressed by facilitating a longitudinal expansive learning process using a formative interventionist research approach, a process that started in 2016. Formative interventionist research is a form of collaborative inquiry that focuses on building transformative agency with stakeholders across activity systems, to develop new learning actions and tools relevant to their shared object of activity. In the case of this study, the shared object of activity was to address socio-ecological issues in restoration NRM practices.

Part II of the study, which emerged from Phase I in 2019/2020, further facilitated the formative intervention engagements with a specific focus on developing practical tools such as implementation strategies, and plans, establishing working groups and networks, training and

capacity development initiatives, as well as developing funding proposals as learning tools to enable stakeholders to work collectively in the implementation and governance of restoration NRM practices at landscape level. These are described as double stimulation processes leading to Emancipatory Transformative Agency by Double Stimulation (ETADS) along linked, and parallel pathways involving constellations of activity systems.

This study demonstrates how co-engaged expansive learning programmes, implemented as longitudinal formative interventions, can lead to the emergence of transformative agency that not only enables stakeholders to work together to practically advance their shared object of activity but also to re-imagine their ethical–political intentions towards enacting sustainability actions and socio-ecological justice.

The study provides analytic tools and concepts for engaging and navigating complex societal issues which emerge in social-ecological activity expansions. In particular, the study focuses on power-dynamics contradictions embedded in structures of power and decision making. This study surfaced power-dynamics contradictions that were constraining practitioners and communities and explored how these were navigated in collective engagement and expansion of the object of restoration NRM practices in the interest of the common good.

Overall, the study offers a case of transitioning between third and fourth generation Cultural-Historical Activity Theory research. It surfaces theoretical, conceptual, contextual, mediational and outcome-related insights that emerged through such a process in the Blyde landscape.

Table of Contents

Dedication	ii
Acknowledgements	iii
Abstract	v
Table of Contents	vii
List of Figures and Photos	xvi
List of Tables	xxiii
List of Extracts	xxv
List of Acronyms	xxvii
Researcher Positionality and Career Progression During this Study	xxx
Reading Notes	xxxiii
Phase I Orientation Chapter: Encountering CHAT and Journeying with Third Generation CHAT1	
Chapter One: Introduction and Contextualisation of the Study	9
1.1 Research Context	9
1.2 Research Focus and Background to the Study Area	12
1.2.1 Research focus	12
1.2.2 Biophysical description of the study areas and their importance to Ecosystem Restoration	14
1.2.3 Biodiversity and ecosystem services	17
1.2.4 Land uses and key threats	17
1.3 Formulating the Research Problem Statement	19
1.4 Research Objectives	20
1.4.1 Main research question	20
1.4.2 Sub-questions	20

1.5 Introduction to Methodology: Theoretical Framework.....	21
1.5.1 Cultural-Historical Activity Theory and expansive learning	21
1.5.2 Key concepts from critical realism.....	21
1.5.3 Research orientation and design.....	22
1.6 Key Sensitising Concepts in designing an expansive learning process in the restoration NRM practices.....	24
1.7 Systems Thinking and Social Learning Approaches for Collaborative Natural Resource Management.....	32
1.8 Limitations of the Study	37
1.9 Conclusion and Overview of the Study.....	38
Chapter Two: Review of Invasive Alien Plants Impacts, Management Policies and Development of Restoration Programmes In South Africa	41
2.1 Introduction	41
2.2 Global Threats by Invasive Species to Biodiversity and the Implication on Human Wellbeing and Sustainability	41
2.2.1 Spread and movement of invasive species	42
2.2.2 Commercial forestry as a source of invasive alien plants	42
2.3 Impact of Invasive Alien Species on Environmental Change.....	44
2.3.1 Ecological impacts of invasive alien plants.....	45
2.4 South African Legislation on Alien Species	47
2.5 Conceptualising the Management of Invasive Species as Ecosystem Restoration Practice	50
2.6 Invasive Alien Species Control as Ecosystem-based Adaptation and Ecological Resilience Building	50
2.6.1 The key concepts for ecosystem-based adaptation strategies.....	51
2.7 Status of IAP Invasion and Early Development of Restoration Programmes in South Africa.....	55
2.8 History and Evolution of Restoration IAP Control Practice in South Africa	57

2.9 Conclusion.....	59
Chapter Three: Theoretical Framework and Research Methodology	60
3.1 Introduction of the Theoretical Framework	60
3.2 Historical Development of Cultural-Historical Activity Theory	62
3.3 Three Generations of CHAT	63
3.3.1 First generation	63
3.3.2 Second generation.....	65
3.3.3 Third generation	66
3.4 Application of CHAT and Expansive Learning Principles in This Study	68
3.4.1 Principle 1: The unit of analysis is a collective learning process	68
3.4.2 Principle 2: Multi-voicedness of activity systems	69
3.4.3 Principle 3: Historicity of object of activity	69
3.4.4 Principle 4: The central role of contradictions as sources of change and development	71
3.4.5 Principle 5: The expansive learning cycle as the possibility of transformations in activity systems.....	73
3.4.6 Exploring learning through boundary crossing	76
3.4.7 Levels of learning and transformation.....	78
3.5 Research Methodology.....	81
3.5.1 Research design and orientation	81
3.5.2 Research sites and participants	82
3.6 Data Generation Methods and Tools.....	83
3.6.1 Document analysis.....	83
3.6.2 Change laboratory workshops	86
3.6.3 Focus groups and key-informant interviews	93

3.6.4 Participant observation: Formative intervention researcher as an active participant observer	97
3.7 Data Analysis and Analysis Framework	97
3.7.1 Part 1: Descriptive analysis of activity systems and surfacing contradictions	99
3.7.2 Part II: Transformative agency and double stimulation	100
3.8 Quality and Validity	103
3.8.1 Triangulation	104
3.8.2 Member checking	104
3.8.3 Reflections with critical friends in the NRM community of practice	105
3.9 Research Ethics	106
3.9.1 Informed consent	106
3.9.2 Data protection, confidentiality and dignity	107
3.9.3 Transparency and honesty	107
3.9.4 Accountability and responsibility	107
3.9.5 Integrity and academic professionalism	108
3.9.6 Researcher positionality, access and relationship with participants	108
Chapter Four: Exploring Challenges and Surfacing Contradictions in the Restoration IAP Control Practice	111
4.1 Introduction	111
4.2 Description of Restoration IAP Control Programmes As Implementation Activity Systems	111
4.2.1 Description of Working for Water activity system	112
4.2.2 Description of high-altitude teams' activity systems	113
4.2.3 Description of SANParks-BSP activity system	116
4.2.4 Description of Department of Agriculture, Forestry and Fisheries - Indigenous Forestry Management (DAFF-IFM) activity system	118

4.3 Historicity of Restoration IAP Control Object in the Blyde Landscape	120
4.3.1 Connections between restoration IAP control activity and forestry	120
4.3.2 Impacts of forestry on water resources and biodiversity	121
4.3.3 Commercial forestry and contribution to the economy	121
4.3.4 Need for sustainable forestry management in the Blyde landscape	122
4.4 Identification of Challenges in the Restoration IAP Control Practice	125
4.4.1 Collective identification of challenges and tensions among the four implementation activity systems.....	126
4.4.2 Collective reflections on the first boundary crossing change laboratory workshop	129
4.4.3 Historicity and identification of challenges within each of the implementation activity systems.....	132
4.4.4 Co-defining shared challenges among the implementation activity systems	138
4.5 Surfacing of Contradictions Within and Among Implementation Activity Systems...	142
4.5.1 Contradictions in subject-tools-object	148
4.5.2 Contradictions in subject-rules-object	155
4.5.3 Contradictions in community-tools-object	160
4.5.4 Contradictions in community-rules-object	162
4.5.5 Contradiction in community division of labour-object	164
4.6 Conclusion.....	166
Chapter Five: Modelling New Expansive Learning Solutions for Advancing Restoration IAP Control Practice Via Double Stimulation	168
5.1 Introduction	168
5.2 Short Review: Introduction of Activity System Analysis and Expansive Learning Framework for Facilitating Learning and Reflexivity	168
5.3 Double Stimulation as Principle for Attaining Transformative Agency.....	172
5.3.1 Mirroring and presentation of mirror data as a double stimulation process.....	173

5.3.2 Activity system analysis as a second stimulus tool	178
5.4 Modelling New Solutions via Sannino's Vygotskian Double Stimulation Model	179
Chapter Six: Expansion From Abstract to Concrete (Co-Creation of Transformative Agency Pathways).....	191
6.1 Introduction	191
6.2 Expansion of Object from Abstract to Concrete: Co-visioning of Auxiliary Motives into Expansive Agency Pathways	191
6.3 Engaging the Rulemaking Activity Systems (Deepening the Envisioned New Solutions)	198
6.4 Breakthrough on Implementing the Model: How can the Model be put into Practice?	204
6.5 Adjustment and Enriching the Implementation: How Should the Model Be Revised?	210
6.5.1 TADS Pathway 1: Stakeholder mapping, co-learning and co-visioning of institutional, governance and management action matters of concern.....	212
6.5.2 TADS Pathway 2: Development of operational and technical learning actions and tools	214
6.5.3 TADS Pathway 3: Exploring capacity and skills development tools, alternative funding models and reflexive learning-oriented monitoring and evaluation.	222
6.6 Conclusion.....	224
Phase II Orientation Chapter: Encountering Power-Dynamics Contradictions and Journeying with Fourth Generation CHAT	225
Chapter Seven: Emergence of Power-Dynamics Contradictions as Catalyst for Ethical–Political Expansion of the Object	242
7.1 Introduction	242
7.2 Reflecting on the Learning Process: Re-examining and Re-adjustment of the New Model	245
7.3 Expansion of the Object and Emergence of New Contradictions.....	248
7.4 Emergence of Common Good and Commoning Activity in Restoration Natural Resource Management Practices.....	253

7.5 Historicising the Common Good and Commoning Activity.....	255
7.6 Framing of Restoration NRM Practices as a Runaway Object	258
7.7 Exploring Contradictions in and Across the Constellation of Activity Systems	260
7.8 Dialectical Critical Realism and Contradictions	262
7.9 The Interplay of Structure and Agency	264
7.10 Ethical–Political Groundings, Emancipation and Co-engaged Depth Inquiry	266
7.11 Manifestation of Power-Dynamics Contradictions as Interplay of Structure and Agency	270
7.12 Proposing the Analytical Framework for Surfacing Power-Dynamic Contradictions	284
7.12.1 Formative co-engaged depth enquiry	286
7.12.2 ETADS pathways (emancipatory transformative agency by double stimulation)	287
7.13 Conclusion.....	288
Chapter Eight: Emancipatory Transformative Agency by Double Stimulation (ETADS) as Ethical–Political Expansion of the Object	290
8.1 Introduction	290
8.2 Framing of Emancipatory Transformative Agency by Double Stimulation (ETADS).....	290
8.2.1. PDCs as the object of ethical–political expansion.....	290
8.2.2. Focal data for advancing ETADS pathways.....	292
8.3 ETADS Pathway 1: Second Stimulus Tools for Co-visioning Matter of Concerns in Multi-stakeholder Networks.....	293
8.3.1 Power-dynamics contradictions and multi-stakeholder structures	293
8.3.2 Navigation of power 2 and activation of power 1 relations	294
8.3.3 Co-construction of a second stimulus tool under ETADS pathway 1	298
8.4 ETADS Pathway 2: Second Stimulus Tools for Co-development of Operational and Technical Planning.....	313

8.4.1 Co-construction of second stimulus tools under ETADS pathway 2	316
8.5 ETADS Pathway 3: Second Stimulus Tools for Capacity and Skills Development for Strengthening Integration and Future Custodianship.....	328
8.5.1 Capacity development tools to support NRM practitioners in spatial planning and data management	328
8.5.1 Second stimulus tools for CPA governance structures towards future custodianship of implementing restoration NRM projects.....	334
8.5.2 Second stimulus tools for skills development and career pathways for community youths	346
8.6 ETADS As a Catalyst for Uptake and Sustaining Expansive Learning Process	357
8.6.1 Second stimulus tools for collaborative learning in sustainable forestry management (potential ETADS 4).....	360
8.6.2 Second stimulus tools for knowledge sharing and co-development of learning materials (potential ETADS 5).....	361
8.7 Conclusions	369
Chapter Nine: Practical Application of Fourth Generation CHAT For Advancing Transformative Learning in Restoration NRM Practices	372
9.1 Introduction	372
9.2 Learning as Horizontal and Vertical Interplay Between Multiple Coalescing Expansive Learning Processes.....	374
9.3 Sustainability of Expansive Learning Processes Beyond Formative Interventions.....	378
9.4 Reflections and Insights on Power-dynamics Contradictions and Their Transformation in Fourth Generation CHAT	379
9.5 Framing of ETADS Pathways and Second Stimulus Tools.....	381
9.6 Expansion of ‘Spearheads’ or TADS Pathways into ETADS and Coalesced Expansive Learning Cycles.....	384
9.7 Mediation Role of Formative Interventionist Researcher(s) in Facilitating ETADS As Coalesced Expansive Learning Cycles	385
9.8 Confronting and Mirroring Power-dynamics Contradictions in Multi-levelled Change Laboratories.....	388

9.9 From Boundary Crossing to Heterogenous Coalitions	391
9.10 Insider Formative Interventionist Mediation Teams in Fourth Generation CHAT ...	393
9.11 Conclusion and Summary of the Main Contribution	395
References.....	398
Appendices.....	431
Appendix A: The Emancipatory Nature of Transformative Agency: Mediating Agency from Below in a Post-Apartheid Land Restitution Case- Lotz-Sisitka et al., 2023	431
Appendix B: Informed Consent Form for Research Participants	432
Appendix C: Signed permission letter to use AWARD data for purposes of PhD Research	433
Appendix D: Example of a Back-to-Office (B2O)	434
Appendix E: Terms of reference for the Blyde Restoration Working Group	440
Appendix F: Summary of relevant projects implemented by Institute for Developmental Learning & Environmental Sustainability (IDLES) as Scaling of Expansive Learning into new transformative learning pathways.....	447

List of Figures and Photos

Photo 1: Photo of Reuben (the researcher) taking pictures of the CHAT illustrations from the Legalameetse CHAT inquiry for Legalameetse communities, led by Professors Engeström, Sannino and Lotz-Sisitka (2015, Hoedspruit, Limpopo, South Africa)	1
Photo 2: Picture of myself (centre) with my colleagues in the background. Taken in 2014, during my time working for the DEA - Working for Water programmes, Groblersdal.....	5
Photo 3: Social media post from AWARD of myself presenting on the Blyde Restoration and natural resource management work, during one of the strategic meetings of RESIOM-O, 2016, Pretoria.....	8
Figure 1.1: Map of the Olifants River Basin as a sub-catchment of the larger Limpopo Basin	13
Figure 1.2: The Blyde Restoration Project area map, indicating land ownership and key rivers originating from the landscape.....	14
Source: AWARD, Blyde restoration project	15
Figure 1.3: Strategic water source area map.....	15
Figure 1.4: Map of the Olifants River Basin showing major sub-catchments (B6 is the Blyde catchment).....	16
Figure 1.5: Photo illustrating some of the invasion of pines in inaccessible steep slopes (note the area delineated in red), shows the impact of the afforestation process in which IAPs continue to spread after the removal of plantations by DAFF Forestry	18
Figure 1.6: Networked case study of activity systems in a Blyde case study.....	23
Figure 1.7: Key components in facilitating collaborative co-inquiry processes.....	34
Figure 1.8: Facilitating transformation through collaborative co-inquiry processes for concerted action	36
Figure 2.1: Integrated spatial assessment to identify EbA areas for supporting resilience systems.....	51
Figure 2.2: The Blyde landscape focus area showing downstream beneficiaries of ecosystem services.....	52

Figure 2.3: South Africa map showing government priority areas for the implementation of restoration programmes. The Blyde landscape is one of the important areas with a high density of invasive alien plants (i.e. IAP 5).....	57
Figure 3.1: (left) Vygotsky’s original formulation of mediated action (after Vygotsky, 1931/1978, p. 40), (right) basic reformulated mediation triangle.....	64
Figure 3.2: Second generation Activity System	65
Figure 3.3: Two interacting activity systems as a minimal model for the third generation of activity theory	66
Figure 3.4: Strategic learning actions and corresponding contradictions in the cycle of expansive learning	75
Figure 3.5: Illustration of different roles of interventionist team members in a change laboratory workshop.....	88
Figure 3.6: Timeline of BCCLWs, FDGs, meetings/interviews and small workshop engagements which were directly linked to ETADS pathways.....	96
Figure 3.7: Strategic learning actions and corresponding contradictions and the emergence of power-dynamics contradictions in the cycle of expansive learning	100
Figure 4.1: Summary of activity system analysis for Working for Water.....	113
Figure 4.2: Summary of activity system analysis for HATs.....	115
Figure 4.3: Summary of activity system analysis for SANParks-BSP	117
Figure 4.4: Summary of activity system analysis for DAFF-IFM activity system.....	120
Figure 4.5: Photograph of pine trees invading grassland on Hebron Mountain which fall within the Blyde landscape. These are critical biodiversity and strategic water source areas which are now threatened by invasive pines spreading from historic forests.	123
Figure 4.6: A question-oriented second generation CHAT heuristic	133
Figure 4.7: Application of third generation CHAT for co-defining shared challenges as matters of concern amongst the four implementation activity systems.....	140
Figure 4.8: Sub-activity triangle inquiry for surfacing contradictions in the restoration IAP control practice.....	148
Figure 4.9: Subject-tool-object sub-activity analysis.....	148
Figure 4.10: Subject-rules-object sub-activity analysis	155

Figure 4.11: Community-tools-object sub-activity analysis.....	160
Figure 4.12: Community-rules-object sub-activity analysis.....	162
Figure 4.13: Community division of labour-object sub-activity analysis.....	164
Figure 5.1: Reuben Thifhulufhelwi (researcher) presenting the expansive learning during the first collective change laboratory workshop	169
Figure 5.2: Strategic learning actions and corresponding contradictions in the cycle of expansive learning	171
Figure 5.3: Agenda for the first boundary crossing change laboratory workshop.....	174
Figure 5.4: Snapshot of flipchart notes on the summary of identified challenges from the first BCCLW	175
Figure: 5.5: Key actions and agreements report from the first change lab workshop	176
Figure 6.1: An illustration of advanced third generation CHAT between the implementation activity systems and the rulemaking activity system.....	199
Figure 6.2: National directors engaging with the Working for Water teams during the field visit in Mariepskop, one of the key focus areas for restoration IAP control projects in the Blyde landscape.....	201
Figure 6.3: Workshop notes: Conceptualisation of a collaborative framework for the development of an Integrated Restoration Strategy (BCCLW #3).....	202
Figure 6.4: Practitioners from the implementation activity systems exploring steps for developing the Integrated Restoration Strategy	205
Figure 6.5: Concept mapping flow diagram representing governance and technical operational processes for developing Integrated Restoration Strategy	207
Figure: 6.6: Tools and processes for TADS for enabling co-learning, sharing and integration between and among restoration NRM practices	212
Figure 6.7: TADS pathways 1 for Stakeholder mapping and co-visioning the matters of concerns for institutional and governance across different NRM practices	213
Figure 6.8: Agenda for the fourth change laboratory workshop.....	216
Figure 6.9: Practitioners engaging with the activity system analysis approach in the fourth BCCLW	217

Figure 6.10: Using activity system analysis as a second stimulus tool for facilitating development of IAP inventory mapping.....	218
Figure 6.11: Workshop notes on the development of IAP inventory mapping used in the fourth BCCLW	219
Photo 4: Reuben (bottom left) and the opening presentation slide at the “Invasive Alien Species National Symposium”. 2017, part of the “Combined Congress of the Entomological and Zoological Societies of Southern Africa”, 3-7 July 2017. CSIR International Convention Centre, Pretoria, South Africa.....	231
Photo 5: Conference attendees during my presentation at the “Invasive Alien Species National Symposium”. 2017, 3-7 July 2017. CSIR International Convention Centre, Pretoria, South Africa	232
Photo 6: Opening slide of my presentation at the RWL, 2017 conference.....	234
Photo 7: Last slide of my presentation at RWL 2017, showing the constellation of activity systems (ok, well Engeström called it that in his reflections), but at the time I just referred to them as the activity systems groups.....	235
Photo 8: Engeström reflection on my paper during the double stimulation symposium, RWL, 2017.....	236
Photo 9: Professor Annalisa Sannino, facilitating day 2 of the Activity System Analysis workshop at AWARD, Limpopo, South Africa in 2015.	237
Photo 10: Photo of professors Lotz-Sisitka, Sannino, & Engeström discussing and reviewing some of the learning material shared by CPAs communities as second stimulus tools supporting the CPAs as they learn and develop a co-management agreement (August 2015; later developed into a paper on Emancipatory Transformative Agency by Double Stimulation - see Lotz-Sisitka et al., 2023)	238
Photo 11: Rough brainstorming notes capturing some aspects of the conceptual framework for analysing power-dynamics contradictions and ETADS pathways in coalesced expansive learning cycles – this informed our paper (Lotz-Sisitka et al., 2023) and was also the foundation of Phase II of this thesis, with the writing of the paper and the chapter unfolding concurrently from this discussion).....	240
Figure 7.1: Strategic actions in expansive learning cycle showing the emergence of power-dynamics contradictions and their navigation via ETADS.....	245
Figure 7.2: Constellation of activity systems as the envisaged conceptual framing for achieving sustainable and integrated restoration NRM practices.....	249

Figure 7.3: Mapping the direction of transformation via PDCs and TADS as pathways indicating the zone of proximal development of restoration NRM as a common good object	283
Figure 7.4: Proposed analytical framework for surfacing and engaging power-dynamics contradictions.....	286
Figure 8.1: Opening slide of the presentation during the interim co-management committee meeting with the Blyde CPAs.....	301
Figure 8.2: Field excursion between members of the BRWG and the DEA national team represented by the national director and senior manager to discuss the operational planning processes to inform implementations of restoration projects in the Blyde landscape	304
Figure 8.3: Cover page of the Terms of Reference for the BRWG (February 2022, see Appendix E).....	305
Figure 8.4: Locating examples of second stimulus tools for cultivating the emergence of emancipatory transformative agency into concrete actions in the cycle of expansive learning cycle between 2-15-2022	312
Figure 8.5: Agenda from the BRWG partners engaging the rulemaking activity system (National DEA-NRM) for their strategic inputs in the development of an integrated restoration IAP control strategy, and endorsement of the formalised BRWG as the learning network to coordinate restoration IAP control activities in the Blyde landscape.....	314
Figure 8.6: Technical subcommittee team conceptualising the Invasive Aline mapping process and collating historical datasets in June 2017, led by Dr Stephen Hollness.....	317
Figure 8.7. Map of the location of different IAP treatment models (types of teams and treatment methods) in the upper Blyde landscape determined by the landscape unit, accessibility and prioritisation criteria.....	319
Figure 8.8: Photos of the wetland fieldwork team describing and sampling a wetland in the Lowveld plantations during the wetland fieldwork in January 2019, led by Dr Lulu Pretorius	321
Figure 8.9: Map showing the locations of preliminary mapped wetlands within the Blyde landscapes. This includes wetlands determined through desktop-based mapping, as well as those confirmed through fieldwork.....	321
Figure 8.10: Participatory ecosystem services assessment workshop on 25-26 February 2020 focused on the Upper Sand River catchment led by Myles Mender from Eco-futures	322

Figure 8.11: Representation of different scenarios from the ecosystem services valuation report to inform governance and implementation of restoration NRM and land development practices	324
Figure 8.12: Locating examples of second stimulus tools from ETADS pathway 2 into concrete actions in the cycle of expansive learning over the period 2016-2022.....	326
Figure 8.13: Training on GIS and data management training conducted during 13–15 September 2017 at the Mpumalanga WfW offices in Nelspruit.....	330
Figure 8.14: In-field training on data collections and management using GPS and free mobile use of the mobile application, February 2019, Nelspruit.....	332
Figure 8.15: Representatives of the co-management committee presenting at the first CPAs visioning workshop, 15 August 2019	338
Figure 8.16: Second visioning workshop focusing on developing partnerships between Blyde CPAs and private conservation agencies on exploring potential investments in future land-use developments, 12 February 2020.....	342
Figure 8.17: Reuben Thifhulufhelwi demonstrating using CHAT activity system analysis for collaborative visioning to explore current and future restoration NRM practices under the Sand-CPAs partnership	343
Figure 8.18: Reuben Thifhulufhelwi presenting a flow diagram for co-constructed in the workshop for developing the governance structure with roles and responsibilities in the Sabi Sand Blyde 04 CPAs partnerships, 12 February 2021	344
Figure 8.19: Flow diagram outlining governance structure with roles and responsibilities for the potential CPAs–Sabi Sand Restoration custodianship partnership.....	345
Figure 8.20: A general meeting with youth from the local communities before the selection test and interviews for team members to be part of the youth capacity custodianship team	347
Figure 8.21: Field-based skills assessment for youth on their knowledge and experience of invasive alien plants identification, <i>land-use management</i> in the area <i>including forestry, conservation management</i> and general ecological literacy as part of selection of the Restoration Custodianship Team.....	348
Figure 8.22: Youth from RCTs practising their presentations during their team reflection in preparation for the project monthly report.....	351
Figure 8.23: Locating examples of second stimulus tools from ETADS pathway 3 into concrete actions in the cycle of the expansive learning cycle between 2016 and 2022	356

Figure 8.24: Summary of the capacity development strategy towards sustainable forestry management in upper Blyde landscapes, led by the Institute of Natural Resources (INR), strategically guided by AWARD's mediation team and supported by the BRWG.....	360
Figure 8.25: An article published in SANBI website to celebrate the discovery of new wetlands discovered in the Blyde landscapes. Reuben Thifhulufhelwi in the photo view with a sampled peat soil during wetland assessment field work led by Dr Lulu Pretorius.....	362
Figure 8.26: Newsletter on the implementation of the Blyde RCTs, shared on the national website of the SANBI	363
Figure 8.27: Published article on the Blyde Restoration Custodianship Team at a national platform celebrating women's career growth opportunities in the NRM sector	364
Figure 8.28: Cover of the learning material booklet focused on sustainable resources use, this booklet was used as learning materials by K2C environmental monitors as they engage communities, and is a resource for use by future environmental monitoring programmes....	365
Figure 8.29: Publication on the Blyde restoration	368
Figure 8.30: Coalesced expansive learning via ETADS pathways as co-inquiry towards fourth generation heterogeneous coalitions	369
Figure 9.1: Cover page of the capacity development report.....	373
Figure 9.2: Visual illustration representing the advancement of restoration NRM practices as sustainability commons via co-development of second stimulus tools as pathways for Emancipatory Transformative Agency by Double Stimulation.....	375

List of Tables

Table 1.1: Goals of the UN Decade on Ecosystem Restoration	11
Table 1.2: Main characteristics of the three research approaches to social learning (Rodela, 2011, p. 3)	32
Table 2.1: Categories of alien species in South Africa's CARA (1983) and NEMBA (2014) regulation	48
Table 3.1: Description of epistemic actions or stages in the expansive learning cycle	75
Table 3.2: Summary of learning levels	79
Table 3.3: List of key documents for historical analysis of restoration IAP control activity ..	84
Table 3.4: List of boundary crossing change laboratory workshops for Phase I and II	90
Table 3.5: List of focus groups and key-informant interviews and meeting engagements from Phase I	94
Table 3.6: Activity system sub-triangle analysis	99
Table 3.7: Sannino's (2015c) Vygotskian model of double stimulation	101
Table 4.1: Witten participants' reflections capture from the first BCCLW	130
Table 4.2: Summary of surfaced challenges within and among the Implementation activity systems (i.e. collated from the four focus group meetings and related formative intervention engagements with practitioners)	134
Table 4.3: Summary of agreed challenges among the four implementation activity systems	139
Table 4.4: Key characteristics of the four kinds of discursive manifestations of contradictions	144
Table 4.5: Activity notation for sub-activity triangles	146
Table 5.1: Analysis of double stimulation model from implementation activity system #1 ..	183
Table 5.2: Analysis of double stimulation model from implementation activity system #2 ..	186
Table 5.3: Analysis of double stimulation model from implementation activity system #3 ..	187

Table 5.4: Analysis of double stimulation model from implementation activity system #4.	189
Table 6.2: Summary of the key agreements and actions as potential solutions to enhance the effectiveness of the restoration IAP control practice	193
Table 6.3: Descriptive version of a proposed collaborative framework for developing Integrated Restoration Strategy.....	202
Table 6.4: Summary of key discussion points on IAP inventory mapping summarised using the activity system analysis.....	219
Table 7.1: Power-dynamics contradictions in relation to co-visioned pathways for TADS .	282
Table: 8.1: List of higher-order and lower-order criteria for the prioritisation of areas for restoration (mainly IAP control).....	318
Table 8.2: Guiding questions for the CPAs’ visioning co-inquiry process	337
Table 8.3: Summary of youth skills assessment	349
Table 8.4: Summary of the various capacity development initiatives which were carried out between 2018–2022 with the Restoration Custodians	352

List of Extracts

Extract 4.1: Brief discussions during the First Boundary Crossing Change Laboratory workshop amongst implementation activity systems (BCCLW #1).....	126
Extract 4.2: Discussion from the individual change laboratory workshop with implementation activity systems.....	136
Extract 5.1: Excerpt from focus group discussion with implementation activity system #1 (FDG #1)	180
Extract 5.2: Excerpt from focus group discussion with implementation activity system #2 (FDG #2)	184
Extract 5.3: Excerpt from focus group discussion with implementation activity system #3 (FDG#3).....	186
Extract 5.3: Excerpt from focus group discussion with implementation activity system #4 (FDG#4).....	188
Extract 6.1: Excerpts from discussion during the BCCLW #2 workshop	194
Extract 6.2: Excerpts by practitioners' expressions on the importance of engaging the rulemaking activity system (BCCLW #2)	198
Extract 6.3: Excerpts from discussion during the fourth change lab workshop (BCCLW #4)	206
Extract 6.4: Excerpts from discussion on development of an integrated strategy and formalisation for the Blyde restoration group (BCCLW #4).....	209
Extract 6.5: Excerpts from the discussion on engaging local communities as key custodians in restoration NRM practices and contradictions of the EPWP model (BCCLW #4).....	222
Extract 7.1: Excerpt from BCCLW on the emergence of power-dynamics contradictions (BCCLW #5).....	246
Extract 7.2: Excerpt from different change lab workshop on the emergence of power-dynamics contradictions (multiple BCCLWs)	272
Extract 7.3: Excerpt from the focus group discussions with implementation activity systems on reflections and preparing for engagements with CPAs' local communities (meeting/interview #4)	275

Extract 7.4: Excerpt from engagements with CPA communities in the sixth change laboratory on surfacing and engaging power2–power1 (BCCLW #6)	279
Extract 8.1: Excerpt from practitioners on developing collaborations with CPA communities and co-creation of multi-stakeholder learning networks (meeting/interview#1).....	295
Extract 8.2: Excerpts of expressions on the need for a collective learning and coordinating entity, i.e. affirmation for the formalisation of the BRWG (focus group discussions and meeting/interview, see Table 3.5).....	296
Extract 8.3: Excerpts on expressions on the concrete formalisation and naming of co-learning network (BCCLW #7).....	299
Extract 8.4: Excerpts on expressions for reframing the working relations between NRMPs and CPA communities (BCCLW #6)	302
Extract 8.5: Excerpts on expressions for reframing the working relations between NRMPs and CPA communities (BCCLW #8)	306
Extract 8.6: Excerpts of expressions for co-development of funding proposals as second stimulus tools to enact volitional action in navigating deep-seated tensions around power2 governance funding models (meeting/interview #7)	310
Extract 8.7: Excerpts of expressions on the development of technical and operation second stimulus tools (BCCLW #9)	315
Extract 8.8: Excerpts of expressions on capacity development with CPA communities (BCCLW #9).....	336

List of Acronyms

APO	Annual Plan of Operation
AWARD	Association for Water and Rural Development
BCCLW	Boundary Crossing Change Laboratory Workshops
BRWG	Blyde Restoration Working Group
BSP	Biodiversity Special Projects
CARA	Conservation of Agricultural Resources Act
CHAT	Cultural-Historical Activity Theory
CIB	Centre for Invasion Biology
CIP	Catchment Investment Programme
CL	Change Laboratory
CoP	Community of Practice
CPA	Community Property Associations
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DEAT	Department of Environmental Affairs and Tourism
DFFE	Department of Forestry, Fisheries and the Environment
DWAF	Department of Water and Forestry
EbA	Ecosystem-based Adaptation
ELRC	Environmental Learning Research Centre
EPWP	Expanded Public Works Programme
ETADS	Emancipatory Transformative Agency By Double Stimulation

GEF	Global Environmental Fund
GIS	Geographic Information Systems
HAT	High-Altitude Teams
IAP	Invasive Alien Plants
IAS	Invasive Alien Species
IDLES	Institute for Developmental Learning and Environmental Sustainability
IFM	Indigenous Forest Management
INR	Institute of Natural Resources
IUCN	International Union for Conservation of Nature
KPI	Key performance indicators
LTAS	Long-Term Adaptation Scenarios
LUI	Land User Incentive
MoU	Memorandum of Understanding
MTPA	Mpumalanga Tourism and Parks Agency
MUCP	Management Unit Clearing Plan
NEMBA	National Environmental Management Biodiversity Act
NRM	Natural Resource Management
NRMPs	NRM Programmes
PAC	Project Advisory Committee
PDC	Power-Dynamic Contradictions
RCT	Restoration Custodianship Team
RSA	Republic of South Africa
RWL	Researching Work and Learning

SANBI	South African National Biodiversity Institute
SAPIA	Southern African Plant Invaders Atlas
SDG	Sustainable Development Goals
SER	Society on Ecological Restoration
SWSA	Strategic Water Source Area
TADS	Transformative Agency by Double Stimulation
ToR	Terms of Reference
UNEA	UN Environment Agency
UNESCO	United Nations Educational, Scientific and Cultural Organization
WfW	Working for Water
WoF	Working on Fire
WWF	World Wide Fund for Nature
ZPD	Zone of Proximal Development

Researcher Positionality and Career Progression During this Study

As reflected throughout the thesis, this study was conducted as a long-term expansive learning process linked first to my employment at the Non-Governmental Organisation: Association of Water and Rural Development (AWARD) where I played different roles over the years (2014–2019) which focused on supporting and leading engagements for improving biodiversity conservation and ecosystems restoration practices. In joining AWARD in 2014, I brought with me practice-based experience from working within the natural resource management programmes (NRMPs) drawing from my previous employment under the Department of Environmental Affairs (DEA) Expanded Public Works Programme known as ‘Working for Water’ (WfW) between 2013 and 2014. As a result, I was tasked to lead the review of NRMPs in the Olifants catchment for AWARD’s RESILIM-O programme (Thifhulufhelwi & Graf, 2015), which later led to the conceptualisation of the Blyde Restoration Project. Between 2014 and 2015 I played a supporting role in facilitating formative intervention engagements, and a leading role in documenting the expansive learning process as demonstrated through the thesis.

From 2016–2018 I became the lead member of the AWARD formative interventionist team and continued leading the documentation to ensure consistency. As the expansive learning transitioned into fourth generation Cultural-Historical Activity Theory (CHAT) (as demonstrated in Phase II of this study) the capacity of the AWARD formative intervention team was tested to the limit as the team was expected to facilitate parallel learning cycles with the three groups of activity systems (implementation, governance and rulemaking). As such, the formative team composition was a fundamental component in facilitating the transition to fourth generation CHAT and in our case, this required both experienced researchers who were also insider formative interventionists as we engaged power-dynamics contradictions and processes of emancipatory transformative agency by double stimulation (ETADS).

From 2019–2022, I left AWARD to take up full-time studies at the Environmental Learning Research Centre, Rhodes University. This transition to ELRC provided an opportunity for me, now leading the formative intervention process with AWARD colleagues and partner organisations in the Blyde Restoration Working Group, to advance CHAT application and insights through multiple scholar engagements and project implementation in other areas in South Africa including the Eastern Cape, Western Capes and KwaZulu-Natal. In 2020, I

founded a local non-profit organisation called *Institution for Developmental Learning & Environmental Sustainability (IDLES)* to continue supporting the mediation processes and convening the Blyde Restoration Working Group, which was an important step towards mediated continuity across institutions involved in this partnership. Between 2020 and 2022, IDLES collaborated with AWARD and Kruger-to-Canyon to continue convening the Blyde Restoration Working Group. In 2022, IDLES took over all the coordination work from AWARD for the coordination of the Blyde Restoration Working Group voluntarily, as AWARD also changed its focus and funding as the USAID-funded RESILIM-O programme ended. This allowed me to continue the work with the Blyde restoration group, despite organisational changes in the anchor institution.

My career progression further transitioned in 2022, when I joined the World Wide Fund for Nature (WWF) South Africa as a water stewardship project manager. In this role, I continued leading formative engagements on restoration NRM practices and supporting water source partnerships in many catchments across KwaZulu-Natal and the Mpumalanga region including the Blyde landscape. This long-term relationship with the Blyde landscape and Blyde Restoration Working Group and its expanding reach into a wider range of activity systems (see Phase II of this study) is evidence of my holding an insider formative interventionist role and this continues to manifest as partners seek my strategic input in project activities around restoration invasive alien plants (IAP) control and invite me to participate in workshops and learning events.

In 2024, WWF South Africa recognised my skills and experience in leading transformative learning within the water and biodiversity sector with a promotion from a project manager to a landscape manager position. This new landscape manager role allows me to oversee all WWF programmes in the entire Mpumalanga Province and parts of KwaZulu-Natal. This career progression over the years has provided opportunities to deepen, scale-out and share key learning insights from the Blyde restoration work across different areas in South Africa. This thesis provides a documented methodological and theoretically reflective practice-based record of ongoing formative interventionist research (where the role of the formative interventionist also changes) in a long-term expansive learning process. It shows how careful documenting of such a process, and indeed, ‘sticking reflexively with the process’ over time, can help to

demonstrate sustainability and scalability of expansive transformative learning in addressing socio-ecological justice challenges and political dynamic contradictions such as those uncovered and reported on in the restoration IAP practices that formed the focus of this study.

Reading Notes

- Throughout this research, pseudonyms are used and all participants are referred to as practitioners to protect their identity. In the case of second or third-person subjects, I used xx or general pronouns. The square brackets [] in all direct quotations (5.1–5.4) are insertions by me for clarity and emphasis.
- At times, organisations and programmes are referred to as activity systems in the context of CHAT and expansive learning traditions.
- ‘I’ refers to the researcher Reuben Thifhulufhelwi.
- ‘We and us’ refers to the formative intervention and mediation team from AWARD that played different roles in supporting this research.
- In the context of the ethical–political expansion of the object (see Chapters Seven, Eight, and Nine), ‘We’ also refers to the authors of the ETADS book chapter (Heila Lotz-Sisitka et al., 2023, see Appendix A). This includes reference to the broader CHAT community associated with the Environmental Learning Research Centre at Rhodes University of which we are part.

Phase I Orientation Chapter: Encountering CHAT and Journeying with Third Generation CHAT

This is an opening text offering personal and professional reflections on the journey that shaped my entry into this study. The intention is to contextualise and position myself as a researcher firstly getting to know Cultural-Historical Activity Theory (CHAT) and moving into the first phase of enquiry, and then later (at the start of Phase II) to indicate the shift that occurred in my engagements with CHAT as the study progressed over 10 years.

I intentionally did not frame this as a chapter so as to allow for free-flow storytelling as I reconnect with my memories that at the time I never thought would be worth reflecting on and writing up as part of a PhD thesis. Some of the wording and quotations are reconstructed from undocumented conversations that occurred many years ago and may not be the exact spoken words at the time.



Photo 1: Photo of Reuben (the researcher) taking pictures of the CHAT illustrations from the Legalameetse CHAT inquiry for Legalameetse communities, led by Professors Engeström, Sannino and Lotz-Sisitka (2015, Hoedspruit, Limpopo, South Africa)

Source: Photo by Heila Lotz-Sisitka

First encounter with CHAT and its applicability in practice

It was in 2014 when I first encountered CHAT as a theory with its methodological application in practice. But *before we start 'CHATting', let's do it the CHAT way by starting with a bit of historicity*. So, this was during my second professional job as a Biodiversity Officer in the South African National Biodiversity Institute (SANBI) Groen Sebenza Internship programme. As part of Groen Sebenza, SANBI would place interns in different host institutions, and I was hosted at the Association for Water and Rural Development (AWARD), a local NGO involved in transformative action research programmes with local communities within the Natural Resource Management (NRM) context. I remember my first week at AWARD in August 2014 when I was introduced to so many theoretical frameworks which different teams were using as part of the RESILIM-O, a transboundary catchment management programme funded by USAID.

The theoretical cocktail at AWARD

From day one at AWARD, I was introduced to theories and frameworks including systems thinking, systems dynamics modelling, socio-ecological systems and social learning. This was the most confusing week of my professional career, *but later I really embraced the confusion*. I remember, my first week at work coincided with a critical discourse analysis workshop, facilitated by Dr Leigh Price, who is a leading critical realist scholar. Well, this is how I got introduced to critical realism and I can tell you it surely felt like a cocktail of theories and my head was just spinning. At this stage, I was fully convinced that AWARD was a philosophical institution that just talked about theories and stuff, and I knew that was not what I came for. I remember telling my fellow Groen Sebenza friends that I did not think I would stay there for long to do this philosophy ... but guess what; I spent a full five years at AWARD between 2014 and 2019 and have continued to work with AWARD as an associate since then.

In trying to understand how these theories translated into real practice and projects on the ground, I started engaging with the different programme leaders. I remember my first discussion with Derick du Toit, the assistant director at the time. He went on an explanatory tangent talking about systemic social learning, communities of practice and the spiral model. This is where I encountered names like Arjen Wals, Ray Ison, Wenger and Trayner. In my quest to figure things out, I then started learning a bit more about complexity theory, systems thinking and adaptive management. This mainly occurred through my participation in high-

level strategic planning meetings in which I was asked to take notes. At this stage, I was still not sure what exactly the RESILIM-O programme was all about as everything seemed very conceptual and theoretical. Well, the quest continued for me ... I was not fully sure what I was looking for exactly, but all I wanted to know was whether the theoretical cocktail could help me better understand my work in NRM practices; and if so, how I could go about it.

Getting to know Dr Charles Chikunda

Dr Charles Chikunda was a lead researcher in AWARD, focusing on facilitating stakeholder engagements and learning in the RESILIM-O programme. His role was crosscutting across all thematic areas of the programme including biodiversity and NRM, water resources management and climate change adaptation. He was the glue that connected the RESILIM-O programmes with different stakeholders on the ground including local communities, government departments, municipalities and private protected area agencies, but local communities were by far his favourite stakeholder group to work with. It was during one lunch discussion that we ended up chatting about the challenges of engaging with too many stakeholders in the Olifants catchment as part of the RESILIM-O programme. This was how the famous nickname given to Charles – *‘the Oldman’* – was born. He actually gave himself the nickname ‘Oldman’ when he said, *“Youngman you must enjoy life like me the Oldman and stop complaining about everything...”*. Since then, we started calling him the Oldman, with me becoming the Youngman. I remember as we were about to go back into the office at the end of our lunch, he said something like *“Youngman it sounds like your work needs CHAT... come over this weekend”*. That is how I got invited to the Oldman’s place to chat about CHAT. I was excited about this CHAT thing, but I had no idea what it was about.

When I visited the Oldman at his place for the first time, he was enjoying drinking *Chibuku*, a traditional beer he brought from Zimbabwe. We talked about many things, and this is where I found out that actually, Dr Chikunda was a teacher. Over the next few months, the visits to the Oldman became frequent. Some weekends we would also go visit one of the Oldman’s friends. The narration of traditional and cultural practices including organic farming were key discussions around the use of natural resources and the Oldman would always say local communities were at the core of building resilience and sustainability practices. He would also narrate stories of how he used a lot of traditional stories and practical tools as illustrations in his years of teaching in schools and universities.

Early introduction to CHAT by CHATting to the Oldman

After a few months of visiting the Oldman, we finally discussed my work problems. At this stage, it felt like I had known the Oldman for years as we had shared so many stories from traditional farming and hunting practices, politics, education, sports and work experiences. It was at this moment that I understood the importance of *historicity* and how this was a key factor for building relational understanding. So, before our first discussions of CHAT, the Oldman shared with me some background CHAT readings, and this was where I first encountered names like Vygotsky and Engeström. Well, I could not even pronounce these names and my understanding of CHAT from readings was not that clear either. The discussions started from the historicity of my work in NRM. The Oldman asked me what I did when I was working for the Department of Environmental Affairs [DEA]. This is where I used to work as a project manager (intern) for the Working for Water (WfW) programme on the restoration of invasive alien plants (IAP) clearing. I knew this work with my eyes closed, so I went on and on about how we used to set up the projects and work with communities and other stakeholders at the catchment, how the WfW programmes were set up from national, regional and local levels. We talked about funding models, the training models and the challenges I thought were constraining the effectiveness of NRMPs.



Photo 2: Picture of myself (centre) with my colleagues in the background. Taken in 2014, during my time working for the DEA - Working for Water programmes, Groblersdal

Source: photo by Khomotso Sebothoma

I remember we were sitting on the couch and the Oldman pulled out a flipchart and started drawing random triangles. It felt like he was not listening, but I kept on talking. After all that, he said something like, “Youngman this is going to be an interesting CHAT project... I can already map so many *activity systems* here ... but it seems like you need a lot of *mediation tools*...”. We then shifted the discussion to my current work, exploring what RESILIM-O programmes were trying to achieve within the biodiversity and NRM space. This was where I again shared with the Oldman my focus area in AWARD which was mainly to explore the learning opportunities for improving the implementation of restoration NRMPs in the Olifants catchment, as this would in turn strengthen the protection and sustainable management of biodiversity. At this stage, I was developing a scoping report on mapping different restoration NRMPs in the Olifants catchment in order to understand who was doing what, where, how, when, and with what tools and resources (Thifhulufhelwi & Graf, 2015; Appendix G). It was

through this process that together with the Oldman we started *identifying different activity systems* involved in the restoration of IAP control practice and mapping out their *object* (the what and why) and focus areas (who does what).

This was the moment I fell in love with CHAT. Well, at the time I just liked the *triangle* as an applicable methodology that one could work with in practice. This was an entry point for me to read more about activity theory and the different generations. It was at this point that I realised my work was more centred around the *third generation CHAT* with different interacting activity systems from local communities as beneficiaries, NRMPs programmes as implementing agents, national departments as regulating, regional conservation authorities and landowners as enabling institutions, private conservation and tourism as supporting and local NGOs such as AWARD as mediating activity systems. However, the core central activity systems in the restoration IAP control were the NRMPs as implementing agents and these were the focus areas for the RESILIM-O programmes to strengthen the effectiveness of biodiversity and NRM practices. This focus on NRMPs informed my initial intentions for the study (see part I of this thesis).

Introduction to Professor Heila Lotz-Sisitka and pursuing postgraduate studies in environmental education

I think it was around late 2014 when Heila was invited to be part of a workshop at AWARD. I can vividly remember how the Oldman introduced me to Heila. They had just finished the workshop (which I was not part of), and the Oldman came running to our office because we used to have two separate offices. When he came into our office, I could hear him from a distance asking, “*Where is the Youngman?*” My good friend Kelvin the office manager responded that I was upstairs, and the Oldman started calling, “Youngman focus ... come down here very quickly”. So, when I got down, he said “I need to introduce you to someone who will help solve all your problems...”. I asked Oldman “What do you mean, who am I meeting today?” (at this point I was used to being introduced to different people, but mostly his friends). By then Heila was already walking off towards her transport, so we caught up with Heila and the Oldman kept on saying, “*Youngman focus*” (this is his way of reminding me to pay attention before we do something important). At this stage, I did not know Heila, but I remember when I met Leigh Price she mentioned something about Heila and the Rhodes Environmental Learning Research Centre (ELRC). So, in my mind, I thought this was going to be another

critical realism and discourse analysis encounter. But it turned out to be just a casual conversation which did not even last long, about three minutes long actually. It started with the Oldman saying, “*Heila, this Youngman is coming to do a study with you at ELRC...*” (with excitement on his face). But *with confusion on my face. I asked, “Ooh am I?”* Heila said something like “*...that would be lovely, we are ready to have him ... this programme here at AWARD has good potential*”. The Oldman said “*Youngman focus... did you hear that? Now go send the application*”. Heila had to rush to the airport, so the conversation was very short and for some reason both the Oldman and Heila seemed to have agreed on something in that quick chat, but I was left confused and with a million questions. But I learned something that day, that *there is apparently potential amid confusion if you have the right tools*. This was mainly because I was still confused about the RESLIOM-O programme but others like Heila and the Oldman seemed to see things differently. From that quick discussion, the idea of a postgraduate study was planted in my head, and I started researching the transformative action research from Rhodes ELRC.

Fast forward to 2016, I ended up applying and was accepted for a postgraduate study in environmental education, supervised by Heila and the Oldman as my co-supervisor. I remember attending my first research design course at Rhodes ELRC, when Heila was facilitating a session, and she kept reminding us that our research should inform the practice, and the practice should inform the research. I cannot remember the exact words, but it was along the lines of “*We research the practice and we practice the research*”. This resonated with me as I had felt that our research was sometimes divorced from the practices we were researching. This is something I experienced in my first professional job as a project manager intern at DEA, where I felt my university training in environmental sciences did not fully equip me to engage with and address the complex socio-ecological issues faced in NRM practices, and this was my first breakaway point from pure natural sciences towards developing capacities for transformative learning action research.



Photo 3: Social media post from AWARD of myself presenting on the Blyde Restoration and natural resource management work, during one of the strategic meetings of RESIOM-O, 2016, Pretoria

From here, the story continues, but as a formal academic project that lasted several years and embedded in my work with AWARD as I grew into using CHAT research in its third and emerging fourth generations.

Chapter One: Introduction and Contextualisation of the Study

1.1 Research Context

In 2015, a set of 17 Sustainable Development Goals (SDGs) were developed by the United Nations Educational, Scientific and Cultural Organization (UNESCO), to strategically guide the world's global development vision 2030. These goals were developed through international policy consensus processes, and they challenged all spheres of development to work towards sustainability. Backed up by a set of 169 detailed targets, the SDGs call for integration amongst different sectors and see international development as an interconnected system that requires collective action in order to achieve protection and ensure sustainable use of the world's natural resources. The SDGs also have a strong emphasis on addressing ever-increasing environmental challenges, specifically goals 13, 14 and 15 which are focused on sustainable utilisation of natural resources, biodiversity conservation and ecosystem restoration and taking action to combat climate change and its impacts (UNESCO, 2016).

In the current global change era characterised by high rates of environmental degradation, there is an ever-increasing need to develop educational approaches that cultivate collective learning and agency as critical elements for transformation towards achieving sustainable management of natural resources. This study's key focus was on exploring the pathways for collective learning towards building collective agency for implementing projects and programmes for resilient landscapes, in order to sustain biodiversity and ecosystem services while reducing vulnerability to global change.

In preventing future degradation and possibly reversing some of the impacts on our natural systems, the restoration of ecological ecosystems has been a key strategy adopted at a global level. This requires an understanding of both the socio-ecological systems in order to design solutions and adaptation actions that are not only sustainable but also contextualised and driven by local actors. South Africa is recognised globally as one of the countries developing nationwide programmes on restoration that address socio-ecological systems objectives, namely through the WfW programme which later expanded to a nationwide Expanded Public Works Programme (EPWP) in a range of different areas of practice including Working on Waste, Working on Fire and Working for Energy. In 2019, South Africa hosted the *World Society on Ecological Restoration (SER)* conference which was themed, "Restoring Land,

Water and Community Resilience”. This conference was inspired in part by the South African experience with *Working for Water* and related NRM initiatives, which are among the best examples in the world for integrating ecological, economic, and social goals into national government priorities for protection and restoring our natural systems which are fundamental to sustainability (SER, 2019). Restoring and protecting natural systems improves the livelihoods of people who depend on them, through the provision of different kinds of services including the provision of water, food, the regulation of disease and climatic systems. If implemented effectively on a large scale, restoration can contribute to achieving many of the SDGs.

Ecosystem restoration was also adopted by the United Nations as one of the strategies and global actions towards achieving 2030 sustainability targets. The UN declared 2021-2030 as the Decade of Ecosystem Restoration (UN Environment Agency [UNEA], 2021). The UNEA in collaboration with global partners developed a 10-year strategy to achieve the Decade of Ecosystem Restoration which is also referred to as #GenerationRestoration. The strategy outlines 10 key actions that are critical to successfully reviving the natural systems that support all life, in line with the 2030 Agenda for Sustainable Development targets. The UN Decade of Ecosystem Restoration Strategy states:

The 2030 Agenda for Sustainable Development seeks to end poverty, conserve biodiversity, combat climate change and improve livelihoods for everyone, everywhere. These objectives, encapsulated in 17 Sustainable Development Goals (SDGs) are unlikely to be met unless ecosystem degradation is stopped and ecosystem restoration is undertaken at the immense scale of hundreds of millions of hectares globally. Currently, there is insufficient political support and technical capacity in both the public and private sectors to invest in the many hundreds of thousands of ecosystem restoration initiatives worldwide that are needed to achieve restoration at such a scale. Not only would such investment contribute to achieving the SDGs, but it would also yield considerable economic returns for a recovery from the COVID-19 crisis and lead to more social, economic and ecological resilience ... this UN Decade will inspire and support governments, UN agencies, NGOs, civil society, children and youth, private sector companies, Indigenous peoples, farmers, women’s groups, local communities and individuals globally to collaborate and develop the appropriate skillsets for catalysing and successfully implementing restoration initiatives across the world. (UNEA, 2021, p. ii)

The UN Decade of Ecosystem Restoration Strategy was developed through an inclusive global consultation with stakeholders between 2019 and 2020. The intention was that the strategy

would be adapted periodically to guide and address the implementation needs of all stakeholders in a spirit of partnership, inclusiveness and joint, coordinated action. The table below provides an overview of the UN Decade on Ecosystem Restoration goals, as outlined by UNEA (2019).

Table 1.1: Goals of the UN Decade on Ecosystem Restoration

<i>Goal for the Decade</i> 1. Foster political will, the mobilisation of resources, capacity building, scientific research and cooperation and momentum for ecosystem restoration at the global, regional, national and local levels. 2. Mainstream ecosystem restoration into policies and plans to address current national development priorities and challenges to address the degradation of marine and terrestrial ecosystems, biodiversity loss and climate change vulnerability, thereby creating opportunities for ecosystems to increase their adaptive capacity and opportunities to maintain and improve livelihoods for all. 3. Develop and implement policies and plans to prevent ecosystem degradation, in line with national laws and priorities. 4. Build on and reinforce existing restoration initiatives in order to upscale good practices. 5. Facilitate synergies and a holistic view of how to achieve international commitments and national priorities through the restoration of ecosystems. 6. Promote the sharing of experiences and good practices in ecosystem conservation and restoration.
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Source: UNEA (2019)

In broad terms, the UN Decade of Restoration Strategy calls for partnerships, inclusiveness and joint coordinated action which includes the need to finance restoration on the ground, to support the institutionalisation of programmes into local governance structures. This requires investment in research and capacity building to ensure the right investments are developed, behaviours are shifted, and leadership and a culture of restoration are adopted and celebrated especially by youth as we build the next generation of restoration practitioners (<https://www.decadeonrestoration.org/strategy>).

In their recent article published in titled *UN Decade on Ecosystem Restoration: Key Considerations for Africa*, Nsikani et al. (2023) argued that for the Restoration Decade to be a success in Africa, there is a need for collective action to identify opportunities and challenges for the planning and implementation of restoration. Furthermore, they identified six key areas

that should be considered at a strategic level by African countries during the Decade (Nsikani et al., 2023, p. 1):

- ensuring effective oversight and governance relevant to Africa;
- translating the goals to meet the African context;
- making the case for restoration amid multiple development demands;
- growing an African restoration community of practice based on regional need;
- collaborating to improve restoration outcomes;
- establishing an Africa-relevant evidence base for restoration.

In implementing the above-identified strategic focus areas for restoration in the African context, the UN Decade on Ecosystem Restoration must accelerate its impact on the ground. This includes ensuring that the restoration efforts are embedded and address key needs such as poverty alleviation to improve livelihoods and mobilise community support. There is a significant capacity building gap that needs to be filled to meet the goals of the decade, and this should follow a systematic approach. Multi-stakeholder collaborations are necessary for collaborative and inclusive restoration efforts that include local communities, researchers, practitioners, policymakers and other relevant stakeholders.

Therefore, in this study, I explored the possibilities of transforming restoration practices through an expansive learning process that sought to advance the agentic capacities of restoration practitioners, local communities, NGOs and other role players in the collective implementation of restoration practices. This included understanding the challenges and opportunities for implementing NRMPs, with a specific focus on IAP control as one of the nationally driven programmes for ecosystem restoration in South Africa.

1.2 Research Focus and Background to the Study Area

1.2.1 Research focus

The study aimed to explore how expansive learning mediation could strengthen collective learning and action in the management of IAPs as a key ecosystem restoration and NRM practice in South Africa. The study explored challenges in IAP-related ecosystem restoration programmes using expansive learning approaches, to identify potential transformation pathways that could enable successful collaboration for the implementation of IAP restoration

activity. All research activities were conducted in the Olifants River Basin, with a specific focus on the Blyde catchment. The research was part of the Resilience in the Limpopo River Basin-Olifants Programme (RESILIM-O)¹, led and facilitated by AWARD aims to build the resilience of both ecosystems and livelihoods in the Olifants catchment, which is a subset of the larger Limpopo Basin (see Figure 1.1).



Figure 1.1: Map of the Olifants River Basin as a sub-catchment of the larger Limpopo Basin

Source: adapted from AWARD, RESILIM-O

¹ The RESILIM-O programme is funded by the United States Agency for International Development (USAID), under USAID Southern Africa – RFA-674-12-000016, Resilience in the Limpopo Basin Program (RESILIM). The programme was implemented by the Association for Water and Rural Development (AWARD), in association with project partners. See <http://award.org.za/index.php/projects/usaids-resilm-o/> for further background details.

1.2.2 Biophysical description of the study areas and their importance to Ecosystem Restoration

The study area was located within the Blyde catchment, which is a sub-catchment of the larger Olifants River Basin (see Figure 1.1). The Blyde catchment is situated in the northeastern Drakensberg escarpment of the Mpumalanga Province, and it is about 2842 km² hectares in size. The Blyde catchment is divided by the escarpment into two main sub-units, namely the Ohrigstad River valley and the Blyde River valley. This study focused on the upper portions of the Blyde River valley. The study area also included the upper portion of the Klaserie and Sand sub-catchments. These three sub-catchments (including the upper Blyde Valley) are managed as a single management unit and together they make up the Greater Blyde Canyon Nature Reserve (Figure 1.2). In this study, I used the term *Blyde landscape* to collectively refer to the upper Blyde, Klaserie and Sand catchments as the study area.

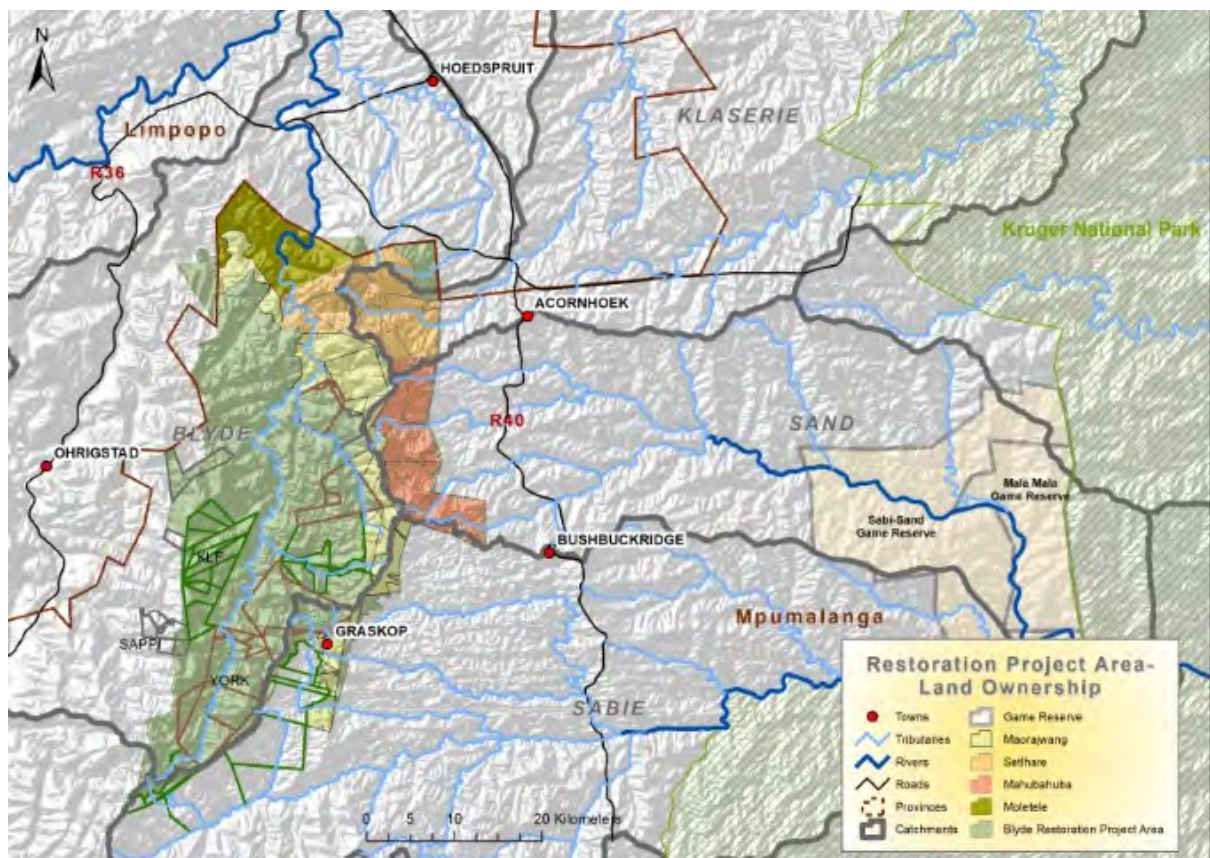


Figure 1.2: The Blyde Restoration Project area map, indicating land ownership and key rivers originating from the landscape

Source: AWARD, Blyde restoration project

The Blyde landscape which consists of the above-mentioned three sub-catchments forms part of the high biodiversity and strategic water source areas within the Mpumalanga Northern Drakensberg region. According to the report by the World Wide Fund for Nature – South Africa, eight per cent of South Africa’s land area produces 50% of our surface water (WWF-SA, 2013) and the Blyde landscape is a major contributor to the Mpumalanga Drakensberg catchment which is also a Strategic Water Source Area (Figure 1.3). The primary rivers from these catchments are the Blyde, Klaserie and Sand Rivers and many other small tributaries that originate in these areas as shown in Figure 1.2 above. Having an abundance of wetland systems, these catchments are not only the water source but also provide critical purification services for water quality.

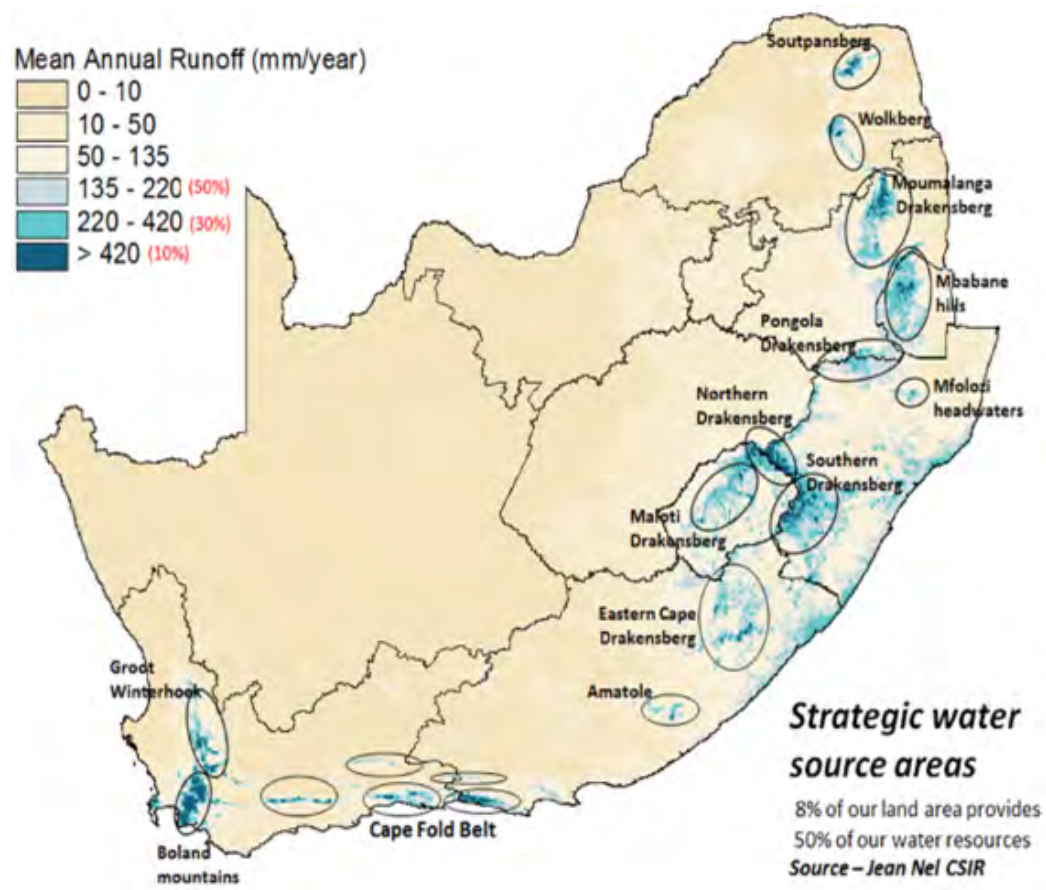


Figure 1.3: Strategic water source area map

Source: WWF-SA (2013)

Many of the rivers that originate in these catchments are still considered near pristine in terms of their water quality. An example is the Blyde River which is classified as one of the few class ‘A’ rivers in the country, considered to be close to a pristine state (Department of Water and Forestry [DWAF], 2004). In terms of climate, these catchments fall within a temperate climatic zone, with annual rainfall reaching over 1000 mm along the escarpment (DWAF, 2004; Matthews et al., 1993); this makes these catchments critical strategic water source areas for South Africa.

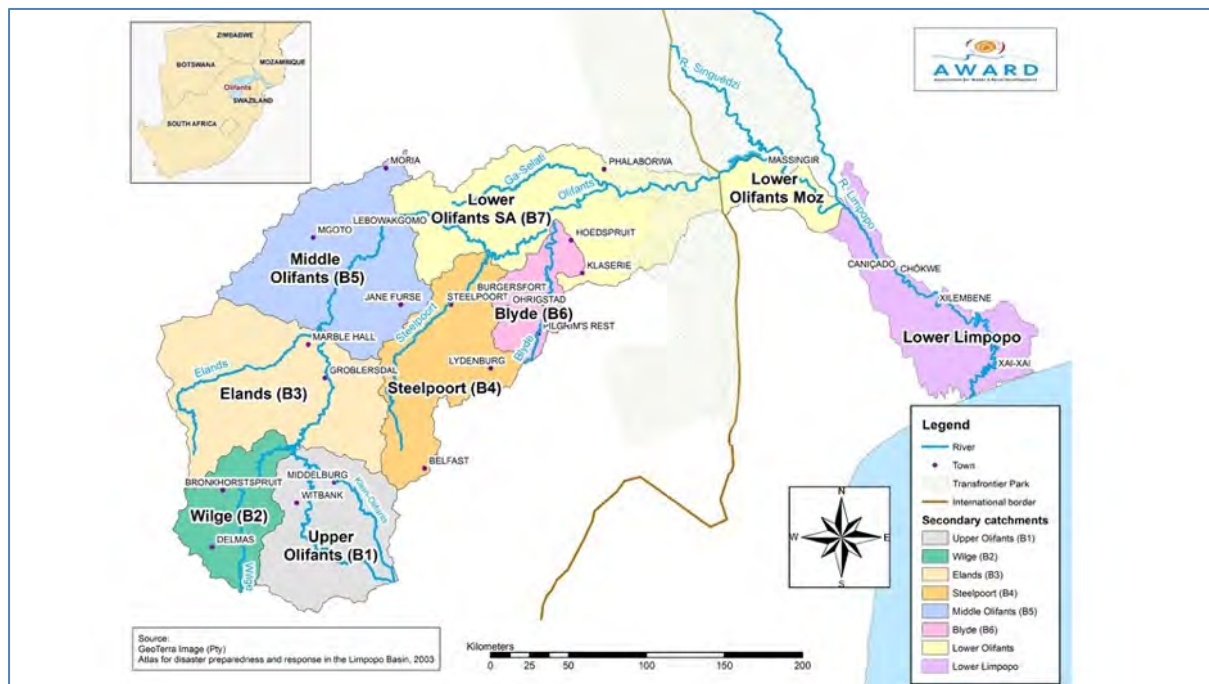


Figure 1.4: Map of the Olifants River Basin showing major sub-catchments (B6 is the Blyde catchment)

Source: AWARD, RESILIM-O

The geological characteristics of the Blyde landscape consist of a complex series of lithological formations that underline the area forming the Drakensberg Mountains. In the eastern portion of the upper reaches of these catchments are the deep layers of dolomites of the Chuniespoort formation, interspersed with alternating layers of indurated shale and quartzite of the Pretoria series of the Transvaal Sequence (Matthews et al., 1993). The soil types comprise two distinctive variations namely the acidic low-nutrition soils that developed from quartzite and shale rocks, and the deep, nutrient-rich dolomite soils (Matthews et al., 1993). These mixtures of distinct soil types are known to give rise to specific vegetation assemblages (Tilman, 1988

in O'Connor, 2005), which makes these catchments one of the most biodiverse areas in South Africa.

1.2.3 Biodiversity and ecosystem services

The Blyde landscape contains unique and highly diverse biodiversity across a large number of different ecosystems which support high endemism. Owing to its high endemism and diversity of ecosystems and vegetation types, the Blyde landscape consists of top-priority vegetation regions (Holness, 2015a). This includes the Northern Escarpment Quartzite Sourveld, Northern Escarpment Dolomite Grassland, Northern Escarpment Afromontane Fynbos, Mpumalanga Afromontane Forest and Subtropical Afromontane Forest, many of which are classified as threatened ecosystems in South Africa (Mucina & Rutherford, 2006; SANBI and Department of Environmental Affairs and Tourism [DEAT], 2009; Mpumalanga Tourism and Parks Agency [MTPA], 2007). The Blyde restoration landscape also forms part of the Wolkberg Centre of Endemism which contains important biodiversity features (SANBI & DEAT, 2009). Furthermore, the Blyde landscape also supports a great abundance of plant endemism and is considered one of the highest plant diversity areas in South Africa. The Mariepskop complex alone, which is a combination of mist forest and Fynbos, has over 1 400 floral species many of which are endemic to the area (MTPA, p. 17).

However, large portions of the Blyde landscape have been transformed by commercial forestry (Holness, 2015b) and the impact of large-scale plantations continues to threaten the ecological integrity and water resources. The majority of historic forestry operations have been stopped, with the intention of restoring the Blyde landscape to its natural state. The extent and effectiveness of initial restoration efforts are, however, not considered efficient and more large-scale restoration efforts are required to manage the spread of IAPs. Because of its high biodiversity value and high water yield, the Blyde landscape is ranked as a top-priority area for ecosystem restoration programmes. These restoration programmes are aimed at maintaining ecological integrity to sustain the long-term flow of ecosystem services through effective IAP control practices (Marais et al., 2004).

1.2.4 Land uses and key threats

Conservation is one of the key land uses in the Blyde catchment, and this is linked to the diversity of ecosystems and species in the area. The Blyde River Canyon Nature Reserve and

many other forest nature reserves including Tweefontein, Haartebeesvlakte and Mariepskop as well as private reserves, provide formal biodiversity protection (Holness, 2015b). Commercial forestry plantations and agriculture are also the main land uses in the Blyde landscape (Holness, 2015b). Tourism is also land-use driven by the scenic beauty features of rugged mountains, canyons and plateaus which make the Blyde landscape one of the main tourist attractions in South Africa. These include the famous *Panorama route* which hosts key attractions such as Blyde River Canyon, Three Rondavels, Bourke's Luck Potholes and God's Window.

One of the main threats to the Blyde landscape is unsustainable forestry management and IAPs. The impact of historical forestry is still felt to the present day through the continuous spread of IAP such as pines and gums (MTPA, 2007). Figure 1.5 below shows some of the historic and abandoned forestry compartments which are now the main source of IAPs, specifically the upper Sand and Klaserie catchments. Lack of effective forestry management has also been a key factor in the escalating risk of invasion by commercial invasive plants, especially in riparian and grassland ecosystems as they are the most vulnerable (Van Wilgen & Wannenburgh, 2016).



Figure 1.5: Photo illustrating some of the invasion of pines in inaccessible steep slopes (note the area delineated in red), shows the impact of the afforestation process in which IAPs continue to spread after the removal of plantations by DAFF Forestry

Source: Photo by Wynand Uys

1.3 Formulating the Research Problem Statement

The Blyde restoration landscape (which includes the upper Blyde, Klaserie and Sand catchments) is renowned for its high biodiversity value and is a Strategic Water Source Area as mentioned above; it has already seen major restoration efforts in the form of IAP control since the mid-1990s. Many of the restoration efforts were led by and funded through government natural resource management programmes (NRMPs), with contributions from local conservation agencies, and some involvement from the private sector as well as civil society organisations. However, the number and scale of project restoration interventions are considered minimal in relation to the high level of IAP infestation in the Blyde landscape. According to the national mapping of IAP in South Africa, the Blyde landscape contains among the most invaded catchments in Mpumalanga Province (Kotzé et al., 2010). A set of priorities was identified in order to scale up the implementation restoration initiatives (Forsyth et al., 2011). Working for Water (WfW), high-altitude teams (HAT), and SANParks Biodiversity Special Projects (BSP), are the three main NRMPs currently implementing restoration IAP control projects in the Blyde landscape. Indigenous Forest Management, a section of the Department of Agriculture, Forestry and Fisheries (DAFF-IFM) which is the current landowner of the historical forestry management areas within the Blyde landscape is also providing additional support to the implementation of restoration IAP control in the landscapes. These NRMPs are all government funded, coordinated and managed by different government agencies. The NRMPs are seen as the leaders in the implementation of restoration IAP control projects, and they are expected to work with all other stakeholders in the Blyde catchment to ensure the effectiveness of restoration efforts.

From a scoping study on understanding the NRMPs in the Olifants catchment (Thifhulufhelwi & Graf, 2015), it was evident through the engagements with NRMP stakeholders that the lack of collective action and learning is one of the key challenges facing the restoration practitioners in the Blyde landscape. This was also expressed by stakeholders themselves, as one practitioner during the meeting engagements pointed out: “We are operating in silos ... a long-term restoration strategy to guide collective action is required ... we don’t know who is working where ... we don’t know where we are working towards...and how far we have come in terms of restoration”. These were some of the expressions during the scoping engagements as part of

the contextual profile which later informed the development of the Blyde Restoration Project (AWARD, 2014). This contextual profiling was led by me, at the time an employee of AWARD (see Thifhulufhelwi & Graf, 2015, see Appendix G).

This study was developed as part of the AWARD's Resilience in the Olifants programme objectives². The study aimed at supporting the emergence of collective action and learning by key role players for the restoration of degraded ecosystems in order to sustain biodiversity and long-term supply of ecosystem services in the high-priority Blyde catchments. The study scope was initially focused on exploring challenges to identify gaps and constraining factors for NRM practitioners to effectively implement restoration IAP control in the Blyde landscapes but grew both in depth and scope over time as is reflected in Part II of this study.

1.4 Research Objectives

The intention of the study was to explore and expand learning processes in the restoration of IAP control practice, in order to examine the emergence of transformative agency for NRM programmes to envisage new pathways that potentially enhance the effectiveness of project implementation through coordinated and collective actions with other key role players in the Blyde landscapes.

1.4.1 Main research question

What are the learning processes that contribute to the development of transformative agency for NRM practitioners to envision new pathways that enhance collective action for the sustainability of the restoration IAP control activity?

1.4.2 Sub-questions

1. What are the current challenges and contradictions facing organisations involved in restoration IAP control activity in the Blyde landscapes?

² The overall objective of the RESILIM-O is to reduce vulnerability to climate change (and other global change factors) through building improved transboundary water and biodiversity governance and management of the Olifants Basin through the adoption of science-based approaches (systemic and social learning) that enhance the resilience of people (livelihoods) and ecosystems (environmental sustainability).

2. What expansive learning and mediation tools can the study develop that contribute to resolving contradictions and enhancing the sustainability of the restoration IAP control activity?
3. What are, and how do underlying mechanism associated with power dynamics promote or constrain transformative agency and learning of restoration IAP control activity by the NRMPs and related agencies in the Blyde landscape?
4. How does double stimulation as a mediation principle support the emergence of practitioners' collective agency in enhancing of their volitional action in transforming and implementing sustainable restoration IAP control activity?

1.5 Introduction to Methodology: Theoretical Framework

1.5.1 Cultural-Historical Activity Theory and expansive learning

This study draws on expansive learning theory developed in the Cultural-Historical Activity Theory (CHAT) tradition. This theory allows for engagement with the socio-ecological systems complexity of the restoration IAP control practices. Expansive learning is a co-inquiry transformation-oriented approach to learning what is not yet there (Engeström, 1987/ 2015). Vänninen et al. (2015) refer to social learning as the development of shared conceptual models among individuals, in which learning occurs through social interactions and processes between actors within a social network. CHAT is an epistemological theory that posits that learning takes place through collective activities that are purposefully conducted around a common object (Engeström, 2001; Mukute & Sisitka, 2012). Dick and Williams (2004) also note that a CHAT-based enquiry combines the systems, learning and development components. This study was situated in the CHAT tradition and grounded in Developmental Work Research, facilitated through the concept of learning by expanding (Engeström, 1987), in which the mediation principle of Vygotskian double stimulation was a fundamental co-inquiry tool for the emergence of transformative agency (Sannino, 2008; 2015).

1.5.2 Key concepts from critical realism

It was anticipated from the beginning that this study may draw on critical realism concepts to enrich the understanding of structural contradictions in CHAT and expansive learning framing. Critical realism has influenced the interpretation of cultural-historical contradictions in expansive learning processes in Southern Africa, where tools are needed to dig deeply and

uncover often hidden structural and cultural histories. Researchers have drawn on Bhaskar's concept of depth ontology and generative mechanisms in deepening their understanding of especially structural contradictions analysis and the empirical interpretations in CHAT (Mutuke & Sisitka, 2012; Pesanayi, 2019; Jalasi, 2020; Lotz-Sisitka, 2022). References to critical realism as used in these CHAT studies point to the need to ensure ontological depth in explanatory critiques (Bhaskar, 1978). Therefore, the use of critical realism allowed for deepening the explanatory critique, especially of the nature of the contradictions in this study, as we have found that it helps to uncover and reveal deep-seated contradictions in activity systems; Bhaskar insists on asking 'why' something manifests as it does and encourages retroductive reasoning to ensure this. He challenges researchers to not only interpret contradictions at the surface level but instead to look into the generative mechanisms shaping the contradictions, in this case, the restoration IAP control practice. Furthermore, in this study, critical realism also provided in-depth insight into the understanding of power and agency (Bhaskar, 1993), through the co-engaged depth inquiry into the deep-seated structural causes of power-dynamics contradictions (Bhaskar, 2008, 2009) that influence the emergence of agency and learning at the individual, programme, and institutional levels (see Part II of the study, Chapters Seven to Ten). Bhaskar's power1– power2 offered a dialectical theory of power relations which I found useful in interpreting the role of expansive learning in power-dynamic contradictions and their resolution through expansive learning as discussed further in Sections 7.11 and 8.3.2.

1.5.3 Research orientation and design

The study adopted a qualitative formative intervention design using a case study approach. A qualitative design, according to Maxwell (2013), is intended to help the researcher understand the meanings and perspectives of the participants in the study and to examine how these perspectives shape their physical, social and cultural context. In formative interventions, the participants face a problematic and contradictory object which they analyse and expand by constructing new meanings and solutions through their transformative agency pathways to break away from the problematic situation (Engeström & Sannino, 2010; Virkkunen & Shelley-Newnham, 2013).

A case study is an intensive description and analysis of a phenomenon or social unit such as an individual or group (Merriam, 2001). Leedy and Ormrod (2014) argue that a case study approach is suitable for learning more about a little-known or poorly understood situation. It can also be appropriate for investigating how an individual, group or programme changes over time because of certain conditions or interventions. Merriam (2001) further notes that researchers can use case study designs to gain an in-depth understanding of something, which can then be used to influence policy, procedures, practices and future research. Furthermore, a case study design also supports intensive research designs that can use critical realism framing (Sayer, 2000). The study adopted a nested or networked case study approach, which consisted of multiple embedded case studies (Yin, 2009). In Phase 1, the four NRM programmes were seen as individual cases or activity systems with a shared object making them a networked case study (Figure 1.6 below). The four activity systems included WfW, HAT, the SANParks-BSP and the DAFF-IFM. Together these activity systems are referred to as the NRMPs, they share a common object of ecosystem restoration through invasive alien control in the Blyde landscapes. As can be seen in Figure 1.6, there were other surrounding activity systems which influenced and were part of the formation of the shared object.

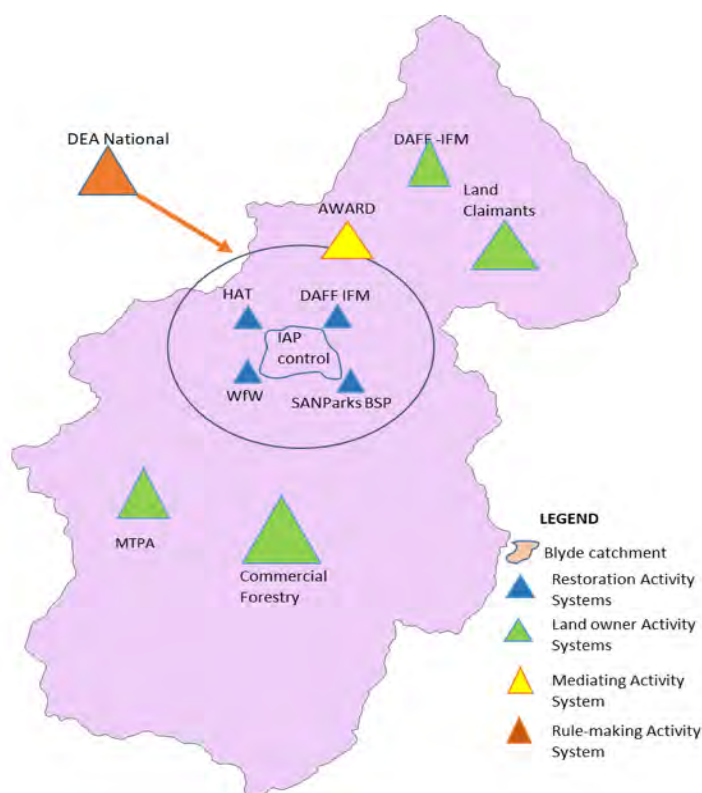


Figure 1.6: Networked case study of activity systems in a Blyde case study

The DEA national (orange) is the rulemaking activity system, which provides capacity, funding, rules and regulations governing the implementation of restoration IAP control by the NRMPs. The rulemaking activity systems sit outside the catchment but influence governance oversight of the restoration programmes. AWARD (yellow) is the local NGO that has been playing a convening role as the mediating activity system which supports development tools and facilitation capacity through systems thinking and social learning to enhance engagements with catchment management issues in the Olifant. At the time of this study, I was employed by AWARD as a formative interventionist action researcher and my role was to support the mediation learning processes, specifically for the Blyde Restoration Project under the broader RESILIOM-O programme. In this way, this research was a key contribution to the RESILIOM-O programme. The landowners – including commercial forestry, communities and local conservation agency the MTPA (green) – were identified as potential activity systems for future exploration as they influenced the governance of restoration IAP practices as key partners and future custodians of implementation. However, the landowners' activity systems were initially not part of the study as they were not directly involved in implementing restoration IAP control but later became important activity systems that were directly affected by the power-dynamics contradictions that became significant through the study's emergence (see Chapters Six and Seven on the emergence of governance activity systems).

The strength of the nested activity systems approach was that it allowed for the examination of the emergence of a shared object as a unit of analysis through the multi-voiced nature within and between activity systems (Engeström, 2008; Yamagata-Lynch, 2003). In nested case studies with a network of activity systems, the unit of analysis may change from one activity system (case) to a network of activity systems (networked cases), making it possible to follow the object across organisational boundaries (Miettinen et al., 2009), and such a methodological arrangement made it possible for me to analyse learning actions across horizontal and vertical boundaries, and also to follow the object and an expanding networked system of activity systems as the study progressed (see Chapter Seven, Sections 7.3, 7.7 in Part II of this study).

1.6 Key Sensitising Concepts in designing an expansive learning process for restoration NRM practices

Environmental degradation such as that caused by the impact of alien invasive plants in the Blyde catchment is the driver of change in complex catchment systems. This requires diverse

responses from stakeholders with the agency to take action. This means that in order to address degradation issues, a series of collaborative engagements with stakeholders is required to explore systemic possibilities for effective practices such as restoration IAP control. This involves the integration of systems thinking and social learning. As such, an expansive learning inquiry is a suitable approach for co-creating a transformative learning pathway towards integrated restoration practices and socio-ecological resilience through enacting the agency of local actors to become custodians of restoration IAP control. Expansive learning informed by CHAT has a strong emphasis on transformation through navigating contradictions towards desired shared outcomes, offering more depth to co-engaged, iterative processes than other generalised social learning theories that tend to be used in the natural resources management field (Lotz-Sisitka et al., 2012).

Below, I briefly discuss the five key concepts that were critical in designing the expansive learning process in this study, namely: *activity, practice, learning, agency, double stimulation, resilience and sustainability*. These concepts were described through the lenses of CHAT which underpinned this study (see Chapter Three), with this section giving an introductory overview of each of the concepts.

1.6.1 Activity and Practice

Miettinen et al. (2009) argue that a practice can be understood as something that people do in everyday life as key fundamentals for social order and institutional functioning. They further note that a “focus on practice challenges us to bridge different levels of analysis ... from the very micro (what people say and do); to the meso (routines); to the macro (institutions)” (Miettinen et al., 2009, p. 1309). Schatzki (2005) also points out that there has been a strong focus on *practices* as a theme across several fields within organisational studies and phenomenological philosophy in recent years.

Green (2009) also discussed a collection of practices referring it as praxis. Some of the key aspects that shape the development of praxis include agency, knowledge, language, ethics and power. In this regard, Green (2009) further notes that a practice is more than an epistemological question because it involves both thinking and doing. Green believes that the ontological perspective of practice is focused on people’s everyday doings, rather than their conceptualisations or their thinking. i.e. “what people do, not what people say they do” (Green, 2009, p. 41). Furthermore, Wenger (1998) broadens the concept of a practice into a community

of practice (CoP), in which a CoP consists of groups of people or organisations who share a common concern and acquire agency on how to address their concerns as they interact regularly.

In this study, I looked into practices from the lenses of expansive learning and CHAT tradition, which introduces the concept of an Activity system. Drawing on the work of Engeström (2001), he notes that traditional theories of learning have focused on individuals as subjects of learning. Lave and Chaiklin (1993) also argue that researchers have traditionally studied learning as a process contained in the mind of the learner only and have ignored the lived-in world in which practices are rooted. But in recent years, we have seen a shift in the learning sciences as more focus is now on exploring collective action and organisational learning (Engeström, 2016).

Engeström (2001) further notes that in transforming both individual and organisational practices, “we must learn new forms of activity which are not yet there”, and the challenge is “people and organizations are all the time learning something that is not stable, not even well understood ahead of time” (pp. 137-138). In this study, restoration IAP control is understood as an activity within the broader range of NRM practices. As such, restoration IAP control consisted of various activity elements which included operational planning, project management, capacity development, organisational governance processes and monitoring and evaluation processes. Therefore, it is a system of interacting components that constituted the restoration IAP control activity. I used the CHAT activity system analysis to explore connections across different elements within the restoration IAP activity, in an attempt to understand (a) the interaction and relations between subjects (practitioners from different activity systems) and their object (the restoration of degraded ecosystem services), (b) explore different tools used by subject to fulfil their role in advancing the object and (c) how the restoration IAP control practice is governed, regulated and managed.

1.6.2 Learning

Learning, as defined by Edwards (2005a), is a process that can facilitate change in how people look, think, interpret and act on the world. Edwards (2005b) also notes that learning is not limited to behaviour (how we act, think, and interpret the world), but also focuses on knowledge and meaning making. She further points out that learning is not simply a matter of learning pre-existing ideas but also involves learning how to interpret problems embedded

within social practices and know how to respond to these problems (Edwards, 2005b). Lave and Wenger (1991, p. 171) suggest three different approaches to supporting learning:

- scaffolding interpretation: where a more knowledgeable other assists the learner to move to a new understanding;
- cultural interpretation: which is concerned with addressing the difference between everyday experiences and scientific understandings using instruction; and the
- collectivist/societal interpretation: which refers to the difference between current understandings and new forms of collectively generated solutions to the contradictions embedded in the current understandings.

Drawing on Engeström's theory of expansive learning, I examined learning in the context of collective action. The theory of expansive learning focuses on learning by expanding, through transforming the object of activity (Engeström, 2001a, 2003, 2008; Warmington et al., 2004). Engeström (2009) further argues that the expansive learning theory is based on the dialectics of ascending from the abstract to the concrete, in which individual subjects begin questioning the accepted practice, and this gradually expands into a collective movement or institution (p. 12). In this study, learning is understood as a process of acquiring knowledge, skills and understanding by individuals and groups within the context of NRM praxis, in order to enhance the capacity and agency to act and transform their contextual difficulties. These include improved conceptual understanding of challenges and contradictions they face in the restoration IAP control practice, as well as modelling potential pathways and new solutions of transformation to advance restoration IAP control practice.

1.6.3 Agency

There are several theories of agency expressing how different scholars classify and describe different types and meanings of agency (Barnes, 2000; Edwards, 2005b; Haapasaari et al., 2014; Heath & Anderson, 2010; Malafouris, 2010; Sannino, 2015; Sayes, 2014). One of the descriptions of Agency in mainstream literature is the capacity of an individual or group to possess internal powers and capabilities, through which they act towards a given end, in relation to something or some other people (Barnes, 2000). However, this definition is not consistent with the CHAT and expansive learning approach. In Activity theory, agency is not processed but rather enacted through a dialectical learning process in which contradictions are engaged using mediation tools. And this type of agency is referred to as transformational agency by double stimulation (TADS) (Sannino, 2015).

Therefore, in this research, I focused on only two types, namely relational and transformative agency by double stimulation in the context of exploring learning pathways in the restoration IAP control activity.

- Relational agency

Engeström (2009) notes that relational agency has to do with the strengthening of competence and expertise to enhance the collective capabilities of a community (also see Hakkarainen et al., 2004). The focus is more directly on the nature of the relations that comprise a network of

expertise. He further argues that relational agency can begin to help us understand the negotiation and reconfiguring task as it occupies a conceptual space in enhancing individual understanding and a focus on learning as systemic change (Engeström, 2009, p. 209). In expanding on this, Edwards (2005b) found relational agency to be a useful concept in understanding how people are connected (relations), how they interpret a problem (cognitive) and how to respond to it (ability to act). Therefore, relational agency, as described by Edwards (2011, p. 34) “involves a capacity for working with others to strengthen purposeful responses to complex problems”. Edwards (2011) further identifies two processes which constitute relational agency: (a) working with others to expand the ‘object of activity’ or task being worked on by recognising the motives and the resources that others bring to bear as they, too, interpret it; and (b) aligning one’s own responses to the newly enhanced interpretations with the responses being made by the other professionals while acting on the expanded object.

- Transformative agency and double stimulation

Transformative agency differs from conventional notions of agency in that it stems from encounters with an examination of disturbances, conflicts and contradictions in the collective activity, particularly conflict of motive (Haapasaari et al., 2014; Sannino, 2015). In Virkkunen (2006, p. 49) transformative agency is defined as the “breaking away from the given frame of action and taking the initiative to transform it”. Transformative agency is not limited to the relations of an individual, as it goes beyond the concept of relational agency (Edwards, 2005; 2009), and it pursues collective change efforts by explicating and envisioning new possibilities (Haapasaari et al., 2014). Sannino (2015) argues that although the expression of change starts from individuals (individual agency), the actual transformation of the problematic situation requires collaboration (collective agency), and this is fundamental to expansive learning transitions of expanding from individual toward collective actions in order to accomplish systemic change. Engeström (2007b) further adds that transformative agency is not an attribute of an individual as it develops in collective interaction over time. Virkkunen (2006) believes that when a group of people collaboratively take initiatives to develop their activity we can speak of shared transformative agency.

Haapasaari et al. (2014) argue that agency in activity theory appears in object-oriented actions, and it develops in historically shaped collective activity systems that are driven by contradictions and motives to transform the activity. Engeström (2007b) emphasises that

contradictions are an important element of transformative agency to emerge, as participants confront their situation in an activity. Mediation is also a critical component through formative interventions such as the Change laboratories, where double stimulation tools are used to facilitate the emergence of transformative agency. This is attributed to Vygotsky's (1978) work on double stimulation through the use of conceptual tools and models to enable participants to advance towards their object of activity (Sannino, 2015).

This study aimed to enhance the transformative agency (individual and collective) of restoration IAP control practitioners. I examined both relational and collective agency that took place during the research process. In short, the study explored the emergence of transformative agency in an expansive learning process, using double stimulation tools to examine the evidence of transformation. This was aimed at answering the third research question of the study: *How does double stimulation as a mediation principle support the emergence of practitioners' collective agency that enhances their volitional action in transforming and implementing sustainable restoration IAP control activity?*

1.6. Sustainability and resilience

- Sustainability

There is a global understanding that humans have been at the centre of environmental degradation since the Industrial Revolution, as many of the environmental challenges are attributed to anthropogenic activities. Furthermore, the impact on our natural systems through human development needs has driven the global call for concerted efforts towards sustainable development. Failure to implement sustainable practice will result in significant environmental and socioeconomic impacts including the costs of restoring the functioning and flow of ecosystem services. It was argued by Richardson (1988) that IAPs are one of the fast-growing threats to environmental sustainability, while the spread of IAPs is strongly linked to human practices and unsustainable land-use management practices (Boy & Witt, 2013). In working towards environmental sustainability, there is a need to address the growing trend of IAP invasion and other drivers of ecosystem degradation through the implementation of large-scale restoration programmes as highlighted in the UN Decade on Restoration Strategy (2021–2030).

Wals and Rodela (2014) also argue that sustainability is not a destiny one can eventually reach but rather a continuous learning path through learning-based change processes. In addition,

O’Riordan and Voisey (1998) cited in Wals (2007, p. 65) argue that “achieving sustainability transition requires new ways of knowing, and doing things differently and this also requires innovation in management processes”. Using activity theory and expansive learning lenses, this study reflected on and interrogated some of the key issues related to the management of natural resources as commons (i.e. NRM as sustainability commons, see Chapter Seven), in order to identify and co-develop pathways towards improved NRM practices that incorporate social-ecological sustainability.

- Resilience

Resilience is one of the key concepts in the management of complexity and complex systems. Restoration IAP control practices in the context of NRM for the benefits of socio-ecological sustainability are a representation of a complex socio-ecological system. In many scholarly resources resilience is described as the capacity of the ecological system to absorb both natural and human disturbances, its ability to deliver essential functions and to provide feedback in order to adapt to the changing conditions and prevailing uncertainties (Holling, 2001; Gunderson & Holling, 2002; Alberti & Marzluff, 2004; Walker et al., 2004; Folke et al., 2005; Walker & Salt 2006; Folke, 2007; Berkes & Ross, 2013; Chaffin et al., 2014). Resilience further addresses the dynamics of social, economic and biophysical systems, which are viewed as a single interacting system driven by feedback and interdependence, commonly referred to as the socio-ecological system or SES (Berkes et al., 1998; Pollard & Du Toit, 2011). These SES are complex adaptive systems and do not behave in linear and predictable trajectories (Walker & Salt, 2006).

In this study, the exploration of learning processes is seen as part of building resilience ecosystems in the Blyde landscapes through the implementation of effective IAP restoration activities. The concept of ecosystem resilience underpins the functioning of natural systems to provide ecosystem services over a range of environmental conditions (Turpie, 2004). By restoring the degraded Blyde landscape, the NRMPs are contributing towards resilience building. Another important concept is the resilience of governance systems described as the adaptability of the laws, policies, regulations, and institutional structures in governing complex systems (Cosens & Williams, 2012; Folke et al., 2005; Huitema et al., 2009). In the context of this study, I explored the deep-seated structural contradictions and their cultural histories and power dynamics that were constraining the adaptive governance of NRM practices.

1.7 Systems Thinking and Social Learning Approaches for Collaborative Natural Resource Management

Achieving environmental sustainability in the current global change era requires participatory and learning-based approaches in transforming human interventions for sustainable NRM practices (Armitage, 2005; Berkes, 2009; Rodela, 2011). Social learning has been widely accepted as one of the fundamental learning-based approaches for environmental sustainability (Ison et al., 2004; Muro & Jeffrey 2008; Reed et al., 2010; Wals, 2007). Over the years, natural systems have become more complex and dynamic, and this has also required systems thinking as an additional approach to social learning, to foster collective action for governance and sustainable management of natural resources in the Anthropocene era (Ison et al., 2007). This study highlights social learning, developed specifically as expansive learning working across activity systems around a shared object of activity, and systems thinking as a key fundamental approach for co-inquiry processes and developing collective action in NRM practices.

Rodela (2011) reviewed social learning literature within the NRM context. From the analysis, she suggested three research approaches to social learning, each with its own assumptions about the learning process and learning outcomes (see Table 1.2 below).

Table 1.2: Main characteristics of the three research approaches to social learning (Rodela, 2011, p. 3)

	Individual-centric	Network-centric	Systems-centric
Learning process	- Transformative: learning as a transformative process that occurs during a participatory activity and involves the individual	Experiential: learning as a process embedded in past experience and/or observation of other practitioners	Emergent: learning as an emergent property of the social-ecological system
Learning outcomes	- A change in participants' internal-reflective processes; a change in participants' behaviour	A change in established resource use or management practices	Shift of the social-ecological system on a more sustainable path
Unit of observation	- The individual	The individual, network, multi-stakeholder platform	The individual, ecosystems, institutions
Unit of analysis	- The participant	Networks	The social-ecological system

Learning agent of interest	-	The individual who participates in a participatory workshop	Multi-stakeholder platforms, the practitioner, member of a community of practice, and/or network of practitioners	The stakeholder, community member or practitioner who is involved in resource management
Operational measures	-	Moral dimension (civil virtues), cognitive dimension (improved understanding of problem domain), relational dimension (relational base), trust (trust toward participants, process)	Change in how things are done; improved relationships	Change of institutions and management practices at higher levels (e.g. policy), with interest in ecosystem responses

Source: Sayes (2014)

Reed et al. (2010) argue that although social learning is increasingly becoming a well-recognised methodological framework in NRM and policy, there is still no consensus on its meaning or theoretical basis. The above research approaches provide sufficient insight into how social learning was defined and applied in the NRM context. Some research approaches (Reed et al., 2010, p. 4) view social learning as “a change in individual understanding, through social interaction, within wider social units or communities of practice”. Other approaches (Ison et al., 2004, p. 13) argue that social learning “rests on a different set of epistemological assumptions, that knowing occurs with the act, and the process of constructing an issue and seeking improvements”. And for social learning to occur there must be a co-production of knowledge, multi-stakeholding and active facilitation towards concerted actions.

Wals and Rodela (2014) argue that collaborative learning-based change processes are critical in achieving environmental sustainability. Ison (2008) also notes that the conceptualisation of systemic thinking is a key requirement for achieving social-ecological sustainability. He further argues that being systemic in this regard should be more than just exploring the interconnectedness and linkages within and amongst different NRM practices but also understanding the learning processes required to change or improve situations of socio-ecological complexities (Ison, 2008).

Foster et al. (2016) further applied Ison’s (2008) argument to systems thinking action research in which they engaged researchers, policymakers and practitioners in a systemic co-inquiry in order to collectively develop a better understanding of water governance in England and how

it might be improved in practice. In their methodological approach, Foster et al. (2016) argue that:

The systemic co-inquiries proceed by enacting a social learning process with those who have a stake in a situation experienced as problematic or as presenting an opportunity. Thereby, they enable participants to begin their investigations in a different emotional space to that which accompanies the emotion of certainty usually associated with programmes and projects. (pp. 2–3)

This is a similar process of collaboratively understanding the need in an expansive learning process through the CHAT-based enquiry. Engeström (2001) describes CHAT as an epistemological theory that posits that learning takes place through collective activities that are purposefully conducted around a common object. This argument is evident in the systemic co-inquiry on water governance (Foster et al., 2016).

This shows how the expansive learning process and the systemic co-inquiry process share similar traits and are both guided by a set of criteria which include stakeholding, facilitation, and institutionalisation (see Figure 1.7 below) and co-production of knowledge in collaborative processes. The difference from CHAT is that it foregrounds cultural historicity, contradictions and the formation of a shared object of activity, offering ontological depth and criticality to the systemic co-inquiry processes.

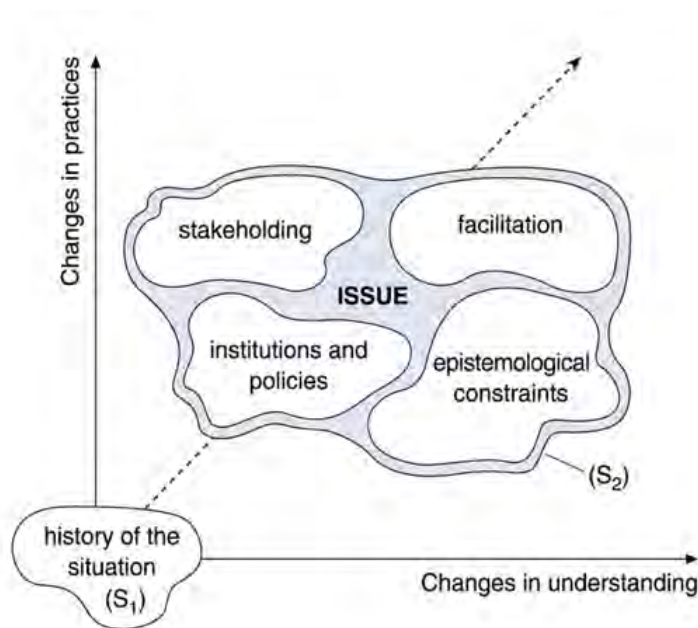


Figure 1.7: Key components in facilitating collaborative co-inquiry processes

Source: Ison et al. (2004, p. 10)

- Stakeholding

This involved mapping and identifying all relevant stakeholders from local, regional, national and global networks in relation to the object of inquiry (subject and community). It also involved developing a shared understanding of the objective, ownership and responsibilities (shared object and division of labour), and the cultural historicity of the different activity systems of the stakeholder groups and arising contradictions influencing the object of activity.

- Facilitation

This involved identifying facilitation needs and providing active facilitation processes that allowed for learning (interventionist researcher), that is, meaningfully engaging people in things that matter to them (exploring matters of concern). In my research, I used the term mediation to explain the nature of the formative intervention researcher's facilitation role.

- Co-production of knowledge

I deployed the collaborative design of learning journeys to improve on and adapt the issues and challenges in the practice under inquiry (collaborative modelling of expansive learning pathways to break away from the contradictions in the present activity). This entailed jointly identifying risks and gaps for improvement (examining and testing the expansive learning pathways or potential new solutions). In my research, the emergence of change was centred on contradictions and double stimulation tools allowing for collective deliberation and charting of these pathways.

- Institutionalisation

Institutionalisation refers to the development of institutions and policies that are conducive to change. This entails establishing how will the practice be implemented, what resources and skills are required, who the custodians are and what the guiding principles are. In an expansive learning CHAT inquiry, these will be the tools and rules that govern the practice.

In investigating the challenges of sustainable water management, Ison et al. (2007) note that in socio-ecological complex issues such as water governance, it is no longer enough to rely only

on scientific knowledge for management and policy prescriptions. They further argue that social learning, which is built on different paradigmatic and epistemological assumptions, offers managers and policymakers alternatives and complementary possibilities. Ison et al. (2007) reinforce the idea that sustainable management of water catchments requires a social process rather than a technical process, an idea also argued by other scholars such as Steyaert and Jiggins (2007) and Collins et al. (2007). Ison et al. (2007) point out:

Desirable water catchment properties arise out of interaction (engaging in issue formulation and monitoring, negotiation, conflict resolution, learning, agreement, creating and maintaining public goods, concertation of action) among multiple, interdependent, stakeholders in the water catchment. (p. 5)

Ison et al. (2007) also believe that a social learning approach provides a context for a dynamic local multi-voicedness through broader stakeholder engagements, and this further provides different sets of epistemological assumptions for facilitating concerted action and network building. In addition, Ison et al. (2004, p. 10) conclude that “the transformation of situations occurs over time through changes in understanding and practices towards concerted action” (see Figure 1.8 below).

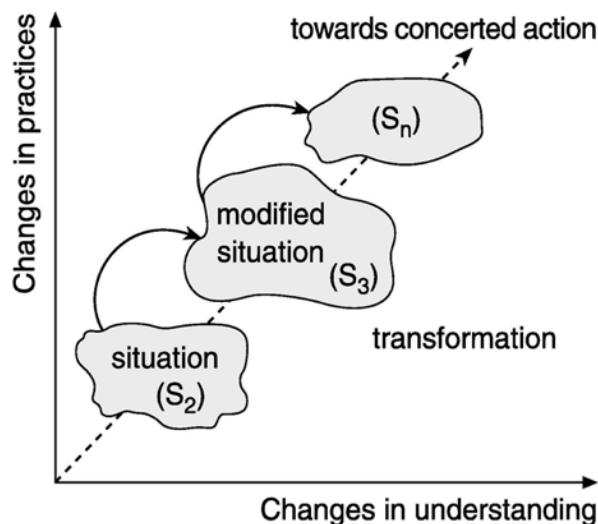


Figure 1.8: Facilitating transformation through collaborative co-inquiry processes for concerted action

Source: Ison et al. (2004, p. 10)

Ison et al. (2004) also note that active facilitation and stakeholding are critical in facilitating concerted action, in order to fully understand the epistemological constraints as well as the

institutional and governance of the practices. This allows for the development of learning systems within institutions, which Schön (1995) refers to as organisational learning, which allows institutions to progressively respond to contemporary challenges. As can be seen from the above, there is research in the natural resources management field theorising and developing insights into social learning approaches that appear to be quite similar to expansive learning. In this study, I worked with expansive learning theory and approaches from CHAT, given that they offered further depth of understanding of these more generalised models of learning in the NRM sector.

In particular, CHAT considers contradictions, not simply as conflicts or problems, but as “historically accumulating structural tensions” (Engeström, 2001, p. 137). Therefore, contradictions emanate from past experiences (network-centric) with potentially important consequences for activity, transformed through co-engagements. It is this which we have found to be less developed in NRM-related social learning research (see Lotz-Sisitka, 2012) which also motivated the use of CHAT in a series of NRM-related studies in Southern Africa (e.g. Baloi, 2017; Kachilonda, 2015; Mukute & Lotz-Sisitka, 2012; Pesanayi, 2019).

1.8 Limitations of the Study

Like many other studies that seek to understand real-world problems, there are limitations from the conceptualisation phase and throughout the development of the study. In this study, the focus was not on the causes and effects of ecosystem degradation, but rather on exploring the learning experiences and challenges faced by practitioners who were leading and were involved in implementing restoration IAP control as part of the broader NRM programmes in the Blyde catchment. Even though this was a multisite case study, the results from this study cannot be generalised for all restoration IAP control practices in different contexts. However, the learning and experiences from this study can be used to inform other studies using similar approaches. It is also important to note that CHAT-based formative interventions do not aim at statistical generalizability or practical multiplication of the models created but rather formative interventions aim at generativity (Sannino, Engeström & Lemos, 2016). Another limitation of the study was its eventual scope, which required adaptation in terms of how to approach and work with the mass of data that was generated, which means that not all of the details in the data could be shared in this study. I may therefore have missed some aspects that could be significant to the overall research question, but the intention was to offer the best insight

possible given the scope of the work as it expanded within the limited framework of a PhD study.

1.9 Conclusion and Overview of the Study

This study is constructed in two parts.

This chapter started part one of the study and introduced the study focus and context and the research questions. As noted above, this research focused on understanding the challenges associated with the management and governance of NRM programmes, with a specific focus on developing learning pathways to support the emergence of collective action amongst key role players in restoration IAP control practice. Through a co-inquiry process, the study aimed to strengthen coordination, collaborations and custodianship amongst NRMP practitioners, conservation agencies and landowners to collectively transform the restoration of NRM practices in the Blyde landscape for long-term socio-ecological sustainability.

The study was based on the Olifants project (RESILIM-O). The overarching goal of the RESILIM-O project is to reduce vulnerability to climate change through building improved transboundary water and biodiversity governance and management in the Olifants Basin, through systemic and social learning approaches that enhance livelihood resilience. The RESILIM-O adoption of systemic and social learning approaches was based on the notion that diverse threats in a complex system need diverse responses from diverse stakeholders whose agency can change over time (Ison, 2008). To address such complexity, a series of foundational activities on resilience building towards improved natural resources management were required, and these were facilitated through systemic and social learning approaches. This study influenced the development of the Blyde Restoration Project, through the application of CHAT and expansive learning tools to facilitate transformation towards the collective implementation of restoration IAP control practice and co-development of governance and institutional arrangements that enable learning among key role players involved in NRM praxis.

Chapter Two reviews IAP co-management practices in more depth as this was the main object of activity that was investigated in the expansive learning process. Background to this practice helped with interpreting the partially shared object and associated contradictions.

Chapter Three discusses in detail the theoretical framework and methodological tools that were deployed in the study. The study was framed through the lenses of CHAT and the expansive learning methodology; these were used to navigate and confront contradictions as a source of transformative learning. Additional methodological tools from critical realism theory – such as the dialectics of power and agency – provided complementarity to the expansive learning framework.

Chapter Four addresses the first research question: What are the current challenges and contradictions facing organisations involved in the restoration of IAP control activity in the Blyde landscapes? The chapter provides an overview of the four IAP control programmes, referred to in this study as the implementation activity systems in order to explore the challenges, disturbances, and tensions in the present activity systems to enable the formulation of central contradictions and conflict of motives in questioning (stage 1) and analysis (stage 2) of the expansive learning process.

Chapter Five transitions from the analysis stage towards the modelling of new solutions (stage 3) to envision and identify the transformative learning actions which may advance the restoration IAP control activity. The principle of double stimulation was a key analytical tool used to facilitate the envisioning of new solutions within the third generation activity systems as practitioners collectively identified new solutions to advance the restoration IAP control activity.

Chapter Six examines and tests the new solutions in the expansive learning cycle (stage 4). This chapter highlights breakthroughs in the learning process from abstract to concrete, in which the identified solutions (abstract) are deepened and further developed as collective transformative agency pathways (concrete solutions) in response to the contradictions. The implementation of the collective transformative agency pathways (stage 5) consisted of refinement, adjustment and enrichment of the expansive learning process, and this led to the emergence of new power-dynamic contradictions driven by the expansion of the object as part of this led to the learning as discussed in Part II of the study.

Chapter Seven starts Part II of the study, an orientation text to introduce and reflect on the expansion of the study from boundary crossing learning via third generation CHAT towards engaging power-dynamic contradictions (PDCs) in fourth generation CHAT. Chapter Seven describes in detail the emergence of PDCs as the ethical–political expansion of the object. This

includes proposing a new analytical framework for surfacing and engaging PDCs in a dialectic and formative co-engaged depth inquiry process. The outcome of the PDCs analytical framework is the emergence of ETADS, as a pathway of transformation consisting of a series of second stimulus tools which are learning actions in fourth generation CHAT.

Chapter Eight discusses the notion that expansive learning is not a direct process but is always mediated by concrete tools and artefacts that are used and adopted by the actors. This chapter presents a series of second stimulus tools that were co-developed by practitioners and local communities in advancing the restoration IAP control activity in navigating the PDCs. These second stimulus tools were categorised into three ETADS pathways identified in Part II of the study, namely ETADS pathway 1 – second stimulus tools for co-visioning matters of concerns in multi-stakeholder networks, ETADS pathway 2 – second stimulus tools for the co-development of operational and technical planning, and ETADS pathway 3 – second stimulus tools for capacity and skills development for strengthening integration and future custodianship. The three ETADS pathways are conceptualised as coalesced expansive learning cycles in a heterogeneous coalition which is carried through by co-constructions of second stimulus tools that enable the emergence of emancipatory agency for navigating PDCs.

Chapter Nine provides recommendations and learning insights for the practical application of ETADS in the broader NRM practices. This study explored and expanded transformative learning within the restoration IAP control activity and opened up a lot of possibilities for the applicability of CHAT fourth generation inquiry in the broader biodiversity conservation sector and sustainable land management practices. This chapter concludes the study by reflecting and providing insights on the theoretical and methodological applications of navigating PDCs via Emancipatory Transformative Agency through Double Stimulation (ETADS) as expansive learning cycles in fourth generation CHAT.

Chapter Two: Review of Invasive Alien Plants Impacts, Management Policies and Development of Restoration Programmes In South Africa

2.1 Introduction

This chapter examines environmental degradation, with a specific focus on IAPs as a key threat to biodiversity, ecosystem services and human wellbeing. From the international to the local context, I review the key factors of IAP spread, the impacts of IAPs and restoration interventions to address IAP threat and support environmental sustainability, as this forms the main object of the expansive learning formative interventions in this study as introduced in Chapter One. Furthermore, to provide a broader historical and contextual grounding to the object, the chapter also gives a brief overview of legislative requirements associated with IAPs as well as a brief overview of the evolution of restoration IAP control as one of the key ecosystem restoration practices in South Africa. In conclusion, I also contextualise social and expansive learning with a focus on NRM and environmental sustainability.

2.2 Global Threats by Invasive Species to Biodiversity and the Implication on Human Wellbeing and Sustainability

Invasive species are a major threat and key contributor to biodiversity loss, ecosystem degradation, and impairment of ecosystem services worldwide (Pyšek & Richardson, 2010). In addition to climate change and landscape transformation, invasive species pose an ever-increasing and cumulative risk to ecosystem services provision. Sustainable management of the current set of land-use practices is critical for maintaining natural capital and ecosystem services flow. Therefore, control of invasive species and understanding the drivers of biological invasions is important for designing appropriate management interventions (Spear et al., 2013), even though no consensus has been reached on how to measure and monitor these interventions at regional and national levels (Wilson et al., 2013). In the context of this study, I have only examined the threats and impacts of IAPs rather than invasive species in general, contextualised to the Blyde catchment study area.

2.2.1 Spread and movement of invasive species

Human population growth and the expansion of global trade have led to the widespread distribution of species beyond their native ranges (De Lange & Van Wilgen, 2010). However, identifying the dimensions of alien plants invasion pathways is still a major and ongoing problem for land managers (Vardien et al., 2013). Humans and birds are the most important agents of dispersal of invasive plants to regions beyond their native range (Faulkner et al., 2014; Richardson & Rejmánek, 2011), but few of these species become invasive and have adverse impacts (Blackburn et al., 2011). As of 2010, South Africa had approximately 8750 introduced plant taxa, 660 were recorded as naturalised, 198 were listed in invasive species legislation, but only 64 were subject to regular control (Wilson et al., 2013). As part of national legislation, South Africa has developed a national strategy to combat this threat by preventing further introductions and limiting the impacts of established infestations through active eradication (National Invasive Alien Species [IAS] Strategy, 2014; Wilson et al., 2013). The National IAS Strategy builds on pre-existing legislation on invasive species such as the Conservation of Agricultural Resources Act (see Section 2.3 below) which divides different invasive alien species into different categories based on their threats and impacts. The strategy also highlights the importance of management and control of invasive species by landowners within their properties. However, the effective enforcement of this act and related legislation has been a major challenge in South Africa.

In the Blyde catchment, the main source of invasive plants is the historical and existing plantations in adjacent areas. Although there were no significant plantations in the study area, the surrounding areas – mainly the Lowveld plantation areas – have been historically managed as gum and pine plantations and over time these plantations became seed sources for invasion of natural non-plantation areas on the critical ecosystems such as critically endangered grasslands and waterways within the study area. Pine and gum remain the main invasive plant species in the area, with few pockets of black and silver wattles, as well as a variety of small shrub and herbaceous invasive plants.

2.2.2 Commercial forestry as a source of invasive alien plants

Many IAP tree species are used in commercial and agroforestry globally, and this has significant implications for land-use transformation (Richardson, 1988). Different alien invasive trees have been planted widely for different reasons, including timber production, fuel

wood supply and erosion control (Richardson, 1988). The spread of invasive alien trees from commercial forestry plantations is a big global problem, with the long history of commercial plantations in the northern hemisphere (Mather, 1993) and large-scale plantations escalated in the twentieth century (Zobel et al., 1987). According to Boy and Witt (2013), one of the main reasons for IAP spread from commercial forestry is weak policy enforcement and institutional alignment.

According to the DWAF (2003), commercial afforestation has been one of the major sources of alien vegetation spread in South Africa, largely because of poor forestry management practices in the past (see also Mondlane et al., 2002). There are several existing policies and regulations on the management of invasive alien species in South Africa such as the Conservation of Agricultural Resources Act 43 of 1983, the National Water Act (NWA) 36 of 1998, the National Environmental Management Biodiversity Act (NEMBA) 10 of 2004 and the alien invasive species regulations of 2014. However, lack of law enforcement is still a major concern, especially in the forestry industry for commercialised IAPs such as pines, eucalyptus and wattle species. Hence, the forestry sector is generally deemed as the culprit of IAP spread in which effective management of plantations is not practiced or not effective in controlling and managing the spread of commercialised IAPs into natural habitats. On a positive note, Claassen (2005) also argued that recent and newly established commercial afforestation plantations are found to be generally well managed, maximising the benefits of forestry and minimising environmental impacts.

Mondlane et al. (2002) note that despite being recognised as one of the major sources of IAP, the commercial plantation industry is fully committed to an environmental code of conduct that includes the management of the spread of alien plants on their estates and beyond and seeks to minimise the negative impacts of their activities on the environment. A large proportion of the area invaded by woody alien plants in South Africa is occupied by species used in commercial forestry, in particular *Pinus*, *Eucalyptus* and *Acacia* species (Moore, 2005). There is a consensus that IAPs are water-consumptive, and the impacts are even higher in riverine invasions. This is because the majority of plantations were established in open grassland areas and trees use considerably more water than the grassland species that they often replace (Pott, 1997). Gush et al., (2011) also argue that the relatively lower water-use efficiency of the Indigenous tree species is primarily a consequence of slow growth rates as opposed to high water-use rates of alien trees such as *Pinus* and *Eucalyptus* species. The impacts of IAPs on

water resources is one of the key areas of interest in invasion biology, and this is because water is a scarce resource and also acknowledged to be a key constraint to economic growth in South Africa; there is considerable pressure for efficient and sustainable use of the limited water resources (Le Maitre et al., 2002).

South Africa has a long history of plantation forestry, with the early colonial governments from the 19th century encouraging the establishment of plantations to supply wood for local use. Plantations are generally established in high rainfall areas, which are generally upstream in many catchments leading to conflict with downstream users especially the farmers even as early as the 19th century. These conflicts also became high-level political issues and have positively contributed to the establishment of regulations and legislation to regulate the afforestation industry. In South Africa, the National Forest Act (1998) is at the centre of this, as the Act seeks to promote the sustainable management and development of forests for the benefit of all. The National Forest Act also provides that the Minister may develop a set of principles, criteria indicators and standards against which the country's sustainable forest management can be measured. The National Water Act (1998) also plays a regulatory role by incorporating restrictions by classifying commercial forestry as a streamflow reduction activity, and plantations are therefore subject to licensing and water-use fees (Scott & Gush, 2017).

2.3 Impact of Invasive Alien Species on Environmental Change

Historically, the concerns of IAPs were mainly about the impacts on lost agricultural production as a direct impact related to human wellbeing, but there has been a growing recognition of the impacts of IAPs on biodiversity and natural systems (Clout & Craig, 1995; International Union for Conservation of Nature, 1997; Le Maitre, 2000). Negative effects on biodiversity are generally the main concern associated with biological invasions, but invasions also have serious implications for human wellbeing (Richardson, 2010). The impacts of invasive species have been widely studied in both local and international contexts (Boy & Witt, 2013; De Lange & Van Wilgen, 2010; Dye et al., 2001; Foxcroft & Richardson, 2003; Richardson, 1998; Kumschick et al., 2012; Le Maitre et al., 2016; Le Maitre, 2000; Le Maitre et al., 2002; Nghiem et al., 2015; Pyšek & Richardson 2010; Van Wilgen, 2004; Van Wilgen et al., 2006; Van Wilgen, 2008; Wise et al., 2012). These studies have extensively assessed and

evaluated the impacts of invasive species on ecological and water resources, ecosystem services and human wellbeing, and economic cost and implications of invasion.

2.3.1 Ecological impacts of invasive alien plants

Invasive species are recognised in the Millennium Ecosystem Assessment (2) as one of the main causes of biodiversity loss (MEA, 2005). In addition, IAPs have direct implications for the flow of ecosystem services worldwide (Pyšek & Richardson, 2010). With the recent gradual increase of studies on invasion ecology, the scientific community now has a better understanding of the ecological impacts and is developing management strategies and approaches (Pyšek & Richardson, 2010). Richardson and Van Wilgen (2004) argue that a large part of South Africa still depends on natural ecosystems for goods and services, and these natural ecosystems have contributed substantially to human wellbeing. However, these ecological systems have also been severely impacted by IAPs, which have altered the functioning and flow of ecosystem services that support the livelihoods of many marginalised and rural communities in South Africa.

Many IAP species are known to change natural vegetation community structure and processes (Ehrenfeld, 2010; Levine et al., 2003; Le Maitre et al., 2016; Strayer et al., 2006), impact water resources and modify river flows (Görgens & Van Wilgen, 2004; Le Maitre et al., 1996; Stromberg et al., 2007) as well as increase fuel loads and change fire regimes (Brooks et al., 2004; Mack & D'Antonio, 1998; Richardson & Van Wilgen, 1986). Globally, the implications of biological invasion for biodiversity are staggering, with hundreds of native species displaced from large areas of their natural habitats (Boy & Witt, 2013). In the Fynbos biome, for example, IAPs are estimated to reduce surface water runoff by 16% (Le Maitre et al., 2000) and in a scenario where the invasive species would occupy the full extent of suitable remaining habitat, estimated water use would increase to between 40 and 53% of surface water runoff (Van Wilgen et al., 2006).

2.3.2 Economic impacts of invasive alien plants

In recent decades there has been a growing interest and focus on the economics of biological invasions (Lowell & Fernandez, 2006; Pimentel, 2002; Van Wilgen, 2008; Wise et al., 2012). Through collaborations between ecologists and economists, substantial progress has been made in the field of ecological economics (Costanza, 1991) and in understanding the economic

consequences of invasions (Pimmental, 2002). These insights are important in decision making and resource allocation for IAP control (Van Wilgen et al., 2006). For example, it is estimated that invasive plants cost South Africa an estimated R6.5 billion annually and if they are left unmanaged, the overall impacts on ecosystem services are likely to increase (Wilson et al., 2013). In the United States, the costs of biological invasions are estimated around US\$120 billion (Pimentel et al., 2005), while the estimate of invasive weeds in farming alone is estimated around AUS\$3.9 billion per year in Australia (Sinden et al., 2004).

In addition to the ecosystem service cost of invasive species, it further costs the Australian government an estimated AUS\$116.4 million each year for the control, management, and research of invasive weeds (Sinden et al., 2004). Similarly, the South African government has spent approximately US\$457 million (R3.20 billion, expressed as 2008 ZAR) in management and control of alien invasive plants (Van Wilgen et al., 2010).

For effective management of invasive species, the capacity to translate IAP invasion data into monetary value is critical to enable understanding of the management costs. Globally, Europe has been more advanced in documenting and developing invasive species databases to inform their planning and resource allocation (Vilà et al., 2010). North America has been one of the continents lagging behind in being able to directly quantify the financial impacts of invasive aliens (Pyšek & Richardson 2010). In South Africa, SANBI and DEA are the leading agencies in developing databases, legislation, strategies and action plans on invasive plant management. This has been a collective process, with support from different research agencies including the Southern African Plant Invaders Atlas (SAPIA), the Agricultural Research Council, the Centre for Invasion Biology (CIB) and the Council for Scientific and Industrial Research.

This collective process has led to the establishment of the first nationwide programme for restoration IAP control called WfW, which was initiated in 1995 (Marias et al., 2004). The WfW programme was launched with a budget of R26 million in 1995 (Marais et al., 2004), and its success has seen the programme spend over R5 684 166 billion on IAP control over the last 20 years (WfW historical figures, <https://sites.google.com/site/wfwplanning/Home>). Much of the WfW budget was spent on controlling invasive trees such as *Pinus*, *Eucalyptus*, *acacia* species (targeted because of their impact on surface water runoff), with large sums also spent on clearing species such as *Chromolaena Odorata*, *Lantana Camara* and *Opuntia*, which are

targeted for their impacts on biodiversity and other ecosystem services (Marais et al., 2004; Pyšek & Richardson 2010).

Although alien species offer other economic returns in sectors such as commercial forestry, the costs of unmanaged invasive plants outweigh the benefits (De Wit et al., 2001) and the sectors most impacted by invasive species include agriculture, fisheries, and nature conservation (Pyšek & Richardson, 2010). Invasions by some species also caused declines in recreational or cultural heritage values associated with various landscapes and water bodies (Kettunen et al., 2009). Pimentel (2002) argues that the global costs of biological invasions amounted to about 5% of the global Gross Domestic Product, and this is expected to increase with the continuous increase of invasive species unless drastic management actions are taken to control this global threat.

2.4 South African Legislation on Alien Species

The Conservation of Agricultural Resources Act (CARA), No. 43 of 1983 has been the longest-standing piece of legislation guiding the control of invasive species. Under section 29 of CARA, three categories of alien species were derived (see Table 2.1. below) based on their invasive status. The National Environmental Management: Biodiversity Act (No. 10 of 2004) further provided norms and standards under section 97(1) for the management of alien species and the conservation of South Africa's biodiversity with the publication of their alien species list (Republic of South Africa [RSA] Gazette No. 36683, 19 July 2013). Furthermore, the amendment of alien invasive species regulations was published in 2014 (RSA Gazette No. 37885, 1 August 2014) which stipulates categories of listed invasive species (in Chapter Two of the regulation). These provide a framework for developing Monitoring, Control and Eradication Plans (Chapter Four of the regulation), permitting exempted species (Chapter Five of the regulation) as well as risk assessment for invasive species (Chapter Six of the regulation). Table 2.1 below summarises the different categories of alien species as initially stipulated in the CARA (1983) and amended in the NEMBA (2014 regulation).

Table 2.1: Categories of alien species in South Africa's CARA (1983) and NEMBA (2014) regulation

<i>Category 1a and 1b: Eradicate immediately and destroy or compulsory control programme</i> Category 1a: Any specimens must be by law compulsorily eradicated and destroyed. No permits will be issued. No person shall, except in or for purposes of a biological control reserve, establish, plant, maintain, multiply or propagate Category 1a plants. The focus of Category 1a is mainly on emerging species (NEMBA 1 August 2014). <i>Category 1b:</i> Invasive species requiring compulsory control as part of an invasive species control programme (remove and destroy). These plants are major invaders or have such a high invasive potential that infestations can qualify to be placed under a government-sponsored invasive species management programme. No permits will be issued to own, import into South Africa, grow, move, sell, give as a gift or dump these plants in waterways. <i>Category 2: Invader plants may be grown under controlled conditions only</i> Invasive species are regulated by area. A demarcation permit is required to import, possess, grow, breed, move, sell, buy or accept as a gift any plants listed as Category 2 plants. No permits will be issued for Category 2 plants to exist in riparian zones. Growing Category 2 plants in a demarcated area qualifies for water use and according to section 21 of the National Water Act, No. 36 of 1998, the land user needs to obtain a water-use licence if the demarcated area is 1 hectare or larger and is for commercial purposes. Land users must undertake all reasonable steps to curtail the spreading of seeds or vegetative reproducing materials outside the demarcated area, and all specimens outside the demarcated area have to be controlled. Category 2 plants may not occur within 30 metres of the 1:50-year flood line of watercourses or wetlands unless authorisation has been obtained in terms of the National Water Act. Category 3: Invader plants may no longer be planted These plants are undesirable because they have the proven potential of becoming invasive, but most of them are nevertheless popular ornamentals or shade trees. Category 3 plants can remain in your garden. However, you cannot propagate or sell these species and must control them in your garden. In riparian zones or wetlands, all Category 3 plants become Category 1b plants.

These categories were developed to regulate and manage alien species in South Africa and to guide IAP control programmes in terms of planning, implementation and monitoring of alien species. Some of the criteria used in deciding on different categories include the value of species, the extent and location of invasion, impacts and risk to biodiversity, and ecosystem services; these refer to the plants' use: some alien species are used for ornamental values (decoration, shade), while others are an important source of timber. Furthermore, some alien species could be in more than one category depending on their invasion status in different locations.

For example (from alien and invasive species list, NEMBA, 2014, p. 16) *Eucalyptus* species are:

- Category 1b within riparian areas; Protected Area declared in terms of the Protected Areas Act or within a listed ecosystem. *Eucalyptus* species are also Category 1b in threatened ecosystems such as Fynbos, Grassland, Albany Thicket, Forest and Indian Ocean Coastal Belt biomes.
- Category 2 for plantations, woodlots, bee-forage areas, wind rows and the lining of avenues.
- Not listed within Nama-Karoo, Succulent Karoo and Desert biomes and also in cultivated land that is at least 50 metres away from untransformed land.

In the context of this study, the focus is mainly on Category 2 plant species. These are alien plants with considerable proven impacts on water resources and biodiversity which in turn impacts livelihoods. However, these Category 2 alien invasive plants also provide important economic value such as timber, and as such they are allowed but only in demarcated and well-managed areas. In the Blyde landscape, key invasive species include *Pinus* and *Eucalyptus* and the source of these invasive plant species is mainly historic plantations, in which pines and gums have invaded natural ecosystems from the plantations owing to lack of effective forestry management.

From a legislative point of view, every plantation owner is obligated to contain all invasive alien plants on their property, and they are responsible for the management costs of any escapees; there are also penalties for poor management if the IAPs in their properties can be proven to have spread beyond the legally designated areas. However, the lack of enforcement of IAP management legislation has been a major problem in South Africa, especially in the forestry sector, and the Blyde landscape is no exception to this. The other critical observation in this study is that most unmanaged or poorly managed plantations are historically government-owned forestry areas, as opposed to private forestry. In an ideal world, this means the government, i.e. the Department of Environment Affairs, will have to issue compliance directives to another government department as forest penalties for lack of effective management of state plantations. But in reality, that is one of the governance contradictions that has resulted in the Blyde landscape being left unmanaged for over 20 years since the decommissioning of forestry in the early 2000s. Perhaps this has to do with the conflict of

motive in this study, in which the government has to regulate its own plantations. Section 2.6.3 below also discusses some of the restoration-related factors that had implications for the forestry management in the government-owned Lowveld plantations.

2.5 Conceptualising the Management of Invasive Species as Ecosystem Restoration Practice

The concept of ecological restoration describes the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed (SER, 2004). Invasion of native ecosystems by exotic plant species is a global phenomenon that poses a critical problem for the conservation and management of many ecosystems (Suding et al., 2004a; Vitousek et al., 1996). This has a major impact on ecological resilience. As such, restoration has been seen as a key driver for building ecosystem resilience (Suding & Hobbs, 2009; Walker et al., 2007). Owing to high environmental degradation from IAP invasion and other threats, the focus of NRM efforts over the past decade has been shifting from the protection of intact systems to the restoration of degraded systems (Dobson et al., 1997; Suding et al., 2004b; Young, 2000), and these efforts provide feedback that can transform a degraded system into a more resilient system through restorative change (Berendse, 1999; Zedler, 2000).

2.6 Invasive Alien Species Control as Ecosystem-based Adaptation and Ecological Resilience Building

Ecosystem-based adaptation (EbA) is defined as the use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people adapt to the adverse effects of climate change (Convention on Biological Diversity, 2009, 2016). EbA is implemented through the protection and restoration of ecosystem services and the sustainable management of natural resources (Stocker et al., 2013). The first major international report on EbA was published by the World Bank (2010), and South Africa's National Adaptation Strategy on Climate Change (DEA, 2016) was also developed to support the establishment and expansion of different EbA initiatives aimed at supporting well-functioning landscapes and restoring degraded ecological systems for long-term sustainability.

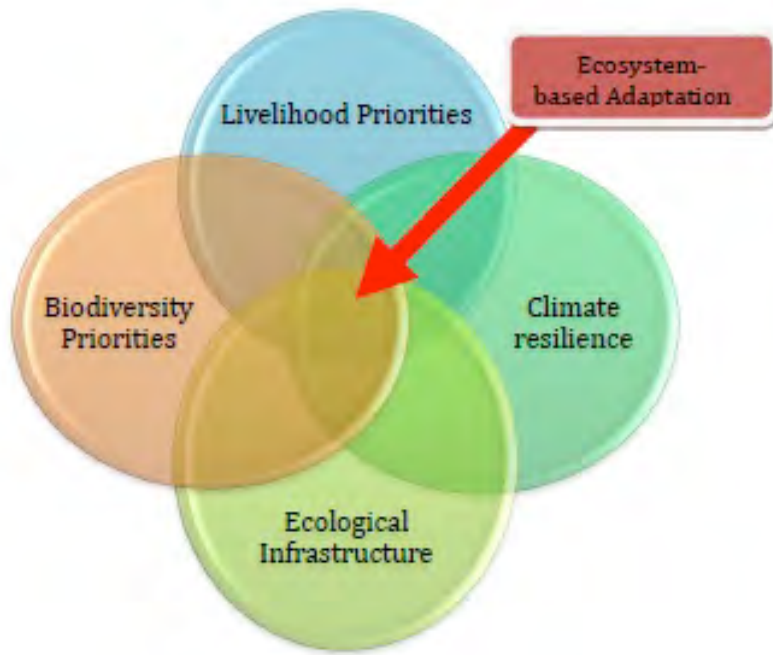


Figure 2.1: Integrated spatial assessment to identify EbA areas for supporting resilience systems

Source: Holness (2015a, p. 7)

In order to understand the restoration IAP control as EbA (see Figure 2.1) a systemic assessment to understand all critical components is required for ecological resilience building. This aims to bring together livelihood issues, ecosystem services or ecological infrastructure, climate change adaptation and biodiversity issues, in order to prioritise landscapes that support ecological resilience. The section below examines different components of EbA strategies, which are critical in designing appropriate restoration IAP control interventions for building ecological resilience.

2.6.1 The key concepts for ecosystem-based adaptation strategies

2.6.1.1 Contribution to climate change resilience

There is substantial evidence of climate change impacts on biodiversity and how these will further impact the ability of different ecosystems to function which provide services such as water that support human livelihoods (IPCC, 2007). This is particularly important in rural areas such as the Bushbuckridge in which over a million people are still dependent on natural resources and ecosystem services from the Blyde restoration (see Section 1.2). Many rivers in the study areas form a critical life support system for downstream users including the Kruger

National Park and private nature reserves, which are a critical tourism hub of the Lowveld area and hence influence the importance of the livelihood system (see Figure 2.2 below). These natural landscapes further deliver key ecosystem services (such as a sufficient quantity of clean drinking water) on which people are dependent. Therefore, these natural environments are critical for supporting climate change resilience and indirectly contributing to human livelihood resilience.

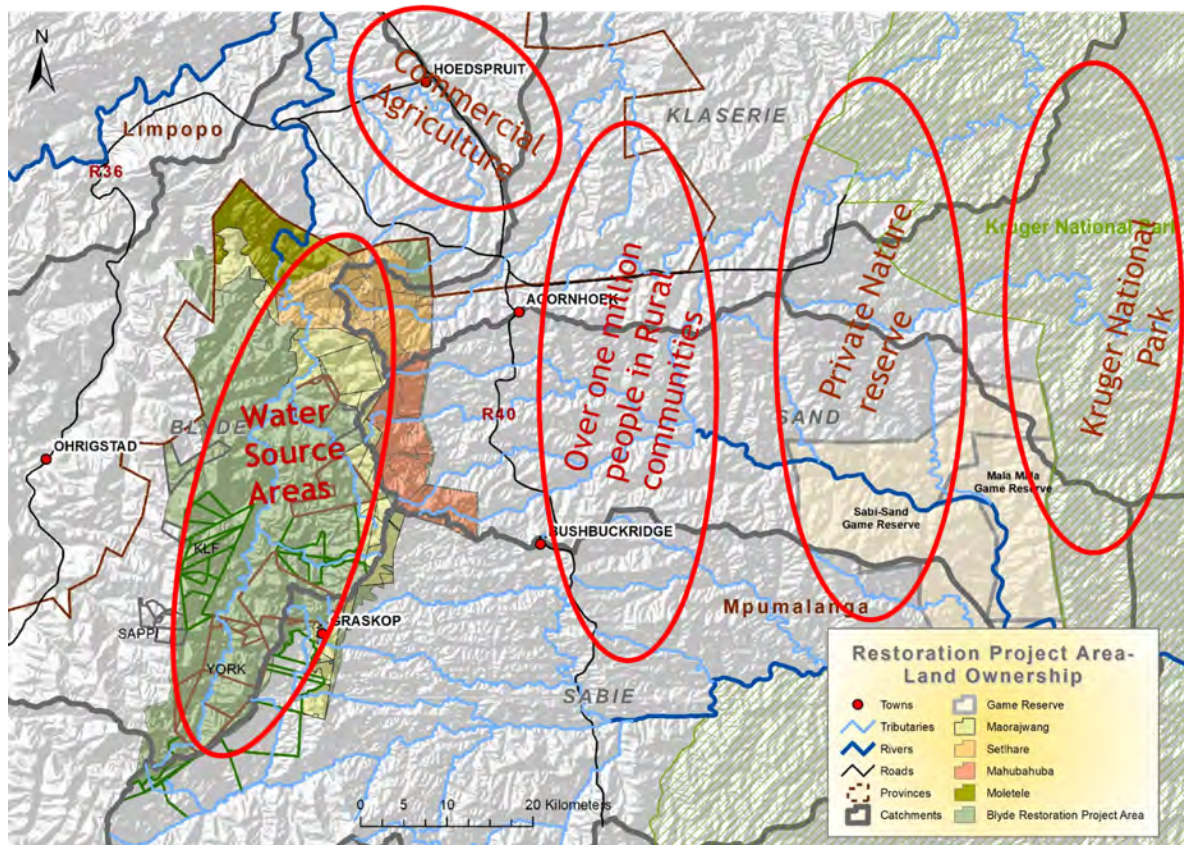


Figure 2.2: The Blyde landscape focus area showing downstream beneficiaries of ecosystem services

Source: Adapted from AWARD, Blyde Restoration Project

2.6.1.2 Ecological infrastructure

Most people are aware of the concept of built infrastructure, which refers to the roads, rail, powerlines and water reticulation systems which support human society. The concept of ecological infrastructure is not divorced from this, but it refers to the functioning of natural and semi-natural ecosystems that deliver valuable services to people such as fresh water, climate regulation, soil formation and disaster risk reduction (Holness, 2015a). Ecological infrastructure includes healthy mountain catchments, rivers, wetlands and corridors of natural

habitat, which form a network of interconnected structural elements in the landscape. Importantly, ecological infrastructure specifically serves to identify places which are delivering particular ecosystem services which are of value to communities. Therefore, the Blyde restoration landscape is an important ecological infrastructure area for the Bushbuckridge communities and further downstream users as illustrated in Figure 2.2 above.

2.6.1.3 Biodiversity priorities

There is no doubt that the Blyde landscape is one of the most biodiversity-rich hotspots in the country (see Sections 1.3.2 and 1.3.3 in Chapter One). The Blyde landscape supports a diversity of species richness, while the critical ecosystem provides a range of key biodiversity assets and ecosystem services. From an ecologically resilient perspective, an intact and functional landscape is critical for supporting society as a whole, and therefore the Blyde landscape areas are important priorities for human livelihoods. Furthermore, many of the ecosystems in the Blyde landscape fall within national Freshwater Ecosystem Priority Areas, Strategic Water Source Areas and as such some are formally protected through the Blyde Nature Reserve, while other areas fall within the protected area expansion strategies. All these are key justifications that the Blyde landscape is an important area for supporting ecological resilience.

2.6.1.4 Priorities for supporting livelihoods

The sustainability of natural resources is in finding a balance between understanding human needs and the environmental capacity to supply such needs. These interactions are mainly referred to as the socio-ecological system (Berkes et al., 1998; Pollard & Du Toit, 2011) which is a critical component of environmental sustainability (Walker & Salt, 2006). The Blyde landscape is situated in social high-priority areas where people are most directly dependent on the environment for the delivery of ecosystem services (Figure 2.2 above). One example of this dependence is that the Blyde landscape is a strategic water source and key biodiversity area which supports downstream local communities including the Bushbuckridge and Acornhoek areas which together support a population of over a million people within the rural and peri-urban communities. Another example is the MTPA together with Bushbuckridge local municipality's launch of a Bushbuckridge Marula Cultural Route (MTPA, 2018) which aims to showcase various tourism opportunities in the rich natural and cultural diversity of the areas with the Blyde landscape and surrounding downstream areas on the Greater Kruger National Park.

These catchments in the Blyde landscape also provide water supply for large-scale farming in the Hoedspruit area in which agriculture is currently a key economic sector and employment generator. According to the Maruleng local municipality's Integrated Development Plan (2022/2023) the municipality's dominant economic activity is commercial agriculture, and the region is the leading producer and exporter of mango and one of the largest producers of citrus.

From the above discussion of the four key components (climate change resilience; ecological infrastructure; biodiversity priorities; priorities for supporting livelihoods), there is enough evidence to argue that the Blyde landscape is a priority area for EbA strategies, and this warrants more investment in restoration IAP control as one of the EbA strategies to address the area specifically and wider global environmental degradation challenges.

Furthermore, the Long-Term Adaptation Scenarios (LTAS³) Flagship Research Programme led by DEA and SANBI has also outlined invasive alien species as one of the key contributors to the degradation of healthy ecosystems impacting services and livelihood derived from these natural ecosystems (DEA, 2013). In building the resilience of biodiversity and ecosystem service delivery under future climate conditions, restoration of natural ecosystems through IAP control is considered a climate change adaptation option to support both the ecological infrastructure and livelihood activities (DEA, 2013). The LTAS programmes also note that further research is required, especially on the predictive understanding of the rates of IAPs spread, in order to develop achievable goals and monitoring criteria for assessing the success of restoration intervention (DEA, 2013).

The Climate Change Adaptation Plans for South African Biomes (DEA, 2015) have also highlighted API as a major threat to the integrity of ecosystem services delivery in many South African biomes (including Fynbos, grasslands and forests). In the progress report on the implementation of the climate change adaptation plans for South African biomes, the DEA (2017) has highlighted NRM programmes involved in IAP control as key interventions contributing to climate change adaptation (DEA, 2017, pp. 9–61). The DEA (2015) also warn that the threat, risk and impacts of IAPs are expected to increase under different future climate

³ The LTAS aims to develop national and sub-national adaptation scenarios for South Africa under plausible future climate conditions and development pathways.

change scenarios, and as such they have outlined some of the top climate-related adaptation options in relation to the management of invasive plants:

- Control of IAPs through government NRM programmes.
- Rapid response and prevention of IAPs in high-risk biomes such as grasslands, Fynbos and riparian ecosystems.
- Effective land-use management practices to minimise the adverse impacts of invasive alien species on both biodiversity and water resources.
- Active monitoring of plant diversity and invasive species (in-situ and satellite observations) to track whether ecosystems are responding and recovering from the anticipated impacts.
- Partnerships between the agricultural and conservation sectors to find more effective ways of managing landscapes for biodiversity and ecosystem services, including controlling invasive alien species; public and private sector involvement in biodiversity conservation (partnerships, community-based conservation, citizen science); in-situ management of biodiversity on private and communal lands through Biodiversity Stewardship Programmes.
- Comprehensive research is required dedicated to understanding the risks of new biological invasions, in other words, to understand how established invaders may respond to changing climates, as less is known about the potential impacts of climate change to facilitate new invasions or to enable presently non-invasive naturalised species to become invasive.

2.7 Status of IAP Invasion and Early Development of Restoration Programmes in South Africa

In recent years there has been a strong focus on researching the impacts and threats associated with IAP invasions, but the key challenge both at a local and international level is accurate data on spatial distribution (abundance and range) of IAPs (Chytrý et al., 2009). McNaught et al. (2006) argue that accurate measurements are critical to the implementation of NRM programmes, IAP control programmes such as WfW require objectively determined spatial distribution data of IAP species at the required scale to allow for effective planning, implementation and future monitoring of IAP spatial changes (Kotzé et al., 2010). Accurate and reliable IAP distribution data are also required at a national and provincial level to assist

with policy decisions and the strategic allocation of funding, as well as managers to determine IAP clearing priorities and measure the outcomes of control efforts over time (Kotzé et al., 2010).

The SAPIA database which contains the records of the presence of IAPs (Henderson, 1998) is one of the most used databases to determine invader status in many studies. Versfeld et al.'s (1998) study was the first study to attempt the quantification of the spatial distribution of major invaders at the tertiary catchment level in both South Africa and Lesotho. Versfeld's study primarily uses expert knowledge as a key methodology, which resulted in a subjective estimation of IAP invasion (Kotzé et al., 2010). More than 10 years after the Versfeld study, the second attempt to quantify the IAP range and abundance was by Kotzé et al. (2010). The national assessment was commissioned by WfW (under the former DWAF, and the study was led by the Agricultural Research Council: Institute for Soil, Climate and Water. The assessment was conducted in three countries (South Africa, Lesotho and Swaziland), covering a total area of 127 million hectares, and the results were summarised at the quaternary catchment level (Kotzé et al., 2010).

Le Maitre et al. (2012) and Forsyth et al. (2011) used the national IAP data (Kotzé, 2010) to further develop the models for prioritising IAP control operations in South Africa. In the prioritisation process the Blyde landscape which forms part of the highly invaded Mpumalanga Drakensberg region was a key priority as the area is dominated by the invasive *Pinus* and *Eucalyptus* from historic commercial forestry operations. In 2020, the Department of Forestry Fisheries and Agriculture (DFFE) advertised the new government tender for implementing restoration IAP control under the NRMPs, and the Blyde landscape remains a key priority based on its high level of invasion as shown in the map (see Figure 2.3).

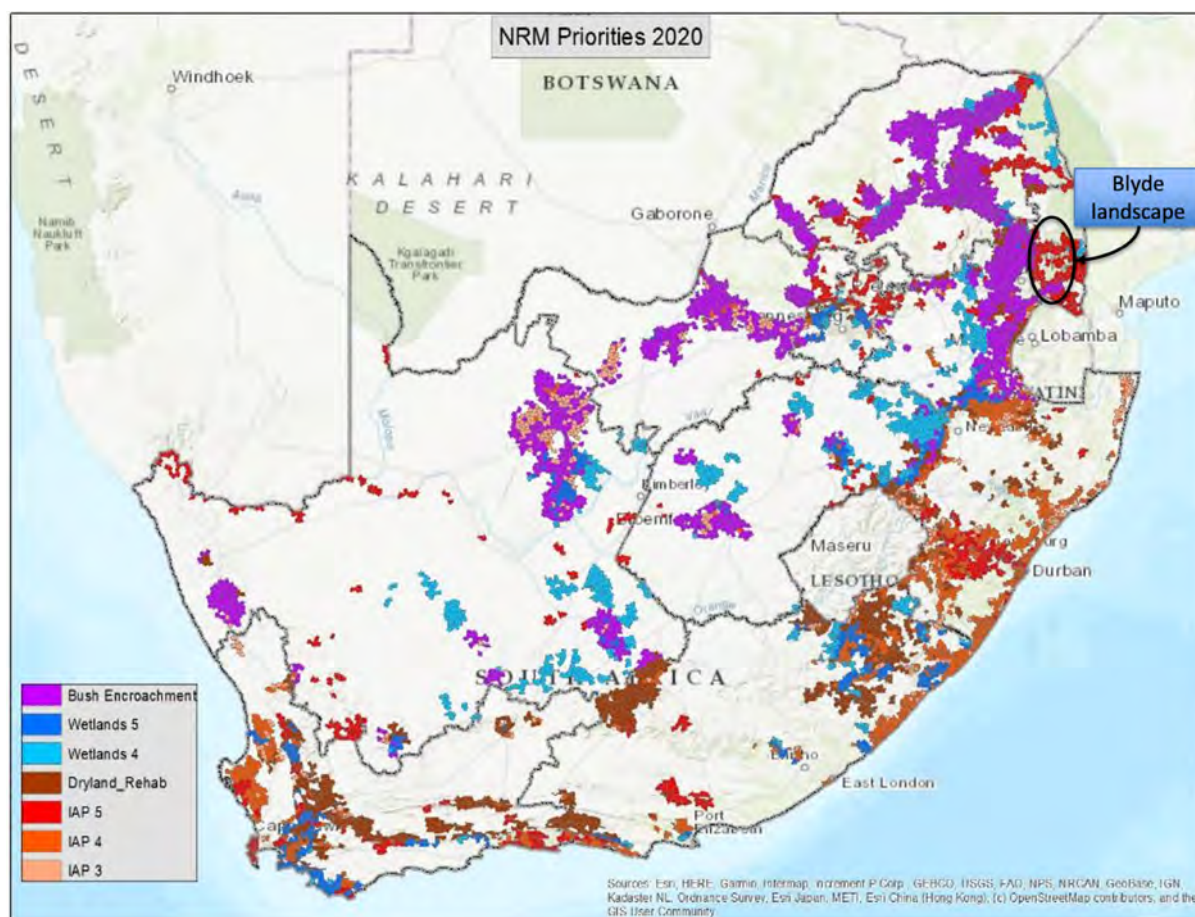


Figure 2.3: South Africa map showing government priority areas for the implementation of restoration programmes. The Blyde landscape is one of the important areas with a high density of invasive alien plants (i.e. IAP 5)

Source: DFFE NRM (2020) <https://sites.google.com/site/nrmprogrammes/home/2021-2024-NRM-Bid-Call>

2.8 History and Evolution of Restoration IAP Control Practice in South Africa

On a national level, the DEA has been the leading implementor and funder of restoration NRM programmes. The pioneering research on the threat and implications of IAP to South Africa's water resources (Le Maitre et al., 1996; Van Wilgen et al., 1996) has contributed to the establishment of a national WfW programme aimed at the control of these species (Van Wilgen et al., 1998). The WfW programme was the first national-level IAP control initiative in South Africa, operating in all nine of the country's provinces and across all major terrestrial biomes (Van Wilgen, 1998). Launched under the former DWAF in 1995, the WfW aims to combat invading alien plants for ecological restoration (Marias et al., 2001), while alleviating poverty by creating short- to medium-term jobs producing significant social benefits for the country's

poorest of the poor (WfW 2000/01 Annual Report; Magadlela, 2004) and the promotion of small business and entrepreneurship development (Rogerson, 2008; Coetzer & Louw, 2012).

On 1 April 2011, the WfW programme was transferred from the DWAF to the DEA (Coetzer & Louw, 2012). Since the origin of the WfW programme in 1995, the South African government through the DEA has implemented an additional large and comprehensive number of programmes aimed at ecosystem restoration. These programmes, broadly referred to as the NRMPs which include the widely known WfW, Working on Fire, Working for Wetlands, Working for Ecosystems and many more are all part of the government-funded EPWP (<https://www.environment.gov.za/projectsprogrammes>). The EPWP is a nationwide government programme aimed at creating labour-intensive employment (poverty alleviation) for previously disadvantaged people, skills development and promoting economic empowerment within the public works' framework (see Chapter Four for more contextualisation).

The WfW programme has been active since its establishment in 1995 and currently has over 300 IAP control teams around the country. The Working on Fire (WoF) programme employs over 200 firefighting teams around South Africa in the prevention and control of wildfires through the implementation of integrated fire management practices (DEA, 2015). The Working for Wetlands programme is dedicated to the rehabilitation, protection and sustainable use of South Africa's wetlands (DEA, 2015). All these NRMPs are essential for restoring and maintaining natural resources to ensure the delivery of ecosystem services that are critical for human wellbeing and socioeconomic development (Angelstam et al., 2019).

Although there has been progress in reducing the densities of invasive species, there has been a great deal of criticism from many scholars that many of the IAP control programmes – such as WfW – are now driven by job creation as part of the government poverty alleviation strategies, with less emphasis on achieving the overall restoration objective of securing ecological benefits and healthy ecosystem functioning as key drivers to human livelihoods (Van Wilgen et al., 2012). Furthermore, Van Wilgen et al. (2012) argue that WfW, as a national lead programme for combating IAP, has been keeping records of expenditure, employment figures and hectares cleared, but whether or not progress has been made in reducing the extent and spread of invasions remains unknown: the questions regarding the effectiveness and ecological benefits from these IAP control programmes is not well understood. This highlights

the internal conflict within WfW, and this is evidence of a primary contradiction around financial gains in which the object is at the tension of employment vs restoration benefits. As such, this study aims to explore challenges and contradictions impacting the effectiveness of restoration IAP control programmes in the Blyde landscape (see Chapter Four).

2.9 Conclusion

Environmental sustainability is a global life support system for development, and a transition to sustainability requires changes in policies and the way people value things (Goodland, 1995; Goodland & Daly, 1996). In South Africa, IAP control and ecological restoration are seen as key strategies in response to the ongoing challenges of water security and biodiversity conservation for environmental sustainability (Le Maitre et al., 2000; Van Wilgen et al., 1998). In combating the ever-increasing IAP threat to biodiversity value and critical water source areas, major restoration efforts have been initiated since the mid-1990s (Marias et al., 2004; Van Wilgen et al., 2012). These programmes have operated mainly through government NRMPs within a complex socio-ecological system, with a dynamic social, organisational and institutional context that has significant implications for NRM and restoration processes, especially in planning and subsequent implementation of the programmes as will be further revealed in this study. Many of these complexities and contradictions are the result of uncertainties generated by transitional institutional arrangements and the lack of adaptive governance strategies for NRM (Ntshotsho et al., 2015).

The next chapter provides a detailed theoretical framing, and the mediation tools applied in this study to explore contradictions and facilitation of the emergence of transformative agency to navigate these complexities and contradictions in restoration IAP control practice in the Blyde landscape.

Chapter Three: Theoretical Framework and Research Methodology

3.1 Introduction of the Theoretical Framework

As briefly highlighted in the first chapter, this study was developed as two parts. Part I was framed within the third generation tradition of CHAT and the expansive learning approach. This allowed me to explore and surface the complex contradictions within and between different activity systems in the restoration IAP control activity in the Blyde landscape in the first phase of this study (Chapters Four to Six). However, owing to the complex nature of the contradiction and object in focus and the need to ‘follow the object’, the study scope expanded, as did the need for in-depth analytical tools to interpret the emerging multi-levelled complexities of the analysis of PDCs that emerged as significant in Phase I of the study.

Hence, Part II of the study (Chapters Seven to Nine) drew on key theoretical concepts in the emerging dynamics of fourth generation CHAT and critical realism, working with Bhaskar’s (1993) theory of a dialectics of power and agency through co-engaged depth inquiry process (see Chapter Seven). This helped me to understand and explain power relations as ontologically grounded dialectical enabling and constraining dynamics of transformative agency formation. I used the critical realism dialectical theory of power relations to deepen CHAT and the expansive learning methodology in order to interpret the findings of this study. This adds to other CHAT studies that have worked with the depth ontology and dialectical post-Marxian philosophical perspectives of Bhaskar (1993). This has helped researchers in Southern Africa to deepen ontological engagement in their CHAT studies, amongst others Mukute (2010), Jalasi (2018), Pesanayi (2019), Baloi (2017), Lotz-Sisitka et al. (2017, 2023). CHAT and critical realism, both drawing on Marxist dialectics, focus on learning as an emancipatory process, with CHAT providing theory and methodology for explaining how the transformation of human activity is mediated through double stimulation tools that enable the emergence of agency within and between actors involved (Lotz-Sisitka et al., 2023; Mukute & Lotz-Sisitka, 2012; Sannino, 2022). While CHAT also refers to ontology, critical realism provided further tools to interpret a laminated depth ontology and differentiate between the real, empirical and actual. This helped to probe with depth and care the empirical experiences of people and related

historically and culturally shaped events that influenced their experiences and to also focus on cultural-historical and socio-material causal dynamics that shaped contradictions affecting the shared (or partially shared) object and its historicity and social materiality. This also enabled its potential dialectical transformation from an emancipatory perspective. For example, critical realism would want one to probe the dynamics of power relations shaping empirical engagements with the historicity of the object and that may or may not be well attended to in expansive learning processes.

This chapter focuses on CHAT and expansive learning as theoretical and methodological approaches underpinning Part I of the study, which collectively inform Part II of the study. Further details of the methodological processes related to Part II of the study are elaborated on at the start of Part II in Chapter Seven.

CHAT is an epistemological theory that posits that learning takes place through collective activities that are purposefully conducted around a common object (Engeström, 2001). A CHAT-based enquiry combines system, learning and development components (Dick & Williams, 2004), and this enables CHAT to become a holistic framework to facilitate expansive learning processes (Daniels, 2001; Edwards, 2005a). Yamagata-Lynch (2003) notes that CHAT provides the researcher with a cultural and historical ability to map the co-evolutionary interaction and relationships between human activities and their environment. Foot (2014) further points out that the theoretical application of CHAT is constantly evolving through historically constituted collective learning actions in response to systemic contradictions and enables the emergence of multi-faceted learning as participants engage with complex practices of their professional work. The advantage of CHAT inquiry is that it provides a framework for a systemic understanding of activity and historically constituted process, which further allows for an in-depth exploration of relationships between and amongst different dimensions of activity systems (Dick & Williams, 2004; Foot, 2014).

In this study, I used activity system analysis to explore contradictions and also to unpack the cultural historicity of restoration IAP clearing practice in the context of the Blyde catchment. This was informed by Engeström (2001), who argues that navigation of contradictions in activity systems is the guiding principle for formative interventionist empirical research, focusing on the expansion of learning. In the sections below, I describe the history of CHAT

through different generations and the application of expansive learning as the key theoretical lens that underpinned this study.

3.2 Historical Development of Cultural-Historical Activity Theory

Cultural-Historical Activity Theory (CHAT) is a philosophical and cross-disciplinary theoretical framework for studying different forms of human practices as developmental processes, which interlink both individual and social levels (Kuutti, 1996). CHAT was developed by cognitive psychologists from the social-cultural-historical psychology tradition, mainly introduced by Vygotsky and his followers, namely Leont'ev and Luria. Their work is mainly attributed to the first generation of CHAT especially the principle of learning through mediation. Their focus was on understanding how humans develop an understanding of the real world, draw meanings from their understandings, and create learnings from those meanings (Leadbetter, 2005; Suthers et al., 2007; Williams & Hummelsbrunner, 2010). Further development and application of CHAT in organisational development contexts were pioneered by the work of Engeström (Daniels, 2001; Edwards, 2005a, Roth & Lee, 2007), especially the introduction of second and third generation activity systems (Engeström, 1999), with a more recent fourth generation CHAT research emerging (Engeström & Sannino, 2021) in the context of social justice and post-capitalism (Cakir et al., 2022; Ko et al., 2024; Lotz-Sisitka et al., 2023; Sannino, 2022). Significant to this study – as explained in Part II – is that this emerging fourth generation of CHAT was taking place as my study unfolded, and I was to some extent, part of the deliberations on the nature of this shift, as also reflected in the empirical work of my study.

A CHAT-based approach is focused on transforming situations by addressing contradictions as systemic challenges within and between activity systems in order to identify new solutions (Williams & Hummelsbrunner, 2010). This makes CHAT one of the few systemic approaches based on both learning theory as well as systems theory. Mwanza (2001) argues that CHAT continues to influence people's thinking beyond its traditional psychology and education roots, and leans more towards systems design and work analysis, which as noted above, is increasingly also dealing with wicked problems such as those characterising the work of environmental and sustainability movements.

Systems thinking has been widely applied as an inquiry approach in the broader field of natural resource management but this study positions CHAT as both a systemic and formative theory.

Williams & Hummelsbrunner (2010) identify seven basic propositions merging the systems thinking and CHAT-based inquiry. These propositions posit CHAT as a theory for understanding systems, facilitating the emergence of new learning, and advancing the development of practices (pp. 204–220):

- Activity theory is based on the proposition that learning is a social and cultural process, not simply a biological process.
- “Activity” is what happens when human beings operate on their environment in order to satisfy a need. It is fundamentally driven by motivation.
- Information must flow through the activity system in order to achieve the desired result.
- We use tools to manipulate our environment and to get information from the environment. The tools (both material and psychological) inform our high order thinking and mediate (or shape) the way we do the work.
- The human systems – social, cultural and organisational – within which we work to satisfy our needs also mediate the ways in which we conduct our activities. To this, I add material / socio-material (in the context of social-ecological systems).
- The learning proposition: Disturbances and contradictions in and between system components allow us to learn about the “real” world, i.e. the system will often be interrupted by unanticipated events (disturbances) or surface underlying tensions between elements of the system (contradictions).
- When a contradiction’s potential as a springboard is triggered by the actions of system participants, they enter a “cycle of expansive learning”, which is a dialectical learning process.

3.3 Three Generations of CHAT

3.3.1 First generation

As mentioned above, the evolutionary development of CHAT is attributed to the generational work of Vygotsky, Leont’ev, Luria and Engeström. The first of the three generations is based on Vygotsky’s work on mediation, and it consists of a basic Vygotskian mediation triad linking

subjects, objects and tools (Edwards, 2005a). First generation CHAT takes mediated action as the unit of analysis (Engeström, 1987; see Figure 3.1).

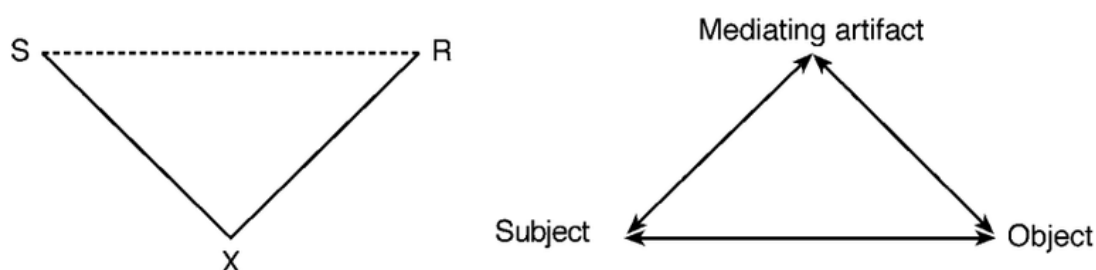


Figure 3.1: (left) Vygotsky's original formulation of mediated action (after Vygotsky, 1931/ 1978, p. 40), (right) basic reformulated mediation triangle

Source: Engeström (2001, p. 134)

In first generation activity theory, Vygotsky proposed that human activity was represented by the connection between the stimulus (S) and the response (R) and culturally mediated by tools (X). Vygotsky highlighted the significance of mediation tools in subject-object interaction, thereby initiating a shift in focus from behaviourist psychology to activity. Wertsch (2007) also emphasised the role of mediation in learning processes, arguing that the co-construction of knowledge in social interaction leads to the emergence of appropriate cultural tools required for performing a new or more advanced task in a new activity.

In this study, the concept of learning through mediation from the first generation was embedded within the Vygotskian double stimulation principle (Sannino, 2015), in which participants collaboratively developed a series of second stimuli as mediation tools to enable their agency to act towards navigating the first stimulus which is presented by the problematic situation (see Chapter Six on the application of Vygotskian double stimulation and Chapter Eight on ETADS). Daniels (2015) further elaborates on the concept of mediation in which external cultural tools are constructed, and shaped by sociocultural and historical factors, and this makes it possible for humans to transform their own activity rather than be controlled and subjugated by cultural systems. This is an act of emancipation in which participants reclaim their own agentic power through the use of tools (see Chapters Seven and Eight on power as agency).

3.3.2 Second generation

Second generation CHAT is based largely on the work of Leont'ev, and it takes the collective activity system as the unit of analysis (Engeström, 2016). Leont'ev's (1981) critical contribution was to the development of Vygotsky's notion of mediation from the level of the individual's actions to an understanding that cognitive change happens within a collective context (Hardman, 2008). Engeström developed Vygotsky and Leont'ev's work further, as shown in Figure 3.2 below, to add the bottom triangle that includes the rules, community and division of labour, as situated socio-historical aspects of mediation in contexts of practice and activity that were omitted by Vygotsky (Engeström, 1987). Daniels (2001) notes that the importance of second generation CHAT was that it brought interrelations between the subject, community and the context of the activity into focus.

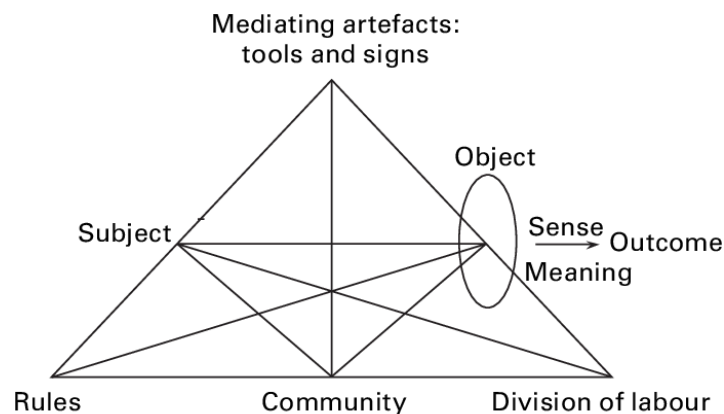


Figure 3.2: Second generation Activity System

Source: Engeström (1987, p. 78)

In developing his model, which is usually referred to as an activity system, Engeström (1987) pointed out that:

- The relations between individuals and the object of their activity are mediated or shaped by tools (i.e. concepts and technologies),
- The relationships between the community and the overall object of its activity are mediated by its division of labour, and
- The relations between individuals and the communities, of which they are part, are mediated by rules and procedures, which can be explicit or implicit.

In this study, the activity system analysis was an important methodological tool during formative intervention engagements for participants to explore the connections between different components of the restoration IAP control practice. In Chapter Four, I also used the second generation activity system analysis to describe the individual activity systems involved in the restoration IAP control and to explore tensions and contradictions within and across different elements of the activity systems, especially in exploring roles and partnerships with other key stakeholders in the Blyde landscapes as a community. Through the application of second generation activity systems, the practitioners were able to conceptualise their role in advancing restoration IAP control practice beyond their individual programmes and this led to the emergence of collective transformation and expansion of the object (see Chapters Four, Five and Six).

3.3.3 Third generation

Third generation activity theory was developed by Engeström and focuses on the interaction between two or more second generation activity systems (Edwards, 2005). As outlined by Engeström (1999), third generation CHAT takes a joint activity or partially shared object of activity as the unit of analysis between two or more activity systems represented as object 3 in Figure 3.3.

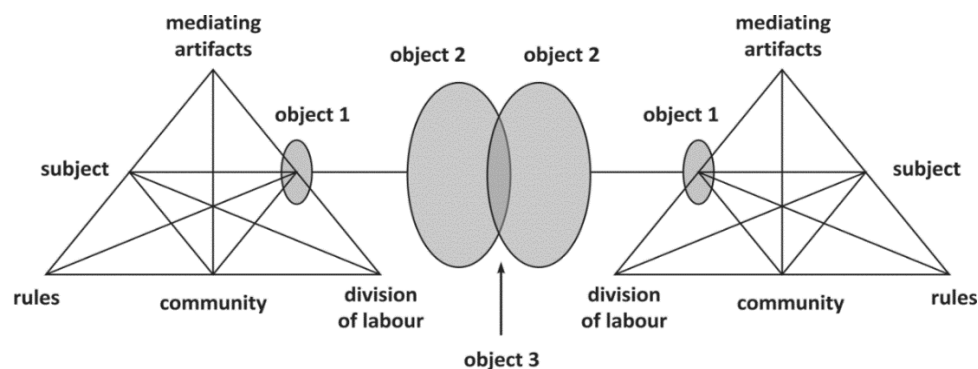


Figure 3.3: Two interacting activity systems as a minimal model for the third generation of activity theory

Source: Engeström (2001, p. 136)

Engeström argues that shared object-oriented actions are “characterized by ambiguity, surprise, interpretation, sense making, and potential for change” (Engeström, 2001, p. 134). Third generation activity theory allows for the development of “conceptual tools to understand

dialogue, multiple perspectives and voices, and networks of interacting activity systems” (Engeström, 1987, p. 6). This is because the nature of learning interaction has shifted from the notion of individual activity systems to the boundary crossing learning between multiple activity systems.

In applying third generation CHAT I drew on Engeström (2001) who put forward key guiding principles which were critical in the development of this study (see Section 3.1.3). The study’s focus was on exploring collective learning and agency within and across activity systems focusing on IAP control in the Blyde landscape, and this made the third generation CHAT unit of analysis a central model for facilitating boundary crossing learning through change laboratory as the main methodology. The third generation CHAT model was used in two parts: first, to enable co-inquiry for exploring contradictions among the four activity systems, namely the WfW, HAT, South African National Parks Biodiversity Support Programme (SANParks-BSP), and the DAFF-IFM programmes, as introduced in Chapter Two, and elaborated on in Chapter Four. From this, a set of envisioned pathways were identified as initial learning actions which were used as mirror data in the second part of the third generation CHAT inquiry to engage the rulemaking activity systems (Chapters Five and Six). The implementation of learning actions further catalysed the emergence of the need to engage with and involve additional activity systems including local community activity systems. As explained in Chapter Seven, the object of activity expanded with this more complex layering of local, provincial and national activity systems. This catalysed the expansion into what I have referred to as an advanced third generation analysis at the boundary crossing level working with groups of activity systems including the implementation group (original four activity systems), the governance group (communities and landowners), and the rulemaking group (national departments). I reflect on this as a potential transition to fourth generation CHAT (see Chapter Seven, Sections 7.3 and 7.7).

Third generation CHAT was particularly appropriate for the study because of the multi-organisational complexity of implementing restoration IAP control across the NRM programmes. In order to explore how collective learning emerges, third generation CHAT allowed me to trace the historicity, social-ecological and sociocultural developments of the restoration IAP control object at the intersection of the multiple activity systems. The unit of analysis in third generation CHAT as proposed by Engeström (2001), is the interaction between one or more activity systems. In this study, in Part I, the central unit of analysis was the

collective interaction amongst the four government agency programmes implementing restoration IAP control projects (see Chapter Four). In Part II it expanded to include community activity systems (see Chapter Seven).

3.4 Application of CHAT and Expansive Learning Principles in This Study

In this section, I describe the application of CHAT in this study. While acknowledging the importance of first generation CHAT through the mediated-learning process, in this study I focus more on exploring the collective learning and agency emerging within and between the activity systems involved in restoration IAP control activity. Part I of the study places more emphasis on boundary crossing learning which was mainly facilitated at the interface of second and third generation CHAT, while Part II probes fourth generation CHAT. I draw on Engeström (2001) who presented a summary of five key principles to guide third generation CHAT inquiry (pp. 136–137). These principles build on and are informed by earlier work on CHAT developments (see Engeström, 1987, 1993, 1996, 1999).

3.4.1 Principle 1: The unit of analysis is a collective learning process

As noted above, I adopted third generation CHAT in exploring collective agency in the restoration IAP control activity. According to Engeström (2001), the unit of analysis in a third generation CHAT is a collective that is mediated by tools and artefacts towards achieving the object of an activity system, which is situated within its network in relation to other activity systems. It is important to note that the object of activity is not static but rather a moving target and can also be described as a ‘runaway object’ (Engeström, 2009) which can be elusive (Sannino, 2020). I found it important to keep this in mind as I engaged with the complexity and dynamism of the restoration IAP control object of activity. By the time I reached Part II of the study, I was more able to describe this as a ‘runaway object’ (see Section 7.4 in Chapter Seven). In exploring the complexity of the restoration IAP control activity, I engaged with different activity systems in search of collective agency from the localised activity level (within and amongst the four implementation activity systems (Chapter Four), at the catchment scale (engaging the implementation and rulemaking activity system (Chapters Five and Six) as well as at system level (engaging implementation, rulemaking, and governance activity systems) (Chapters Seven and Eight).

3.4.2 Principle 2: Multi-voicedness of activity systems

As indicated in Chapter One Section 1.4, the study's main question is centred on exploring collective learning processes that enable the emergence of transformative agency in restoration IAP activity. The multi-voicedness principle of third generation CHAT allowed me to embrace the diverse historicity and viewpoints of practitioners as I engaged with them, across multiple activity systems, as advised by Engeström (2001, p. 136):

An activity system is always a *community of multiple points of view*, traditions and interests. The division of labor in an activity creates *different positions for the participants*, the participants carry their *own diverse histories*, and the activity system itself carries multiple layers and strands of history engraved in its artefacts, rules and conventions. The multi-voicedness is *multiplied in networks of interacting activity systems*. It is a source of trouble and a source of innovation, demanding actions of translation and negotiation (my emphasis).

Chapters Four, Five and Six present the diversity of viewpoints that emerged as I engaged with practitioners in the implementation of activity systems. It was through this diversity that I was able to surface challenges and contradictions within and across the four implementation activity systems. Working with the principle of multi-voicedness further enabled the emergence of both vertical and horizontal learning as the object transformed and new contradictions emerged. An example is how the expansive learning process compelled me to start working with the constellation of activity systems (i.e. implementation, rulemaking, and governance activity systems) as the object evolved from just focusing on the implementation of IAP control projects (Part I) into restoration NRM practices as sustainability commons (Part II, Chapters Seven, Eight and Nine).

3.4.3 Principle 3: Historicity of object of activity

Engeström (1991) defines this perspective of historicity as “identifying the past cycles of the activity system” (p. 15). In this study, historicity involved understanding how restoration IAP control activity was developed and how it evolved over time, including the implementation of NRMPs as a key government strategy to advance key restoration practices in South Africa (see Chapter Two). I looked at how these programmes were initiated, and the tools used to guide, govern and regulate NRMPs in the last two decades of implementation since inception in 1995. This historical background was important to historicise the emergence of contradictions

affecting activity systems as they worked towards a shared object of activity as the restoration practices evolved over time.

In emphasising the importance of historicity, Engeström (2001, pp. 136–137) indicates that:

Activity systems take shape and get transformed over lengthy periods of time. Their problems and potentials can only be understood against their own history. History itself needs to be studied as local history of the activity and its objects, and as history of the theoretical ideas and tools that have shaped the activity (my emphasis).

Besides offering a broader historical view of NRMPs (Chapter Two), in Part I of the study, I explored the historicity as part of generating empirical data through formative intervention engagements with practitioners to understand the historical development of restoration IAP activity and the emergence of contradictions (see Chapters Four, Five and Six). The focus was on understanding how and when the implementation of restoration IAP control started in the Blyde catchment, and who the key actors were. As noted above, I conducted a series of formative intervention engagements within each of the identified four implementation activity systems (i.e. WfW, HAT, SANParks-BSP, DAFF-IFM) through focus groups and key-informant interviews, as well as collectively across the four activity systems through change laboratory workshops (see Chapter Four). Through constructing and coming to understand the historicity of the activity systems, contradictions were surfaced within each of the above-mentioned activity systems, and between them, as they approached the partially shared object, and these were further deepened in collective change laboratory sessions. As practitioners engaged with identified contradictions, new activity systems were identified (i.e. national departments as rulemaking and tools development activity systems), and this led to boundary crossing formative interventions between the implementation and rulemaking activity systems (Chapters Five and Six).

In Part II of the study, the object of the activity expanded from focusing on the implementation of IAP control activity as a shared object to exploring the restoration of NRM practices as sustainability commons. This was driven by the emergence of tertiary and quaternary contradictions in Part I which demanded the inclusion of new activity systems such as landowners, the conservation tourism sector and local communities including youths. I referred to these as the governance group of activity systems which are critical in the institutionalisation of NRM practices and the integration of restoration IAP control in current and future land-use

developments. Therefore, there was a need to understand the evolution of different land use and NRM practices in the Blyde historically in redefining the object of activity in exploring the future sustainability of restoration NRM practices as sustainability commons through partnerships across governance, implementation, and rulemaking activity systems (see Chapter Seven, on common good and sustainability commons). This resulted in *a constellation of three activity system groups* in and between which new contradictions were identified (see Chapters Seven and Eight on the emergence of PDCs). This further triggered the emergence of three parallel but interrelated expansive learning processes in which new tools were developed to mediate the development of the expanded object of restoration NRM practices as sustainability commons and co-governance (see Chapters Eight and Nine on emancipatory agency via double stimulation tools).

3.4.4 Principle 4: The central role of contradictions as sources of change and development

As noted above, this study was framed in the tradition of CHAT with its expansive learning (Engeström, 1987, 2001, 2016) and transformative agency by double stimulation (Sannino, 2015, 2022) theories. The theory of expansive learning relies on its own metaphor of expansion and the learning is driven by contradictions in the present activity (Engeström & Sannino, 2010). Therefore, the expansive learning activity can be described as a “production of objectively, societally new activity structures (including new objects, instruments, etc.) out of actions manifesting the inner contradictions of the preceding form of the activity in question” (Engeström, 1987, p. 125). Engeström (2001) argues that contradictions between and within activity systems are potential sources of transformation. He pointed out that “contradictions are not the same as problems or conflicts. Contradictions are historically accumulating structural tensions within and between activity systems” (p. 137). In a CHAT model, contradictions are seen as sources of development, and “activities are virtually always in the process of working through contradictions” (Foot, 2001, p. 54). Engeström et al. (1999) further emphasise a view of contradictions as the driving force or motive of change and development. These contradictions do not manifest directly but through disturbances in everyday work actions and practices (Avis, 2007; Engeström, 2001, 1987; Foot, 2001), and manifest in conflicts of motive, critical conflicts, dilemmas, double binds (Engeström & Sannino, 2011), and ‘conundrums’ or ‘isiphithiti’ as named by Kuse (2024).

Engeström (1987) identified four types of contradictions:

- Primary contradictions that happen within elements of the activity system and within subjects or tools.
- Secondary contradictions occur when there is tension between one element and another in the activity system.
- Tertiary contradictions take place when the object of an activity system clashes with that of a more advanced system.
- Quaternary contradictions transpire when the central activity system is at odds with any of its neighbouring activity systems.

It is important to note that these types of contradictions are neither static nor independent from each other. This means that contradictions can evolve from one form to the other and they may influence or aggravate each other as different elements of the activity systems continue to advance. Engeström (2001) explains this using his classic example of contradictions in capitalism:

The primary contradiction of activities in capitalism is that between the use value and exchange value of commodities. This primary contradiction pervades all elements of our activity systems. Activities are open systems. When an activity system adopts a new element from the outside (for example, a new technology or a new object), it often leads to an aggravated secondary contradiction where some old element (for example, the rules or the division of labour) collides with the new one. Such contradictions generate disturbances and conflicts, but also innovative attempts to change the activity. (Engeström, 2001, p. 137)

In this study, I embraced contradictions as a potential source of transformation, in which different contradictions were identified and historicised to fully understand their emergence (see Chapter Four). However, the focus was beyond just surfacing contradictions, extending to identifying potential pathways for advancing responses to them, in which the principle of double stimulation was applied as an analytical tool to devise auxiliary motives for advancing responses to contradictions in the restoration IAP activity (see Chapters Five and Six). Although acknowledging the importance of primary and secondary contradictions (i.e. within

activity and a single activity system), this study intended to explore collective learning by particularly exploring contradictions *between the four implementation activity systems (i.e. tertiary and quaternary contradictions)*. In Part I, the focus was mainly on surfacing contradictions within and between the four activity systems that implement restoration IAP control in the Blyde catchment (4), and to identify transformative pathways for addressing such contradictions (Chapters Five and Six). However, as the contradictions were surfaced, they were also aggravated and evolved as noted above by Engeström (2001). This led to the emergence of a new form of contradiction which was particularly prominent in this study, which I referred to as *PDCs*. I also found that a different form of expansive learning process was required to engage with PDCs (see Chapter Eight, on coalesced expansive learning). As such, the expansion of the object towards restoration NRM practices as sustainability commons and the emergence of new contradictions triggered the involvement of more activity systems, which led to a constellation of expansive learning cycles (see Chapters Seven, Eight and Nine on probing towards fourth generation CHAT).

3.4.5 Principle 5: The expansive learning cycle as the possibility of transformations in activity systems

As noted above, activity theory is based largely on Vygotsky's theories of cognition and learning, in which Vygotsky argued that learning took place as a social activity within a "zone of proximal development" or ZPD (Williams & Hummelsbrunner, 2010). Engeström (2014) argues that Vygotsky's concept of ZPD (see Vygotsky (1978, p. 86) is one of the fundamental concepts of the theory of expansive learning. In his book '*Learning by Expanding*', Engeström (1987) redefined Vygotsky's ZPD concept from a cultural semiotic focus on learning and development to a focus on the ZPD of a shared activity, at the level of collective activity. Engeström (2000) further defines the ZPD as the space for expansive transition from actions to activity.

The expansive learning cycle consists of a series of learning actions in which actors collectively re-model and reconfigure the object of activity as they engage with contradictions in the present activity. Engeström (1987) summarises this as follows:

An expansive transformation is accomplished when the object and motive of the activity are reconceptualised to embrace a radically wider horizon of possibilities than in the previous mode of the activity. A full cycle of expansive transformation may be understood as a *collective journey*

through the zone of proximal development of the activity: It is the distance between the present everyday actions of the individuals and the historically new form of the societal activity that can be collectively generated as a solution to the double bind potentially embedded in the everyday actions. (p. 174, my emphasis)

In his matrix of analysing expansive learning, Engeström (2001) points out that “people and organizations are all the time learning something that is not stable, not even defined or understood ahead of time” (p. 137). Furthermore, he argues that in order to transform our personal lives and work activity into organisational practices “we must learn new forms of activity which are not yet there” (p. 13). This means that in an expansive learning process, we are all learners, and the learning process is facilitated in a collective engagement manner (see discussion below on boundary crossing and change laboratories). Therefore, Engeström (2001) reminds us that when facilitating an expansive learning process, it is important to ask critical questions such as: *Who is learning? Why do they learn i.e. why are they motivated to learn? What do they learn? How do they learn (this together)?*

Engeström (2014) explains that expansive learning is about movement from actions to activity in a collective setting. Engeström (2016) strengthens the aspect of collectiveness by pointing out that transformations occur in activity systems through the collaborative creation of new objects and patterns of activity as the participants construct a new object and concept for their collective activity and implement this new object and concept in practice. This is what is referred to as the process of ascending from abstract to concrete through “practical experimentation with a problematic situation” (Sannino et al., 2016, p. 605). Expansive learning theory thus focuses on learning processes in which the subject of learning is transformed from isolated individuals to collectives and networks.

In summary, the outcome of an expansive learning process leads to the formation of a new, expanded object and pattern of activity oriented to the object. This is achieved through *specific learning actions*, and together these actions form an expansive cycle or spiral (Engeström, 1987; Engeström, 2001; Engeström & Sannino, 2010, 2012). Figure 3.4 below shows the strategic learning actions which are also referred to as the stages of the expansive learning cycle, with associated types of contradictions. Table 3.1 takes this further, describing the epistemic actions that typically form part of the expansive learning cycle.

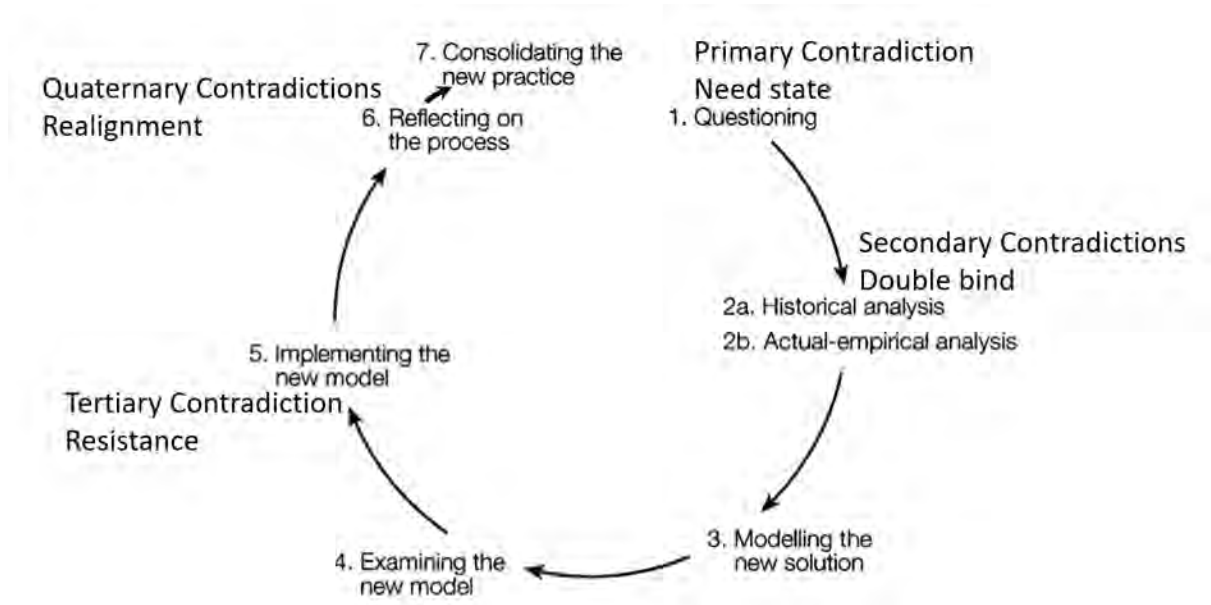


Figure 3.4: Strategic learning actions and corresponding contradictions in the cycle of expansive learning

Source: Engeström (2001, p. 152)

Table 3.1: Description of epistemic actions or stages in the expansive learning cycle

Epistemic action	Description
1. Questioning:	Criticising or rejecting some aspect of the accepted practice and existing wisdom.
2. Analysing:	Evokes “why?” questions and explanatory principles, which seek out causes or explanatory mechanisms. It involves two types of analysis (a) “historical-genetic analysis”, which “seeks to explain the situation by tracing its origins and evolution” (b) actual-empirical analysis, which “seeks to explain the situation by constructing a picture of its inner systemic relations”.
3. Modelling:	Involves constructing an explicit, simplified model of the new idea that explains and offers a solution to the problematic situation.
4. Examining the model:	Involves running, operating and experimenting with the new model in order to fully grasp its dynamics, potentials and limitations.
5. Implementing the model:	Involves working with the new model in real-life situations and monitoring its impacts.
6. Reflection:	Involves using monitoring data to evaluate the model for refinement.
7. Consolidation:	Involves implementing the refined model or the outcomes into a new stable form of practice or part of practice.

Source: Engeström and Sannino (2010, p. 7) and Engeström (1999b, p. 384)

In Part I of the study, I applied the expansive learning theory to guide a process of resolving contradictions using learning actions that followed the logic of ascending from the abstract to the concrete as practitioners confronted their contradictions through analysis of historical and present-day restoration IAP activity (Chapter Four). This enabled the reimagination and modelling of new future pathways as the object for restoration IAP activity using the Vygotskian principle of double stimulation to catalyse transformative agency (Chapter Six). In Part II of the study, I continued to apply the expansive learning process to trace the evolution and expansion of the restoration IAP control object through the constellation of activity systems and coalesced expansive learning cycles driven by the co-engaged depth inquiry process for co-development of the second stimulus tools. This enabled the emergence of an emancipatory agency for enacting the expansive learning actions into practices (see Chapters Seven, Eight and Nine) and the restoration of NRM as sustainability commons.

3.4.6 Exploring learning through boundary crossing

As indicated above, expansive learning theory focuses on learning processes in which the subject of learning is transformed from isolated individuals to collectives and networks. As indicated in Chapter One, and above, this study aimed to explore learning at a collective level between different activity systems involved in restoration IAP control. 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” (Engeström & Sannino, 2010, p. 2). Horizontal movement allows for expansion of interactions between different actors and activity systems, and this is referred to in many expansive learning studies – including those conducted in southern African NRM contexts (e.g. Baloi, 2017; Conde-Aller, 2022; Jalasi, 2018, 2020; Kuse, 2024; Lindley, 2014; Mphepo, 2020; Mukwambo, 2021; Mukute, 2010; Mukute & Lotz-Sisitka, 2012; Pesanayi, 2019) – as boundary crossing. However, Engeström (2015) notes that boundary crossing is not just about sideways expansion as it also encompasses vertical or hierarchical aspects of learning, which are also captured in the above-mentioned expansive learning studies in southern African NRM contexts. Engeström (2001) argues that we should embrace both vertical and horizontal forms of learning as key aspects of transformation and development in expansive learning processes. He points out that there is a rich complementary dimension through negotiation and ‘knotworking’ by the participants as they engage in BCCLs which are useful for enabling sideways learning:

We habitually tend to depict learning and development as vertical processes, aimed at elevating humans upward, to higher levels of competence. Rather than simply denounce this view as an outdated relic of enlightenment, I suggest that we construct a complementary perspective, namely that of horizontal or sideways learning and development. (Engeström, 2001, p. 153)

The evidence of vertical learning can be seen in this study by tracing the evolution of the restoration NRM object *from working at the local level* with project implementation IAP control activity systems *to high-level engagements* with the national departments that are rulemaking activity systems (see Chapters Five and Six). The bulk of the horizontal learning emerged through trying to address the emergence of advanced contradictions that required other actors and activity systems involved who were not part of the original scope. These included local Common Property Association (CPA) communities and other landowners as key activity systems in addressing governance aspects of the restoration NRM practices.

Engeström (2001) also cautioned us that we should be mindful of boundary crossing engagements as this can be confused with CoP which normally focuses attention on building networks and centres of coordination within bounded spaces. He argues:

Recent theories of situated learning (Lave & Wenger, 1991; Wenger, 1998) and distributed cognition (Hutchins, 1995) tell us to look for well-bounded communities of practice or functional systems, such as task-oriented teams or work units, to become collaborative subjects of learning. In a similar vein, Suchman (1997) would recommend that we focus our attention on centers of coordination of this activity. (Engeström, 2001, p. 140)

Engeström here is substantiating his claim from *Learning by Expanding* (1987) of “learning what is not yet there”. He is pointing out the fact that expansive learning goes beyond bounded systems (i.e. communities of practice) and the trajectory of transformation cannot be predetermined. He further partly acknowledges actor-network theory on the heterogeneous aspect of actors, but he emphasises the need to focus on identifying contradictions:

Latour’s (1987, 1996) actor-network theory recommends that we locate learning in a heterogeneous network of human and non-human actors. This is fine, but Latour’s principle of generalized symmetry turns all the actors (or actants, as he prefers to call them) into black boxes without identifiable internal systemic properties and contradictions. If we want to successfully confront the various actors involved ... we must be able to touch and trigger some internal tensions and dynamics in their respective institutional contexts, dynamics that can energise a serious learning effort on their part. In our case, learning needs to occur in a changing mosaic of

interconnected activity systems which are energised by their own inner contradictions. (Engeström, 2001, p. 140)

One of the key principles in expansive learning is the *multi-voicedness of activity systems* (Engeström, 2001), which embraces the diversity of actors and activity systems, mentioned above. As such, transformation and innovation emerge as networks of interacting activity systems that engage and negotiate the learning process. Therefore, embracing the diversity of activity systems in an expansive learning process also means that a truly transformative learning process cannot be predefined or well-bounded within a system, CoP or Latour's actor networks. In addressing the question of why actors learn, Engeström (2001) argues that

...for situated learning theory (Lave & Wenger, 1991), motivation to learn stems from participation in culturally valued collaborative practices in which something useful is produced. This seems a satisfactory starting point when we look at novices gradually gaining competence in relatively stable practices. However, motivation for risky expansive learning processes associated with major transformations in activity systems is not well explained by mere participation and gradual acquisition of mastery. (p. 142)

Therefore, transformative learning happens when we confront and engage with the systemic contradictions within and between activity systems, and the change laboratory method is a formative intervention tool for facilitating expansive learning in boundary crossing contexts (Virkkunen & Newnham, 2013).

3.4.7 Levels of learning and transformation

In broad terms, the theory of expansive learning was developed based on Bateson's conceptualisation of three levels of learning (Daniels, 2008; Engeström, 1987, 2001; Engeström & Sannino, 2010; Nilsson, 2003; Pihlaja, 2005). Drawing on Bateson (1972), the three learning levels are summarised in Table 3.2 below.

Table 3.2: Summary of learning levels

Description of levels	Examples
<i>Level I: Conditioning through the acquisition of responses deemed correct within a given context</i>	<i>Learning the correct answers and the behaviours in a classroom. In classrooms, students learn the ‘hidden curriculum’ of what it means to be a student: how to please the teachers, how to pass exams and how to belong to groups.</i> In this study, the example can be how new teams are trained to identify and remove IAPs. In this case, the team members acquire new knowledge about restoration IAP activity under the supervision of an experienced project manager and qualified training providers who are regarded as experts in the field. <i>A collective endeavour for learning leading to change in organisational practice.</i>
<i>Level II: Acquisition of the deep-seated rules and patterns of behaviour characteristic to the context itself</i>	In this study, examples may include practitioners learning how to implement projects in the complex bureaucratic structure of the Expanded Public Works Programme (EPWP) system; team members learning other personal and socio-development skills such as job marketing, health and wellness, strengthening relations with other team members from their community, etc. These are important life skills that are acquired through participating in natural resource management programmes (NRMPs).
<i>Level III: Radical questioning of the sense and meaning of the context and the construction of a wider alternative context</i>	<i>A more complex, reflexive form of learning that leads to collective agency and change in structures</i> An example from this study would be practitioners learning that the complex bureaucratic EPWP system constrains their agency from collectively working together as NRMPs to effectively implement restoration IAP projects at the catchment scale. They engage in the development of alternative means and strategies to transform the way they do things. Another example is local communities learning that the model for historical implementation of NRMPs is exclusionary and does not allow their community structures to fully participate and benefit from the programmes beyond just short-term job creation, and the communities are actively involved in co-creating second stimulus tools to conceptualise and enact their emancipatory agency.

Source: Adapted from Daniels (2008, p. 126) and Engeström (2001, pp. 138–139)

While acknowledging the importance of all three levels, the expansive learning theory builds on the third learning level (Engeström, 1987) as “Learning III is essentially a seen as a collective endeavour” (Engeström, 2001, p. 138). As such, the theory of expansive learning develops Bateson’s idea into a systematic framework in which a learning process occurs as actors in their activity systems engage and confront disturbances, to reformulate problems and envision new ways of transforming their shared activity, including the creation of new tools and patterns of activity (Engeström & Sannino, 2010). The Boundary Crossing Change

Laboratory is a critical methodology tool for facilitating expansive learning processes that enable actors to advance from a single to a third learning level. As such, boundary crossing can be both vertically constituted, through hierarchical learning in and across different levels of organisational scale. It can also be horizontally constituted between activity systems and actors expanding their knowledge, and expertise and constructing alternatives.

Bateson (1972, pp. 305–306) described learning level III as the most difficult to achieve as he argued it “...*can be dangerous, and some fall by the wayside...*” (my emphasis). In response to Bateson’s work, Engeström (2001) presents expansive learning as a new learning challenge with guided tools and methods. He argues that:

Bateson’s conceptualization of Learning III was a provocative proposal, not an elaborated theory. The theory of expansive learning develops Bateson’s idea into a systematic framework. Learning III is seen as learning activity which has its own typical actions and tools. ... The object of expansive learning activity is the entire activity system in which the learners are engaged. Expansive learning activity produces culturally new patterns of activity. Expansive learning at work produces new forms of work activity. (p. 139)

Bateson (1972) further points out that *double binds* are the key driver of Learning III, and this is generated when actors are confronted with opposing situations. In *double-bind situations*, people and organisations struggle to move forward because of paralysis from the contradicting situation they are facing, and it is typically almost impossible for individuals to break away and find solutions on their own without engaging with others (Engeström & Sannino, 2011). Now this is where expansive learning in BCCLs becomes critical, as crossing boundaries involves encountering differences as we walk on unfamiliar ground and in areas where one is not qualified (Engeström et al., 1996; Engeström et al., 1999). It is through these encounters that we are able to break away from double-bind situations as we start moving towards what Engeström (2016) describes as ‘learning what is not yet there’.

The theory of expansive learning has been enriched by the developmental work research methodology (Engeström, 1987). As such, expansive learning theory is based on the principle of ascending from abstract to concrete, which has its roots in dialectics (Engeström, 2015; Sannino et al., 2016). As a theory and methodology, the expansive learning theory has been widely applied in transformative praxis in southern African environmental education research for over a decade working with complex objects including among others the expansive learning

in sustainable agriculture and food production, river commons, wetland and catchment management and climate change adaptation, including socio-technical innovations and social justice in climate change adaptation (Conder-Aller, 2022; Jalasi, 2018; Kachilonda, 2015; Kuse, 2024; Lindley, 2014; Mpepho, 2021; Mukute, 2010; Mukwambo, 2021; Pesanayi, 2019). In this study, it is important to point out the conceptualisation of expansive learning as a systematic approach that enabled actors in the restoration IAP activity to collectively learn together in their work activity. Actors and formative interventionists learning together produce new patterns and new tools as they confront tensions and disturbances in the work activity. The application of the expansive learning process in this study is presented in Chapters Four, Five and Six where I describe the process of confronting contradictions, envisioning new ways of conducting NRM work activity, boundary crossing involving the engagement of new actors and tracing the evolution of the object. As the learning journey continued, we also encountered new contradictions which required new tools and new cultural patterns of the activity to be developed, described in Chapters Seven and Eight. Through these learning processes, the application of existing CHAT tools was demonstrated, but I also needed to explore new and emerging theoretical tools (i.e. those emerging in, and contributing to fourth generation CHAT), described in Chapter Nine.

3.5 Research Methodology

3.5.1 Research design and orientation

As noted above, this is an expansive learning study, that uses a qualitative formative intervention design in a case study approach. A qualitative design helps the researcher understand the meanings and perspectives of the research participants (Maxwell, 2013). Henning (2004) notes that qualitative research provides a clear and detailed account of actions and representations of actions in order to gain a better understanding of the world as a way to bring about social change. Adopting a formative intervention design provides for historical and ethnographic analysis, which allows the subjects involved, working with the formative interventionist researcher, to analyse a problematic and contradictory object of activity by expanding and constructing a novel concept or new expansive learning pathways (Engeström & Sannino, 2010; Virkkunen & Shelley-Newnham, 2013). Within the case study approach, I was able to focus on four restoration NRMPs in the Blyde landscape, which were conceptualised as core activity systems of this study (see Figure 1.6 in Chapter One). The focus

was to explore collective agency within and amongst the four NRMPs through surfacing the contradictions and disturbances in the restoration IAP control activity. The four NRMPs are therefore referred to as the *implementation activity systems*. Each of the four implementation activity systems constitutes a sub-case in the wider case study, together constituting a multisite case study approach. Yin (2009) describes a multisite case study as an approach in which a group of several programmes or organisations with a shared object are engaged collectively.

As explained in Chapter One, this study was part of and contributed to the USAID-funded programme called the Resilience in the Olifants Basin Programme (RESILIM-O), which was implemented by AWARD, where I was working as an interventionist researcher between 2014 and 2019. Therefore, the study should be seen as part of the bigger programme. As explained in Chapter One, the project area for the study was based in the Blyde catchment, which was a sub-catchment of the Olifants River Basin (see Figures 1.1., 1.2, and 1.4).

3.5.2 Research sites and participants

Purposive sampling, which involves the selection of population samples subjectively based on the purpose of the researcher (Leedy, 2010), was used to select the study site and participants. This sampling technique is used when the researcher has one or more specific groups or individuals whom they are seeking to identify as relevant to the study (Bless, 2006). In the context of this study, the Blyde catchment study area was chosen based on the active involvement of different NRMPs for the implementation of restoration IAP control activity as explained in Chapter One. As noted in Chapter Two, these programmes have been working in the area and implementing IAP projects since the early 1990s, which provided a rich history of the evolution of the restoration practices and associated contradictions. In addition to this, the Blyde catchment was also identified as a priority catchment for AWARD and the RESILIM-O programme. This was informed by the high socio-ecological importance of the Blyde catchment area in providing critical ecosystem services such as water sources and high biodiversity value. The increasing rate of ecosystem degradation through IAP species was among the key criteria in the selection of the upper parts of the Blyde, Klaserie and Sand catchments as the specific focus areas, and collectively I refer to the three upper catchments as the *Blyde landscape* (see also Chapters One and Two).

The same purposive sampling technique was also used to select participants for the research process including change laboratory workshops and interviews. This was based on their

involvement in the implementation of restoration IAP control activity within the Blyde restoration landscapes (i.e. upper catchments of Blyde, Klaserie and Sand). The unit of analysis in this study was collective learning amongst actors involved in the restoration IAP control activity. This was done through examining challenges, tensions, and disturbances (i.e. contradictions) faced by practitioners and collective exploration of transformative learning pathways to enhance the effectiveness of restoration IAP control. The research participants whom I referred to as practitioners included both project coordinators and managers involved in different aspects of the restoration IAP control, from the project planning, implementation, monitoring and evaluation, to reporting and data management. As the object of the study expanded, more activity systems were engaged including national departments, local community structures and youth teams (see Chapters Six to Nine).

3.6 Data Generation Methods and Tools

Both primary and secondary data sets were used in this study. Primary data – referred to as raw data from the source (Leedy & Ormrod, 2010) – were acquired through interviews, focus group discussions, change laboratory workshops and participant observations. Secondary data – information that had been collected by other investigators in relation to the research problem – were acquired through literature search and document analysis and this included reports, annual plans of operations, published literature and unpublished records of previous engagements such as meeting minutes.

3.6.1 Document analysis

This involved a review of documents that were already available in formats such as reports, strategies, operational standards, legislation and any other relevant information related to NRM practices. These data were critical in developing a contextual understanding of restoration IAP control in South Africa which had evolved for more than two decades since 1995 (see Chapter Two). Documents such as operational guidelines and annual reports for NRMPs were acquired from the DEA and DWAF websites, as they were the leading departments in restoration IAP control in South Africa, and these informed the descriptions of activity systems (see Chapter Four). Strategic plans and reports documenting the evaluation of progress produced by research institutions such as the Council for Scientific and Industrial Research were also used in historical analysis on the implementation of restoration IAP control programmes.

A list of key documents accessed is provided below in Table 3.3. These documents were analysed in search of tools that guided and regulated the IAP control activity, as well as analysis of historical progress and identifying perceived challenges in the implementation of NRM programmes in South Africa and the Blyde landscapes. The scoping report produced by AWARD (Thifhulufhelwi & Graf, 2015; see Appendix G) provided a key contextual profiling report which helped us to understand the context of NRMPs in the programmes and organisations involved in implementing restoration IAP control in the Blyde landscapes. The scoping report was based on a combination of a literature review and a series of engagements with the restoration practitioners in the Blyde restoration landscapes (see Chapter Four for a description of implementation activity systems).

Table 3.3: List of key documents for historical analysis of restoration IAP control activity

#	Document Name	Type and Date Published	Authors
1.	Blyde Canyon Nature Reserve: Integrated Zoning and Tourism Master Plan, 2013-2018	Strategic plan, April, 2013	Mpumalanga Tourism and Parks Agency (MTPA)
2.	Blyde River Canyon National Park - Business and Development Plan	Strategic plan, September, 2003	DEAT and International Union for Conservation of Nature (IUCN)
3.	Blyde River Canyon National Park: Forest Restoration Plan	Strategic Plan, 2005	Prepared by David Grossman and Associates, for DEAT, Mpumalanga Department of Agriculture, Conservation and Environment and IUCN
4.	Declaration Intention of the Blyde River Canyon National Park under the National Environmental Management: Protected Areas Act, 2003 (Act no. 7 of 2003)	Government Gazette, June, 2006	Department of Environmental Affairs and Tourism (DEAT)

5.	Draft communication strategy for the proposed Blyde River Canyon National Park	Strategic document, January, 2003	DWAF and International Union for Conservation of Nature
6.	Exit strategy/transfer plan of Lowveld state forestry plantations: for optimising the positive socioeconomic impacts through change of land use from plantation forestry to conservation, Project Number 2005-070	Strategic document. March, 2006	Prepared by Sesikhona services, for DWAF
7.	Expanded Public Works Programme (EPWP) Environment and Culture sector plan Phase 2, 2009-2014. A guideline to align sector programmes to EPWP	Strategic Plan, 2008	Department of Public Works
8.	External evaluation of the WfW programme. Synthesis Report	Evaluation report, 2003	Common Ground Consulting
9.	Historical expenditure, clearing and employment data	Cost-benefit analysis data	DEA website: https://sites.google.com/site/wfwplanning/Home
10.	Memorandum of understanding on consolidation of the Lowveld forests with the Blyde River Canyon Nature Reserve for incorporation into Blyde River Canyon National Park	Memorandum of Understanding (MoU) agreement, August, 2004	MoU between DEAT, DWAF and the Mpumalanga Department of Agriculture and Land Administration.
11.	National Environmental Management: Biodiversity Act, 2004. Alien and invasive species regulations	Regulation, Legislation, 2004	Department of Environmental Affairs (DEA)
12.	National strategy for dealing with biological invasion in South Africa	Strategic plan, March, 2014	DEA
13.	Prioritisation strategy for invasive alien plant control at quaternary catchments for the Mpumalanga WfW Region. CSIR, report number: CSIR/NRE/ECO/ER/2011/0031/B	Strategic Plan, 2011	Prepared by CSIR for DEA

14.	Protocols for the monitoring and evaluation of benefits arising from the WfW programme. CSIR, Report number: CSIR/NRE/ECO/ER/2008/0066/c	Report, 2008	Prepared by CSIR for DEA
15.	Save the Sand project: phase I and II implementation	Proposal, January, 1999	Save the Sand Steering Committee
16.	Scoping report: NRM programmes in Olifants Catchment	Baseline report, March, 2015	Prepared by Thifhulufhelwi and Graf, for AWARD's RESILIM_O programme.
17.	WfW annual plan of Operation (APO) guidelines	Strategy plan, 2011	DEA
18.	WfW Annual Report 2000/01		Department of Water Affairs and Forestry (DWAF)
19.	WfW Programme Standards for Mapping and Management of Alien Vegetation and Operational Data. Department of Water Affairs and Forestry, Pretoria, South Africa	Operational guidelines, 2003	DWAF
20.	WfW Project Operating Standards (Previously the Self-assessment Standards), Version 3	Operational, guidelines, May 2007	DWAF
21.	WfW Research Strategy and Action Plan. Final Draft	Strategic plan, March, 2005	DWAF

3.6.2 Change laboratory workshops

A change laboratory (CL) is a method typically used in CHAT and expansive learning studies as a toolkit for the implementation of formative intervention methodology (Engeström, 2015; Engeström & Sannino, 2016; Virkkunen & Newnham, 2013). As a formative intervention methodology, CL focuses on creating a collaborative space for collective exploration of the activity under investigation, and this further allows for new perspectives of development and

transformation (Virkkunen et al., 2014). Engeström and Sannino (2010) point out that the formative CL intervention method is based on CHAT and the theory of expansive learning, in which the participants, together with the interventionist researcher, analyse the existing activity and collaboratively construct and implement a new model of the activity. The purpose of the CL intervention is not only to create a change in the activity but also, more importantly, to deepen the understanding of the nature and context of the problem space. A successful CL intervention thus leads to a reconceptualisation of the problem space and a new understanding of the activity, thereby also bringing to the fore other aspects of its effectiveness and efficiency (Virkkunen & Newnham, 2013).

Boundary crossing change laboratory workshops (BCCLWs) were the main method of collectively engaging different activity systems in facilitating the expansive learning process in this study. This included exploring historicity and contradictions amongst the implementation activity systems with the shared object of implementing restoration IAP control projects and envisioning future possibilities for transforming restoration IAP control with implementation and rulemaking activity systems (see Part I, Chapters Four, Five and Six). In Part II, the BCCLWs were facilitated as coalesced expansive learning cycles which involved multiple groups of activity systems (governance, implementation, rulemaking, mediation) focusing on engaging and exploring deep-seated PDCs and developing second stimulus tools for transformative agency emergence (see Chapters Seven, Eight and Nine).

- **Setting up and facilitating boundary crossing change laboratory workshop**

In facilitating all the BCCLWs, I had a three-to-five-member interventionist team, in which there was a dedicated note-taker/ scribe, co-facilitator and lead facilitator. These roles helped me to capture all insights, expressions and comments throughout the workshop. The scribe was responsible for recording full detailed notes of the workshops, while the co-facilitator only captured key points that were used as reference points during discussions, and these were captured on a flip chart visible to all workshop participants. The lead facilitator's responsibility was to strategically guide the discussions in alignment with the purpose of the workshops and also bringing connections with other engagements relevant to the restoration IAP control object. All BCCLWs were planned and facilitated collaboratively with the lead facilitator calling and drawing on the support from other team members was necessary (see Figure 3.5 below).



Figure 3.5: Illustration of different roles of interventionist team members in a change laboratory workshop

The composition of participants for BCCLWs for Part I of the study included project coordinators, regional managers and directors from the national departments. Furthermore, in each CLW, mirror data were provided in the form of reflections from the past CLWs or any other engagements that happened in between the workshops (including telephonic discussions or other meetings where I managed to engage with any of the restoration practitioners). This reflection process further cemented the trust and strong relationships between me as the intervention researcher, our team and the restoration practitioners. The support from the research team in facilitating the BCCLWs was also critical as it enabled me to switch roles during workshops where other research team members facilitated certain aspects of the workshops, and I could take an observation or scribing role. This switching of roles further allowed for deep internal reflections during the workshops and also gave me extra opportunities to evaluate the formative intervention process.

In accordance with research ethics protocols, as approved by the Education Higher Degrees Committee which permitted me to conduct the study, all workshop participants were asked for permission to record and take photos before sessions started. As researcher/facilitator, I explained that these photos and recordings would only be used for compiling detailed notes

which would be shared with all the workshop participants. Participants were comfortable with voice recordings and photos, but they did not feel that video recording was necessary. This led to us focusing on the use of notetakers to capture the workshop proceedings, rather than video recording. This is one of the challenges of facilitating change laboratories when engaging in complex issues, as some participants may feel uncomfortable when being recorded. For example, we tried to video-record during the initial engagements with the implementation activity systems and some participants were not engaging, while some were conservatively raising their points. But when the sessions were not recorded, we could sense a complete freedom of engagement. This was more obvious when we started engaging the local communities as part of governance activity systems. They made it clear that they do not want any sessions recorded on voice or camera. In one workshop they even asked all formative interventionist team members and some of the practitioners who were also invited to leave the room as they held a quick private discussion on their decisions around the land claims process. Landownership and governance in South Africa are some of the deep, structural matters considered sensitive and confidential. As formative interventionist researchers, we had to respect their request for confidentiality, and this led to the communities being able to engage openly with us in future workshops (see Chapter Eight).

Furthermore, participants in BCCLWs also felt that the detailed transcribed notes of the meetings were too dense, and they requested that only a summary of discussions should be circulated after workshops. As such, we only shared an abridged version of minutes with participants which normally included summaries of discussions, key actions and agreements from the workshops rather than the detailed transcriptions and notes. In hindsight, this was a useful data reduction strategy as over time huge volumes of data were generated in this study given its extensive and complex nature. This helped me to deal with the most strategic issues arising from the volumes of data in the ongoing BCCLWs process. Table 3.4 below presents the list of BCCLWs conducted in both Part I and II which provided the focal data for the study.

Table 3.4: List of boundary crossing change laboratory workshops for Phase I and II

#	Date engagement	Stakeholders/ participants	Purpose of engagement
1.	7 July 2015: First Boundary Crossing Change Laboratory (BCCLW#1)	The four implementation activity systems (WfW, HAT, SANParks-BSP, DAFF-IFM)	Aimed at collective deepening insight into the restoration context in the Blyde landscapes with the practitioners from the four implementation activity systems, to explore the challenges facing practitioners in the IAP control practice. This was informed by earlier contextual profiling work led by Thifhulufhelwi and Graf (2015), and between first and second change lab workshops we engaged in telecommunication data sharing to continue with the contextual profiling of restoration IAP control activities in the Blyde landscape.
2.	12 January 2016: Second Boundary Crossing Change Laboratory (BCCLW#2)	Implementation activity systems (WfW, HAT, SANParks-BSP, DAFF-IFM)	Co-defining matters of concern using third generation CHAT, for identifying shared challenges in the object of restoration IAP control activity including issues on operational planning, implementation capacity, coordination, governance and institutional arrangements.
3.	10 March 2016: Third Boundary Crossing Change Laboratory (BCCLW#3)	The four implementation activity systems (WfW, HAT, SANParks-BSP, DAFF-IFM) and the rulemaking activity systems (National DEA-NRM)	Aimed at engaging the national rulemaking activity system to share the collective vision by restoration practitioners in the Blyde landscape, and to further explore practical pathways for endorsing and implementing the envisioned solutions.
4.	22 April 2016: Fourth Boundary Crossing Change Laboratory (BCCLW#4)	Implementation activity systems (WfW, HAT, SANParks-BSP, DAFF-IFM)	BCCLW#4 involved the four implementation activity systems again to consolidate the outcomes of BCCLW#3. The focus was on the development of the IAP inventory framework as first agreed in expansive learning action under the operational aspects of the restoration strategy, as well as the development of terms of reference as a guiding tool to ensure coordination amongst the restoration activity systems.
5.	26 July 2016: Fifth Boundary Crossing Change Laboratory (BCCLW#5)	Implementation activity systems (WfW, HAT, SANParks-BSP, DAFF-IFM) and Governance activity systems (Komatiland forestry, York private forestry, MTPA conservation authority,	Aimed at reflecting and re-examining the identified new learning solutions as Transformative Agency by Double Stimulation (TADS) pathways, and exploring the best possible tools required for full implementation of TADS. This boundary crossing workshop included practitioners from the four implementation activity systems, as well as additional stakeholder representatives from the local NGOs and private forestry companies who were invited as part

		Kruger-to-Canyon NGO)	of expanding the restoration working group beyond the implementation activity systems.
6.	25 April 2017: Sixth Boundary Crossing Change Laboratory (BCCLW#6)	Representatives from the implementation activity systems (WfW, HAT, SANParks-BSP, DAFF-IFM) and four Blyde communal property associations (CPAs). The 4 CPAs are a core group of the governance activity systems	To formally introduce the restoration IAP control projects to the land claims communities as the new landowners, and to explore governance and institutional arrangement challenges; collectively envision new institutional arrangements to support the coordination and governance in restoration IAP control work.
7.	6 June 2017 Seventh Boundary Crossing Change Laboratory (BCCLW#7)	Implementation activity systems and the broader stakeholders in the Blyde Restoration Working Group	Development of a draft framework of the Integrated Restoration Strategy, and further planning and reviewing progress on key components of the restoration strategy such as prioritisation, ecosystem services assessment, as well as institutional arrangement processes including formalisation of the learning network to become the Blyde Restoration Working Group.
8.	17 November 2017 Eighth Boundary Crossing Change Laboratory (BCCLW #8)	Broader stakeholders of the formalised Blyde Restoration Working Group, including implementation and governance activity systems	Aimed at exploring tools and mechanisms for funding both human and technical capacity required for the coordination of the Blyde Restoration Working Group as a learning network. Key outcomes included the agreement to develop a funding proposal through the Land User Incentive from the national rulemaking activity system (National DEA) and from private conservation in the Blyde landscape. There were also agreement practitioners to actively involve CPAs in the planning processes for restoration IAP control project for them to take lead in future as part of building custodianship.
9.	12-13 February 2018 Ninth Boundary Crossing Change Laboratory (BCCLW #9)	Broader stakeholders of the Blyde Restoration Working Group, including implementation, governance, and national rulemaking activity systems	Engaging the rulemaking activity system (National DEA-NRM) which is responsible for developing operational and planning tools for their strategic inputs in the development of an integrated restoration IAP control strategy led by the implementation and governance activity systems, and endorsement of the formalised Blyde Restoration Working Group as the learning network to coordinate this work in the Blyde landscape.
At the end of Phase I (2014–2018), the BCCLWs were re-conceptualised to support the development of Emancipatory Transformative Agency by Double Stimulation (ETADS) pathways, as discussed in Chapter Eight. A series of smaller workshop engagements were conducted focusing on operational and technical planning tools (see Section 8.4, ETADS pathways 2), and capacity and skills development for custodianship (see Section 8.5, ETADS pathways 3.). The progress for development of ETADS pathways was mediated and coordinated by the Blyde Restoration Working Group as the multi-stakeholder learning network (see Section			

8.3, ETADS pathway 1). As such, in the BCCLWs under Phase II we focused on the level of multi-stakeholder learning network (mediation platform) for holding together the coalescing expansive learning processes. It is important to note that a series of engagements with various partners were held in preparation for annual Blyde Restoration Working Group (BRWG) workshops (BCCLWs #10–15), and these prior engagements included small meetings to share data on restoration IAP project, field activities and other relevant project planning activities.

10.	20 November 2019 Tenth Boundary Crossing Change Laboratory (BCCLW #10)	Broader stakeholders of the BRWG (22 attendees)	Aimed collective planning for BRWG partners to update each other on current restoration IAP control plans to ensure alignment, coordination and synergy amongst all work including technical tools, institutional arrangements, capacity development activities and funding proposal developments.
11.	19 November 2020 Eleventh Boundary Crossing Change Laboratory (BCCLW #11)	Broader stakeholders of the BRWG Group (12 attendees, in-person & online. i.e. number of participants restricted due to COVID-19 regulations)	To provide an update to all partners on the development of an Integrated Restoration plan for the Blyde Nature Reserve and the relevant technical tools including wetland assessment. For restoration implementation and management partners to update each other on work progress and share plans for 2020–21 to ensure alignment, coordination and synergy among all work planned. Planning for the implementation of the CPA Land User Incentive project, including processes for hiring new restoration IAP control teams.
12.	24–25 February 2021 Twelfth Boundary Crossing Change Laboratory (BCCLW #12)	Broader stakeholders of the BRWG (14 attendees, in-person & online. i.e. number of participants restricted due to COVID-19 regulations)	This workshop was aimed at a detailed review and collective reflections on the draft Blyde NR Integrated Restoration Plan and providing inputs to the annual plans presented by implementation activity systems. Owing to social distancing regulations for the COVID-19 pandemic, only a limited number of people could physically participate in the workshop. The broader stakeholders of the BRWG were afforded the opportunity to participate by commenting on the restoration plan and sharing information among partners. There was an agreement from the workshop to conduct a biannual review of technical and operational tools to ensure the relevance of the plans and to capture up-to-date data on restoration progress.
13.	11 November 2021 Thirteenth Boundary Crossing Change Laboratory (BCCLW #13)	Broader stakeholders of the BRWG (18 attendees, in-person & online)	Aimed at reviewing progress on agreed actions from the last workshop, including key discussions of technical tools and institutional arrangements. Update from the restoration implementation and governance activity systems partners to provide feedback on progress on restoration projects in the 2021 financial year, and for sharing and co-learning to ensure alignment, coordination and synergy among all work planned.

14.	2 February 2022 Fourteenth Boundary Crossing Change Laboratory (BCCLW #14)	Broader stakeholders of the BRWG (19 attendees, in-person & online)	Aimed at reviewing progress on agreed actions from the last workshop, including key discussions of technical tools for guiding implementation restoration IAP control projects. Update from the restoration implementation and governance activity systems partners to provide details of spatial planning and key activities for the 2022 financial year, to ensure alignment, coordination and synergy among all work planned. To address any further institutional arrangements matters of relevance to the group such as the expansion of the Restoration Working Group to include other members that have shown interest.
15.	17 November 2022 Fifteenth Boundary Crossing Change Laboratory (BCCLW #15)	Broader stakeholders of the BRWG (20 attendees, in-person & online)	Aimed at reviewing progress on agreed actions from the last workshop, including key discussions of technical tools and institutional arrangements. Update from the restoration implementation and governance activity systems partners to provide feedback on progress on restoration projects in the 2021 financial year, and for sharing and co-learning to ensure alignment, coordination and synergy among all work planned.

3.6.3 Focus groups and key-informant interviews

Focus group discussions or group interviews are important when engaging a group of participants who work together on similar or related subject matter (Cohen et al., 2007). They can provide a researcher with a comprehensive understanding of the collective response of the whole group as the unit of analysis, rather than the individual members (Cohen et al., 2007). Focus groups and key-informant interviews were used mainly in Phase I of the study as part of documenting historical developments in restoration IAP activity and building relationships with practitioners from each of the four implementation activity systems. These focus groups provided an in-depth understanding of the historicity of restoration IAP control activity in the Blyde landscapes, and practitioners were able to express issues and challenges within their own organisations without outsiders (see Chapter Four on description of activity systems). This collective view within each of the four implementation activity systems was also critical in building mirror data before facilitating BCCLWs which involved practitioners from all activity systems. The size of focus group interviews ranged from two to six practitioners from the implementation activity systems.

Interviews enable participants to discuss their interpretations of the world in which they live and express how they regard situations from one point of view. Interviews also help the interviewer to get direct, live responses about complex and deep issues (Cohen et al., 2011). The key-informant interviews also provided triangulation data in areas where gaps were pointed out, especially during CL sessions. For example, forestry was mentioned as one of the key stakeholders which should be involved in restoration practices, but practitioners had little information on the status of the forestry operations in the Blyde. As a result, I identified key forestry actors in the Blyde landscapes and interviewed managers including the DAFF commercial forestry (government-managed), as well as Komatiland and York Timbers forestry (privately managed companies). Table 3.5 below is a list of core data from focus groups and key-informant meeting interviews conducted with different stakeholder groups in Phase I of the study between 2014–2018. We also conducted a series of follow-up engagements between 2019–2022 with individual stakeholders as part of reflections and take-away tasks that informed the BCCLWs (see Table 3.4).

Table 3.5: List of focus groups and key-informant interviews and meeting engagements from Phase I

#	Date engagement	Stakeholders/ participants	Purpose of engagement
1.	2014-2015 Review and scoping exercise: Document analysis and partner engagements	All implementation activity systems were engaged via emails, telephonic communications, one-on-one meetings and field activities	Reviews and scoping of Natural Resource Management Programmes in Olifants catchment, with a specific focus on restoration IAP control projects, analysis of the historical work, current restoration IAP control projects, and the spatial area of operations. This was captured in the NRMPs' scoping report (Thifhulufhelwi & Graf, 2015; Appendix G).
2.	28 June 2016: FDG #1	Focus group discussions with project managers for WfW activity systems	Individual exploration (per activity system) of challenges and contradictions. Analysis of expansive learning tools that promoted the emergence of collective transformative agency in the restoration IAP control practice.
3.	28 June 2016: FDG #2	Focus group discussions with project, regional and national managers	Individual exploration (per activity system) of challenges and contradictions. Analysis of expansive learning tools that promoted the emergence of

		for High-Altitude Teams (HAT) activity systems	collective transformative agency in the restoration IAP control practice.
4.	8 September 2016: FDG #3	Focus group discussions with project managers SANParks-BSP activity systems	Individual exploration (per activity system) of challenges and contradictions. Analysis of expansive learning tools that promoted the emergence of collective transformative agency in the restoration IAP control practice.
5.	30 October & 10 November 2016: FDG #4	Focus group discussions with plantation managers DAFF- IFM activity systems	Individual exploration (per activity system) of challenges and contradictions. Analysis of expansive learning tools that promoted the emergence of collective transformative agency in the restoration IAP control practice. Historicity of the restoration IAP control object, in relation to Blyde National Park and decommissioning of the Lowveld plantations.
6.	28 June 2016: meeting/interview #1	Meeting interview with MTPA conservation and stewardship manager	To explore their restoration visions, current and potential restoration and NRM projects, as well as understanding their relational agency with other stakeholders in the Blyde restoration landscapes,
7.	17 August 2016: meeting/interview #2	Group meeting with regional and national managers from DAFF forestry regional directorate	To formally introduce the restoration IAP control projects to the DAFF commercial forestry, which is the current largest landowner in the Blyde landscapes, and to explore their challenges and processes in the management of the Lowveld plantations, including institutional arrangements and governance processes.
8.	29 September 2016: meeting/interview #3	Meeting interview with private commercial forestry and landowners York Timbers	To explore the contradictions in the private forestry industry in relation to restoration IAP control, and understand their environmental management functions, as well as relations with other stakeholders in the Blyde landscapes.
9.	5 April 2017: meeting/interview #4	A group planning meeting led by the implementation activity systems (WfW, WoF-HaT, DAFF- IFM, SANParks-BSP), with participation of K2C, a local NGOs joining Blyde restoration group	A group meeting to strategically plan for formally introduction the restoration IAP control projects to the land claims communities as the new landowners, and to explore governance and institutional arrangement challenges; collectively envision new institutional arrangements to support the coordination and governance in restoration IAP control work.
10.	4 May 2017: meeting/interview #5	Meeting between the implementation activity systems and the co-management committees which represent four	Engagements on project management and governance between the implementation activity systems and the Blyde CPAs co-management committee, and specifically to reach agreement on

		Blyde CPAs or land claim communities	processes for job selection criteria of beneficiaries from local communities.
11.	14 June 2017 meeting/interview #6	Meeting interviews with private commercial forestry and land owners (Komatiland Forestry)	To explore the contradictions in the private forestry industry in relation to restoration IAP control, and understand their environmental management functions, as well as relations with other stakeholders in the Blyde landscapes.
12.	1 August 2018 Meeting/interview #7	Meeting between Blyde CPAs and Sabi Sand Reserve which is the private conservation tourism agency looking to invest in restoration and tourism projects in the Blyde landscape	To support the exploration of a partnership between the Blyde CPAs and the private conservation tourism agency on the private sector investing in restoration IAP control and tourism projects in Blyde landscape areas owned by land claimants' communities.

Additional small workshops and meetings were also conducted to supplement the focal data from BCCLWs (see Table 3.4) and the focus group discussions and meetings/interviews (see Table 3.5). These small workshops and meetings specifically focused on the co-development of double stimulation tools to advance the three ETADS pathways (see Sections 8.3, 8.4, and 8.5). Figure 3.6 below provides a timeline of BCCLWs, FDGs, meetings/interviews and small workshop engagements which were directly linked to the relevant ETADS pathways.

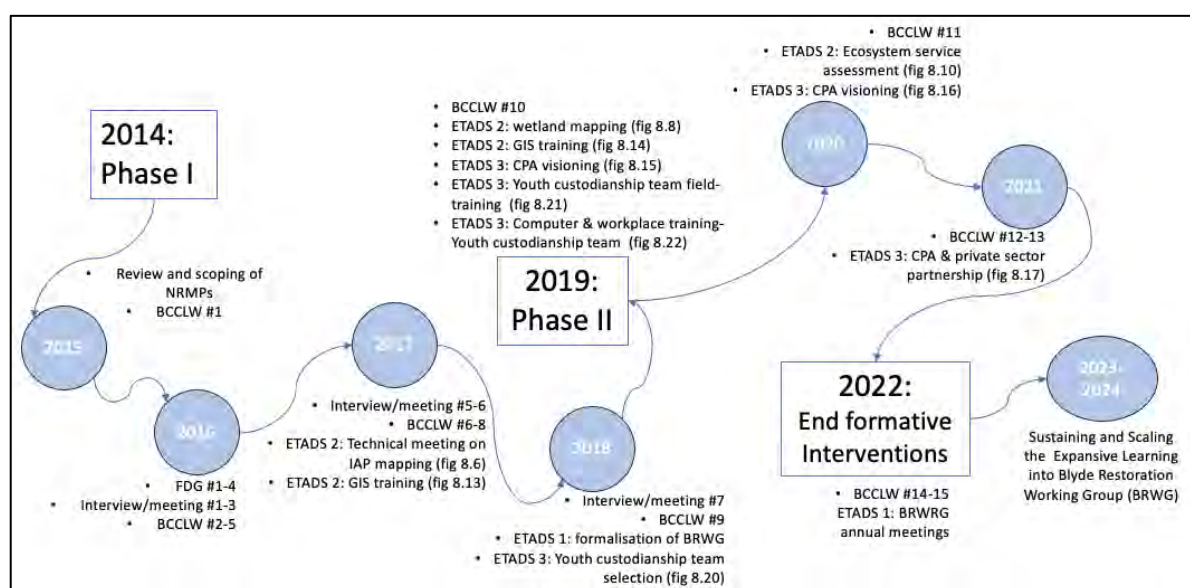


Figure 3.6: Timeline of BCCLWs, FDGs, meetings/interviews and small workshop engagements which were directly linked to ETADS pathways

3.6.4 Participant observation: Formative intervention researcher as an active participant observer

Patton (2002) believes that direct participation and observation in many cases is the best research method in order for a researcher to fully immerse themselves in understanding the complexities of situations. De Vos et al. (2005) similarly describe participant observation as a qualitative research procedure that studies the natural experience of the respondents in a particular community or situation. This method of data collection allows the researcher access to impressions and experiences of the phenomenon being studied (De Vos et al., 2005). Cohen et al. (2007) further point out that participant observation is an important data generation process for deep ethnographic inquiries. I used direct participation and observation to immerse myself fully in engaging practitioners and communities in their work activity

I was invited by practitioners who included project coordinators and managers to join their field work involving the mapping of IAPs and strategic planning activities. I used this time to listen to practitioners' experiences and reflections on managing NRMPs. I also participated in regular field visits to see teams of local communities conducting their daily IAP control activities. Here, I would bring an extra uniform and join the teams in clearing as an additional member and I used this time to listen to communities' stories and experiences of being team members in the NRMPs. During participant observation sessions I took field notes to capture key issues and stories, documenting learning narratives as part of a personal journaling process. I was granted permission to take photographs and where appropriate I took videos of activities as I engaged with practitioners and communities. These datasets provided important insights forming my understanding of the implementation of restoration IAP activity but also provided guidance in preparation for BCCLWs. Some of the field reflections were used as mirror data during workshops to allow for collective reflections and meaning-making processes.

3.7 Data Analysis and Analysis Framework

Data analysis requires data to be organised, described, theorised, interpreted, discussed and presented to the readership (Ryan, 2006). According to Creswell (2007), data analysis in a case study approach typically involves the organisation of specific facts about the case in a logical order, categorisation to cluster data into meaningful groups and interpretation in order to examine meaning and patterns from which we can synthesise and draw conclusions from the analysis. In this study, I worked with an analytic approach which involved abductive, inductive

and retroductive analysis. Drawing on Danermark et al. (2002, the three forms of analysis were defined by Mukute and Lotz-Sisitka (2012, p. 352) as follows:

- *inductive* analysis enables one to make sense of data by clustering them into categories;
- *abductive* analysis occurs when one uses theoretical lenses or contextual information to make sense of and recontextualise data;
- *retroductive* analysis involves establishing explanations based on what must be the case for things to be the way they are by using historical analyses, counterfactual argumentation and thought experiments.

For descriptive logical purposes, I structured the analysis process for this study into two parts (Part I and Part II) involving the use of three analytical dimensions: analysis of expansive learning, analysis of double stimulation and transformative agency, and analysis of PDCs. These are briefly outlined below and elaborated on further across the study. Overall, the expansive learning process is presented across the study as a longitudinal process from the descriptive analysis of activity systems (Chapters Four and Seven), confronting contradictions within and between activity systems (Chapters Four, Five and Seven), envisioning new pathways (Chapters Five, Six and Eight), and co-developing second stimulus tools for cultivating transformative agency in response to complex PDCs (Eight and Nine).

Furthermore, I opted not to foreground the theoretical descriptions of the analysis in this chapter but rather embed the theoretical lenses in the empirical data chapters. This meant that in this section I introduced only the analytic concepts I worked with – such as double stimulation – and then provided a full description in the chapters where they were applied (e.g. see Chapters Six and Eight on double stimulation). Other important analytical lenses that I used have been described in earlier sections and again I opted not to redescribe them here in the analysis section. These include key concepts such as contradictions as a source of change, transformative agency, activity system as the unit of analysis, the historicity of object, and boundary crossing learning (see Section 3.4 on the application of CHAT and expansive learning principles). These concepts are the holding thread of the analysis work in this study, especially in Part I of the empirical data chapters (i.e. Chapters Four, Five and Six). Other key analytic concepts – including PDCs, power as agency, emancipatory agency, coalesced expansive learning, co-depth inquiry and co-constructed second stimulus tools – are discussed in Part II.

3.7.1 Part 1: Descriptive analysis of activity systems and surfacing contradictions

Part I of the analysis involved both an inductive and abductive approach, drawing on CHAT theoretical lenses to cluster key themes in understanding the contextual profiling of activity systems and the historicity of the object. As part of surfacing contradictions within each of the four implementation activity systems, I applied the activity system analysis approach, drawing on Engeström (2001). After the description of each of the four implementation activity systems, I used Mwanza's (2001) sub-triangle method as an analytic tool for surfacing contradictions within each of the four activity systems. The sub-triangle analytic method re-organises Engeström's activity system analysis by developing a sub-activity mediating combination of the actors and the object. Mwanza's activity analysis notion identifies six general inquiries (Table 3.6. below) which I used as guiding questions for sub-triangle activity system analysis (see Chapter Four).

Table 3.6: Activity system sub-triangle analysis

Actors	Mediator	Objective	Diagnostic questions
Subject	Tools	Object	What tools do the subjects use to pursue the object and how?
Subject	Rules	Object	What rules affect the way subjects pursue the object and how?
Subject	Division of Labour	Object	How does the division of labour influence the way subjects engage with the object?
Community	Tools	Object	How do the tools in use affect the way the community engage with the object?
Community	Rules	Object	What rules of engagement are used to involve the community in pursuing the object and how?
Community	Division of Labour	Object	How does the division of labour affect the way the community engage with the object?

Source: Mwanza (2001, p. 6)

The activity systems analysis formed part of the first and second stages of the expansive learning cycle (questioning and analysis) in which both primary and secondary contradictions were surfaced as shown in Figure 3.7 below (see Chapter Four). To facilitate the collective conceptualisation of central contradictions, third generation CHAT was applied in BCCLWs. The central contradictions were further used as mirror data in follow-up BCCLWs to inform the third stage of expansive learning (modelling new solutions). Again, the application of third generation CHAT was critical as the national government (rulemaking activity system) was engaged as practitioners envisioned potential new pathways to address the identified central contradiction (Figure 3.7).

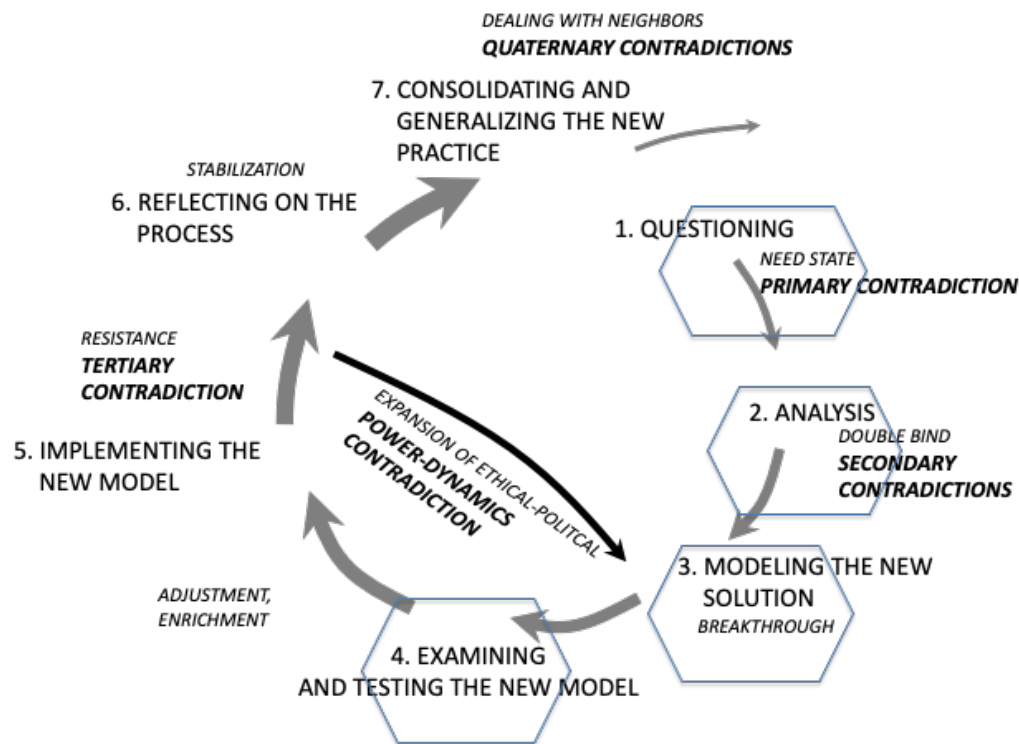


Figure 3.7: Strategic learning actions and corresponding contradictions and the emergence of power-dynamics contradictions in the cycle of expansive learning

Source: Adapted from Engeström (2001, 2020)

3.7.2 Part II: Transformative agency and double stimulation

In Part II of the study, I used abductive and retroductive analytic approaches to make sense of the envisioned transformative motives from stage three of the expansive learning cycle. I applied the principle of double stimulation as an analytical approach to deepen, examine and follow the testing of the envisioned transformative motives into a new model (stage four of the expansive learning process).

The basic principle of double stimulation is that people use double stimulation tools to break out of the conflict of motives/paralysis to mediate learning and undertake actions in their everyday practices (Vygotsky, 1960/1997). It is the everyday actions that inform how people gain agency to transform their practices, and therefore, double stimulation is an underlying principle in attaining transformative agency (Sannino, 2015a, 2015b; Sannino & Laitinen, 2015). Furthermore, Engeström and Sannino (2016) note that expansive learning and transformative agency are intertwined, and it is difficult to conceptualise one without the other.

In this study, I used the Vygotskian double stimulation (Table 3.7) process, as explicated by Sannino (2015), as an analytic principle for exploring the emergence of collective transformative agency associated with the object of NRM in the study context, in order to expand understanding of the expansive learning process and how it helped people to transform their object of activity. I followed this process as practitioners and local communities responded to and engaged with the emerging contradictions and manifested the volitional capacity to adopt and implement the new model to transform the restoration IAP control activity (see Chapters Five and Six).

Table 3.7: Sannino's (2015c) Vygotskian model of double stimulation

Phase	Detail	Example from waiting experiment
<i>APPARATUS 1: DECISION FORMING</i>	Comprises phases outlined below; at issue is the choice of closure path	
1 – Conflict of stimuli	Demands or expectations that pull in opposite directions	Being asked to stay vs. having no purpose in an empty room
2 – Conflict of motives	Activated by the conflict of stimuli, the subject is at the mercy of motives	Conforming to instructions to wait vs. wanting to leave
3 – Auxiliary motive	Conversion of stimulus to auxiliary motive, the subject begins to control her behaviour	Deciding to use the clock to make a decision
4a – ‘Real’ conflict of stimuli	Occurrence of neutral stimulus confronting subject with signal and meaningful connection	Clock reaches a particular time
4b – Closure of conditioned connection	Decision to act in a particular way; the subject makes decisions based on the occurrence of external stimulus	The participant decides to leave the experiment
<i>APPARATUS 2: DECISION IMPLEMENTING</i>	Activation of the conditioned connection	Participant leaves the experiment

Source: Hopwood and Gottschalk (2017, p. 24)

I applied the double stimulation principle in boundary crossing formative interventions, in which the identified central contradictions provided the first stimulus, and I used several tools as a second stimulus including the activity system analysis for exploring the conflict of motives and the co-visioning of auxiliary motives (see Chapter Five on modelling new solution via double stimulation). As such, Chapter Five focused on decision forming (apparatus 1) of Sannino's (2015) Vygotskian model of double stimulation as presented in Table 3.6 above, and the outcome was a series of envisioned auxiliary motives. The auxiliary motives were further

deepened into transformative pathways for ascending from abstract into concrete actions which is the decision implementation (apparatus 2), described in Chapter Six.

The emerging analytic framework for fourth generation activity theory: The latter part of this study was more of an emerging process in which I tried to develop my own analytic framework for analysing the ethical–political expansion of the object in the context of the study’s morphing from third to fourth generation CHAT, through engaging PDCs (see Chapters Seven to Nine). This morphing from a third to a fourth generation form of CHAT occurred as more activity systems became involved in contradictions associated with the object of activity surfaced in Phase I of the study. This revealed a more complex object of activity than was initially engaged with and had implications for how the study evolved, hence I present it as a Phase II of the study.

From the deepening of auxiliary motives into transformative agency pathways, it became evident that the research process had expanded in scope in which the object was reconceptualisation from collective action for implementation of restoration IAP control (focus on implementation activity systems), into collective learning for transforming restoration NRM practice as sustainability commons (i.e. ethical–political dimension of the object). The other expansion of the research that occurred was the socio-spatial dimension in terms of new actors which resulted in a constellation of activity systems, namely the implementation, rulemaking, and governance activity system groups (see Chapter Seven). Therefore, the constellation of activity systems became the central focus for exploring restoration NRM practice as sustainability commons via ethical–political expansion, and this led to the emergence of a new type of contradiction that I referred to as PDCs. As will be elaborated on in Phase II of the study, these contradictions were mainly experienced when the object underwent reform, restructuring and sometimes when a completely new object emerged as the focal point. This also revealed a deeper level of complexity associated with the initial object, which required its redefining. As in Phase II of the study, some of the evidence of PDCs could be observed as tensions at the constellation level between two or more **activity system groups**, and the transformation and navigation of PDCs then seemed to require facilitation through what I termed **coalesced expansive learning cycles**. As such, the focus on ethical-political aspects of the object including land ownership, governance and custodianship by local actors was initially not seen as critical for advancing restoration IAP control activity but this later emerged in Part

II of the study as PDCs were engaged through co-creation of ETADS pathways for common good and sustainability of restoration NRM activity (cf. chapter 8).

This shifted the study focus from strengthening capacity for implementation of IAP activity (Part I of the study), towards developing new second stimulus tools for enabling coalesced expansive learning processes which engaged the constellation activity systems groups through co-engaged depth inquiries which proceeded in ongoing boundary crossing formative interventions, further enabling more groups to enact their volitional actions for transforming restoration NRM as common good practices in ways which are described as being emancipatory (see Chapters Eight and Nine on ETADs. See also Appendix A, a published paper that formed part of a process to develop the language of description in an associated context, and of ‘working out’ how to deepen our work with ETADS for this study and our context more broadly (Lotz-Sisitka et al., 2023).

Therefore, in exploring the emergence of PDCs and their navigation through ETADS, I, in conversation with co-researchers and my supervisors, drew on decolonial literature and on concepts from critical realism that enabled me to contextually deepen the way I was working with the CHAT framework in the study and especially to develop ways of dealing with the complex PDCs that were so obvious in my study. I was therefore able to broaden the language of description for explaining some of the observations and processes that emerged in Part II of the study (see Section 7.1. in Chapter Seven on reflections and transitions into Part II of the study). With hindsight, this work sheds light on Sannino’s (2023) point that CHAT is a power-sensitive theory, but for which we did not initially have adequately suited languages of description in our context.

3.8 Quality and Validity

Quality and validity are important key criteria of effective research (Cohen et al., 2011; Maxwell, 1992). Creswell and Creswell (2017) argue that validity is the development of sound evidence to demonstrate the rigour of the research process. In this study, I addressed the matter of validity using triangulation, member checking and reflections with critical friends in the NRM CoP.

3.8.1 Triangulation

This involved using multiple sources of data to compare the validity and reliability of arguments within the data. Triangulation was employed at two different levels, firstly by employing different data generation methods. The CL is the main data generation method, with a focus group discussion, field observations, document analysis, and key-informant interviews as the other methods used in the study (see Section 3.5.3). The second level of triangulation was through employing different data collection techniques to complement the limitation of collection tools (e.g. not being able to use video data) and in some cases using cross-referencing. For example, during the BCCLWs, I was supported by a team of three to five interventionist researchers from AWARD who were also capturing notes and key points of the discussions as described above. At the end of every engagement, the formative intervention team would collectively reflect and share notes. This was an important triangulation process, especially in workshops and meetings which were not recorded because it was not possible (i.e. field discussions) and confidentiality threats (i.e. participants' consent). Another important triangulation method used was cross-referencing, especially when exploring the historicity of the restoration IAP control in the Blyde landscapes. An example of this was the verification of historical documents I received from practitioners, as well as follow-up discussions, phone calls, emails and asking for other contacts to substantiate and clarify key details from the discussions.

3.8.2 Member checking

Member checking was one of the critical tools used in this study to ensure the validity of the data. This was also done in two ways, first by presenting mirror data to participants during the BCCLWs in a process in which participants were given an opportunity to reflect on, expand or withdraw their own views. In this case, participants would provide corrections where necessary and sometimes they would further clarify their statements which provided depth and contextualisation of the data. Second, minutes of meetings which included summary notes and key action items were shared formally with all participants through email communications. Attendance registers were taken in all engagements, and these were circulated along with meeting minutes or notes as part of member checking. As noted above, in terms of sharing meeting transcripts or verbatim notes, participants early on felt that the notes were too detailed and hence not user-friendly, and they suggested an abridged version of minutes capturing only

key points from the workshops. As such two different sets of notes were produced from every BCCLW in which the summarised version was shared with participants, and the more detailed records were kept in my data archive for analysis, triangulation and verification. The detailed verbatim versions of the minutes were also made available to those who needed them or who requested them. During meetings, participants were also asked for permission to record and take videos and photos. However, because of confidentiality threats, participants requested that some meetings should not be audio or video recorded. As noted above, this was where the value of having a full team of formative interventionist researchers was critical in capturing notes.

3.8.3 Reflections with critical friends in the NRM community of practice

As noted in Chapter One, this research was part of the RESILIM-O programme. The programme was aimed at supporting the sustainable management of biodiversity and water resources in the Olifants catchment, in order to reduce vulnerability and enhance the resilience of ecosystems and people's livelihoods. The RESILIM-O programme was staffed with scholars and experienced practitioners in the NRM field. Their critical comments, reflections and advice were important in shaping this study, especially the biodiversity and NRM team which I referred to as the formative interventionist team, as they all played different roles in supporting this study. As part of documenting the learning process at AWARD, we were asked to write short reflections from every field engagement, meeting and workshop. These reflections were captured using a back-to-office (B2O) tool which was a template document with guided questions to understand the activity that was conducted.

As a result, after every engagement, the formative interventionist team held reflection sessions in which key insights from the workshop were captured in the B2O report. The B2Os were further circulated to the other relevant programme members, especially the monitoring, evaluation and learning team for their comments and inputs. We used the B2O to inform future engagement and for reflections on the overall learning process and progress. I used B2Os both for quality and validity purposes but also as an additional tool for data collection and self-reflection on this study's expansive learning process. The B2O was framed with guiding questions that allowed us as formative interventionists to reflect and build connections throughout the expansive learning process. Below I list some of the key reflection categories from the B2O template (see Appendix D for an example of a back-to-office report).

- Making connections questions
 - What was the field event? (Workshop, meeting, course, conference, talk, etc.)
 - Where did it take place?
 - When did it take place? (date)
 - Purpose of the event
 - Intended RES-O Outcome Towards Which the Event Contributes
 - Name(s) of Author(s): Complete with colleagues where possible
- Capacity Development questions
 - Could participants learn new information or skills relating to climate change, biodiversity and/or water management?
 - Did AWARD staff make a substantial input in the event, please share (e.g. a presentation)?
 - Were the intended learning objectives and/or outcomes specified?
- Reflection questions
 - What new insights did you gain from this event, or this event in relation to previous ones?
 - Please summarise any key observations regarding the context and/or about your role in the process or AWARD's work in general.
 - Have any new questions emerged (from you or others) about the context and/or your work arising from this event?
 - Have you identified any new challenges regarding the context and/or your work? Do you have any ideas as to what should / could be done about this?
 - Have you gained any new insight regarding progress in relation to the baseline conditions there were previously in this context?

3.9 Research Ethics

3.9.1 Informed consent

All the participants were informed about the purpose and goals of the research, and its potential value to me as the researcher, to them as practitioners and beneficiaries in restoration NRM practices, to AWARD as the implementer of the USAID-funded project, and to the environment in promoting sustainability. Participants were asked for their consent to be part of this action research process which formed part of AWARD RESILIM-O Programme. Briefing sessions about the potential implications, risks and benefits were communicated to all participants before engagements, after which a consent form was signed (see Appendix B) by the representatives of activity systems involved in the study, and a letter of permission to use AWARD data for research purposes (see Appendix C). The research process – including data-generating mechanisms such as CL which requires a high level of trust and good relationships – was clearly explained to the participants. Participants were asked for permission to use the

data for the sole purpose of research, and it was agreed that no raw data or transcripts from the engagements would be shared or passed through to other researchers. It was also agreed that the researcher would seek specific consent if any other use became an option or if anyone besides the researcher wanted access to the data.

3.9.2 Data protection, confidentiality and dignity

Confidentiality and anonymity of all participants were negotiated and guaranteed throughout the research process. Pseudonyms were used in all the research documentation processes, and member checking was used to ensure a fair and adequate representation of participants' views. Participants were also informed that participation in the study was voluntary and that they were free to withdraw at any time if they did not want to participate further in the study process. All personal data and other sensitive information not relevant to the study were removed from the transcripts, minutes and all research outputs. Data were stored in a password-protected data management system, to which only my supervisor and I had access.

3.9.3 Transparency and honesty

All participants were informed about how the data would be used for the study, including presentations at conferences, publication of papers and producing reports for the RESILIM-O programme. Findings from this study have been presented at different national and international conferences (see Phase II orientation chapter), and these presentations were made accessible to research participants. Participants were also informed of papers for publication, and in some cases, they directly contributed to the framing of papers and conference presentations. I undertook to share all research outputs with participants and acknowledge their contributions. My research interests and existing relationships with participants were clearly expressed to participants as captured in the section below on researchers' positionality (see Section 3.8.6).

3.9.4 Accountability and responsibility

This research was conducted in accordance with the professionalism and responsibilities of the formative interventionist researcher, who works with stakeholders in a co-engaged manner. As a researcher, I indicated to participants how I would take responsibility and accountability for all research data generated and past historic documents shared by participants. I guaranteed that none of the research data would be shared further without their consent. Throughout the

course of the study, I kept participants informed of the progress of my study and also informed them and discussed with them potential papers and conference presentations. All verbal (telephonic, informal discussions) and written (such as emails and phone texts) agreements between me and the participants were honoured. All my personal reflections and perceptions were captured separately, and these were used for self-reflection throughout the study and were not presented as views of participants.

3.9.5 Integrity and academic professionalism

According to Maxwell (2013), a key focus of a qualitative research design is the ability to help the researcher understand the meanings and perspectives of the subjects and to examine how these perspectives shape their physical, social and cultural context. I used cultural and historical perspectives in this research to unpack ways of engaging with practitioners in the field. These were sensitively and carefully interpreted with integrity and academic professionalism, as we collectively (with participants) confronted issues impacting the restoration NRM practices. As a formative interventionist researcher, my key role was to provide learning tools for practitioners to engage their challenges and contradictions in their work practice, in order to envision the future of restoration NRM practices in the Blyde landscapes. As part of the research process, I was also prepared to mediate potential conflicts which could arise between different stakeholders but thankfully in this study, such conflicts did not occur. The research was professionally conducted, and as the researcher, I ensured the rigour of the research approaches and methods used. As already noted, this was a formative interventionist study, in which the researcher was also part of the process (Mukwambo et al., 2021). Therefore, as a researcher, I had to declare my interest and influence on the study (i.e. assumptions, experiences, or relationships with the participants) and these were captured independently of participants' views through an ongoing process of reflexivity in the research journal and regular B2O reports.

3.9.6 Researcher positionality, access and relationship with participants

During the time of this study (Phase I especially) I was working as a junior researcher at AWARD, and one of my key roles was to explore learning tools for supporting stakeholders in implementing sustainable NRM practices. This included providing support in the form of conceptual ideas, technical skills, and operational knowledge that could enhance the capacity of our partner stakeholders in the broader Olifants River Basin. As a core team that had been

working in the Blyde catchment since 2014, I developed strong relationships with NRM practitioners who were involved in the restoration of IAP control. These existing relationships with participants played a significant role in the process of negotiating access for my research study. I was involved in the scoping phase of the RESILIM-O programme, in which I was tasked to lead the development of contextual profiling of NRM programmes in the Olifants catchment⁴. Through this process, I engaged regularly with the NRMP practitioners. These pre-existing relationships and engagements made it easy to gain access and consent from participants as they were already familiar with my work ethic as the researcher.

However, these pre-existing relationships have potential implications for the quality and validity of the research, as they may have influenced participants' responses, especially during interviews. To ensure quality, I worked together with the team of formative interventionist researchers from AWARD who provided key observations and reflections, as well as notes and this helped to mediate potential bias that could emanate from having close relationships with participants. During the course of this study, there were different formative interventionist researchers involved, and this was a critical factor in ensuring that the relationships with participants were always professional. To balance the new and old relationships, the core team of myself, Charles Chikunda and Jan Graf continued to lead all engagements with stakeholders in the Blyde catchment and the broader Olifants Basin in relation to restoration NRM practices. The core team was supported by research assistants who included: Shonisani Netshishivhe (2014), Lerato Mogane (2015–2018), Mabatho Maja (2016), Thabang Mogale (2016–2019) and Silindile Mtshali (2017–2019). It is important to note that the formative interventionist team was involved in other projects at AWARD, and they had other relations with stakeholders in the Blyde catchments; these relations were disclosed as we engaged in meetings. An example is that we would refer to other AWARD projects that had relevance, such as water resource management, climate change adaptation and municipal support initiatives; we also cross-referenced to work done by our partner organisations, such as Kruger-2-Canyon who were

⁴ Thifhulufhelwi and Graf (2015). The NRMPs scoping report: Understanding different Natural Resource Management Programmes in the Olifants catchment, 03/2015. Internal report produced for the Association for Water and Rural Development (AWARD) for the USAID Southern Africa RESILIM-O programme (RFA-674-12-000016).

leading the declaration of protected areas to protect biodiversity. This was an important process for building connections and relations among different stakeholders in the NRM sector.

In some of the later engagements associated with Phase II when the AWARD USAID project ended, I became a full-time PhD scholar, but participants continued to engage with me in this changed role as I remained committed to the ongoing process of NRM as negotiated with them, and I established a non-profit organisation as a mediating organisation to continue the work with the BRWG. In 2024, as I was penning the final stages of this study, I was appointed to manage NRM landscapes in Mpumalanga and KwaZulu-Natal for WWF South Africa, which should allow me to continue aspects of this work, but in this new role.

In some ways, the continuities of relationships established by formative interventionist researchers are vital over longer periods to fully advance the nature of third into fourth generation CHAT, and I was privileged, throughout the different roles I have occupied (see introductory notes on my positionality and changing roles in the study), to be able to maintain this ongoing role and relationship with stakeholders in the catchment. It is this continuity of relationality and focus that also allowed me to traverse the ‘morphing’ of the study from third generation to fourth generation CHAT, a process which remains ongoing. Importantly, I have not taken this relationship for granted and have aimed to constantly and carefully work *with* stakeholders in the catchment to co-engage their object/s of activity, even as this changed focus as described in the shift from Phase I to Phase II of this study. In Southern Africa the works of Mukute (2010), Mukute and Lotz-Sisitka (2012), Mukute et al. (2018), Mudokwani and Mukute (2019) and Pesanayi and Lotz-Sisitka (see Lotz-Sisitka et al., 2016, 2022; Lotz-Sisitka & Pesanayi, 2020; Pesanayi, 2019) shows similar ongoing co-engagement *with* activity system groups over time, with CHAT studies evolving to more complex formations / fourth generation CHAT type studies over time (see Pesanayi, 2019, although he did not make full use the language of fourth generation CHAT at the time as it was still evolving). It seems therefore that the longitudinal relational dynamics of such CHAT studies is an important aspect of transformative CHAT research in contexts where the objects of activity associated with sustainability and social justice are by their nature complex, especially perhaps in societies emerging from colonial/apartheid histories/histories of oppression. I reflect on this further in Chapter Nine, in the closing of this study.

Chapter Four: Exploring Challenges and Surfacing Contradictions in the Restoration IAP Control Practice

4.1 Introduction

This chapter explores challenges, disturbances and tensions in the restoration of IAP control activity. This chapter is informed by the learning proposition that disturbances and contradictions are fundamental concepts in expansive learning as they allow us to make meaning, re-conceptualise and learn about the world around us (Engeström, 1987). Therefore, this chapter seeks to address the first research question: *What are the current challenges and contradictions facing organisations involved in restoration IAP control practice in the Blyde landscape?*

The chapter starts by giving a brief description of the four IAP control programmes referred in this study as the implementation activity systems, in order to understand the evolution of restoration IAP control practice in the Blyde catchment (Section 4.2). The chapter then discusses the tensions in the present activity systems to enable sense making of the challenges faced by the restoration IAP control practitioners (Section 4.3). In conclusion, the chapter covers Phase 1 of the analytical framework, employing both inductive and abductive analysis to unearth disturbances and contradictions.

4.2 Description of Restoration IAP Control Programmes As Implementation Activity Systems

All data for this analysis were gathered through document analysis, interviews and BCCLWs in each of the four implementation activity systems. This information was used to inform the contextual understanding of processes, tools, norms and standards used by the implementation activity systems in fulfilling their objective and understanding the governance and institutional arrangements in which the implementation activity systems operated. Much of the data was generated during the scoping phase of the study, informed by historic planning documents acquired through engagements with practitioners from the four implementation activity systems as well as documents from the literature on restoration IAP control practice.

4.2.1 Description of Working for Water activity system

Working for Water (WfW) was the first IAPs control programme in South Africa; it was established in 1995 (Van Wilgen, 1996). The programme's main aim was to remove IAPs in order to improve the functioning of ecosystem services that support diverse livelihoods (Marais et al., 2004). Its primary objective was to restore the degraded ecosystems while creating employment using labour-intensive IAP control approaches as a socioeconomic development strategy for local people (Magadlela, 2004; see Section 2.6.2 in Chapter Two for further elaboration on the history of WfW). The Blyde landscape was one of the first areas targeted by WfW; the programme was implemented there in 1997, while other NRMPs – such as HAT – were initiated in the early 2000s.

At the time of this study, the WfW programme was managing 16 IAP control teams in the Blyde restoration landscapes. Team composition varied from 12 to 20 members and the WfW projects employed an estimated total of over 316 people (WfW Mpumalanga APO, 2016/17). The team members, commonly referred to as beneficiaries, were from the local communities adjacent to the WfW project implementation sites. All WfW beneficiaries go through functional training activities to enable them to carry out their responsibilities which include IAP identification, first aid, health safety and herbicide application training. In some cases, it is reported that some beneficiaries were able to acquire jobs and elevate their career through the skills and capacity they gained from the WfW programme.

All WfW operational activities at the project level are guided by the APO, which is developed annually and must be approved by the provincial and national departments (referred to in this study as the rulemaking activity system). Apart from the APO, all WfW projects are required to have a medium to long-term plan, normally referred to as the Management Unit Clearing Plan (MUCP). The MUCP is a guiding document for the development of APOs at several IAP control projects at a regional management unit level (i.e. it consists of multiple projects with the same geographic area, which can be collectively referred to as the management unit). However, at the time of this research in the Blyde, the MUCPs were still under development, and practitioners mentioned the absence of the MUCP tool as one of the key challenges in their planning and prioritisation processes. There was also a strong belief that these planning tools should be shared across all programmes implementing IAP control projects in the Blyde as well as other key stakeholders who could provide inputs, especially on strategic planning (see

Section 4.3 below). In general, all tools developed at the management or project level (including APO, MUCP) are guided by legislation, regulations and long-term strategic plans which are developed at the national level by DEA (WfW strategic plan 2008–2012; Forsyth et al., 2011; Le Maitre et al., 2012).

The information about the WfW work practices was presented using the second generation CHAT heuristic to produce the WfW Activity System (Figure 4.1) at the start of Phase I of the research. A similar process was followed for all four implementation activity systems (see Figures 4.2, 4.3 and 4.4).

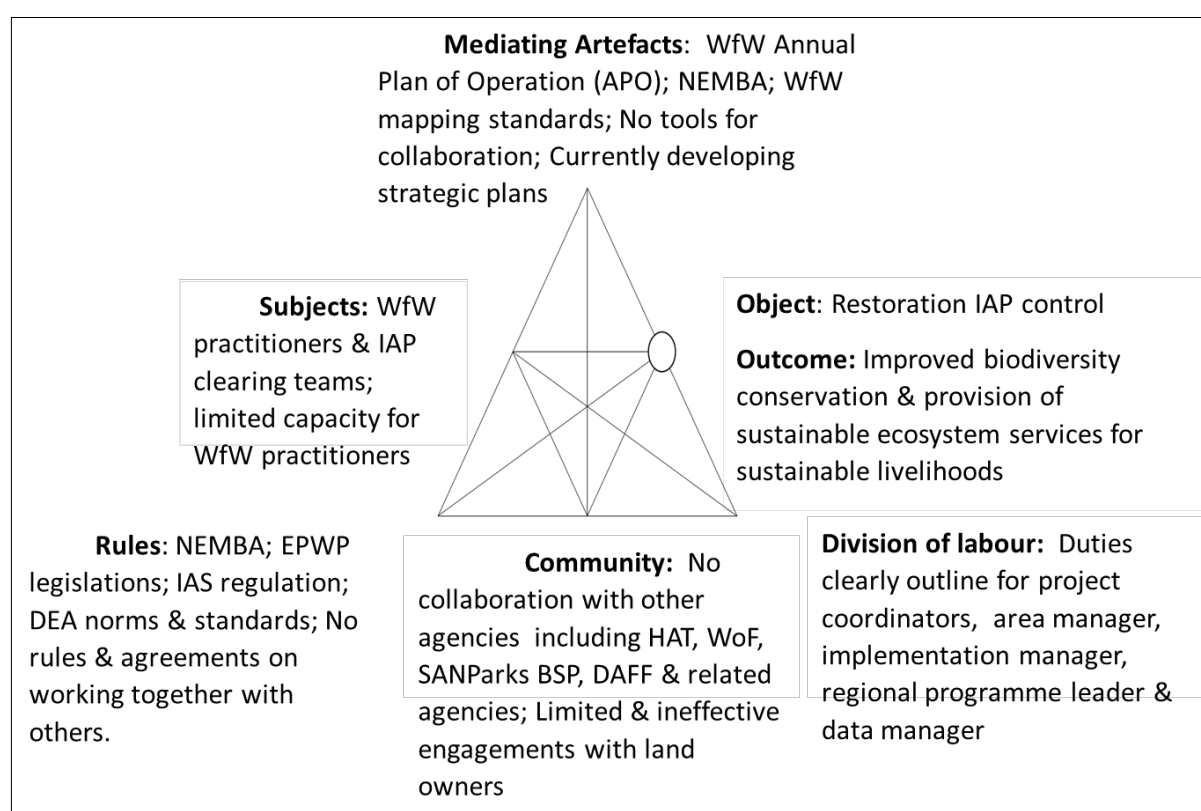


Figure 4.1: Summary of activity system analysis for Working for Water

4.2.2 Description of high-altitude teams' activity systems

High-altitude teams (HAT) is a national programme that works in conjunction with the WfW programme on implementing IAP control projects. They are highly trained teams using twin rope access techniques to remove IAPs from inaccessible areas and steep slopes (DEA, 2017). This is the work that is deemed too dangerous for WfW teams who are less specialised. In the

study site at the time of the Phase I research, HAT was employed by a private company called Kishugu, under the DEA WoF programme. The HAT programme's goal is to support IAP control operations in high slope areas and to explore the use of fire as a management tool for IAPs (WoF, 2016). One of the HAT practitioners during individual meetings said, "In theory we support WfW ... we prioritise our work based on their support needs, and we also follow catchment-based approaches ... but with a lot of capacity issues, we sometimes end up doing our own planning" (see Section 4.3. below).

Just like many other NRM programmes when this research started, the HAT programme was fully funded by DEA, under the NRM directorate. The HAT operates within the regulations of the EPWP which, as noted in Chapters One and Two, is a national-scale strategy to support poverty alleviation through targeted programmes for unemployed local communities. Contrary to WfW clearing teams, HAT relies heavily on specialised extensive training and high-level fitness, and this means they employ far fewer people than WfW. As such, HAT only had a total of six restoration IAP control teams in the Blyde, employing an estimated total of 70 qualified and well-trained beneficiaries (HAT 2016/17 APO). Unlike WfW, HAT operated within a less bureaucratic system, as their projects were mainly small, and they had flexibility in terms of planning as they were a specialised team.

One of the identified tensions and key differences between WfW and HAT is the model of employment. For example, HAT employed limited numbers, but their beneficiaries were full-time employees who worked every day. By contrast, WfW employed high numbers of workers for work that required less skill and therefore cost less. WfW teams worked on contracts on an ad hoc basis when there was work available under what is referred to as 'the order number'. This was later raised by local communities as a fundamental problem as communities wanted full-time jobs for projects implemented on their land (discussed in Chapters Seven and Eight).

Furthermore, some practitioners argued that the level of bureaucracy in WfW was actually crippling productivity because of long chains of approvals from contractors at the project level, regional level, provincial level and national level before the order number was issued. The turnaround for this could take months and in practical terms, much of the time in a year was spent on these long bureaucratic processes, rather than on actual implementation of restoration IAP clearing.

During individual meetings, a practitioner noted:

Sometimes we wait for months before we get order numbers ... and you can't do any IAP clearing if you don't have the order number ... you know Reuben you have worked in this ... [my additions: yes we really struggled back in the days but that work 10 years ago...] ... well not much has changed ... maybe we need a system that could generate these order numbers for the whole year in advance but unfortunately the current system doesn't work like that ... and sometimes by the time we get the order numbers we find out that out contractors are now going somewhere else because they have been waiting for too long just sitting and not working and this means we have to re-train people ... most of the time we don't even have the budget readily available which means another delay trying to source training for new people. (FDG #2)

Figure 4.2 summarises the HAT activity system using the CHAT second generation heuristic, which was generated from an analysis of historic plans and reports and several meetings with HAT practitioners.

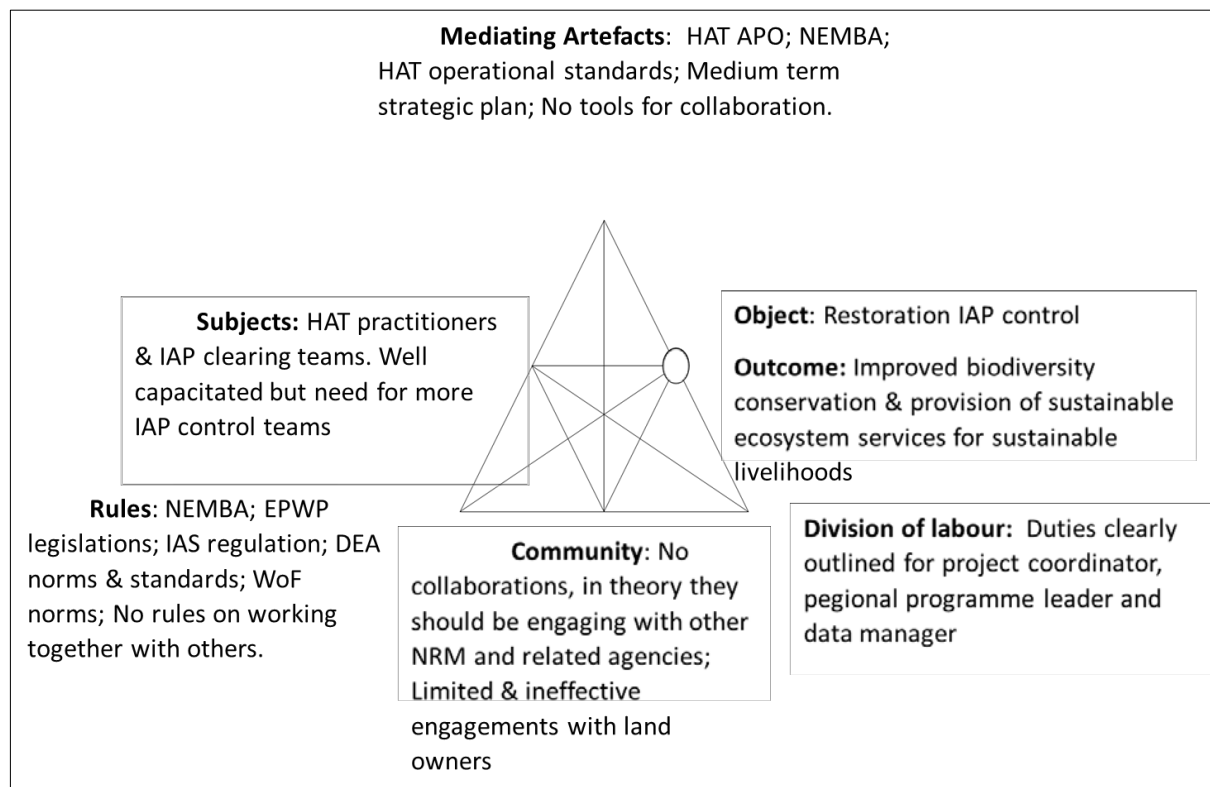


Figure 4.2: Summary of activity system analysis for HATs

4.2.3 Description of SANParks-BSP activity system

At the time of this research, the South African National Parks (SANParks) was implementing a range of BSPs to address different environmental degradation issues. The BSPs are social responsibility programmes funded by the national government through the DEA within the EPWP framework. They are broadly aimed at promoting the conservation of natural and cultural heritage while alleviating poverty in communities surrounding national parks and conservation areas through the provision of jobs, training opportunities and the establishment of small business opportunities (DEA, 2017). One of the specific foci of the BSPs is restoration through IAP control inside and outside national parks, and at the time of the start of this research, eight SANParks-BSP teams were operating in the Blyde landscapes, employing over 120 beneficiaries. SANParks-BSP and WfW teams are trained similarly (semi-skilled), and both programmes are required to follow similar operational planning procedures, including working in less dangerous areas (i.e. flat terrain as opposed to HAT which focuses on steep slopes). The focus of SANParks-BSPs is strongly aligned with working within protected areas or in the buffer zone, while the priorities for both WfW and HAT are nationally driven based on the importance of catchment areas (WfW APO guidelines). This means SANParks-BSP in most cases collaborates with local and provincial protected areas management agencies. In the Blyde landscape, this means working in partnership with the MTPA as a local conservation authority. As such, some of the SANParks-BSP projects were housed within MTPA as part of a collaboration including informing BSP work plans and priorities in alignment with the conservation targets. However, in practice, this was not always the case because of a lack of capacity in terms of resources for both management personnel and IAP clearing teams, which presented a major challenge. Furthermore, as a partner to MTPA, the practitioners from SANParks-BSP indicated a second challenge related to their restoration work being impacted by land claims issues, as some of the nature reserves they work in – including the famous Blyde Canyon Nature Reserve - are subject to land claims by local communities who are represented by Community Property Associations (CPAs). These are the communities that were forcefully removed from the areas before the establishment of nature reserves. They are now legally recognised as the rightful owners of the land, which forces the government to enter into co-management agreements with the communities to ensure joint-management and beneficiation models of local communities.

Start-up engagements with senior SANParks-BSP and MTPA practitioners which sought to understand the history of their operations in relation to restoration IAP control in the Blyde landscapes in this research, similar to HAT and WfW, showed that IAP control was an old practice in the Blyde, dating back to the late 1990s. They pointed out that substantial progress had been made in terms of restoration IAP control in certain areas but that more work still needed to be done for impact at the catchment scale. They highlighted the need to find ways of getting more capacity as the current teams in the field were nowhere near enough, and they pointed to a need to find synergies across different restoration programmes in order to make a substantial impact, as revealed in the quotation from the data below:

Our focus area is just too big for a single ecologist or project manager to be able to make meaningful inputs in everything ... this is an unfortunate situation we have to operate in ... I do meet once in a while with SANParks project managers to give inputs and advise in their work, but actual working together is needed at catchment level for restoration to be effective ... I have been working here for decades; I know places straight from my head but I'm an old man now and I can't be everywhere and also, we hardly have travel budget ... you guys will have to keep coming to see me here in my little office ... hahaha. (FDG #3)

Figure 4.3 below summarises the SANParks-BSP activity system drawing from engagements with practitioners and a review of their historical work.

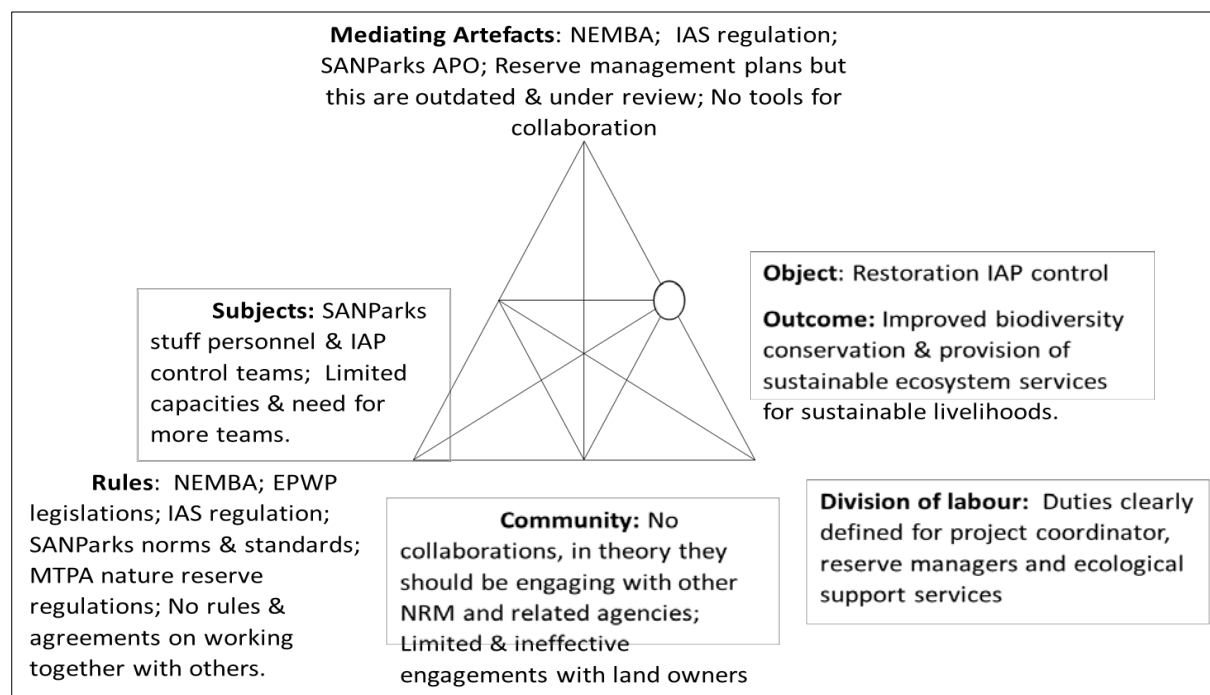


Figure 4.3: Summary of activity system analysis for SANParks-BSP

4.2.4 Description of Department of Agriculture, Forestry and Fisheries - Indigenous Forestry Management (DAFF-IFM) activity system

Guided by the National Forests Act (Act No. 84 of 1998), South Africa developed a set of principles, criteria, indicators and standards to guide and promote sustainable forest management. The last version of the principles, criteria, indicators and standards informing this research was reviewed and revised in 2015/2016. Through the DAFF, the government is one of the largest current landowners and management custodians in the Blyde landscapes. At the time of the start of this research, the land managed by DAFF included both Indigenous and commercial forestry areas in the Lowveld plantations. Furthermore, at that time, the Lowveld plantations, including the Mariepskop Forestry Nature Reserve, were under land claims by the four CPAs who represented local communities who were originally the landowners and forcefully removed from the area before the establishment of forestry operations and declaration of the Mariepskop Forestry Nature Reserve.

Initial engagements for this research focused on understanding the DAFF-IFM role in sustainable forest management as the managing authority of Mariepskop Forest Reserve, which is one of the most critical biodiversity conservation areas in the Blyde landscape. The DAFF-IFM is mandated to ensure an enabling framework for the sustainable management of woodlands and Indigenous forests, through the development of rehabilitation programmes, conservation planning and compliance with the national biodiversity legislative framework (DAFF, 2015). One of the key functions under sustainable forest management is the implementation of restoration IAP control programmes. DAFF-IFM has historically implemented a range of restoration IAP projects but at the time of this research, they were not directly implementing any restoration activities owing to the lack of resource capacity. However, DAFF-IFM was providing other forms of support to a total of eight IAP control teams operating in their areas, this included six WfW and two HAT teams. The support included maintaining road networks which enabled access, providing accommodation for clearing teams and related support services including using their satellite offices.

As one of the largest land managers in the Blyde restoration landscapes, DAFF-IFM plays a critical role in supporting the institutional and governance processes to enable effective restoration IAP control activities in the state nature reserves under their management. This includes logistical support in terms of fixing management roads, providing institutional and

governance support and providing historic management data which is critical in informing both the current restoration operations and future planning.

During the engagement with DAFF-IFM, the senior practitioners not only provided historic information on past restoration activities, but they also shared critical documents of past restoration efforts, including the rehabilitation plans for incorporating DAFF state forestry as part of the proposed Blyde National Park (see Section 5.4 in Chapter Five on the collapse of the Blyde National Park proposal).

One of the main tensions affecting the DAFF-IFM activity system at the start of this research was the expectation that they should continue to carry out the mandated sustainable forest management even though their budgets and resources had been systematically reduced by the national government over the last two decades. This left DAFF-IFM with a few ageing staff and no resources for implementing any form of restoration activities. As highlighted above, in the initial engagements of this study, the focus was only on aspects related to sections of indigenous forest management (IFM) and we initially did not engage with commercial plantation management, referred to here as DAFF forestry plantation. However, this changed as restoration practitioners argued that forestry plantations were the main drivers of degradation through IAP invasion and as the complexity of land claim resolution became more visible, which called for transitional institutional arrangements and governance (see Chapter Seven). Drawing on the engagements with practitioners and historical analysis, I have summarised the DAFF-IFM activity system analysis in Figure 4.4 below.

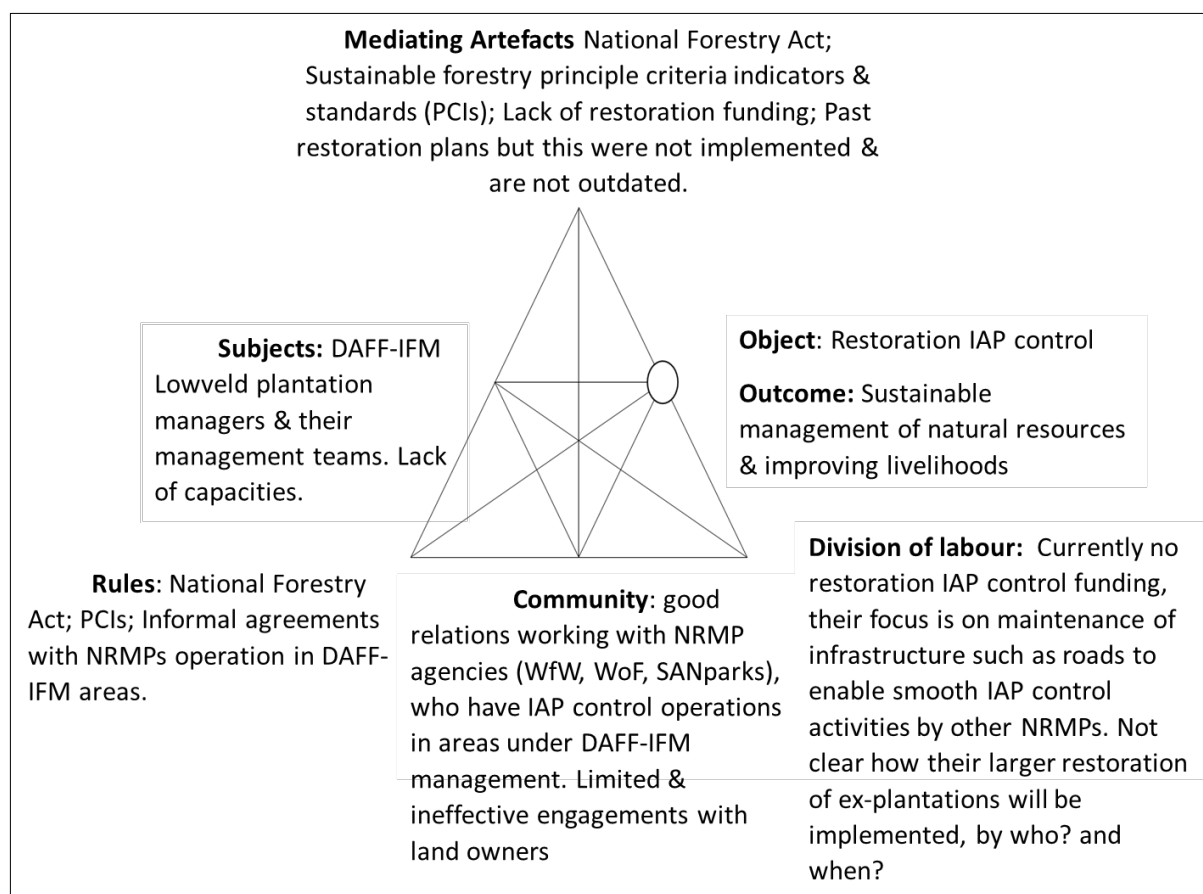


Figure 4.4: Summary of activity system analysis for DAFF-IFM activity system

4.3 Historicity of Restoration IAP Control Object in the Blyde Landscape

4.3.1 Connections between restoration IAP control activity and forestry

Implementation of restoration IAP control programmes has a long history in the Blyde landscapes, dating back to the early 1990s. The origin and conceptualisation of restoration IAP control practice were mainly in response to the growing impacts of commercial forestry on water resources and highly endemic biodiversity. All the catchments here referred to as the Blyde landscapes – namely the upper Blyde, Klaserie, Sand, and Sabie (see Chapter Two) – have a history of commercial forestry, which produced a source of largely invasive commercial alien plant species such as gums and pines, and these are by far the most dominant IAPs in the area (Forsyth et al., 2011; WfW Mpumalanga APO, 2016/17). Given the commercial production focus of the sector, introduced plantation genera, genetic breeding aims for fast growth rates, and the introduced species such as pine, eucalyptus and acacia currently

outperform the Indigenous species for the production of wood products required by the market. While the use of silvicultural practices applied in commercial plantations (e.g. pruning and thinning) could increase growth rates, the increased growth rates will in turn lead to increased water resource impacts (Gush et al., 2011).

4.3.2 Impacts of forestry on water resources and biodiversity

The impacts of commercial forestry leading to a serious reduction in biodiversity and water resources are now well understood (Le Maitre et al., 2012; Pott, 1997). However, the management of sustainable forestry is still not adequately understood and the lack of capacity for compliance enforcement means there is substantial unsustainable forestry management, a situation which characterises the Lowveld and Blyde landscape. South Africa has a long history of plantation forestry, with the early colonial governments encouraging the establishment of plantations to supply wood for local uses from the 19th century onwards. However, even in the early stages, the establishment of plantations led to conflicts with downstream water users (mainly farmers). This conflict became a high-level political issue as early as the 1930s. Efforts to address the conflict resulted in the establishment of an intensive forest hydrological research programme, the results of which were incorporated into management policies between the 1970s and early 1990s. This research programme produced unequivocal evidence that the fast-growing plantations had a negative effect on total and dry season streamflow. The results of the research programme were incorporated into policy that regulated the extent and location of the plantations, based on their estimated effects on regional water resources. The post-apartheid National Water Act (1998) now incorporates these restrictions by classifying commercial forestry as a streamflow reduction activity, and plantations are therefore subject to licensing and water-use fees (Scott & Gush, 2017). Water is acknowledged to be a key constraint to economic growth in South Africa and there is considerable pressure for efficient and sustainable use of the limited water resources (Le Maitre et al., 2002).

4.3.3 Commercial forestry and contribution to the economy

South Africa's commercial plantation industry comprises approximately 1.27 million ha of plantations. These plantations are made up of fast-growing pine, eucalyptus and acacia species, with an annual sustainable production of timber estimated at 20 million tonnes. The commercial plantations industry is an important part of the South African economy, with an estimated US\$1.7bn earned (DAFF, 2011). The industry as a whole (including processing)

employs an estimated 170 000 people of whom 66 000 are involved in forestry operations (Scott & Gush, 2017). Although forestry will not be able to take households completely out of poverty, it contributes substantially to household income. This was one of the contradictions in the decommissioning of Lowveld plantations to establish the Blyde National Park in the early 2000s; key stakeholders pointed out the important economic contribution of forestry in terms of employment in the poverty-stricken communities of Bushbuckridge (see Chapter Seven).

4.3.4 Need for sustainable forestry management in the Blyde landscape

The commercial plantation industry is widely recognised as one of the country's major sources of alien infestation (Mondlane et al., 2002). A large proportion of the area invaded by woody alien plants in South Africa is occupied by species used in commercial forestry, in particular *Pinus* and *Acacia* species (Moore, 2005). In the Sabie-Sand catchment, the riverine invasions are dominated by non-Indigenous *Acacia* and *Eucalyptus* species. About 23% of the Sabie-Sand catchments have been invaded to some degree (Kruger, 2012). Forestry plantations are found in some of the higher rainfall areas. The decrease in runoff and streamflow in many sub-catchments including the upper Blyde, Klaserie, Sand and Sabie can be attributed to the impacts of forestry, especially the lack of sustainable forestry management practices. The large-scale commercial forestry operations in the Olifants to Sabie catchments have led to extensive and long-lasting disturbances of the natural ecosystems in particular in areas such as the mountain grassland of the Drakensberg escarpment. A survey conducted in the Graskop area on sites within pine plantations along the Treur River bordering the Blyde River Nature Reserve illustrated that restoration of plant species biodiversity through natural succession, on cleared plantation sites, required periods longer than seven years and that the regeneration of a great many of the Indigenous forest species remained uncertain (Kruger, 2012). Figure 4.5 below shows the invasion of pines in open natural grasslands, and this is one of the many examples of forestry impacts in the Northern Mpumalanga Drakensberg.



Figure 4.5: Photograph of pine trees invading grassland on Hebron Mountain which fall within the Blyde landscape. These are critical biodiversity and strategic water source areas which are now threatened by invasive pines spreading from historic forests.

Source: Photo by Jan Graf

As highlighted above, one of the major challenges in the Blyde landscape is the sustainable management of historical forestry areas, which now requires extensive implementation of restoration IAP programmes. There is fairly good management of private forestry operations as practitioners said in Phase 1 of this research:

Forestry management is a major issue in these catchments. The private commercial forestry has its own issues but there is good management practices and they are investing in improving their operations. That can also be addressed through compliance enforcement but the Lowveld plantation is a dead-end. There is nothing happening there. When you talk to plantation managers they say there is no budget to do anything. No one knows whether the commercial operations will resume and if so when ... at the moment the Lowveld plantations are just one big source of invasion to other area ... we need to engage national government to find a way forward ... it has been decades now and still we have no idea of what is the future ... we don't even know if are they going to give the area to communities to manage after land claims? But one thing for sure is the management has deteriorated and the invasion is crazy. The rivers and grasslands are just a mess. (FDG #4)

These historic plantations in the Blyde landscape were government-owned and are commonly referred to as the Lowveld plantations. They are still under the management of DAFF. Furthermore, the DAFF Lowveld plantations have ceased all commercial operations, and a large part of the historical forestry area, at the time of this research, was being declared and incorporated into a protected area as part of Blyde River Canyon Nature Reserve. Although the commercial operations have been stopped, the legacy of historical forestry remains the main source of invasion through the spread of commercial alien plants including gums and pines from the old forestry compartments (see Figure 4.5 above). In engagements with some of the managers of the DAFF Lowveld plantations during field excursions in Phase 1 of this research, (see Figure 4.5 above), they highlighted the importance of taking action to halt the continuous invasion. During a Phase 1 interview, one of the practitioners argued :

These plantations were established in the wrong areas ... this is a highly biodiverse area and strategic water source. Many rivers such as Klaserie, Sand and many others originate from these areas. Although some areas were left unplanted for conservation purpose, it still doesn't make sense why they decided to establish plantations back in the 1930s. We don't even have roads that can go to some of these areas, and even the roads we have collapsed because of lack of maintenance. You see those pines on top of Hebron mountains, I don't know how we are going to get up there ... this is mission impossible to remove the trees up in those mountains... there is no road you need some sort of helicopter to get there. (FDG #4)

In terms of plantation management and the uncontrolled spread of IAP tree species which are mainly pines and gums, the practitioner further argued:

We have clearly lost the battle against these gums and pines. Look they are everywhere now, they have invaded all those precious grasslands on top of the escarpment he [was pointing at areas captured in Figure 4.5], and it's the same thing in the rivers and riparian areas. Before the decommissioning process [before 2001], the rate of invasion spread was very limited because we still had some level of management of the plantation areas. But after the 2001 decommissioning process, a decision was taken in cabinet that all plantations in Lowveld areas will be removed and the area will be restored and incorporated into the existing Blyde Canyon Nature Reserve to form the Blyde Canyon National Park. After the cabinet decision our capacity for better management of these plantations was halted as our budgets for commercial was taken away and now we can't do anything. Since then they were just harvesting the existing trees and what happened after that was now regarded as the responsibility of the newly proposed Blyde National Park. Some of the areas were partially restored and Indigenous vegetation regenerated

but in most areas the regrowth of pines and gums was massive. And since then it has been 15 years of regrowth and further spread of invasion from these historical plantation areas. (FDG #4)

In terms of collaborations, the practitioners noted the importance of working with other restoration IAP programmes:

We are trying to do the little we can. We work with Working for Water to support their teams in the area. We know the areas very well and that makes the planning easier. We only have like six teams in the area, and that is like a drop in the ocean when looking at the problem. We are helpless in terms of capacity and we are just watching areas continue to be invaded by pines. We have unique and endemic species in here in Mariepskop and if this invasion continues like it has been for the last 10 years or so, I tell you there will be serious irreversible impacts on biodiversity and water resources from these areas. Now the invasion is so overwhelming that you don't even know where to start but I guess we have to start somewhere. (FDG #4)

The above expressions were corroborated by the review of the historic restoration plans, including the Lowveld Plantation Restoration Plan, Lowveld Plantation Existing Plan, Blyde Canyon Nature Reserve Tourism Master Plan, and MoU for Decommissioning of the Lowveld Plantation. Additional engagements were also conducted with other managers and key stakeholders who had been historically involved in restoration NRM practices in the Blyde landscape, further corroborating the existing situation as described above in Phase 1 of this research.

4.4 Identification of Challenges in the Restoration IAP Control Practice

After a series of engagements with each of the four restoration activity systems (Section 4.2) in Phase 1 of this research, it was evident that there were significant challenges and tensions within and amongst the four activity systems. These were mainly expressed as issues constraining practitioners from implementing effective and efficient restoration IAP control practices as also shown in the quotations above. In order to deepen these, we organised the first collective BCCLW#1 to bring together the four implementation activity systems. The challenges and tensions expressed during individual engagements were used as mirror data to mediate and facilitate the BCCLW #1 workshop. The first BCCLW aimed to collectively identify key challenges and tensions constraining practitioners in restoration IAP control practice.

It's important to note that in an expansive learning process, the emergence of transformative agency and new solutions is driven by contradictions. And according to Engeström (2001) these are not just simple challenges but rather historically accumulating structural tensions within and between activity systems. However, in the initial engagements with practitioners, they initially viewed the contradictions in restoration IAP control activity as simplified challenges (see section 4.4 below), and it was only after series of BCCLWs whereby practitioners started deepening the challenges into deep-seated contradictions discussed from section 4.5.

4.4.1 Collective identification of challenges and tensions among the four implementation activity systems

This section continues to address the first research question, which focused on exploring the current challenges and contradictions facing the implementation of activity systems in their IAP control practice, which were brought into focus in the first collective formative BCCLW convened among the implementation activity systems. The BCCLW #1 was preceded by a series of meetings of individual activity systems as highlighted in Section 4.2 above, and all practitioners said that they were happy to be part of the collective workshops. The first BCCLW workshop was aimed at collectively deepening insight into the restoration context in the Blyde landscapes with the practitioners from the four implementation activity systems, and to further explore the challenges facing practitioners in the IAP control practice. Extract 4.1 below summarises some of the key discussions during the first BCCLW workshop.

Extract 4.1: Brief discussions during the First Boundary Crossing Change Laboratory workshop amongst implementation activity systems (BCCLW #1)

Facilitator: The aim of this work is to support the existing programmes and institutions involved in IAP control. Through this workshop, we aim to collaboratively identify what you practitioners see as the main issues affecting restoration IAP control, also identify opportunities and capacity gaps related to these challenges. We met with most of you individually in the past months and we suggested this collective meeting.

- **Practitioner1:** This is not all stakeholders ... did you start from the upper catchment going down? And other degradation issues such as erosion?
- **Practitioner2:** What legal frameworks have you considered for your work ... how effective is your work is going to be because we are tired of just meeting for the sake of meeting. It will take time to achieve the restoration goal but in whatever we do, we need to see the results.
- **Practitioner3:** There are past restoration plans made during the Blyde National Park proposal back in 2000s which talk to these issue ... it is old plans but still relevant because nothing has actually changed since the Blyde proposal around 2005 ... so let us not focus on starting everything new

but rather work and update existing plans. The only thing that collapsed the old plans was budget issues and lack of coordination.

- **Practitioner4:** I think this is exactly the same process that happened years ago and yet we are still identifying challenges. Let's not waste time we know all the problems with land claims, unmanaged Lowveld forestry, and we don't even want to talk about fighting communities because they think we are the one bringing EPWP to them. How are we going to solve these in this meeting?

Facilitator: We would like to facilitate collective understanding of why activities developed under the past plan as suggested by practitioners have not been taken forward ...

- **Practitioner4:** Yes, things haven't moved forward and yet the restoration operations are continuing. I need to see something more and you need to come in with a new approach ... in terms of IAP control we are covered, I don't think AWARD can help much on these issues as they are organisational issues ... maybe we should change the focus on the thing you can help us with?
- **Practitioner1:** I think AWARD can help us ... they bringing us together and this what we were supposed to be doing but we failed to do it by ourselves ... maybe it's time we bring relevant people who can assist us ... On the issues of IAP control, we have challenges on planning and geographic information systems (GIS) capacity but this is also very much internal.
- **Practitioner 4:** We need to have collaborative APO meetings, to share plans and prioritisations in order to work together.
- **Practitioner 6:** We would appreciate sharing plans and maps with other programmes to ensure we know who is doing what and maybe an integrated plan. Practitioner four noted that he had some planning meetings before with practitioner 3's predecessor, but the work was not carried forward.
- **Practitioner 4:** It seems like people are not fully free to express their internal organisational ... I think will be good for AWARD to start interacting with individual programmes to see what is possible to work with and maybe some of the issues are just beyond us...

Facilitator: As agreed, we will be organising a series of more detailed meetings with practitioners from each restoration programme to get a much better understanding of their work and the scope we can work together on and then we will present this in the next group meeting...

The key guiding question for the first BCCLW was to understand the challenges, constraints or issues affecting restoration IAP control within the Blyde landscapes. As indicated above, this understanding was drawn from the initial small meetings with practitioners from the four implementation activity systems discussed in Section 4.2. above. The envisaged outcome of the first CL workshop was a shared conceptualisation of key challenges constraining the implementation of restoration IAP control.

However, these challenges did not fully emerge from the group as practitioners largely felt their matters were internal organisational challenges as shown in the transcript extract above. Although some challenges relating to planning were expressed, practitioners seemed to be uncomfortable fully exploring their challenges in a group setting. There were also several expressions of discomfort by practitioners about discussing challenges in a group setup, such

as “In terms of IAP control we are covered, I don’t think AWARD can help much on these issues as they are organisational issues ... maybe we should change the focus on things you can help us with?” From such an expression, it was evident that there were underlying mechanisms constraining practitioners from engaging the systemic challenges within their practice. Furthermore, such expressions also indicated that practitioners saw AWARD as an external partner who may not have the capacity to support them in engaging their organisational and management issues which some practitioners felt were internal challenges and beyond the support of AWARD as an external interventionist organisation.

There were also contradictory expressions such as the expressions that we needed to engage more stakeholders from upstream to downstream of the catchments in order to engage in restoration matters but at the same time, these were seen as internal issues. In addition to this, there were strong expressions that we needed to move away from identifying challenges as some practitioners indicated that this had been done in the past and they wanted to see changes. This is an example of paralysis and conflict of motives and a clear example of this was a direct expression: “There are issues on planning and GIS capacity, but this is very much internal”, which indicated a call for a specific kind of support situated within the operational rules of the activity systems. In simple terms, this indicated internal tensions as some practitioners were willing to share their challenges while upholding their organisational systems, which seemed to be the source of such tensions.

As indicated in the data extracts above, as a way forward, it was suggested and agreed by all the participants that AWARD engage the four implementation activity systems individually to get a better understanding of their history, detailed context and gaps. This led to a clear realisation that as interventionist researchers we needed more time with each of the four implementation activity systems to build relations and to understand power dynamics and organisational operational tools. This also presented evidence of the *manifestation of power dynamics within and between different activity systems* as constraining factors for collective action in restoration IAP control practice seemed to limit ease of interaction between them, an issue which required further probing through this phase of the study.

The first BCCLW setting involved a mix of practitioners working at different levels across the four implementation activity systems, including project coordinators, managers and programme leaders in the same BCCLW. Perhaps this was one of the tensions as some

practitioners may have felt uneasy working across traditionally hierarchical levels. Therefore, in reflecting on the first BCCLW, we asked all practitioners for individual reflections as discussed below.

4.4.2 Collective reflections on the first boundary crossing change laboratory workshop

As reflected above, the first BCCLW was essentially cut short from the originally planned full-day workshop. At the end of the workshop, all participants including formative interventionist facilitators were asked to privately and anonymously reflect on the workshop process by writing their insights down. In addition to the anonymous reflections, we also asked a few practitioners to share their reflections with the group. The open group reflections were generally on appreciating the formative interventionist team on the commitment to work with practitioners in addressing restoration IAP control practices, as some practitioners said:

I think this is a good start to a very long process that will help us all to work together ... we are really thankful to AWARD team for finding resources and commitments to try work with us.

I cannot remember the last time we had a meeting like this with everyone in the same room ... I think something like this was during the development of Blyde National Park proposal about 15 years ago ... we need to have more of these meetings and AWARD has really forced us to take the first step.

We used three questions as shown in Table 4.1 below to guide the anonymous reflection process. The small reflection papers were placed in a box and later transcribed by the AWARD formative interventionist team.

Table 4.1: Witten participants' reflections capture from the first BCCLW

1. Were your expectations for the day met?	2. What did you find good about today?	3. What did you find less good about today? (future improvements)
A. Yes, I was expecting to meet my fellow colleagues to discuss how we can work together	There are many parties doing work in the same catchment	Really no coordination of work been done, and catchment management agencies not represented
B. Yes they were met through discussion	The group interaction and new information	None
C. Partially yes,	Good participation and interaction	Nothing, but more stakeholders must be involved, especially forestry and land claimant communities
D. Yes it was a good meeting though we didn't agree much on many things	Planning was good	I know is early stage but more stakeholders should have been invited. And broaden the scope to other degradation issues like erosion and wetland rehabilitation
E. Yes, I am happy to know who is who in this catchment	Given that this was the first stakeholder consultation meeting on the project, everything was fairly good	Nothing less good, it was all well. Hopefully the lunch will be improved in future meetings (not bread) for lunch
F. No, there were more arguments than agreements	More information need to be available on organisations	Working without legal framework, we need to recognise operational rules and implications when sharing internal plans
G. Expectations were met and we need more of these provocative meetings	It was good to see old faces and confirm we are still working towards a common goal	Realise that similar efforts from the past apparently did not made any noteworthy impact to the common cause
H. Yes, my expectation was to establish what can my organisation contribute to this meeting and larger restoration objectives to make it successful	I was informed on the background of the RESILIM-O+B project, which I only had a vague idea about	Despite the minor challenges like power issue and bad weather, everything went fine

I.	Not really because we were expecting you to tell us what you can bring on the table. What can you do to help us?	Clarity on what you are all about, how are you planning to achieve this collaboration thing?	It was cold
J.	Yes, because of the group together and possible cooperation going forward	To meet various stakeholders and understand their needs	No representations from other stakeholder groups in the catchment

Source: BCCLW #1

The reflections (Table 4.1) further echo the sense that participants were a bit reluctant to fully discuss their programmatic and organisational challenges in a group setting and also signify the suggested approach of small group engagement focusing on individual activity systems (Extract 4.1). We also got the impression that practitioners wanted to see tangible contributions of immediate benefit to their work. An example of this was the expressions on the funding need for more IAP clearing teams, rather than long dialogical processes with no guaranteed outcomes. Specifically, the practitioner who said that their expectations were not really met because he/she was “expecting you to tell us what you can bring on the table. What can you do to help us?” (question 1-I) The practitioner further said that there was no clarity on what the process was all about and how these engagements were going to achieve the collaboration (I2). On the third question for future improvements, the reflections projected a positive outcome and the willingness to collaborate further in this process and the need for more stakeholder representation (see expressions by practitioners D3, C3, J3 and G3 from the table above). We also took cognisance of reflections on the recognition of operational frameworks which guide the different implementation programmes and implications when sharing plans across organisational processes (F3). There were also general and practical comments on the suitability of weather and food which was taken into consideration in the next workshops.

Drawing on Extract 4.1, there was also more evidence of the need to reflect on previous restoration efforts and plans. This was further reflected in the need to integrate previous work and plans to ensure continuity and avoid duplication of efforts (G3). This came in the form of constant reference to the previous restoration work done as part of the Blyde National Park proposal and the decommissioning of forestry in the Lowveld plantation. Practitioners who

were involved in these processes felt that this had been a collective action by different institutions towards the development of an integrated plan for the restoration of the Blyde landscape (see Section 4.3 on the historicity of the restoration object). In addition to the notion of revisiting historic plans, many practitioners argued that most of the historical work had now collapsed, although there was still an emphasis on the importance of building on the previous work, as one practitioner argued:

There are past restoration plans made during the Blyde National Park proposal back in 2000s which talk to these issue ... it is old plans but still relevant because nothing has actually changed since the Blyde proposal around 2005 ... so let us not focus on starting everything new but rather work and update existing plans. The only thing that collapsed the old plans was budget issues and lack of coordination. (Extract 4.1)

Furthermore, some participants expressed signs of fatigue related to the repetition of similar processes, and this came in the form of a critique of some of the historic restoration processes. One practitioner argued: “I think this is exactly the same process that happened years ago and yet we are still identifying challenges?” The practitioners’ reflections highlighted the need to expand the restoration object to focus beyond IAP control practice, in order to include other forms of degradation such as erosion and wetland rehabilitation (C3 in Table 4.1) and to broaden the focus area to include other interested and affected catchment stakeholders including commercial forestry (D3). Other key stakeholders recommended to be part of the process included land claimants, traditional authorities, municipalities and broader community representatives within the Blyde landscapes. These reflections were critical mirror data to mediate follow-up engagements with individual implementation activity systems as agreed during the first BCCLW (Section 4.4.3 below).

4.4.3 Historicity and identification of challenges within each of the implementation activity systems

A series of formative engagements were conducted in response to the recommended way forward from the first collective BCCLW to engage the individual activity systems. These engagements consisted largely of focus group meetings with practitioners from the implementation activity systems, with a range of two to six practitioners in each meeting. As such, four focus group meetings were conducted with each of the individual implementation activity systems. In addition to the focus group discussions, there were follow-up engagements

through telephonic interactions, and in some cases a one-on-one meeting and field excursions. The focus group meetings were aimed at facilitating an in-depth understanding of operational, management and governance processes within different elements of the activity systems. This was a critical step in the expansive learning cycle for *questioning and analysis* as we engaged practitioners within their individual activity systems. The individual questioning process was an agreed-upon suggested way forward from the first collective workshop, in which practitioners felt that some of their constraining challenges were ‘internal issues’ within organisational and operational structures. We then developed guiding questions (Table 4.2 below), which were used to mediate the engagements during focus group meetings. These questions were adapted from Engeström (2015), who identified key diagnostic questions for a second generation inquiry within and between elements of the activity system.

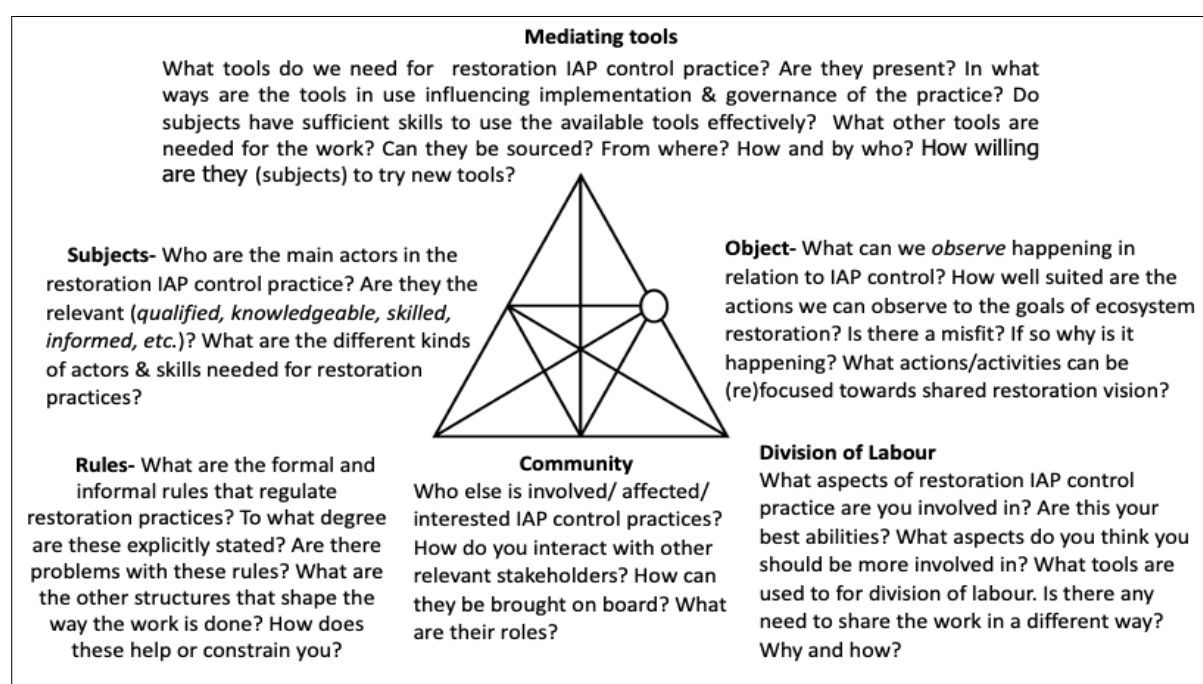


Figure 4.6: A question-oriented second generation CHAT heuristic

Source: Adapted from Engeström (2015)

As a double stimulation tool, the diagnostic questions in Figure 4.6 provided an important mediation tool during the focus group meetings as practitioners used the second generation heuristic as their visual tool for systematic surfacing challenges within all elements of their activity systems. The four restoration activity systems are referred to in Table 4.2 as *Activity Systems 1–4* and the surfaced challenges are presented in relation to their relevance to each element of the activity system.

Table 4.2: Summary of surfaced challenges within and among the Implementation activity systems (i.e. collated from the four focus group meetings and related formative intervention engagements with practitioners)

Activity systems are not named here as the table was developed for mirror data that did not seek to identify specific actors but rather represent key challenges, tensions and suggested actions (see below).

Activity system elements	Activity system 1 challenges	Activity system 2 challenges	Activity system 3 challenges	Activity system 4 challenges
Subject (Who?)	Lack of human resource capacity: the need for additional project coordinators and GIS technicians.	Need for more resources to upscale the project: more clearing teams are required.	Lack of human resource capacity: Only two ecologists in the whole province instead of seven. Also the need for more clearing teams.	Need for more IAP control teams, and active ecological management and strategic planning support.
Object (Why?)	We are more worried about how many people are employed than the quality of IAP control.	Our work is not really understood and well appreciated by others, especially communities and landowners.	Job creation shapes IAP control work: People only see these programmes as job creation, and this always creates serious conflict.	No shared conceptualisation of the object with other stakeholders including communities and landowners. No one really knows who is doing what.
Mediating artefacts/ tools (How?)	- No tools for communication (between us and other NRMP agencies) - Lack of long-term management plans/ strategy.	- Lack of long-term management plans/ strategy. - No tools for communication and collaboration; APO stakeholder meeting not happening. - The data management system is also not user-friendly for sharing information with others.	- Lack of tools to access inaccessible areas; much of the catchment area is too rugged and impossible to work. - No supporting tools to collaborate with other partners that have expertise to help us. - No clarity on ownership and tenure, and this constrains the way the IAP work is done. - No Integrated Management Plan.	- Lack of planning and operational tools: we need support from those who have expertise but it's impossible because we don't really work together. - Lack of clarity on landownership and tenure and this is influencing the way the restoration work is done.

Community (Who else are involved?)	- Lack of information sharing between us and other programmes (when and how they should be involved is not clear and it's not happening). - Lack of collective action among NRMPs.	Lack of involvement of landowners (incl. commercial forestry, land claimants, and communities who live in these areas), and these result in conflicts of motives.	- Lack of information sharing on who is working where. - Lack of collective action that could lead to the development of long-term collaborative action.	- Lack of information sharing which hamper both the planning and implementation of IAP control activities. - Tensions on landownership and use. Slow land reform process resulting in land-tenure conflicts.
Division of Labour (Who does what?)	We know we need to work collaboratively with others, but there is not enough capacity to do everything; project coordinators feel overwhelmed and they have to compromise some of their duties.	- We need an integrated plan that will spell this out clearly. I.e. it is not clear when and how other NRMPs should be engaged. - We are operating in silos, no one knows who is doing what.	Who does what is not clearly defined, and this is why we have a lot of inappropriate and overlapping functions. I.e. managers spend most of their time dealing with political issues because there is no collaborative catchment vision for all necessary stakeholders.	With the changing mandates, we don't even know our roles anymore. Understanding landownership and management responsibilities is very critical in decision making for both governance and operational processes required for effective IAP control.
Rules (What regulates this?)	- No rules on integration with other NRMPs, and that's key in IAP control as a catchment scale - Need to enforce compliance legislations especially in commercial forestry.	Alone we can't make a difference, and we need regulations to ensure collaboration. A mandate/ decision power is required to enable integration different restoration activities in the Blyde.	- Everyone is governed by their internal department standards. This has to change, and there should be restoration catchment management protocols. - Government bureaucratic burden also constrains collective action.	We are guided by the national legislations and departmental regulations but it is difficult if not impossible to implement these without adequate capacity.

It is important to note that, through the specific activity system enquiry process, there was a complete shift in terms of practitioners' participation and engagement in discussing challenges impacting the implementation of their restoration IAP programmes. In each of the four focus group meetings, there was an average of five participants including project coordinators, area managers, planning and data managers and programme leaders at the provincial level. There was an open discussion on what was considered their 'internal issues', which we could not discuss during the first collective BCCLW. This showed that there were underlying tensions across the implementation of activity systems, and in some cases, practitioners did reflect on non-functional relationships across programmes which prevented working together.

In the facilitation of the four focus group meetings, we explained to participants that this process was part of the individual engagements agreed upon in the first collective BCCLW. We also asked them if we could share the information they provided with the other practitioners, and they were all happy to share the information. As such, the summary of identified challenges (Table 4.3) was used as mirror data in the follow-up collective workshop (see Section 4.4.3. below). During the four focus group meetings, there were strong expressions of 'agentive talk' towards collective action, specifically related to how practitioners see most of their challenges as an outcome of a lack of collective action. Sannino and Engeström (2016) describe agentive talk as expressions through which people commit to doing something. Such agentive talk can emerge at any stage of the expansive learning process, but normally after the questioning and analysis stages, as participants confront the disturbances in the present activity. In this study, agentive talk was triggered by confronting and reflecting on the current challenges as part of the focus group meetings. Extract 4.2 below is an example of practitioners' expressions towards envisioning the potential learning actions for addressing their challenges on silos and uncoordinated IAP control activities.

Extract 4.2: Discussion from the individual change laboratory workshop with implementation activity systems

Facilitator: ... you have indicated the importance of a memorandum of understanding (MoU) to facilitate the collaboration... so without the MoU in place, do you currently plan together with the other NRMPs? Especially the guys from [activity system xx] ... how often do engage with them?

Practitioner 2: No we are hardly meeting to be honest... I have tried to consult them [activity system xx] but they say they are too busy and that was the last time I tried.

Practitioner 1: What practitioner 2 is trying to say is that there is limited communications. We have only attended one stakeholder meeting in years with [activity system xx]. This is very unfortunate because these

programmes are from the same department, and we report to the same national department, just differently and yet we don't work collaboratively. We need to engage more in collaborative planning and implementation... in this way we can make a difference if we are working together.

Practitioner3: I would really like to have a meeting with these guys [referring to other implementation activity systems]. But the guys we work with here at regional level always say they are too busy.

Practitioner1: The biggest problem is once we have acquired the funding, everyone starts doing their own thing. Everyone is worried about their key performance indicators and in doing so we don't realise that our work is affecting others. We need to work together...

Practitioner4: You see if we don't have systems that forces these programmes to work together then it will be seen as an additional thing to do and never a priority. As practitioner2 says, if you try asking for meetings or even sharing of data, then people say they are busy or they just don't respond to your request because that is not their KPI [key performance indicators]...

In the above discussion in Extract 4.2, we, as the facilitators, were probing practitioners' reflections on the need for an MoU or formalised processes that enable working together across implementation partners. We can see here that practitioners are already envisioning tools that allow them to address their challenges. This is what is referred to as second stimuli tools for the mediation of learning processes (see Chapter Five, on double stimulation and transformative agency). Furthermore, the facilitators wanted to fully understand the generative motives behind the lack of coordination amongst the implementation programmes. Practitioners reflected on the lack of systemic understanding that working together across implementation programmes is fundamental for impact restoration work at the catchment scale. This was evident as practitioner 1 said: "I have tried to consult them, but they say they are too busy", while practitioner2 further added: "... once we have acquired the funding, everyone starts doing their own thing. Everyone is worried about their key performance indicators and in doing so we don't realise that our work is affecting others".

From the above extract, we could sense an expression of resentment from practitioner2, who seemed to have a conflict of motives. This came from his previous attempts to engage other implementation programmes without success. Although he was still willing to try, he kept emphasising the fact that they always told him they were too busy for extra activities. His agency was paralysed, and now he was faced with conflicting motives on whether to try again or to give up. However, practitioner 1 argued for the importance of working together. He also pointed out that a lack of communication and silo operations are key challenges resulting in a lack of collaboration amongst partners implementing IAP control programmes in the Blyde catchment. Furthermore, there was an assertive agentive expression by practitioner 2: "... we

need to engage more in collaborative planning and implementation.... We need to work together”. This was critical in securing commitments for practitioners to further engage in the follow-up collective CL workshop on building a shared conceptualisation of key challenges in the Blyde landscape.

As part of the reflections and planning of the second collective BCCLW, we (the AWARD formative interventionist team) asked practitioners from the four implementation activity systems if we could share the outcomes of focus group meetings to which the general response was affirmative. Some practitioners did, however, feel that we should present the information neutrally to ensure that other practitioners did not feel blamed or attacked on matters related to their programmes or organisation. As such, the details discussed such as the expressions captured in Extract 4.2. above were not presented in the second BCCLW. This is what prompted the formative interventionist team to develop a summary of challenges presented in Table 4.3 above and this was used as the mirror data in the next collective workshop

4.4.4 Co-defining shared challenges among the implementation activity systems

After a series of focus group meetings with the implementation activity systems, we (the formative interventionist team) then facilitated the second collective BCCLW (BCCLW #2). The second BCCLW aimed to build a collective and shared understanding of challenges and issues that were identified during the focus group meetings. In facilitating the second BCCLW#2, we presented the summary of challenges in Table 4.3 as mirror data to the group of practitioners representing the four implementation activity systems. We further asked practitioners for their confirmation of whether the summary was a true representation of the focus group meetings, and to provide additions of key challenges that might have not been captured or represented adequately. Although the focus group meetings were conducted separately, there were common themes and commonalities in the challenges identified across the four activity systems as can be seen in Table 4.3. This also indicates that practitioners from the four implementation activity systems seemed to be facing similar challenges in relation to the shared object of the restoration IAP control practice. Drawing on the mirror data (Table 4.2 above), the formative interventionist team further facilitated the grouping of common themes of challenges across different elements of the implementation activity systems, summarised in Table 4.3 below.

Table 4.3: Summary of agreed challenges among the four implementation activity systems

Summary of key challenges among the four implementation activity systems	
1.	Lack of implementation capacity: the need for more IAP control teams, and technical operational planning support.
2.	Lack of long-term management plans: the need for collective strategic planning at the catchment level.
3.	Lack of communication and collaboration among NRMPs: no leadership in coordination of planning for project implementation on the ground.
4.	Lack of compliance and enforcement of IAPs regulations: the need to work with relevant stakeholders including landowners such as commercial forestry and conservation agencies to ensure prioritisation of restoration in their management plans.
5.	The burden of bureaucracy and lack of adaptive regulations constrains efficiency: lengthy delays in approvals of annual plans of operations which affect effective planning and prioritisation. The stringent EPWP rules constrain adaptive management and the creation of meaningful partnerships and employment opportunities for local communities.
6.	Lack of tools and operational systems for collective learning which is critical for collaboration amongst NRMPs. Need for a mandate from national departments to ensure active collective action on the ground. Need to have integrated plans and a central coordinating structure for all restoration-related activities at the catchment or regional level.
7.	No shared understanding of restoration objectives with the community and landowners. Need to develop functional institutional arrangements that take into account land ownership and land-use issues, as these have an influence on the implementation of NRMP programmes.

Source: BCCLW #2

Table 4.4. above was a key process for consolidating challenges into what was collectively agreed as ‘shared’ key challenges amongst the implementation activity systems. This was a further deepening process, in which practitioners reflected on how their specific IAP control programme was connected to other programmes. Through this process, practitioners started to reframe some of their challenges from an *individual organisation to a collective inter-agency object at the catchment level, reconceptualising the four implementation activity systems as a single central activity system concerned with a shared object.*

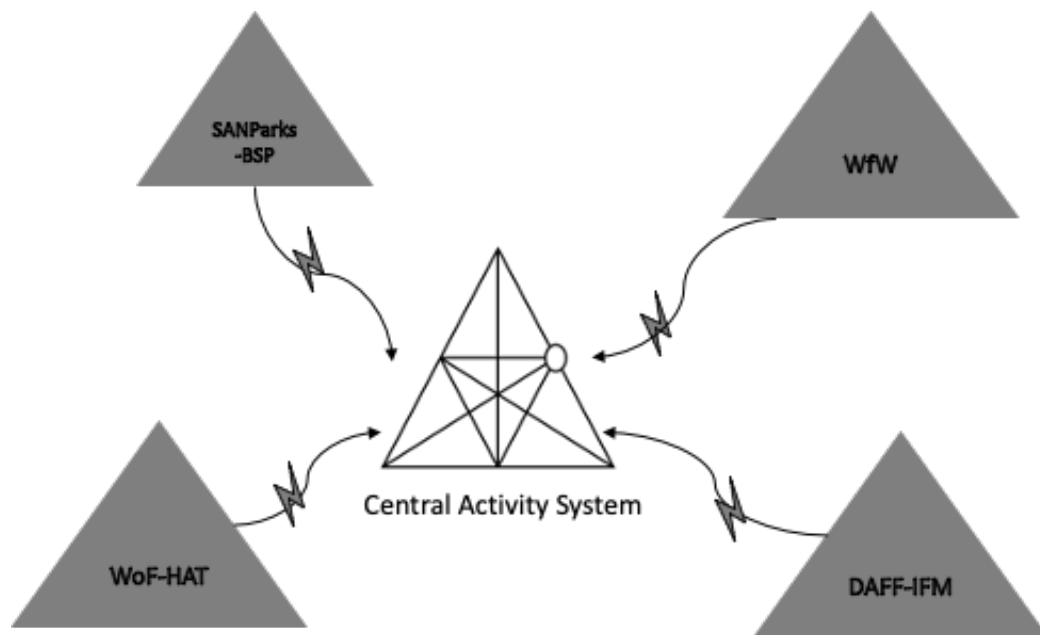


Figure 4.7: Application of third generation CHAT for co-defining shared challenges as matters of concern amongst the four implementation activity systems

There was a consensus among practitioners that the identified shared challenges in Table 4.4 were representative enough of the main issues in the object of restoration IAP control practice. The shared challenges covered different aspects including operational planning, implementation capacity, coordination, governance and institutional arrangements. However, practitioners felt that these were high-level challenges and that it would be very difficult to try to address all of them at the same time. As such, practitioners proposed the need to prioritise the key priority challenges that required immediate interventions and which were felt to be within their capacity, as reflected in the data extract below from BCCLW #2:

The problem is when you summarise things it gets difficult to solve them ... you in the summary we made those are not just one issues ... and we can't just solve it once off ... I don't think we will be able to even try address some of the issues there like the operational regulations stuff and the bureaucracy because we know EPWP is not going anywhere.

I agree we have to choose what we can do ... we can't do everything, and some things are not our responsibility.

Through continuous discussions of the urgency and relevance of the shared challenges, it was collectively agreed in the BCCLW #2 that issues relating to lack of internal capacity and funding for implementation of teams and the operational bureaucratic issues were regarded as

the least important to deal with immediately. The initial prioritisation criteria were based on whether the challenges could be addressed by practitioners themselves without requiring interventions from the higher-level national departments (i.e. rulemaking activity systems).

However, there was collective agreement among practitioners that for effective restoration IAP control practice at the catchment level, there is a need for collective action amongst the implementation partners and that the rulemaking activity systems must be engaged as they were responsible for developing operational rules. Practitioner1 said: “We need high-level agreements between all the departments and land users in order to have commitments on trying to address these issues.” In response, Practitioner2 said: “Maybe we should rather get the directors from national to attend the next meetings?”. This was further supported by all practitioners, with Practitioner3 also adding: “Yes we need national departments to be involved here, but we still need to decide what is the most important issues we want to deal with ...”. In addition to the agreement to involve national departments, it was also suggested that local land claimant communities must also be engaged as key partners in IAP restoration programmes. This was initially expressed by Practitioner4:

We also need communities here because land claim is a big problem in areas our guys are working ... communities have chased away some our team in the Sand catchment ... they say they are tired of EPWP jobs ... but we are not EPWP and we can't do anything about that.

Out of the prioritisation process, three high-priority challenges impacting the restoration IAP control practice within the practitioners' implementation level were identified during the second BCCLW. These included:

- Lack of long-term management plans, and the need for an integrated long-term restoration strategy at the catchment level.
- Need to strengthen coordination and alignment of NRMPs to allow for collective action.
- No shared understanding of restoration objectives with community and landowners. Need to develop functional institutional arrangements that take into account landownership and land-use issues, as this has a bearing on the implementation of NRMPs programmes.

These three challenges were collectively agreed and informed by practitioners' expressions:

We are operating in silos ... a long-term restoration strategy to guide collective action is the most key requirement.

Our operation rules don't really allow for integration between programmes, everyone is reporting individually to national.

We don't really know where and how other programmes are doing, but we are working in the same catchment.

There is a need for a restoration coordinator, to coordinate these processes and to ensure that all the sub-plans feed into the larger restoration strategy.

As is evident in these excerpts, not only were shared challenges further deepened, but potential mechanisms for addressing them were also explored. These different expressions of transformative agency were a key outcome of the second BCCLW in which practitioners started envisioning how to address the shared challenges. This is discussed in detail as 'expansive learning pathways' in Chapter Six. At this stage of the study, practitioners had identified challenges in the restoration IAP control practice both individually within each activity system and as shared challenges across implementation activity systems. They further prioritised the top challenges which were constraining their agency for effective implementation of projects. In the section below, I further analyse these challenges and deepen them into contradictions that have emerged over time as the restoration IAP control object evolved and explore how these contradictions impact different elements of the activity systems. The surfacing and analysis of contradictions reflect on the focal data from the first and second collective BCCLWs and the focus groups and individual meetings with the four implementation activity systems.

4.5 Surfacing of Contradictions Within and Among Implementation Activity Systems

In this section, I surface and analyse contradictions across the four implementation activity systems. This section answers the second part of the first research question: *What are the current challenges and contradictions facing organisations involved in restoration IAP control practice in the Blyde catchment?*

As noted above in Sections 4.4.3 and 4.4.4, practitioners from the four implementation activity systems identified what they perceived as key challenges that constrained their agency in implementing effective restoration IAP control. At this stage of the research, some practitioners were already eager to move into envisioning learning pathways to address these challenges as one practitioner expressed in the first collective workshop (Extract 4.1):

I think this is exactly the same process that happened years ago and yet we are still identifying challenges? Let's not waste time we know all the problems ... How are we going to solve these in this meeting?

In an expansive learning process, the emergence of transformative agency and new solutions is driven by contradictions. These are not just simple challenges but rather historically accumulating structural tensions within and between activity systems (Engeström, 2001). As such, this section aims to deepen the identified challenges into different types of contradictions in order to explore the possible learning pathways to navigate and address the contradictions.

Engeström and Sannino (2011) note that contradictions manifest as actors engage with the activity and cannot easily be identified from talk. Therefore, we must approach contradictions through manifestations in the discourse (Bonneau, 2013) as they are historically accumulating structural tensions (Engeström, 2001). Engeström and Sannino (2011) identify four types of discursive manifestations of contradictions, namely *dilemmas*, *conflicts*, *critical conflicts* and *double binds* (p. 373). Bal et al., (2019) and Cakir et al (2022) discussed *condemnation* as the fifth discursive manifestation. Condemnations manifest as severe or strong expressions of powerlessness, exaggerated emotions and metaphors of fear and anger, and rejection of the status quo (Cakir et al., 2022). *Inconsistencies* are another form of discursive manifestation as proposed by Jalasi (2018), and “it refers to self-contradictory approaches that occur when an approach perceived to facilitate change in two specific behaviours fails to influence one behaviour” (p. 243).

In the surfacing of contradictions in this study, I applied the discursive manifestations of the contradiction's framework within the context of sub-triangle activity analysis (see Table 4.5). The aim was to situate contradictions within different elements of the central activity system. The central restoration activity systems were defined as the *conceptual shared space among the four implementation activity systems* centring on the partially shared object, depicted in Figure 4.7 above. This later became a learning network (see Chapter Eight) but at this stage of

the research, it was represented by common challenges identified by practitioners from the four implementation activity systems. The approach of exploring the discursive manifestation of contradictions in relation to elements of activity systems helped me look for contradictions beyond mere expressions but as systemic tensions within the restoration IAP control practices. The outcome of this analysis was to trace evidence of collective agency through the types of discursive manifestation. Engeström and Sannino (2011) summarise the four discursive manifestations of contradictions and their linguistic cues as presented below in Table 4.4.

Table 4.4: Key characteristics of the four kinds of discursive manifestations of contradictions

Manifestation	Features	Linguistic cues
Double bind	Facing pressing and equally unacceptable alternatives in an activity system <i>Resolution: practical transformation (going beyond words)</i>	“we”, “us”, “we must”, “we have to” pressing rhetorical questions, expressions of helplessness; “let us do that”, “we will make it”
Critical conflict	Facing contradictory motives in social interaction, feeling violated or guilty <i>Resolution: finding new personal sense and negotiating a new meaning</i>	Personal, emotional, moral accounts narrative structure, vivid metaphors “I now realise that [...]”
Conflict	Arguing, criticising <i>Resolution: finding a compromise, submitting to authority or majority</i>	“no”, “I disagree”, “this is not true” “yes”, “this I can accept”
Dilemma	Expression or exchange of incompatible evaluations <i>Resolution: denial, reformulation</i>	“on the one hand [...] on the other hand”; “yes, but” “I didn’t mean that”, “I actually meant”

Source: Engeström and Sannino (2011, p. 375)

Judging by the linguistic cues in Table 4.5 above, dilemma, conflict and critical conflict are mainly at the personal individual level, while double bind goes beyond individual to collective. Therefore, the focus of this study was on double bind as a discursive manifestation of

expanding collective agency for transforming the restoration IAP control practice. Throughout the analytic process, there was evidence of other types of discursive manifestation, but these were also in reference to collective action at the activity system level rather than an individual. Therefore, I have also interpreted dilemma, conflict and critical conflict in group settings as practitioners saw themselves as part of the collective group, which I referred to as the central activity system (see Figure 4.7).

Double binds involve a process in which actors are repeatedly facing issues with seemingly no way out and equally unacceptable alternatives in their activity (Engeström & Sannino, 2011). Bonneau (2013) further notes that in the context of work activities, double bind corresponds to situations in which actors are caught in a reflexive loop, where they feel pressured to do something but feel unable to act according to their will. Engeström and Sannino (2011) further elaborate on double bind:

In discourse, double binds are typically expressed first by means of rhetorical questions indicating a cul-de-sac, a pressing need to do something and, at the same time, a perceived impossibility of action. This impossibility is commonly expressed with the help of desperate rhetorical questions of the type ‘What can we do?’ A double bind is typically a situation which cannot be resolved by an individual alone. Thus, a discursive elaboration of a double bind typically involves an attempt at a transition from the individual ‘I’ to the collective ‘we’, such as ‘we must’, ‘we have to,’ loaded with a sense of urgency. The resolution of a double bind requires practical transformative and collective action that goes beyond words but is often accompanied with expressions such as ‘let us do that’, ‘we will make it.’ (p. 374)

Therefore, the analysis of discursive manifestations of contradictions in this study was conducted at the collective level of the activity. As such, the identified challenges (Sections 4.4.3 and 4.4.4.) provided evidence of tensions and disturbances experienced throughout the development of the restoration IAP control practice in the Blyde landscapes. I used Mwanza’s (2001) sub-triangle analytic approach to guide the analysis of discursive manifestations of contradictions and to contextualise the analysis within different elements of the activity systems. Mwanza (2001) re-organised the activity system developed by Engeström (1987) by formulating sub-triangle activity for analysis across actors, mediation and the object as shown in Table 4.5 below. Using the sub-triangle analysis was the author’s decision to adopt an analytic tool that can also visually demonstrate the linkages and connections across the different elements of the activity system as shown in figure 4.8.

Mwanza (2001, p. 5) argues:

The activity system ... can be very complex because it incorporates the various sub-activities that together make up the main activity system being analysed. ... the Activity Notation was introduced to aid the process of breaking down the situation's activity triangle system into smaller manageable units or sub-activity triangles.

Table 4.5: Activity notation for sub-activity triangles

Actors		Mediator		Objective (Purpose)
Subjects	~	Tools	~	Object
Subjects	~	Rules	~	Object
Subjects	~	Division of Labour	~	Object
Community	~	Tools	~	Object
Community	~	Rules	~	Object
Community	~	Division of Labour	~	Object

Source: Adapted from Mwanza (2001)

Each combination within the activity notation represents a complete sub-activity triangle from the main activity system (Mwanza, 2001, p. 5). The rule of thumb states that each combination within the activity notation shall consist of:

- An '*Actor*' represented by the *Subject* or *Community* component of the triangle model.
- A '*Mediator*' represented by the *Tools*, *Rules* or *Division of Labour* component of the triangle.

- The '*Object*' on which the activity is focused.

Mwanza (2001) further developed six general inquiry questions within each of the sub-activity analyses, arguing that these were “Questions that are specific to a particular combination within the activity notation and also representing a sub-activity triangle are then generated” (p. 6):

- What *Tools* do the *Subjects* use to achieve their *Objective* and how?
- What *Rules* affect the way the *Subjects* achieve the *Objective* and how?
- How does the *Division of Labour* influence the way the *Subjects* satisfy their *Objective*?
- How do the *Tools* in use affect the way the *Community* achieves the *Objective*?
- What *Rules* affect the way the *Community* satisfies their *Objective* and how?
- How does the *Division of Labour* affect the way the *Community* achieves the *Objective*?

To incorporate this notion, I adapted the general inquiry questions within each of the sub-activity triangles into specific guiding questions for discursive manifestations of contradictions in the context of restoration IAP control object as presented below in Figure 4.8.

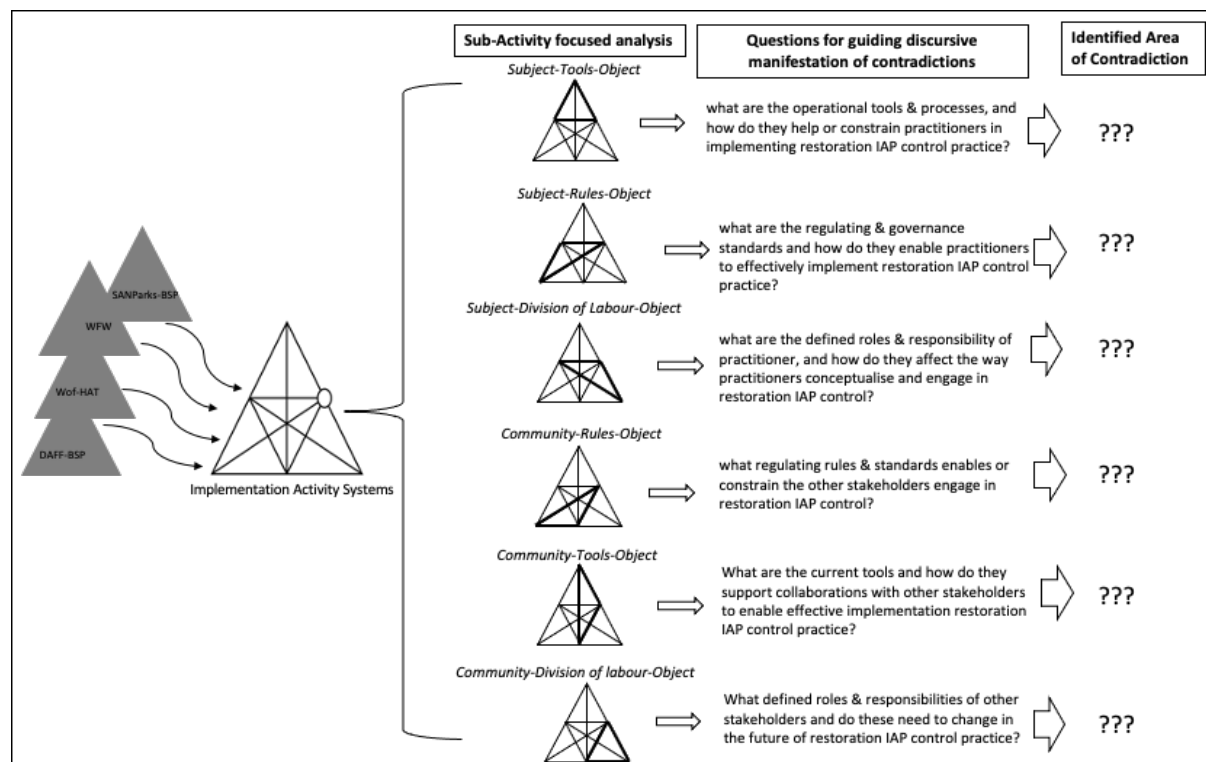


Figure 4.8: Sub-activity triangle inquiry for surfacing contradictions in the restoration IAP control practice

Source: Adapted from Mwanza (2001)

The sections below discuss the manifestations of contradictions guided by the sub-activity triangle analysis. The focal data for this analysis draws on the series of formative intervention engagements discussed in previous sections including the CL workshops, focus group discussions, individual meetings and field excursions with the four implementation activity systems.

4.5.1 Contradictions in subject-tools-object

Sub-activity analytic question: What are the operational tools and processes, and how do they help or constrain practitioners in implementing restoration IAP control practice?

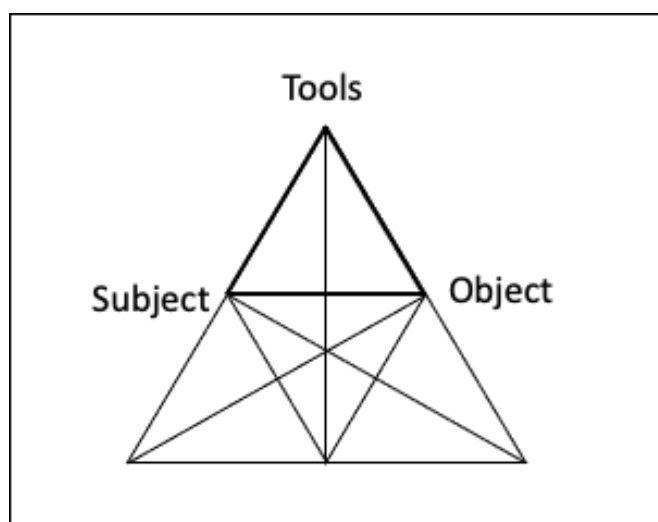


Figure 4.9: Subject-tool-object sub-activity analysis

As highlighted, the four implementation activity systems form part of the NRMPs, a nationwide suite of programmes sometimes referred to as “working for programmes”. All implementation of the range of IAP restoration practices in the NRMPs is guided by tools and operating standards, which are developed by national government implementing agents. At the time of Phase 1 of this research, the National DEA was entrusted with leading the implementation of all NRMP restoration practices including amongst others IAP control practices as discussed in Chapter Two and above in Section 4.2. Drawing on the national planning guidelines (i.e. WfW APO guidelines, 2011) and the prioritisation tools (Forsyth et al., 2011), the implementation activity systems were required to develop their regional and

provincial strategies to facilitate the implementation of projects on the ground. Therefore, a medium to long-term management plan was required to guide their restoration IAP control operations. However, in the case of NRMPs in the Blyde landscapes, it has proven difficult to develop medium and long-term plans, and this was expressed as a major challenge for the four implementation activity systems. To put it in context, only one of the four activity systems had started the development of a medium-term plan, also referred to as the strategic plan. Furthermore, the long-term strategic plans are at the level of regional and catchment level plans and are informed by the national prioritisation process (Forsyth et al., 2011). However, practitioners argued that with the absence of long-term strategic plans, it was difficult for practitioners to work collectively in an integrated approach in order to maximise the impact of restoration.

In addition to siloed operations across NRMPs, practitioners also argued that some of the current projects were being implemented in non-priority areas as practitioners were mainly relying on knowledge of the historical implementation of projects as their only strategic guidance. Some practitioners expressed their frustration with the absence of strategic tools:

The problem is how we are expected to work because our operational standards don't always make sense ... our important planning principle is to always prioritise working on follow-up areas ... which means that once you start clearing an area you must continue working on it to secure the initial investment and this takes years. But the problem in most historical areas is that they don't align with the national priorities which was done around 2012 or so... we have now abandoned NBALs [IAP clearing areas] which were mostly were not high-priority areas ... we are trying to focus more on riverine areas and high catchment areas but this shift is also because of the reduced budget as we don't have the budget we used to get few years ago ... we had no choice but to let go of areas that we have worked on for many years and that is a big loss of millions we have invested. (FGD #1)

The expressions above reveal the manifestation of primary contradictions within the tools (their operational standards) which were producing the inconsistency in the implementation of projects on the ground. On the one hand, the operational standards prescribe the continuity of project implementation in follow-up areas (which is the principle of securing historical investment in restoration) but on the other hand, the operational standards require practitioners to re-align their historical operations according to the new national prioritisation plans. The primary contradiction in tools is producing secondary contradictions between tools and

subjects, as practitioners face paralysis in terms of continuity with historical investment in follow-up areas or shifting to the new priority areas which means abandoning historical areas. However, because of the cutting of budgets, this primary contradiction within tools seems to have been resolved as practitioners had no choice but to reduce their project size and the first call were areas that were no longer aligned to the new national prioritisation. We can observe this as “critical conflicts”, described by Engeström and Sannino (2011) as “situations in which people face inner doubts that paralyse them in front of contradictory motives unsolvable by the subject alone” (p. 374). In this case, the introduction of continuous budget cuts from national rulemaking activity systems became the catalytic instrument (second stimulus) for resolving this contradiction as practitioners felt powerless. However, it is important to note here that the second stimulus instrument in the form of budget cuts created more contradictions as practitioners argued that due to budget cuts, the impact of restoration IAP control practices was no longer significant as they now had fewer teams:

We used to be the biggest implementers in the landscape with our project coordinators managing about 10 teams each but now we have few [repeated by practitioner for emphasis] teams on the ground as we speak ... it is difficult to make a difference with few teams... unless we work closer to each other we will just be the drop in the ocean ... restoration is not like picking rubbish papers in the street because when you clear IAPs they regrow back and very fast ... so if you have small teams in isolation it really doesn't do much ... we need to put teams in collected spaces and we gradually move together or someone must get us billions to put teams all over the catchment at once ... hahaha [practitioner laughing sarcastically]. (FDG #1)

The above is evidence of the manifestation of secondary contradictions between the tools and the object, in which the reduction in funding has unintended implications for the effectiveness of implementing restoration IAP control projects. Furthermore, the operational regulation from the national department also requires practitioners to develop a medium to long-term strategic plan at the regional or provincial level. These are five to 10-year strategic plans to guide the objective of restoration practices and they are implemented through the APO at the project level. Therefore, APO is a practical tool that identifies areas to be cleared annually, including the required budgets. The APO must be approved at the provincial and national levels. Once the APO is approved, practitioners further engage with local communities to bid for the contracts tendering process and the successful bidders will lead the day-to-day supervision of teams in the field (i.e. beneficiaries employed from local communities). Practitioners argue that although these long chains of approval are critical for ensuring sound financial management,

the lengthy operational planning processes are constraining the efficiency of restoration, which then impacts the quality of work.

We have many issues that are not always in our control but the planning and internal bureaucracy is our own doing as a department ... the year-to-year APO planning is not good enough because we don't even get to finish what we have planned. You submit your APO beginning of financial year around April and it gets approved but then you wait for months without getting the order number to get contractors working on the ground. Without the order number you can't do anything and for some reason we can't seem to make that system work. As we are speaking now we don't have teams in the field because we don't have order numbers. By the time to get it, the year is almost over... that is really crippling us. (FDG #1)

One of the practitioners further argued that the medium to long-term plans were critical but these plans must be integrated to ensure effective restoration IAP control.

We need to find a way to work together... we need a collective long-term strategy that forces all the organisations to work on the same plan to ensure synergies ... I mean, IAP control in the Blyde has been going on for over 16 years now but there is minimal progress because everyone is doing their own thing ... no one has enough budget to work by themselves. (FDG #2)

Here we can see the manifestation of secondary contradictions in the tools as the demands for the restoration IAP control object (i.e. the APO as the critical operational planning tool) are now seen as inadequate to address the issues associated with collective action among practitioners from different organisations. We can also see the advancement of secondary to tertiary contradictions, whereby practitioners are now calling out for new tools that enable collective action as the restoration object is now conceptualised as a central practice for catchment management by all stakeholders rather than the historical view of IAP control as a government programme. Engeström (1987) points out that tertiary contradictions exist when a conflict of motive emerges in a central activity between a dominant motive and a culturally more advanced motive. In this case, the dominant motive is the view that restoration IAP control is a nationwide government-led and funded programme, but this has changed as the government has been continually cutting the budget allocation to NRMPs and in some cases, the NRMPs have been unable to fully implement the allocated budgets due to bureaucratic issues and this has led to the decline in government investment over the year. The restoration practice itself is culturally more advanced, even globally as a socio-ecological practice for

restoring and safeguarding natural systems for achieving societal sustainability goals (see Chapter Two).

As practitioners attempted to navigate the contradictions around subject-tools-object, they started conceptualising the role of other activity systems in advancing the restoration IAP control practices. And through this, we could see the manifestation of quaternary contradictions. Engeström (1987) noted that quaternary contradictions emerge between the central activity and its ‘neighbour’ activities with which it is linked. These are additional activity systems that interact with the central activity which is driving the object. In this case, the four implementation activity systems are the central activity systems as they have collectively engaged and identified their shared challenges on how they can advance their shared restoration IAP control object. The national department is already identified as the rulemaking and instrument-producing activity system. At the regional scale, rules, instruments and subject activity systems are identified as discussed below.

During engagements in this phase of the research, practitioners from one of the four implementation activity systems said that they were currently finalising their medium-term strategic plan which was to guide their annual plans for the next five to 10 years. They pointed out the importance of having a strategic plan at the catchment scale but at the same time they felt constrained as their current operational standards only required the planning processes to be bounded within organisations, as shown below:

We are busy finalising our Management Unit Clearing Plan [strategic plan] for the whole programme at regional level in order to forecast what we need to do in the next week years. But the issue is our plans are not coordinated with the other guys, so even when we are done with our plan it will just be our plan only ... but when it's done we will share with you and other related NRMP stakeholders ... we need a formalised process to make sure these plans are integrated ... and landowners must also have their IAP plans as per the legislations. (FDG #2)

There was a strong emphasis on the need to develop tools for supporting coordinated actions. Practitioners already recognised other NRMPs (i.e. other implementation activity systems) as a collective that should be working on a shared object of restoration IAP control. Although there were contradictions within the tools, between tools and objects, which were constraining the collective actions, practitioners were envisioning the future of restoration beyond the government NRMPs. In search of a second stimulus to navigate the identified contradictions,

practitioners were calling for a formalised process that could enable integration amongst NRMPs and also ensure that landowners also developed their IAP control plans. They saw this as both a collective agency process for enabling working together amongst NRMPs and also as a compliance enforcement tool that could ‘force’ all actors to play their roles in restoration IAP control. This was more evident as representatives from landowners also echoed the need to be actively involved in restoration practices. i.e. these are neighbouring activity systems, which have been referred to later in this study as governance activity systems (see Chapter Seven).

As landowners and land-use managers of nature reserves, we need to take responsibilities. IAP management plans are supposed to be developed, not only for us but all other landowners in the catchments. The legislation makes provisions for these plans but in reality, they are not there ... the IAP plans must be integrated into the reserve management plans and there must be compliance directives for landowners who don’t have the plans and that is the responsibility of DEA national. (FDG #3)

This respondent further emphasised the need for more human capital development capacity and for working collaboratively with local communities:

We has started with the development of the reserve management plan ... but the process is slow because we are doing other things as we are under capacitated. If we are to management these protected areas, we need to train more people ... we are engaging with K2C to work with land claimants communities to declare about 16 000 hectares on their land into the Blyde Nature Reserve ... that is a big sacrifice of their land that they could do anything for their communities but they chose to put it in conservation ... what are they getting out of this? Just simple EPWP jobs? We have to do better in working with communities. (FDG #3)

As can be seen from the above, practitioners from the conservation agencies who were mandated managers of the Blyde Nature Reserve were arguing for the need to develop more capacity, especially building partnerships with local communities. This was a callout for response to quaternary contradictions which emerged through tensions between restoration practitioners (central activity system, see Figure 4.7) and local communities (neighbouring activity systems) related to the ethical–political expansion of the object, and leading to reconceptualising of restoration IAP as a common good object in Phase II of this study (see Chapter Seven). The above expressions also signify the importance of collaborations with other

scales of activity at the catchment level to ensure that restoration IAP control is integrated into other NRM practices such as the conservation of protected areas.

Furthermore, during the focus group discussion meeting (FDG #4), practitioners provided strong reflections on historical processes related to the development of restoration IAP control plans. One practitioner argued:

We did our restoration plans 10 years ago under the Blyde National Park proposal, the idea was that local conservation authorities will take over conservation areas after the removal of plantations to begin with long-term restoration initiatives but everything fell apart ... there is no vision on what to do in the Lowveld plantation area and this has resulted in all our budgets being taken away by forestry national and we currently don't have capacity at all to do any impactful management. Also the main concern is slow land reform processes, as we are not clear about the settlement agreement as to whether there will be co-management or claimants will take full control of the area, which means from our department we will no longer be responsible to manage this area ... everything is just up in space as we speak ... you can't have restoration plans without sorting out the land governance issues. (FDG #4)

According to practitioners, the failure to implement the post-plantation restoration plans developed in the early 2000s (see Grossman, 2005) had a major influence on their current restoration vision, as all of their management activities were linked to the establishment of Blyde National Park.

From the above data, it seems that practitioners are historicising the emergence of current contradictions, and they see non-functional governance and institutional arrangements as underlying mechanisms that are producing uncoordinated efforts amongst the key actors including landowners and local communities. There was also an acknowledgement by practitioners of the need to expand the restoration scope beyond just IAP control practice, but this is still challenged by the lack of capacity, as one of the practitioners argued:

There is a need to build capacity and stimulate interests of CPA communities and local organisations to be involved in IAP work. We have our project advisory committee that help us when engaging communities especially hiring local people but we can do more. A bigger project advisory committee will be an ideal structure to engage all relevant parties ... land claimants must have a representation in the project advisory committee, as well as municipalities as these are important institutions representing local communities ... we need to get other landowners as well, but communities are very important. (FDG #1)

Therefore, agentic capacity to fully participate in restoration programmes is viewed as a constraining factor, in which practitioners argued that the current tools did not support the emergence of capacity development from CPA communities for their active involvement in the implementation of restoration IAP control projects. Similarly, the current tools were more focused on operational processes for project management purposes within the boundary of NRMPs organisation and this did not create opportunities for involving other catchment stakeholders.

4.5.2 Contradictions in subject-rules-object

Sub-activity analytic question: What are the regulating and governance standards and how do they enable practitioners to effectively implement restoration IAP control practice?

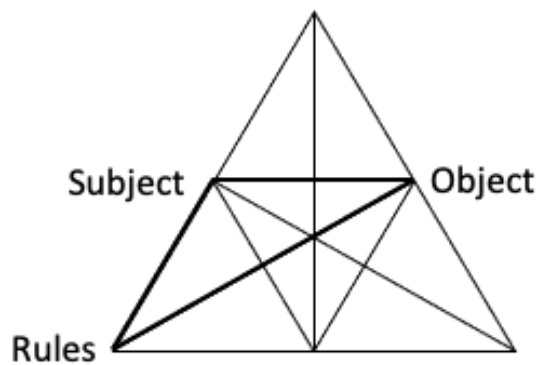


Figure 4.10: Subject-rules-object sub-activity analysis

In this phase of the research, one of the main tools sustaining the existence of the nationwide restoration IAP control and related NRM programmes was the *guaranteed funding from the national government*. The implementation activity systems are allocated annual budgets by the national treasury, and this funding is managed under the regulations of the Department of Public Works through the Expanded Public Works programmes commonly referred to as the EPWP model as explained in Chapter Two. Through the EPWP model, national funding was allocated to implementing agents, including the DEA which at the time of the research was overseeing and coordinating all restoration ‘working for’ programmes nationally. To govern this funding process, a series of EPWP criteria and standards were developed as guiding rules for the implementation of all government-led restoration programmes, and one of the main

criteria was that EPWP should target poverty alleviation by providing temporary jobs to unemployed communities. The short-term job standards were identified as one of the main challenges for effective implementation of restoration IAP practice as they constrained continuity and adaptive management at the project level (Van Wilgen & Wennenburgh, 2016).

Human capital development is another key resource in the successful implementation of restoration IAP control. The national department has been responsible for human resources at different levels including hiring and training of project coordinators, project managers, training coordinators, area managers, provincial programme leaders and GIS technical managers (cf. Chapter Two). All the human resource processes are regulated according to the departmental standards. As shown above, practitioners repeatedly mentioned the gaps and constraints in human capacity, and some even argued for the need to reframe the roles of key personnel such as project managers in order to adapt to the emerging challenges that were being experienced in the field as discussed below.

Despite the capacity constraints, the implementation activity systems were still expected by their rulemaking activity systems (national department and EPWP) to fully achieve the restoration IAP control objectives. However, these programmes are massively understaffed with open vacancies in key positions such as project coordinators and GIS capacity. During the engagements, practitioners expressed their frustrations with the cost-cutting measures introduced by the funders of the programmes. One practitioner argued:

We have serious capacity issues, and due to resource constraints, the recruitments are now frozen and there will be no replacements of any personnel that exit the programmes, and this will mean more work for the current staff which are already under capacitated. (FDG#1)

In addition to this, practitioners also pointed out the misalignments between the NRMPs' mandate on restoration IAP control activities and the capacity development requirements to fulfil such activities as one of the generative mechanisms shaping contradictions in capacity constraints. This contradiction emanates from the rules set by the national government, the rulemaking activity system. Some of the rules questioned by practitioners include the decision to freeze vacancies of personnel who exit the NRMPs, without making alternative arrangements for how the additional functions would be operationalised. The role of practitioners when engaging at the local implementation scale was also raised.

They argued:

We are not complaining but things have not been the easy ... we have been losing staff for various reasons, but no position have been filled in time, and some are never filled at all. Now you have limited number of staff who somehow have to make sure the allocated budget is spent efficiently because if you don't spend the budget then you might not get in the next financial year. If you have too much money not spent, you have to account why, and that budget can be re-allocated to other programme ... the delays in order numbers to get contractors in-field is also a big problem but in the end if you are not able to spend the budget it looks like your fault. (FDG #1)

These contradictions have also been documented in the literature, showing how the NRMPs are heavily affected by the government's bureaucratic administration and governance. For example, Van Wilgen and Wennenburgh (2016) also argued that the NRMPs

...programme's managers have to operate in a bureaucratic and rule-bound environment, which slows progress and removes the ability to be flexible, in an environment that often demands flexibility and adaptive management. (p. 14)

Practitioners further argued the point of being adaptive in their roles, especially in building partnerships and relations at local catchment and regional levels. They argued for the recognition of collaboration as part of KPI in order to allow practitioners to prioritise collaborations with other role players:

The two big KPIs are person days and hectares cleared ... the department had a lot of budget to spend back in the years ... we had a lot of teams to manage ... now it's not just working for water but other stakeholders who are also involved in IAP clearing ... we should be showing leadership to other stakeholders. (FDG #1)

Furthermore, there were also expressions of transformative agency by practitioners (see Chapters Five and Six), in working towards integrated approaches and building collective action amongst the implementation activity systems. The integrated approach, in which key aspects such as strategic planning are done collectively, could be an alternative to support capacity constraints in the implementation activity systems. However, the lack of formal mandates to enforce collaboration was highlighted as the key challenge in achieving an integrated approach.

This was expressed by one practitioner:

Our biggest challenge in achieving the NRM restoration vision in the Blyde catchment is the lack of collective action and support by landowners that could lead to the development of a long-term collaborative strategy and action. And unless there is some sort of mandate or formalised process to facilitate these collaborations amongst and between NRMPs and other agencies, we can't solve the situation. (BCCLW #2)

In addition, there was also strong emphasis on facilitating horizontal learning amongst implementation activity systems, and with other relevant stakeholders on the ground. The importance of vertical learning was also noted, and this is mainly between the implementation activity systems and higher-level activity systems including national departments. One of the practitioners noted during the focus group meetings:

This work requires working together. You as facilitators need negotiations with each and every stakeholder and make commitments. Maybe we should start on higher level, before breaking it down to people commitments at ground level. But some sort of a high-level support or mandate is required. (FDG #2)

Practitioners also expressed their concerns about the current DEA and EPWP operational and monitoring standards. At the time of the Phase 1 research, there was a general acknowledgement by many stakeholders throughout the country that the EPWP model was not sufficient for the effectiveness of NRMPs, including the four Blyde implementation activity systems. As noted above and in Chapter Two, the EPWP is one of the government's short- to medium-term strategies to address unemployment and poverty relief. However, most of the NRMPs were now heavily driven by job creation outcomes with less effort going into effective and efficient restoration practices. Practitioners further argued that the main monitoring indicators required by EPWP were just the number of jobs created and training with little or no interest in monitoring the actual ecological integrity improvement, which is the main objective of the NRMPs:

There is no doubt that the NRMPs are the main source of short-term employment in many parts of the country; however, there must also be a system that helps track and monitor other benefits and impact of these programmes, not just jobs. We need a more reflective learning system which will create space for addressing everyday challenges people are facing at ground level and also track our contributions on ecosystem services. (BCCLW #2)

The biggest challenge is lack of understanding by high level people in what we do and the challenges we face every day, and this is also because the NRMPs monitoring and evaluation framework just focused on hectares cleared and person days. This is too simplistic to tell you anything about the overall programme's objectives and performance. (FDG #2)

Our monitoring and evaluation system is also very narrow, as all we report is numbers of person days and hectares cleared. We just have to believe that our efforts are giving positive results in terms of protecting water resources and things like that. (BCCLW #2)

The effectiveness of the NRMPs has also been heavily criticised nationally by scholars and independent evaluators. The NRMPs were conceptualised in South Africa during the early 1990s, with the dual objectives of catchment-based ecosystem restoration through IAP control, while promoting socioeconomic development (Marais et al., 2004). Other scholars including Van Wilgen et al. (2012) argued that the effectiveness of these restoration IAP control programmes has been questionable over the years.

Whether or not progress has been made in reducing the extent of invasions remains uncertain ... and the ability to address questions regarding the effectiveness of their operations is limited because the programme has not implemented an effective system of monitoring and evaluation. (p. 29)

The above critiques highlight the need for rethinking the operational rules guiding the NRMPs' activities in order to create space for adaptive management in addressing emerging everyday challenges facing NRMP practitioners. Furthermore, the need for an effective monitoring and evaluation system that will allow for reflective learning has also been pointed out by both the implementation activity systems practitioners and Van Wilgen et al. (2012), as one of the key tools required for effective restoration IAP control.

In addition, Van Wilgen and Wennenburgh (2016) further argue that effective planning and prioritisation in the NRMPs is critical and "failure to do so would result in constraints to economic growth" (p. 16), as these programmes are aimed at restoring critical ecosystem services such as water provision, which is already a scarce resource in South Africa. Furthermore, Van Wilgen and Wennenburgh (2016) highlight ongoing political interference in NRMP operations as one of the major challenges affecting their effectiveness, in which politicians prioritise job creation as the most important outcome of the NRMPs, with no consideration of the larger ecosystem restoration focus.

4.5.3 Contradictions in community-tools-object

Sub-activity analytic question: What are the current tools and how do they support collaborations with other stakeholders to enable effective implementation restoration IAP control practice?

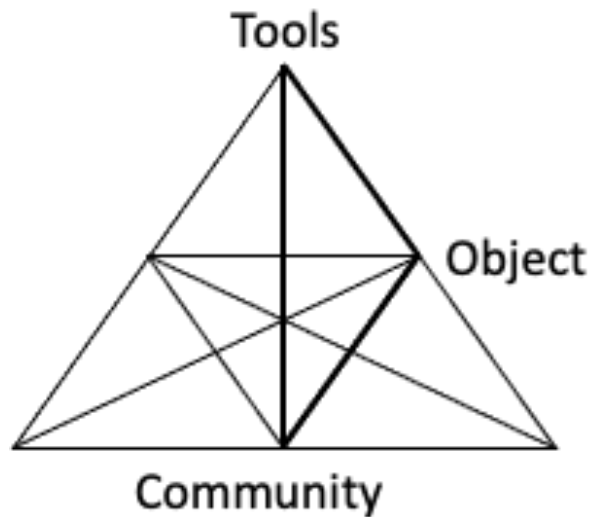


Figure 4.11: Community-tools-object sub-activity analysis

Lack of shared conceptualisation of the restoration objectives with relevant agencies, including landowners was highlighted as one of the key challenges facing the implementation activity systems practitioners in this phase of the study. There were no enabling tools within the NRMP operational frameworks to facilitate the coordination and communications amongst the implementation activity systems and between implementation activity systems and the community. The community includes other relevant agencies with interests in restoration IAP control practices, such as landowners and conservation agencies. The role of the community in restoration IAP control is also not clearly defined. i.e. how and when other NRMPs and related stakeholders should be involved, and what their responsibilities are in supporting the restoration of IAP control activities. The importance of multi-stakeholder engagement was one of the key discussions during the second collaborative change laboratory workshop (second collective implementation activity systems CL), and one of the practitioners argued:

Our biggest challenge in achieving the NRMPs vision in the Blyde catchment is the lack of collective action and support by landowners that could lead to the development of a long-term

collaborative strategy and action, and unless there is some sort of mandate or process to facilitate these collaborations amongst and between NRMPs and other agencies, we can't solve the situation. (BCCLW #2)

He further noted:

Forestry is one of the big stakeholders ... they are one of the largest land users ... and they are a stakeholder we should be talking to and from a legislative point of view in terms of NEMBA regulations, forestry should be responsible of managing the IAPs in their properties, as well as the escapees. (BCCLW #2)

Other practitioners concurred with the need for broader stakeholder engagement and developing tools that could facilitate collaborative restoration IAP control in the Blyde catchment. Another practitioner also pointed out:

Yes, forestry sector must definitely be involved in this process. It is their pines which are escaping into the wild and inaccessible areas But one other thing we must develop is a communication plan for land claimants to make sure we are engaging the right people. The problem is that we are not involved in this process of land restitution as it is facilitated by other people but landownership issues have serious implication to restoration, especially governance related stuff. (BCCLW #2)

This was also endorsed by a practitioner who said that in order to enable this involvement of landowners, "the regional land claims commission must be fully involved, as they are supposed to be facilitating the land reform process but currently they are non-existent" (BCCLW #2).

These views show the need for developing communication and coordination plans as a priority, as these tools were absent. Practitioners also conceptualised the coordination and communication plan as a sub-component of the larger Integrated Restoration Strategy which would be guiding the long-term operational IAP control activities. The governance and institutional arrangements were the other key components of the restoration strategy that needed to be developed. This was seen to focus strongly on building the relational agency between the implementation activity systems and the community, which included land users and landowners, local communities and conservation agencies.

4.5.4 Contradictions in community-rules-object

Sub-activity analytic question: What regulating rules and standards enable or constrain the other stakeholders engaged in restoration IAP control?

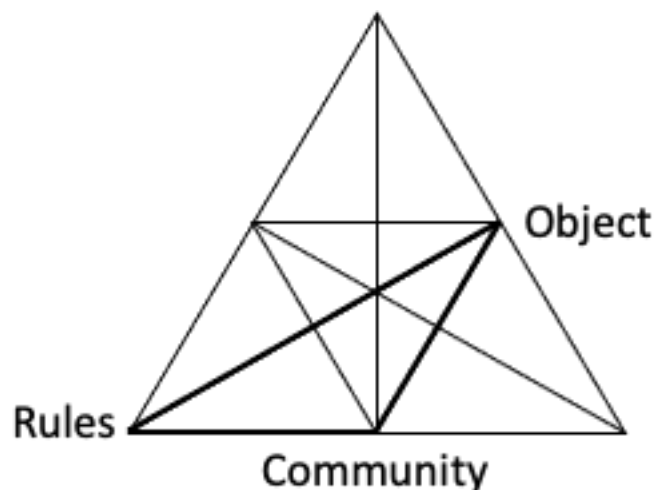


Figure 4.12: Community-rules-object sub-activity analysis

From the series of engagements with the implementation activity systems practitioners through individual and collective CLs, it was constantly expressed that the lack of functional institutional arrangements was one of the key challenges facing the restoration IAP control practice in the Blyde. As indicated above, this was deemed to be the result of the absence of rules, agreements, and protocols to guide the development of relational agency in order to ensure alignment and collaboration between NRMPs and related agencies. Based on the practitioners' expressions, the success of restoration IAP control rested on building collective action and working together, and this required functional governance and institutional arrangements amongst NRMPs, and between NRMPs and other partners, including landowners, communities and conservation agencies. One practitioner argued:

To a certain extent we fail to justify the need for resources we need, due to our failure to engage with all the other stakeholders ... as this is what is required on the ground ... we should have a catchment-wide plan that will include all stakeholders in the area. (BCCLW #2)

This underlined the need for coherent coordination mechanisms through which the restoration IAP control practice could be mainstreamed as a crosscutting issue of concern amongst NRMPs, conservation and forestry and other different land user groups. In the restoration IAP control processes as found in Phase 1 of the study, the majority of the landowners and land users were not involved, and this is what practitioners argued as one of the underlying mechanisms which resulted in many conflicts between the implementation activity systems and different land user groups over the years. Similarly to the above-discussed challenges, practitioners also suggested potential expansive learning pathways for addressing the governance and institutional arrangement-related challenges. As such, there was unanimous agreement that the implementation activity systems needed to take the initiative to engage relevant stakeholders. These engagements were seen to be aimed at both relationship building as well as building custodianship of landowners and consideration for future restoration work under the DEA Land User Incentive programme, in which landowners and community-based organisations would be encouraged to take full responsibility for restoration practices:

We need to create a more inclusive Project Advisory Committee (PAC) to hold the overall restoration vision in the Blyde catchment. The PAC must include all interested and affected parties, from landowners, community-based organisations, traditional authorities and municipalities. (FDG #1)

Another practitioner also noted:

We used to have PACs but we were given directives from national offices that these are no longer needed. Maybe we need to engage the national structure to re-emphasise the importance of such structures especially in community engagement processes. (FGD #1)

From the above discussions it emerged that a collective resolution among the implementation activity systems practitioners needed to be made and that a larger PAC was needed; a collective restoration vision must also be developed by the PAC. The PAC with all stakeholders' representatives was to be formed and facilitated under DEA requirements, and the implementation activity systems would take responsibility to ensure that the PAC was coordinated and upheld its collective restoration vision. Furthermore, the implementation activity systems proposed the need for developing a comprehensive guiding document outlining the functions of all stakeholders within the PAC.

4.5.5 Contradiction in community division of labour-object

Sub-activity analytic question: What are the defined roles and responsibilities of other stakeholders and do these need to change in the future of restoration IAP control practice?

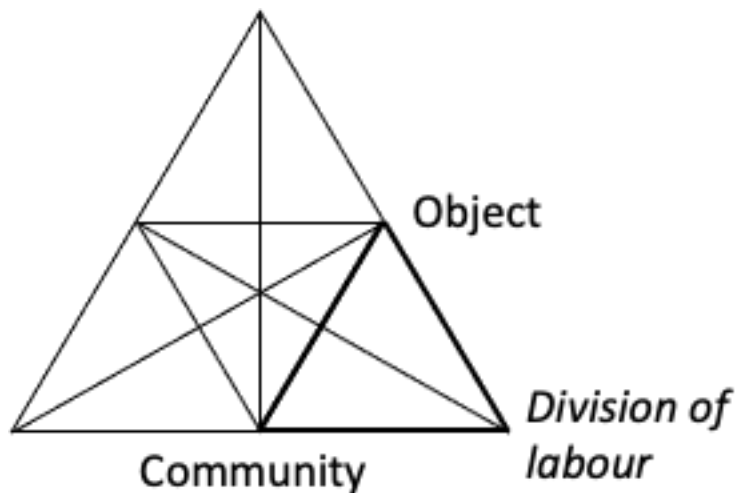


Figure 4.13: Community division of labour-object sub-activity analysis

Although the lack of active collaboration between and among the implementation activity systems was identified as a key challenge constraining the restoration IAP control work in the Blyde, there was also an acknowledgement that there is a relationship amongst the implementation activity systems though this needed to be strengthened to be more functional. One of the practitioners during the focus group meetings argued: “It will be interesting to know where everyone is working, what resources do they have, so we can plan and prioritise together ... everything is currently dis-jointed, no integration and coordination” (FDG #2). In the first BCCLW (BCCLW #1) practitioners further expressed a lack of collaboration and coordination amongst stakeholders as a key challenge constraining the IAP control practice in the Blyde landscape (see Section 5.3).

However, the relationships between the implementation activity systems and other stakeholders including landowners were described to be in a dire state, and this had both immediate and future implications for the restoration IAP control practice. There were reports of community members who were believed to be part of the land-claiming structure (future landowners) that were in dispute with the implementation activity systems over recruitment

processes for selecting IAP control beneficiaries or workers. This was driven mainly by local political structures that saw the implementation activity system and NRMPs in general as just job provision agencies, wanting to influence the recruitment processes to favour beneficiaries from their own communities. This created conflict between implementation activity systems and the people demanding jobs, as the implementation activity systems were guided by the EPWP regulations, which give all unemployed people equal opportunity (also see Section 5.4 on analysis of governance issues, institutional arrangements and power dynamics). One of the practitioners reflected on this after the decision by implementation activity system #1 to move all their IAP control teams out of the Lowveld forestry area owing to conflicts with communities who were undergoing a land claim process in the area. He expressed both a sense of disappointment and also the opportunity to use this disruption as a learning pathway for collective action:

This is very disappointing for the bigger picture at catchment scale, as it undermines the process of working together as a collective. But maybe this forces us to work together, since we don't work together. And from a planning point this might change everything. (FDG #2)

It was also collectively agreed by the implementation activity systems practitioners that an integrated approach was required to improve coordination between NRMPs and wider stakeholders. Furthermore, there were also strong expressions of the need to address issues such as land claims conflicts and misunderstandings by communities and other stakeholders on the operational processes for the NRMPs, as these were constraining the restoration IAP control practice (see Section 5.4). One practitioner argued: "There is a need for a MoU between various agencies involved, on how they should operate and coordinate, as well as sharing of information and this process should be mandated". Also discussed was the need for an adaptive and reflexive feedback process for collective learning with the wider stakeholders involved or interested in the restoration IAP control practice; this should include beneficiaries of the programmes such as communities, municipalities and related user groups. Furthermore, there were also self-reflection insights:

To a certain extent we fail to justify the need for resources and that is due to our failure to engage with all the other stakeholders to collaboratively motivate for the work, as this is what is required on the ground. And also failure to implement our plans, especially if we don't use the entire allocated budget, which has been happening more often, then how do we justify additional resource? We should have a catchment-wide plan that will include all stakeholders in the area,

and make sure our plans are integrated and implement efficiently before we can argue for more funding. (FDG #1)

Other critical reflections were related to working together with the landowners and land users as this had implications for the efficiency of the restoration IAP control practice. Another practitioner pointed out:

One other thing we must develop is a communication plan for land claimants ... problem is that we are not involved in this process as it is facilitated by other people. Forestry is also a big land user that must be involved in this process. (FDG #1)

In response, another practitioner also concurred:

Yes, forestry is a big stakeholder as the significant portion of this catchment is under commercial forestry. They are one of the largest land users and their pines are escaping into the wild and inaccessible areas ... They are a stakeholder we should be talking to, and from a legislative point of view in terms of NEMBA regulations, forestry should be responsible for managing their IAP escapees (FDG #1).

Another practitioner emphasised the need to strengthen the current processes on addressing compliance concerns:

This goes down to law enforcement, but the challenge is internal capacity ... we can engage with the Biosecurity directorate who deals with compliance issues. The DEA national department is also building capacity in terms of the new NEMBA regulations. We have trained about six environmental inspectors within our institutions to assist with compliance issues. We have also appointed two designated invasive species inspectors in the province who will be working hand-in-hand with the provincial departments. We are also establishing provincial task teams that will engage all the departments including district municipalities, land users and communities(FDG #1).

4.6 Conclusion

In this chapter, I explored the contradictions in the restoration IAP control practice. I used the second generation activity system (Engeström, 1987) and the sub-activity system analysis (Mwanza, 2001), to unearth disturbances within and between the implementation activity systems and related NRMPs agencies involved in or affected by the restoration IAP control practices in the Blyde catchment. Although there were few expressions of technical challenges

related to strategic planning and mapping, it was evident from the analysis that most of the challenges facing the implementation activity systems are systemic across a range of technical, institutional and governance matters of concerns, which require active collaboration among and between the implementation activity systems and other related NRMPs.

Capacity and resource constraints were also among the key challenges which further constrained implementation activity systems practitioners in both the planning and implementation of their operations. Matters related to capacity and resource constraints were regarded as high-level, which could not easily be addressed by practitioners at the regional level, and this was seen to require engagements with the DEA national activity system. There were also many transformative agency expressions by practitioners on working towards an integrated approach and involving other stakeholders to build collective action in the restoration IAP control practices. In addition, several potential expansive learning pathways were also suggested in response to the surfaced challenges and contradictions (these are fully explored in chapter five).

Chapter Five: Modelling New Expansive Learning Solutions for Advancing Restoration IAP Control Practice Via Double Stimulation

5.1 Introduction

This chapter focuses on exploring the third stage of the expansive learning cycle on envisioning new solutions (Engeström, 1987) in the restoration IAP control activity as practitioners engage with and navigate contradictions. The chapter begins with a short review of the process we followed, not only practically, but also theoretically with the implementing activity systems, to support their reflexive engagement with processes we were supporting them with as a formative intervention team.

From this short review, the chapter focuses on double stimulation as a mediating principle to attain transformative agency and to support the exploration of new learning solutions in response to the identified contradictions analysed and presented in Chapter Four. As highlighted in Figure 5.2 below, this chapter describes the third stage of the expansive learning cycle (modelling the new solution). Several expansive learning solutions were suggested in Chapter Four, but most of these emerged during focus group discussions (FDG #1–4) with the four individual activity systems. As such, a further deepening through collective envisioning was required and this was facilitated through the BCCLW #3. The aim of BCCLW #3 was to collectively deepen the analysis of emerging new solutions for navigating contradictions and transforming restoration IAP control practice in the Blyde landscapes. However, these needed to be carefully understood, and I did use the transformative agency double stimulation model of Sannino (2015) discussed in Section 3.7 and table 3.7. This chapter shows how I analysed the data to make the emergence of transformative agency through double stimulation more visible within the four implementing activity systems. This was done to produce stimulus material for and to inform the third BCCLW (reported in more detail in Chapter Six).

5.2 Short Review: Introduction of Activity System Analysis and Expansive Learning Framework for Facilitating Learning and Reflexivity

In Chapter Three, I explicated the methodology of the study, and in Chapter Four I articulated the insights gained through the first two phases of the expansive learning cycles. However, one of the critical moments in the first BCCLW involved the introduction of activity system

analysis and expansive learning theory to practitioners, as we deliberated on how to work together with them as a formative intervention team. Here I presented expansive learning as an approach for mediating learning processes and introduced tools such as activity system analysis as a tool for exploring challenges and contradictions in the restoration IAP control activity. As such, the activity system analysis and expansive learning framework were seen as important mediation tools for building collective learning (see Figure 5.1 below). At the time, some practitioners were a bit sceptical as this was the first time they explicitly engaged with an expansive learning approach. One of the participants asked:

How effective is your work is going to be, because we are tired of just meeting for the sake of meeting. It will take time to achieve the restoration goal but in whatever we do, we need to see the results. (Extract #4.1)



Figure 5.1: Reuben Thifhulufhelwi (researcher) presenting the expansive learning during the first collective change laboratory workshop

Source: BCCLW #1

Although the different stages of the expansive learning cycle (Engeström, 1987/2015) were explained during the workshop, we also got the impression that most participants were struggling to understand expansive learning as a theory of change for developing collective action. Some practitioners were able to understand the basis of expansive learning as a long-

term transformative process, but some practitioners considered expansive learning very unconventional and maybe too conceptual:

This cycle looks very nice and the stages are well described but things are very complex here; you can't move for one stage to the other as you presented in that slide. This will work on paper, but people out there they want funding to implement projects. (BCCLW #1)

In response, we noted that the expansive learning process could move across stages, and sometimes it could go back and forth as practitioners engage with their contradictions. Some practitioners were enthusiastic about learning the new ways of conceptualising their work as they considered the expansive learning cycle a helpful tool to structure the learning process:

I have never seen this cycle, but it seems like something logical ... I like the stages from questioning, analysis, implementation ... so you are saying here asking all the issues is in stage one right? But that can't be right because we have done a lot of plans before and to me looks like stage 3 or 4? ... Ok some of the plans didn't work ... so this means we are back-and-forth on stages? I like this thing it make things make sense. (BCCLW #1)

It was also agreed that the AWARD team would make further detailed presentations of expansive learning theory and practical application learning tools in the next workshops. This was a critical step at the start of the third BCCLW, because, following the careful work undertaken to develop shared understanding in BCCLW #1 and BCCLW #2, participants now viewed the AWARD team as a formative interventionist team that was committed to learning together with practitioners as opposed to bringing solutions to solve existing issues. One practitioner expressed the importance of collective historical analysis:

I know some guys here have been involved for decades in these areas but some of us are not fully aware of all the historical work ... this AWARD framework can definitely help us all learn why thing did not work ... and maybe just maybe we might do it better this time. (BCCLW #1)

It was important to develop this shared understanding of co-engaged solution modelling at this stage of the research so that practitioners could expand their engagement and commitment to the process. We therefore also continued to share further insights from expansive learning with participants.

For example, in BCCLW #3, drawing on Engeström (2001) who argued the following:

In important transformations of our personal lives and organisational practices, we must learn new forms of activity which are not yet there. They are literally learned as they are being created. There is no competent teacher. (pp. 138–139, my emphasis)

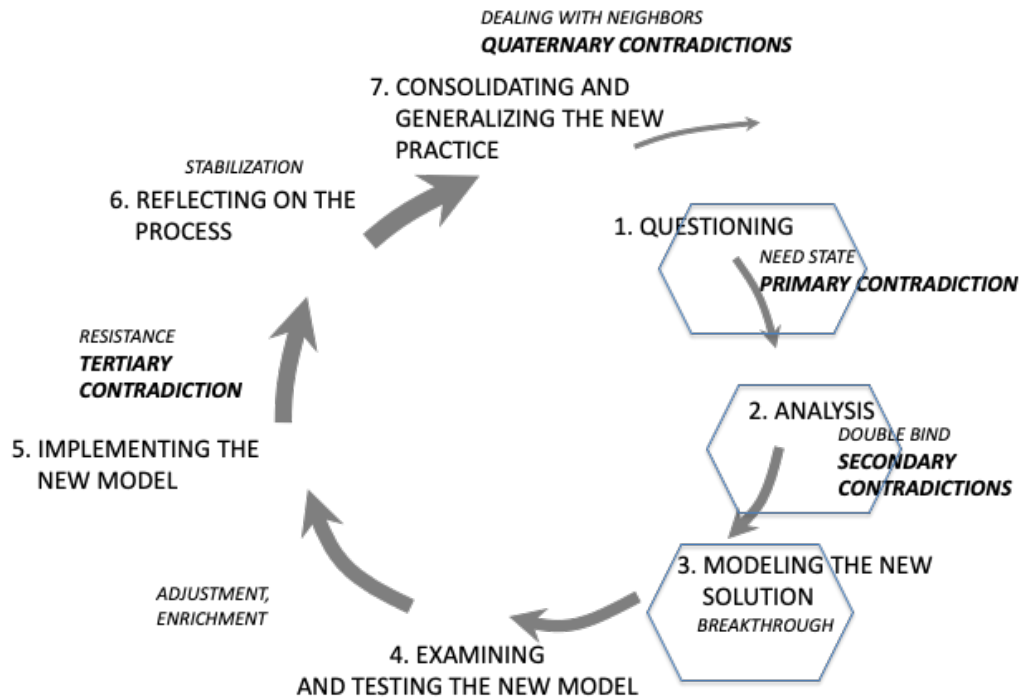


Figure 5.2: Strategic learning actions and corresponding contradictions in the cycle of expansive learning

Source: Adapted from Engeström (2001, 2020)

In Chapter Five, I focus on the transition from analysis (stage 2) towards modelling new solutions (stage 3), to envision and identify the transformative learning actions to advance their restoration IAP control practices (Figure 5.2). To facilitate the envisioning process in the third BCCLW, I used the double stimulation principle as discussed in Chapter Three (see Section 3.6.2). I concentrate here, in Chapter Five, on the analysis of the early stages of transformative agency emergence by double stimulation as found through interactions with the individual four activity systems and develop this to inform stimulus tools used in the third BCCLW reported on in Chapter Six.

5.3 Double Stimulation as Principle for Attaining Transformative Agency

As discussed in Chapter Three, Engeström and Sannino (2016) argue that expansive learning and transformative agency are intertwined, and it is difficult to conceptualise one without the other. In expanding Vygotsky's work, Sannino (2015a, 2015b; Sannino & Laitinen, 2015) highlighted the importance of double stimulation as an underlying principle in attaining transformative agency. Hopwood and Gottschalk (2017), however, caution that "not all volitional action would constitute transformative agency, but it is difficult to conceive the latter in the absence of the former" (p. 25). In this section, I describe different double stimulation tools I used in Phase 1 of the study to support NRMP practitioners in attaining transformative agency and volitional action to respond to contradictions in their restoration IAP control practices. While there are overlaps with descriptions in Chapter Four, the focus here is on the double stimulation process, which is explicitly described and reflected on in this chapter. This section answers the fourth research sub-question of the study: How does double stimulation as a mediation principle support the emergence of practitioners' collective agency in enhancing their volitional action in transforming and implementing sustainable restoration IAP control practices?

The above research question encompasses both relational and transformative agency (see sensitising concepts in Chapter Two). In this part of the research, the relational agency is more focused on strengthening the competence and expertise of NRMP practitioners to enhance their collective capacity. The transformative agency is focused on the examination of disturbances, conflicts and contradictions in the collective activity by explicating and envisioning new possibilities. Therefore, this section describes how the double stimulation principle was used as a guiding principle to support the emergence of practitioners' agency to collectively confront contradictions in restoration IAP control practice.

As indicated in Section 3.6, in this study I used double stimulation as a guiding principle in search of practitioners' transformative agency and their volitional capacity in confronting the social-ecological contradictions within the restoration IAP control practice. This involved the use of conceptual artefacts as a mediating tool to facilitate CLWs as the main data-generating method in this research engagement. This was informed by Sannino (2015a, 2015b; Sannino & Laitinen, 2015) who highlights the importance of double stimulation as a basis for formative

intervention and a generative principle in attaining transformative agency (see Section 3.6.2 for further theoretical elaboration).

As indicated in Chapter Four, the identified challenges and contradictions constraining the effective implementation of the restoration IAP control activity (Chapter Four) provided the first stimulus in the double stimulation process. This process was aimed at exploring the emergence of practitioners' transformative agency and volitional capacity as they envisioned new solutions in responding to the contradictions within the IAP control practice. As indicated in Chapter Three, Engeström and Sannino (2016) argue that transformative agency via double stimulation is a fundamental principle in an expansive learning process. I therefore used various conceptual double stimulation tools to support practitioners in exploring the emergence of their volitional action. These included tools such as mirroring the historicity of challenges and contradictions, application of the activity system analysis to identify contradictions and using concept mapping as sense making tools for identifying linkages for potential integration in different components of restoration IAP control practice. All these were used as initial double stimulation tools in formative intervention engagements, which included laboratory workshops, focus group meetings, field excursions and key-informant interviews. The use of double stimulation in this context was based on the notion that resolving ongoing contradictions at a systemic level required mediation (Engeström & Sannino, 2020).

5.3.1 Mirroring and presentation of mirror data as a double stimulation process

Mirroring is a process by which participants are given an opportunity to re-engage, analyse and make meaning out of the data collected from earlier engagements. The data presented during the mirroring process are referred to as mirror data, and this is the information that was gathered in prior engagements with participants in various forms, including meetings, interviews, observations, focus group discussions and BCCLWs described in Chapter Four. In the context of this study, the mirroring process was critical for both member checking and for allowing further deepening of contradictions by practitioners as also reflected in Chapter Four.

As indicated in Chapter Four, to facilitate the double stimulation process I used the identified tensions from the contextual profiling report (Thifhulufhelwi & Graf, 2015) as the *first stimulus*. The contextual profiling report was a compilation of information generated from my early meeting engagements with the NRMP practitioners.

My role as a formative interventionist researcher was to provide a mediating process to enable NRMP practitioners to collectively conceptualise and explore in detail their challenges, tensions and contradictions in the restoration IAP control activity. To do this, I provided an initial systemic overview of key issues within the broader IAP control practices, with specific reference to the implementation of restoration teams by various NRMPs throughout the country (drawing on the contextual profiling report, the first stimulus). I prepared a summary in a PowerPoint presentation, highlighting key sections of the contextual profiling report (item 4, in Figure 5.3). It is important to note that in preparation for the first workshop (BCCLW#1). I engaged with practitioners telephonically and through emails to brief them on the upcoming workshop and we also discussed agenda items for the workshop beforehand (Figure 5.3).

Blyde NRMP Workshop 7 July 2015		Agenda	
Workshop Objectives: - To collaboratively understand the context in which the NRMPs in the upper Blyde catchments are working - To collaboratively plan further work together - To support the development of collective agency and action	Item	Task/ Discussion	Time
	1.	Welcome and introductions	09:30
	2.	Brief overview of day and aims of the workshop	
	3.	Background on: RESILIM-O programme, approaches and methodologies [Different areas of work, including ecosystem restoration (NRMP) focus, and linkages between these]	
		TEA	10:45
	4.	Background and aims of RESILIM-O Biodiversity & Ecosystem restoration work	11:00
	5.	Defining a guiding or central question for Blyde ecosystem restoration work (linked to vision)	
	6.	Identifying challenges, constraints, issues experienced by NRMPs (in relation to central question)	
		LUNCH	13:00
	7.	Continuation of Item 6	13:30
	8.	Co-planning Blyde ecosystem restoration engagement process	
	9.	Close of meeting and short reflection on day	

Figure 5.3: Agenda for the first boundary crossing change laboratory workshop

Source: BCCLW#1

It was through the presentation of mirror data (agenda item no.4 in Figure 5.3 above) that practitioners began engaging and further conceptualising challenges and tensions in restoration IAP control within their context, and this was visually presented on the chart by the scribe.

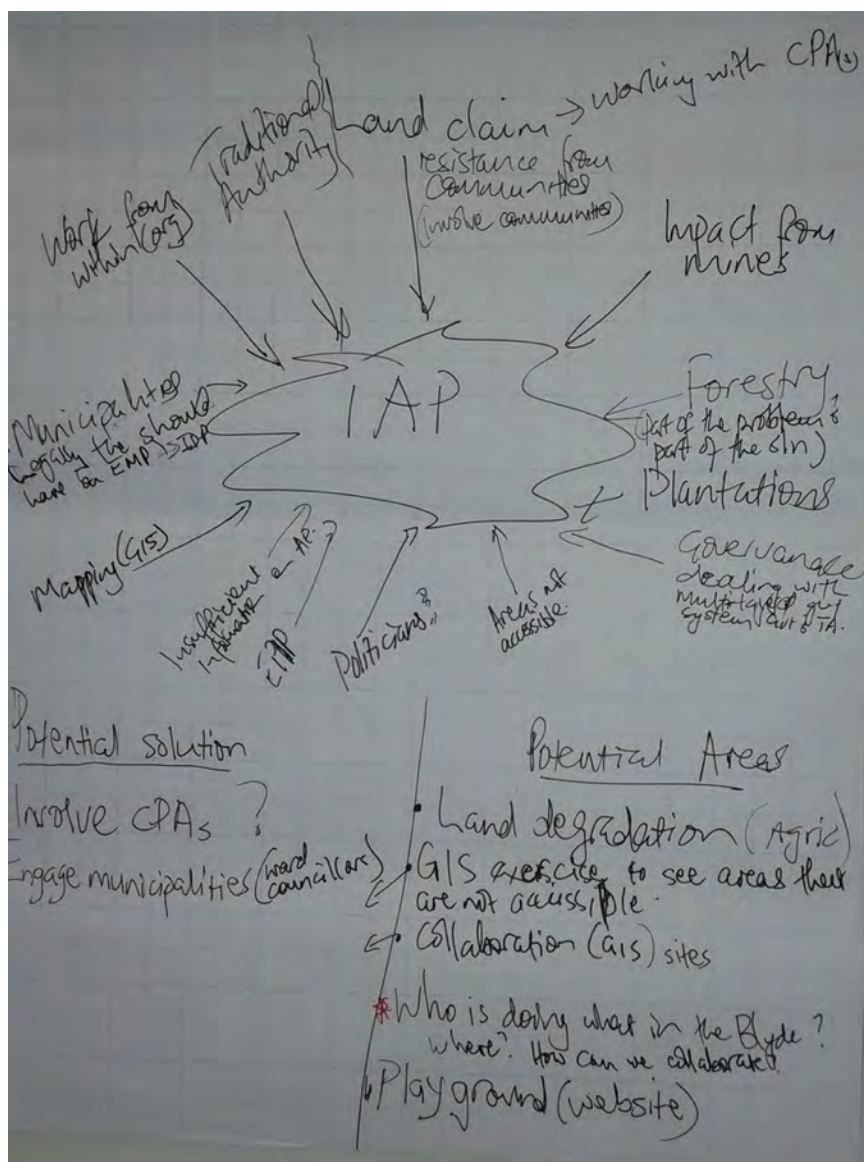


Figure 5.4: Snapshot of flipchart notes on the summary of identified challenges from the first BCCLW

Source: BCCLW#1

Summary of identified challenges and potential solutions for working together in Figure 5.4:

- Lack of coordination among NRMPs.
- Need to work with a broader stakeholder base who have stakes in restoration IAP control such as municipalities, CPAs, private forestry and traditional authorities.
- Issues on GIS and spatial data sharing and management.
- Governance issues and dealing with multiple agencies.
- Understanding who is doing what in the Blyde, and where.
- Tools for collaboration such as a central website.

5.3.1.1 Deepening and analysis of need state

After the workshop, the formative interventionist team summarised the workshop proceedings in the form of action items and agreements as proposed by practitioners. The summary was shared with all workshop attendees, and this further provided another mirroring opportunity for them to re-engage with the context, make additional input and where necessary provide corrections. After inputs and suggestions, the final document was then shared as the official meeting summary notes as presented in Figure 5.5 below.

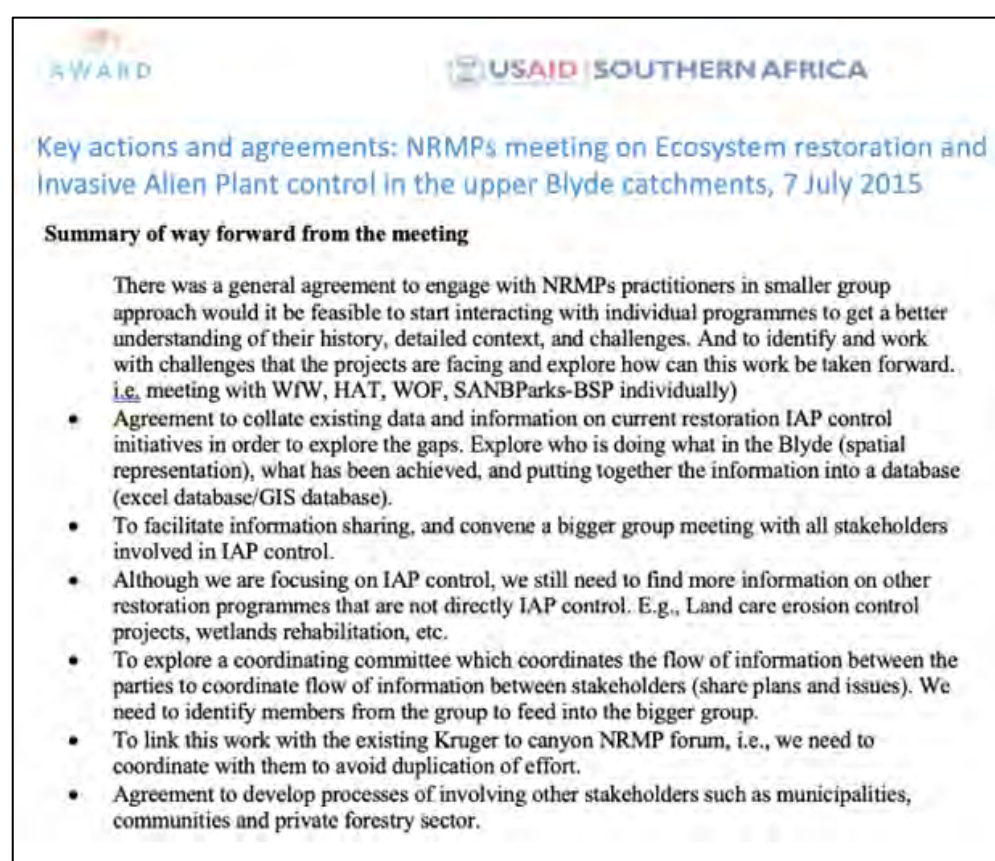


Figure: 5.5: Key actions and agreements report from the first change lab workshop

Source: BCCLW#1

As part of the way forward, follow-up meetings were agreed upon to further discuss the identified issues in detail. As the formative interventionist team, we had planned the first collective workshop as a whole-day event that would allow practitioners to spend time discussing the contradictions in the restoration IAP control practice in detail. This would allow time for the historicity of contradictions as deepening the first stimulus and identifying potential auxiliary motives as the second stimulus for mediating the transformation. However,

as reported in Chapter Four, practitioners did not feel comfortable discussing their tensions and contradictions in depth. They were happy simply to list areas of potential issues (Figure 5.3) and agreement was reached on how to move forward as summarised in Figure 5.4. This reluctance to discuss tensions and contradictions in a collective setting was a bit of a shock to us as the formative interventionist team, as practitioners had indicated that they wanted to work together collectively as different activity systems.

As elaborated in Chapter Four, the interventionist team subsequently engaged with individual activity systems. This was expressed as follows:

It seems like people are not fully free to express themselves, I think will be good for you [AWARD] to start interacting with individual programmes to get a better understanding of their history, detailed context and gaps. (see full discussion in Extract 4.1 below)

This comment was agreed to by all practitioners during the workshop. Upon reflection as the formative interventionist team, we learned from this that it was an important step to allow practitioners to suggest a way forward, and this became our point of engagement as we set follow-up engagements. The summary notes from the first workshop (Figure 5.4) provided the first stimulus to mediate the engagements (see Section 5.4. below) in subsequent interactions. Adopting the suggested way forward by practitioners themselves gave practitioners confidence that their views were important in shaping the direction of the Blyde Restoration Project and further empowered practitioners to become custodians of their own learning process.

5.3.1.1 Participants' reflections in a double stimulation process

Participants' reflections were an integral part of the research process. At the end of every workshop, all participants including the formative intervention team were asked to write reflections on the workshop process – as described in one case in Chapter Four – privately and anonymously. Collectively, these reflections were critical in shaping not only the facilitation of future engagements but also enriching the content and potential key discussion points. The reflections relating to workshop facilitation were analysed and implemented by the interventionist team, while the reflections relating to content were synthesised and sent back to practitioners as part of the workshop minutes. These reflections were also presented during follow-up workshops as the first stimulus, which allowed practitioners to re-engage and sometimes suggest alternative options as the context might have changed. Chapter Four showed how such mirror data were used as double stimulation for CL 2. Overall, the reflections

showed positive agency towards the Blyde Restoration Project by practitioners as elaborated in Chapter Four (see Table 4.1 and related discussion). However, there were other expressions of agency which came in the form of resistance (I1 and I2, Table 4.1) in which one practitioner expressed disappointment with how the workshop had not yielded much in terms of the outcomes on frameworks for approaching collaborative processes among different practitioners' and stakeholder groups. Evidence of resistance, however, is the first stage of transformative agency expression (Engeström, 2011; Haapasaari, et al., 2014). The same practitioner went further to criticise the current coordination practice and called for the need to explore mechanisms to assist in achieving collaboration and coordination of restoration practices in the catchment (I3). Criticisms such as these form the second stage of expression of transformative agency according to Engeström (2011) and Haapasaari et al. (2014). As can be seen from the discussions in Chapter Four, these expressions of agency were important precursors to wider transformative agency, which will be expanded on further in Chapter Six.

5.3.2 Activity system analysis as a second stimulus tool

In the above sections, I discussed the roles of mirroring and participants' reflections as the first stimulus which contextualised the problem space in the double stimulation process. In mediating the learning process to engage with the problem space, and as partly explained in Chapter Four, we also used activity system analysis as a second stimulus. I applied both the second and third generation activity systems as key second stimulus tools in both data generation and analysis of the study. During data generation, the second generation activity system was used as a double stimulation tool to surface contradictions in the four implementation activity systems as described in Section 4.2. The use of a second generation heuristic during CL workshops allowed practitioners to engage with all aspects of their activity system from objects, tools, subjects, rules, community and division of labour. In this way, the second generation was used as a methodological tool to facilitate the surfacing of contradictions within all aspects of the activity system and to establish linkages between different aspects of the activity systems using the sub-triangle analysis as elaborated in Sections 4.4 and 4.5.

Similarly, the third generation activity system was used as a double stimulation tool to facilitate both the deepening of contradictions among different activity systems and exploring expansive learning pathways to address the contradictions. The mirror data which were the identified

challenges (Tables 4.1 and 4.2) thus provided the first stimulus double stimulation process during CL workshops, and both second- and third generation activity systems were used as conceptual tools to enable practitioners to envision potential learning actions as the second stimulus. In Part II of the study, I focus on developing new second stimulus tools for mediating the co-inquiry process for the emergence of emancipatory transformative agency (see Chapter Eight).

5.4 Modelling New Solutions via Sannino's Vygotskian Double Stimulation Model

In this section, I describe more explicitly how I applied Sannino's Vygotskian model of double stimulation (Sannino, 2015c) as an analytic tool to explore the envisioning of auxiliary motives for volitional action in response to contradictions and conflicts of motives (see Section 3.6) in the restoration IAP control activity. As shown in Section 3.6, in Sannino's Vygotskian model, both the first and second stimuli are critical for the emergence of volitional action, with the first stimuli providing a problem space, while the second stimuli play the mediating function. As noted above, the mirror data and participant reflections were the key first stimulus, while the activity system analysis was applied as the second stimulus tool.

Sannino (2015c) notes that the emergence of volitional action involves conflicts of motives as a key component of the double stimulation model. Hopwood and Gottschalk (2017, p. 25) highlight the need for researchers to “distinguish between mediation (a general concept referring to use of tools or signs), and the specific characteristics of double stimulation (where conflict of motives and the issue of volitional action are in play)”. Sannino (2015c) also believes that “although second stimuli play a crucial mediating function, double stimulation cannot be subsumed to the general idea of mediation by symbolic tools” (p. 2). Therefore, conflict of motive is a central component of the double stimulation process, and this is evident in Thorne (2015, p. 23) who also argues that “the double stimulation begins with a conflict of motives and this conflict is resolved through volitional action or will”. Engeström and Sannino (2011, p. 374) point out that “critical conflicts are situations in which people face inner doubts that paralyse them in front of contradictory motives unsolvable by the subject alone”, which I have discussed in Chapter Four where I identified the key double binds affecting the shared activity (see Section....).

Drawing on Sannino's Vygotskian model of double stimulation outlined in Section 3.6, I developed a series of double stimulation examples for the four implementation activity systems. These examples were based on the engagements and expressions by practitioners during the formative intervention engagements which are summarised in Extracts 5.1–5.4 below. The extracts below present evidence of the focus group discussions with the four implementation activity systems. The discussion in the extracts is focused on exploring the emergence of transformative agency and volitional action through envisioning potential new solutions to respond to the tensions and contradictions discussed in Chapter Four.

Extract 5.1: Excerpt from focus group discussion with implementation activity system #1 (FDG #1)

Facilitator: From the last collective workshop it was agreed by all practitioners to engage you individually to start exploring in detail the history, context, challenges and opportunities within the restoration IAP control practice in the Blyde, as well as to understand what has been achieved in the past, what information is available and how this work could be taken forward.

- **Practitioner1:** The history might not be much from us, as most of us are new in this area. I came here in 2012, as well as my colleagues here [practitioners 2 and 3] have only been working here for 3 years now. Please engage with the ex-manager of this area who is currently with [implementation activity system #2]; he could be a good source of historic efforts.

Facilitator: We heard about the past plans during the early 2000s, on restoring the Lowveld forestry areas, and to declare the Blyde as a National Park. Do you know about this process or anyone who was involved?

- **Practitioner1:** You see the problem is this area is owned and managed by many departments and other landowners including communities who are now claiming the area too. These kinds of complexity always slow the process. I'm not sure some of those plans might still be in place, and I heard DEA is in negotiations with DAFF as leading departments to develop a MoU to guide restoration in the state forestry areas. So, there seems to be inter-departmental misunderstandings which are derailing the restoration progress.

Facilitator: Thank you very much, and one last question, do you plan or work together with the other NRMPs, for example [implementation activity system #2], even if there is no MoU in place?

- **Practitioner2:** I have tried to consult them, but they say they are too busy.
- **Practitioner2:** I would like to have meeting with these guys [referring to other Implementation activity systems], but the guys we work with here at regional level they always say they are too busy.
- **Practitioner1:** What practitioner2 is trying to say is that there are limited communications. I have only attended one stakeholder meeting with [implementation activity system #2] in Graskop. This is very unfortunate because we and implementation activity system #2 are funded from the same department [DEA] but we don't work collaboratively. We need to engage more in collaborative planning and implementation. In this way we can make a difference if we are working together.
- **Practitioner3:** The biggest problem is once we [referring to all implementation activity systems] have acquired the funding, everyone starts doing their own thing. Everyone is worrying about their key

performance indicators and in doing so we don't realise that our work is affecting others. We need to work together.

- **Practitioner1:** The other challenge is the structures and setup of departments [silos], which doesn't enable coordination and integration. As [implementation activity system #1] we are supposed to be champions in IAP control but with lack of coordination it is impossible. Together, we need to prioritise what is important, and who should do what and how. We also have the Land User Incentive programme, which can also be a good way to integrate other partners such as communities and NGOs in the restoration work, all we need is to have a formal structure that includes everyone and coordinator of this structure.

Facilitator: Can we refer to our discussions when we meet the other implementation activity systems later?

- **Practitioner1:** Yes, I will organise you the list of people you can engage with in [implementation activity system #2 and #3] ... we meet often but we have good relations.

Extract 5.1 above was taken from one of the focus group meetings with implementation activity system #1. As discussed in Section 5.3.1, mirror data from the previous engagements were used as a mediating artefact to help practitioners from the implementation activity system #1 to confront and historicise their contradictions. Hopwood et al. (2016) argued that the main interest of Vygotskian researchers is in “the use and development of conceptual tools and ideas that change our understanding of a problem and our response to it” (p. 113). Furthermore, Vygotsky (1960/1997) pointed out that all higher mental functions, including volitional action, rely on mediation connected with the use of signs as auxiliary tools to solve psychological problems. It was with this notion that I used the double stimulation principle to identify the conflict of motives and the auxiliary motives as the response to volitional action. Here auxiliary motives serve both as signs of transformative agency and potential second stimulus tools for navigating the conflict of motives within the restoration IAP control practice.

Extract 5.1 records how the facilitator pointed out:

From the last collective workshop, it was agreed by all implementation activity systems practitioners to engage you individually to start exploring in detail the history, context, challenges and opportunities within the restoration IAP control practice in the Blyde.

This reflection feedback was a key item of mirror data which provided the first stimulus in all focus group discussions with the implementation activity systems. Furthermore, based on the level of discussions from the extract above, practitioners appeared to be free and open to engage and share their perspectives as opposed to the first BCCLW (see Extract 4.1). As discussed in Chapter Four (see Section 4.5) contradictions in the coordination, integration and alignment

across different departments and implementation activity systems were expressed. In addressing this, an inter-departmental MoU was proposed as an ideal tool to facilitate collaboration (auxiliary motive).

The facilitator further deepened this by asking practitioners if they worked together even though there was no MoU in place. Practitioner2 indicated that he had tried to consult them with no success:

I have tried to consult them, but they say they are too busy”. He further expressed his desire to work with them, “I would like to have meeting with these guys” but on the other hand, practitioner2 also expressed conflict of motive when he says “but the guys we work with here at regional level they always say they are too busy.

This is an indication of paralysis with conflicting motives, on whether to keep on trying to engage the other implementation activity systems practitioners after failing in the past attempts. In response, practitioner1 further deepened the contradictions expressed by practitioner2: “What practitioner2 is trying to say is that there is limited communications ... this is very unfortunate because us and [implementation activity system #2] are funded from the same department (DEA) but we don’t work collaboratively”. This further elaborated the conflict of motive expressed by practitioner2 to tertiary and quaternary contradictions around tools for integration and communication amongst different implementation activity systems. Practitioner1 further suggested an auxiliary motive in an attempt to address the conflict of motive of whether to engage further with other implementation activity systems. He argued: “We need to engage more in collaborative planning and implementation, in this way, we can make a difference if we are working together”.

This expression is also an indication of the emergence of collective transformative agency., Practitioner1 saw collective action as a critical auxiliary motive for the effectiveness of the restoration IAP control practice. Practitioner1 also referred to how the implementation activity systems were funded, indicating they were from the same national department, and they should be working together. He further expressed the need for the MoU to ensure collaboration and also use the LUI programme as another potential auxiliary motive that can integrate different agencies in restoration work (see Table 5.1).

Table 5.1: Analysis of double stimulation model from implementation activity system #1

Phase	Example from implementation activity system #1 in Extract 5.1
<i>APPARATUS 1: DECISION FORMING</i>	
1 – Conflict of stimuli	Silo operations by implementation activity systems vs. collaborative in the restoration IAP control practice
2 – Conflict of motives	Whether to keep on trying to engage the other implementation activity systems practitioners after failing in past attempts
3 – Auxiliary motive	Need to develop an MoU to ensure collaboration among NRMP
4a – ‘Real’ conflict of stimuli	Collective action is a central component of effective restoration IAP control practice
4b – Closure of conditioned connection	A decision on the need to form a formal structure for coordination between and amongst implementation activity systems
<i>APPARATUS 2: DECISION IMPLEMENTING</i>	N/A

Source: Extract 5.1

A similar double stimulation process was applied to all four implementation activity systems (see Extracts 5.2–5.4), and summary tables of key outcomes were presented using Sannino’s Vygotskian double stimulation model (Tables 5.2–5.4).

Extract 5.2: Excerpt from focus group discussion with implementation activity system #2 (FDG #2)

Facilitator: From the last collective workshop it was agreed by all practitioners to engage you individually to start exploring in detail the history, context, challenges and opportunities within the restoration IAP control practice in the Blyde; as well as to understand what has been achieved in the past, what information is available and how this work could be taken forward. We've already met with [implementation activity system #1] and they have given us good insights and also referred us to you for more details on historical analysis.

- **Practitioner1:** Clearing in the Blyde started in 1998 as well as in the Sand River catchment.
- **Practitioner2:** There were various restoration plans in the state forestry but this collapsed. IAP control has been going on for over 16 years in the Blyde but a lot of this is still stuck in the same polygons [clearing same area], with little progress.
- **Practitioner1:** [implementation activity system #2] is a national programme set up by the national department to support [implementation activity system #1]. Both [implementation activity system #1] and [implementation activity system #2] are fully funded by government, but we are managed through a private company called [xx]. Therefore, we support [implementation activity system #1], we don't make decisions, they [implementation activity system #1] decide and we prioritise our work based on theirs [implementation activity system #1], and we also following catchment-based approaches.

Facilitator: Do you have any clarity on why the plans collapsed? And any implications for the current processes and how much were you involved?

- **Practitioner2:** [implementation activity system #3] and department of land affairs will know better. They are the ones who should take decisions as they are landowners, we can just support. Mr xx from [implementation activity system #3] was heavily involved in this.

Facilitator: Do you think that lack of coordination and collaboration is a big challenge for IAP control in the Blyde? This was expressed by [implementation activity system #1] when we met them and they said we can share their views with you.

- **Practitioner1:** Yes, this is the biggest challenge in the Blyde. The reason there is not much progress is because everyone is doing their own thing in their little corner without others involved. We need an integration of this programmes using a catchment approach.

Facilitator: Will it be valuable if we facilitate development of a collaborative action amongst implementation activity systems?

- **Practitioner2:** Yes but will be more valuable is to get different role players from all the guys up here [implementation activity system #1-4] to plan together on a yearly basis, and to work on the same annual work plan.
- **Practitioner1:** We also want to use fire as IAP control tool to offset the IAP control costs but the fire will need a lot of coordination, this is why it's not working at the moment.
- **Practitioner3:** You can do all the planning and logistics, and we (implementation activity system #2) will implement the actual burning, but there are costs involved in fire too.

Facilitator: How should we go about this?

- **Practitioner2:** Everyone must be involved, including landowners, as well as the DEA national, but we will need to develop a coherent plan together and they will definitely endorse these ideas, and everyone must take responsibility.
- **Practitioner1:** Go spend time with individual stakeholders, draw a plan that you will take to national, with all role players signed and committed, task and responsibilities must be clear. You as AWARD can facilitate getting all role players together and in drafting a plan/ framework.

Facilitator: This will require strong relationship building. How do you think we can start building these relationships?

- **Practitioner1:** Through negotiations, sit with each and every stakeholder and make commitments. Maybe we should start on a higher level, before breaking it down to people commitments at ground level. We [implementation activity system #2] are committed to rugged inaccessible areas, no matter whose land it is ... we are committed, but if there is no progress or anyone working around us, we will pull out. An integrated strategic plan is the best possible entry point.
- **Practitioner1:** We as a group can go to [DEA national director] and present a case on this collective action, and [implementation activity system #2] will come and advise how to use fire as a control tool (when, and where to burn). All we need is commitments from the different programmes.

Facilitator: We can facilitate the development of the integrated plan, but do you have more ideas on how this plan should like?

- **Practitioner1:** A sustainable integrated and coordinated plan, at least 5-10 year is the key to make people commit, and we are committed to work on this plan.
- **Practitioner3:** This proposal has a potential of being a successful as pilot project to integrate the three DEA affiliated programmes here [implementation activity system #1, implementation activity system #2, implementation activity system #3], in an ecologically sensitive areas and biodiversity hotspot. And deputy director general also likes the idea of integration.

Facilitator: from these reflections, it seems like the [implementation activity system #2] planning and technical capacity is ahead of other [implementation activity systems]? How can we expand this knowledge and experience to others?

- **Practitioner1:** Anything technical and mapping related stuff come to us, we will assist. We do have commitments for now but if more budget came, we could do more. We already know where we are going to work for the next 10 year, we can use our GIS personnel to do the mapping exercises.

Table 5.2: Analysis of double stimulation model from implementation activity system #2

Phase	Example from implementation activity system #2 in Extract 5.2
<i>APPARATUS 1: DECISION FORMING</i>	
1 – Conflict of stimuli	Traditional siloed and streamlined NRM programmes for IAP control have resulted in little progress since 1995 vs. re-orientating IAP control as an integrated catchment restoration approach.
2 – Conflict of motives	Need to explore partnerships and collaborations at the catchment level to maximise restoration outcomes but there is no funding for such work vs continue working in a silo and bureaucratic system which is less efficient but has guaranteed government annual funding.
3 – Auxiliary motive	Develop capacity to apply for the DEA Land User Incentive (LUI) programme as a tool to facilitate integration among NRMPs and use this as a learning space for applying for future big collective funding.
4a – ‘Real’ conflict of stimuli	An integrated and coordinated long-term restoration plan is the first step towards effective restoration IAP control practice.
4b – Closure of conditioned connection	Propose the APO meetings every year to start planning together. Commitments to work collaboratively on the long-term restoration plan, and this must be presented to the national department for endorsement and all role players must be committed (integration of both top-down and bottom-up approaches).
<i>APPARATUS 2: DECISION IMPLEMENTING</i>	N/A

Source: Extract 5.2

Extract 5.3: Excerpt from focus group discussion with implementation activity system #3 (FDG#3)

Facilitator: From the last collective workshop it was agreed by all practitioners to engage you individually to start exploring in detail the history, context, challenges and opportunities within the restoration IAP control practice in the Blyde; as well as to understand what has been achieved in the past, what information is available and how this work could be taken forward.

- **Practitioner1:** There was a plan to rehabilitate the Lowveld state forestry areas, incorporate them into Blyde Nature Reserve to make it a national park [*Practitioner1 then showed a map indicating the areas which were supposed to be restored*]. People from the Sabi Sand reserve were instrumental in starting the plan, and this is where the “Save the Sand” project was started. They convinced parliament that there was a need to rehabilitate the forests and to make Blyde a national park, but unfortunately the plan didn’t succeed due to political issues and other challenges.
- **Practitioner1:** After this collapse, the challenge now is we don’t know what Blyde is, and what it’s not. There are also land claims by communities, and now we don’t know who the owners are. These issues need to be address in order to make informed planning with the relevant people.
- **Practitioner1:** There was a lot of support from national DEAT [*now DEA*] to support the Blyde National Park proposal but unfortunately all this collapsed. There were guidelines and plans [e.g. Lowveld restoration plan] but implementation *activity system #4* pushed all the clearing

responsibilities to us [implementation *activity system #2*] and we didn't have funding. No one wants to take responsibility.

Facilitator: Do you know why the restoration plan collapsed? Any issues/ challenges?

- **Practitioner1:** All of the stakeholders had an agreement that the forestry areas must be restored but there were issues around job security (what will happen with jobs, where will they go). I was involved in the zoning of the area, to determine the suitable land uses, and we developed guidelines 5 years ago on which areas to be re-planted. But still everything collapsed due to lot of institutional conflicts and issues.

Facilitator: What's your perception of key challenges to IAP control in the Blyde?

- **Practitioner2:** Lack of capacity is key; we don't have enough resource to deal with the size of the problem, especially in inaccessible and rugged terrains.
- **Practitioner1:** Lack of proper and up-to-date management plans.

Facilitator: How do you perceive the level of collaboration and coordination amongst stakeholders involved in IAP control?

- **Practitioner2:** I have only seen implementation activity system #2 teams once, and I have never seen others. We don't actually know where other NRMPs are working and how they are working.
- **Practitioner1:** There is a need for effective coordination, and this can only be possible if there is a single restoration coordinator, where everyone will report to, and to allow sharing of information. Ecological problems such as dealing with invasive plants are very complex and required integration of different methods from use of fire to manual and biological control of IAPs, but this requires partners to work together.

Table 5.3: Analysis of double stimulation model from implementation activity system #3

Phase	Example from implementation activity system #3 in Extract 5.3
<i>APPARATUS 1: DECISION FORMING</i>	
1 – Conflict of stimuli	Effects of institutional conflicts and political issues which resulted in the collapse of past restoration plans vs. developing new up-to-date management plans independent of the institutional arrangement processes.
2 – Conflict of motives	Whether to be involved in dealing with institutional conflicts and political issues which are beyond the work scope or continue focusing on conservation duties (work scope) which have been impacted by the institutional arrangement issues which is past and this is likely to continue if not addressed.
3 – Auxiliary motive	Need for an integrated up-to-date management plan, functional institutional governance model, effective coordination amongst NRMPs and involvement of other stakeholders.
4a – ‘Real’ conflict of stimuli	Complex ecological problems require partners to work together on informed planning with the relevant people.

	Institutional arrangement issues have an impact on ecological restoration and this must be addressed to ensure effective implementation of IAP control practices.
4b – Closure of conditioned connection	Proposed the appointment of a restoration coordinator to facilitate effective coordination and integration of IAP control programmes.
<i>APPARATUS 2: DECISION IMPLEMENTING</i>	N/A

Source: Extract 5.3

Extract 5.3: Excerpt from focus group discussion with implementation activity system #4 (FDG#4)

Facilitator: From the last collective workshop, it was agreed by all practitioners to engage you individually to start exploring in detail the history, context, challenges and opportunities within the restoration IAP control practice in the Blyde. As well as to understand what has been achieved in the past, what information is available and how this work could be taken forward. We have already met with the guys from implementation activity systems #1, implementation activity system #2, and implementation activity system #3, and you were referred as one of the key people who have been working in the Blyde for long time, and involved in the past restoration plans that apparently collapsed.

- **Practitioner2:** Our restoration plans we did 10-15 years ago under the Blyde National Park proposal, the idea was that the local conservation authority will take over conservation areas, after the removal of forestry plantations, but everything fell apart. It was Practitioner1 and Mr xx who were involved, the person who was mostly involved is Mr xx but he has left now and I think he probably handed over the documents to Practitioner1.
- **Practitioner1:** We need to work with landowners in order to avoid the same collapse of the Blyde National Park scenario. What's hampering the current progress is the state of land claims. The restoration process cannot proceed unless there is an agreement with all landowners and strong institutional arrangements to facilitate and uphold the agreements. DAFF and DEA as leading national must all be involved, as well as the regional departments, conservation authorities, all landowners including private forestry. This process you not only be about strengthen coordination around NRMPs, but it should rather be a collaboration amongst all stakeholders and beneficiaries of the Blyde catchment.

Facilitator: What was the reason for National Park collapse?

Practitioner1: Governance issues, who will manage the park, was a big problem. The local conservation agency wanted it, so did the national parks. It was also anticipated that there will be loss of jobs during conversion from forestry to conservation which was the main employment in the area. And this sparked big political issues as these politicians are mainly interested in jobs.

Facilitator: Do you see [implementation activity system #4] still playing a central role in restoration process in going forward as they did in the past though the progress was minimal in terms of implementation of past plans?

- **Practitioner1:** We have serious capacity constraints within [implementation activity system #4], and on our own we can never manage and restore these areas. This will require collective action. We have also

been discussing using fire to clear some areas, even some plantation areas can be cleared by using fire, and this will require [implementation activity system #2] and other NRMPs to be on board.

Facilitator: Looking back in history, what would you say were your key challenges?

- **Practitioner1:** Weak institutional governance is the main problem, and of course lack of resources. But I've been working on these areas since 1983, so I cannot sit back and watch it deteriorate. The very least I can do is to provide documentary reports of what's happening in there to the relevant people even though I know they don't have the budget to do anything. There must be a record to show that warning was being given and no steps were taken to correct anything.

Table 5.4: Analysis of double stimulation model from implementation activity system #4

Phase	Example from implementation activity system #4 in Extract 5.4
<i>APPARATUS 1: DECISION FORMING</i>	
1 – Conflict of stimuli	Continue operating in silos with limited resources vs. engaging different stakeholders for collective action.
2 – Conflict of motives	Whether to work on addressing land claims and landownership issues which are slow, delaying and impacting restoration progress versus sitting and waiting to see what will happen.
3 – Auxiliary motive	Need for stakeholders' partnerships and formal agreements. The restoration process cannot proceed unless there is an agreement with all landowners and strong institutional arrangements to facilitate and uphold the agreements.
4a – 'Real' conflict of stimuli	Need to develop a formal agreement to secure commitments with all institutions and programmes involved in restoration.
4b – Closure of conditioned connection	Proposed the formalisation process by developing terms of reference for the Blyde restoration group where all implementation activity systems are currently used as a medium of coordination. Engagements with DEA and DAFF as a national leading department to formalise the development of a long-term restoration strategy.
<i>APPARATUS 2: DECISION IMPLEMENTING</i>	N/A

Source: Extract 5.4

The above tables 5.1–5.4 present a summary of how the double stimulation principle using Sannino's Vygotskian model was applied in all four implementation activity systems to explore the emergence of volitional action in the form of auxiliary motives. Using mirror data from past engagements as first stimuli provided mediation as practitioners were able to explicate their contradictions and also enable practitioners to envision new potential expansive learning actions to transform their restoration IAP control practice. In the double stimulation analysis, we can observe strong similarities and alignments on the broader view of conflict of motives and the potential auxiliary motives to resolve the contradictions.

It is important to note that the focus of this double stimulation analysis was on apparatus 1 (decision forming) which focused on the envisioning process. At this point, apparatus 2 (decision implementing) was excluded and this was mainly because the focus of this study was on building collective action among different implementation activity systems. Therefore, the processes for apparatus 2 (i.e. implementation of proposed auxiliary motives) were collectively deliberated in the BCCLWs as discussed below in Chapter Six.

In conclusion, the use of the double stimulation tools allowed practitioners to confront their contradictions, and in doing so the emergence of transformative agency was also evident as practitioners began questioning and envisioning new ways of doing things to advance the restoration IAP control activity. Furthermore, these double stimulation tools supported the development of practitioners' collective agency in exploring potential auxiliary motives that address contradictions at a catchment or landscape level in relation to boundary crossing issues of institutional, operational and technical and capacity constraints. As such, the application of double stimulation provided practitioners with methodological and practical tools to envision new solutions for re-imagining the restoration IAP control from a siloed operation and towards a co-engaged integrated activity.

Chapter Six: Expansion From Abstract to Concrete (Co-Creation of Transformative Agency Pathways)

6.1 Introduction

In Chapter Five, I discussed how the double stimulation principle was applied within each of the four implementation activity systems to identify conflicts of motives and explore potential auxiliary motives (transformative learning actions). Through a double stimulation process, several auxiliary motives were identified by practitioners as analysed in Chapter Five and were elaborated in the BCCLW #2 as outlined below. In Chapter Six, I discuss how these suggested auxiliary motives (abstract) were further deepened and envisioned as collective transformative agency pathways (concrete solutions) in BCCLW #2, BCCLW #3 and BCCLW #4. The collective visioning process was facilitated through BCCLW #2 and involved practitioners from the four implementation activity systems; BCCLW #3 involved these activity systems and representation from the national government department which is the rulemaking activity system. BCCLW #4 involved the four implementation activity systems again to consolidate the outcomes of BCCLW #3. Therefore, Chapter Six deepens the envisioned solutions by examining the applicability and pilot testing of the solutions (stages 4, and 5 of the expansive learning cycle), involving the collective review and critical insights by practitioners from all implementation activity systems including inputs from the rulemaking activity system.

6.2 Expansion of Object from Abstract to Concrete: Co-visioning of Auxiliary Motives into Expansive Agency Pathways

As highlighted above, through the earlier research engagement processes, several auxiliary motives were suggested by practitioners as shown in Chapter Five (see tables 5.1–5.4). Although the auxiliary motives or potential transformative agency pathways were not conceptualised in a single engagement, they were broadly interrelated. The suggested solutions were mainly focused on developing tools and processes that would support practitioners from different implementation activity systems to work collectively as summarised in Table 6.2 below. After a series of individual engagements per activity system and a collective feedback session in BCCLW #2, these suggested solutions were now agreed by practitioners as the most

relevant emanating from the discussions present in chapter 5 (cf. figure 5.4. and 5.5, as well as tables 5.1-5.4).

At this point of the research (moving from stages 3 to 4 and 5 of the expansive learning cycle), it was important to further deepen the potential solutions in order to develop a shared visioning and implementation process among the implementation activity systems. As the formative intervention research team, we convened the second and third BCCLWs aimed at *further exploring and deepening the suggested auxiliary motives into shared expansive learning pathways to strengthen coordination and collective action among implementation activity systems in restoration IAP control as a shared object.*

During the BCCLW #2, we presented the above-listed auxiliary motives to provide an overview of discussions from engagements with individual activity systems (see Table 6.1). These auxiliary motives served as mirror data to provide the first stimulus (problem space), in order to stimulate further discussions on collectively exploring and examining how these can be actioned and implemented. Engeström and Sannino (2010, p. 5) refer to this process as “ascending from the abstract to the concrete”, and it is a critical stage of the expansive learning process (i.e. moving from stage 3 to 4).

During the BCCLW #2, in which practitioners from all four implementation activity systems were present, it was surprising to the formative intervention team when practitioners *collectively agreed* on the summary from Table 6.1 as a true representation of their shared views on how to respond to their contradictions. They further agreed on exploring the possibilities of implementing all the suggested auxiliary motives as a matter of urgency. This was a surprise to the formative intervention, as we wondered how the four implementation activity systems could have the same views on every discussion point in Table 6.1. However, we learned later that after our engagements in the first collective workshop (BCCLW #1), while we were undertaking the careful co-engaged analysis with individual activity systems, that practitioners also started engaging on their own and organising meetings among each other to discuss how they could work together. This was expressed during BCCLW #2:

Practitioner1: Since our last meeting held at the Blyde Nature Reserve Bourke’s Luck potholes, I have been in touch with Mr xxx to discuss this challenge of working next to each other but not actually working together. I gave him my plans and he shared his, and we are going to the field this coming week ... you guys you also come [referring to AWARD team].

Practitioner2: Yes, Mr xxx is right, we have been in touch and this is going to make our work more effective because if you working upstream you need someone to be work downstream.

Practitioner3: From your presentation you gave in that last meeting when it was very cold ... [referring to BCCLW #1] we started thinking about commonalities in our work ... it is clear that we all want the same thing. We need to find a way that can help us to formalise these engagements. It's good to that Mr xx & Mr xx are already a step ahead in working together but without a plan or structure in place, it will be difficult to sustain these types of engagement especially if some people leave or change positions because there will be new people who don't have the history on these meetings.

Practitioner4: Yes I fully agree with him ... our biggest challenge in achieving the NRMPs vision in the Blyde catchment is the lack of collective action and support by land owners that could lead to the development of a long-term collaborative strategy and action, and unless there is some sort of mandate or process to facilitate these collaborations amongst and between NRMPs and other agencies, we can't solve the situation.

Using the third generation activity system heuristic to facilitate collective engagements, several agreements and actions were agreed upon by the practitioners on required key activities to ensure effective and integrated restoration IAP control in the Blyde landscape. Practitioners collectively adopted the suggested auxiliary motives (see Table 6.1.) and further expanded them into a more detailed set of actions and agreements (Table 6.2. below).

Table 6.2: Summary of the key agreements and actions as potential solutions to enhance the effectiveness of the restoration IAP control practice

Summary of the key agreements and actions as potential solutions to enhance the effectiveness of the restoration IAP control practice

- Agreement to formalise the meetings into a working group to ensure that there are regular engagements among NRMPs
- Agreement on a single restoration plan to collectively guide restoration interventions by NRMPs, to be developed by a working group and facilitated by the research team from AWARD. The plan should include details on implementation, defining processes and roles and responsibilities of different parties, including communication and information sharing.
- Need to present these group discussions to the National DEA, deputy director general and chief director for NRM directorate, in order to get buy-in support and mandate to commission the development of an Integrated Restoration Strategy, which should include a single planning unit, central restoration coordinator (possibly funded through LUI application), and relaxing of certain bureaucratic procedures where possible.

- The group should meet regularly (quarterly) time to afford time to develop the Integrated Restoration Strategy for the whole catchment. Also additional ad hoc one-on-one meetings between the research coordinating team from AWARD and NRMPs and other relevant stakeholders.
- Agreement on engaging other key stakeholders including commercial forestry, communities, municipalities, and local conservation agencies who have interests, influence or are impacted by the restoration work.
- Agreement on the development of a new IAP map of key species (as decided by the group and needs of NRMPs programmes) incorporating existing data from various sources (including historical clearing data and exploring look satellite remote sensing possibilities).
- Agreement to work towards developing a single mode of reporting and having a central reporting system for the group, that will allow for easy access to spatial data and information sharing.
- Need for a reflexive learning process on issues faced on the ground up to the national level, especially challenges which cannot be easily addressed at this level and need endorsement such as developing an Integrated Restoration Strategy.
- Need to develop Terms of Reference or MoU for this group of partners to show collective action and to use our collective capability to apply for more restoration funding.
- The group should be in line with the national plans to start regional learning and sharing forums on NRM restoration issues. This could be used as a mini management, research and planning meeting which is facilitated by the DEA at the national level.
- Need to conduct capacity development assessment at institutional level, in order to understand what skills, resources, experiences and tools we already have or need in advancing towards integrated restoration.
- Need to engage with governance and institutional issues that impact restoration such as land reform, and to start working with community land claimants as the future land custodians.
- Need to explore the availability of existing restoration knowledge and historical work from research development institutions such as ARC, CIB, SANBI, etc.), in terms of historical data and experiences that we might need, in order to inform future research (i.e. develop list and outline of key research questions or needs).

Source: BCCLW #2

As noted above, the main aim of the third generation workshop (BCCLW #2) was to further explore and deepen the proposed auxiliary motives into shared expansive learning solutions agreed upon by all practitioners as potential interventions for resolving the contradictions within the restoration IAP control activity. Although there were agreements among practitioners (see Table 6.2) on what key and shared expansive learning interventions were required, there were also concerns raised that these agreements could not be viewed as concrete solutions until they were endorsed by the National DEA – this is the mandated department in South Africa leading the restoration IAP control and other related NRM practices (rulemaking activity system). In Extract 6.1 below, I provide some of the excerpts from the discussions as practitioners made strong recommendations to engage the rulemaking activity system (BCCLW #2).

Extract 6.1: Excerpts from discussion during the BCCLW #2 workshop

Facilitator reflections: From the emerging discussions in this workshop, and reflections from the previous engagements, it is evident that there are lot complexities for practitioners who are working on the ground. And the higher level in decision-making portfolios don't seem to understanding this complexity of challenges. You reflected on technical issues on lack of collective planning tools, lack of resource and capacity despite the Blyde being critical strategic catchment in the country. In terms of institutional arrangements you also reflected on the importance to work with other stakeholders such as forestry which are often deemed to create the IAP invasion problem. The issues of the land reform process which is extremely slow and this creates a lot of uncertainty about what can and can't be done in term of restoration and also raise questions on what will the future land use be and how will that impact on restoration practices in general. In terms of monitoring and evaluation, there have been a strong expression for the need to develop a systemic Monitoring & Evaluation framework with robust indicators to measure not only jobs created and hectares cleared but also broader progress and benefits in terms of ecosystem service, as well as capacity develop of communities as custodians. I'm not sure if that's the true reflections of your views?

- **Practitioner1:** Decision-making process is also lacking. This integrated process is literally moving across traditional EPWP systems of implementing NRMPs in which we were more of working in parallel, there is a lot of implications on our current budgeting and reporting processes. I suggest we get high-level support form DEA national or else we are trying to change the system that is not created by us and it will be challenging to do that with high-level support.
- **Practitioner2:** Yes, you have really summarised in well, now we need to move on how we get this rolling, let's invite all these people and start the discussions.
- **Practitioner3:** We need to be careful when developing tools and resources. There is a compliance manual for forestry estates but it's not being implemented, and the areas have been left non-compliant for years. It is either people don't have the knowledge, they have to be trained or there are some sort governance issues we are not aware of.

Facilitator: Also in terms of commercial forestry, there are different views with some people arguing it is not complaint but others saying otherwise.

- **Practitioner2:** Yes you see that's why we need to work with them to fully understand the context in our catchment, not some generalised views from the literature. What are the chances of getting one person to coordinate or will AWARD be doing that?

Facilitator: We are in agreement with that but this will require a full-time position and we cannot do it while still under the RESILIM-O programme. In our individual previous engagements, the suggestion for a restoration coordinator came more than twice. We can potentially explore funding some coordination aspects through our RESILIM-O project or it can be funded by the upcoming DEA Land User Incentive programme if we put in a proposal.

- **Practitioner2:** *It's no use to get a restoration coordinator if there is no high level agreement between all the departments and land users to appoint this person.* We worked on MoU between the Minister of DEA, DAFF and Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs to achieve some of the past proposals, to get them to work together but it was not implemented. This should be revisited and amended to include everything we are talking about here.

Facilitator: I agree that it has to be **mandated and agreed upon by everyone** [my emphasis]. There must be a central direction of reporting.

- **Practitioner4:** We all know that this has been here for many years. I agree with practitioner2's suggestion. There was a forestry stewardship committee which was almost similar to what we are suggesting, and they had a coordinator but the chairmanship was changed a lot which created problems.
- **Practitioner3:** The difference was that it was driven by Forestry. I was chairperson at the time but there was no support. All these challenges are not unique to Blyde, it's across the board. From my time then at [implementation Activity System #1] and now at [implementation activity system #2] things have not changed, we still have almost same issues.

Facilitator: Supporting this work is important for us, the Blyde is a high biodiversity and ecosystem service area. We can take this to national if agreed by everyone, to share the summary of discussions and agreements from this workshop with them.

- **Practitioner2:** No, *we should rather get the directors to attend the meetings.*
- **Practitioner3:** Chief Director and Deputy Director General won't look at this list if we sent it to them, we need the higher-level people to be attending these meetings. This is actually *more than just a regional responsibility.*

It was clear during the BCCLW #2 that most of the practitioners were reluctant to commit their time and resources to the agreed actions in Table 6.2 unless some level of engagement could be facilitated with DEA national in order to get their support for the process and expressions of practitioners' concerns and challenges for collective action at the catchment level.

This was first expressed by practitioners as "it's no use to get a restoration coordinator if there is no high-level agreement between all the department programmes and land users to appoint this person". They further argued that the process "has to be mandated and agreed upon by everyone". As the workshop facilitator, I suggested that the outcomes of the workshop, mainly the actions and agreement (see Table 6.2) could be shared with the National DEA for their endorsement. However, this was not agreed upon by practitioners, as they wanted the DEA national representatives to attend these meetings, and it was pointed out that "no, we should

rather get the directors to attend the meetings”. Practitioners also noted the specific names of the chief director and deputy director general who needed to be engaged, and they further highlighted the importance of engaging the national department as they argued that “we need the higher-level people to be attending these meetings ... this is actually more than just a regional responsibility”. It was evident that towards the end of the workshop, practitioners’ agency shifted from taking actions themselves, towards expressing their frustrations with high-level support on not fully embracing the concerns they were facing as they argued:

This has been going on for a long time, we should highlight the importance of this to our bosses ... we have been in serious conflicts with a lot of people because of how restoration programmes are being implemented ... some of our people have been held hostage by local communities demanding better jobs ... people don’t want this current EPWP, they say government doesn’t takes them serious not this stop-and-start few month EPWP ... this could be our chance to motivate for something ... we make promises to start the project and then there is budgets cuts and you stop the project, now people think we are just playing with them ... it makes our plans not make sense because we keep planning all the time ... it’s really depressing at times. (BCCLW #2)

From the above discussions, it was agreed that engagements with DEA national were critical to the success of any potential expansive learning intervention at the regional catchment level. It was further agreed that they (DEA national) needed to be invited to the next workshop, and the intervention mediation team was tasked by practitioners to facilitate the engagements.

Although this was not part of the initial scope of the Phase 1 study (see Chapter One), the DEA national became an additional key activity system, and I refer to them as the *rulemaking activity system*. According to practitioners, the endorsement of this collective work by DEA national was a breakthrough towards integrated restoration NRM in the Blyde landscape. Practitioners expressed the need to engage DEA national below in this extract.

Extract 6.2: Excerpts by practitioners' expressions on the importance of engaging the rulemaking activity system (BCCLW #2)

Practitioner1: I have said this before and I'm saying it again ... *it will be very difficult to get everyone to work together in long-term if this process is not formalised or at least supported by DEA national* ... I have been involved in a lot of historical restoration work and they all end up in smoke, and of course there are people like ... we can blame for some failures but that is not to say everything is their fault.

Practitioner2: I agree with him, that collapse of Blyde National Park after a lot of work of both technical and broader stakeholders' engagement is evidence that *we need to build strong governance and a formalised process* is good step towards that...

Practitioner3: I think an *endorsement and support from DEA national will be enough to enable us to work collectively*. But also *remember that formal processes are not always the answer* because the Blyde National Park was a formalised process with ministers and all those big guys involved but it still ended up failing. The Save the Sand project was also a formalised partnership between government, NGOs and private agencies but it also ended up in smoke as you pointed out. And I think it comes down to *us making commitments to work together*.

Practitioner4: All I want is *this process to be recognised in our KPI* [key performance indicators], because this is going to be an extensive process that will require us to put in time and *if DEA endorse this it means we can be able to put time and resources on it* but until then we are here because we see the importance of the process and some people will not be fully committed if it's not formalised...

Practitioner1: I see where Mr xx is going with this and I agree. I mean we can still all do our APOs individually *without working collaboratively because it is not a formal requirement to do it together like this*. And that is how we have been working in the past with very limited engagements for collaborations.

Practitioner5: I think we need a bit of reflections on who actually has *the mandate to manage these catchment* ... we can do all these plans and strategies but it won't really work the way we think it should if *the mandated landowners and managers are not involved* ... all I'm saying is let's not only focus on technical stuff because the *governance complexities* must be addressed too or else we will be back at the Blyde National Park collapse story.

6.3 Engaging the Rulemaking Activity Systems (Deepening the Envisioned New Solutions)

By this time, we had reached the breakthrough stage in the expansive learning process, whereby envisioned new solutions by practitioners from the four implementation activity systems were further explicated and deepened with the rulemaking activity system. This was an act of developing collective processes and agreements on *the what and the how* (i.e. explicating and testing new solutions into transformative pathways and actions i.e. stages 4–5 of the expansive learning cycle). The agreed auxiliary motives were mainly focused on developing learning

processes that would support practitioners from the four implementation activity systems to work collectively (see Table 6.2).

At this point of the research process, the implementation activity systems had developed their collective vision of restoration IAP control as their shared object (Table 6.2), and this was agreed to be presented as the first stimulus to DEA national. I described this stage of the research as an *advanced third generation CHAT* that is characterised by a group of four implementation activity systems (with a shared vision), engaging with the high-level rulemaking activity system. Essentially, the implementation activity systems were represented as a single unit that had co-defined its object.

As the formative intervention mediation team, we convened BCCLW #3 to facilitate the advanced third generation inquiry (see Figure 6.1). The third BCCLW was aimed at sharing the co-vision of practitioners in the Blyde landscape with the rulemaking activity system, and to explore practical pathways for endorsing and implementing the envisioned solutions.

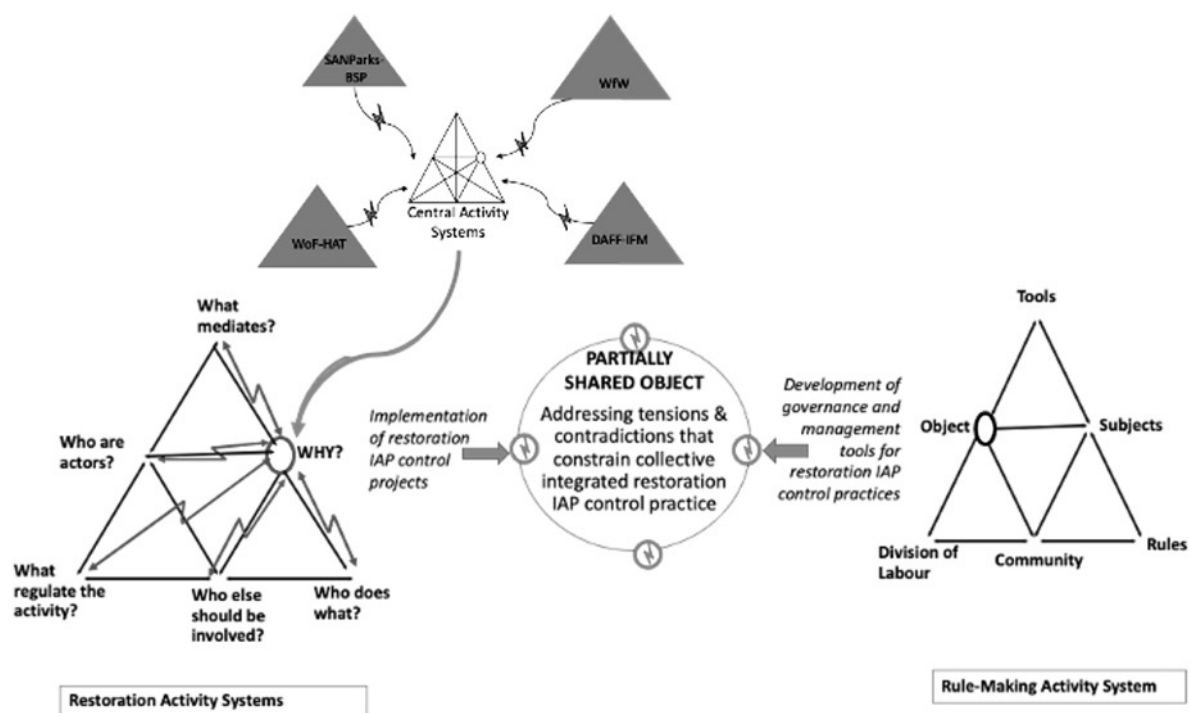


Figure 6.1: An illustration of advanced third generation CHAT between the implementation activity systems and the rulemaking activity system

Source: Researcher's own

The advanced third generation BCCLW was framed as a collective engagement with DEA national (rulemaking activity system) on exploring tensions and contradictions constraining collective action towards integrated restoration IAP control practices. During a previous workshop (BCCLW #2), the implementation activity systems explored their shared vision and collectively agreed on potential auxiliary motives (see Table 6.2). The summary of key actions and agreements in Table 6.2 was used as mirror data to facilitate the advanced third generation BCCLW #3. This provided practitioners another opportunity to reflect and further deepen the auxiliary motives, as part of the mirroring as double stimulation.

The rulemaking activity system was represented by the deputy director general and chief director from the National DEA, the NRM directorate. This is the highest level of decision making in the country in relation to the implementation of government-led NRM programmes as discussed in Chapter Two. In facilitating the workshop, we asked practitioners to lead the presentation of their concerns, constraints and contradictions, and the process they collectively engaged in for the development of what they framed as their vision for implementing integrated restoration IAP control in the Blyde landscape. The engagements with directors from the rulemaking activity system were designed as both an office-based workshop and a field excursion for the directors to contextualise the actual complexities in the landscape. As such, practitioners from the four implementation activity systems also led the field excursion to show national directors their restoration focus areas with a specific focus on priority areas such as mountain tops and river canyon valleys that they are currently unable to implement projects in due to a lack of both resources and high-altitude technically trained workers. They expressed a need to expand the high-altitude team model, which would allow them to target the inaccessible areas and also explore alternative models which could allow local landowners to take control of managing their ecosystems. Upon discussion, there were general agreements from the national directors, although the funding was repeatedly expressed as a major constraint and a potential catalyst for transformation (see Figure 6.3 and Table 6.3 below).



Figure 6.2: National directors engaging with the Working for Water teams during the field visit in Mariepskop, one of the key focus areas for restoration IAP control projects in the Blyde landscape

Source: Photo by Jan Graf

From these engagements, the DEA national directors endorsed the initiative by practitioners to work towards developing integrated and coordinated restoration activities. They urged them to broaden their scope beyond just IAP control and to work holistically with all restoration NRM practices in the area in order to maximise the impact and access potential financing opportunities. It was clear from the national directors that the government would never have sufficient funding to restore such a big and complex landscape like the Blyde. This was summarised by their expressions:

National director 1: ...from my quick assessment it's going to cost billions to try and restore this landscape and government doesn't have that kind of money ... you need to explore other funding models ... there are a lot of private users and landowners in this space that are benefiting from your work, you need to engage them to invest ... there is a lot of IAP biomass that can be utilised to fund the restoration initiative ... there is more to do here. (BCCLW #3)

This endorsement from DEA national provided practitioners with both conceptual tools to enact their transformative agency towards developing integrated restoration practices, and possibilities of funding resource support to expand restoration work. The suggested actions by practitioners (see Table 6.2) were agreed upon and national directors provided further inputs and strategic directions. As such, a collaborative framework for the development of an Integrated Restoration Strategy was roughly formulated during the workshop (see Figure 6.3).

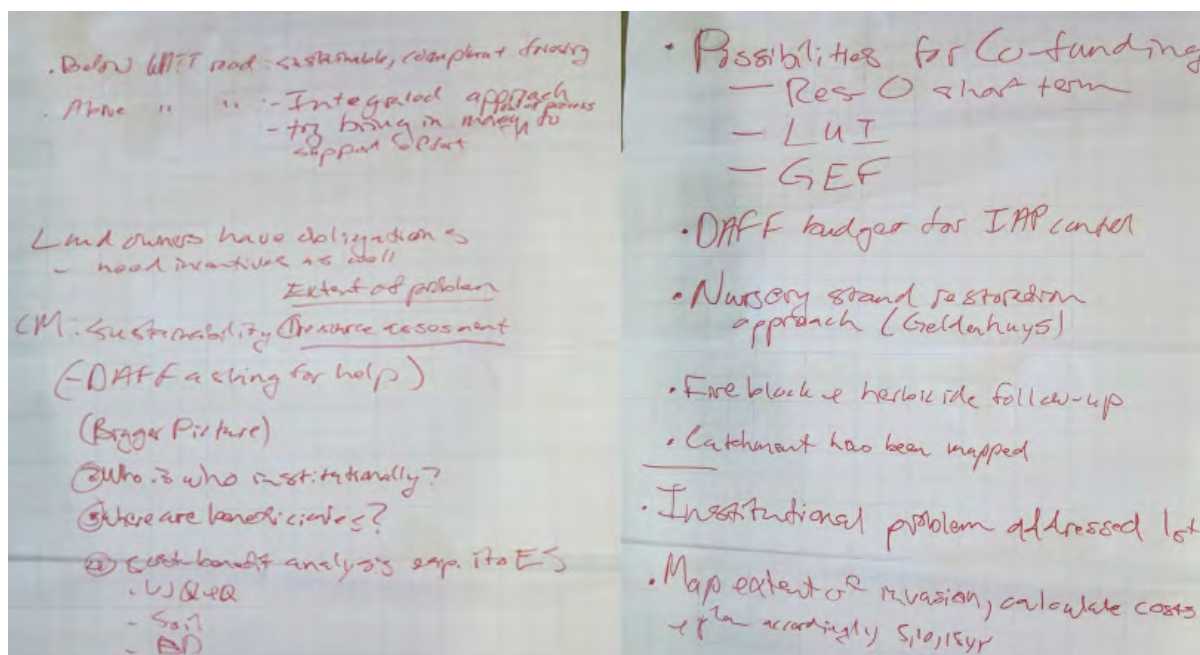


Figure 6.3: Workshop notes: Conceptualisation of a collaborative framework for the development of an Integrated Restoration Strategy (BCCLW #3)

Figure 6.3 above is the flipchart notes during the meeting which provide a synopsis of the summary of discussions during the BCCLW #3. The need to take an integrated approach was emphasised, which required bigger-picture thinking on the extent of IAP invasion and restoration needs, engagement of all necessary stakeholders and institutional agencies, development of a cost-benefit analysis and then exploration of alternative funding sources. All these would collectively contribute to the Integrated Restoration Strategy which could guide restoration NRM practices in the Blyde landscape.

Table 6.3: Descriptive version of a proposed collaborative framework for developing Integrated Restoration Strategy

Proposed collaborative framework for developing Integrated Restoration Strategy
• Need for a long-term strategy (10-15 years) to be endorsed and supported by the DEA national and other responsible departments such as DAFF, MTPA, DRDLR and RLCC. • Need for a coordination role through a coordinator. AWARD agreed that it could fund such a position for the first 2 years of the initiative through RESILIM-O funding from USAID. • Need for partnerships and institutional arrangements amongst multiple departments and landowners, especially communities involved in land reform. • Importance of working with the Department of Rural Development & Land Reform, and the Blyde four CPAs as they are the future landowners and custodians. • Need to involve a well-qualified community-based natural resource management person to support the co-management processes and development of relations with CPAs.

- Align this collaborative initiative with agreement amongst four ministries jointly calling for the development of integrated projects between DEA, DAFF, Labour, and Social Development and also bringing in the Department of Water Affairs and DRDLA.
- The need for an integrated operational plan, involving WfW, HAT, WoF, using different control mechanisms was agreed (incl. prioritisation and systematic plan in different land management units and who will be responsible for doing what on each portion).
- Need to develop value-addition through biomass utilisation to offset restoration costs was emphasised.
- Apply for a large, collaborative LUI involving all landowners, -users and managers would be ideal to drive this initiative forward.
- Examine current restoration budgets from different partners, and look into other sources of funding such as donor.

Source: BCCLW #3, Figure 6.3

From Table 6.3 above, the collaboratively developed framework highlighted two components of the Integrated Restoration Strategy, namely:

- **Operational and technical:** This included integration and working together in the implementation and management of restoration IAP control and relation restoration teams. Focus activities here included the co-planning across NRMPs groups, co-development of tools such as IAP maps, knowledge sharing, capacity development and training, etc.
- **Governance and institutional arrangement:** This included engagements and coordination across different stakeholder groups that were interested, affected and involved in restoration work, and to develop tools to support cooperative governance of restoration NRM practices such as learning networks, MoU, terms of reference, advisory committees, etc.

The above categories were a conceptual framing from that which was highlighted by the national directors, who argued for the need to take into cognisance the challenges of achieving integrated NRM restoration, as this would definitely take a long time to develop and the costs would be very high. They further pointed out the need to break this long-term process into manageable steps and then think of the required capacity and resources for each step. The national director argued the following during the workshop:

National Director 2: Thank you for the field excursion, it was really nice to see this place after a long time [...] it is important to think about the bigger picture ... I can see clearly that the IAP invasion problem has gone out of control and it will require a lot of resource to address and also

importantly to think about how to maximise the current resource we have to avoid loss of historical efforts by ensuring follow-up and working collaboratively. It is also good to see different practitioners who are leading the implementation of NRMPs in the catchment [...]. You need to plan for a long-term strategy, maybe 10-15 years, and then explore the possibilities for co-funding because restoring these catchments is impossible with just the EPWP funding. You need to think beyond EPWP, and you must explore applying for bigger funding like a big collective LUI for this area with everyone who is involved. (BCCLW #3)

6.4 Breakthrough on Implementing the Model: How can the Model be put into Practice?

In this section, I discuss the fifth stage of the expansive learning cycle which focuses on the implementation of the model into practice. A fourth BCCLW was convened (BCCLW #4), to examine the proposed framework for the Integrated Restoration Strategy as shown in Table 6.3. As such, the proposed collaborative framework (see Table 6.3) was used as the mirror data to facilitate engagement during the workshop (BCCLW #4). The main focus of the workshop was for *practitioners from the four activity systems to reflect on the applicability of the proposed framework by exploring the practical requirements including resource needs and capacity requirements for developing an Integrated Restoration Strategy as the agreed transformative pathways for advancing restoration NRM practice in the Blyde.*



Figure 6.4: Practitioners from the implementation activity systems exploring steps for developing the Integrated Restoration Strategy

Source: BCCLW #4

The average number of attendances in the previous BCCLW before engaging DEA national was between 10–12 practitioners. However, after the engagements with the rulemaking activity system (BCCLW #3), there was a significant increase in the number of practitioners who attended the following workshops. This was evidence that practitioners value the endorsement of their collective action from the national department. As such, we convened the fourth workshop (BCCLW #4), and there were about 18 practitioners from all four implementation activity systems. There were also other participants from landowners including private forestry, local NGOs and the conservation authorities. We started the workshop with a feedback process, and we asked practitioners who have been part of the last workshops to lead the feedback session. Extract 6.3 below presents some of the discussions from the workshop.

Extract 6.3: Excerpts from discussion during the fourth change lab workshop (BCCLW #4)

Facilitator: The two main aims of this workshop is to provide feedback to the bigger group from the meeting we had with the DEA national, which was focused on getting their support and input on the way forward for this project ... it was a great privilege to us for both the director and chief director to be able to come down to discuss our issues and challenges in our catchments ... we managed to take them around for field excursions to give them a broader context. Most importantly, we had about nine practitioners from this group who attended the meeting and I see five of them are present today, and we have asked with them to lead the reflections and feedback session. I will hand over to the guys to start the feedback session ... in summary, this is the rough list of key actions from the meeting [Table 6.3 was projected on screen]

Practitioner1: Our directors were very happy with our work ... I think we all now know what needs to be done ... we have collectively identified the key steps that are required for the Integrated Restoration Strategy. They suggested we start by doing IAP mapping to have inventory map and biomass assessment which will give us an estimate of the alien invasion problem in these catchments ... and also other degradation issues such as wetland degradation.

Practitioner2: You see this is where we have been stuck for a long time, on how do we develop long-term processes that allows for us to work collaboratively ... yes, we need some products like IAP maps and also wetland. IF we have such layers we can then do prioritisations to inform the implementation of projects ... I think some of the layers were developed in the past during the Blyde National Park times... maybe we can find some stuff still useful and we just update.

Practitioner3: ... yes we did the streams and wetland mapping for decommissioning of forestry plantation but that is old stuff because the aliens have grown back like crazy ... things can still collapse if no one is the custodian of the work ... and if you look at lack of management capacity within DAFF and MTPA as management authorities at the moment, it's a sign that things are going to be worse if we don't find a better way of working together to maximise the limited resource and capacity.

Practitioner3: I agree with practitioner1 because a lot of experts were involved the like of Mr XX from IUCN to facilitate the process but once they finished their job and delivered the Blyde national part proposal and forestry restoration strategy, but in the end the work just fell through the cracks. Similarly to the Save the Sand work coordinated by AWARD in the late 1990s and early 2000s, it just fell through immediately when AWARD was no longer coordinating the process.

Practitioner4: I am sure practitioners knew what to do next in order to take the restoration forward ... maybe the problem was just beyond them and other who were supposed to take charge of governance and resourcing didn't do their part ... I really liked the meeting with the deputy director general and chief director, it was amazing how they were supportive of this work and yet half of the time we think they are not taking action to support us. We have big problem with the DEA bureaucratic systems of working with EPWP processes and so on, but they see it differently and are encouraging us to think beyond the EPWP.

Practitioner5: Ok ok ok ... let's not get carried away here... I think let's go back to that list [referring to Table 6.3], and identify a way forward from all those actions. I think from the discussions with our directors, we first need to formalise this group as they have endorsed it ... and AWARD has agreed to be the interim coordinator through their USAID funding.

Practitioner1: I agree with practitioner5, and also we must think of exploring other funding source and potentially applying for a big Land User Incentive (LUI) funding from DEA national as the director suggested.

From the above expressions and the follow-up discussions, the group agreed on narrowing down the list of actions in Table 6.3 above into process-oriented steps as a way forward. It was also noted that some of the steps outlined above may have already been partially done through previous efforts, such as the restoration plans under Blyde National Park, IAP mapping and an existing IAP clearing plan, but the group agreed that all these tools must be updated in the context of supporting integrated restoration across different partners. A flow diagram was developed (see Figure 6.5 below) as a step-by-step concept mapping process based on the agreed actions Table 6.3.

A flow diagram was expressed as another way to represent that the agreed steps in Table 6.3 were not linear but rather iterative and interlinked which required systems thinking. The idea of a process flow diagram was proposed by one of the practitioners:

Practitioner1: ... when I look at this list of steps [referring to Table 6.3] I see two flow processes here. One focusing technical stuff like the new IAP inventory and the need for a joint operational clearing plan ... and the other process is more of institutional and governance stuff ... to engage all of our partners and develop some sort of agreement on how we work together and who will do what ... these two processes are linked and influence each other.

As the discussion on a flow diagram continues, other practitioners were agreed with the suggestion and the facilitator captured visual representation in a flip chart during plenary session as presented in figure 6.5.

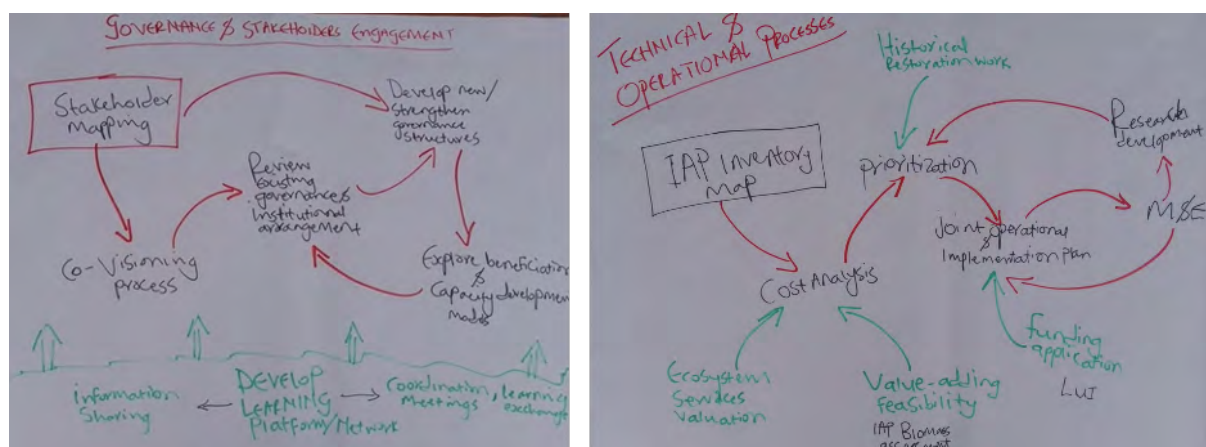


Figure 6.5: Concept mapping flow diagram representing governance and technical operational processes for developing Integrated Restoration Strategy

Source: BCCLW #4

- **The governance and stakeholder engagement process** was the foundation of working towards an integrated restoration approach. This included conducting a detailed stakeholder mapping as a first step in order to understand who was doing what in terms of restoration and related NRM practices. This needed to be followed by co-visioning to further deepen stakeholders' aspirations linked to their objectives and mandates. Thereafter, the governance and institutional arrangement needs as tools to support the co-developed vision had to be explored, and this should inform what capacity development needs there were for stakeholders as future custodians of restoration practices. All these processes were underpinned and facilitated at the collective learning platform or network level, and this learning network should carry forward among other things the coordination, learning exchanges and information sharing.
- **Technical and operational processes:** This was discussed and agreed that the first step should be to understand the extent of the degradation problem and restoration needs. Therefore, developing an IAP inventory to map the extent of invasion was a sensible agreed starting point. This should be followed by a cost analysis of restoration IAP control interventions (i.e. how much will it cost, how many teams, what skills and tools, etc). As part of cost analysis, it was agreed to also develop a detailed analysis of ecosystem valuation processes (what and how much we are gaining when we restore or losing if we do not) and also explore other ways of cost offsetting and value adding potentials (i.e. using IAP biomass for eco-furniture, charcoal, etc). After this, a prioritisation of what, where, and how to restore needed to be developed, and this had to be informed by historical restoration work to ensure follow-up and security of prior investments. A joint operational plan that outlined who needed to do what and linked to available resource and skills capacities had to be developed. This joint operational plan should continuously be strengthened by a reflexive monitoring and evaluation process that ensured that the learning insights were integrated into the plan, and to identify research development gaps and apply for funding such as the DEA LUI as a collective of Blyde restoration partners.

As the deliberations on the above process flow diagram continued, some practitioners felt that separating the operational and governance processes would create confusion, as other stakeholders may see this as two different processes which would further create tensions on the bigger objective of working towards integrated restoration NRM practices. Therefore, some

practitioners argued that the two processes should be integrated. This was expressed during the workshop as shown in Extract 6.4 below.

Extract 6.4: Excerpts from discussion on development of an integrated strategy and formalisation for the Blyde restoration group (BCCLW #4)

Practitioner2: I like how we have developed these flow diagrams but I feel like some people out there won't get it. I think we need to show the linkages between technical and governance processes because in reality they support each other.

Practitioner3: I agree with practitioner 1, but I think let's ask our facilitators from AWARD to polish these diagrams a bit more and we can then see how this looks in the next meeting.

Practitioner4: Ok at least let's agree on a way forward. Going back to meeting with DEA national, we agreed that it will be valuable to have a formal structure for collaborations and appoint a coordinator. So this group is the structure and AWARD offered to coordinate. What is missing is the terms of reference of how this group will function ...

Practitioner5: As this group will be like our group for working together in restoration ...

Practitioner6: ... let's just call it the Blyde Restoration Working Group.

Practitioner1: I support it, that is a good name... the group will then coordinate the collaborative vision work and engage all the partners as suggested earlier. We trust AWARD as our coordinators on this.

Practitioner7: But we are going to have a problem a bit ... if we bring everyone to the group meeting it will be too large to manage especially on issue that don't need everyone at the same time. Like the technical thing such as APO alignments and IAP mapping stuff will not need everyone ...

Practitioner3: That is true, maybe we need sub-groups then ...

Practitioner8: Yes small groups for technical and governance stuff. Like now we work with advisory committees in the areas we are implementing IAP clearing. So we can just expand those committees to include more stakeholders.

Practitioner6: ... so the technical group can work on specific things but must report back to this bigger group.

Practitioner9: Now that the group is official and we are going to work on terms of reference ... we need to also engage other key stakeholders ... we discussed this in previous meetings on engaging communities, forestry, municipalities, and also work closely with the local conservation agencies, and private guys like the tourism guys downstream of the catchment. I think it's too much to do at once but that must be captured in the terms of reference it else it will fall through the cracks ...

From Extract 6.4 discussions, there were key action-based agreements that were collectively identified by practitioners, and these included:

- The need to ensure the systemic connections between governance and technical processes in developing the Integrated Restoration Strategy.

- The need to formalise the group name and develop terms of reference on how the group should function in supporting the coordination of restoration NRM practices. Practitioners agreed to call it the Blyde Restoration Working Group (BRWG), and the formative interventionist research team from AWARD was officially nominated to be the coordinators.
- The need to expand the BRWG stakeholder engagement process, deepening the restoration object in working with other key stakeholders in restoration including local communities, forestry, conservation agencies, etc (also see Chapters Seven and Eight on boundary crossing expansive learning and ETADS).

6.5 Adjustment and Enriching the Implementation: How Should the Model Be Revised?

This section centres on the fifth stage of expansive learning (implementing the new model) with a specific focus on testing the model and exploring how it could be enriched and adjusted to incorporate new ideas and suggestions. At this point in the formative intervention research, the Integrated Restoration Strategy was the agreed model for guiding the future of restoration NRM practices in the Blyde landscape. Based on discussions and agreements from the fourth BCCLW, the formative interventionist team was tasked to refine the flow diagram (see Figure 6.4) to highlight the systemic nature of the governance and technical processes for the Integrated Restoration Strategy. This process of work-away tasks is critical in facilitating an expansive learning journey. Engeström and Sannino (2016) refer to this as the task-specific solutions to the activity or mini-micro cycles. Practitioners from different implementation activity systems were also tasked to work on collating historical data and plans on restoration-related practices in the Blyde catchments landscape. It was further agreed that both the refined flow diagram and the historical information would be discussed in the next CL workshop.

In reconceptualising the process flow diagram, our focus as the formative intervention team was on identifying key feedback loops that would provide *transformative agency pathways* (see Jalasi, 2020) for collaboration in restoration NRM practices. I referred to these transformative agency pathways as TADS, as they are steps and tools that mediate the development of practitioners' agency to act. Engeström et al. (2020, p. 1) explain the TADS as:

...based on Sannino's recent work on transformative agency by double stimulation (TADS), a truly educational approach to agency is gaining traction. In double stimulation, a person or group

faces a paralysing conflict of motives (first stimulus) which is resolved by identifying a meaningful artefact that is turned into a sign (second stimulus). Today's critical learning challenges typically do not have obvious or 'correct' solutions. They require a pedagogy that allows learners to face conflicts and construct artefacts to help break out of their paralysis. The paradigm of double stimulation ..., offers a starting point for a pedagogy of agentive actions and expanding possibilities.

The TADS (see Figure 6.6) emerging from the Phase 1 formative intervention research process in this study are labelled as 1, 2, 3 and are described as key tools and processes for enabling co-learning and integrated implementation of restoration NRM practices. The TADS are presented as feedback loops connecting different stages (see text box), and they are supported by different tools (unboxed text). These feedback loops were identified as the re-enforcing processes that ensured reflexive learning from historical work and navigating towards an integrated approach for the implementation of restoration NRMPs. One practitioner argued the following during the fourth BCCLW:

We have to be very careful not to repeat past mistakes ... most of us have been working for long enough in these landscapes and we have seen a collapse of good ideas such as the Blyde National Park just because there was inclusive processes that allowed for integration and working together ... you see the land claim is a different thing, the NRM programmes is a different thing and has its own issues, then you have the protected area expansion of the existing reserve, you have the decommission of forestry. The question is how can all these things inform each other like connected chain?

The above expression was critical in emphasising the importance of governance tools and processes that allowed for collective action. In the workshop with the DEA national, the director also expressed the importance of working with all landowners and not just private sector custodians.

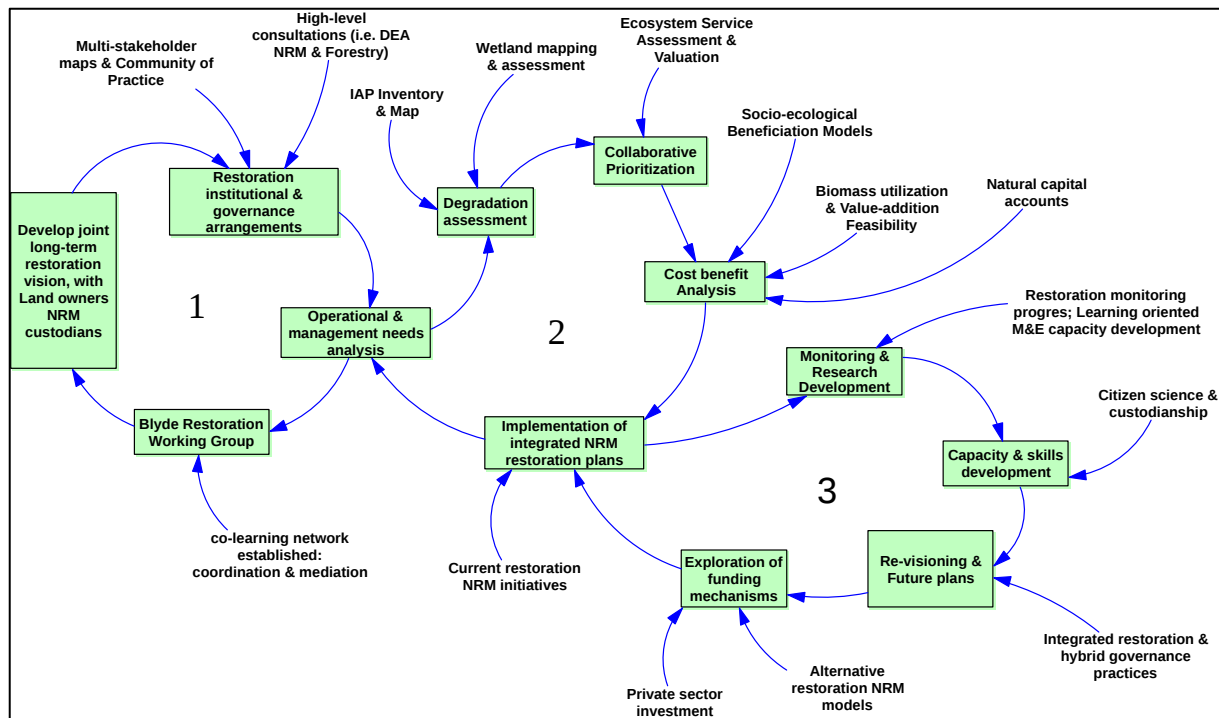


Figure: 6.6: Tools and processes for TADS for enabling co-learning, sharing and integration between and among restoration NRM practices

Source: Researcher's own

It is important to note that the three TADS pathways (1, 2, 3) are interlinked (as represented through connections) but are not necessarily interdependent, meaning each TADS can still be developed individually via a set of learning actions, steps, and tools (green box text) which are facilitated by other partners and supported by other outputs and products (unboxed text). Below, I briefly discuss specific learning actions that were, at this point in the research process, being undertaken by restoration practitioners towards further development of the three TADS.

6.5.1 TADS Pathway 1: Stakeholder mapping and co-visioning the matters of concerns for institutional and governance across different NRM practices

This expansive learning and transformative agency (TADS) pathway explored the possibilities and opportunities of developing the collaborative long-term vision for all restoration NRM and related ecological infrastructure in the Blyde catchment landscape. Doing so would require extensive stakeholder engagement for all partners who were currently involved in restoration work and those interested or who may be impacted by the restoration work. The focus of this TADS was on addressing challenges and contradictions relating to governance (how could restoration NRM practices be collectively managed). The establishment of the learning

network was identified as a key tool to support co-inquiry with all stakeholder groups (see also Pesanayi, 2019), in order to conceptualise core matters of concern and management needs analysis. From the previous CLWs, an agreement among the four restoration NRMPs and the DEA national was reached to formalise the existing group of practitioners as a foundation of the learning network, and practitioners agreed to call it the *BRWG* and further agreed on *developing the terms of reference for the group*. The next process under this learning pathway would be the engagement of other stakeholder groups to form part of the learning network and these included communities, municipalities, local conservation agencies, and the private sector (see Figure 6.7).

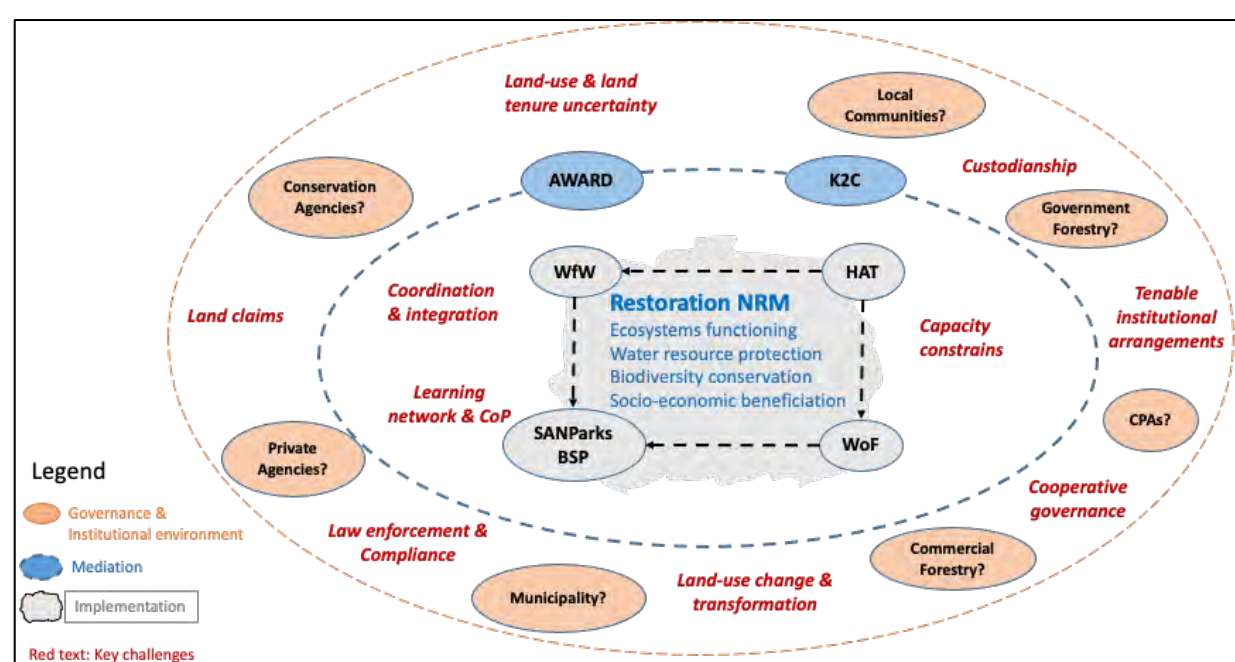


Figure 6.7: TADS pathways 1 for Stakeholder mapping and co-visioning the matters of concerns for institutional and governance across different NRM practices

Source: Researcher's own

Figure 6.7 shows the key stakeholder groups that needed to be engaged, based on discussions from the BCCLWs with restoration activity systems. All these stakeholder groups had a role to play towards restoration NRM practices (centre grey shaded box with blue text). Closer to the centre are the four NRMP activity systems (grey) that were at the time of the study responsible for implementing restoration IAP control projects. In the middle circle are the two NGOs supporting the mediation processes including coordination and capacity development. AWARD was the main mediating NGO towards supporting restoration NRMPs, while K2C

was involved in working with local conservation agencies and communities for the declaration of biodiversity stewardship and proclamation of protected areas, which were important practices in the broader NRM and ecological infrastructure. As such, K2C was recognised as part of the mediating activity systems, the role that was mainly carried by AWARD only. In the outer circle are the governance activity systems made up of landowners and custodians. These included stakeholder groups such as municipalities, communities and CPA communities, commercial forestry, conservation agencies and private agencies. It is important to note that so far in this research, only the four NRMPs, DEA national and AWARD had been fully involved, and the recommendations to expand this formative intervention research process to the other identified stakeholder groups was a collective decision taken during the fourth BCCLW. I referred to this as an expansion of the object towards exploring cooperative governance of restoration NRM practices in the Blyde catchment landscape (also see Section 7.3 on expansion of the object and emergence of PDCs).

6.5.2 TADS Pathway 2: Co-development of operational and technical management actions and tools for restoration IAP control activity

This TADS pathway was focused on exploring the collective agency towards the co-development of learning tools and products that were critical in addressing the current uncoordinated and siloed restoration NRM practices. This would involve steps such as collaborative degradation assessment through the development of tools such as IAP inventory, wetland mapping, erosion assessment, etc. Other steps might include collaborative prioritisation of key restoration practices and actions, and this would be informed by the cost-benefit analysis. All these steps would guide the collective and integrated implementation of restoration NRM practices such as IAP clearing.

During the fourth BCCLW, practitioners expressed the importance of starting with exploring the processes of developing an IAP inventory map as an initial step to understanding the scale of restoration needs (degradation assessment). This was expressed as an important process to get updated data on the degradation scale across the Blyde catchment landscape and they argued that this needed to continue even though other stakeholders were not yet engaged in the BRWG.

Practitioner1: We need to start working on the IAP inventory map as soon as now... We will need to have a rough idea of the scale of the problem when we engage other stakeholder or else how do we ask people to be part of something we are not sure of ...

Practitioner2: I agree [...] we are responsible for implementing IAP clearing in these catchments and other stakeholders will expect us to know the scale of the problem. It doesn't need to be too detailed at this point but we need to start working on it.

Practitioner3: In terms of IAP invasion we have enough data to put together [...] what we don't have is the other form of degradation like wetland mapping, erosion and sedimentation.

Practitioner4: I think the idea is to start with mapping IAP invasion and later we can work on other forms of degradation including wetland mapping ...

All practitioners agreed with the above suggestions and the second part of the fourth BCCLW (afternoon session of the workshop) focused on the initial steps for the development of the IAP inventory map. The fourth BCCLW was a full-day workshop from 09:30–16:00 as shown in the agenda below (see Figure 6.8)

 		
Blyde Restoration Project Group meeting		
Meeting date: 22 April 2016 Time: 10:00 – 15:00 Venue: Thaba Chweu Municipality offices, Graskop		
Agenda		
Item	Discussion	Time
1.	Welcome and introductions	10:00
2.	Brief overview of day and aims of the meeting	10:10
3.	Reflection on Blyde restoration group meeting with Drs. Preston & Marais - Brief overview of proposed main steps forward - Discussion and further refinement of these steps - Developing time schedule for steps	10:15
4.	Detailed planning for initial steps: Sharing the Methodology - Updated IAP inventory and map for Upper Blyde & Klaserie - Engagement of landowners, communities and further partners (If time allows further steps could also be looked at)	11:00
	Lunch	13:00 – 13:45
5.	Updates from different programmes/projects on aspects requiring coordination and collaboration amongst different programmes/projects	
6.	Brief reflection on day	14:50
7.	Close	15:00

Figure 6.8: Agenda for the fourth change laboratory workshop

Source: BCCLW #4

To facilitate discussions on the IAP inventory mapping, we used the activity system analysis tool to develop diagnostic questions that helped practitioners explore different data requirements, capacities and relevant stakeholders for the IAP mapping process. To refresh practitioners' memory and for the benefit of new practitioners who by this time had only joined

the fourth BCCLW, I provided the contextual background to the activity systems analysis and an overview of CHAT and expansive learning theory (see Figure 6.9).



Figure 6.9: Practitioners engaging with the activity system analysis approach in the fourth BCCLW

Source: BCCLW #4

Some of the practitioners were already familiar with the CHAT and expansive learning from the previous BCCLWs, nonetheless, the recap on the methodologies was greatly appreciated. The object of activity systems analysis was conceptualised as *planning the development of the inventory map*, and we collectively developed a series of diagnostic questions as a mediation tool for discussions (see Figure 6.10). As such, we divided practitioners into two groups for the activity system analysis exercise, and there was a report-back session in plenary.

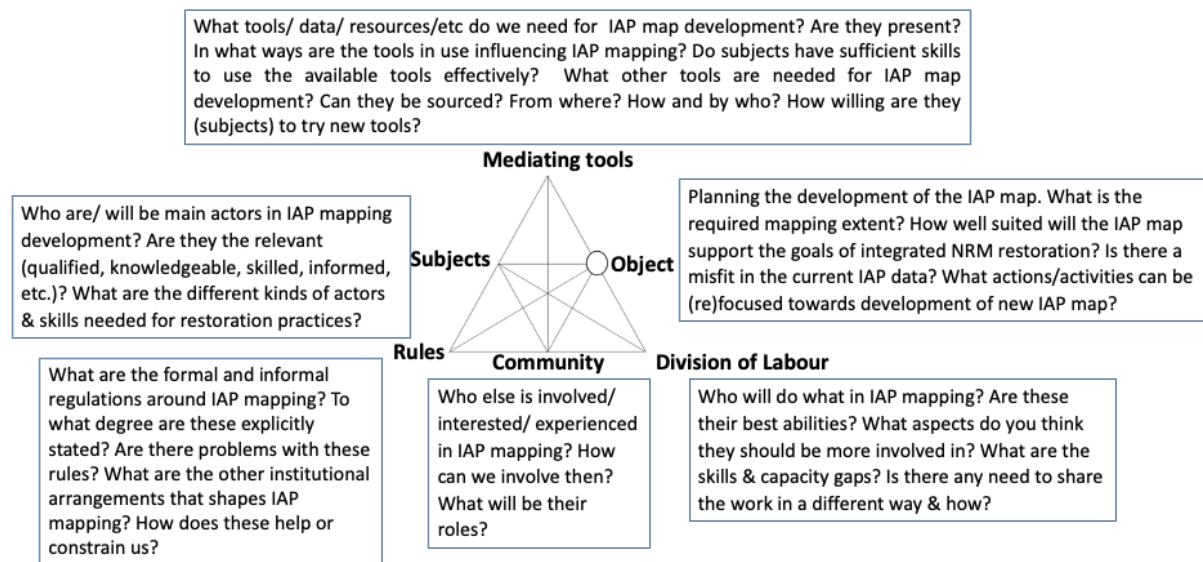


Figure 6.10: Using activity system analysis as a second stimulus tool for facilitating development of IAP inventory mapping

Source: BCCLW #4

In the interest of time, it was agreed that the two groups should focus on different aspects of the activity systems analysis. i.e. group A focused on tools and subjects, while group B focused on community and division of labour. The object was done in plenary as an example before the group exercises. Each group had a facilitator and a scribe from the formative intervention team. After the exercise, the two groups presented their report back with further input from each other. Key points from the report back were summarised in the flipchart (see Figure 6.11).

Subject (Who?)	Who should be involved in coming up with the inventory map? Are they the relevant people (qualified, skilled, etc.)? What capacity is required?	• Restoration coordinator- AWARD • GIS steering team (made up of personnel from the NRMP agencies)
Mediating artefacts/tools (How?)	What tools do we need for the inventory map? Are they present? In what ways are the tools in use constraining or influencing the construction of the IM? Do subjects have sufficient skills to use the available tools effectively? What other tools can be needed for the work? What knowledge and skills are needed? Can they be sourced? From where? How and by whom? How willing are they (subjects) to try new tools?	• Plantation maps (species list, size, age, estimate of invasion) • List of people working in plantations • Budgets allocations on restorations • GIS data from technical personnel • Annual operational plans • Management plans for both Indigenous & commercial • Satellite data & remote sensing (aerial photos) • NBAL analysis (Historical, current, future plans)- Historic data from 2004-present • APO tool (Budgets, ha, species) • MUCP (Management Unit Clearing Plan) • Use GPS field mapping (cyber track) • Natural vegetation maps • Blyde Nature Reserve management plan • IAP data within MTPA reserves • Historical fire data • Fuel load data (IAP included) • SANBI rapid detect programme (emerging IAP species)- • Data from the Agricultural Research Council
Community (Who else should be involved?)	Who else can support the development of the IM? How can they be brought on board?	• Blyde Land claimant communities (historical data & Indigenous knowledge) • Environmental monitors from local communities • Engaging CMAs • Municipality spatial planning • Commercial forestry • Conservation authorities & tourism agencies
Division of Labour (Who does what?)	Who should do what in developing the IM?	• AWARD to lead communications and data collection • NRMPs practitioners- Technical & GIS steering committee • Other identified stakeholders to share IAP data
Rules (What regulates the activity?)	What can constrain us?	• Need for data-sharing agreements amongst NRMPs • Need for data protection and management (referencing & patent rights)

	What are the other structures that may shape the way the work is done? Timeframes in which the activity needs to be done	• Agreements with involved institutions: the need for a formal letter to be developed by AWARD requesting support from partners to share data • The need to develop the terms of reference amongst different institutions involved in IAP control and the larger collaborations on restoration NRM practices
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Source: BCCLW #4

Therefore, the IAP inventory map would be one of the TADS tools to enable practitioners to understand the extent of the degradation challenge in order to fundraise and engage partners with accurate understandings. The IAP map was seen as an important product that would be tested and piloted by practitioners as they planned for and prioritised their annual restoration plans and budgets requirements. It was further agreed that the practitioners should meet twice a year for an APO workshop, in which they would share their restoration IAP control plans, and this was to be informed by the collaboratively developed new IAP inventory map. This was expressed by practitioners during the fourth BCCLW:

Practitioner1: The IAP inventory will be very critical to inform the existing clearing plans while we are working towards developing the long-term strategy.

Practitioner2: We need to put recommendations that the technical sub-group of the Blyde Restoration Working Group must meeting regularly to share and discuss APO to ensure alignment and coordination.

Practitioner3: I think meeting twice a year will be good ... first meeting in the beginning of our financial year around March or April, and then later around November to reflect on our progress and to plan for the new financial year.

It was also agreed that a series of follow-up workshops on the development of IAP inventory would be required – the focus would be on the technical aspects of collating all existing IAP data, identifying the gaps in existing IAP data and also developing the mapping protocol. i.e. which IAP species would be the most in focus and how or what mapping techniques and methods could be used.

6.5.3 TADS Pathway 3: Capacity building and skills development to empower local actors, developed ownership of restoration IAP control and exploring alternative funding models

This TADS pathway focused on exploring tools and processes for sustainability and institutionalisation of restoration IAP control projects. The need for capacity and skills development of local communities as future custodians was identified as a critical gap. In addition, a need was identified for the development of monitoring and evaluation processes that were reflexive and provided feedback loops to inform future planning, implementation and governance of restoration NRM practices. Therefore, the main focus under this TADS pathway was to support capacity development within landowner structures to become future custodians in implementing and managing restoration NRM practices. i.e. local CPA communities who had successfully claimed their land through land restitution but did not have the capacity or skills competencies for sustainable management of biodiversity and water resources on their land. Restoration IAP control was identified by the restoration activity system practitioners as one of the important practices for supporting the capacity development of new landowners to strengthen their governance and management capacities. This had emerged during the third BCCLW with the DEA national, as the director argued:

National director: We can't ignore this situation, the impacts on water are huge. We have to do restoration here in these catchments. The IAP biomass could be utilised to offset costs and job creation but an integrated plan is needed. One also has to look at land use and ownership ... land claims are the wild card in the space as new landowners are claiming for benefits but also inherit the liabilities and responsibilities such as IAP invasion on the land. (BCCLW #3)

Furthermore, the need for engaging communities and supporting capacity development and training processes was again reiterated in the fourth BCCLW (see Extract 6.5).

Extract 6.5: Excerpts from the discussion on engaging local communities as key custodians in restoration NRM practices and contradictions of the EPWP model (BCCLW #4)

Practitioner1: We haven't talked about capacity development and training. I have attended one meeting with the CPAs. Trust me they are not happy and now that the land claims is almost finalised they want to be involved more, not just for employment. I think we need to think about how to do that.

Practitioner2: The issues on exploring bigger funding possibilities is very important ... that will allow all these possibilities to develop all the restoration tools we need, and also training for CPAs. We are really under estimating how important the CPA communities are ... I mean they have claimed and now own upper Klaserie, upper Sand and upper Blyde catchment including the Blyde reserve. These are important strategic water source

areas ... we have been implementing restoration IAP control teams in all these areas but most of that historical work has collapsed because landowners are not custodians on these programmes.

Practitioner3: You are very right [referring to practitioner 1] local communities out there don't see our restoration programme as something they can learn from and participate in ... the EPWP thing has given us a bad name. It's very difficult to engage people without being called names and sometimes we are physically harassed ... you can't blame the communities we haven't really fully engaged with them ... maybe we should think of that bigger LUI proposal suggested by the chief director. Then we will have enough resources for meaningful training.

Practitioner4: Unfortunately we can't suddenly change the EPWP model in which communities are minimally involved just as workers for IAP clearing teams. It's a catch 22 situation ... we want a better implementation model but we are stuck with the EPWP model because it is currently the only way government is funding restoration work.

Practitioner5: Well, the EPWP model is not well suited for our work ... we all know it is one of the reasons we are having issues with people because that type of short-term stop-and-go whatever you want to call it is not employment ... I think we need to start thinking beyond EPWP, especially into private sector.

Therefore, the co-development of the LUI proposal was seen as one of the learning tools for collaborative implementation of restoration IAP control teams and support for capacity development for custodianship. There was also a strong emphasis on the need to explore possibilities for systemic transformation of restoration models such as EPWP that held the ethical-political dimension of restoration work such as the creation of employment and capacity development (see Chapter Seven on the emergence of PDCs).

As such, it was further agreed that local CPA communities should be engaged as critical stakeholders and future strategic partners in the restoration NRM practices in the Blyde landscape where they had claimed most of the land. In addition to local CPA communities, other land management institutions and custodians such as local conservation authorities, forestry management agencies, and private tourism agencies that were dependent on the Blyde catchment landscape for ecosystem services such as water were also conceptualised as critical and should be engaged as part of developing *a collective long-term vision with all stakeholders* on restoration NRM practices. Another learning action under the third TADS pathway was to explore alternative funding models and sources for restoration work. There were strong expressed constraints within the government EPWP funding model (see Extract 6.5 above). The LUI funding model was suggested by DEA national in the third BCCLW as an immediate alternative to supporting custodianship in local communities and landowners through training and mentoring them in managing and implementing restoration IAP clearing programmes.

In Chapter Seven, I highlight the research expansion in terms of stakeholder engagement as new activity systems emerged as practitioners collectively started working towards implementing the three TADS pathways. Chapter Seven also highlights the expansion of the restoration IAP control object towards reconceptualising restoration IAP control as a common good object for advancing socio-ecological justice. The object expansion was analysed through analysis of PDCs that emerged between and among different groups of activity systems when exploring the identified three learning pathways.

6.6 Conclusion

From the above three TADS pathways, it became evident that the research process had, by the end of 2018, expanded both in scope (re-conceptualisation of the object from strengthening collective action among implementation activity systems, to exploring custodianship and sustainability of restoration NRM restoration interventions for the socio-ecological common good). The other expansion was in terms of new actors and activity systems, a form of expansion that Engeström and Sannino (2020) refer to as the socio-spatial expansion of the object (see Section 7.3). In Chapter Seven, I describe the boundary crossing constellation of activity systems and the emergence of a new form of contradictions (power-dynamics contradictions or PDCs). These PDCs are mainly experienced when the object undergoes reform, restructuring or when a new object emerges. These contradictions present themselves as quaternary contradictions across groups of activity systems. Evidence of PDCs could be seen as tensions at the coalesced level between two or more expansive learning cycles which emerged from the constellation of activity system groups. Chapter Seven also begins Phase II of the research, which I introduce informally next, offering an interlude between Phase I and II of this expansive learning research project that took place over these periods – Phase 1: 2015–2018; Phase 2: 2019–2023.

Phase II Orientation Chapter: Encountering Power-Dynamics Contradictions and Journeying with Fourth Generation CHAT

Just like in Part I, I use this orientation piece to reflect on the expansion into Phase II of this study. Again, this orientation chapter allows me to express personal reflections in the form of storytelling and open discussion on my journey towards fourth generation CHAT.

The transition from Part I into Part II of the study

In summary, part I of the study was focused on exploring the historical context and current initiatives in restoration NRM practices in order to surface tensions and contradictions that are constraining collective action at the catchment scale. These contradictions were addressed by facilitating longitudinal expansive learning processes using the formative interventionist approach, focusing on building transformative agency pathways using double stimulation principles to help practitioners envision new learning actions and tools for integrated restoration NRM practices at the catchment landscape level, as captured to the end of Chapter Six.

The implementation of TADS as the new model for advancing the restoration NRM object, led to an expanded zone of proximal development, in which additional activity systems groups and the ethical–political dimension of the object became the key focus of inquiry. The ethical–political dimension was a fundamental framing which shifted practitioners’ views on rethinking restoration NRM as sustainability commons that should be co-managed by all actors (custodianship), especially by those who were historically denied access to managing their natural resources (socio-ecological justice).

As such, engaging local communities represented by the CPAs became the central focus for advancing restoration NRM practices as CPAs have claimed their land back and they were identified in Phase 1 of the study as amongst the largest landowners in the upper Blyde landscapes. However, practitioners engaged in the Phase 1 enquiry were not at ease with working collaboratively with CPAs as some argued that community structures in their current form do not have the necessary capacity to implement and govern restoration NRM projects. This raised evidence of historical approaches in NRM linked to colonial and apartheid eras, in which local communities were forcefully removed from their land and their agency was taken

away as they were denied both access to participate in management and beneficiation from their land. This historical socio-political approach of subjugation created a multitude of complex socio-ecological issues that continue to impact NRM practices in Southern Africa and the wider Global South. In South Africa, the land claim process became one of the ways to address these historical contradictions as an attempt towards socio-ecological justice.

As noted above (see Chapter Six), both the four implementation activity systems and the national rulemaking activity systems emphasised the importance of working with local landowners and actors as drivers for the future sustainability of restoration NRM practices (see Chapter Six). In CLWs, directors for the rulemaking activity systems explicitly pointed out land claims and local CPA structures as the key drivers of change, and the need to see the bigger picture beyond the government's model of funding and implementation (for summary see Table 6.3). As such, I embraced these suggestions in this study, which formed the key fundamental of expanding from Phase I to Phase II of the study.

Expanding from Phase I to Phase II of the study

As indicated in the narratives describing Phase I of the study, this took place between 2015-2018. After developing an almost complete draft of Phase I of the study, I realised that the most important contribution of the study lay in expanding beyond Phase I. Together with my supervisors, I realised that the work was on the cusp of important expansions in the field of CHAT research, which were evident in the study data and context, as well as the theoretical field. In particular, we noted:

Expansion of the conceptual framework of the Phase I work, from a focus on expansive learning among NRM activity systems around IAP control to a more complex conceptualisation of expansive learning as systemically constituted expansive learning around a configuration of different types of social-ecological activity systems that are more or less aligned to a complex social-ecological resilience building object that relates to the IAP control system of activity but expands beyond it.

Within this, was emerging evidence of:

- Expansion of the theoretical framework of the Phase I work, from third generation CHAT to empirical and theoretical engagement with an emergent trajectory of fourth generation activity theory which – at the time – was being constituted and theorised

around complex objects such as climate change resilience building in social-ecological system contexts. Additional theoretical deepening was emerging from the study data, particularly around generativity related to power relations as a significant generative mechanism, and at the time we were discussing a viable and interesting way of theorising and analysing this. We reasoned that this could contribute to third and fourth generation CHAT, which at the time was under-theorising generative mechanisms such as power relations.

- Expansion of the empirical foundation of the research, from an initial focus on four activity systems centred around IAP control to a more complex configuration of multiple activity systems that are rule-producing activity systems, governance activity systems, and operational activity systems (i.e. three different types of activity system) configured via their interactions in a social-ecological system, but more so within an emergent social-ecological expansive learning system. By the time I had completed Phase I, I still had substantive amounts of data that were related to the emergent expansive scope outlined above, that could be further expanded and analysed.
- Reflection on Phase I revealed substantive movement in the field and object of activity, but theoretically, the study still needed to make a theoretical and more expansive field-based contribution, i.e. it still needed to clarify and make its contribution to new knowledge.
- In Phase II I therefore set out to explicitly contribute to expanded praxis outcomes surrounding the IAP object and the emerging wider social-ecological systems development object of the study and to the fields of environmental education and expansive learning, with a specific interest in also potentially contributing to the emergence of fourth generation CHAT, while contributing to the growing body of research on expansive learning and natural resources management, and sustainability in Southern Africa, which I had already partially addressed in Phase I.

In June 2019, I started the ethical clearance process for the expansion of the study from Phase I (2014-2016) into Phase II (2019-2022). After an expanded ethical clearance agreement with new stakeholder groups including the local CPAs and youth restoration team (see Appendix B on consent forms). I conducted a series of formative interventionist engagements on the newly expanded research scope focusing on advancing ETADS pathways (see Chapter Eight):

- with four implementation activity systems represented by practitioners including project managers, data managers, regional managers, and training coordinators;
- the Blyde local communities through engaging the four CPA structures which represent community interests in co-management and development of land uses in all their land claimed areas within the Blyde landscapes. They also represent communities in local, regional, and national committees and structures on land claims discussions and community development initiatives;
- the private forestry and conservation tourism agencies as key landowners in the land landscapes;
- the regional and national departments as rulemaking activity systems responsible for the development of operation support tools for the implementation of restoration NRM practices. These included the mandated DEA-NRM directorates, the DAFF forestry, Indigenous management, the local government conservation agency; and
- collaboration with other local civil society NGOs such as the Kruger-to-Canyon in facilitating formative interventionist initiatives.

The above expansion of activity systems was the foundation of the *constellation of activity systems groups* which enabled the emergence of the *three coalescing expansive learning cycles* that are discussed in Chapter Eight.

At this stage of the research, I was still not sure how to develop the methodology for both the research engagement and analytic processes. I was still referring to this as third generation CHAT in which two or more activity systems with partially shared objects are engaged (Engeström, 1987, 2001), as was the case in Phase I of the study. However, I was struggling to make sense of the partially shared object across this much more complex configuration of activity systems groups. In broad terms, they are all working within the sustainability context, but is sustainability an actual object? I tried focusing on what these activity systems actually do and what was driving their interests (i.e. their motives). I found out that others were interested in maximising the benefits from their land (is this profit-driven?), others were interested in restoring landscapes to sustain the ecosystem services (restoration for who?), and others were interested in reclaiming their own land so they can benefit from it (how do they want to benefit?), and others were interested in ensuring there is good management of natural resources by making rules and laws (how is this implemented?). The more I tried to figure out a partially shared object among the different activity systems I had identified, the more

questions I had. In the end, I started framing this as a complex issue because I was struggling to make sense of how to engage and address these issues. This was more akin to Engeström's (2009) 'runaway object' which he mentioned when charting out the future of activity theory and also resonated with similar complex objects encountered by other researchers working in the sustainability and NRM space in Southern Africa such as Pesanayi (2019; see also Lotz-Sisitka et al., 2021) who found their research objects expanding, with wider ranges of related activity systems that seemed to reach beyond the descriptive capability of third generation CHAT at the time.

Sharing the challenge and confusion within the NRM and education sectors

In 2016, I started sharing the AWARD Blyde restoration work with wider communities in both the NRM and the education sectors. A big part of this was presenting the emerging preliminary findings from Phase I of the study in conferences and workshops. Below I list some of the key conferences that I attended and where I presented this work.

- **Thifhulufhelwi, R.** (2016). Using social learning approaches to expand learning and transform restorative invasive alien clearing practices: A case of Blyde catchment. Oral presentation. 34th Environmental Education Association of Southern Africa annual conference, September 2016, Johannesburg.
- **Thifhulufhelwi, R.** (2017). Rethinking Invasive Alien Plant control as a social process in a complex system: The case of the Blyde Catchment. Oral presentation. 44th Annual Research Symposium on the Management of Biological Invasions in Southern Africa. 5-7 July, Pretoria, South Africa.
- **Thifhulufhelwi, R., & Graf, J.** (2017). Working with land owners and practitioners in building Natural Resource Management custodianship for resilient landscapes in socio-ecological systems. Oral presentation. Land Rehabilitation Society of South Africa (LaRSSA) 5th annual conference, 1-5 August 2017, Middleburg, South Africa.
- **Thifhulufhelwi, R.** (2017). Governance failure and constraints of Social Learning emergence in complex socio-ecological system: The case of natural resource management in the Olifants catchment. Oral presentation. Environmental Education Association for Southern Africa 35th annual conference, 18-22 September 2017, in Maun, Botswana.

- **Thifhulufhelwi, R.** (2017). Collaborative development of learning tools for integrated ecosystem restoration practices in the Blyde River Catchment. Oral presentation (symposium): Double stimulation and scaling within learning networks: Features of expansive social learning in southern African social-ecological work and learning contexts. 10th International Conference on Researching Work and Learning, 6-8 December 2017, Rhodes University, South Africa.
- **Thifhulufhelwi, R.** (2018). Towards collective learning approaches for natural resource management practices in complex socio-ecological systems: the case of invasive alien plant management in the Blyde catchment. Oral presentation (symposium): “Bringing the gap between research, policy and management”, South African Conservation Symposium, 4-9 November 2018, Midlands KwaZulu-Natal, South Africa.
- **Thifhulufhelwi, R., Mponwana, W., & Pollard S,** (2018). The emergence of systemic adaptive governance practices for global change: From theory to practice in a transboundary catchment in Southern Africa. Oral presentation (symposium): 4th National Conference on Global Change, 3-7 December 2018, Polokwane, South Africa.
- **Thifhulufhelwi, R.** (2019). Creating collective socio-ecological learning spaces for transformative learning and custodianship building in natural resource management practices. Oral presentation (symposium): Towards a praxis of systems thinking, learning, and collective action for resilient and equitable restoration: synthesis and examples from two southern African catchments. 8th World Conference on Ecological Restoration, 23-28 September 2019, in Cape Town, South Africa.
- **Thifhulufhelwi, R.** (2019). Navigating power-dynamics contradictions through boundary crossing formative interventions in natural resource management practices Oral presentation: 37th Annual EEASA conference, 06-10 October 2019, in Johannesburg, South Africa.
- **Thifhulufhelwi, R. & Chikunda, C.** (2019). Decolonisation and democratisation of livelihoods: Restoring human-land relations through co-management of natural resources. Oral presentation (symposium): Shifting the role of science in community-based landscape restoration: from science FOR to science WITH society. 8th World Conference on Ecological Restoration, 23-28 September 2019, in Cape Town, South Africa.

Inputs across these conferences were critical in the write-up of Phase I of the study, but also in framing Phase II of the project. Below, I give examples of two cases where I presented my work, one is at the *Invasive Alien Species Symposium* (photo 4) and the other is at the *Researching Working and Learning Conference* (photo 5).



Photo 4: Reuben (bottom left) and the opening presentation slide at the “Invasive Alien Species National Symposium”. 2017, part of the “Combined Congress of the Entomological and Zoological Societies of Southern Africa”, 3-7 July 2017. CSIR International Convention Centre, Pretoria, South Africa

As highlighted in the presentation titled “Rethinking IAP control processes in complex systems” I was trying to reflect on how in my research, the management and governance of IAP control was emerging as a complex matter that goes beyond just effective implementation of projects on the ground. During this presentation, I put forward the idea of rethinking the NRMPs as shared commons that need to be managed in a different approach than the current view of NRMPs just as projects. I further pointed out the need to make the NRMPs more adaptive to allow for learning at local catchment levels to be integrated into operational processes. The point of adaptive governance of NRMPs has been strongly highlighted by key scholars but I was trying to provide evidence from my research on how this is impacting practitioners on the ground. At the time I was very scared to present these ideas in the presence of directors, professors and international researchers. This conference was hosted at the CSIR International Convention Centre, and I was this tiny boy with just my head sticking out on the podium (see photo 2). Many people from the back could hardly see me but they could hear me through the microphone. I think one of the reasons why the hall was so full (photo 3) during

my presentation was that my presentation was in the session with some serious people in the field, which made me even more scared.



Photo 5: Conference attendees during my presentation at the “Invasive Alien Species National Symposium”. 2017, 3-7 July 2017. CSIR International Convention Centre, Pretoria, South Africa

To put it in context, this was by far the most difficult presentation I have ever made. Not because I was struggling with the content but because my proposition was considered unconventional for a young student to be proposing such deep transformation ideas in the structures and processes that govern restoration NRM practices. And yes, there was some form of backlash from the comments. Most of the people who made the comments were high-level directors and scholars I had only heard of or knew from references. After my scary session, I had to run for coffee to calm my nerves. It was during the coffee break that I also had good discussions, and many people were coming to me showing interest and giving me advice. Generally, there was a positive attitude from people on how a young boy was trying to tackle some of the most difficult issues to confront in the NRM sector. *I was cautioned, however, that I need to further study the NRM sector before making such big claims, and perhaps this was one of the reasons that motivated me to pursue the complexities of Phase II.* In sum, there was a clear indication that this was a thought-provoking presentation, but it still needed more

evidence to show that some of the ideas associated with the potential future transformation of restoration NRM can actually work in practice.

Researching Work & Learning (RWL) Conference 2017: Meeting Engeström and Sannino for the second time

Fast forward to a few months later, and I was again presenting my work, this time at the 10th International Conference on Researching Work and Learning. This was a special conference for many reasons, firstly it was hosted at Rhodes University, so I felt at home, and this was the second time I met Engeström and Sannino. As shared in Phase I orientation, the first time I met them was in 2015 while working at AWARD (discussed below) but at the time I did not fully understand what they were saying until I revisited the workshop notes from 2015 and also listened again to the 2015 workshop recording before in preparation of the Researching Work and Learning conference in 2017. I was lucky to be able to revisit the earlier discussion with Engeström and Sannino because I had the opportunity to be the one who produced the workshop report in 2015, so I had all the data including notes, and camera photos and listen to transcriptions!

At the RWL conference in 2017, my presentation was part of the symposium organised and led by my supervisor, Professor Heila Lotz-Sisitka. The title of the symposium was: *Double stimulation and scaling within learning networks: Features of expansive social learning in southern African social-ecological work and learning contexts*. This indicated our shared interest in double stimulation in complex learning networks/activity system formations. My presentation was on: ‘Collaborative development of learning tools for integrated ecosystem restoration practices in the Blyde River Catchment’, as shown in photo 6 below.



Double-stimulation tools for
collective learning in Natural
Resource Management practices in
the Olifants Catchment

Reuben Thifhulufhelwi
RWL 2017, Rhodes, Grahamstown 07 Dec 17



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Photo 6: Opening slide of my presentation at the RWL, 2017 conference

Before the symposium, we were tasked with developing full papers on our presentations which were sent to Engeström and Sannino to review and give us feedback during the symposium. I was the “young man” of the symposium, the most inexperienced in CHAT or any work experience for that matter. I remember we had the likes of more experienced researchers such as Mutizwa Mukute, Tichanona Pesanayi, Experiencia Jalasi, Charles Chikunda “the Oldman” and others presenting their work. But for some reason, I was not scared and perhaps I was too excited to tell Engeström and Sannino that my research was going pear-shaped. Well, that is how I thought it was going at the time because it seemed like I kept finding more problems than solutions.

To wrap up the story, I thought my presentation was good, but I ended the presentation with more questions, and it pointed to the need for a wider, new scope for the research as shown in photo 7 below which shows the last slide of the presentation.

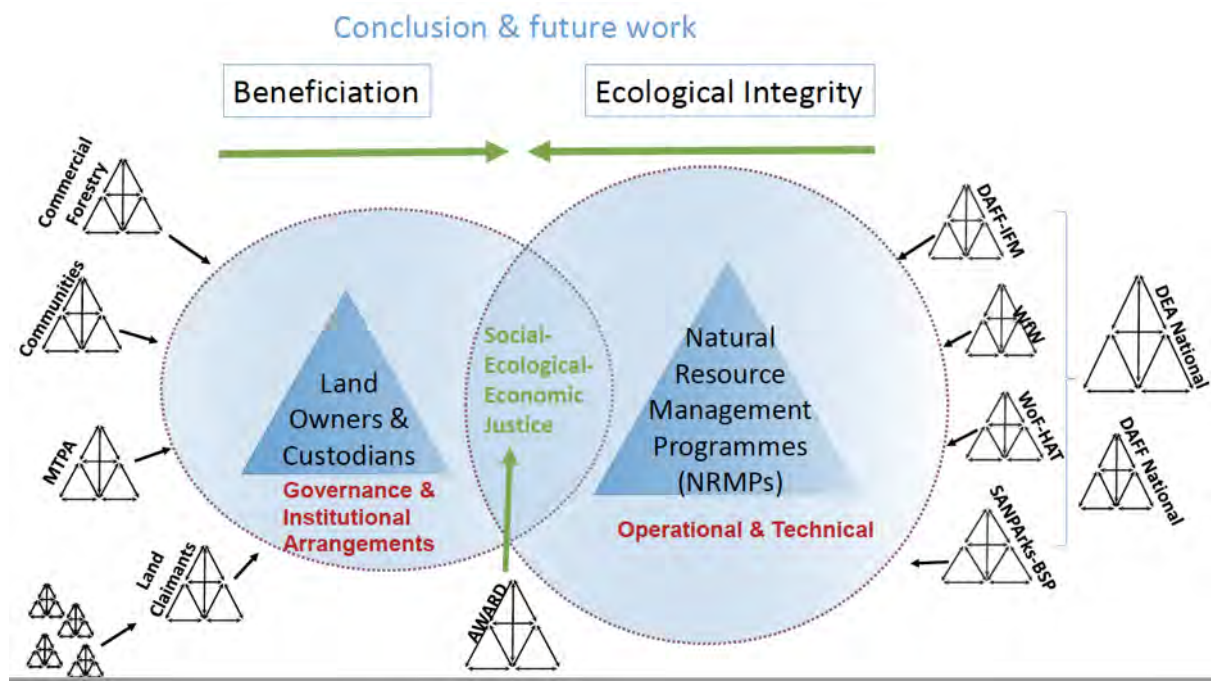


Photo 7: Last slide of my presentation at RWL 2017, showing the constellation of activity systems (ok, well Engeström called it that in his reflections), but at the time I just referred to them as the activity systems groups

At the end of the symposium, after everyone had presented (including me who kept coming up with questions with no answers), Engeström and Sannino gave a summative reflection in which they reviewed all the papers that were presented. Below is Engeström's slide (photo 8) on my paper reflecting on how I had used the series of double stimulation tools (reported in Chapters Five and Six). In short, this is the summarised version of the narrative presented in Chapters 5 and 6 of Phase I of this study.

Reuben Thifhulufhelwi

- The excerpts from the Change Lab discourse are very powerful!
- Overcoming the collective resistance by means of individual interviews/discussions is an important insight (similar to what happened in our CL with tomato growers).
- “I think there should be an inter-departmental memorandum of understanding (MoU) to guide restoration in the Blyde, and this could help addressing this institutional complexity which is derailing the restoration progress.” (Extract 2) –Would the MoU be a second stimulus? Or would it be the whole Land User Incentive (LUI) program? The need for collective agreements and mandate!
- Table 1 on the steps of double stimulation is impressive. But please enrich it with actual excerpts from the interactions! Go into the details and give voice to the practitioners!
- The three contradictions (2nd CL session) could be formulated as oppositions, now they are more like “lack” of something.
- Concept mapping is a promising instrument for modeling, or generating a shared second stimulus.
- The long duration of the expansive learning process is a good challenge, something that needs to be reported (too many people think that CLs can be done quickly, in a rush)
- The last slides of the two big constellations are a brilliant explication of the challenge and setup of 4th generation activity theory research!

Photo 8: Engeström reflection on my paper during the double stimulation symposium, RWL, 2017

This affirmed the emerging direction of the project towards a Phase II focusing on the *challenge and setup of fourth generation activity theory research*, which was under discussion between our research group at Rhodes University and the Helsinki research group at the time, and which then formed the focus of a subsequent focus of a research school early in 2020. In short, my research was falling ‘right into the middle’ of the theoretical emergence of fourth generation CHAT research; I was excited by this and took it up as a challenge in framing Phase II of the study. This is particularly because I could see that my study was leaning so heavily towards the struggle of engaging with a partially shared object among a complex configuration of activity systems. *I knew that the research was situated at the cusp of third and fourth generation CHAT, but I didn’t have enough framing or descriptive language on how to explain the engagement within and across the complex interactions of the constellation of activity systems that I depicted in my slide.* This is where the language of ‘constellations’ became useful, and I was then able to present the multiple activity systems into three constellations groups of activity system, which enabled the emergence of coalesced expansive learning cycles

(see Chapters Seven and Eight). It also helped me to reflect on the 2015 visit by Sannino and Engeström to AWARD, especially to make more sense of the concepts of double stimulation and transformative agency which our research group had also continued to engage (as per the symposium focus at RWL), and as I had already worked with (Chapter Five). I came across a quote from Sannino reflecting on TADS in practice in 2015, where she said:

[The] genesis of transformative agency is in overcoming the paralyzing conflicts of motives by means of identifying and using artefacts as second stimuli (original quote in photo 9).



Photo 9: Professor Annalisa Sannino, facilitating day 2 of the Activity System Analysis workshop at AWARD, Limpopo, South Africa in 2015.

Source: Photo by Reuben Thifhulufhelwi

This helped me to deepen my understanding of and make better sense of TADS, which by 2020 was becoming a clearly articulated theory of *Transformation Agency by Double Stimulation*, which Sannino presented the third time I met them in 2020 at a research school hosted at Rhodes University focusing on fourth generation CHAT. By 2021, with my supervisors and research group, we were referring to the significance of double stimulation tools in emancipatory processes, and we were presenting papers and co-authoring work on the emergence and development of emancipatory forms of TADS (see my work in Chapter Five and the case example described out of the AWARD/RU research collaboration on the

Legalameetse case that I was part of in Lotz-Sisitka et al., 2023 – Appendix A), which had an emphasis on *emancipation* which is an important form of transformative agency when engaging complex NRM issues which are deep-seated, multi-dimensional, and structurally-embedded in historical structures of powers and decision-making processes (see also Jalasi, 2020; Lotz-Sisitka & Pesanayi, 2020; Mukute and Lotz-Sisitka, 2012). This seemed to be an important feature of the work in Southern Africa which was a feature of my work, and the work we were collectively doing, but we had not fully developed ways of researching this from a power-dynamics contradiction perspective, which is the project I took up in Phase II of this research.



Photo 10: Photo of professors Lotz-Sisitka, Sannino, & Engeström discussing and reviewing some of the learning material shared by CPAs communities as second stimulus tools supporting the CPAs as they learn and develop a co-management agreement (August 2015; later developed into a paper on Emancipatory Transformative Agency by Double Stimulation - see Lotz-Sisitka et al., 2023)

Source: Photo by Reuben Thifhulufhelwi

By the third time I met Engeström and Sannino in 2020, the ethical–political dimension of my study had become a lot clearer. I was discussing the issue of power dynamics in my presentation and was encouraged to develop the concept of PDCs. My supervisors and I agreed that this would be a good focus for ETADS work which we were discussing at the time, especially concerning the historical context where power dynamics were intimately intertwined with the

potential expansion of the object of NRM practices in contexts that were under land claim as in my study. This took place more or less at the same time that Sannino (2017; 2020) was developing her fourth generation CHAT study on homelessness in Finland, and she provided me with some of the languages of description in the form of coalitions, and ways of thinking about my research as a case of emerging fourth generation CHAT research, at the centre of which were the PDCs, which I then proceeded to develop further as will be shown in Chapters Seven-Nine of the study. Thus, this complex but difficult shift to conceptualise my study in Phase I and Phase II took place around both the contextual dynamics of the study and the emerging theoretical dynamics of the field which were unfolding as my study was emerging.

In summary, the bones of Phase II of this study are presented in photo 11 below. This was the original conceptualisation (rough scribbles based on our discussions and supervision meetings with Prof Heila) on how to navigate PDCs through co-engaged depth inquiries in formative interventions in constellations of activity systems, for advancing the ethical–political dimension. We discussed how the focus on the ethical–political foregrounds emancipation (power as agency), and this was done through the co-construction of second stimulus tools as pathways for ETADS. The paper we published in 2023 in a book on Agency and Transformation (edited by Hopwood & Sannino, 2023 – see Appendix A) was an important conceptual ‘ground clearing’ process that helped me to synthesise some of these discussions as I was also doing the same in relation to the data in my study. I therefore include this paper as an appendix to the thesis.

second stimulus tools to engage the historical and current structures that were producing paralysis in the form of PDCs (power2), and in doing so they were activating their agentic capabilities (power 1) to develop new learning actions (Chapter Eight). I used Bhaskar's dialectical notion of power to explain power1 (agentic power) and power2 (oppressive structures power) to theorise the emergence of transformative agency in relation to the PDCs. As this work was unfolding, I also presented it at different forums, which again helped me gain insightful perspective on the emerging work, which I report on further in Phase II in more detail. Below are some of the presentations done to shape this phase of the research.

- **Thifhulufhelwi, R.** (2021). Navigating PDC with double stimulation tools in natural resource management practices. Oral presentation in symposium: Expansive Learning, Sustainability and the common good: commoning activity, change laboratories and double stimulation tools. 6th Congress of the International Society of Cultural-historical Activity Research (ISCAR), 30 July- 7 August 2021, Brazil (online).
- **Thifhulufhelwi, R.** (2021). Research that matters: What are we making space for? Oral presentation in workshop session: Generative & Transdisciplinary Methodology for Research in the Sustainability Sciences. 6th Biannual National Environmental Skills Summit, 8-10 September 2021 (online).
- **Thifhulufhelwi, R.** (2021). Cultivating transformative agency via co-engaged expansive learning approaches in community learning settings for cooperative governance of Natural Resource Management. Oral presentation in panel workshop session. South African Education Research Association Conference, 10-12 November 2021 (online).

Chapter Seven: Emergence of Power-Dynamics Contradictions as Catalyst for Ethical–Political Expansion of the Object

7.1 Introduction

Chapter Seven explores the research question: *What are and how do underlying mechanisms affect (promote or constrain) transformative agency and learning of restoration IAP control practice by the NRMPs and related agencies in the Blyde catchment?*

The expansive learning process was clearly described in Part I of the study, showing stages of the expansive learning cycle from *question and analysis* to *envisioning and implementation of new solutions* (Chapters Four, Five and Six). As such, three pathways were identified as part of implementing the new model to advance restoration NRM practices, as outlined in Chapter Six. I referred to these as pathways for TADS, which potentially enables breakthroughs for implementing the new model:

- **TADS pathway 1:** Stakeholder mapping, co-learning and co-visioning of institutional, governance and management action.
- **TADS pathway 2:** Development of operational and technical learning actions and tools.
- **TADS pathway 3:** Exploring capacity and skills development tools, alternative funding models, and reflexive learning-oriented M&E.

Some of the learning actions for implementing the three TADS pathways were partly started in Phase I of the research, as reported in Chapter Six (see Section 6.3). These included the decision to formalise the BRWG as a learning network (TADS pathway 1) and initial workshops on the co-development of inventory IAP mapping (TADS pathway 2). It was through both the conceptualisation and the initial implementation of the TADS, that new tensions were encountered by practitioners from the four implementation activity systems. For example, TADS pathway 3 focused on exploring alternative capacity development and funding models that would allow practitioners to implement integrated restoration NRM practices and advance custodianship as local stakeholders would be empowered to participate in the governance and management of NRM practices. However, the local key stakeholders in this context were the CPAs who had claimed most of the land in the Blyde landscape (this is the

land which was taken away from communities by the government during the apartheid era). This presented a different viewpoint on the management of the land to that of the implementation activity systems, which saw it from an environmental sustainability perspective. The CPAs as governance activity systems were mainly interested in maximising the benefits from their land by using ecosystem services they had been denied for hundreds of years. They were primarily interested in exploring the land for new development opportunities. In addressing this deep-structural tension, a full expansive learning process was required (see ETADS pathway 3 in Chapter Eight).

Another example is the expansion of more activity systems that needed to be involved for the above-mentioned three TADS pathways to be implemented successfully. This meant that practitioners from the implementation activity systems had to actively engage other actors to develop long-term working relations and tools that could create opportunities for collective actions such as alternative co-funding of projects. This added a different dimension as some practitioners preferred to focus on their technical competencies and were not willing to address matters regarding institutional arrangements, governance structures, stakeholder engagements and capacity development. They claimed that some of these aspects involved complex tensions that needed people with specialist skills who could work with such matters as expressed in BCCLW #4:

Practitioner 1: ...I still don't see how all components discussed here for the strategy will be done ... who will be doing to engage all those CPAs?

Practitioner 2: ... this stuff needs people who are specialists in governance ... I don't see myself trying to solve these issues.

Practitioner 1: ... the guys working with land claims are better equipped on these things ... but they also fully understand our restoration NRM work, and we also don't work with them closely ... so it's a catch-22 situation here.

Practitioner 3: I liked the IAP mapping activity we just did earlier ... it helped us see what we need to do next, who can help, where to find data ... we have already started with the technical part and I think most of us here are into that part but someone must lead the engaging of people and structures.

Practitioner 4: I have been involved here for years ...we did a lot of mapping over the years. I think I might have some useful maps in my old office. But the issues with communities can be

very tricky ... I remember the last Environmental Impact Assessment for proposing cable car in the Blyde canyon cause a lot of issues as from conservation point of view it was too risky but the communities just wanted tourism ... the guys working in co-management stuff would know better how to deal with communities.

Practitioner 5: We have to find a way to engage them ... we can ask the NRM regional lead to represent us as he has some relationship.

Practitioner 5: There is still a lot of work here not just the institutions and community stuff ... even the technical components needs a lot of thinking in practice ... we still have to present things to everyone to explain what we are doing and why they need these strategy tools ... maybe it's best to start with communities but the forestry guys as well, the tourism guys downstream, the other NGOs doing work here.

As shown in Figure 7.1 below, the engagements on implementation of the above three TADS as the new model provided a *new zone of proximal development* in the restoration IAP control object, in which the *ethical-political dimension* became the key focus of the inquiry. This led to the *encountering of a new form of contradictions* which I refer to as *power-dynamics contradictions (PDCs)*. The *emergence of PDCs reverted the expansive learning process* back to the *modelling of the new solution phase* as shown in Figure 7.1, in which the *new groups of actors* were involved (*constellations of activity systems*, see Figure 7.2) and multiple expansive learning cycles emerged in which a series of second stimuli were co-developed as tools for advancing ETADS (see Chapters Eight and Nine).

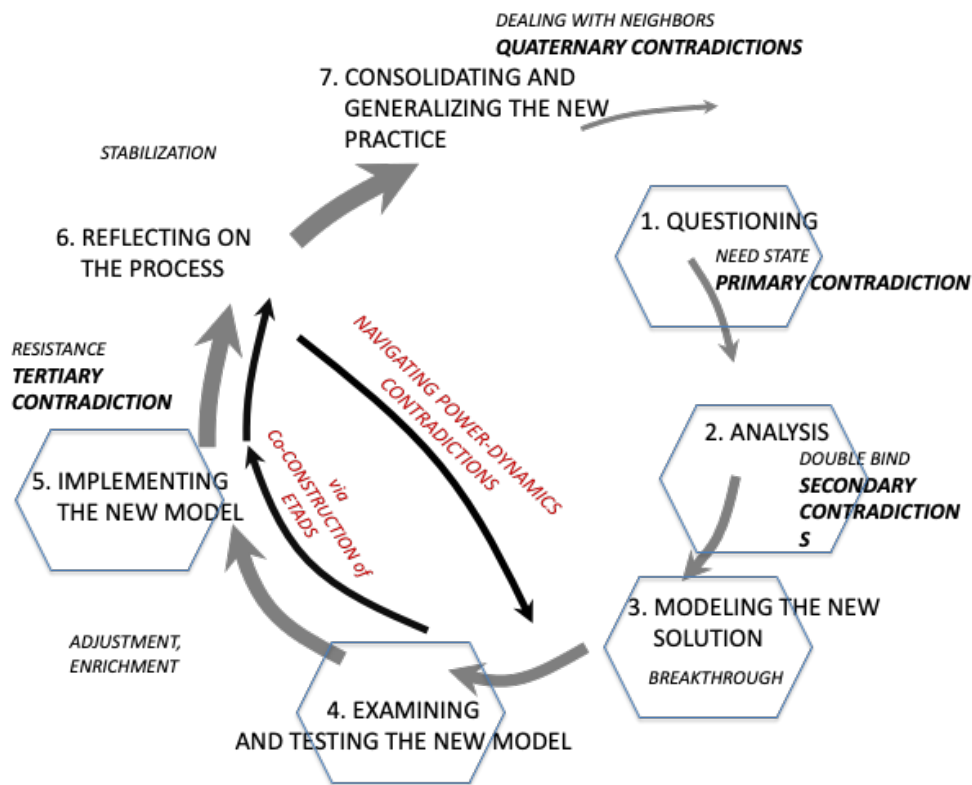


Figure 7.1: Strategic actions in expansive learning cycle showing the emergence of power-dynamics contradictions and their navigation via ETADS

Source: Adapted from Engeström (2001, 2020)

7.2 Reflecting on the Learning Process: Re-examining and Re-adjustment of the New Model

This section partially describes stage 6 of the expansive learning cycle and how the transformation process reverted to re-examining and testing the model as the restoration NRM object expanded and new contradictions were encountered. Engeström and Sannino (2016, 2020) pointed out that *not all expansive learning processes follow the expansive cycle sequentially, as some deviate or revert to previous steps based on the emergence of new contradictions or the difficulties in implementing the proposed new solutions*. This was the case in this study.

As such, I organised the fifth BCCLW. The fifth BCCLW aimed to reflect on the initial pilot testing of the TADS as a way to explore the best possible ways to fully implement the TADS pathways (re-examining). This was a boundary crossing BCCLW with practitioners from the four implementation activity systems; there were also additional stakeholder representatives

from the local NGOs and private forestry companies who were invited after showing their interest in being part of the BRWG. This already was evidence of expansion of key stakeholders which was identified as one of the learning actions under TADS pathway 1. However, other key actors including local communities and municipalities were still not part of the workshop. In Extract 7.1 below, practitioners explicated different possible ways for further implementing the identified TADS pathways, and it was through this process that new contradictions started to emerge in concrete terms.

Extract 7.1: Excerpt from BCCLW on the emergence of power-dynamics contradictions (BCCLW #5)

Facilitators gave brief reflections from the last workshop [mirroring process]

From our last workshop [BCCLW #4] we discuss the first steps in developing the IAP mapping. We [interventionist team] have collated some historical data on IAP invasion and clearing and we will discuss this with the group, then we will all discuss where to find additional data, and who will do what in collating the required information. Then we will go out into the field to conduct IAP ground truthing. Other technical tools we identified including prioritisation, integrated restoration plan, ecosystem service assessment, etc. will be developed later [TADS pathway 2]

The other agreed process was to expand our stakeholder engagement [TADS pathway 1], and we have already invited several stakeholder groups. The private forestry, MTPA conservation authority, Kruger-to-Canyon (K2C) NGO are all here. But the local communities, CPAs, municipalities and private tourism agencies are not present. We need to develop a strategy on how to engage with these stakeholders, especially the local CPA communities.

The last agreed process was on supporting capacity development towards future custodianship of restoration programmes by actively working with local communities, especially on youth development [TADS pathway 2]. We have to engage fully with CPAs ... we have discussed a bit on how communities have expressed their interest to become fully involved in managing NRM practice, and how some restoration projects have been stopped due to conflicts with the communities ... so that was the quick overview.

Practitioner1: I understand how we have identified all these processes to help us address issues and challenges we are facing in IAP control. But there are so many activities that need to happen ... I mean this could be whole different project.

Practitioner2: I think we need identify what we can do and focus on that, otherwise we can't do everything. We need to go back to our initial conceptual figure of technical vs governance aspects, and we only focus on our technical stuff like IAP map, prioritisation, clearing operational plans ... the other things on stakeholder engagement and capacity development need a different process.

Practitioner3: You see that is the problem ... we can make all good plans here but if there is no agreements by all stakeholder on who, where, how to implement then we are going back to square one ... everything will collapse like the Blyde National Park story.

Practitioner4: I think we are discussing the ideal approach here but the reality out there is the CPAs communities are furious with our IAP control programmes. Our teams have been stopped as we speak. Some

community groups are even threatening our project managers. They have been expressing their frustration to the EPWP systems that is constantly creating the short-term jobs. Communities don't even call these jobs ... they say it's an insult to their people who have been deprived the benefits from their land for so many years ... now they have claimed the land back but there is still not benefits for them ... you see that is what we need to deal with.

Practitioner3: This is why we need to find a better way to engage with the communities. They have the interim co-management committee that deals with land claims issues ... I think we should ask to present out restoration project to them and how we want to work with them.

Practitioner5: We are all working under EPWP here, how do we go to communities and tell them we will work with them differently when the system is set up to function like this? I don't want more conflicts with communities ... so we better be very clear what we are going to say to them.

Practitioner6: These are the same issues we discussed with the director general and chief director ... unless there is some form of mandate it will be difficult for us to engage all these different stakeholders and to bring them together for integrated restoration. The communities just want better jobs and to be involved in implementation of IAP programmes. We need to find a way on how to support them.

Practitioner7: What we are talking about here is beyond just IAP control ... if we are talking about better management of the Blyde landscapes then it needs commitments from all stakeholder groups. IAP control is one of many natural resource management practices. We remove the IAPs someone needs to manage that land after, when we clean the invaded rivers someone must manage the rivers.

Practitioner8: The Integrated Restoration Strategy we are going to develop will be effective if all stakeholders support it. The problem is all the land ownership complications here. We know the land claims are successful and the CPA communities are going to be future land managers but we don't know how the land use will be like. Will the Lowveld plantations be declared as protected areas? ... which portions will be declared? Who will manage the areas? There are just so many questions we don't have answers.

Practitioner10: There is a programme supporting the CPA communities to declare part of the Lowveld plantations to become a protected area supported by K2C ... this provide the security for our restoration interventions. And the Integrated Restoration Strategy will be a very useful tool to guide reserve managers on which areas to restore and how to do it.

Practitioner3: I think we need to work with what we can do ... many of these questions can only be answered by the land claims commission, of the Department of Rural Development who manage land claim issues. So I think lets engage the CPA communities and discuss this with them as they are the future land custodians. It doesn't matter how long the process will take, DAFF will eventually move out as management authority and the land will be given back to CPAs.

In Extract 7.1 above, practitioners argued that the sustainability of the restoration IAP control activity should be viewed by its impact as a *socio-ecological common good object* in the broader spectrum of NRM practices. For IAP control to be effective in restoring degraded biodiversity, water and tourism potential and creating socioeconomic benefits, there is a need to work with all stakeholders and landowners within the NRM practices such as conservation, forestry, land-use development and land restoration.

As pointed out above, this was not the conceptualised focus of this study but was a critical turning point in expanding the restoration IAP control object with its now much more explicit ethical–political dimension.

7.3 Expansion of the Object and Emergence of New Contradictions

Reflecting on the third BCCLW, the rulemaking activity system (DEA national) expressed the need to broaden the engagements in restoration IAP control activity by creating pathways that included landowners, local communities, NGOs and private sectors. This was agreed upon and supported by practitioners from all implementation activity systems (i.e. the fourth BCCLW was focused on conceptualising and developing the three TADs) as reported in Chapter Six. This need to expand or bring in new activity systems was expressed as fundamental for the effectiveness of broader NRM practices and the sustainability of ecosystem services delivery.

However, the challenges of expanding the scope of the object from restoration IAP control activity to broader sustainable NRM practices were not fully discussed. It was during the fifth BCCLW that practitioners felt the importance of further exploring the potential constraints towards implementing the TADS pathways, which required an expansion of the restoration IAP control object. Practitioners felt that it was beyond their control and that it would require intervention from other regional and national departments (rulemaking activity systems) and other types of specialists with social, land restitution and community engagement experience. They expressed the importance of trying to bring all stakeholders together, but they also felt it would be difficult to manage such a large diverse group – it was suggested and agreed during the fifth BCCLW to work in sub-groups.

Practitioner1: I'm already imagining what will happen if this we have everyone attending the Blyde Restoration Working Group meetings, I don't think it's going to be effective because we still need to discuss technical activities like the IAP mapping that won't be relevant to everyone

at that moment ... I think it will work if we have sub-groups that addressing different needs (BCCLW #5)

In Figure 7.2 below, I mapped the conceptual framing towards sustainable and integrated NRM practices in the Blyde landscape as expressed by practitioners. The constellation of three activity systems groups had a range of different roles to play, and these included: *development of tools and regulations, governance and land-use management and implementation of restoration projects*. This constellation of activity systems was the driving mechanism towards integrated NRM practices and corporate governance of the sustainability of the commons. As such, the collective action was seen here as a form of *commoning activity* as described by Lotz-Sisitka (2017a). Although it was not explicitly expressed during the BCCLWs, the concept of common good objects was emerging from the discussions – it was therefore critical to explore how to develop integrated and sustainable restoration NRM practices.

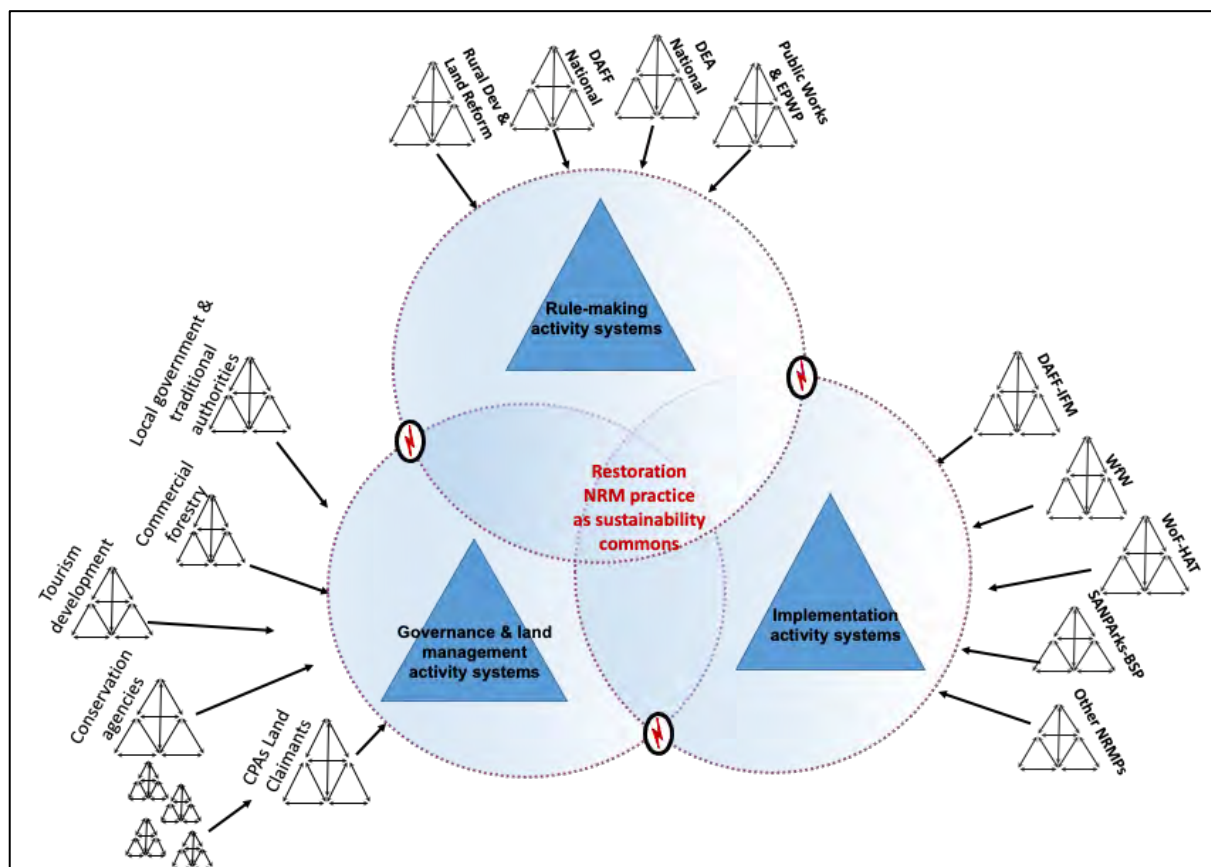


Figure 7.2: Constellation of activity systems as the envisaged conceptual framing for achieving sustainable and integrated restoration NRM practices

- ***Restoration NRM activity systems:*** These are the four IAP control programmes which were originally the focus of the intervention research (WfW, HAT, SANParks-BSP, and DAFF-IFM) as discussed in Chapters Four and Five. These activity systems are directly involved in implementing restoration projects on the ground. They are the core activity systems of this study and the boundary crossing formative BCCLW interventions were initially conceptualised with them.
- ***Governance activity systems:*** These include all other stakeholder groups that are involved, have interests in or influence the restoration NRM practices. These include local CPA communities (who are the future land custodians through the land claims process⁵, and beneficiaries of jobs created through restoration programmes), other land managers such as in the forestry sector (forestry production and protection), conservation agencies (biodiversity protection and management), Traditional Authorities (as social and cultural structures), municipalities (as local government agencies), civil society and NGOs (as agents of change supporting social learning mediation), the private sector (such tourism agencies as potential investors in restoration NRM), and the general public (as beneficiaries of ecosystem services such as water provision). All these activity systems have a role to play in sustainable NRM for the common good and broader societal benefits.
- ***Rulemaking activity systems:*** These include the high-level regulating activity systems that produce tools, regulations, operational standards and resources to govern the implementation of NRMPs at the local catchment level. In the context of the study, DEA National, DAFF National and Rural Development & Land Reform are high-level departments that produce and govern different NRM practices; all these departments have different mandates and operational processes. For example, DEA National produces tools to govern restoration IAP control, while DAFF national governs sustainable forestry management; Rural Development & Land Reform supports the land claims process and capacity development of land-claiming communities. Another critical high-level rulemaking activity system is the EPWP which produce rules and

⁵ Land claims – This is a legal process in South Africa under the national programme on land restitution, which supports Indigenous communities who were forcefully displaced and denied access and beneficiation to their ancestral lands to claim the land back. The structures that represent land-claiming communities are referred to as Communal Property Associations (CPAs).

operational standards to guide the management of funding resources towards implementing NRMPs. i.e. EPWP is a national programme that governs how government NRMPs should be implemented in terms of funding processes (see Chapter Two). This has created PDCs in which local communities are confronting and questioning the EPWP model that focuses on short-term jobs as they argue it constrains their potential towards becoming future land management custodians (see Section 7.11 below) as was revealed in the data reported from the BCCLWs and the activity systems analysis (Chapter Six).

One of the key fundamental principles in framing sustainable NRM practices (see Figure 7.2) is the systemic linkages and interconnections across different NRM practices. In this study, the sustainability and effectiveness of NRM were seen as an outcome of collective action at the level of a constellation of activity systems. As expressed by practitioners during the fifth BCCLW (see Extract 7.1), these activity systems were made of diverse groups of stakeholders that were not necessarily working at the same level or within the boundary of the shared object. For example, the restoration activity system group was made up of the four IAP control programmes, with the same vision of restoration but using different tools and processes – an expansive learning process was required to explore contradictions and tensions as discussed in Chapters Four, Five and Six.

Similarly to the governance activity systems group, it was made up of different activity systems that were involved in land-use development practices. For example, the object of forestry activity systems was to maximise production through the planting of invasive tree plants, while the object of protected area management activity systems was to protect the natural ecosystems for conservation and sustainable use which included removing invasive plants (which on the other hand were planted by forestry within the same vicinity in the Blyde landscape). This is an example of how two NRM practices were in tension with each other but were both part of the governance activity systems. Therefore, in order to achieve sustainable NRM in the Blyde landscape, there was a need for collective planning and action across these practices, and to achieve this, there was a need for full expansive learning within each of the three constellation groups.

At the centre of these tensions across practices were the high-level rulemaking activity systems that produced rules and regulations to guide three key NRM practices in the Blyde landscape, namely *conservation management, forestry development and restoration practices*. Therefore, multiple national departments were responsible for guiding the three NRM practices and the mandate was executed through different regional and local structures. At the local level, the landowners, managers and custodians such as municipalities, civil society organisations, and traditional authorities played management roles in ensuring that sustainable practices were implemented in their land and catchments according to legislation and governance arrangements. At the regional level, there were provincial departments that oversaw the compliance and monitoring processes.

As shown in Figure 7.2, the rulemaking activity system group included DEA national, DAFF national and Rural Development & Land Reform as the high-level departments that produced and governed different NRM practices (conservation, forestry, restoration), and all these departments had different mandates and operational processes. In the Blyde landscape, the National DEA and national DAFF produced tools and governance processes for NRM practices including protected area management for conservation, restoration IAP control and sustainable forestry management. Rural Development and Land Reform supported and managed the land restitution and development of land use for communities in the post-land claim process. As high-level decision-making structures, these rulemaking activity systems were critical in the effectiveness of the implementation of sustainable NRM practices in Blyde. But the most important factor was that all three national rulemaking activity systems had never met to discuss the problems and potentially collaborate in concrete terms. This was expressed by the practitioners themselves:

Practitioner1: ... the biggest challenge here is land management and landownership ... forestry is managed by DAFF national, for NRMPs we report to DEA, the land claim stuff is rural development ... but none of these departments actually meet to discuss anything.

Practitioner2: ... it is funny how we don't even get invitation when they talk about land claim stuff ... they go and talk to [provincial conservation authority] but we are the one doing the actual restoration on the ground ... our teams are working everywhere which tells you how much our teams are spread out in the landscape ... but does anyone care to tell us what is happening with land management?

At this stage of the research, the full expansive learning process was focused on the implementation activity systems as illustrated in Figure 7.2. The implementation of TADS pathways was at the level of the constellation of activity systems, as the TADS pathways for new models expanded and broke away from a single group of activity systems. This was the emerging sign of coalesced expansive learning cycles which are discussed in Chapter Eight; however, there was still a need to collectively reconfigure what the restoration object would look like at the level of the activity system constellations. I discuss this below as a commoning activity.

7.4 Emergence of Common Good and Commoning Activity in Restoration Natural Resource Management Practices

Since the inception of the NRMPs in the early 1990s (see Section 2.8), there has been progress and expansion in which new programmes and tools have been developed. There has also been a shift in the understanding of the future of NRMPs, with the view that the government has been the leading actor and is now inviting private sector and land managers to become custodians of restoration initiatives. This shift towards focusing on collective action for integrated restoration was strongly emphasised in the 8th World Conference on Ecological Restoration, which was held in Cape Town, South Africa in 2019. The conference theme focused on *Restoring Land, Water & Community* and there were strong reflections on sharing the experiences and role of South Africa's WfW and related NRMP initiatives. There was consensus at the conference that WfW remains the world's largest programme on restoration and among the best examples anywhere in the world of integrating ecological, economic, and social goals under one long-term framework (SER, 2019).

However, the governance and implementation strategies of South Africa's NRMPs have been considered less effective, uncoordinated, and unsustainable (Levendal et al., 2008; Ntshotsho, 2015; Van Wilgen, 2012; Van Wilgen & Wennenburgh, 2016), as discussed earlier in this study. These systemic governance challenges have been recognised at the national level, and there are engagements to address them or develop alternative approaches for better management and governance of NRMPs. For example, at the SER conference (2019), the keynote address by the Chief Director of the Natural Resource Management Directorate at the then-national Department of Environmental Affairs (DEA-NRM), pointed out the importance of *rethinking NRMPs as socio-ecological systems that are managed and governed by a*

collective within the water value-chain or other related ecosystem services. This means that different stakeholders must be identified at different levels of ecological infrastructure management and there is a need for tools that allow these stakeholders to function as a collective. He further argued for diversifying the management capacity and resourcing funding mechanism away from the government, to ensure that these restoration programmes are sustainable and institutionalised to local custodians such as communities, and most importantly garners commitment for restoration from the private sector (see insights from Dr Christo Marais' keynote presentation at SER, 2019). These insights from the conference further reinforce the expressions and suggestions made by the DEA national director during the third BCCLW with the DEA national activity system reported on in Chapter Six:

National Director: ... it is important to think about the bigger picture ... it is also good to see yourself as a unit of different practitioners who are leading the implementation of NRMPs in the catchment... you need a long-term strategy, maybe 10–15 years, and then explore the possibilities for co-funding because restoring these catchments is impossible with just the EPWP funding. You need to think beyond EPWP, and you must explore applying for bigger funding like a big collective LUI for this area with everyone who is involved. (BCCLW #3)

Practitioners from implementation activity systems also expressed the need for commoning activities during our engagements. Below is one of the examples from the reflections and planning meeting in preparation for the sixth BCCLW with the CPA communities:

Practitioner 1: I think one of the main problems we have is we have divided our NRMPs into specific focus and we have lost the idea of a bigger picture ... all we worry about in my little corner is how to spend the IAP clearing budget I was given. We never worry about how to expand the restoration work further, how to engage the other stakeholders like the private guys to invest in this work. ... Our directors expressed this very well, we have to find a way to work beyond our programmes ... They estimated about 80 million a year needed for this catchment. I can't remember but where are we going to get that kind of money?... *We always tell people that removing IAPs saves water, but we never worry about who gets that water, how is the water we are saving managed, who is managing it, do they know who is saving the water, how are they doing it. I mean there are so many questions we need to think about if we want the restoration work to make the impact in the environment and society.* I'm not saying we need to do all that because it's impossible but I'm sure if we can have a better plan. (Reflection interviews #1)

The above expressions highlight the existence of common good concepts in implementing restoration NRMP practices at the catchment level, and the need to conceptualise the commoning activity in the form of multi-stakeholder partnerships and collective action. Gibson-Graham et al. (2016) argue that the current environmental crisis such as climate change manifests as multi-sectoral challenges that require rethinking of commons theory and practice. They further point out that traditional forms of management such as local action and policy at the nation state level may also be inadequate and there is a need for a new form of commons engagement at the level of intersectionality across sectors.

The concept of the commons has its roots in political economy and ecology and is widely used in reference to natural resources that are accessible to all members of society. Some of the examples include water and biodiversity resources such as forests, rivers, wildlife, etc. SANBI (2014) defines ecological infrastructure as naturally functioning ecosystems that deliver valuable services to people for our livelihood and economic development. These functioning natural systems are the commons that are increasingly being degraded at an alarming rate and institutions such as SANBI, who are custodians of national biodiversity, are calling for multi-partnership approaches for restoring ecological infrastructure. This has led to the establishment of many catchment-based initiatives across South Africa which involve multiple partners.

7.5 Historicising the Common Good and Commoning Activity

Some of the early work on the governance of the commons include the widely cited '*Tragedy of the Commons*' by Hardin (1968). Many scholars have questioned Hardin's conceptualisation, and others even argue that some of the destructive management decisions of the commons could be attributed to Hardin's notion of privatisation and total control by the government (Berkes et al., 1989; Dietz, 2003; Feeny et al., 1990; Harvey, 2011; McEvoy, 1986; Ostrom et al., 2002). In response to '*the tragedy of the commons*', Feeny et al. (1990, p. 3) pointed out the following:

In a later paper, Hardin (1978) specifically recognised two general solutions, and presumably no others: private enterprise and socialism (control by government). Hardin argued that if we do not act in one of these two ways, we acquiesce in the destruction of the commons.

In the abstract of their book '*The Drama of the Commons*', Ostrom et al. (2002) also discussed the importance of human motivation and the rules governing the use of the commons. They argued:

Things are not as simple as they seem in the prototypical model. Human motivation is complex, the rules governing real commons do not always permit free access to everyone, and the resource systems themselves have dynamics that influence their response to human use. (p. 1)

Furthermore, they argued that Hardin did not consider the reciprocal implications of his notion of control by government and privatisation of the commons. i.e. by creating private property, the concept of open access changes meaning – it can be seen as unmanaged, free for all, unregulated and in most cases, the only available resource for most of society. This was well documented in Feeny et al. (1990, p. 6):

The evidence supports Hardin's argument concerning degradation due to the inability to regulate access to resources held as open access. Examples are many, and include the classic case of the historical depletion of various whale stocks in the open ocean. Several examples, however, reveal a point not mentioned by Hardin. In many cases, the tragedy occurred only after open-access conditions were created, often as a consequence of the destruction of existing communal land-tenure and marine-tenure systems. A number of these cases involved the imposition of colonial rule, as in sub-Saharan Africa (Johnson and Anderson, 1988), the Pacific Islands (Johannes, 1978), and northwest North American salmon rivers. (Berkes, 1985).

Lotz-Sisitka (2017b) also argues that the discourse on the management of the commons, loss of the commons and the notion of the common good are critical when engaging and framing sustainability pathways. It is important to include and draw from historical impacts on control of the commons, as “such perspective begins to take on new meaning in the current context of climate change, especially in Southern Africa which has been defined as highly vulnerable to the impacts” (Lotz-Sisitka, 2017b, p. 51). Furthermore, she suggests the need to re-orientate our perspective on the commons and cultivate an ethic of care towards the environment. This is an expansion of Dussel's (1998) point on the need to shift from the conceptualisation of nature as an exploitable object which is the source of the global destruction of the socio-ecological system.

Lotz-Sisitka (2017b) emphasises the commons as a commoning activity, noting that today's socio-ecological crisis on the management of the commons requires the co-development of governance tools as transformative learning pathways as an activity of commoning and emancipation (Bhaskar, 1986, 2002; Engeström & Sannino, 2020; Lotz-Sisitka, 2017a). Drawing from an example in Kachilonda's work on the co-management of fisheries, Lotz-Sisitka argues that this commoning in uncertain conditions such as the environmental crisis

requires an expansive learning approach that emphasises the learning of the collective (Engeström, 1987, 2015); it is unlike the privatisation and government control of the commons which has led to subjugation, control and restraint of agentic capacities to co-construct the commons in many instances, especially in colonial contexts (Lotz-Sisitka, 2017a; Bhaskar, 1986, 2009). In his book *Scientific Realism and Human Emancipation*, Bhaskar argued the need for co-engaged enquiry in emancipatory agentic commoning activity as follows:

Cooperative enquiry that includes the frustrated agent(s) concerned, into the structure of some presumed set of mechanisms, constituting for that agent an unwanted source of determination, with a view to initiating, preserving or restoring the agents' wellbeing, including her capacity to think, speak, feel and act rationally. (Bhaskar, 1986/2009, p. 202)

Amin and Howell as cited in Lotz-Sisitka (2017a, p. 65) argue that there is a need to re-imagine the commons as a “process, a contest of force, a reconstitution and a site of convening practices”. Thus, commoning activity offers an action-oriented concept of how to manage the commons. Linebaugh (2008), as cited in Lotz-Sisitka(2017a, p. 65) argues:

To speak of the commons as if it were a natural resource is misleading at best and dangerous at worst – the commons is an activity and, if anything, it expresses relationships in society that are inseparable from relations to nature. It might be better to keep the word as a verb, an activity, rather than as a noun, a substantive.

Therefore, the commoning activity brings together the intersectionality between the common good, sustainability and a humanistic, expansive learning educational approach (Amin & Howell, 2016; Linebaugh, 2008, 2014). Lotz-Sisitka (2017a, 2017b) suggests the importance of developing a theory of education and learning that focuses our attention on building commoning activities and draws on expansive learning theory to make this argument. In recent work on environment and sustainability education in Southern Africa, Rosenberg et al. (2020) and Lotz-Sisitka et al. (2021) put forward bodies of theory that explore generative forms of educational research that can potentially enable the emergence of commoning activity amongst actors in concrete situations. Examples include the dialectic agency and co-engaged depth inquiry from critical realist theory (Bhaskar, 1993, 1986/2002, 2016) and expansive learning and transformative agency via double stimulation which was developed from CHAT (Engeström, 1987/2015; Engeström et al., 2020; Engeström & Sannino, 2010, 2020; Sannino, 2015) as also used in this study. In expanding and deepening theoretical work, Lotz-Sisitka et

al. (2021, p. 536) argue that they have found the above bodies of theories to “have enabled a greater engagement with the multi-actor groups such as the dialectic of power which open up the agency of the oppressed in engaging with the complex and dynamically shifting common good objects”. They point out:

A growing use of stronger conceptual and social engagement tools (like Cultural-Historical Activity Theory, social and expansive learning, and community of practice constructs) and a stronger theorization of the role of ethics and ontology, have proven to be generative by allowing researchers to overcome the relativism that trapped some earlier participatory and constructivist studies. (Lotz-Sisitka et al., 2021, p. 536)

The above further strengthens the commitment to expansive learning research in open systems (Engeström, 1987/2015; Engeström & Sannino, 2016) which is critical for building sustainability commoning activity in the face of wicked societal challenges (Engeström & Sannino, 2020). Therefore, this study expands the transformative learning work within a broader body of generative research on various common good objects that foreground social and environmental justice and transformation involving communities and NRM stakeholders in Southern Africa (Jalasi, 2018; Kachilonda, 2015; Kuse, 2024; Lindley, 2014; Mphepo, 2020; Mukwambo, 2021; Mutizwa, 2010; Pesanayi, 2019).

7.6 Framing of Restoration NRM Practices as a Runaway Object

In Phase I of the study, the focus was on restoration IAP control activity as the object of the inquiry. As noted above, the object expanded as this phase of the study unfolded. In Phase II, I worked with restoration NRM practices as the object, situated in the broader notion of sustainability and the common good. Therefore, the sustainability of restoration NRM practices became the object of focus, which exists at the intersection of social, ecological, political, economic and cultural dimensions of NRM. I referred to this intersectionality as the ethical–political expansion of the object, which is embodied in an ethics of care for the environment and its people (socio-ecological justice).

The object was less ‘confined’ than in Phase I of the study and was forming more along the lines of a ‘runaway object’ (Engeström, 2009). Runaway objects are objects of activity that are contested and generate opposition and controversy. They can provide pathways for powerfully emancipatory processes that open up radically new possibilities for development and wellbeing (Engeström, 2009). In addition, runaway objects are difficult to bind and sometimes hard to

trace as they expand as new contradictions are encountered – this was evident in this study when the restoration NRM object was reframed as sustainability commons for socio-ecological justice. Engeström (2009) further describes runaway objects in the discourses of the learning sciences as objects that have the potential to escalate and expand up to a global scale of influence. Morton (2013) refers to *hyperobjects* such as climate change or pandemics that are massively distributed in time and space and that transcend localisation. Engeström (2009) also cautions that runaway objects emerge within the existence of human activities, expanding on Leont’ev’s (1978) argument that “there is no activity without an object” (Engeström, 2009, p. 304). In his example, he pointed out:

To begin with, they must be identified and named by humans. The very concept of global warming would not exist if experts, researchers, politicians and journalists had not articulated the phenomenon. But which activities take responsibility for such a huge object as global warming?” (Engeström, 2009, p. 4)

The complexity of runaway objects is that they usually manifest as small problems or marginal innovations, making it difficult to predict their risk potential (Engeström, 2009). “They often remain dormant, invisible, or unseen for lengthy periods of time, until they burst out into the open in the form of acute crises or breakthroughs” (Engeström, 2009, p. 4). I found that this level of unpredictability of runaway objects was very evident in the restoration NRM practices, which have been in existence for the last two decades since the establishment of WfW as the large-scale government restoration programme. This was regarded as just one of the government programmes to support ecological restoration while providing short-term job opportunities to the marginalised communities (Marais et al., 2004). Since 2010, there has been an expansion and scaling from a single WfW programme to multiple NRMPs, leading to what is commonly referred to as the “working for a suite of programmes” which include working for land, Working for Wetlands, Working on Fire, working for the coast, and working on waste (DFFE, 2025). This expansion towards multiple NRMPs has presented unprecedented challenges and contradictions as a runaway object that keeps evolving, as discussed in earlier chapters. For example, many scholars and independent evaluators question the object of restoration NRMPs as they argue that the object of NRMPs keeps on evolving to become more political which is contrary to the commitment to restoring ecosystem services and improving lives (Ntshotsho et al., 2015; Van Wilgen et al., 2012).

For example, they argue that one of the most expressed systemic challenges affecting the effectiveness of NRM restoration programmes is the interference by politicians who have co-opted NRMPs into their job creation schemes in order to enhance their political campaign for employment (Van Wilgen & Wennenburgh, 2016); this has resulted in NRMPs being viewed by communities as short-term and unsustainable, with no commitment to socio-ecological justice. They emphasise the need to reclaim the object of NRMPs from the heavily politicised, siloed, and bureaucratic governance systems, and “*failure to do so would result in constraints to economic growth*” [my emphasis] (Van Wilgen & Wennenburgh, 2016, p. 16). Furthermore, they also argue for an alternative governance system that supports the emergence of practitioners’ capacity to function collectively in addressing the complex restoration NRMP concerns. The current NRMP governance systems are furthermore deemed to be more of a constraint than an enabler:

The programme’s managers have to operate in a bureaucratic and rule-bound environment, which slows progress and removes the ability to be flexible, in an environment that often demands flexibility and adaptive management. (Van Wilgen & Wennenburgh, 2016, p. 14)

The above reflective insights were supported by evidence from the formative intervention BCCLWs, in which practitioners expressed the need for collective actions across NRM practices as reported in Phase I and above. At the start of Phase II of the research, they were viewing restoration NRM practices as a common good object that required cooperative governance and collective actions from all stakeholder groups at local, regional, to national levels, which they did not see as being without complexity and difficulty to achieve as shown above.

7.7 Exploring Contradictions in and Across the Constellation of Activity Systems

As discussed in Chapter Three, Engeström (1987) argues that contradictions are the source of development in an activity and presents the four types of contradictions, namely primary, secondary, tertiary and quaternary (see Section 3.4. in Chapter Three). As indicated in Phase I, this study was initially framed as a third generation CHAT inquiry, which means there was more emphasis on contradictions between activity systems (tertiary and quaternary) rather than within individual activity systems or between elements of an activity system (primary and secondary). According to Engeström (1987), tertiary and quaternary contradictions emerge

when the object of an activity system clashes with that of a more advanced system, or when the central activity system is at odds with any of its neighbouring activity systems.

In Phase I of this study, the central activity system was defined within the collective of four implementation activity systems, through which I explored contradictions among the four activity systems and between the four activity systems and the high-level rulemaking activity system (see Sections 4.4 & 4.5). In Phase II, there was no central activity system but rather a constellation of activity system groups as illustrated in Figure 7.1 (i.e. implementation, rulemaking and governance groups). These groups consist of their own interesting activity systems with their own motives and objects. It is important to note that these groups of activity systems have different objects which also have elements of contradictions (i.e. forestry production vs conservation and restoration), but their objects transcend localisation from the catchment level to the national level which makes it difficult to fully conceptualise them within a single boundary. However, there is also a form of intersectionality across the constellation of activity system groups, and this is driven by the pathways for TADS as presented in Figure 7.1.

As such, I argue that in a case where the central activity system is not clearly defined or when dealing with a complex multi-dimensional runaway object like restoration NRM, it is difficult to classify the contradictions according to the four types (see Engeström, 1987). In addition, identifying the type of contradiction (i.e. tertiary or quaternary) was not enough for me to find an approach to engage or navigate them, as these contradictions were emerging at the boundary of the third generation and probing towards the fourth generation CHAT via the constellations of activity systems. But still, I did not have an analytical framing of how to engage or analyse them.

The question was, what happens when we cannot define the central activity system and when the contradictions are multi-levelled? In exploring this, I drew from Sannino (2020), who points out that runaway objects are generally elusive and yet are considered critical drivers in current research towards fourth generation CHAT, in which the object becomes evident as ‘utopias’ of sustainability. Engeström and Sannino (2020) further argue that types of utopia objects require a different form of expansive learning which is coalesced across multi-scales and is multi-dimensional. They further emphasise that engaging with utopia objects requires a *multi-level CL approach* in order to fully grasp the different levels of expansion and emergence of contradictions through discursive manifestations (Sannino & Engeström, 2020). This points

out some of the dimensions of the emerging fourth generation of CHAT research. This further reiterates the notion that contradictions must be identified through their manifestations in the discourse and actions of the players involved (Bonneau, 2013; Engeström & Sannino, 2011).

Before organising another BCCL, I reflected on the previous formative engagements in search of *linguistic cues for manifestations in the discourse* (Bonneau, 2013; Engeström & Sannino, 2011) on the *motives for the emergence of multi-levelled contradictions at the level of constellation of activity systems*. Here, I was tracing how the expansion of restoration NRM as a sustainability commons object was expressed and to *identify evidence of the type of contradictions at play*. As expressed above, at this point of the research there was *no central activity system which made it difficult to conceptualise the contradictions as tertiary or quaternary* although their manifestation was between and among groups of activity systems. Therefore, I looked for the *underlying motives for manifestation within the linguistic cues* which was the holding thread across the expressions, and this was about *power and structures* for decision making. The conceptualisation of power and structures was informed by Bhaskar's (1998) critical realist dialectical conceptualisation of power as an emergent agency which I discuss below (see Sections 7.11 and 7.12).

7.8 Dialectical Critical Realism and Contradictions

As noted in Chapters One and Three (see Sections 1.5.1, 3.1), this study was framed within the CHAT tradition, but I adopted a complementary approach in which I strengthened the study with key concepts from critical realism. In broad terms, both CHAT and critical realism conceptualise change-oriented learning as a dialectical process in which the logic of transformation involves deep engagements with sociocultural praxis as people construct and reflect on their human activity (Lotz-Sisitka, 2016). Therefore, both CHAT and critical realism are driven by the notion of navigating contradictions in a dialectical process (Bhaskar, 2016; Engeström, 2001). There are different approaches used in the two theories on how to engage with contradictions: in CHAT, contradictions are seen as the driving force of transformation and are engaged with through their discursive manifestation (Engstrom & Sannino, 2011), while in critical realism, the core meaning of dialectics involves engaging contradictions by unearthing their generative mechanisms through absencing of absences in search of freedom-seeking transformation (Bhaskar, 2016). Absences are seen as constraints on human wellbeing

(Bhaskar, 1998) and in the context of social-environmental systems, these are the sustainability challenges of managing the commons (Lotz-Sisitka, 2016).

Some CHAT studies have applied critical realist concepts to explore the underlying or generative mechanisms to deepen insights into the historicity and causality of contradictions as a basis for potential transformation (i.e. Baloi, 2017; Jalasi, 2018; Lindley, 2014; Mukute, 2010; Pesanayi, 2019). The common thread across these studies is that dialectical critical realism has helped researchers to ask ‘why’ things are the way they are with more care. This has deepened analysis in CHAT, especially in probing the emergence and types of contradictions in deeply oppressive societies, where the ‘real causes’ are not always evident in explicit discourse or even in obvious historical records; therefore, they require deep and careful probing beyond what is said or what seems empirically obvious. Generally, the notion of contradiction in dialectical critical realism “denotes a constraint or a bind in a situation that may typically involve opposing parties” in dealing with everyday life dilemmas (Nunez, 2014, p. 71). This is a similar notion from Engeström and Sannino (2011) in which dilemma and double bind are emphasised in the discursive manifestation of contradictions. To fully understand the dialectical contradictions, Bhaskar (2008) notes that we must pay attention to the connection between the elements which form a totality – this includes understanding generative mechanisms shaping the contradictions.

Both in CHAT and critical realism, the navigation of contradictions is influenced by the interplay between structure and agency. These do not only include more immediately obvious sociocultural traditions of human practice but also the deeper and longer-term historical cultural influences of political landscapes and governance processes in which the more immediate sociocultural or obvious practices are developed. For example, communities may indicate that they want to develop tourism potential on their land, but the reasons for this (i.e. years of disenfranchisement from the land) may not immediately be obvious without deeper probing of the historicity and causality and the underlying historical power and structural relations. Edwards (2005b) points out that structures are produced and transformed by human agency (individual, collective, relational). This means that as we encounter and navigate contradictions, we also create traditions that govern our practices, and these can be interpreted as both enabling and constraining structures. However, not all structures are the result of our own doing, as some structures can be imposed on us (Archer, 2003; Bhaskar, 1998; Nunez, 2014) e.g. through histories of coloniality or apartheid, as was the case for most Black South

Africans over centuries of colonial rule. Therefore, in order to enable transformative agency to advance human practices, we must engage contradictions which are structural tensions driven by their historicity and generative mechanisms.

7.9 The Interplay of Structure and Agency

The interplay between structures and agency is critical in facilitating transformative learning research. Bhaskar (1998) points out that human agency is always exercised in a world of structural constraints and possibilities that they did not produce. Bhaskar (2008) uses several examples to illustrate the influence of structures as generative mechanisms on how humans exercise their agency.

It is the state of weather that determines, in England, when and where the rules of cricket can apply; the state of conversation that determines the ways in which we can express ourselves in speech; the state of market that determines the use of machines, the use of machines that determines the conditions under which certain physical laws apply. The use of machine is thus subjected to dual control: by the law of mechanics and those of economics. (Bhaskar, 1998, p. 112)

In the environmental context, we can use the example of sustainable development in the Anthropocene era. This is the era where we have witnessed evidence of destructive human agency through fossil fuel-powered economic development. This was considered innovative during the last century, but the impact of climate change has forced us to rethink the concept of sustainability and energy resources. As such, this example of climate change adaptation presents a utopian challenge as structural tensions embedded deeply in a fossil fuel-powered economy are extremely hard to shift, but not completely impossible. Thus, current and future human development requires reflecting on the scope and power of existing structures of development and reframing our current and future structures including laws of sustainability and forms of energy use – themselves embedded in political economies that are extremely complex to shift. Therefore, the type of structures can either constrain or enable humans to transform their activities and work practices. The scale and scope of engaging such deeply seated structural constraints is daunting and relates to the notion of the runaway object outlined above, and in the case of my study, to the scale and scope of IAP and their impact on water and sustainability of the economy. Hence, it is no surprise that the object of NRM and IAP control

that I started working on expanded and became more complex to engage with as I moved into Phase II of the study.

In the *Critical Realist for Marxist Sociology of Education*, Banfield (2016) discusses the problem of structure and agency. He points out that structures and agents are different kinds of things although they are relational; he suggested a critical realist intervention as an approach to deal with structure-agency relations. This also links to morphogenesis by Archer (1993), which presents structure-agency relations as an analytic dualism, which she analytically separates for descriptive purposes while maintaining a dialectical relational perspective on structure and agency. What Archer fails to do, however, is develop a theory of learning that can engage the dialectic of structure and agency, as pointed out by Sannino (2020). Both critical realist and CHAT theories draw on Marx, and reflect this perspective:

Men make their own history, but they do not make it as they please; they do not make it under self-selected circumstances, but under circumstances existing already, given and transmitted from the past. (Marx, 1966/1852 cited in Banfield, 2016, p. 150)

Drawing from Marx, Banfield (2016) explains the critical realist distinctions between agents and structures dialectically:

Marx's aphorism is best understood as expressing a critical realist distinction between agents and structures that points to the twin realities of (i) objective structures interests, and (ii) the *powers of agents to know and realise their interests*. The *transformation of oppressive structures by human agents* is not only an *ever-present possibility* but is impelled by real *interested-driven human needs*. Moreover, a *dialectical* (morphogenetically emergent) understanding of the movement of history insists that the *agents of history, in changing structures, change themselves*. In an important sense, *human emancipation is and can only be, self-emancipation ...*[although this is not an individualised view only]. [my emphasis] (Banfield, 2016, p. 150)

In the above passage, I highlighted my key interest in Banfield's work. He notes the structure-agency relations through the twin realities and dialectical relations between structural interests and the power of agents to know and realise their interests. I was interested in understanding the latter on how actors in the restoration NRM practices conceptualise and realise (i.e. take action) in transforming their practices when faced with tensions related to structures. The former emphasis on structures' interests is explained in Marx's passage above as pre-existing circumstances and in this study, these pre-existing circumstances were presented by the

historicity of the restoration NRM object. Banfield also points out the transformation of oppressive structures as an ever-present possibility for human emancipation, and in this study, this came into view through the ethical–political expansion of the restoration NRM object, as it required a different form of agency to transform the object. However, Banfield seems to conceptualise the transformation of oppressive structures as self-emancipation which he argues that as agents of history change structures, they change themselves. I was not only looking for how people were changing themselves but was interested in the cultural changes and also the ecological changes – thus a different view on human emancipation in which the transformation of oppressive structures enables the agents to create new tools or advance the existing tools in their shared/collective learning pathways towards an envisioned future focused on the object of activity. This involves different levels of emancipation from self (emancipatory agency to know and act), practices (advancing human activity) and structural (creating new tools and sedimented ways of doing things). Lastly, Banfield proposes a dialectical process of understanding how agents change structures and themselves, and he suggests morphogenesis as a suitable approach. As much as I agree with Banfield on the dialectical part, I did not see morphogenesis as used by him or Archer’s classical sociology⁶ as a fitting theoretical lens to complement my attempt to work with fourth generation CHAT, which works instead with Sannino’s (2015, 2022) *educational* theory of collective transformative agency, more relevant for what I was doing in this study. As such, I opted for a different conceptual framing of emancipatory agency by framing agency through the lens of ethical–political groundings and their relation to Sannino’s (2020, 2022) educational theory of transformative agency (discussed in Chapter Three, see Section 3.6) discussed further below.

7.10 Ethical–Political Groundings, Emancipation and Co-engaged Depth Inquiry

As argued in the paper that I co-authored with my supervisors Lotz-Sisitka and Chikunda and former colleague at AWARD, Mponwana (2023, see Appendix A, which I also refer to in the orientation section to Phase II as a ‘ground clearing’ paper for this research – hence I cite

⁶ Archer’s work is often interpreted at the individualised level, but her full body of work deals with structure, culture and agency at individual and corporate or collective levels, with her later work also dealing with wider social morphogenesis which is less discussed but potentially interesting for some aspects of CHAT research, although overall it lacks an adequate theory of learning as also argued by Lindley (2014) and more recently by Sannino (2022) who argues instead for an *educational* theory of agency. I found, however, that going into detail on Archer’s work was an unnecessary detour for my thesis work so have not pursued it here.

extensively from it here), our research was based in Southern Africa, where our work found its onto-epistemic and ethical–political grounding in protracted struggles against colonial and imperial rule, most explicitly characterised by racism and marginalisation of the Black majority. As we (Lotz-Sisitka et al., 2023) argued “Our countries have been deeply affected by decades and centuries of what Walter Rodney (2018) terms ‘structured under development’ and the continuities of coloniality” (p. 231). This was also found to be the case in the IAP restoration control context, most visible in the recent land claims process that was changing the foundations of IAP control decision making, and in the awkwardness of the IAP implementation teams undertaking socio-political work associated with this transformation.

As discussed in Chapters One and Two, and as found in all our CHAT studies, including this one, “Disenfranchisement, inequality and environmental degradation are widespread, with climate change posing a major threat to food and water security, affecting people’s livelihoods” (pp. 231–232). As described earlier in this thesis, in our research community, we have engaged in numerous expansive learning projects and drawn on the theory of expansive learning and transformative agency developed by Engeström and Sannino (referred to across this thesis). Our paper provides another example of how the “communities that we work with regularly choose to transform oppressive forms of activity shaped by the cultural-historical nexus of coloniality, environmental degradation, social injustice, poverty and exclusion” (Lotz-Sisitka et al., 2023, pg. 232). It draws on the Legelameetse case which I was also involved in mediating during my tenure at AWARD, specifically involving expansive learning and transformative agency in a land restitution process involving CPAs. While these CPAs were not the same as those involved in the Blyde case reported on here, the context was very similar, and I also learned much from the work in the Legelameetse case while working on the Blyde landscape IAP control study, which is the focus of this PhD.

In our paper (Lotz-Sisitka et al., 2023, p. 232) we argued that such activity transformations are, as found in the body of southern African NRM and environmental justice research that this study also contributes to

...onto-epistemic [used in a decolonial sense] and ethical–political in that they arise from memories and experiences of prejudice, racism and oppression and actively seek out emancipatory alternatives in a decoloniality of power (Mignolo, 2011; Rabaka, 2009) or what Rabaka (2009) frames as “*the dialectical process of revolutionary decolonization and revolutionary re-Africanization*” (p. 7; original emphasis). In elaborating expansive learning,

transformative agency and activity transformations inspired by the ethical–political motives of historically marginalised communities, we [reviewing the body of southern African research] have indicated that this involves, inter alia, transgressing unsustainable and socially unjust norms (Lotz-Sisitka et al., 2017); decolonial epistemic acts such as foregrounding cognitive justice and Indigenous knowledges, languages and cultures (Mukute, 2010; Mukute & Lotz-Sisitka, 2012; Pesanayi, 2019; Mphepo, 2020); the formation of solidarity relations (Mudokwane & Mukute, 2019), navigating power relations (Kachilonda, 2015; Jalasi, 2018); gender justice and reflexivity (Jalasi, 2018, 2020; Mphepo, 2020); and a concern for the common good (Lotz-Sisitka, 2017; Mukute et al., 2018). We have also elaborated a diversity of mediation tools and processes that typically extend from change laboratories as a key method (Pesanayi, 2019; Lotz-Sisitka & Pesanayi, 2020; Mphepo, 2020). We have also argued for ontological depth in better understanding deep-seated structural tensions and contradictions (Mukute & Lotz-Sisitka, 2012; Mukute 2016; Pesanayi, 2016) which we have under-laboured with the relational depth ontology offered in Bhaskar’s critical realism (cf. Bhaskar, 2014, 2008, 2009).

In the same paper, we indicated that “While we have been able to elaborate aspects of emancipatory agency from below as emergent from CHAT-inspired expansive learning research, we have not as yet fully articulated how emancipatory agency from below emerges via TADS” (Lotz-Sisitka et al., 2023, p. 233), which I also develop further in the following chapters of this thesis, along the same lines as we did using the Legelemeetse case study in the paper (see Appendix A).

We further reviewed concepts of agency informed by critical realist theory and CHAT research (Lotz-Sisitka et al., 2023, pg. 233) as follows:

Harvey (2002) notes that humans, society and their mediating social relations become ‘ontologically irreducible moments’ in complex reproductive and/or transformative dynamics. As well explained by Sannino (2020, 2022) and Jalasi (2020), it is the *mediating social relations* that require articulation in educational settings where reflexivity, sayings, relatings and doings emerge from these mediating social relations as modalities of human agency. Agency can be reproductive as it can reproduce social structures and the material foundations of the social, or it can be transformative in the sense that it can alter the future conditions of its own capacities. Such transformations may not, however, be emancipatory or freedom seeking, hence we include a focus on emancipation in this chapter (cf. Lotz-Sisitka, 2016 for further elaboration on emancipatory orientation to environmental education). All of these gain meaning only when agency emerges from ‘a concrete set of cultural traditions and within the material and ecological boundaries of an actually existing community’ (Harvey, 2002, p. 175) that introduces ‘spatio-

temporal rhythmicity' and 'geohistorical processes' (after Marx; cf. also Bhaskar, 2009), which in our context include decolonial ethical–political (Rabaka, 2009) emancipation questions into the sphere of mediating social relations and associated reproductive and/or transformative-emancipatory outcomes of agency.

The focus on emancipation in this paper was important to elaborate on at this point in my research journey, especially as it helped me to better understand the dialectical transformation of oppressive power relations in transforming activity via the emergence of emancipatory forms of transformative agency from below. We argued the following in the paper:

By agency 'from below', we mean freedom-seeking forms of agency among the most marginalised and excluded, with freedom seeking defined not only in economic terms (i.e. transgressing class structures) but also in decolonial, non-anthropocentric terms (i.e. transgressing social-relational absences – e.g. absence of cognitive justice – and ecological ills). (Lotz-Sisitka et al., 2023, pg. 233)

We noted further:

De Sousa Santos (2015) and Rabaka (2009) are among those that argue for framing the world in ways that reach beyond Marxist theory on labour and capital to more fully include patriarchy, coloniality, racism, anthropocentrism and their intersections (cf. also Bhaskar, 2009; Moore, 2015; Rabaka, 2009). (Lotz-Sisitka et al., 2023, pg. 233)

All of this work, deliberation and contextual and theoretical clarification that went into this paper and its development began to give me a more robust language of description for the inclusion of the land claimants. It helped in my understanding of the PDCs and the expansion of the object towards not only the socioeconomic dynamics of IAP control but also the social-ecological and post-apartheid social justice concerns that surfaced in relation to the transforming object towards a 'common good' object noted above.

Clarifying the concept of emancipation further, we argued:

The conventional use of the term 'emancipation' indicates a process of being set free from legal, social or political restrictions. We use the concept of emancipation as used in critical realism, where it is recognised that emancipatory agency involves co-engaged depth inquiry into the deep-seated structural causes of the oppressions being experienced; that is, the stratification of the situation (Bhaskar, 2008, 2009; Price, 2020). This makes possible the ethical absencing of ills and the dialectical potential of transforming power relations (Bhaskar, 2008). This resonates with

the co-engaged inquiry into the deep-seated structural tensions and contradictions as used in CHAT, inspired by historical materialist geohistorical rationality that imbues Marxist theory, but which is to some extent reframed by decoloniality and non-anthropocentrism (cf. de Sousa Santos, 2015; Rabaka, 2009). (Lotz-Sisitka et al., 2023, p. 234)

As such, I focused on the elaboration of the onto-epistemic and ethical–political dynamic of the research context and how it relates to emancipation and emancipatory transformative agency potential (Lotz-Sisitka et al., 2023, Appendix A). I was now more able to work with and elaborate on the PDCs which I had been identifying in my study for some time, but for which I did not find the requisite languages of description at the intersection of Phase I and Phase II of the study (as introduced in the orientation to Phase II).

7.11 Manifestation of Power-Dynamics Contradictions as Interplay of Structure and Agency

Just to recap as explained above, in Phase II of this study, the object was re-conceptualised and the study morphed towards a fourth generation CHAT study through the constellation of activity system groups in which a different form of tensions and contradictions were encountered at the interplay of structure and agency. The reconceptualisation of the restoration NRM object as a sustainability common good object was explored through co-engaged depth enquiry and manifested as an ethical–political expansion of the object as contextualised in Section 7.10 above. As noted above, one of the key challenges in Phase II of this study was the lack of adequate descriptive language as I encountered fourth generation CHAT which was not fully conceptualised at the time. As such, I had to create my own conceptual understandings and in some cases develop my own analytic framework (see Figure 7.4 below). In my conceptualisation of emerging tensions in the restoration NRM object as sustainability commons, I framed these as *power-dynamics contradictions* or in short PDCs.

Power dynamics as defined by ATLAS.ti:

Power dynamics refer to the inherent structures and influences of power that exist between individuals and groups within a given context. This idea extends beyond mere authority or control, delving into more nuanced territories of influence, dominance, privilege.... In its simplest form, power can be understood as the ability to influence or control outcomes. The possession of power can come from a variety of sources - from formal structures like hierarchies... to less tangible aspects like knowledge, charisma and social capital. (ATLAS.ti website)

The framing of PDCs was informed by multiple aspects, but first and foremost was the notion that these tensions were emerging at the interplay of deep-seated structures that had until now disenfranchised communities, and which were also disempowering the IAP control implementing agencies and the agency for change in complex circumstances. However, as shown in Chapter Six, people were able to express transformative agency powers, which can also be understood in Bhaskar's (1993) terms as power as agency. Bhaskar points out that as much as our agency is influenced by structures, we must also take responsibility for our actions as agents:

If the concept of human agency is to be sustained, it must be the case that we are responsible for some but not other ... for agents are defined in terms of their tendencies and powers, among which in the case of human agents, are their reasons for acting. (pp. 92–93)

In the conceptualisation of power as agency, Bhaskar (1993) argues that humans possess the agency to act and exercise their volitional will in seeking their freedom and emancipation, which was also elaborated by Sannino's post-Vygotskian work that emphasises volitional will. Bhaskar (1993), however, considers this in terms of power relations, in which he describes a form of power (*Power2*) *relations* that refers to power influences that exert control over agents. Bhaskar also considers power relations to be a generative mechanism which can be exercised to bring about change and/or constrain change. He argues within a dialectical framework that this enables humans as agents to defend their freedom seeking and volition will by confronting, resisting, and reframing the “covert wishes and/or ... the real interests of others” (Bhaskar, 1993, pg. 153). As such (and drawing on Marx), power2 structures can be defined as “generalised master-slave type relationships” (Bhaskar & Norrie, 1998, p. 566). These include social relations, cultural, political, material goods and related structures that produce authority as a form of oftentimes oppressive governance. In his dialectical theory of power relations, Bhaskar refers to *Power1 relations* simply as the “transformative capacity of human agency” (Bhaskar, 1993, p. 60), which in Sannino's (2015, 2022) post-Vygotskian terms would be our capacity to, among others, use double stimulation tools to temporarily ‘anchor’ our forward movement as transformative agency emerges in relation to cultural-historical and other structural influences. In summary:

- **Power1 relations** refers to the power inherent in agency or the transformative capacity for action. This is a collective power held by agents to transform their situations.

- **Power2 relations**, on the other hand, is the capacity to control one's own or other's agentic capacity, wishes or interests. This type of power in its worst form, manifests as forms of exploitation, domination, subjugation and control (e.g. as exercised by colonial governments to exclude and forcibly remove Black people from their lands and subjugate their knowledges as was the case in colonial and apartheid South Africa). Power2 is an authoritative power normally held within decision-making structures, and it is also heavily influenced by access to resources. Such forms of power in the wider context of climate change can, for example, be found in the continuity of oil interests that hold much of the fossil fuel economy in place.

Therefore, the *emergence of PDCs lies within the dialectics of transforming power2–power1 relations*. These are represented by struggles, tensions and disturbances that emerged at the coalesced activity system level, as agents attempted to work together to enact their transformative agency to implement their envisioned and agreed-upon TADS pathways across the three constellations of activity systems groups as shown in Figure 7.2 above in this study.

Below in Extract 7.2, I use examples from the previous engagements which highlight the emergence of power2–power1 relations with **power2** represented as structures of existence in the past or present that were producing tensions and conflict of motives, as practitioners and communities were co-engaged with in-depth inquiry for envisioning the future of restoration NRM practices as socio-ecological justice (**power1**), with a strong emphasis on ethical–political dimensions through the emancipation of the historically disadvantaged.

Extract 7.2: Excerpt from different change lab workshop on the emergence of power-dynamics contradictions (multiple BCCLWs)

Practitioner: ... *decision-making process* is also lacking [power1]. This integrated process is literally moving from *traditional EPWP systems* [power2] of implementing NRMP in which we were more of working in parallel, there is a lot of implications on our current budgeting and reporting processes. I suggest we get *high-level support from DEA national* [power1] or else we are trying to *change the system* [power2] that is not created by us and it will be challenging to do that with high-level support" (BCCLW #2)

National director: "... one also has to look at *land use and ownership* [power2] ... land claims are the wild card in the space as new *landowners are claiming* for benefits [power1] but also inherit are the liabilities and responsibilities such as IAP invasion on the land" (BCCLW #3).

Practitioner: "... local communities out there don't see our restoration programme as something they can learn from and participate in ... the *EPWP has given us a bad name* [power2]. It's very *difficult to engage people*

without being called names and sometimes physically harassed [power1]... and you can't blame the communities we haven't really fully engaged with them [power 1]..." (BCCLW #4).

Practitioner: ... practitioners knew what to do next in order to take the restoration forward [power 1] ... but maybe the problem was just beyond them and others who were supposed to take charge of *governance and resourcing* didn't do their part [Power2]... (BCCLW #4)

Practitioner: I really liked the meeting with the deputy director general and chief director, it was amazing how they *endorsed this work* [power1] and yet half of the time we think they are not taking action to support us. We have big problem with our *government bureaucratic systems* [power2] of working with EPWP processes and so on, but they see it differently and are encouraging us to think *beyond the EPWP* [power1] (BCCLW #4)

Practitioner: It's important to ask who actually has the *mandate to manage* [power2] these catchments ... we can do all these *plans and strategies* [power1] but it won't really work the way we think it should if the *mandated landowners and managers* [power2] are not involved ... let's not only focus on technical stuff because the *governance complexities* [power2] must be addressed too or else we will be back at the Blyde National Park collapse story (BCCLW #5).

In Extract 7.2 above, I was trying to identify the emergence of PDCs from the formative intervention engagements. Here I traced how practitioners conceptualised the tensions through the lenses of power2–power1 relations. Therefore, this was partly answering the third research question: *What are, and how do underlying mechanisms associated with power dynamics promote or constrain transformative agency and learning of restoration IAP control activity by the NRMPs and related agencies in the Blyde landscape?*

The fourth research question was framed with a double focus: the *what*, which entails identifying the type of underlying mechanisms associated with power dynamics and *how* these constrain or promote transformative agency, which involves the navigation process associated with transformative agency and learning in a context heavily shaped by power dynamics. As noted above, in Phase II, the scope of the study expanded towards constellated activity system groups, and the focus was no longer on working within the NRMPs' scope (i.e. four implementation activity systems) but rather at the constellation level (i.e. other agencies represented by the rulemaking and governance activity systems). Although not directly expressed, I could identify in the linguistic cues from different workshops how power relations are represented as a generative mechanism for the emergence of PDCs (see Extract 7.2 above). In short, practitioners saw their agency to implement restoration as sustainability commons (power1) being constrained by the current governance structures (power2) which were not inclusive or enabling enough. But in order to activate and enable their agency, they saw

transformation possibilities i.e. adapting and creating new tools for the overall governance structure as a key component for advancing restoration NRM practices (*power2–power1 transformation*). These power2–power1 transformations at the constellated level across the three groups of activity systems thus appeared to be important to pursue further in the study, and this is where the coalesced expansive learning cycle was formulated for Phase II of the study; however, the navigation pathways for PDCs were not yet identified.

It is important to reflect that from Phase I of this study, in which the focus was initially on facilitating an expansive learning cycle within the boundary of the implementation activity systems group (reported in Chapters Four to Six), practitioners were fully aware of these power-relation tensions but did not conceptualise them as a central contradiction in the expansive learning process. This means that practitioners were solely focused on how to strengthen collective learning among the four implementation activity systems although they acknowledged governance and land management concerns. Drawing from the expressions in Extract 7.2 above, there was a common thread on systemic tensions within and across structures of governance including: navigating the constraints of operating within the bureaucratic EPWP systems; exploring the creation of new structures to enable meaningful engagements with landowners and management agencies as future custodians; enforcement of decision making through clear mandates; and development of strategies and tools for enabling collaboration for resourcing and integrated implementation of the project. All these emerged within the context of power2–power1 relations but were still too broad and difficult to engage with. In addition, these tensions were seen as being at different levels from local, regional and national and it was impossible to bring all actors and activity systems together.

As such, a collective decision was taken that the implementation activity systems needed to re-engage and present the restoration NRM vision to the local communities which are represented by their CPA community structures. The engagement of CPA communities was one of the key steps in the implementation of TADS pathway 3 as discussed in Chapter Six (see Section 7.1). In the Blyde landscape, four main CPAs were involved in the co-management of protected areas and land-use development in the land they had claimed back. These four CPAs were collectively represented by their chairperson in a collective platform referred to as the co-management committee. The co-management committee was responsible for engaging in the co-management of protected areas in which the land had been claimed by local communities.

As such, this committee took decisions on behalf of their community representations, and these included land management and development opportunities such as eco-tourism.

It was also acknowledged that it was proving to be difficult to work with contradictions between different groups of activity systems if people from the other activity systems were not represented or their perspectives were not adequately considered. For example, practitioners pointed out that the local communities were still not actively engaged in restoration NRM practices as agreed in TADS pathways (see Chapter Six). They argued that if local community structures were not consulted and informed of the development in restoration work, they were likely to not fully embrace or see themselves as future custodians of programme implementation. At the same time, practitioners also expressed frustration with the EPWP model's reduced restoration programmes to short-term jobs provision, which was neither consistent with their intention nor offered a developmental training approach. This was the source of most conflicts with CPA local communities. Extract 7.3 below is based on the discussions related to preparation for the sixth BCCLW, and it demonstrates the underlying contradictions between the restoration practitioners and local CPAs communities, and that these contradictions stem from the national level because of a top-down EPWP model and the NRMPs' bureaucratic systems.

Extract 7.3: Excerpt from the focus group discussions with implementation activity systems on reflections and preparing for engagements with CPAs' local communities (meeting/interview #4)

Practitioner1: I was asked to give a report back from the Eco-Furnisher project which was supposed to start in April. The project had already employed people and started training, and they gave them protective clothing and working tools. But there were serious issues with CPA communities as they were not happy with a lot of processes. First it was because the project was delayed and we were no longer sure when it will start. The national department informed us that the budget was cut. So the initial agreement to employ 40 people was cut down to 20 people. The CPA communities were furious about that. We tried to explain that it is beyond our control as it is the national department but they didn't want to listen. We met with the CPA representative structures to discuss the way forward but that didn't help much, and that's where the unrest started... there seems to be a lot of political tensions on these EPWP jobs. A large group of people blocked the roads and held our teams hostage. We have now asked the local municipality's local office to facilitate the discussion ... we will be having more meetings next week. I think the project will go on although there is budget cuts but this is not a good way to work.

Practitioner2: This is very unfortunate thing because now all restoration projects have been stopped by communities ... people are tired of being treated like they don't matter.

Practitioner3: It's not the first time it has happened. It's becoming very risky to manage these projects ... we need to find a better model that can help us work together with people.

Practitioner4: It demonstrates how serious the situation in the communities are in terms of jobs.

Practitioner5: It also highlights the need for support at a higher level in government ... we also need people who are skilled in this field of social conflicts, hopefully the person from municipality can play that role.

Practitioner6: Our advisory committee should address these issues ... what I gathered from my meeting is that they are actually unhappy with how the projects got introduced to communities and they want more commitment from government when they employ people. They don't want short-term jobs and they want training to develop them as project managers not the usual first aid and health & safety type of EPWP functional training.

Practitioner7: I think in terms of advocating, we need to make sure that the communities understand that there are guidelines, it becomes easy if we engage them before. What also communities don't understand is the objective of our projects, we need to make them understand. We should be proactive so they own these projects ... the sustainability of this work rests on them being able to take these projects forward just like all other landowners.

Practitioner8: I think we need to engage CPA communities as soon as possible. Everything else we do in our restoration work can only work if we have good governance structures. What is the point of having a good IAP map and restoration strategy that is not recognised by landowners.

Practitioners9: Maybe it is time we get involved in the land claims issues because that is one of the reasons we don't have functional governance arrangements because the land claims commission is delaying the process. The communities know that they are rightful owners but the process is taking way too long and they are fed up ... I think the CPA engagement should be a priority now.

From the extract above, it was evident that there were deep-seated PDCs that were constraining the agentic capabilities of practitioners towards advancing restoration NRM practices. Practitioners expressed the need to support meaningful engagements with CPA communities on capacity development for custodianship as they were the rightful new landowners (emancipatory agency). As such, the PDCs were between the continuing implementation of restoration projects in current constraining governance structures (power2) vs co-creating new potential tools to strengthen existing or develop new structures (power1). These PDCs were structural tensions currently evident in the NRM governance structures such as EPWP but can be traced back to the historically oppressive era of land management, in which the socio-ecological agency of local communities was taken away as people were forcefully displaced from their land. In addition, local communities were actively denied access to and excluded from land-use management and the benefits of land ownership during oppressive colonial and apartheid systems (see Table 7.1 below, and Appendix A where this is described in some detail

in our paper). The need for and urgency to engage local communities was vividly expressed by practitioners (Extract 7.3 above). It was agreed by all practitioners that the implementation activity systems should engage and present the vision of restoration NRM practices, exploring potential collaborative learning opportunities with CPA communities as beneficiaries and future custodians of the projects.

As such, representatives of CPA communities were invited to BCCLW #6⁷. During the workshop, CPAs themselves expressed the tensions between government NRMPs and the view from local communities, as they claimed that the EPWP system is oppressing unemployed local communities whose agency is constrained (power2) by the same government structures aimed at supporting their development (the envisioned power2–power 1 transformation). These expressions from CPA communities were evidence that PDCs were indeed deep-seated structural tensions that were embedded in historical management and skewed power relations and governance arrangements (generative mechanism of PDCs). Below is an example from the discussion in which a CPA representative argued:

Practitioner1: ... as discussed in preparation for this meeting, we came to present our restoration work at the co-management committee ... we are trying to develop the new strategy and plan on how to work collaboratively with CPAs as landowners.

CPA representative: ... we are not fighting you [referring to restoration practitioners], we are fighting the EPWP system. They are playing with our people ... our people get employed for few weeks and the project is over but the EPWP demand that the very same unemployed people must come with vehicles in order to get these contracts ... now our people are getting into loans and after that you guys come back and say the project is cancelled ... always tell us budget cut stories but what do the people do who now have loans because of your projects ... we have claimed majority of the Blyde land and we want real benefits not this few months piece-jobs. (BCCLW #6)

From the above workshop excerpt, the CPA representative was clearly expressing the emergence of an emancipatory agency in which communities were *calling out* the need to

⁷ BCCLW #6 refers to the first workshop engagement between the implementation activity system (represented by practitioners from the four restoration NRM programmes) and the governance activity systems (represented by the CPA co-management committee structures formed by the four CPA communities in the Blyde landscape).

transform power² structures which were embedded in NRMPs' and EPWP's governance. It is important to note that this was one of the workshops in which the formative intervention team was asked to leave the room as CPA representatives were discussing how to further engage with NRMP practitioners. This presented a challenge for conducting formative intervention engagement in the context of deep-seated power-laden structural matters such as land claims and land management which are problems with a lot of historical tension in South Africa and evoke the past injustices of apartheid. We had witnessed this in some of our direct meeting engagements with all four CPA communities in the Blyde, in which many disagreements surfaced as communities vividly expressed their anger with historical structures of power that had in many cases produced poverty by subjugating Black communities. As such, we were not allowed to record conversations in these workshops and from time to time we were also asked to go outside when the CPA co-management committee engaged in decision-making processes among themselves.

Despite all the tensions being raised and confronted, the sixth BCCLW was a success in which the outcome was positive in the sense that the CPAs agreed to engage their communities in managing conflicts between local communities and NRMP projects which were at the time stopped due to conflicts. The CPA structures were also positive about working together with practitioners *towards a collective reconceptualising of the restoration NRM practices*. This was apparent in the expressions of emancipatory agency that called for collaborations as CPA communities reflected on the importance of the communities being capacitated so that they could have a better understanding of managing the land that was once theirs and taken away. It was also clear that through the successful land claims, they saw themselves as custodians of their land and this included a willingness to take up management and governance of NRM practices (power¹). For example, the local communities represented by their CPA structures expressed their frustration with slow progress on the land restitution process – they were not actively engaged as custodians of NRMPs because they were not regarded as rightful landowners yet as the land claims process was not finalised. Members of the CPA management committee argued the following in Extract 7.4.

Extract 7.4: Excerpt from engagements with CPA communities in the sixth change laboratory on surfacing and engaging power2–power1 (BCCLW #6)

CPA representative1: ...those conflicts between our communities and your NRM programmes was a bit unfortunate. It was not supposed to be physical confrontational but you can't blame us. We are tired of being played by the same government that claims to be helping us. These EPWP jobs are not sustainable, they hire us for one or two months and drop us when they feel like it. All we are asking is a more consistent form of employment like a full year contract. We are the rightful landowners of these catchments that are producing water for everyone but no one takes us seriously. The land claim process is moving at a snail pace and it is one of the reasons why you guys just see us as free labour but that will change the day we have our title deeds ... this is why we are now demanding proper training for our communities so that they can someday be managers of their land.

CPA representative2: Yes I agree with the chairperson ... government must stop playing games with us. We need jobs and benefits from our land and we mean real jobs not these short-term EPWP jobs that are actually making our people even poorer. How do you employ our people for about 6 months and you call that employment?

CPA representative1: these EPWP programmes demand that our people must bring bakkies [referring to work car for transporting people and tools] ... our people get into loans or hire to buy these bakkies from people, just to work for few months in a year. That has to stop, we want a minimum of a year continuous contract and don't tell us about EPWP policies because you also know that has failed our people.

CPA representative2: ... I remember we had a meeting with the guys who wanted to build a lodge and eco-tourism business in our land... they said we can invest money in land we don't know who owns it. That is very painful to us because we know we own the land ... you see why we get very angry in these meetings is because we want to develop opportunities for our people but the government keeps constraining us ... at this point more of our communities are angry and they have reached a point where they say no programmes will be implemented here until we are fully involved.

The above expressions are an example of the emergence of PDCs. This was during the sixth BCCLW which was aimed at engaging the local CPA communities as one of the activity systems identified by both restoration practitioners and DEA national as central to the governance and custodianship of restoration NRM practices. In the above expressions, the chairman of the CPA co-management committee acknowledged the tensions between the CPA communities and NRMPs (critical conflicts), however, he situated these conflicts within the underlying structural constraints of the EPWP model of employing people and governance of the restoration programmes (power2 in the form of agentive control through top-down model). Furthermore, he identified the land restitution as a transformative pathway that could help him break away from these structural tensions as it would provide the communities with the legal status of landowners (emergence of power1). However, the land restitution process as a potential tool for enacting communities' agentive capacity was also constrained by the

government's bureaucratic system (*"moving at a snail's pace"*), and this was evidence of deep-seated structural tensions.

He further pointed out the ethical–political and sustainability common good object, i.e. *"rightful landowners of these catchments that are producing water for everyone but no one takes us seriously"*. This elevated the concept of ethics or care for others, which was embedded in the restoration NRM practices as sustainability commons for broader societal benefits. In addition to the above, these PDCs could also be traced in a geo-political landscape as tensions that stemmed from the apartheid laws that forcefully removed and prevented local communities from owning land or having access to management and beneficiation rights. The land claim process was conceptualised nationally as one of the tools for addressing historical injustices (ethical–political dimension of the object); it remains plagued by inefficiencies that further exacerbated the PDCs.

As discussed above, the reconceptualisation of the restoration NRM object as sustainability commons was carried through the navigation of PDCs as ethical–political expansion of the object. In reflection, it is possible to identify the evidence of reconceptualisation of the object as the holding thread that emerged in the first formative engagements of Phase I of this study (see Chapters Four, Five and Six). Practitioners themselves also reflected on this in the reflections and planning meeting (FGD #5) which was held in preparation for BCCLW #6, as they continued to express the need for re-visioning the national objectives of restoration NRM practices. As shared above, they saw this as providing pathways for addressing broader societal challenges (utopias) such as restoration NRM practices and sustainable land-use developments that support sustainability for human wellbeing. But at this point, it was clear that this required the facilitation of a multi-levelled expansive learning process to engage and concretely co-develop tools for navigating different stakeholder groups so that they could be more fully engaged and working collectively. Below are some of the expressions from the reflections and planning meeting (FGD #5):

Practitioner1: ... the conflict with CPAs is disrupting our programmes but the communities are fighting for their rights ... we measure how many people are employed but these are short-term jobs and unfortunately this has become a political thing about jobs- jobs- jobs ... due to high unemployment in the country ... we also measure the hectares of cleared invasive alien plants but also that is not enough in measuring the impacts of restoration. Most of the areas here in the

Blyde we cleared them in the 90s and 2000s but if you go now you will see jungles of invasives ... that is evidence enough that we are not implementing sustainable programmes.

Practitioner2: ...we need to find ways of developing better jobs from these NRM programmes, we have to find ways of fully working with the private sector to get sustainable funding for this work. I mean we always say we are saving water by restoring ecosystems, yes that's true but we don't know how much water we are saving, we don't even know who is using that water ... that is the opportunity to sell our work even better.

Practitioner3: ... if we know the amount of water and who is benefiting why are we not asking those people to fund restoration NRM?... these questions are important and NRM programmes can address them and now we have the high-level discussion support from our directors.

These expressions substantiate the notion that sustainability challenges are complex societal challenges which Engeström and Sannino (2020) refer to as utopias. As indicated above, they are elusive runaway objects which typically do not have obvious or 'correct' solutions. Practitioners argued that more attention and resources must be invested in empowering the local people who were denied opportunities and access to the benefits of common good resources such as water, biodiversity and the potential social-economic opportunities for the advancement of their lives. Furthermore, practitioners saw the NRMPs as a pathway for transformation in terms of the sustainability of the programmes through ensuring continual investments (i.e. management capacity, resources,) from a wider range of contributors (private sector) to secure the socio-ecological gains that were made by the government. They argued that NRMPs as government programmes should not only be involved in implementing the restoration projects but should further address the matters of socio-ecological beneficiation processes to ensure that the right people have access to the benefits and devise a process for re-investment in ecological infrastructure. In this process, local communities would be seen as the biggest investors as custodians for future management of NRMPs, however, these would require extensive capacity development and other sources of funding. The funding resources for this capacity development and future implementation of NRMPs should be supported by the private sector including tourism, conservation, and agriculture sectors which have been historically and currently are still the largest beneficiaries of ecosystem services such as water, business development, access to land, biodiversity and green economy opportunities. As such, an integrated approach to restoration NRM could address the ethical-political questions of who

should benefit and carry the costs in managing the commons. However, the current governance structures constrained the concrete reconceptualisation of the object and this reinforced PDCs on who could participate in investing, managing and benefiting from the restoration NRM practices. Therefore, engaging the PDCs as an ethical–political concern was a deep dive in this study with neither a correct solution nor a well-known or tested approach on how to navigate PDCs in multi-levelled and interconnected learning processes. Engeström and Sannino (2021) refer to this as enacting utopias in heterogeneous coalitions. These coalitions are characterised by constellations of activity systems, coalesced expansive cycles and are multi-organisational, multi-dimensional and driven by ethical–political expansions of the object.

Drawing on expressions from all the previous formative engagements including BCCLWs and reflection meetings with practitioners and local communities I summarised the PDCs into three deep-seated structural tensions (see Table 7.1). I presented this in relation to the three TADS that were co-visioned as learning pathways in Phase 1. The three PDCs encompassed the contradictions which were surfaced in Phase 1 (see Chapters Four and Five), while the TADS pathways identified earlier embedded the collective vision of modelling new solutions as discussed in Chapters Five and Six. Therefore, by applying the power as agency analytic lenses (power2- power1 relations), I consolidated the emerging PDCs into three deep-seated structural tensions which existed at local, regional and national levels (multi-levelled) as heterogeneous coalitions (constellation of activity system groups).

Table 7.1: Power-dynamics contradictions in relation to co-visioned pathways for TADS

Identified Power-dynamics contradictions (PDCs)	Co-visioned pathways of Transformative Agency by double Stimulation (TADS)
PDC 1: The bureaucratic and siloed operational system that produces uncoordinated restoration IAP control activity VS need for integrated NRM programmes that are adaptable to function beyond government management processes.	TADS Pathway 1: Stakeholder mapping and co-visioning the matters of concerns for institutional and governance across different NRM practices
PDC 2: Top-down decision making and operational tools, which unintentionally constrain the emergence of collective agency VS contextualized and co-created bottom-up operational and governance processes.	TADS Pathway 2: Co-development of operational and technical management actions and tools for restoration IAP control activity
PDC 3: Historical implementation of large-scale restoration IAP programmes as a government-owned intervention which produce lack of custodianship by other multi-stakeholder actors VS intentional investment in capacity development at local level for decentralization of restoration IAP control as a shared common good object	TADS Pathway 3: Capacity building and skills development to empower local actors, developed ownership of restoration IAP control and exploring alternative funding models

Furthermore, in mapping the direction of transformation, I used the four-field ZPD of activity expansion as described by Engeström (2015):

The distance between the present everyday actions of the individuals and the historically new form of the societal activity that can be collectively generated as a solution to the double bind potentially embedded in the everyday actions. (p. 138)

In Figure 7.3 below, I used the ZPD four-field quadrant to visually represents the PDCs in relation to the historicity of the restoration IAP control object. In the movement towards fourth generation CHAT, Sannino (2020) and Engeström & Sannino (2021) argue that the four-field ZPD is a critical tool in mapping the ZPD, especially when the direction of transformation is not well defined (i.e. engaging in enacted utopias). The direction of transformation is represented as spearheads (Sannino, 2020) and in this study, I referred to the spearheads as TADS pathways (see Figure 7.3) as did Jalasi (2018) in her study, as the concept of ‘spearheads’ evokes traditional concepts of violence. We reasoned that this would not be productive in our research context as they could be misunderstood and be counterproductive to the emancipatory intent embedded in collectively visioned directions for transformation.

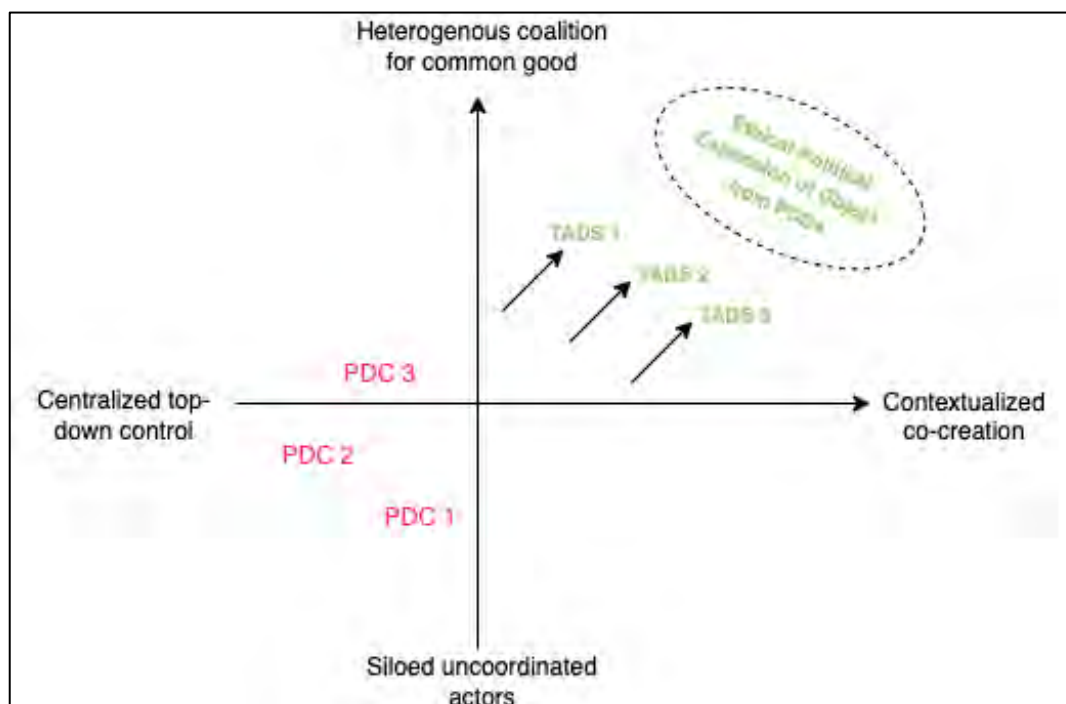


Figure 7.3: Mapping the direction of transformation via PDCs and TADS as pathways indicating the zone of proximal development of restoration NRM as a common good object

Source: Adapted from Engeström and Sannino (2021)

As shown in Figure 7.3 above, PDCs in the restoration NRM practices are embedded in power structures (indicated by the grey circle) such as the top-down EPWP model that exerts total control of the governance tools and resources guiding programme implementation through a prescribed blueprint model to be implemented across the country, although catchments have different contexts. As mentioned, practitioners, CPA communities and national directors expressed the need to create new and alternative tools to navigate these structural tensions towards the direction of the TADS pathways identified in this study (green arrows), representing adaptive, co-created and reflexive learning processes. As such, a series of learning actions for potential expansion of the restoration IAP control as a common good object were identified as TADS pathways and were subsequently pursued through further BCCLWs as will be discussed in Chapter Eight.

7.12 Proposing the Analytical Framework for Surfacing Power-Dynamic Contradictions

Just like other types of contradictions, PDCs shared the discursive manifestations as described earlier in Section 7.11. Furthermore, the manifestations of PDCs went beyond just resolving technical or structural tensions within or between activity systems, as they embodied an ethics of care and ethical–political expansion of the object. As highlighted above, PDCs in this study emerged as core to the ethical–political expansion of the restoration NRM object. The PDCs were embodied in the dialectics of power and agency, in which emancipatory agency emerged as a volitional action in search of new learning pathways to transform decision-making structures and processes in transformative ways with the power to address deep-seated historical exclusions and constraints. However, at the time of writing this study, the concept of power as agency (Bhaskar, 1993) had not been well explored in expansive learning research, even though Sannino, in her 2023 chapter, argues that CHAT is a power-sensitive theory.

In recent work on the further development of CHAT research, Engeström and Sannino (2020) suggest the need for more research on exploring and expanding the ethical–political expansion of the object, which addresses the aspects of power relations and power dynamics. This points to the analytical limitation of PDCs which is embodied in the ethico-political expansion of the object. In earlier work presented out of Southern Africa, Lotz-Sisitka et al. (2016) advocate the development of a dialectic theory of power relations in conceptualising transformative agency in CHAT in pursuing decolonial objects, which I have been developing further and in more depth in this PhD study. In advancing the framework on TADS, Engeström et al. (2020) also

suggest the need to pay attention to power relations as “exerting power may either maintain and defend the existing state of affairs, or challenge and transform it” (p. 2). Furthermore, Engeström and Sannino (2020) also point out that “power is not stable”, but it

...becomes something that can be generated from below, by grasping the contradictions and by re-forging the activity to transcend the contradictions ... individuals gain agency and power by joining their efforts and constructing ... motive of the entire collective activity. (p. 8)

Ko et al. (2021) in their recent work also discussed the importance of power dynamics that “exist[ing] between school members (administrators, teachers) and students, family and community participants” (p. 6). However, they did not conceptualise these power dynamics as a central contradiction, but rather as a factor that produces “power over students of colour”. Therefore, I argue that power dynamics are critical types of contradictions in an expansive learning study – these have been less explored or explicitly defined due to potentially a lack of an appropriate analytical framework and a dialectical theory of power.

Many scholars in Southern Africa have directly or indirectly worked with power relations in NRM, although these were not explicitly framed central contradictions (Conde-Aller, 2022; Jalasi, 2018; Kachilonda, 2015; Mukute, 2010; Mukwambo, 2021; Pesanayi, 2019). For example, Kachilonda (2015) argues that committing to actions is often dependent on the transformative agentive capacity to navigate and negotiate power relations. Jalasi (2018) pointed out that in order to catalyse transformative agency, rigorous deliberate and mediated processes of participation and learning are required which take into account power relations. She further argues that in CHAT, researchers need to give attention to power relations as an agentive factor that influences how agents interact in their community. In Mukute (2010), power dynamics within the cultural structures of gender disparities were highlighted as a critical factor which have a bearing on the learning and practices of sustainable agriculture. Pesanayi (2019) worked with Bhaskar’s conceptualisation of Power1 and Power2 as generative mechanisms for emancipatory agency. He argues for the need to surface and navigate power relations in boundary crossing formative interventions in order to allow for the multi-voiced and collective capacity of agents to confront exploitative structures (power2). With the above consideration and gaps, I drew from the concepts of power as agency (Bhaskar, 1993) and TADS (Sannino, 2020) to propose my own analytical framework for surfacing and engaging with PDCs in formative interventions (see Figure 7.4).

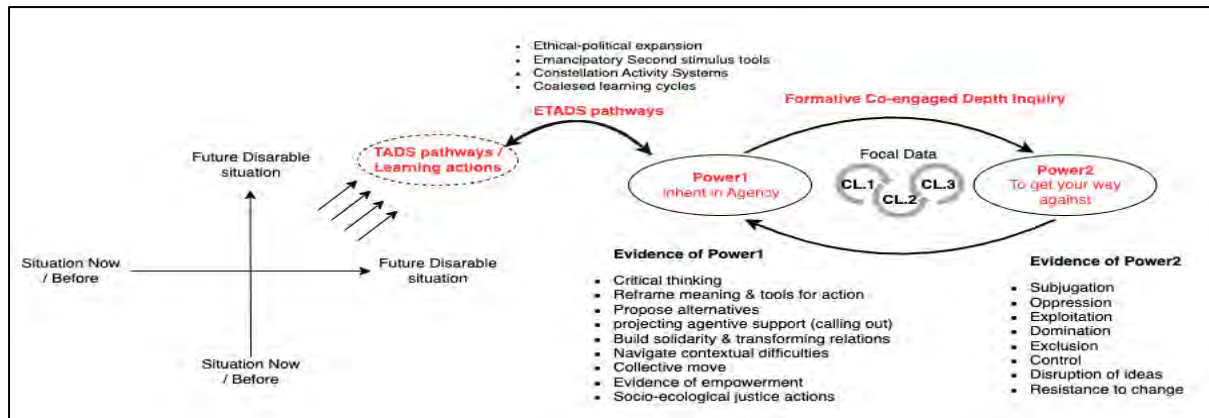


Figure 7.4: Proposed analytical framework for surfacing and engaging power-dynamics contradictions

In summary, the analytical framework combines the principles of CHAT and critical realism by emphasising transforming power relations (i.e. power2–power1) as a dialectic process (as indicated by loop arrows) through formative co-engaged depth inquiries in which ETADS pathways are envisioned as the direction of transformation (ethical–political expansion), and a series of TADS pathways are identified or are referred to what Sannino (2020) notes are ‘spearheads’. Once collectively envisioned, TADS are implemented through the co-development of second stimulus tools. The analytical framework can be categorised into two parts: the formative co-engaged depth inquiry and ETADS pathways.

7.12.1 Formative co-engaged depth enquiry

The main tool for facilitating co-engaged depth inquiry is the longitudinal change laboratories (CLs) as formative interventions that provide focal data. The emphasis is on longitudinal as power relations are deep-seated structural tensions that normally emerge as generative mechanisms, and this requires an iterative process with actors (i.e. surfacing PDCs may require an insider formative interventionist approach, see Mukwambo et al., 2023). The intended outcomes of the co-engaged depth inquiry are the surfacing and identification of evidence of power2 and power1 in linguistic cues and/or practices. As shown in Figure 7.4, some of the evidence of power2 (*power over*) includes subjugation, control, resisting change, exploitations, etc., while power1 (*power with*) is seen through collective moves, calling out, proposing alternatives, etc. These evidences of power2–power1 are core to the identification of the existence and emergence of PDCs and their resolution. In this study, Power2 evidence included the questioning of current governance structures of restoration NRM practices, while power1 was expressed through resisting control of the EPWP programmes, questioning the intentions of NRMPs, building collective movement among practitioners, and proposing alternative ways

and tools to re-conceptualise the restoration NRM object (as discussed in sections above). The framing of formative co-engaged depth enquiry allows us to draw from broader educational methodological tools that are used in both CHAT and critical realism in the generation of focal data. This is critical because PDCs are complex types of tensions that may not emerge through analysis of change labs linguistic cues only, and a different form of the method may be required such as identifying stratified absences, and absencing of the absences (see Baloi, 2017; Lotz-Sisitka, 2016) e.g. in this study there was a palpable absence of adequate structures to engage with CPAs in NRM projects. This was identified as a lack of discourse but required depth probing at the level of the generative mechanism level of power dynamics to fully consider what was required in the longer term to resolve the IAP control contradictions. This complementarity should be seen as strengthening the application of both CHAT and critical realism, rather than a critique that emphasises the difference between the theories.

7.12.2 ETADS pathways (emancipatory transformative agency by double stimulation)

The framing of ETADS pathways is presented as a two-way arrow process because it can either emerge as an outcome of TADS pathways or as power2–power1 dialectics in a formative co-engaged depth inquiry. The emancipatory agency is then catalysed through the development and implementation of second stimulus tools (ETADS) as we described and reflected on in our paper (Lotz-Sisitka et al., 2023; Appendix A). This is mostly the case where PDCs are settled and not directly confronted (i.e. they are not directly expressed or are unrealised), in which a process of identifying all possible evidence of power2 would be required as the first step before envisioning power1 agentic capabilities.

The ETADS pathways can also emerge as TADS pathways in the ZPD by using the four-field ZPD. The ‘spearheads’ represent the learning actions which represent the direction of transformation. Sannino (2020) emphasises that the spearheads or TADS pathways should be collectively conceptualised by the agents during formative intervention engagements, as was the case in my study where the three TADS pathways were conceptualised together with stakeholders from the activity systems. This emergence of ETADS via pathways was applicable when PDCs were expressed and surfaced in formative interventions, with evidence of the ethical–political dimensions of the object. An example in my study was when the re-conceptualisation of the object towards seeing restoration NRM practices as a common good (i.e. which embedded the ethical–political expansion) informed the direction of transformation.

The power2–power1 relations were clearly expressed by practitioners and CPA communities (framing of PDCs), and the three TADS pathways were co-visioned as learning actions to navigate the PDCs (Figure 7.3). Within each of the ETADS pathways, a series of second stimulus tools were co-developed as an emancipatory process to activate the power1 (see Chapter Eight below). If one of the PDCs was not clearly defined, a longer process of identifying evidence of power2- power1 would be required, which meant the analysis would move back to co-engaged in-depth inquiry and potentially towards ETADS pathways again.

As expressed by Sannino (2020) and Engeström and Sannino (2021), TADS pathways are a key feature of the fourth generation CHAT. They argue that the unit analysis in fourth generation CHAT is the heterogeneous coalition in which multi-levelled coalesced expansive learning cycles through TADS occur. However, when engaging PDCs, we emphasised emancipation, and this is what was framed as ETADS pathways in this study and in the work undertaken to develop our paper (Lotz-Sisitka et al., 2023). The ETADS pathways were therefore enacted via the co-development of emancipatory second stimulus tools i.e. *tools specifically aimed at navigating power2–power1 relations*. Thus, in this study, a series of emancipatory second stimulus tools were co-developed as we navigated the PDCs in restoration NRM practices (see Chapter Eight).

7.13 Conclusion

As highlighted in the beginning of the chapter, the emergence of PDCs as the central focus in Part II of the study was a turning point in which the expansive learning processes reverted from implementation (stage 5) to modelling new solutions (stage 3) as shown in Figure 7.1. Drawing on Engeström's (1987) categorisation of contradiction types, the emergence of PDCs can be described as quaternary contradictions. Engeström (1987) noted that quaternary contradictions emerge between the central activity and its 'neighbour' activities with which it is linked. In the context of fourth generation CHAT, quaternary contradictions exist within the constellation of activity systems. This chapter sought to clarify this in some detail as I found a lack of adequate descriptive language and analytical tools for this type of contradiction at the start of Phase II of my study – a process which took much work to resolve coherently, especially as this emerged at the cusp of an emerging fourth generation CHAT that was still in process at the time, and in a context that was characterised by complexity of the object. Therefore, at the end of this chapter, I described *PDCs as quaternary contradictions that are deep-seated structural laden*

matters, and the navigation of PDCs is the driving force for advancing the ethical-political aspect of the object through ETADS in heterogeneous coalitions.

In Chapter Eight, I further and more explicitly expand on the co-development of emancipatory second stimulus tools in ETADS pathways for navigating PDCs in restoration NRM practices. Through the co-development of second stimulus tools in ETADS pathways, we demonstrated evidence for reclaiming and cultivating agentic actions for exploring ethical-political dimensions of the object in contexts of deep-seated structural tensions. As indicated in this chapter, I have used the concept of emancipation as used in critical realism (Bhaskar, 1993, 2008), where it is recognised that emancipatory agency is not just about using a method or process (e.g. change laboratories or double stimulation processes) to achieve desired outcomes of the activity. Rather, as argued in our paper (Lotz-Sisitka et al., 2023), the conventional use of the term ‘emancipation’ *indicates a process of being set free from legal, social or political restrictions*, while in critical realist terms, it involves co-engaged in-depth inquiry into the deep-seated structural causes of the oppressions being experienced which makes possible the ethical absencing of ills and dialectical transforming of power relations (Bhaskar, 2008). More specifically, in the context of restoration NRM practices in this study, emancipation also refers to *being adaptive and able to collectively reform governance norms and management tools* which constrain practitioners and communities towards envisioning restoration NRM practices as sustainability commons for all.

Chapter Eight: Emancipatory Transformative Agency by Double Stimulation (ETADS) as Ethical–Political Expansion of the Object

Learning is never direct at the beginning; it is always mediated by concrete artefacts or linguistic tools that must be adopted and actively used by the learner ... the learning of an individual or a collective who faces a demanding problem by taking up and using mediational means is at the same time a volitional action. (Sannino 2020a, pp. 169–170)

8.1 Introduction

Reflecting on Chapters Five and Six, I discuss the use of the double stimulation principle in identifying conflict of motives and contradictions, envisioning auxiliary motives and articulation of TADS pathways. However, as the object of activity was expanded in Chapter Seven, PDCs emerged as new contradictions. The PDCs as deep-seated structural tensions were seen as underlying mechanisms that constrained the co-creation, implementation and uptake of TADS pathways. In Chapter Seven, I proposed an analytical framework for surfacing and engaging PDCs as an expansion of the ethical–political dimension of the object. The analytical framework presented *PDCs as complex, elusive, power-relation contradictions that are embedded in utopian challenges such as the co-management of the commons*. In this study, the navigation of PDCs requires *coalesced* expansive learning processes that are not only boundary crossing, but *multi-layered* across the implementation, rulemaking and governance activity systems groups in advancing the *ethical–political expansion of the object*. To achieve this, a series of second stimulus tools were co-developed to catalyse ETADS as discussed in this chapter.

8.2 Framing of Emancipatory Transformative Agency by Double Stimulation (ETADS)

8.2.1. PDCs as the object of ethical–political expansion

ETADS framing in this study is represented through the enactment of the multi-layered and coalesced expansive learning processes for the navigation of *PDCs as the object of ethical–political expansion*. As such, ETADS pathways were facilitated through co-construction and uptake of double stimulation tools in BCCLWs and other supporting formative intervention engagements. It is important to note that the co-development of interconnected ETADS as the representation of coalesced expansive learning processes was framed as a heterogeneous

coalition. This means that a series of interconnected change labs were facilitated at different levels and scales within and across the constellation of activity system groups represented in Figure 7.2. In some cases, the facilitation of full change laboratories was not feasible and different methods of engagement were used. For example, inviting the national government rulemaking activity systems to every CL was not possible, and in such cases, we opted for short, focused meetings and used inputs and reviews of documents as a form of engagement to access inputs of national directors. Another example is the ETADS learning pathways for CPA communities where we were not allowed to record any workshops at the beginning of our engagements; however, as the working relationships deepened over the years, they started viewing us as insider formative interventionists and we were allowed to start using some of the CL tools (see ETADS pathways 3).

Working with ETADS framing, we were able to expand the ethical–political dimension of the restoration NRM object towards sustainability commons in Phase II of the research, with a strong focus on building custodianship of local community stakeholders as key actors reclaiming and advancing their power¹ capabilities (transformative agency from within) via continuous engagements with the historicity of restoration NRM object which continues to produce power² structures (oppressive, exclusive, managerial-oriented). Paying attention to the navigation of PDCs was critical as participants were able to confront their internal contradictions around power² structures. This was evident during CLWs, as restoration practitioner participants explicitly expressed their conflicts of motives (as discussed in previous Chapters Four to Seven).

Therefore, ETADS became pathways for cultivating transformative agency from below (power¹) (see our paper – Lotz-Sisitka et al., 2023). As expressed by Sannino (2020), TADS provides the fundamentals for the navigation of contradictions, but when engaging PDCs we argued for an expanded view of TADS, through a deliberate focus on the co-creation of second stimuli as tools for emancipation (ETADS). This is because PDCs do not always emerge explicitly during change labs, meaning they can be easily missed during open discussions as they are mostly embedded within the underlying mechanisms and structures of power that sometimes may not be in alignment with the object in focus. In our context, people as actors and agents of change do not always openly want to confront structures of power directly, as was found in this study (see also Conder-Aller, 2022; Lindley, 2014).

For example, one of the early identified challenges in the BCCLWs was a need for practitioners who were implementing IAP control to work together in order to enhance the effectiveness and impact of restoration practices. This was further deepened by contradictions of siloed NRMPs in which practitioners did not plan and implement projects collectively. Upon further engagements in follow-up CLs, it emerged that this was a systemic problem which was produced by the bureaucratic and fragmented national EPWP tools that re-enforced silos and this became a central contradiction. However, the transformation of a national system like EPWP requires a different expansive learning process that is beyond this study and the capabilities of the restoration practitioners. Therefore, although the EPWP system was seen as the constraining factor that produces the contradictions of silo operations and less effective implementation, the real PDCs only emerged after a few years through probing the ethical–political dimensions of the restoration NRM object. Instead of planning a national-level expansive learning project to change the EPWP system, practitioners and local communities started questioning the intended object of restoration NRM practices (socio-ecological justice) and whether the governance systems that supported the implementation of the practices enabled the realisation of the object? Therefore, the emergence of PDCs only came to the surface through the ethical–political inquiry (deliberate focus on emancipation) as time progressed.

8.2.2. Focal data for advancing ETADS pathways

In the proposed framework surfacing PDCs (Section 7.4, see Figure 7.4), the formative CL method was a critical tool in generating focal data for the depth inquiry process (power2–power1 dialectics). In searching for evidence of emancipatory transformative agency, I revisited and interpreted data from the CLWs from Phase I (see Table 3.4, BCCLW #1–9) using the PDC lenses. In Phase II, the CLWs were centralised around convening the BRWG as the learning network for convening partners across different activity system groups to ensure synergy and alignment among coalesced expansive learning processes. To further advance each ETADS pathway, a series of small workshops, meetings and field activities were conducted, and these engagements were shared and further discussed with all activity systems in the BRWG workshops (see Table 3.4, BCCLW #10–15 and Figure 3.6 on the timeline of ETADS engagements) as partners continued to co-develop the double stimulation tools (see Section 8.3. 8.4 and 8.5).

8.3 ETADS Pathway 1: Second Stimulus Tools for Co-visioning Matter of Concerns in Multi-stakeholder Networks

ETADS pathway 1 was mainly driven by the implementation activity systems. These were initially the four restoration IAP control programmes which were originally the focus of the intervention research (WfW, HAT, SANParks-BSP, and DAFF-IFM) discussed in Chapter Four. As noted in previous chapters, these activity systems are directly involved in the implementation of restoration projects in the Blyde landscape. One of the main outcomes of ETADS pathway 1 was the co-creation of the BRWG as the learning network, and we collectively worked with practitioners in identifying the first stimulus and deepening through a series of formative engagements between 2015 and 2017 when the BRWG was officially formalised and endorsed.

In unpacking the first stimulus, we conducted contextual profiling by engaging practitioners from implementation activity systems to understand their historical, current and potential key challenges facing restoration IAP control activity (as one of the main NRM practices) using the second and third generation activity system analysis (see Chapters Four and Five). Secondly, I conducted an in-depth analysis of the conflict of motives that were identified. The initial analysis of conflicts of motives was done within the individual four implementation activity systems and was followed by a series of boundary crossing formative interventions to further explore the conflict of motives at a collective level (boundary crossing third generation CHAT). Furthermore, I used *Sannino's Vygotskian model of double stimulation* to identify the auxiliary motives (decision forming, see Chapter Five), which were then deepened into transformative agency pathways (implementation of expansive learning actions, see Chapter Six).

8.3.1 Power-dynamics contradictions and multi-stakeholder structures

The emergence of PDCs (see Chapter Seven) was from the deepening of the identified expansive learning actions (see Chapter Six). A series of technical and institutional governance tools were identified as key learning actions and these included among others the need to *develop a long-term stakeholders' vision and understanding of the dynamic institutional and governance structures*. However, the turning point was the conviction by practitioners, local communities, and national directors to focus on re-imagining restoration NRM practices beyond the current governance structures as a commoning activity in which all actors must be

engaged. But the question was how do we engage all actors at local, regional and national level? This was where the creation of a learning network became an emancipatory second stimulus tool to re-imagine (advance the ethical–political expansion) the restoration NRM object to be managed collectively as sustainability commons.

There was an honest reflection on the current regulations for implementing restoration NRM, and these were largely the EPWP standards which had been deemed inefficient in advancing collective action and local custodianship development at the catchment level. Transforming and advancing restoration NRM beyond current governance was the key driver but this remained a distant future vision as both practitioners and local communities initially conceptualised this as beyond their capacity. Therefore, the focus was concentrated on strengthening the multi-stakeholder learning platform which was conceptualised as the pathway for addressing working in silos. As such, the BRWG was fully recognised as a collective learning space in which practitioners, communities, conservation agencies, NGOs and the private tourism sector could collectively engage in advancing restoration NRM practices in the Blyde landscape.

8.3.2 Navigation of power 2 and activation of power 1 relations

8.3.2.1 Negotiating and engaging in power relations

As discussed in Chapter Seven, the conceptualisation of power2–power1 relations was central to the framing and exploration of PDCs. In general, restoration NRM practices are viewed as government-driven programmes and are largely governed by the EPWP regulations. These were some of the Power2 relations that were exclusive, constraining and oppressive as expressed by practitioners and CPA communities. They argued that the top-down governance approach was constraining the emergence of collective actions by local actors, especially local communities who were the custodians of the land and other local actors including civil society. The CPA communities explicitly expressed the exclusion in decision making for management implementation of projects on their land as unethical and they wanted more involvement beyond short-term employment which was not sustainable (see Chapters Six and Seven). Practitioners expressed the silos in different restoration programmes that were government funded as constraints in the collective impact of the programmes, including how to engage and work meaningfully with local actors and CPA communities' future custodians for implementation of restoration NRM practices (see Chapters Six and Seven).

The shared ethical–political emancipatory motive was to address the exclusive and constraining decision-making processes (power2) on how the restoration NRM practices were implemented at the catchment level. This was the emergence of an emancipatory transformative agency as local actors via CPA communities expressed their agentic capabilities (power1) to be involved through learning management capabilities. From the implementation activity systems, the emergence of power1 was seen from the expressions and commitments to creating a co-learning network for practitioners to constructively engage with all stakeholders at different levels to support implementing restoration NRM practices. Practitioners also saw the need for collective action across all NRMPs in the Blyde landscape and this required proactive engagements and a long-term strategy.

8.3.2.2 Co-visioning of the second stimulus as tools to transformative agency movement (action for change) along the ETADS pathway

Since 2015, we (the mediation team from AWARD) facilitated a series of stakeholder engagements which made up the formative intervention. As mentioned already, this was started by conducting deep contextual profiling into key issues facing the NRM practices in the Blyde landscape (Thifhulufhelwi & Graf, 2015). From 2016, the stakeholder meetings evolved into collective multi-stakeholder engagements which were guided by emerging restoration NRM concerns identified by restoration practitioners. It was in the context of multi-stakeholder engagements that we facilitated a series of BCCLWs. The BCCLWs provided a collective learning space in which practitioners started reconceptualising their management processes in restoration NRM practices as they envisioned an integrated approach. During a later planning and reflections meeting (FDG #5), restoration practitioners expressed the importance of multi-stakeholder workshops and the need for a formalised structure to facilitate these engagements.

Extract 8.1: Excerpt from practitioners on developing collaborations with CPA communities and co-creation of multi-stakeholder learning networks (meeting/interview#1)

Practitioner 1: There is no doubt that you [referring to facilitators] have managed to do what we could not do by productively engaging with CPAs. These communities have been very difficult to our project managers on the ground and there are also cases of violence. But you guys from AWARD have managed to engage with the community leaders and now we are having these kinds of meetings.

Practitioner 2: It has been long overdue for us to work with communities but I also think a facilitator was needed because CPAs sees us as the face of government that is not taking them seriously. They think we are the ones making the rules. They are right about the temporary and unsustainable EPWP jobs but then again we are just project managers we cannot do much about it.

Practitioner 3: The sad part is as the department we have other processes that allows CPAs to apply to managing NRM projects themselves like the LUI but they don't have the capacity or experience to do this by themselves, which create the same problem that were are excluding them.

Practitioner 5: This engagement through the meetings facilitated by AWARD has been a breakthrough. From the last meetings other private conservation were interested in developing projects with CPAs communities and that will allow for space for CPAs to learn and maybe in future they can apply for LUI.

Practitioner 1: I think what is important to note here is the power of being able to meet everyone. For a long time I could not imagine a meeting with us government programmes, provincial conservation, private conservation, forestry, NGOs, municipality, to discuss restoration issues. I think we need to make sure this process continues so that we can find better ways of working.

Practitioner 6: The AWARD guys are doing this coordination work very well. Maybe we should formally appoint them as the facilitators and they help us formalise this group?

Practitioners 7: Our deputy director general was very happy when he visited us on the field and their points from that meeting were had in Mariepskop were on these issues of engaging landowners ... they have already supported this platform and we should use that to our advantage.

The above expressions from restoration practitioners catalysed power1 (agency from within) towards the establishment and active management of the BRWG as the learning network. As the formative interventionist team, we were asked to further engage the governance activity systems made up of CPAs communities, conservation agencies and NGOs on how they saw the future of collective engagements in the Blyde landscape. We conducted focus group discussions with the governance activity systems. These were conducted individually whereby the AWARD mediation team organised separate meeting engagements to discuss the future of restoration NRM practices, with reference to the need for formalisation of the collective learning network. Below is the summary of excerpts from the focus group discussions in response to the question of the establishment and formalisation of the BRWG as a collective learning network.

Extract 8.2: Excerpts of expressions on the need for a collective learning and coordinating entity, i.e. affirmation for the formalisation of the BRWG (focus group discussions and meeting/interview, see Table 3.5)

NGO rep 1: We used to have the K2C NRMP forum that used to bring stakeholders together. But I think it was too broad and it was focused on bigger areas and difficult to engage on specific issues. This platform is very focused on the restoration practice and should definitely be formalised. (meeting/interview #4)

Practitioner 1: So far the AWARD team has managed to do exceptionally well. Coordinating these complex groups of stakeholders is very challenging. From our side we are happy to be part of this and bring our

contributions through implementation of our projects on protected area management and stewardship. (meeting/interview #4)

CPA rep 1: They are lying that we are fighting to stop the government. They make us sound like crazy people running around chasing government. No we are not like that ... we want to be part of these projects ... this is why we have been attending these meetings. (meeting/interview #5)

CPA rep 2: We are the voice of our communities in these meetings and we have to account and report back. So if you see us fighting it is because our people are tired of being disrespected. They have claimed the land but no one take us seriously. Yes we don't have the title deeds yet but we will soon have them. (meeting/interview #5)

CPA rep 1: we are entering in co-management with the [local government conservation agency] because we have claimed the Blyde Nature Reserve and we are working together to develop the co-management agreement. This is a sign that we want to work together. We know the EPWP is a bigger government poverty alleviation scheme and is used in many areas but here in the NRM projects this is not working and we don't want our people to continue be treated like emergency part-time jobs for like 3 months in a year ... that is disrespectful to say the least. For the moment some communities are still taking this 1 month here- 1 month there EPWP because there is no other options. (meeting/interview #5)

Private forestry rep: We are a private company and own land in most of our plantations but we have some areas that are claimed or leased ... so partnerships are very important. We definitely see value in these meetings and we know forestry is always blamed for restoration issues especially IAP invasion but we want to collaborate into solutions. (meeting/interview #3)

Government conservation agency rep1: we represent the local government by managing the conservation areas and I can tell you there are already a lot of discussions with CPA communities. But unfortunately the co-management and land claim things are handled by other sections who are not here. But when they don't always know what conservation management action look like on the ground and that is the problem. (meeting/interview #1)

Conservation agency rep2: This group is very important to us ... partners have always come up with ideas and sourcing funding that have helped our work to be easier. There was no way we were going to develop the management plan for the reserve by ourselves, so by all means we need to keep this group going. (meeting/interview #1)

Private conservation & tourism rep1: We are very interested in working with CPA communities on tourism projects. This group has allowed us to have insights on what is happening in the catchments and to guide us on how to best work with these communities. I know there were initial discussions on us funding restoration work in the upper catchments because we sit at the bottom and rely on good management upstream mainly for our rivers. We will engage again on how we can fund some of the restoration work and this could be a learning pilot to implement restoration outside EPWP which everyone think is not adequate although we understand why EPWP is important from boarder government perspective. We used to implement LUI from government, I agree with everyone the administration of EPWP can be very constraining. I think we need more funding from private sector and this group can be the guiding space. (meeting/interview #7)

From the above expressions, it was evident that all stakeholder groups saw value in the convening of the BRWG as a multi-stakeholder platform as a space for learning and co-constructing possible solutions within their means or agentic capabilities. There was a strong reference to push back from the continuous implementation of the EPWP model, which was the regulatory framework within the restoration NRM practices, which were implemented if and when funded by the government. Both the implementation activity systems and the governance activity systems conceptualised the future of implementation of NRM practices beyond the government EPWP funding as the main funder, and this included engaging the private sector and exploring other partnership funding mechanisms.

It is important to reflect that the implementation group was the central activity system in Phase I, with the rulemaking group emerging along the expansive learning process through callouts from practitioners as a transformative action for addressing silo operations and uncoordinated activities. The above expressions in Extract 8.2 provide evidence of the concrete expansion of the object in which governance activity systems were now playing a central role in the reconceptualisation of restoration NRM practices. This is presented as the constellation of activity systems in a co-inquiry process to explore tools for supporting working together across three groups of activity systems (i.e. implementation, rulemaking, governance) as indicated in Section 7.3.

8.3.3 Co-construction of a second stimulus tool under ETADS pathway 1

8.3.3.1 Formal establishment of the Blyde Restoration Working Group as a co-learning network

ETADS pathways 1 focused on the exploration of collective agency (power1 capabilities) of the three activity systems groups to reform, reframe, rethink and re-conceptualise the historic and current institutional and governance arrangements that constrained co-learning and co-visioning of new ways to transform restoration NRM practices. In advancing this, and after the long and complex process described above, the BRWG was now agreed upon in Phase II as the multi-stakeholder learning network that would allow practitioners, communities, managers, and funders to collectively engage in matters of concern to guide management actions, institutional arrangements and governance tools in the context of co-managing NRM practices as the commons for all.

The BRWG was officially established in 2017 (i.e. after over three years and eight BCCLWs) with the agreement to develop full terms of reference that would be endorsed by all actors from the implementation, governance and national rule making activity systems. Even the naming of the BRWG required extensive deliberation, as shown in Extract 8.4 below from BCCLW #6.

Extract 8.3: Excerpts on expressions on the concrete formalisation and naming of co-learning network (BCCLW #7)

Practitioner1: We agreed in the last meeting that this group is important... and this is why we should work towards formalising the group and it will be managed.

Practitioner2: We need to be very specific in the name... we don't want to lose the focus of our work and people when they here of this group they must know what it does not speculate.

Practitioner 3: I suggest we call it the Mpumalanga natural resource management network or group.

Practitioner5: I don't agree with the natural resource management network... we had the K2C NRMP forum few years ago but it was too broad including Mpumalanga and Limpopo. We were not sure of where it was focused ... I think we should keep it to our catchments. We work in Blyde, Sand, Klaserie and a bit of Sabie.

Practitioner5: I think we should mention catchment in the name to tell people where it is because Mpumalanga is very big.

Practitioner6: We are here as natural resource management programmes deliberating issues that has to do with implementing restoration. We also need to add the thing we are doing in the name.

Practitioner7: Yes, we are not here just meeting to talk about anything in the catchment but the restoration initiatives and relevant natural resource management practices ... not just everything.

Practitioner1: I agree with him ... and the Blyde is most famous catchment of this area ... so let's call ourselves the Blyde restoration network.

Practitioner8: I liked the first idea of a group ... everyone is creating networks these days and it gets very confusing what these networks do. I think let's use the group.

Practitioner3: ... how about Blyde Restoration Working Group ... it adds all the points we talked about.

Practitioner2: The name sounds good and everyone seems to agree ... the next step will be to present this name to CPA communities and DEA national so that they know who we are.

Practitioner6: And we also need Term of Reference to describe the group and how it works ... how we should all contribute.

Practitioner9: We need a collective vision as NRMPs before we go to CPAs because the communities are very clear on what they want ... our regional programme leader should be the one presenting our work. We can't ask AWARD to do everything.

Practitioner 1: guys from AWARD has been the lead for growing this group but we should also play a role. I'm happy to lead the team for presenting our collective work to CPAs communities.

The above extract presents expressions from the sixth BCCLW. During the workshop, there was a strong suggestion from practitioners that the group name should be specific and not lose its focus. This emphasises the intention to keep the object in sight which is critical when dealing with what Engeström (2009) refers to as runaway objects (see Section 7.6 in Chapter Seven).

The collective action towards the formal establishment of the BRWG was a key step that allowed practitioners to further expand their own agentic capabilities on how they saw themselves participating and contributing to the success of the BRWG. This was the volitional action that carried the movement along the ETADS pathway, and this movement provided direction and guided the implementation of learning actions. For example, after the agreement of the formalisation of BRWG as the learning network, practitioners took the next step to present their collective vision to the governance activity systems, starting with the CPA communities to get their buy-in as members of the BRWG.

Therefore, the BRWG became the second stimulus tool that provided the enabling learning space for co-inquiry (a pathway for emancipation) in which learning actions could be developed and implemented (learning actions). Furthermore, this emancipatory movement also expanded and opened up the possibility to configure new secondary second stimulus tools required to sustain the direction of the expansive learning process (i.e. the BRWG as the second stimulus enabled the co-development of funding proposals which became a learning action or secondary second stimulus tool for sustaining the functionality of the learning network). Below, I present a series of key learning actions for sustaining the Blyde restoration learning network as the second stimulus for advancing the PDCs around power2 governance structures producing exclusive, uncoordinated and siloed operations.

8.3.3.2 Visioning process: Presentation of collective vision for Restoration NRM practices to CPA communities

After agreement by governance activity systems on their endorsement and participation in the learning network, the net key action was to engage them in sharing and co-developing the terms of reference to guide the BRWG. As such, the implementation activity systems, very different from their past practices, started by engaging the CPA communities to share the current vision

of restoration NRM practices in the Blyde and to formally invite CPA full participation in the BRWG. This was a key step towards resolving the conflicts between CPA communities and NRMPs.

Figure 8.1 below shows the opening slide of the presentation led by the provincial NRM programme leader to the committee of CPA communities in what was now BCCLW #8. Although the formative interventionist research team from AWARD was critical in coordinating and organising the engagements, it was collectively agreed that this negotiation process must be led and facilitated by the leadership of NRMPs at the provincial level. This was evidence of a transformative move (action for change) in which restoration practitioners expressed their emancipatory capabilities to renew relations and re-imagine new future possibilities with CPA communities.



Figure 8.1: Opening slide of the presentation during the interim co-management committee meeting with the Blyde CPAs

Source: BCCLW #6

During discussions, there were strong expressions to explore the alignment between CPA communities and government NRMPs, and how restoration practitioners should provide inputs regarding the land claims processes that were under development. At this stage of BCCLW #6 on 25 April 2017, the land claims for CPAs were already finalised in most areas and they were

already co-developing co-management agreements supported by the government on the management of the protected area land that now belonged to CPA communities.

Extract 8.4: Excerpts on expressions for reframing the working relations between NRMPs and CPA communities (BCCLW #6)

Facilitator: As discussed in separate meetings we had with CPAs and NRMP practitioners, we agreed to organise this collective workshop to explore how to work together in addressing the challenges and conflicts expressed in the past.

Practitioner1: we met and discussed as NRMP practitioners and we realised it's important to work meaningfully with CPAs communities as landowners and we have come together as a group to share our projects. What we are currently doing on the ground, what is being planned, what could come in future, and how you as landowners, can be involved.

Practitioner2: our vision involves CPAs implementing these NRMP projects in the future and for that to happen we need to work together to see the possibilities ... we work under regulations of which some of them like the EPWP are not adequate enough but as a group we can see what is possible to change and how to work around what cannot be changed, at least for now.

CPA rep1: ... yes we told the AWARD that we want to be involved, we want our people to be employers in the future, we want to learn how to implement these projects. We cannot wait to be employed and just complain when things are not good for us ... we are happy for AWARD to bring us together ... we cannot fight forever but we are going to fight if fighting is the only way for people to listen to us as landowners.

CPA rep2: we are already developing the co-management agreement with the government conservation agency because we have claimed the Blyde reserve. We are going to learn how to manage a reserve so that our people our kids can one day be the managers here in our land. Please also bring the tourism guys ... tell them we want to do environment friendly projects with them. We need the partnerships.

Practitioner1: we are working on formalising our group, and we are now calling the Blyde Restoration Working Group. We will be developing terms of reference for the group and how the group work collectively with all key stakeholders. We see CPAs as critical contributors to the group but also as landowners.

CPA rep1: we will participate in your working group meetings from now on ... we will also invite you in our regular co-management committee meetings with land claims commission and the government conservation on developing co-management agreement for the reserve that we have successfully claimed.

The presentation of the NRMPs' vision to the CPA committee which dealt with co-management provided a key movement in building the collaborations to ensure alignments and synergies across the restoration NRM practices and land-use developments. This key learning action by practitioners presenting their visions to ensure alignment between the implementation and governance activity systems was a key learning action that enabled active collaborations through the learning network (BRWG). Therefore, the functionality and sustainability of the learning network (second stimulus) as an emancipatory tool that allowed for confronting

contradictions in current practices and re-imagining the future directions was supported by concrete implementation of these key learning or secondary second stimulus tools. For example, all governance activity systems (including CPAs, forestry, tourism, conservation, etc.) were aware of the group meetings in which practitioners from implementation activity systems met regularly to discuss the implementation of the IAP control project. But the governance activity systems (CPAs) did not participate until practitioners actively engaged them separately to present the vision of the Blyde group. As such, the learning network was not an emancipatory second stimulus tool until the alignment of visions between the activity system groups started to occur. This means that the visioning process became a secondary second stimulus tool to catalyse activity through emancipatory agency in concrete action terms.

8.3.3.3 Co-development and endorsement of terms of reference for BRWG learning network

After CPA communities endorsed the BRWG learning network and committed to participate in engagements, the focus shifted towards engaging other key stakeholder sectors, especially the private sector. The need for terms of reference (ToR) to be the guiding tool for learning was collectively agreed upon and a series of consultations were held to develop the ToR. At this stage, the BRWG learning network was representative of all key stakeholders from the implementation and governance activity systems, and it was agreed that in the next workshop, we had to invite the rulemaking activity systems for their input and endorsements of the process since the initial engagements with the deputy director generation and the chief director (in the third BCCLW). We organised the ninth BCCLW (BCCLW #9) and the rulemaking activity system was represented by the national director and senior manager from the operational planning directorate. As such, the rulemaking activity provided input and endorsed the draft ToR. This was a key learning action as the ToR became a tool for guiding the strategic direction of the learning network, ensuring horizontal collaborations among BRWG partners and vertical collaborations with regional and national rulemaking activity systems. After the workshop, a field excursion was also organised for the national director and senior manager to fully contextualise the operational planning processes in the Blyde landscape as shown in Figure 8.2.



Figure 8.2: Field excursion between members of the BRWG and the DEA national team represented by the national director and senior manager to discuss the operational planning processes to inform implementations of restoration projects in the Blyde landscape

Source: Photo by Reuben Thifhulufhelwi, BCCLW #9

With the endorsement from the national department, the BRWG continued to engage stakeholders to incorporate their input into the first ToR for the group which was finalised in December 2019. In February 2022, the ToR was reviewed by partners during the BRWG meeting, where it was formally agreed to include the adjacent catchment of upper Sabie as part of the learning network (i.e. the initial ToR only focused on upper Blyde, Sand and Klaserie catchments). With the expansion of the BRWG focus area, additional stakeholders in the upper Sabie catchment were identified to be engaged and invited to formally join the learning network. The group also extensively discussed whether the name of the group should be changed given the addition of the Sabie catchment, however, members suggested and agreed that it would be best to keep the name BRWG although the focus was across the above-mentioned four catchments, which in this study is referred to as the Blyde landscape.

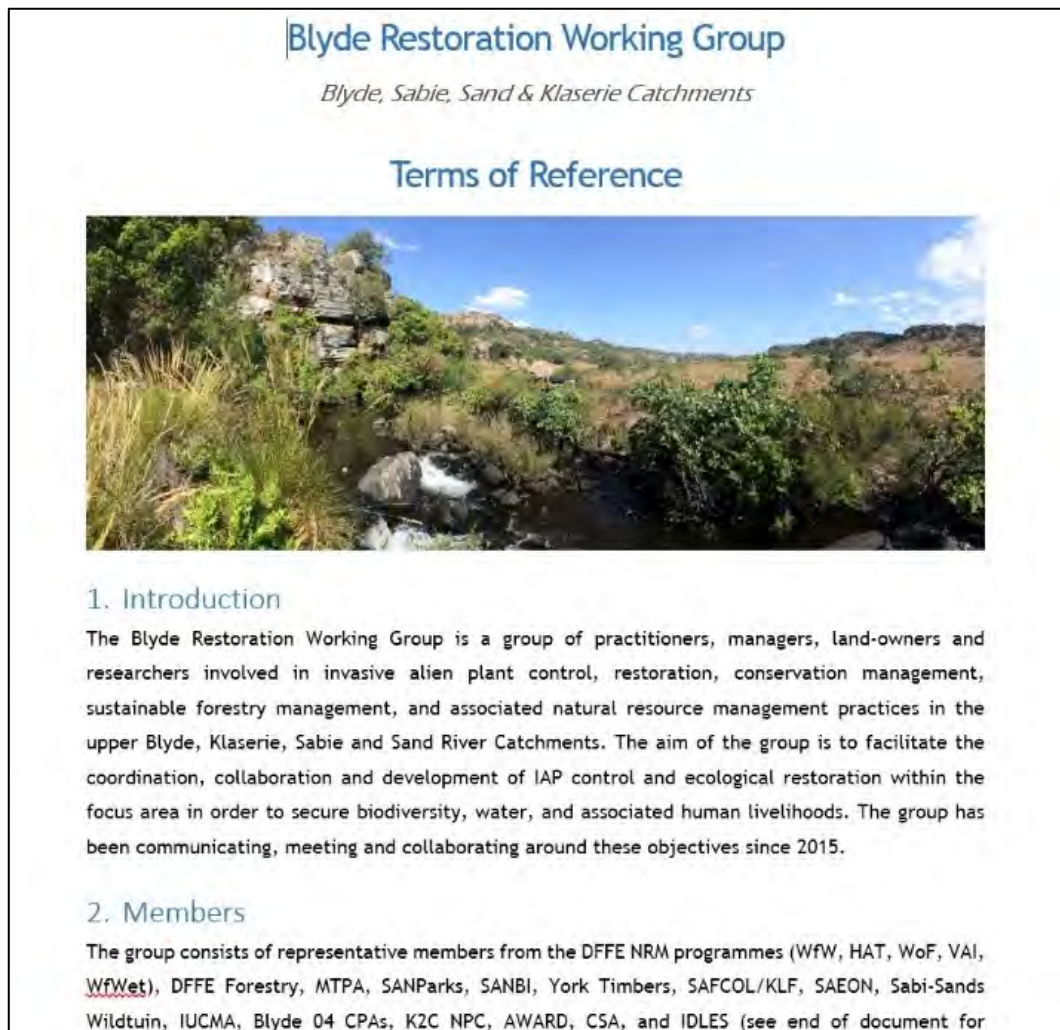


Figure 8.3: Cover page of the Terms of Reference for the BRWG (February 2022, see Appendix E)

Source: Blyde Restoration Project: terms of reference for Blyde Working Group, AWARD (2022)

The BRWG partners also agreed on a standardised collective group meeting biannually, first at the beginning of the financial year to ensure effective planning and synergies across all restoration projects, and secondly towards the end of the financial year for reflexive learning and evaluation of progress. In between the two biannual collective meetings, the group was to meet to engage in critical matters of concern such as starting new projects to ensure all stakeholders were informed, engaged and participated accordingly. After the formalisation of the BRWG, this platform became the anchor to facilitate mediation and central space for hosting all CLWs in Phase II between 2019–2022 (see Table 3.4, BCCLW #10–15). Post 2022, the BRWG partners continue to host and facilitate workshops without the support of external formative interventionists for their annual planning and progress reviewing of restoration IAP projects, and partners continue to invite me for strategic inputs:

- 13 April February 2023: BRWG workshop (in-person, 21 attendees). Aimed at reviewing progress on agreed actions from last workshop. Update from the restoration implementation and governance activity systems partners to provide feedback on progress on restoration projects in the 2022 financial year, and to share their plans for 2023, to ensure alignment, coordination and synergy among all work planned
- 21 November 2024: BRWG workshop (in-person, 33 attendees). Aimed at reviewing progress on agreed actions from the last workshop. Update from the restoration implementation and governance activity systems partners to provide feedback on progress on restoration projects in the 2023 financial year, and to share their plans for 2024, to ensure alignment, coordination and synergy among all work planned

This adoption and continuous convening of BRWG as the learning network provides evidence of the scaling and sustainability of expansive learning.

8.3.3.4 Co-development of funding and resources for coordinating and convening the Blyde Restoration Working Group

After the development of the draft ToR for the BRWG learning network, the next big question was how the group would be convened and managed. This was a key question that emerged in the eight BCCLW where stakeholders recognised the need to explore mechanisms for funding both human and technical capacities required for the coordination of the learning network.

Extract 8.5: Excerpts on expressions for reframing the working relations between NRMPs and CPA communities (BCCLW #8)

Practitioner1: ... we have been working hard trying to find a way of working together for years but it is only now that we can say it is actually happening and recognised.

Practitioner2: Our KPIs [key performance indicators] don't really recognise all the effort we spend in the meetings but this endorsement from national department is a breakthrough ... we will now be able to send more of our project managers to come into these meetings and commit resources.

CPAs rep: We are happy to be part of these meetings ... now we can see that the national department takes us seriously ... they are here talking to us on how we can learn more and participate in the NRM programmes. We want to learn as much as we can.

Practitioner3: I guess this is the point where we should discuss how we go forward ... how we manage this group.

Facilitator: As agreed in the last meeting, we have engaged our manager at AWARD and they have supported the idea of us continuing to lead the meeting under the USAID programme. So AWARD will continue to fund

our time for these meetings, coordination and secretariat of this group until the end of the programme which is around 2018.

Practitioner2: From WfW side we are happy to host meetings when they are in Nelspruit ... we can also negotiate with other departments to help like the municipality which support us in Graskop area.

Practitioner5: We are also happy to host HAT meetings at our offices, we have a bigger meeting hall than them ...hahaha [he laughs]... our remote teams also need accommodation when they go to field ... our equipment is very expensive to move around and accommodation is one of our key challenges especially when working on top of the mountain ... maybe forestry can provide us with accommodation.

Practitioner6: DAFF forestry cannot offer much on teams implementation as we don't have the budget, but when meetings need to be held in the catchments then we are best placed to arrange that in any of our forestry offices in Salique, Hebron, Welgevonden, and Mariepskop ... we can also arrange accommodations for the clearing teams working on top mountains in Mariepskop and Hebron side.

NGO rep: From the K2C we are busy supporting the declaration of old forestry areas into the Blyde Nature Reserve ... this is the expansion of the current reserve and we working with MTPA and CPAs who are going to be the management authority.

Practitioner6: from the MTPA we can offer technical skills and fieldwork experience ... call on our team when you need assistance ... we know these areas and all the access points ... our sister department here is also busy working on the co-management agreement with the CPAs communities on how to manage the Blyde reserve together ... I am not involved directly in that work but the CPAs members here are part of the committee.

CPAs rep: Yes he is right we are busy with co-management agreement supported by Mrs [xx] and team from MTPA ... regional land claims commission has been slowing thing down but we are progressing ... the co-management agreement process is also guided by the national land claims commissions. We had many meetings and now we have a framework to work from and very soon the agreement will be finalised ... this will give us power to negotiate concessions deals with tourism operators like the Makuleke community in Kruger National Park ... we want tourism businesses to come invest in the Blyde. Our people are very happy with the opportunities to manage and be involved in their land.

Private conservation rep: ... this is exciting to hear that there is progress on land claims because landownership is very important when setting up tourism business partnerships ... our Sabi Sand conservation partnership will definitely be interested to explore opportunities not only inside the nature reserve but also outside to support wildlife economy.

Facilitator: ... actually Sabi Sands were involved in the late 1990s with DEA-NRM and AWARD via Save the Sand programme ... they invested in restoring the upper Sand catchment as it is one of the main river sources for water down to Sabi Sands area. Our director [AWARD] worked closely with your CEO [Sabi Sand] and the DEA deputy-general many years ago. The DEA deputy director reflected on this during meeting with them in Mariepskop and he pointed out the need to get private sector investment.

Practitioner7: ... yes I remember he also talked about a big LUI [Land User Incentive] proposal... we should write that proposal to DEA-NRM ... the LUI model is a bit more flexible than direct implementation of EPWP team through our regional DEA departments.

From the above extract, we can see the emergence of volitional will articulated in various commitments to action in supporting the coordination and convening of the BRWG learning

network. All stakeholders identified their contributions in the form of resources and capacity to support the group. This reflected the emancipatory element in which partners were committed to sustaining the learning network as a second stimulus tool that allowed them to collectively engage in exploring possibilities for transforming their work practices. There was also a strong shift from CPA communities, who were now recognising the complexity of restoration NRM practices as they were involved in operational planning and governance discussions. There were also commitments from AWARD to support the mediation and convening of the learning network and supporting fundraising opportunities to continue the work beyond the USAID RESILIM-O programme.

It was through these commitments that *ETADS pathway 1* (co-visioning matter of concerns in multi-stakeholder networks to inform management action, institutional and governance arrangements) was further deepened into a full expansive learning process that needed to be separate from the technical operational processes. Practitioners in the workshops argued for the need to separate these processes to ensure active and focused engagements. See below expressions from BCCLW #8.

Practitioner1: ... I support the agreement for this group to meet twice per year, but I think it will be difficult for this big group work to do practical tasks like the mapping. We need smaller groups that feed back to the bigger group.

Practitioner2: ... he is raising an important point... we all have different strengths... someone like me would I would prefer to be used more in technical space.

Facilitator: How about we then create steering committees or sub-groups?

Practitioner3: That will work and now we have already identified the need for a small technical committee ... maybe we will create others as time goes by.

Practitioner4: Also the group leading funding proposals ... we can't all come meeting like this ... these is over 20 people in this room and some meetings have even more people ... we need a small group.

Practitioners5: The AWARD guys are good at these things [hahaha he laughs]... let's ask them to lead the funding thing and we will volunteer who should be in then technical group.

Facilitator: we are happy to facilitate the process but you guys are the ones with knowledge of everything in the catchment, especially the historical stuff.

From the above expressions, it was agreed that there would be two sub-committees that focused on technical operational processes and funding developments. Both groups at this stage were facilitated by the AWARD formative intervention team. This meant from this point on, there were big group meetings for the BRWG learning network with practitioners from all activity systems groups (biannually) and the national rulemaking activity system group was always invited to these meetings. There were also smaller focused meetings on technical developments and funding project developments (see ETADS pathway 2).

Therefore, the BRWG learning network became a collective governance structure to support co-inquiry engagements among stakeholders for guiding operational planning activities, implementation, resourcing and capacity development for the implementation of restoration NRM practices in the Blyde landscape. In terms of planning and convening, the BRWG held strategic planning workshops twice a year between 2017 and 2019 (led by AWARD), and between 2019 and 2023 the group was led by a coalition of other partners including WfW and the Institute for Developmental Learning and Environmental Sustainability (IDLES)⁸. At the time of finalising this study in 2024, these workshops continue to be critical for the co-development of annual plans to ensure synergies and reflect on the progress and implementation challenges across programmes. As part of collective agreements, these workshops have always been hosted in central locations to accommodate everyone and all costs for venues and supporting workshop materials were covered by different partners; in some cases, the partners negotiated with local municipalities and other departments to host these workshops for free. This is evidence of emancipatory transformation which is carried through and reinforced by the continuous implementation of learning actions (annual meetings) embodied by the second stimulus (BRWG).

The USAID Resilience in the Olifants (RESILIM-O) programme which supported the coordination of the BRWG work through AWARD was anticipated to end in 2018. This meant

⁸ IDLES: The Institute for Developmental Learning and Environmental Sustainability is a local non-profit organisation that was created by me and was operational in 2019 to support mediation processes. I founded IDLES in 2017 as an organization aimed to support capacity development for local communities in restoration IAP control and other natural resource management activities in the Blyde landscape. I served as a director until 2024 and working together with my former colleagues Jan Graf and William Mponwana, we continued to facilitate expansive learning projects, including leading coordination of the Blyde Restoration Working Group. See appendix F for IDLES' short biography and list of projects.

that beyond 2018, the BRWG coordination role which was led by the formative interventionist team from AWARD would be limited, or in the worst case, AWARD might completely be unable to provide any support. Therefore, the need for funding to sustain the BRWG work in the longer term presented a conflict of motive for partners on how to navigate the problem of short-term funding vs the need for sustainability of restoration work in order to make a realised impact. As a collective, partners started exploring ideas for potential funding opportunities to sustain the existing BRWG restoration work beyond the USAID RESILIM-O support and to implement new projects.

In order to unlock funding, the obvious option was to approach the National DEA department (rulemaking activity systems) for possible additional budget through the already existing EPWP programmes which were implementing restoration NRM in the Blyde landscape. However, the BRWG partners were further confronted with deep-seated contradictions in EPWP operational standards which were regarded as rigid and lacked flexibility to allow implementers to address localised challenges. As found in this study, the EPWP model also strongly focused on the short-term and did not allow for full participation and capacity development of CPA communities as implementers of projects. This was a conflict of motive facing both practitioners and CPA structures on how to best support the local communities in becoming future custodians of their land while using the current EPWP funding opportunities. The conflicts between CPA structures and NRMPs were considered historical at this point and both activity system groups were committed to finding solutions for sustainability of restoration NRM practices and beneficiation of communities as landowners while engaging communities. The extract below shows how practitioners co-constructed second stimulus tools to enact their volitional action in navigating these conflicts that were deep-seated tensions around power2 governance structures. See below expressions from a focus group discussion by the subcommittee on exploring funding developments.

Extract 8.6: Excerpts of expressions for co-development of funding proposals as second stimulus tools to enact volitional action in navigating deep-seated tensions around power2 governance funding models (meeting/interview #7)

Practitioner1: ...we need to plan well ahead on how to source funding for the group ... we cannot wait for AWARD to stop supporting the coordination ... it will be too late by then.

Practitioner2: when we met our bosses [deputy director general and chief director], they were on board for supporting this process ... why don't we engage them for more funding?

Practitioner3: ... we are fighting with CPAs because of how our current projects are implemented, we cannot try to replicate the same thing especially after we have made good progress on engaging with communities as landowners and future implementers ... people were held hostage because of things we cannot control ... it was not our fault that the budget allocated was reduced and when you tell people you can't employ them anymore it cause a lot of fighting.

Practitioner4: it is good that we are having these discussions without CPAs present because we would be fighting already ... I think we need to find some private funding.

Practitioner1: The chief director was really interested on us developing a big LUI [Land User Inceptive] project for this area. Maybe we don't develop a big one but start a bit small and see if they will be interested to fund it ... if we get the big then we can make it even bigger.

Practitioner5: the LUI can work, the national department has been funding big projects in other catchments ... they don't work exactly like EPWP, there is a bit of flexibility that can work for us.

Practitioner6: Ok we seem to be agreeing on trying out the LUI ... so we must start planning for and announce in the next big meeting so that everyone is on board, we don't want surprises anymore.

Facilitator: We will need to have a detailed spatial planning process our current projects and develop clear objectives on why we need the LUI funding ... without that they will not even entertain it.

Practitioner3: the LUI needs someone to lead it. It is fair to ask AWARD to lead the application on behalf on the BRWG ... because AWARD is already leading and funding the coordination, they can easily put in their current resources as co-funding into the application.

Facilitator: Yes AWARD has worked with the national department in the late 90s implementing the Save the Sand project which many of you are aware of. We will present this to our directors and I'm sure they are going to support it as they see this as critical work.

Practitioner1: yes I remember Save the Sands and there was other private conservation guys involved in it ...

Practitioner5: it was Sabi Sands who were also involved and they are still interested in restoration of Upper Sands because is one of the main water sources for them as downstream users ... we can also engage them for exploring funding possibilities.

Facilitator: we must also explore support with the air force guys ... we talked to them a bit and they indicated they can support us as they always fly over the Blyde as part of their training.

Practitioner2: I fully agree ... we are going to need more helicopters here ... we will explore other options via WoF and HAT ... this will be important for inaccessible areas like the three rondavels and the Blyde Canyon.

The development of collaborative funding proposals to support the coordination of BRWG and project implementation became a key focus of engagement. At the next large collective planning meeting, this was made a key point of discussion. An agreement was reached by BRWG partners (incl. the CPA communities) that two proposals would be developed, 1) focused on supporting the governance of learning network processes beyond the AWARD

RESILIM-O Programme, including human capacity for coordination and a secretariat for the group, and to continue to explore opportunities for further funding, 2) focused on starting new restoration project implementation to support capacity development of the four CPA communities (represented by the CPA management committee) as they begin their learning journey to become future implementors and custodians of NRMPs as major landowners in the Blyde landscape (see ETADS 3). In summary, the co-creation of second stimulus tools enabled the emergence of transformative agency but the true emancipatory element was experienced in how the second stimulus provided practical learning actions as power1 agentic capabilities for actors to confront power2 structural tensions. As such, the emancipatory agency was dependent on how the second stimulus tools were used. In Figure 8.4 below I locate the application of the double stimulation as a process of ascending from the abstract to the concrete (Engeström, 2016). The focus is on the co-construction of the second stimulus and the process of co-construction is an iterative, dialectical, and co-engaged depth inquiry that takes time and was carried through what Engeström (1996) referred to as local transformations and specific innovative solutions in the activity. This can also be referred to as mini-expansive cycles which are embedded and carried through second stimulus tools.

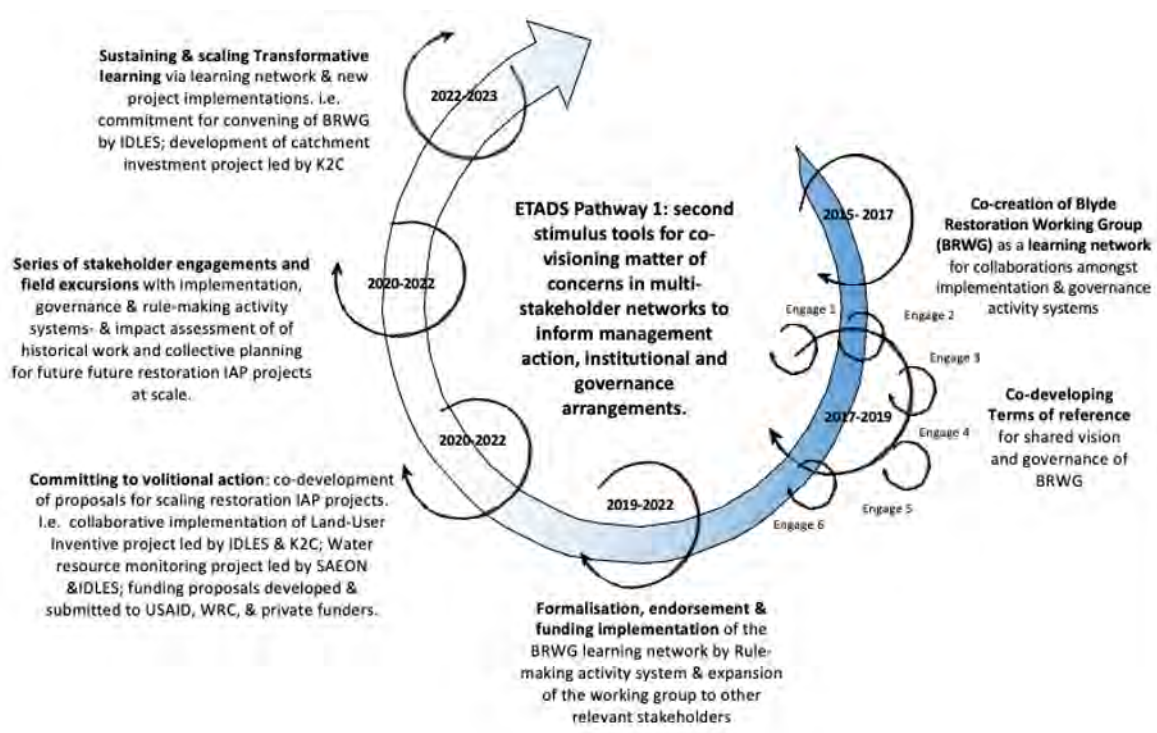


Figure 8.4: Locating examples of second stimulus tools for cultivating the emergence of emancipatory transformative agency into concrete actions in the cycle of expansive learning cycle between 2-15-2022

Source: Adapted from Engeström (1996, pp. 131–143)

8.4 ETADS Pathway 2: Second Stimulus Tools for Co-development of Operational and Technical Planning

It's important to reflect that the concrete implementation of ETADS pathways 1 was interlinked with ETADS pathways 2 and 3 (i.e. through the coalesced expansive learning process). The emancipatory agency was seen through the co-constructions and application of a series of second stimulus tools across the coalescing level. This meant that second stimulus tools were created to navigate power2–power1 relations. An example was the learning networks which can always be created for any purpose, but in this case, the BRWG was created to enable co-engaged inquiry into matters of concern in the restoration NRM practices as elaborated earlier. As such, this enabled all groups of activity systems to confront their contradictions as a collective – this is something that had never been done or at least was considered impossible as different groups were in conflict with each other (i.e. NRMPS vs CPA communities). As highlighted above, ETADS pathway 1 explored the co-creation of second stimulus tools for governance and institutional arrangements, and in ETADS pathway 2 we focused on second stimulus tools for addressing contradictions and gaps in technical and operational management processes. The effectiveness of the BRWG as a learning network required practitioners to manage processes in the current restoration NRM practices. Below is an agenda (Figure 8.5) for the BRWG in which key actions were agreed upon towards the development of a series of technical tools as a second stimulus for activating the emancipatory agency for concrete working together on the ground (i.e. collaborative project implementation) and exploring new funding mechanisms and partnerships with other sectors to advance the restoration NRM practices.

 	
Blyde Restoration Project & Working Group: Operational Support & Planning meeting & field visit	
Meeting: 12 February 2018, DEA Working for Water office, Nelspruit Field visit: 13 February, Mariepskop Estate, Lowveld Plantations	
Day 1 Agenda:	
Welcome & Round of introductions	08:45
Overview of the 2-day programme	
Blyde Restoration Project & Working Group - Background on Blyde NRMPs: Overview of work done 2017-18 & plans for 2018-19 - Partner projects: K2C-GEF, Coert Geldenhuys	
Development of Restoration strategy Structure & key elements of the strategy	
IAP mapping update	
Ecosystem services Assessment Process & Key services	
Spatial prioritization for IAP control - Process & Criteria - Further degradation sources & restoration needs	
Inaccessible area IAP control: proposal to SA Air Force	
Lunch	13:00
GIS and mapping software and tools: development & new tools	13:45
Institutional arrangements - Securing regular OPS inputs - Blyde Restoration Working Group: Terms of Reference	
Reflections & Close	15:30
Day 2 Programme:	
Meeting at Klaserie 1-Stop	08:00
Drive and visit sites on way up to: DAFF Forestry offices	
Meet Winners at DAFF Forestry offices	09:00
Top of Mariepskop, view extent of challenge and examples of various sites	
Visit to invaded and degraded peat wetlands (Klaserie head waters)	
Lunch on the go	12:30
Visit to Forest restoration pilot sites (Coert Geldenhuys project)	
End of field visit	14:00-14:30

Figure 8.5: Agenda from the BRWG partners engaging the rulemaking activity system (National DEA-NRM) for their strategic inputs in the development of an integrated restoration IAP control strategy, and endorsement of the formalised BRWG as the learning network to coordinate restoration IAP control activities in the Blyde landscape

Source: 12–13 February 2018, BCCCLW #9

Item 4 from the agenda focused on the discussions about the development of an Integrated Restoration Strategy which was identified as a second stimulus tool that could enable integration of planning and implementation of projects on the ground in which different restoration actors could manage projects collectively through alignment and synergies at the catchment level. A series of key technical components of the strategy were collaboratively identified and these tools included the invasive alien plant map, wetland mapping, ecosystem service assessment, spatial prioritisation and IAP biomass assessment as shown in Phase I (see

Section 6.4, Figure 6.5). Below are some of the expressions from the discussions during the ninth BCCLW.

Extract 8.7: Excerpts of expressions on the development of technical and operation second stimulus tools (BCCLW #9)

Practitioner1: ... the need for a restoration plan is becoming more and more realised ... we have been doing restoration IAP clearing since the late 1990s but it is still difficult to track our progress if we don't have an integrated plan ... we know the status of invasion has changed so much over the last two decades ... I think some areas we made good progress while others not so much.

Practitioner2: We need a lot of data layers but for a start we need a downscaled local status of IAP invasion ... we also need wetlands layer in the area ... there also a lot of IAP biomass in old plantations ... all this already makes a big chunk of the restoration plan.

Practitioner3: AWARD team is already getting data from all of us to support the group on developing the downscaled IAP mapping process ... that is the biggest part and the rest of the stuff can come a bit later ... we cannot develop funding proposals if we don't have the IAP layer and information on who is working where.

Practitioner4: We can get our GIS team to work with AWARD to put together the IAP layers ... we can help with field work mapping and providing information of the number clearing teams in the field.

Facilitator: As mentioned early in the meeting, we have some capacity to lead the IAP mapping, we have a skilled GIS team and we will be meeting with the technical committee group ... we will draw a field verification plan in which we will begin the process of ground truthing with all of you.

Facilitator: We have also secured additional funds from RESILIM-O to get a service provider to do an aerial photography with a low-flying aircraft and we will use the aerial photography for mapping different IAP species ... this can only work for identifying big trees ... so there will be a lot of desktop mapping for us and we will rely on all the partners to verify the data because you know most parts of the catchments better than us.

Facilitator: We have also noted that most of the practitioners here in the meeting are project managers who do a lot of fieldwork, and most of you mentioned the need to support you with GIS training.

Practitioner4: Yes, all of us have a GIS team ... you have met some of them in the last meetings ... we will engage them to give you all data layers so that we have everything in one place when we meet next time ... we will then decide what is missing and what do start with.

After the BRWG meeting, it was agreed that the development of technical and operational components of the strategy would continue as a separate process led by the technical subcommittee group. This was because the process required a deep dive into technical GIS language that was not a speciality for most practitioners. It was also identified that there was a gap in technical and GIS capacity, and this was explored later under ETADS pathway 3. As the learning network, the BRWG would continue to ensure synergies, alignments and collective

discussions on overall governance management matters across the implementation, governance and rulemaking activity systems.

Therefore, ETADS pathway 2 became a separate expansive learning process, and a sub-technical steering committee was created to lead the process. The technical steering team led all technical processes which included among others the engagements and fieldwork activities for the development of a new IAP map, wetland assessment and ecosystem services assessment. The advancement of ETADS 2 on developing the technical and operational tools was enacted by the co-inquiry process for the Blyde development of the *integrated restoration plan* (co-constructed second stimulus tool), in which further secondary stimulus tools were developed (i.e. key components of the strategy). It was through the co-creation of second stimulus tools that the emancipatory agency was activated as practitioners took concrete actions as a collective to inform their operational planning and project management activities. Below I have provided a summary of the co-creation processes towards the development of the technical and operational tools between 2017 and 2022.

8.4.1 Co-construction of second stimulus tools under ETADS pathway 2

8.4.1.1 New IAP mapping and cost analysis for implementing clearing teams

Without the new understanding of the extent of IAP invasion in the catchment, BRWG partners were unable to quantify the costs of clearing and this was a critical component of the funding proposal development and to ensure that different programmes implement projects in an integrated and complementary approach (i.e. WfW which focused on clearing flat areas at the bottom of the mountain while HATs focused on rugged areas working on top of the mountains). The mapping process consisted of desktop work and field surveys for verification and these engagements were led by BRWG partners. Additional funding was sourced from the RESILIM-O programme for aerial photography in which high-definition photos were provided by the service provider, and this enabled BRWG to further verify the desktop IAP mapping process.



Figure 8.6: Technical subcommittee team conceptualising the Invasive Aline mapping process and collating historical datasets in June 2017, led by Dr Stephen Hollness

Source: Reuben Thifhulufhelwi

The outcome of the IAP mapping process was a fully developed map showing the density of key invasive plant species that could be targeted by the restoration projects. We presented this in a series of maps that guided practitioners and teams in identifying the project focus areas. The newly developed IAP maps were a critical instrument to inform the prioritisation of where, how, when, by whom^{0.9} and how much it would cost to implement restoration IAP control initiatives. For spatial prioritisation, a simplified multi-criterion-based prioritisation process linked to the major degradation priority areas was conducted. The criteria used were the existing higher and lower-order prioritisation criteria that were developed with BRWG partners based on their knowledge of the area.

Table: 8.1: List of higher-order and lower-order criteria for the prioritisation of areas for restoration (mainly IAP control)

	Criteria or principle	Explanation
	Higher-order criteria	
1.	Ecosystem threat level	Highly threatened ecosystems are a higher priority
2.	Critical ecosystem services source	Areas with higher supply are higher priority (hence strategic water source areas are particularly important)
	Lower-order criteria	
3.	Level of habitat/ecosystem intactness	Largely intact natural areas with low to medium-density invasions are a higher priority, before transformed areas (due to plantations or high-density invasions) and secondary habitats (areas from which plantations have been removed)
4.	Vulnerability to invasion (by transforming species, mainly trees)	Grasslands, herbaceous or open wetlands and riparian areas have the highest risk of invasion and hence are higher priority, than savannas with intermediate risk and Indigenous forests with the lowest invasion risk
5.	Risk/rate of further degradation	Vulnerability to habitat loss once invaded by transforming species. Similar to the above criterion grasslands, herbaceous or open wetlands and non-wooded riparian areas have the highest risk of further degradation, savannas have intermediate risk and Indigenous forests have the lowest risk
6.	Probability of recovery if transformed	Habitats more difficult to restore, such as grasslands and wetlands, are prioritised (linked to precautionary principle)
7.	Surrounding context or risk of further spread	For invasions with equal density, those surrounded by intact but vulnerable areas are prioritised, as opposed to invasions surrounded by transformed land or habitat types more resistant to invasion (such as forests)
8.	Risk of immediate additional degradation (in the absence of intervention or because of intervention)	This is generally presented by areas containing medium to high-density pine invasions in moribund grassland with a high risk of high-intensity or hot fires. Such areas should be prioritised for treatment through controlled burning ideally followed by manual treatment

The results of the integration of all criteria are summarised in the map below (Figure 8.7). The map highlights the importance of protecting the undisturbed high biodiversity grassland areas which are mainly mountain tops, and the river riparian areas for the security of key water sources including rivers and wetlands. As such, the precogitation map became a practical tool that practitioners from all implementation activity systems could use to inform their annual planning areas and identify what type of restoration interventions and teams were required in which parts of the catchments as shown in Figure 8.7 below. The governance activity systems also used the prioritisation map to guide the land-use management planning in their land (i.e. which areas to protect and which areas could be developed). The prioritisation map was also a key tool when engaging the regional and national rulemaking activity systems in supporting the project implementation. For example, the BRWG used this prioritisation to motivate more funding to implement HAT teams via helicopter support from the national department as the priority areas were inaccessible via foot (i.e. canyon, escarpment top). This was evidence that the technical tools as second stimulus tools provided an emancipatory capability to empower actors in reconfiguring their management processes and governance structures.

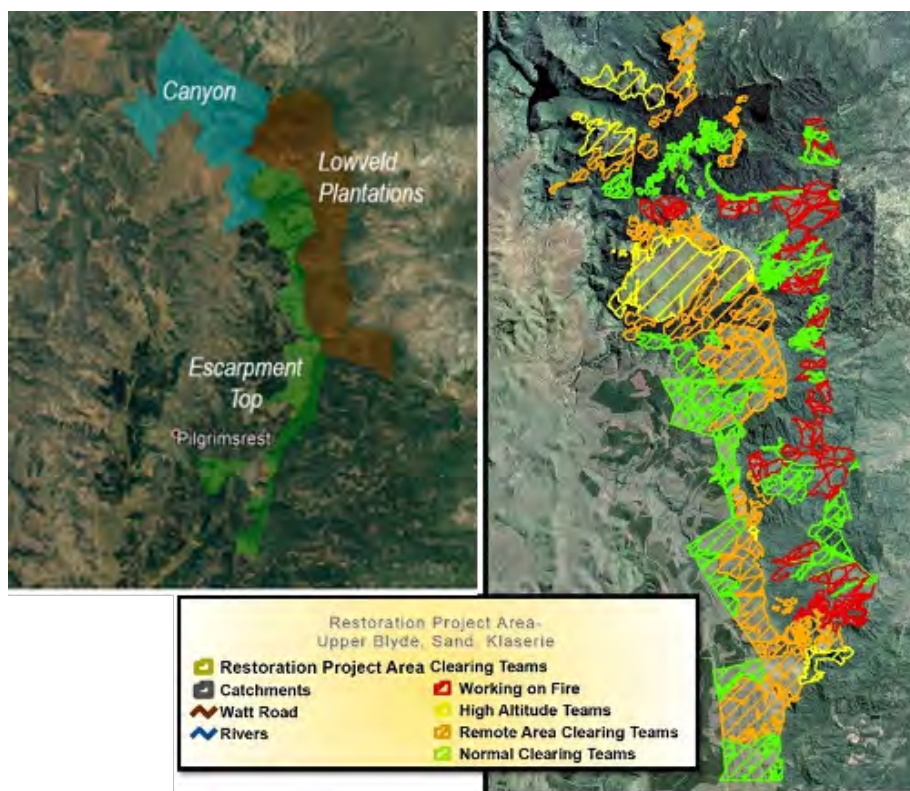


Figure 8.7. Map of the location of different IAP treatment models (types of teams and treatment methods) in the upper Blyde landscape determined by the landscape unit, accessibility and prioritisation criteria

Source: IDLES, Blyde Restoration Project: Integrated Restoration Plan (2022)

It is important to note here that the co-development of IAP mapping, criteria for prioritisation, and development of a series of priority maps was a long-term iterative process led by the sub-technical committee. This involved a lot of stakeholder engagements for data and information collection, field excursions, and analysis of historical documents to extract spatial information, interpretation of reports, one-on-one engagements with past managers, and constant feedback to the larger BRWG for input and guidance.

Below, I have presented a summary of other key technical second stimulus tools. This work evolved from 2019 until 2022 when the integrated Blyde restoration strategy was finalised. As such, the analysis of this work is at the level of tracing the co-creation of the second stimulus and does not focus on individual formative intervention engagements, although in some cases there is a reference to specific meetings or workshops.

8.4.1.2 Collaborative wetland assessment and mapping

Wetlands and riparian ecosystems are the critical drivers for freshwater supply especially in dry seasons. The biggest challenge was that these ecosystems were known to exist in the Blyde landscape but were not quantified and mapped in detail, making it difficult for practitioners to protect and manage them sustainably. The knowledge of wetland restoration was also held by older and senior managers who were near retirement and the collective wetland assessment provided a much-needed knowledge sharing and learning process, especially for young practitioners. As such, a series of wetland mapping assessments were conducted to inform operational planning (see Figure 8.8 below). One of the outcomes activating the emancipatory agency from the wetland mapping assessment was the discovery of a high-importance wetland type (peatlands) in the Blyde landscape. This type of wetland was not known to occur in the area, and this prompted the need for further wetland mapping assessment in which more partners dedicated their capacities and skills to support further wetland mapping processes. This also enacted collective agency in reconceptualising the priority areas in order to focus on restoring and protecting the high-value wetlands. All wetland assessment work which required specialist knowledge was led by the expert consultant Dr Lulu Pretorius, who was at the time affiliated with the University of Kwazulu-Natal.



Figure 8.8: Photos of the wetland fieldwork team describing and sampling a wetland in the Lowveld plantations during the wetland fieldwork in January 2019, led by Dr Lulu Pretorius

Source: Photos by Reuben Thifhulufhelwi and Jan Graft

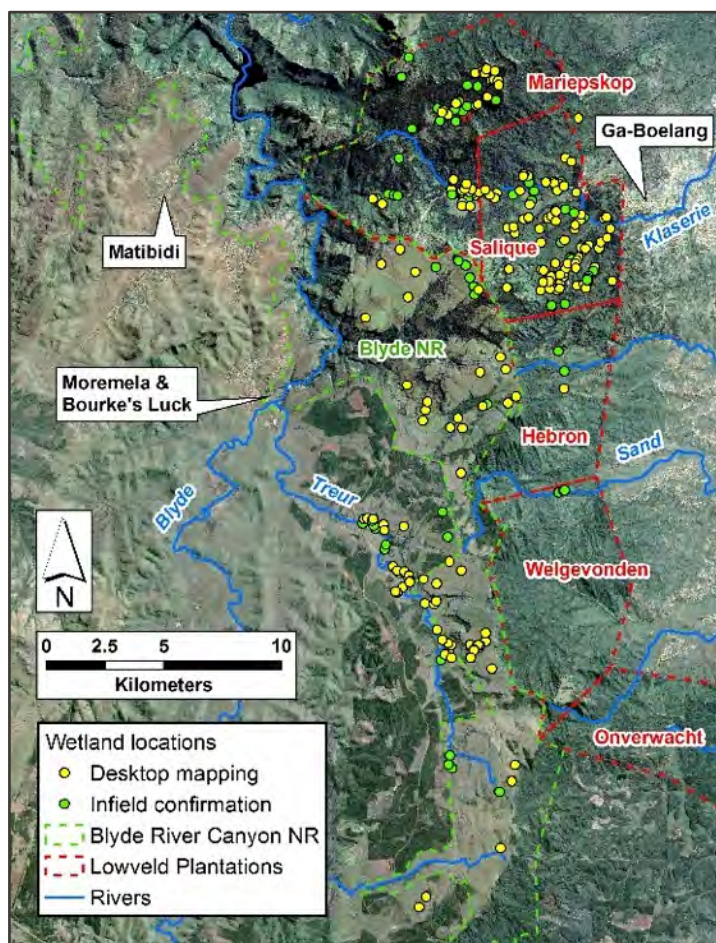


Figure 8.9: Map showing the locations of preliminary mapped wetlands within the Blyde landscapes. This includes wetlands determined through desktop-based mapping, as well as those confirmed through fieldwork

Source: IDLES, Blyde Restoration Project: Wetland mapping assessment report (2022)

8.4.1.3 Co-development of ecosystem service valuation and assessment

In addition to the IAP mapping and wetland assessment, it was collectively agreed that there was a need to develop an assessment and valuation of ecosystems in order to use this as a tool to strategically inform the prioritisation of critical ecosystems. However, the key need for ecosystem valuation was to quantify the amount and types of ecosystem services as part of engaging the private sector for investment in the restoration and protection of ecological infrastructure. As such, the BRWG partners identified key experts to support the development of ecosystem service assessments and valuation. This was a specialist field for which members of the BRWG needed additional support from external experts on environmental economics.



Figure 8.10: Participatory ecosystem services assessment workshop on 25-26 February 2020 focused on the Upper Sand River catchment led by Myles Mender from Eco-futures

Source: Photo by Reuben Thifhulufhelwi

The AWARD RESLIM-O programme provided initial funding to bring in expert consultants from *Eco-futures* to support the BRWG in exploring the ecosystem service valuation process. Further funding was supported by the national rulemaking activity systems through the LUI grant also coordinated by AWARD. As such, a series of formative engagements including a two-day workshop, meetings and field excursions were conducted. The outcome of the two-day workshop was a detailed technical report outlining the estimations of key ecosystem

services from the upper Blyde landscape including water, value to biodiversity, biomass, tourism potential and other indirect services such as climate change regulation.

As indicated earlier, by this phase of the research, there was a strong recognition that CPA communities were the main landowners in the upper Blyde landscape. Therefore, as the transfer of the land to the CPAs was imminent, decisions on the future land use for future land-use management now needed to be taken. Given the key role the Blyde landscape continues to play in supplying downstream water to support private conservation and tourism, there was a need to generate economic benefits for the CPA communities, and it was necessary to understand the trade-offs between different land-use options for the area. This was done through a collaborative modelling process in which scenario modelling was used to show the potential land-use development and the impact on ecosystem services production. Three scenarios were developed as shown in Figure 9.11 below. These include a ‘do nothing’ scenario, ‘maximise private benefits’ scenario and a ‘win-win’ scenario. All three scenarios used the same 20 years’ time frame, that is, the scenarios described a situation in the year 2040. Participants used these to discuss the changes in land use in the different possible future scenarios and then estimated changes in land cover in terms of the following:

- Estimating changes to land cover types in the affected area (in hectares) due to the different land-use options.
- Switching the allocation of areas between different land cover types, such as reducing plantations and replacing them with woodlands, increasing croplands, etc.
- Changing the condition or state of the natural assets and land cover types in response to the likely future land uses and their associated management efficiencies/approaches and local population pressures.
- Systematically reflecting on the consequences of changes in the landscape in relation to hydrological systems, such as when an upstream riparian forest is degraded, with the impacts on downstream rivers identified and scored.
- The outcomes, in terms of services supply and their associated demands, were then modelled and reviewed. Importantly, the modelling outcomes were a product of the discussions of the stakeholders in the BRWG, with the report reflecting the opinions and perspectives of the stakeholders.

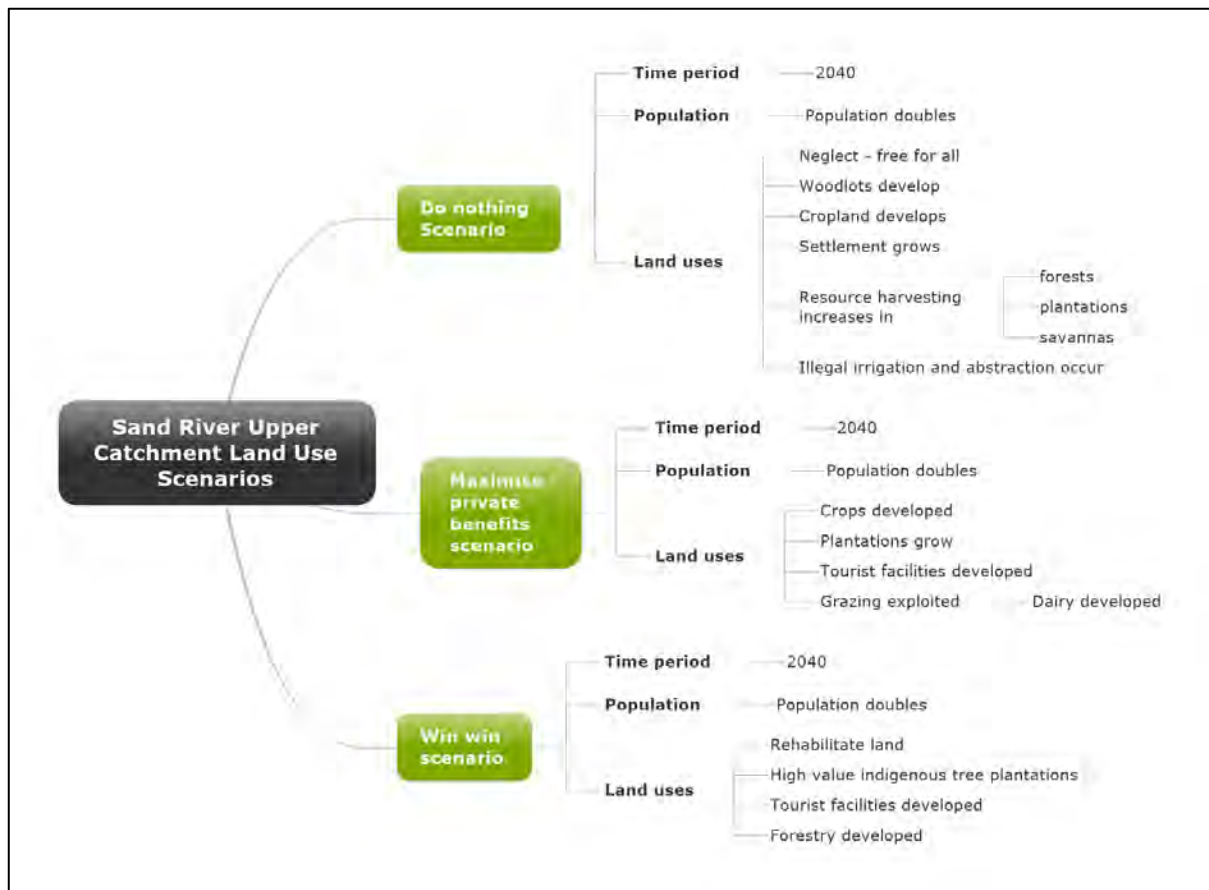


Figure 8.11: Representation of different scenarios from the ecosystem services valuation report to inform governance and implementation of restoration NRM and land development practices

Source: AWARD, Report by Manders et al. (2020)

In simple terms, the “do nothing” scenario indicated the current situation in which there was little land-use management and no integration across restoration NRM practices. The “maximise private benefit” scenario focused on exploring more opportunities for benefiting CPAs as landowners without considering the investment in restoration and sustainable management. A “win-win” scenario reflected a balance towards co-management of natural resources as sustainability commons, and this emphasised the need to invest in integrated restoration NRM practices as a fundamental principle to ensure that land-use development such as tourism would be sustainable and the source of ecosystems services such as rivers and mountains would be well managed for the benefit of all in the longer term.

Following this, there was a recommendation from the BRWG to conduct a second technical analysis on ecosystem services focusing on another priority catchment and this time it was led by the technical team from the BRWG. Both ecosystem service valuation processes were

conducted over the two years between 2020 and 2022 in which two reports were produced. These valuation reports have since been used by the BRWG as tools for fundraising as they were now able to motivate and quantify potential benefits if a successful restoration programme was implemented. These include socio-ecological services such as biodiversity value, water flow, and tourism potential and employment and business opportunities as direct and indirect benefits from the restored Blyde landscape.

The above technical and operation tools were the critical second stimulus for the advancement of ETADS 2. It was through the co-development of these tools that practitioners and CPA communities started envisioning and enacting their agentic capacity (power1) to re-imagine the governance management of land-use practices. For CPA communities, this was a visualisation process, as they participated in these high-level visioning processes in which they could understand the impact of unsustainable land-use developments. Upon reflection at the end of the ecosystem service valuation workshops (Figure 9.10), a CPA representative noted the importance of a participatory planning process:

CPA rep: This two-day workshop was very useful to us ... we might not be the technical gurus but we understand the planning... we like the idea of asking us what we want from our land and we use the modelling to see if that is good or bad decisions ... we are also happy that everyone here see us as landowners because we are and the title deeds will be transferred soon and we can start approaching investors to work with us ... this group is very important to us and we will come ask for guidance on these technical stuff.

These reflections were evidence of collective actions and the navigation of conflicts between CPAs and NRMPs. Without these technical data and reports (which were generated through the co-development of the above second stimulus tools), the BRWG would have been unable to explore potential funding opportunities, especially engaging the private sector in investing in restoration NRM practices as a socio-ecological justice concern. In summary, the expansive learning process within ETADS pathway 2 is presented in Figure 8.12 below. Although the focus was on the co-development of operational and technical planning tools, this was a co-engaged inquiry process in which a series of formative engagements were conducted as discussed above.

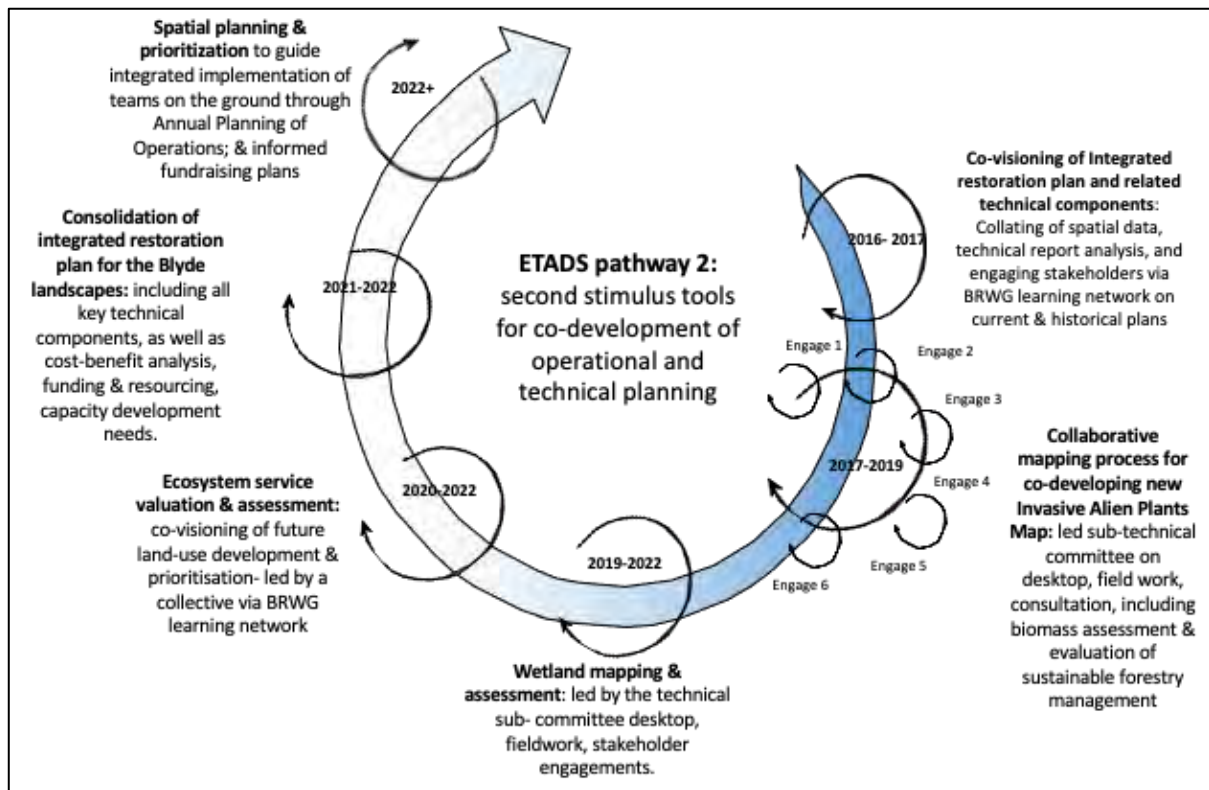


Figure 8.12: Locating examples of second stimulus tools from ETADS pathway 2 into concrete actions in the cycle of expansive learning over the period 2016-2022

Source: Adapted from Engeström (1996, pp. 131–143)

Therefore, in this research, ETADS pathways are seen through the co-development and enactment of second stimuli to navigate the PDCs in order to advance the ethical–political transformation of the restoration NRM object. It was through the use of second stimulus tools that new pathways of navigating PDCs (power2-to-power1) became a possibility and accessible for BRWG partners. Some of the evidence includes:

- Before the BRWG was established, there was no platform for practitioners to work collectively, guided by an integrated plan to ensure the effectiveness of the implementation of restoration NRM practices. There was a lot of project implementation on the ground, but these were mainly streamlined operations in which the planning, reporting and management systems did not fully allow integration and co-development of plans and data sharing across different NRMPs – this resulted in uncoordinated restoration efforts on the ground.
- The BRWG as the second stimulus continued to reinforce and deepen the co-inquiry process through the application of learning actions such as the APO workshops, which

are held twice a year, and this continued in 2023 as the post-formative intervention work.

- Practitioners and CPAs are now constructively engaging and working together on co-developing and implementing restoration NRM practices. It was not the case before as CPAs and NRMPs were mostly in confrontational engagements.
- The technical tools including the restoration plan, IAP mapping, wetland assessment, and ecosystem service valuation continue to guide the implementation of projects on the ground, providing evidence, data and information to catalyse new funding proposals for investing in restoring natural capital for sustained ecosystem services.
- Several funding proposals have been developed and implemented guided by the BRWG partnership since 2017.

The above offers key evidence of how second stimulus tools under ETADS pathways 1 and 2 have catalysed the emancipatory agency within and across the three activity system groups (implementation, rulemaking, governance) in advancing the governance and management of restoration NRM practices. However, the important part of governance is the custodianship in which local actors could develop their capacity as land managers to take ownership of restoration practices in their land. This was also a key element of emancipatory transformative agency in which local communities who were now landowners after claiming their land (power1), needed to be supported as they developed their agentic capabilities to manage the land which was once theirs and taken away (power2). As such, this was a key focus for ETADS pathway 3 involving capacity development for custodianship and strengthening collective governance. An example here was the pilot of a custodianship-driven project which was implemented in 2018 as a partnership between CPA communities, mediating NGOs and government NRMPs. This project aimed to provide concrete evidence of implementing restoration projects that were not managed through the constraining EPWP model (as the project was initially funded by USAID) and also to demonstrate the capacity development initiative that supports CPAs towards becoming custodians and managers of future NRM projects. This paved the way/modelled an opportunity for many other projects to engage with CPA communities in implementing projects that were focused on strengthening local communities' capacity in NRM, and these now include projects led by K2C, CSA, SAOEN, IDLES and other local organisations in the Blyde landscape.

8.5 ETADS Pathway 3: Second Stimulus Tools for Capacity and Skills Development for Strengthening Integration and Future Custodianship

The ETADS 3 was aimed at addressing custodianship by focusing on capacity and skills development within the implementation and governance activity systems. As mentioned above in various sections, the expressions related to the need for capacity development emerged across different formative intervention engagements including the biannual BRWG meetings, sub-technical working group meetings and engagements with CPA communities. Within the implementation activity systems, the focus was on supporting technical capabilities, especially with integrated spatial planning which required a strong GIS background (see ETADS pathway 2 above), and most of the practitioners expressed the need to be supported with such skills. Within the governance activity systems, the focus was on supporting the overall capacity of CPA communities to become active managers and implementers of restoration NRM projects. As such, two categories of second stimulus tools were identified by the BRWG to strengthen the capacity of practitioners and CPA communities and these included:

- Capacity development tools for NRM practitioners in spatial planning and data management.
- Capacity development tools for custodianship of restoration NRM projects in CPAs' governance structures and community youth career pathways.

8.5.1 Capacity development tools to support NRM practitioners in spatial planning and data management

In exploring the types of second stimulus tools to support NRM practitioners in spatial planning and data management, we conducted a series of engagements with all project managers and coordinators who were responsible for managing in-field IAP control teams. These engagements included one-on-one meetings involving discussions, mapping processes and field excursions to discuss the application of spatial data and also their personal growth and skills they were interested in learning. Out of these, we collectively developed a comprehensive *GIS and data management training programme* (discussed below), which we identified as a key second stimulus tool to advance capacity and skills related to the importance of strengthening technical and operational planning capacity. It was agreed in the BRWG that as formative interventionists we should focus more on working with project managers in technical capabilities as they were agents of change who led the implementation of projects on the

ground. Therefore, they would be supported with tools and knowledge that enabled working via an integrated and coordinated approach. The capacity development of practitioners was also driven by the fact that a lot of knowledge on the history of implementing restoration projects and rehabilitation of key wetlands and rivers was held by senior managers nearing their retirement and there was a need to focus on knowledge management processes. As such, the older managers were invited to our field excursions and training to share their knowledge and experience. This was a form of intergenerational knowledge sharing through historicity. One of the key expressions relevant to this came from focus group discussions with practitioners who were the senior managers from the implementation activity systems (source FDG #3):

Practitioner1: ...you see the issue here is not that people cannot work together, it is more of who has the institutional knowledge of this landscape ... I have been working here for over 30 years and I can tell you now all the key rivers and wetlands we mapped with [Mr xx] back in the days of planning for the Byde National Park. You can ask him when you meet them, he might still have some shapefiles of all the areas. We were not working for the same department but we understood why we needed to work together and the Blyde National Park was a neutral ground for all of us to bring our knowledge ... it is a pity the National park idea collapsed mainly because of political reasons but a lot of work went into that, we need to learn from those processes.

Facilitator: Yes, we already asked him about the shapefile of the areas and he said he will look from his old files. We have also engaged the GIS team from the [implementation activity system 1] and they shared good historical IAP clearing data of restoration projects ... but they said you know a lot more about the historical stuff.

Practitioner1: These new project managers don't even know the landscape... They don't even have they GIS mapping skills. How are they going to do spatial planning and coordinate their work with the other guys clearing?... without you guys helping to put the planning tools together I don't think they will be even able to share the mapping data ... what we did long time ago is sitting in different formats and you know the old computers and software ... I don't think if I can take out all my file these young project managers can understand a thing.

Facilitator: ... all spatial planning work is done by GIS specialists but there is not enough capacity which makes it very difficult to do everything. And the project managers don't have licences to the software to do their own mapping ... in the last meeting there was a request for AWARD to do a GIS and Mapping training for project managers for them to use freely available

tools such as Google Earth and QGIS to do field mapping and then share information with their specialists.

Practitioner1: Yes ... that is what is needed ... I know the department has one GIS manager, that is impossible to do practical things and pay attention to detail.

Practitioner1: ... you said you have planned the wetland mapping work with [Mr xx] ... that is fantastic I wish I still had energy to come join the team ... I was going to show you all the areas we worked on before but it's all in the documents I sent you. The young project managers should all join these field events to learn from the old guys and specialists.

The above reflections on GIS and spatial mapping capacity needs were collectively discussed in the BRWG meeting and a collective decision was taken that AWARD would consult their other teams who had GIS capacity and would bring specialists to support the training initiatives. As such, the AWARD formative intervention team in collaboration with the senior technical specialist from BRWG facilitated a series of workshops contributing to overall training on *Advanced GIS & Data Management* for practitioners between 2017–2019.



Figure 8.13: Training on GIS and data management training conducted during 13–15 September 2017 at the Mpumalanga WfW offices in Nelspruit

Source: Photo by Reuben Thifhulufhelwi

As highlighted above, technical skills such as GIS and data management were key for practitioners to carry out their project implementation work. Given the very large amounts of information and data that practitioners have to analyse and process, it was critical that we fully defined the outcomes of the training process as a collective, as different practitioners were using different data management systems prescribed by their organisations. This presented complexities in the sharing of information as the datasets were in different formats.

8.5.1.1 Co-designing of GIS and data management training

Before the beginning of workshop events, we engaged with practitioners themselves to identify the specific technical areas that they considered most important to focus on and to collectively design the learning programme which included contact sessions (workshops and field excursion) and work-away tasks (data management exercises). Both contact sessions were designed to consider various existing GIS abilities of the practitioners and the different levels of competency or previous exposure to data management by the different practitioners. The training programme initially focused on deepening the basic spatial concepts, tools and techniques that were essential in the use of all GIS and data management processes. The main learning outcomes identified collectively with partners were focused on:

- Understanding geographic information and spatial orientation.
- Planning of an in-field data collection trip.
- Using a GPS efficiently in the field.
- Basic mapping, displaying and analysing of geographic information on a desktop-based application.
- Conducting more advanced manipulation of geographic information on a desktop-based GIS programme.

As such, a series of workshop sessions were conducted until 2019, including both office-based workshops with data management and fieldwork activities for practical application. These workshops were attended by practitioners at different levels from area managers, GIS technicians, project coordinators, and interns and included a total of 23 practitioners who largely managed restoration programmes at the local catchment and provincial levels. The sessions were facilitated interactively and had several practical exercises focusing on spatial information and data management.



Figure 8.14: In-field training on data collections and management using GPS and free mobile use of the mobile application, February 2019, Nelspruit

Source: Photo by Reuben Thifhulufhelwi

In summary, the two-year capacity development process on GIS spatial mapping and technical competencies covered a range of topics including:

- Understanding spatial data and GIS
 - Types of spatial data; using GIS to identify, explore, understand and solve challenges
- Understanding data file formats, data sharing and data management
- Fundamentals of a GPS
 - Components of a GPS; how a GPS works; GPS error sources
- Using a GPS in the field
 - Exploring using different mobile free applications: testing MapIT software application
 - Basic settings; taking points; loading & manipulating pre-mapped GIS data onto GPS; finding points/lines/polygons; editing existing data
- Downloading and saving data
- Sharing and exchanging data
- Planning data collection trips
- Importing raw data into a GIS analysis software: testing Google Earth Pro
- General Google Earth Pro functions and settings:

- o Basic settings (navigation & orientation); Google Earth Pro layers and creating and opening layers; historical imagery
- Digitising and mapping errors
- Calculating geometry (area, distance and slope)
- Producing maps
 - o Opening layers; map scales and labelling
- Key data capture and management rules
- Introduction to advance analysis software: using QGIS freely available
 - o Downloading QGIS; QGIS interface
 - o Adding backdrops; opening layers; data analysis; map productions; data export and sharing

8.5.1.2 Collaborative reflections on spatial and technical training support

At the end of each workshop training session, participants were invited to reflect on the session itself, on the learning journey in relation to the previous training session and on how they were now applying the skills in their work. Some of the reflections from the course participants included the following:

Practitioner1: ...GIS & technical stuff are not my strongest points but after a lot of these sessions and testing my skills in the field I feel confident.

Practitioner2: I learnt so much form these workshops ... they have been going on for a long time and it gave us enough time to practice ... and you guys have been patient with us when we keep asking a lot of questions.

Practitioner3: ... it is interesting that we now know a lot of these free tools ... I didn't know I could do so many things with Google Earth Pro... the QGIS was a bit complicated but with more practising we will get it right ... I mostly like that phone mobile app MapIt ... it makes things very easy than us writing down coordinates ... because the GPS we have here don't always work and we have to share them.

Generally, practitioners as course participants expressed how GIS problems have been constraining their work, especially during fieldwork and capturing spatial information as they fully relied on their GIS manager even for things they could do themselves (i.e. most NRMPs only had one GIS manager, which indicated capacity gaps). They noted how the GIS tools, especially shared GPS, had been giving them technical problems which affected capabilities for data collection in the field and analysis because they did not have access to licences for

software. Practitioners also reflected that in some cases, they resorted to using landmarks as points of reference during their in-field data collection; however, landmarks could be difficult to identify on the map when they did spatial planning. This could lead to the incorrect identification of project boundaries which guided teams on planned areas for IAP clearing and might result in reporting incorrect data.

Practitioners also reflected on how they found the use of freely available GIS applications very user-friendly, easy to understand, efficient in the field and helpful in locating planned polygons and verifying clearing efforts. They learned new functionalities on how to best work with free applications such as Google Earth App and MapIT, as platforms to create and analyse data and track changes and progress over time. Practitioners also mentioned that some technical aspects such as using QGIS would require a long-term process as they needed to further develop their understanding of the programme. This was expected as this section covered more advanced GIS aspects, looking at the in-depth elements of GIS which were more complex. Participants also noted that a shorter period between training events would be beneficial, as they had forgotten some of the things they had learned previously. This highlighted the need for this to be an ongoing process, with more regular support for work-away tasks.

The above reflections were critical in strengthening the whole capacity development process, and it was through these reflections that a collective agreement was reached to further build capacity for GIS and data management as an integral component of the BRWG. Spatial mapping and data management were also included as key competencies and priorities for ongoing developments towards effective governance and management of restoration NRM practices. In particular, the BRWG collectively agreed that in future, they would establish an online data-sharing platform in which practitioners from different programmes could exchange and access each other's data as part of integrated spatial planning processes. This platform would be used for troubleshooting, sharing tutorials and new GIS tools, etc., while allowing peer learning to maintain an ongoing learning process.

8.5.1 Second stimulus tools for CPA governance structures towards future custodianship of implementing restoration NRM projects

The capacity development for local communities who had now claimed their land was structured into two processes focusing on the co-developing of tools:

- Firstly, the focus was on *strengthening CPA management committees as governance structures for the management and governance of NRM practices*. This is the capacity for CPAs to be actively involved in decision making in projects implemented on their land and to apply for funding to start their own projects as implementing agents.
- The second component was focused on supporting *skills development and career pathways for community youth in the NRM sector*. This was seen by CPA communities as important for their long-term vision for developing custodianship. Creating opportunities for youth to be trained and involved in land management discussions including the capacity for project management was therefore seen as vital for longer-term custodianship within the CPA communities.

As discussed in Chapters Six and Seven, four CPA communities in the Blyde landscape have successfully claimed their land. Although the full title deeds for the lands had not been returned to CPA communities at the time of the Phase II research, the BRWG partners recognised CPAs as the current landowners and pro-actively worked collectively to support capacity development initiatives to strengthen their governance structures and to implement projects in the broad spectrum of NRM including restoration IAP projects, protected areas management, sustainable agriculture and exploring tourism opportunities with private sector investment. As such, a *long-term capacity development process* was agreed upon, to work with CPAs governance structures to explore their visions and aspirations for their land and support them as key partners for future implementation of restoration NRM projects.

8.5.1.1 Tools for strengthening CPAs governance structures as custodians of NRM practices

In order to guide the long-term capacity development process, a *visioning workshop* was conducted with leaders of the four Blyde CPAs represented by their co-management committee. This visioning workshop was the first step towards exploring capacity needs within the CPAs' governance structures. This included both the capacity needs within the CPA management committee and also in the broader local communities. As such, the formative interventionist team engaged with the four CPAs individually before the collaborative visioning workshop. The capacity development needs were explored in the context of potential roles the CPAs could play in the governance of current and future land-use management in their land. This approach with a special focus on capacity development needs with CPA

communities was conceptualised in the BRWG learning network and was fully supported by practitioners who argued the need to work more closely with CPAs. The extract below shows some evidence from the engagements with practitioners on the conceptualisation of the CPA capacity development process.

Extract 8.8: Excerpts of expressions on capacity development with CPA communities (BCCLW #9)

Practitioner 1: ... if we are going to try support CPAs communities to become future managers ... we need to start addressing the issues of capacity development for them ... they have never NRM managed projects before and because of that lack of recognised project experiences they will never get funding... it is part of our duty to help develop the communities.

Practitioner 2: The idea of pilot of a small IAP clearing project working with CPAs was suggested in the last meeting ... if we have the project implementation money then our guys will support the training as part of our current NRM project commitment in the area.

Facilitator: From the last discussions on piloting a small project we applied for a small subgrant from USAID to support the CPAs custodianship team. The funding was approved and will be provided via AWARD to K2C as the local NGO with capacity to employ a CPA team ... AWARD team will lead the engagements with the four CPAs communities to understand the skills gaps... and the BRWG partners will all contribute to support different capacity development processes including training.

Practitioner 3: The CPAs have already committed a lot of their claimed land to expansion of Blyde Nature Reserve and K2C are helping with the declaration of protected area expansion ... this is a serious commitment of CPAs. They have claimed the whole Blyde Nature Reserve and yet they don't have much capacity to manage the land. We know by legislation they are required to work with provincial conservation agency MTPA but can the CPAs actually co-manage with MTPA at the moment? I don't think they have the capacity at the moment.

Facilitator: I agree, the capacity of CPAs is not adequate at the moment and all BRWG partners have acknowledged that and from our engagements with CPAs they are happy to work with all of us to support them. There is an ongoing co-management agreement with MTPA and as part of that there will be training for CPAs on conservation management ... I think broadly there are different processes supporting CPAs and our engagement is strong on governance of restoration NRM, while K2C and MTPA is supporting declaration and co-management of protected areas.

Practitioner 4: There is a huge potential of other developments in the CPAs land that are not going to be declared as protected areas. I think they can do a lot of wildlife economy and agriculture development and tourism.

Practitioner 1: Yes even inside the protected area they can still do a lot of tourism ... the partnership with private sectors is important and there are lot of guys downstream getting water from the CPAs land, we should engage to partner with CPAs.

8.5.1.2 Co-visioning workshop with four Blyde CPA communities

Therefore, after engaging the four Blyde CPAs individually, we then organised the *co-visioning workshop* as the initial second stimulus tool for exploring CPAs' capacity development needs as a pathway for navigating power-dynamics contractions on ownership and historicity of exclusions. As reflected above, the Blyde landscape was undergoing a transitional institutional environment due to changes in land ownership and management, in which the CPA communities have successfully claimed the majority of the landscape and they have expressed the desire to become managers of their own land. Through the visioning workshop, CPA communities were able to articulate their aspirations on how they envisage future land-use developments. These were aspirations driven by the broader communities as represented by the CPA management committee. As facilitators, we developed a series of guiding questions (Table 8.2 below) which were used to guide CPA communities in confronting current land-use management practices and envisioning their future aspirations for the land.

Table 8.2: Guiding questions for the CPAs' visioning co-inquiry process

1. Understanding the use and dependency of local communities on natural resources
• What are/were the key resources and benefits (direct & indirect) that people get/got from the land? • How are/were the resource uses or benefits distributed? • Who has access to the resource? • How and who is responsible to manage and maintain the resource (sustainability)?
2. Community's perceptions of the opportunities and threats concerning the natural resource uses and benefits
• What are the threats or constraints impacting the resource and its benefits? • What are the trends of resource use or benefits?
3. Understanding the current land-use practices
• What are the current land-use practices in the landscape? • What are the gaps between the current practices and the desired future land-use developments? • Do the current land-use practices support the beneficiation to the community? • What are the benefits and how was this achieved?
4. Community's desires and aspirations for future land-use developments

• What are the desired future development opportunities to maximise the resource benefits? • What are the enabling and constraining factors of these developments?
5. Towards the development of guiding strategies/ pathways for future resource development
• What tools, processes, projects, resources, etc., can we use to address these gaps and unlock the desired future development?

The participants from the four CPA communities were divided into mixed groups to engage with the above questions. As part of the report back from groups, the questions in Table 8.2 above were categorised into two key focus areas:

- The historicity of natural resource use, current resource condition and use, and associated threats (1, 2, 3).
- Exploring communities' aspirations for future developments through reflections on the current land-use practices and identifying learning actions for CPAs custodianship (4, 5).



Figure 8.15: Representatives of the co-management committee presenting at the first CPAs visioning workshop, 15 August 2019

Source: Photo by Reuben Thifhulufhelwi

Below is a summary of key points (drawing from questions 1-3 in Table 8.2) that emerged from the group discussions. These were further explored through follow-up engagements with CPAs and engagements with other partners through the BRWG meetings. The outputs from the visioning workshop were presented as mirror data in the next workshop with CPAs to further allow for reflection by the CPAs' representatives and inputs from the BRWG partners.

Identified threats to natural resources and benefit

- Mismanagement of resources and non-regulated harvesting: uncontrolled access to the landscape even though it is under DAFF forestry management currently. Although policy and regulations exist there is no effective enforcement regulating access and resource harvesting.
- CPAs are not involved in management processes in relation to recruitment for new employment opportunities on their land.
- There is no effective or formalised communication with the CPAs regarding governance and management processes of their land (by current management authorities).
- The CPAs do not have decision-making powers because they are still awaiting title deeds of the land they claimed.
- The CPAs lack the institutional capacity to manage resources on their land. They need skills development support.
- No consistent youth participation in governance and management processes. There is no support for youth career development, and this forces them to leave or not want to be involved in land management matters.

Potential management roles to inform capacity development initiatives

- CPAs must be officially consulted in any development and project implementation on their land.
- Restoration NRM projects must benefit communities by creating long-term employment and must move away from short-term approaches.
- CPAs must give feedback to their broader community structures and start identifying skills needs.

- Conduct skills needs assessment for youth development in order to identify training programmes and skills development (e.g. financial management, business management, office management, project management, admin etc.).
- CPA structures must be supported to develop a project management and technical skills programme where youth need to be involved.
- The CPA committee is becoming more empowered by these engagements and acquiring valuable knowledge. They have created a not-for-profit company called *Blyde 4 CPAs*. The company is a business entity for the four Blyde CPAs and is a collective organisation that can be strengthened and capacitated to manage and administer restoration and NRM-related funds. The functionality of this institution is critical to demonstrate the institutional capacity of the CPAs, and this may also stimulate more partnerships with, and investments from, the private sector.

As part of envisioning the future governance of Blyde landscapes, CPAs are expected to play a critical role as landowners. We therefore asked the CPAs to list potential future developments they wished to see in the landscape.

Desired future development opportunities to maximise CPA beneficications

- CPAs must implement and manage restoration projects.
- Training of youth in conservation career development.
- Training of CPAs' management committees on governance.
- Long-term benefits and employment opportunities for communities from restoration projects.
- Develop a wildlife economy for large-scale tourism.
- Build 5-star accommodation hotels for tourism.
- Build recreation and entertainment facilities, including quad biking and hiking trails.
- Build cable cars and skywalks across the Blyde River Canyon.
- Build a caravan park and floating restaurants.
- Build good road infrastructure and security services to improve access and safety in the Blyde reserve.
- Build training centres, cultural villages and wildlife schools for conservation and tourism.

The above-identified points were regarded as an aspiration list into which CPAs would do their own research (i.e. internal engagements with broader communities they represent) to understand key driving factors such as whether the potential developments were feasible in the area, resource requirements, sustainability and implications and linkages with the other existing land-use developments. After engagements with the community structures, the CPAs would present the desired priority key developments to their co-management committee and the BRWG would provide expert inputs and guidance to support CPAs in skills training and partnership development processes.

The overall object of the visioning process was to support the CPAs as new landowners in developing a collective vision focused on their interests, aspirations and potential roles in NRM management and land-use development in the upper Blyde landscape. With the inputs of the BRWG and other key stakeholders, the refined vision would be consolidated as a collective and formalised strategic framework to guide the governance of NRM practices, especially on the roles of landowners and their capacity development processes.

The CPAs expressed the value of the visioning process and committed to further engaging in this process of collaborative development of their long-term vision. It was agreed that more follow-up engagements were necessary, and it was estimated that more than three in-depth workshops would be required to deepen and consolidate the CPA communities' vision with inputs from the BRWG partners. In parallel to the CPAs' visioning workshop, there were ongoing engagements by the BRWG with the private tourism sector focusing on potential investment in restoration projects on the CPAs' land. It was agreed that CPAs must use this opportunity to negotiate with the private sector as part of the capacity development process. As such, a follow-up visioning workshop focused on *developing partnerships between CPAs and the private sector* to support the implementation of restoration custodianship teams and potential tourism business opportunities in the CPAs' claimed land (Figure 8.16 below).



Figure 8.16: Second visioning workshop focusing on developing partnerships between Blyde CPAs and private conservation agencies on exploring potential investments in future land-use developments, 12 February 2020

Source: Photo by Noxolo Mbebe

The second visioning workshop involved a collective with representatives from the four Blyde CPAs, the formative interventionist team from AWARD as a mediation team, the Kruger-to-Canyon (K2C) as a supporting partner working with CPAs in the declaration of portions of CPA land into protected areas, and Sabi Sand Private Reserve who were the conservation and tourism agency as a potential investor for funding implementation of restoration projects. In facilitating this workshop, we used activity system analysis to guide the co-visioning of future partnerships and land developments between CPAs and the private conservation agency as an investor. This co-inquiry process using second generation CHAT tools provided an in-depth analysis and deepened the list of CPAs' aspirations (mirror data from the first visioning workshop).

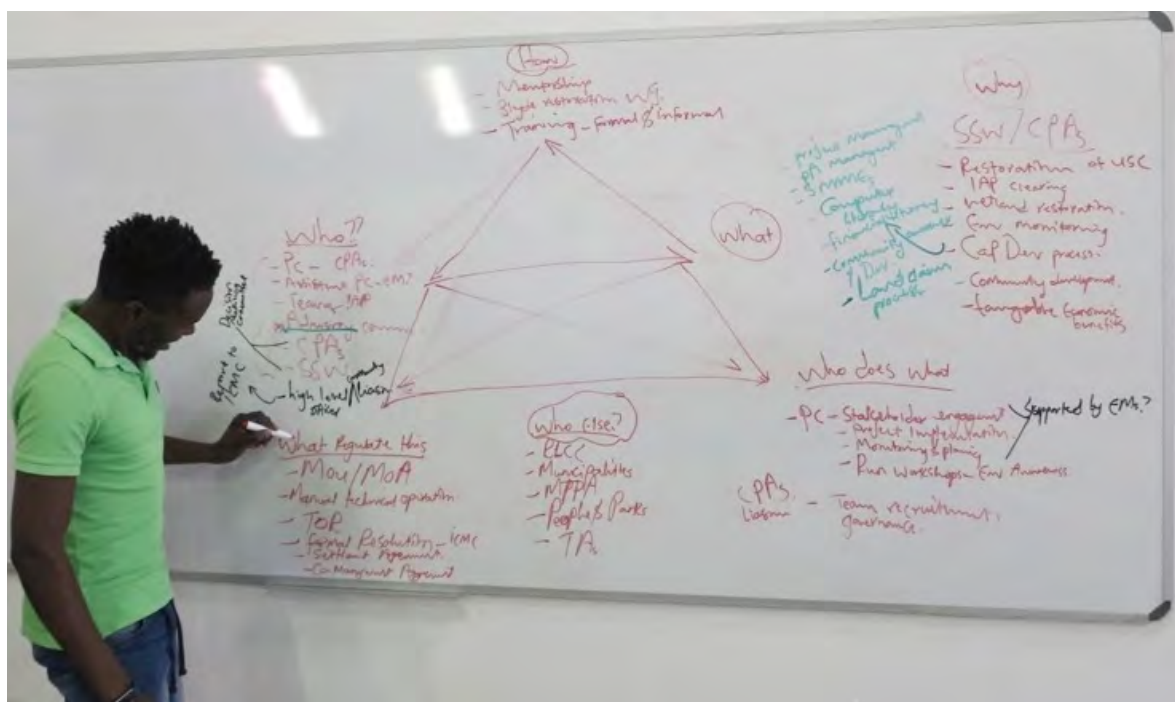


Figure 8.17: Reuben Thifhulufhelwi demonstrating using CHAT activity system analysis for collaborative visioning to explore current and future restoration NRM practices under the Sand-CPAs partnership

Source: Photo by Noxolo Mbebe

The activity system analysis (Figure 8.17) was co-constructed during the workshop discussions and plenary sessions to co-vision the possibility of CPAs and private sector partnerships, using the elements of the activity systems. The *object (what)* of this partnership was to advance the project management competencies, develop small and medium enterprises, and advance skills capacity through training including basic computer, financial and project management. The *outcomes (why)* of this work were to support custodianship and long-term beneficinations to local communities and youth, which would be realised through partnerships for project implementation on the ground, such as IAP control and environmental monitoring projects. In order to achieve these outcomes, a series of *enabling tools (how)* were required including mentoring of CPAs, working collaborations with BRWG partners and facilitation of skills-based training. The four Blyde CPAs and community youth in partnership with the private sector were as seen as the key *actors (who)* driving the future of sustainable management and development as landowners, with the support from the *community*, BRWG partners and other relevant structures such as the integrated co-management committee, land claims commission, people and parks forums, traditional authorities and municipalities. These partnerships would also have to develop their own *governance tools (rules that regulate the activity)*, both formal

and informal, including ToR, MoU and formal resolution standards. Furthermore, additional governance tools developed through other processes would also be critical for an enabling environment such as the settlement and co-management agreements which would give local communities power1 agency to enter into formal business partnerships as legal landowners. The *division of labour* for the partnership was clearly defined in order to inform the roles and responsibilities (*who does what*) including the future capacity needs.

The overall discussions guided by the activity system analysis were then reframed into a flow diagram in order to represent a process for the development of the partnerships. This was informed by the discussions from the private investors that they needed a finalised conceptual process that they could present to their board of directors. As such, we quickly re-conceptualised the activity system analysis into a rough flow diagram, and this was further discussed and agreed upon in the workshop.



Figure 8.18: Reuben Thifhulufhelwi presenting a flow diagram for co-constructed in the workshop for developing the governance structure with roles are responsibilities in the Sabi Sand Blyde 04 CPAs partnerships, 12 February 2021

Source: Photo by Noxolo Mbebe

The flow diagram was later edited into the final version (Figure 8.19) that was submitted as part of the proposal to Sabi Sand for Phase 1 investment in the partnership with CPA.

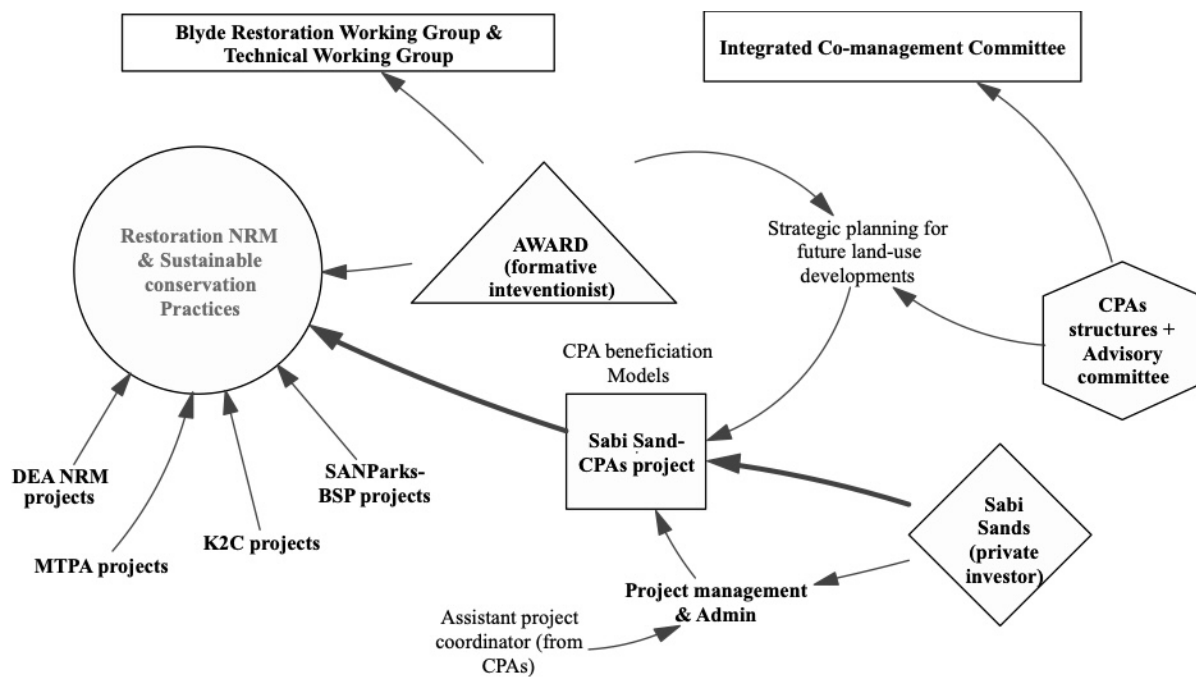


Figure 8.19: Flow diagram outlining governance structure with roles and responsibilities for the potential CPAs–Sabi Sand Restoration custodianship partnership

Below is the text providing a description of Figure 8.19 – Blyde four CPAs and Sabi Sands partnership:

Sabi Sands as a private investor (diamond) is committed to supporting restoration NRM and sustainable tourism developments by partnering with the Blyde 4 CPAs as landowner communities to maximise the local communities' beneficiation models. As such, funding will be provided to implement the Sabi Sand-CPAs project (square), and this will be a stepladder process for supporting CPAs' capacity development through pilot projects as part of a broader contribution to restoration NRM and sustainable conservation practices (circle). Sabi Sands will also provide capacity support for project management and administration. This would form part of a CPA mentoring programme, in which assistant project coordinators from the CPAs will be trained as part of the long-term youth development process (i.e. workplace learning). The CPA structures would be capacitated in admin and project governance by working in collaboration with Sabi Sand and the BRWG. The formative interventionist role is still critical for this CPA incubation stage, and the AWARD team (triangle) will continue to provide mediation and coordination capabilities. Additional formative interventionist partners would be identified as new projects are developed especially around eco-tourism business developments. An advisory committee for the Sabi Sands–CPAs project will be created in which all key partners would be represented including the Blyde 4 CPAs, Sabi Sand, AWARD, K2C and DEA-NRM. These

partners would guide the decision-making processes, as well as support specific actions such as quality assurance of project implementation activities.

In broad terms, Figure 8.19 outlines the envisioned governance and management processes for the implementation of restoration custodianship projects, and how the Blyde CPAs–Sabi Sands partnership was conceptualised as a contribution to the broader restoration NRM practices in the Blyde landscape. The flow diagram was a consolidation of key actions and agreements from the workshops, and this flow diagram, together with the activity system analysis was continuously used as mirror data to guide the ongoing engagements for the partnership development. As such, a *proposal of R2 million* was agreed upon as an initial investment in Phase 1 of the partnership, in which the private conservation organisation would fund the employment of *restoration custodianship teams to be managed by CPAs*. The CPAs would still be supported by the AWARD formative interventionist team on further capacity and training activities for the management of the restoration team as well as drawing on expertise from the BRWG. After the initial two years of incubation support, the CPAs were expected to pilot their full governance capacity by managing the restoration teams by themselves as the formative interventionist team would be exiting and only playing a minimal support role (i.e. development of training materials, with CPAs leading the actual training events and project management actions).

8.5.2 Second stimulus tools for skills development and career pathways for community youths

As highlighted above, ETADS 3 was categorised into two pathways, namely the capacity development for CPA governance structures and the specific focus on youth skills and careers. From the visioning workshops with CPA leaders, it was collectively agreed that a comprehensive skills assessment was required in order to identify skills gaps among youth and conceptualise training courses and workplace learning initiatives. Again, the formative interventionist team led the youth skills assessment process supported by practitioners from the implementation activity systems. As such, youth from the local communities were in large meeting briefings to discuss the long-term capacity development opportunity created through the partnership of their CPAs structures and partners from the BRWG. However, for the pilot of the youth skills development project only a small team was selected. Figure 8.20 below is one of the first youth meetings in which a small team restoration team was selected through comprehensive selection criteria that included the youth writing a motivation for their interest

in developing careers in the biodiversity and conservation sector –this was followed by interviews and physical tests.



Figure 8.20: A general meeting with youth from the local communities before the selection test and interviews for team members to be part of the youth capacity custodianship team

Source: Photo by Reuben Thifhulufhelwi

The selection test and interviews were strongly focused on the assessment of a basic understanding of NRM practices, interpersonal skills, computer literacy, knowledge of project management and stakeholders' engagement. The skills assessment process was conducted through a series of meetings, fieldwork exercises and competency evaluations with youths from the local communities.

8.5.2.1 Collective skills assessment process

As briefly highlighted above, the skills assessment process focused on collectively identifying the capacity gaps and types of learning tools required for strengthening youth development and career pathways in NRM and biodiversity conservation. The skills assessment process was started in 2018 and this process informed the implementation of piloting the Restoration Custodianship Team, which became a specialised IAP control team made up only of youths. As such, the skills assessment process was aimed at understanding gaps in knowledge and experiences across different areas, including computer literacy, interpersonal skills, knowledge and experience of any restoration techniques, stakeholder engagements, project management and a general understanding of NRM practices.

From the range of engagements with local communities' youths, the assessment process indicated an overall *basic entry level of skills and competencies in NRM* (Table 8.2 below). This included limited knowledge and exposure to both the implementation of the NRM practices and career development opportunities in the conservation sector. Although most of the youth were aware of some of the NRMPs such as WfW, they had limited knowledge on the in-depth understanding of objectives and opportunities for empowering local communities through the restoration NRM practices.



Figure 8.21: Field-based skills assessment for youth on their knowledge and experience of invasive alien plants identification, *land-use management* in the area including forestry, conservation management and general ecological literacy as part of selection of the Restoration Custodianship Team.

Source: Photos by Reuben Thifhulufhelwi

Table 8.3 below provides a summary of gaps in knowledge, skills and competencies from engagements with the youth. In addition to the practical skills assessment in which a small team of youths was selected, we further conducted in-depth youth individual interviews with the selected team of 10 youths, to deepen our understanding of their capabilities and experiences. We also explored their personal interests in terms of potential careers and skills development within NRM and related land-use practices in the Blyde landscape.

Table 8.3: Summary of youth skills assessment

Knowledge, Skills and Competencies	Basic	Intermediate	Advance
General understanding of NRM practices		x	
Working experience in a restoration programme		x	
Experience in supporting organising and participating in environmental-related campaigns	x		
Knowledge of applying restoration NRM techniques	x		
Interpersonal skills	x		
Computer literacy	x		
Knowledge and experience in project management and implementation	x		
Stakeholder engagement experience	x		
Knowledge of management actions for land-use practices in the Blyde landscape such as conservation, eco-tourism, forestry, agriculture, etc.	x		

From the interviews, the youths expressed interest in learning more about different practices in the broader NRM field. These included water resources management, sustainable forestry, conservation management, eco-tourism, restoration IAP control, wetland management, environmental education, environmental compliance and agriculture development. These expressions were based on the youth's views on what they envisaged as potential future land-use development that could benefit their communities and align with their career aspirations. Below are some of the expressions from the youth interviews:

I would like to gain more knowledge on computer skills and learn more about different natural resource management programmes; I also have interest in agriculture and forestry; I would also like to have financial skills; lastly to learn more on Indigenous plants and expand my knowledge on alien plants, as well as catchment management.

One day I would like to be the manager of a restoration team, get more trainings related to restoration, and to also learn more about agriculture and forestry.

I will be happy to learn more on life skills and general personal development. I would like to have a computer training as I have never used it in professional work.

I would like to learn more about our landscape and how we can benefit from this environment...I would also like to learn more about CPA functions especially related to our job in restoration.

I would like to learn more or refresh on computer skills because it has been a while since I used a computer; to learn about climate change and its effect on agriculture, farming, forests and rivers; the importance of removing alien plants and different categories of alien plants and control methods.

From the skills assessment, a series of recommendations were proposed, and these were endorsed by CPA governance structures and the BRWG partners. The *long-term implementation of the Youth Restoration Custodianship Team project* was the main recommendation to advance the youth's involvement in restoration NRM practices through workplace learning. This led to collective efforts to secure funding for the restoration custodian team (RCT) since 2018 (as discussed below). Other recommendations included the need to *develop training programmes to support youth personal development and co-development of learning materials that could be used to train and support new youth groups in the coming years*. The co-development of learning materials for future use was an approach for sustaining the learning processes beyond the formative intervention activities (i.e. institutionalising learning processes within the governance structures of CPA and BRWG partners as future mediators through the use of learning materials as a second stimulus).

8.2.5.2 Training events for youth personal and career development

Between May and September 2019, the selected youth as part of the Restoration Custodianship Team were supported with a series of training events. We conducted three training sessions on computer literacy with a specific focus on Microsoft Office competency for report writing, data

capturing and management and presentation skills. As part of this training, the RCT youth were required to write monthly reports as practical learning experiences. All members of the RCT were allocated individual sub-sections in the monthly reports in which they were responsible for collecting relevant data during the month and presenting a report to their peers and the formative interventionist team members. The individual presentations were then compiled by the RCT leader into an overall report which included maps of IAP clearing hectares per month, challenges experienced by the RCT members, key learning insights for the months, areas for potential development and general health and safety concerns. Upon completion of the report and getting feedback from the formative interventionist team, the RCT then presented their final report to the project management committee which included members of the CPA structures and the BRWG, and this was done at monthly project reflection meetings.



Figure 8.22: Youth from RCTs practising their presentations during their team reflection in preparation for the project monthly report

Source: Photo by Nakisani Mposi

Furthermore, a series of individual and group sessions were facilitated for personal development competencies of RCT including writing CVs, motivation letters, job applications and preparing for interviews. Other training events included the continuation of GIS and spatial

mapping sessions with field-based practical activities for data collection and data capturing in Excel as reflected in Table 8.4 below.

Table 8.4: Summary of the various capacity development initiatives which were carried out between 2018–2022 with the Restoration Custodians

Date	Topic
Ongoing field-based training from 2018–2019	Introduction to GIS & practical application of mobile mapping tool; understanding restoration NRM practices and sustainable land-use developments; tools and techniques for restoration
May 2019	Introduction to computer literacy & Microsoft Office: focus on report writing and presentation
June 2019	Continued computer literacy: introduction to Excel data capturing
August 2019	Continued computer literacy: data analysis and database management
August–September 2019	Data management and analysis in mobile GIS mapping app and field-based spatial data capturing
September 2019	Personal development: curriculum vitae, cover letters, job applications and interviews
2021–2022	Training workshops and field engagements on resource use and river health monitoring

8.2.5.3 Co-development and pilot testing the Restoration Custodianship Project as a collaborative governance project and tools for skills development

As discussed above, ETADS 3 pathways enabled CPAs, youth and the BRWG to work collaboratively in the co-construction of second stimulus tools. The CPAs, visioning workshops, youth skills assessment and training were the initial steps for conceptualising the capacity development process for local custodianship of restoration NRM practice. However, there was still a gap in pilot testing the implementation of the CPA restoration project, and this was the concrete evidence that formed the fundamental basis for future funding proposals. The RCT became the model to pilot test the collaboration between CPA and Blyde restoration partners.

The need to provide practical evidence on the practical application of RCT (as one of the second stimulus tools for advancing capacity for custodianship) emerged early during the CLWs as discussed in previous chapters in which practitioners raised concerns that it was critical to work collaboratively with CPAs as local custodians and that there was a need to build practical capacity for project management as they had never managed restoration projects in the past. Below are some of the expressions from restoration practitioners' planning meetings for engaging CPA land claims communities (meeting/interview #4) in which practitioners reflected on the need to pilot test a collaborative project that provided concrete evidence for partnerships with CPA structures and community youth.

Practitioner1: ... in the workshop with our [chief director and deputy direct-general] ... they were very clear on the need to work with CPAs because this is the fundamental of our work to benefit local communities ... they said we need to address land claims issues ... but the problem is CPAs have never implemented restoration teams before and no one will give them money without that experience.

Practitioner2: this is exactly what I raised before that unless there is evidence of project implementation ... all these ideas of CPAs becoming future managers will be seen as wild plans.

Practitioner3: if we can get the opportunity to pilot the project with CPAs ... I think we should test it and see how it goes and then we can learn what to change.

Practitioner4: we need to convince our regional and national departments to fund the CPA communities projects or else we will be going backwards again ... let's also get the private guys to be involved in this, they always say they want to support communities and this is the time to show commitments.

Practitioner5: ... I agree with him, we can't just be doing plans-plans-plans ... we need project implementation for actual restoration on the ground. Plans without project evidence will not get us far.

As shown above, there were strong convictions from practitioners that the focus on CPA custodianship would require evidence-based support through project implementation. This is the same sentiment indicated by the CPA communities who expressed their willingness to learn and be supported to develop their capacity in project management and governance of restoration NRM practices as future custodians (i.e. ethical-political expansion). This was an act of expressing a *calling out* for support in an attempt by CPA communities to enact their

power1 (transformative agency from below). The ethical–political expansion of the restoration NRM practices, as noted above, was the driving factor for navigating PDCs through the co-development and adoption of second stimulus tools discussed in ETADS 1, 2 and 3.

There was a concerted effort from the NRMP practitioners, CPA communities, the formative interventionist team and the broader partners in the BRWG to support the pilot implementation of restoration custodianship teams as a practical example of the *collective move* for integrated restoration NRM practices (i.e. different actors and programmes working together). This collective move is power1 in action for addressing historical norms and structures (power2) that constrained the active involvement of CPA communities as landowners and future custodians.

As such, the pilot project implemented was initiated between 2018–2019, and the project was referred to as the *Blyde Restoration Custodianship Team*, also referred to as *Blyde Restoration Champion Teams*, and still maintained the abbreviation of RCT. The RCT project was implemented as a partnership project by AWARD, K2C and the Blyde CPAs, with support from NRMPs and other partners in the BRWG. The RCT was a dedicated youth project and was initially funded by USAID RESILIM-O programme AWARD through (2018–2019) as part of youth development. During this period, the focus was on capacity development activities for CPAs in project management and governance and field-based training for youth (see sections above). The RCT was deemed a success and was then funded under the Global Environmental Fund (GEF) Biodiversity Stewardship Programme and the USAID Resilient Water programmes which were implemented through K2C (2019–2021). Additional funding opportunities were explored including the LUI project from the national department (i.e. rulemaking activity systems) and other funding from private conservation agencies and local NGOs, to support the implementation of RCT and capacity development activities from 2021. In 2022, a full Capacity Development Plan⁹ was developed consolidating learning insights from the implementation of RCT as a partnership model for integrated restoration NRM practices, with attention to the ethical–political expansion of the object. After a successful pilot test of

⁹ **Thifhulufhelwi, R.**, Graf, J., Mponwana, M., & Pollard, S. (2022). Capacity development plan for implementation of expansive social learning interventions in Restoration Natural Resource Management practices. Report produced for Blyde restoration project. Funded by Department of Forestry, Fisheries, and Environment (DFFE)- Natural Resources Management Chief Directorate.

the Blyde RCT, partners collaboratively develop the LUI funding proposals. A budget of R4 million was secured to support the Blyde four CPAs to continue implementing the RCT programme from 2020 onwards with a strong capacity development focus on governance and youth career skills. This was a successful expansion of the initial RCT initiative, although the expansion of the project was disrupted by the Covid-19 pandemic.

At the time of finalising this study, the BRWG continues to support CPAs to secure further restoration funding opportunities. As such, another successful proposal was developed to explore eco-tourism business opportunities on the CPA-owned land with the CPAs. An initial R2 million was agreed on between CPAs and Sabi Sands Wildtuin to start implementation of restoration projects in 2020 that would be managed by CPAs' governance structures (see section above on capacity development CPAs governance structures). Sadly, this was also impacted by the Covid-19 pandemic and the process was delayed although the negotiations to resume the project have been undertaken. This partnership between CPA communities and private conservation organisations demonstrates the growing relationships among local communities, NRMPs and the private sector. These partnership relationships are the product of the expansive learning process initiated by the formative interventionist team in 2016 and reinforced over the years by the co-construction of second stimulus tools for advancing the three ETADS discussed above.

The initial proposal agreement demonstrated the potential for further investments in restoration projects from downstream private conservation and tourism agencies, who are beneficiaries of ecosystem services such as water flow since the Blyde landscapes are national strategic water source areas and most rivers in Mpumalanga originate in these areas flowing downstream towards the famous Kruger National Park and into Mozambique. However, more capacity development for CPAs is required in order to strengthen their governance capabilities to manage and oversee long-term custodianship of potentially larger restoration and eco-tourism partnerships.

In summary, ETADS pathway 3 had three focus areas which can be described as separate learning processes that were focused on the co-construction of second stimulus tools for capacity development. These three learning processes required different forms of engagement, tools and capacity for mediation and were co-developed with different groups of actors. The first was focused on co-developing second stimulus tools for advancing the technical

competencies and capacity of restoration practitioners towards integrated spatial planning for project implementation; the second was focused on second stimulus tools to support capacity development of CPA structures in governance and project management of restoration NRM projects; and the third focused on skills and career development pathways for youths in situating their learning in the spectrum of the environmental and biodiversity sector.

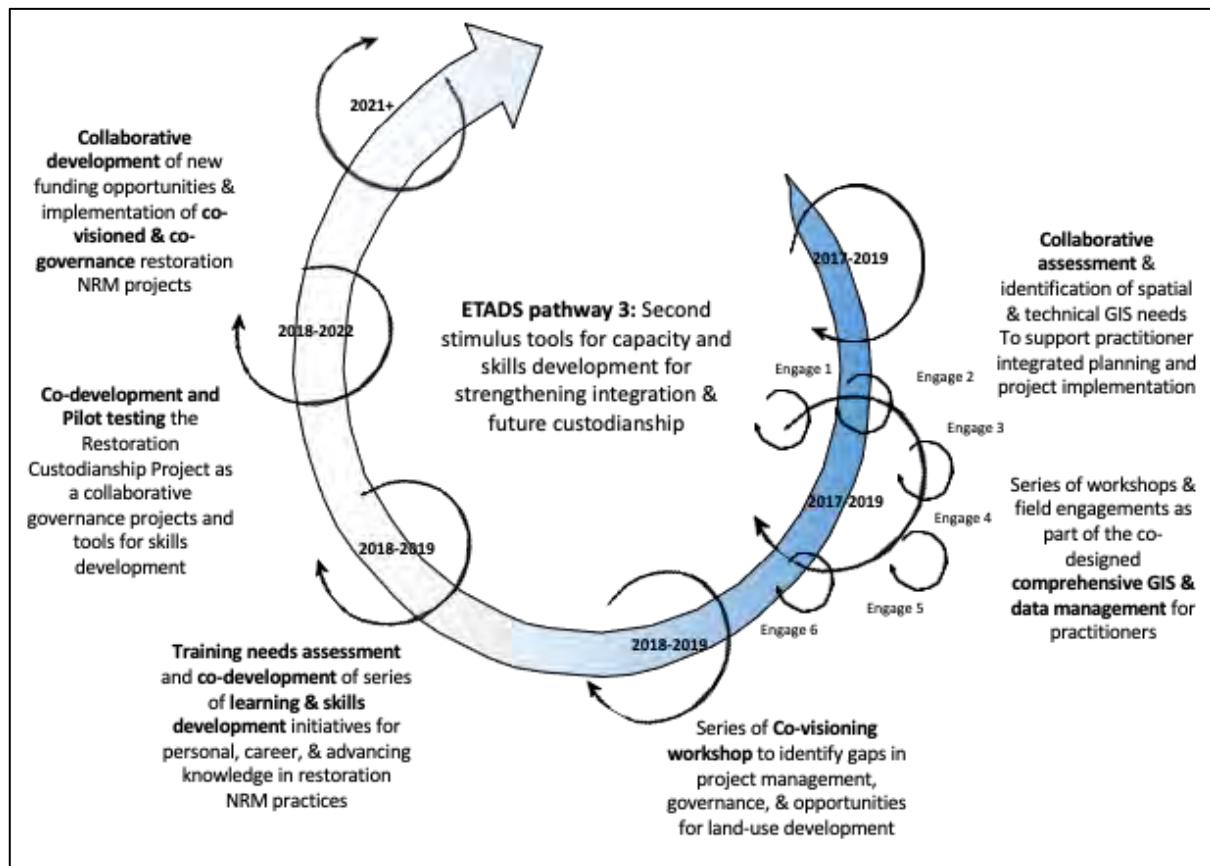


Figure 8.23: Locating examples of second stimulus tools from ETADS pathway 3 into concrete actions in the cycle of the expansive learning cycle between 2016 and 2022

Source: Adapted from Engeström (1996, pp. 131–143)

Although the formative interventionist team from AWARD was central to all these, it was nearly impossible to lead these learning processes as they emerged in parallel; this was in addition to the engagements for ETADS 1 and 2. As such, a considerable number of facilitators were involved in the facilitation of all ETADS and mostly this additional capacity was through bringing in consultants and experts to lead the specific development of second stimulus tools

and processes as indicated above. For example, the wetland mapping¹⁰ and ecosystem service assessment¹¹ under ETADS 2 was led by specialists, while the project management for the piloting of the RCT was implemented through a subgrant from AWARD to K2C. This was evidence that as we engaged and navigated complex utopian sustainability challenges and as we moved towards fourth generation CHAT, the role of formative interventionists changed towards a collective of mediation teams as the complex utopia required in-depth capacity and multi-sets of skills-sets from different disciplines – a finding that has also been reported in the river commons fourth generation expansive learning programme in KwaZulu-Natal involving multiple partners (Lotz-Sisitka et al., 2022) – and has also been shown to be the case in the Sannino study on homelessness in Finland (Sannino, 2020, 2022). This situates fourth generation CHAT in the category of a team project that must be in a collective of formative interventionists in order to fully explore the coalesced nature of utopian objects. In some sense, I was lucky to be part of such a process from the start in the AWARD RESILIM-O Programme, although the tracking and data generation for this entire process was an enormous task, which at times threatened to overwhelm me. However, developing the analytical tools for Phase II of the research was vital for me to be able to report on this process clearly as I have tried to do in Chapters Seven and Eight of this study.

8.6 ETADS As a Catalyst for Uptake and Sustaining Expansive Learning Process

One of the main questions regarding CHAT and expansive learning studies is how to facilitate the uptake of learning actions and sustain the continuation of the transformative learning process beyond the active formative interventionist engagements, which are often led by researchers. In most cases, the CLWs and related formative engagements cease in the absence of researchers. An exception is the Amanzi for Food Learning Network which was catalysed

¹⁰Van Rooyen, L., Graf, J., **Thifhulufhelwi, R.**, & Mbebe, N. (2020). *Wetland status scoping report: Preliminary wetland mapping, characterization & health assessment for wetlands of the Upper Blyde, Sand & Klaserie Catchments*. Report and spatial data layers produced for Blyde Restoration project. Funded by USAID Southern Africa (RFA-674-12-000016), and Department of Forestry, Fisheries, and Environment (DFFE)- Natural Resources Management Chief Directorate.

¹¹ Mander, M., Graf, J., **Thifhulufhelwi, R.**, Mtshali, S., & Holness, S. (2020). *Ecosystem services assessment and valuation to inform restoration Invasive Alien control*. Report produced for Blyde Restoration project. Funded by USAID Southern Africa, Resilience in the Olifants programme (RESILIM-O), (RFA-674-12-000016), and Department of Forestry, Fisheries, and Environment (DFFE)- Natural Resources Management Chief Directorate.

by Pesanayi's formative intervention research, but which has continued through ongoing formative intervention engagements of different forms through ongoing interactions with a network of researchers since 2019, in what is also reflective of a fourth generation CHAT study (Lotz-Sisitka et al., 2021; Pesanayi, 2019).

Therefore, there is a need for institutionalisation of expansive learning to continue beyond formative interventionist interventions, through more diverse explorations related to future developments of the object. As we moved towards fourth generation CHAT, the need for institutionalisation and embedding expansive learning was of utmost importance as we dealt with complex and dynamic objects. Sannino (2020) refers to this as enacted utopias, which require coalesced expansive learning processes that are interlinked at different levels and may evolve simultaneously. As briefly highlighted above, the fourth generation demands more capacity from formative interventionist researchers and in some cases, it may be practically impossible to facilitate two or more coalesced expansive learning processes at the same time by individual researchers or even small teams of researchers (also see sections below on insights for fourth generation CHAT). Therefore, the ETADS framing operationalised within a key double stimulation process of a learning network (e.g. the Imvothu Bubomi Learning Network in the case of Pesanayi's (2019) research, and the BRWG in the case of my research) presents an opportunity for institutionalisation of learning processes through the lens of *emancipation*, in which actors became custodians of their own expansive learning process as they agreed to co-operate on various shared priorities along agreed upon TADS pathways. As such, the co-construction of second stimulus tools that enabled the emergence of emancipatory agency (activation of power1) along such pathways appeared to motivate and make actors full custodians of the expansive learning processes as they continued to work together in refining, reframing and advancing the co-constructed second stimulus tools. These second stimulus tools were *negotiated, co-created, shared, and accepted* as tools for transformation, and the *uptake* of second stimulus tools ensured that the expansive learning was embedded into the future development and expansion of the object as shown in this study.

In each of the three ETADS discussed above, all second stimuli were co-created including the establishment of a learning network (i.e. BRWG), development of planning and operational tools (i.e. IAP mapping, wetland assessment, ecosystem service assessment, etc.), and the co-creation and piloting of a multi-partnership project (i.e. Blyde Restoration Custodians). It was the co-creation process that made it possible for the second stimulus tools to become shared

guiding resources for actors to continue working on their agreed pathways of transforming restoration NRM practices, even in the absence of formative interventionist researchers.

Furthermore, within each of the second stimulus tools, a series of learning actions were identified at the level of micro-analysis. These learning actions were small-scale transformations referred to as the mini-expansive cycles (Engeström 1996) that enacted and re-enacted the ETADS pathways which were the bigger transformation trajectory. For example, the CPA communities had their own co-management governance structures that mostly engaged in addressing land claims concerns. This was a national process that had been developed independent of the influence of the formative mediation team. However, the Blyde CPAs had influence in the national land claims commission and co-management forums, and they had scaled up and influenced these national structures through the learning actions on how to support capacity development for custodianship (i.e. second stimulus tools for ETADS 3 including visioning process, project pilot, training and skills development, etc. were presented and recommended for other CPAs to explore). This was an example of scaling expansive learning processes through ETADS (*emancipatory*) by embedding and uptaking of second stimulus tools, in which actors themselves had the agentic capacity (*power/I*) to direct and mediate their own transformation trajectory.

Another example of the institutionalisation of expansive learning and uptake through ETADS, was the continuous convening of the BRWG, in which the learning network partners had now taken the lead role in coordinating the learning network after the AWARD mediation team completed the AWARD programme. At the time of finalising this study, practitioners were still engaging in the collective annual planning meetings and sharing data to inform integrated planning. The specific technical tools including the restoration strategy were set to be collectively reviewed at an agreed time frame regularly.

The uptake of second stimulus tools also enabled new learning opportunities to emerge, and these new learnings might further advance into future expansive learning and transformative agency processes. This meant that as actors were co-creating second stimulus tools to transform the object, new contradictions could emerge, in which new second stimulus tools were required or the deepening of existing second stimulus tools was needed to address the emerging contradictions. Below, I have described *examples of scaling and deepening of the current ETADS and the emergence of new ETADS pathways*.

8.6.1 Second stimulus tools for collaborative learning in sustainable forestry management (potential ETADS 4)

Note: Here I am just highlighting the emergence of future ETADS that were catalysed, although these are not the main focus of this study

After the formalisation and development of the ToR for the BRWG, partners recognised the importance of developing collaborative working relationships with the forestry sector as key landowners in the Blyde landscape. As such, a series of second stimulus tools were collectively developed to guide sustainable forestry management in the eight components described in Figure 8.24 below. This became a full expansive learning process working in collaboration with both government and private forestry managers on co-developing practical tools to guide restoration NRM practices in forestry areas and to minimise the impact of forestry on ecological infrastructure including effective management of plantations to curb the spread of IAPs. See Chapter Two on the impacts of forestry on the spread of IAPs and Chapters Four, Five and Six on practitioners' reflections on the need to work collaboratively and inform forestry sectors as a key driver and major landowners in the Blyde landscape.

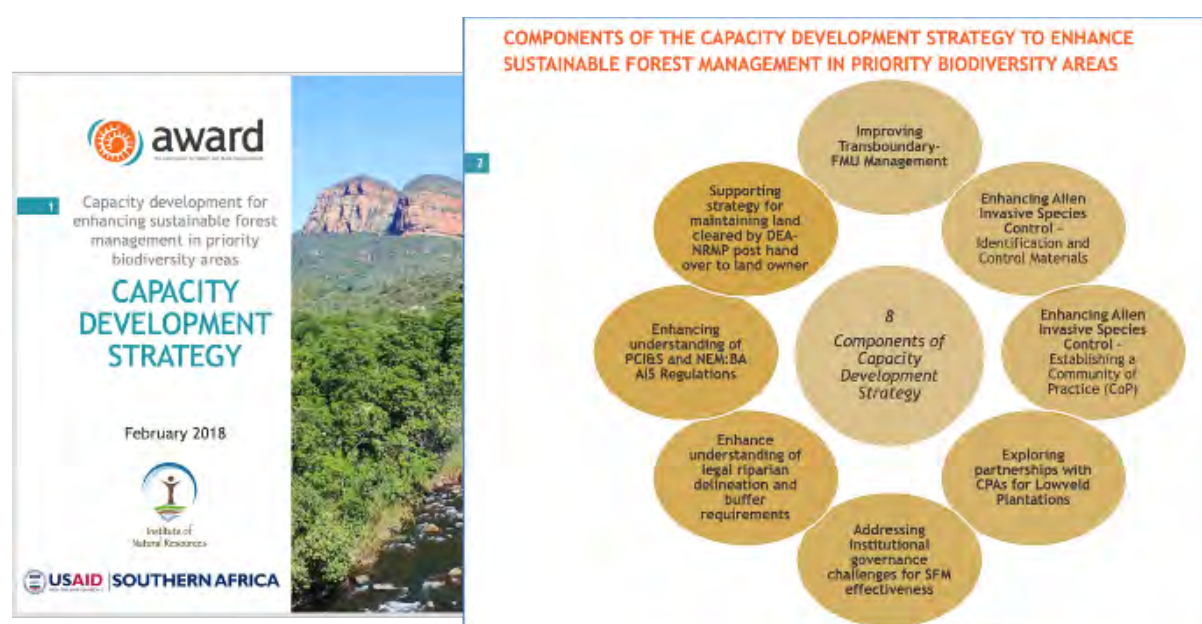


Figure 8.24: Summary of the capacity development strategy towards sustainable forestry management in upper Blyde landscapes, led by the Institute of Natural Resources (INR), strategically guided by AWARD's mediation team and supported by the BRWG

Source: AWARD, Blyde Restoration Project, report on Capacity Development Strategy for Sustainable Forestry

This can be referred to as a *future ETADS 4*, which was guided by BRWG partners with mediation capacity led by the INR. The AWARD formative interventionist team was involved strategically but it was practically impossible to lead another emerging ETADS pathway both in terms of capacity and the need for specific knowledge and experience in forestry. Therefore, it was the INR who led the mediation and co-development of a series of second stimulus tools throughout the learning framework presented in Figure 8.25 above. Sustainable forestry management has the potential to be further explored through the lens of water stewardship and it was recognised by the BRWG as a critical focus for securing and protecting biodiversity and sustainably managing ecological infrastructure; however, in practical terms, this work needs a full mediation team with a similar capacity of AWARD and unfortunately such capacity was not available and this was earmarked as a future priority.

8.6.2 Second stimulus tools for knowledge sharing and co-development of learning materials (potential ETADS 5)

Note: Here I am just highlighting the emergence of future ETADS that were catalysed, although not the main focus of this study.

Back in 2017, there was an identified gap by the BRWG partners on the need to focus on knowledge management to share the emerging work of the learning network at regional and national engagements. However, there was also a realisation that the BRWG was configuring and piloting many ideas that could be considered new and some of them may need time to gather evidence of their success. As such, it was agreed that the group could share knowledge in conferences and learning engagements but there should be an acknowledgement that the work was an ongoing development process and must be contextualised to the Blyde landscape. The knowledge sharing was not a fully explored pathway but below I discuss some of the shared learning initiatives, including news articles, conferences and the development of learning materials that could be used to engage local stakeholders.

8.6.2.1 Sharing the discovery of new wetlands on national platforms

As discussed under ETADS pathway 2, the new discovery of peatlands (which is a rare type of wetland not known to occur in the Blyde landscape) further catalysed collective actions by the BRWG to engage national authorities on the management of these high-value wetlands. This was a critical transformative move for scaling and expansion of wetland management work. To showcase this work nationally, an article was written on the discovery of new wetlands

(Figure 8.25) and published by SANBI, which is the nationally mandated institution on biodiversity protection and management.

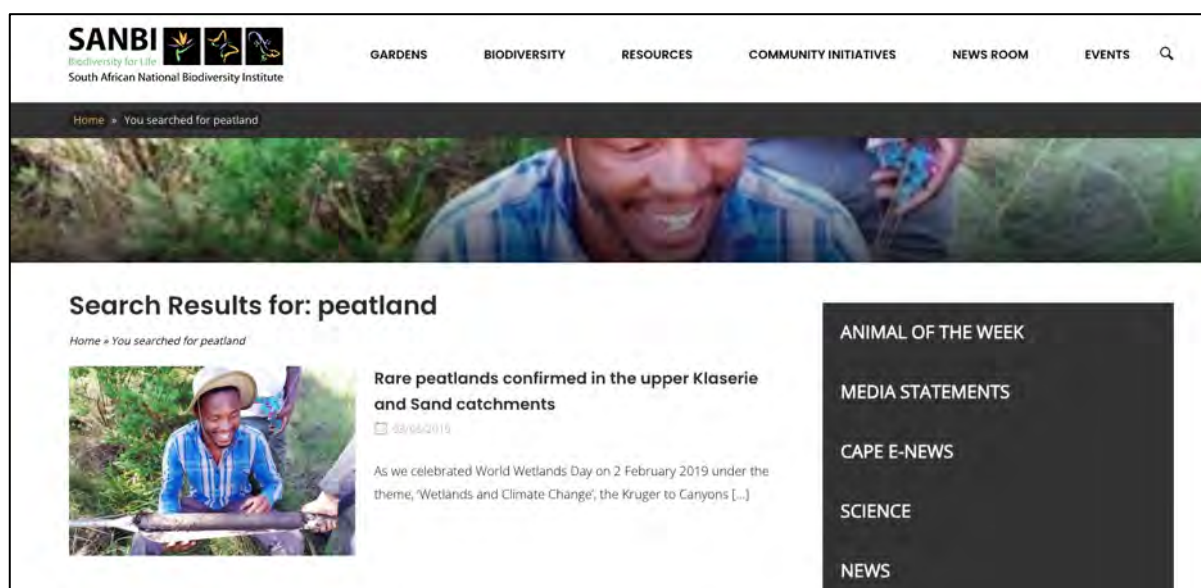


Figure 8.25: An article published in SANBI website to celebrate the discovery of new wetlands discovered in the Blyde landscapes. Reuben Thifhulufhelwi in the photo view with a sampled peat soil during wetland assessment field work led by Dr Lulu Pretorius

Source: <https://www.sanbi.org/news/rare-peatlands-confirmed-in-the-upper-klaserie-and-sand-catchments/>

8.6.2.2 Showcasing the Blyde Restoration Custodianship Teams on a national level

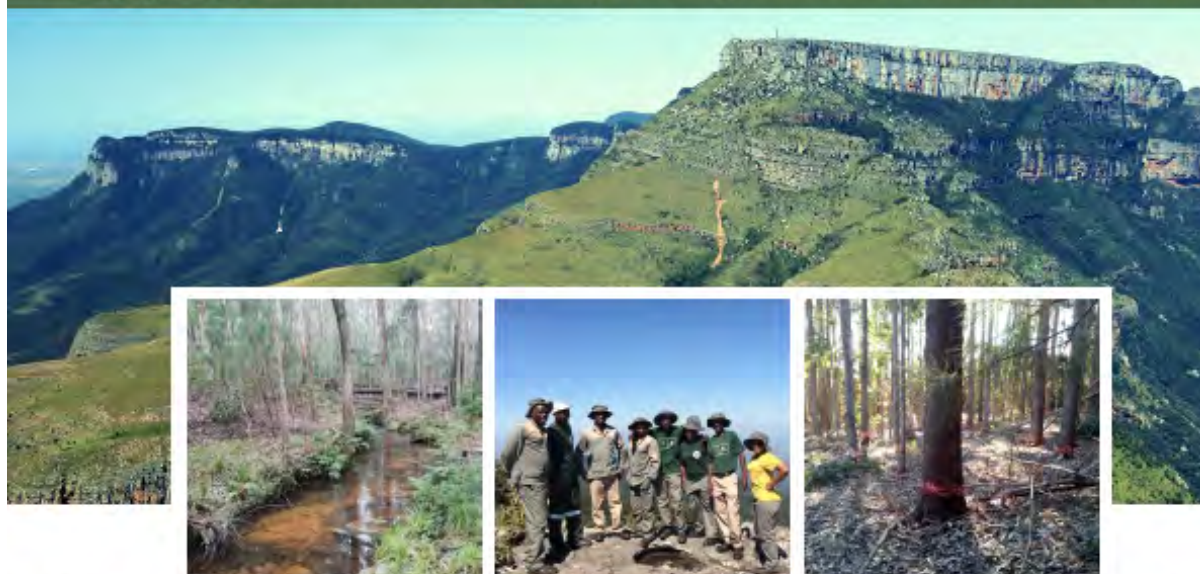
The piloting of the Blyde RCTs was received widely by partners both at local and national scales as an approach that supports the custodianship of local communities towards creating sustainable management and socio-ecological beneficiation. This was a critical transformative move for local CPA communities and youth as they developed competencies and skills to become future custodians for the management of their claimed land. Furthermore, the RCT model strongly focuses on creating opportunities for career pathways, especially for youth and women in the biodiversity sector. This is reflected in the article below developed by the K2C team who were lead managers of the RCTs from 2020. This knowledge sharing at the SANBI national platform shows a recognition of advancing RCT as a model for capacity development in which the collective human agency of those who were historically constrained is placed at the heart of addressing complex sustainability challenges. This reflects the ethical–political expansion of the object, for reframing the restoration NRM practices as a common good object for socio-ecological justices.



BLYDE RESTORATION CUSTODIANSHIP PROJECT



Healthy upper Blyde, Sand and Klaserie River catchments, in which degraded areas have been restored and maintained.



The Blyde Custodianship Project is a restoration project implemented by the Kruger to Canyons Biosphere Region NPC (K2C) and the Association for Water and Rural Development (AWARD). The project employs an Intermediate Team of Restoration Champions from local communities who clear invasive plants with a focus on difficult and challenging terrain.

Where

The project focuses on areas in the upper Klaserie Catchment that have a history of plantation forestry and that will be included in an expansion of the Blyde River Canyon Nature Reserve (areas around Mariepskop).

Who

The BRCNR and the Lowveld Plantations have been claimed by four Communal Property Associations collectively known as the Blyde Four CPAs. The vision of the landowners is to play a direct and increasing role in the conservation and natural resource management, and hence the custodianship of this area. The intermediate team is made up of 8 members who reside in the surrounding communities and form part of the Blyde 4 CPAs. A strong focus of the project is the capacity development of members employed by the project.

What

The team focuses on eradicating invasive pine (through ring barking) and gum species (using herbicides). These invasive species use large amounts of water and displace natural grassland, wetland and riverine species.

Why

The project aims to:

- Support a top down catchment clearing approach with intermediate teams addressing the need to clear crucial 'middle' areas;
- Support the development of meaningful employment and career pathing opportunities;
- Support the develop of management capacity within BRCNR.



Funded by: The Resilience in the Limpopo Basin project (RESILIM-C) is funded by the U.S. Agency for International Development under USAID Southern Africa RFA-674-12-000016.

Co-funded: The Biodiversity and Land Use Project (BLU) is implemented by the South African National Biodiversity Institute (SANBI) together with its partners, with funding from the Global Environment Facility (GEF) through the United Nations Development Programme (UNDP).

Figure 8.26: Newsletter on the implementation of the Blyde RCTs, shared on the national website of the SANBI

Source: https://www.sanbi.org/wp-content/uploads/2021/12/22.-Blyde-restoration-custodian-project-Brochure_2019.pdf

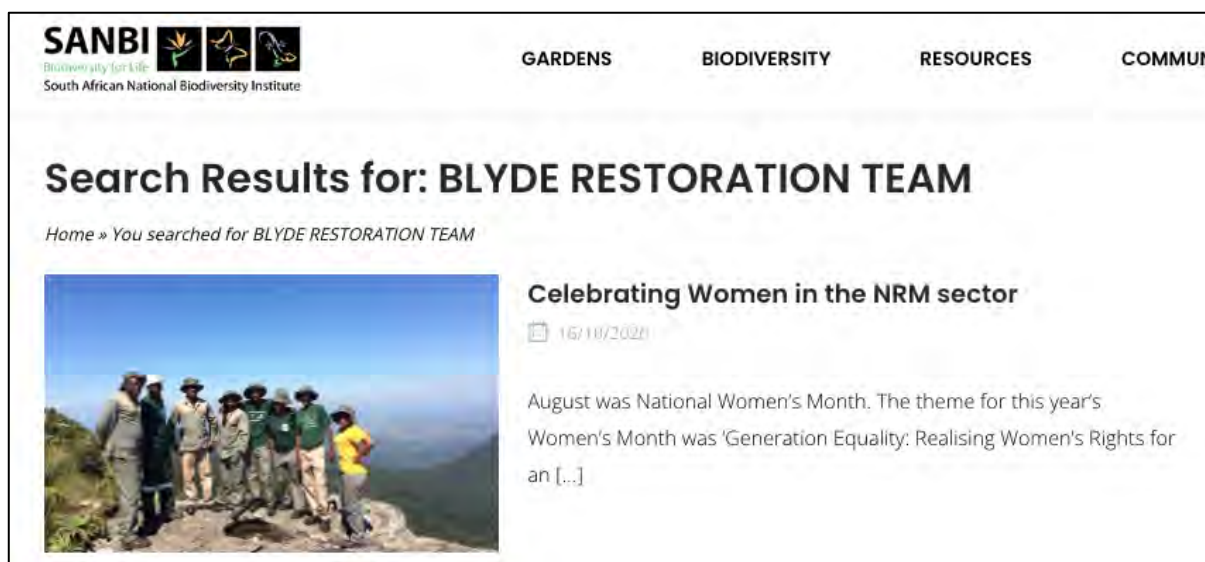


Figure 8.27: Published article on the Blyde Restoration Custodianship Team at a national platform celebrating women’s career growth opportunities in the NRM sector

Source: <https://www.sanbi.org/news/celebrating-women-in-the-nrm-sector/>

8.6.2.3 Co-developing learning materials for supporting capacity development in future community-based monitoring programmes

One of the capacity development focus areas under ETADS pathway 3 was on advancing the practical skills and competencies of environmental monitors to develop a better understanding of woody resource use (particularly along rivers and wetlands) by people living adjacent to the Lowveld plantations, and how monitoring and community engagement by the monitors could support changes towards more sustainable use of this resource. This focus area was selected as a result of the significant unregulated wood harvesting of Indigenous tree species from riverine forests and wetland swamp forests in the Lowveld plantations. It explores if harvesting if continued on a larger scale, could have significant negative impacts on catchment health and water quality in the area.

Between 2021–2022, a series of engagements were conducted with the environmental monitors who at the time were part of the K2C programme involved in environmental monitoring in the Blyde landscapes. This involved collectively working with environmental and programme managers and community engagements to identify challenges and opportunities regarding the sustainable use of natural resources. From the engagements, we subsequently developed two booklets, as learning materials for use by environmental managers or related future monitoring

programmes (Figure 2.28). These booklets include a focus both on technical aspects and guidelines for learning-oriented activities carried out by EMs when engaging with community members, regarding sustainable use of woody resources, especially in riparian and wetland areas.



Figure 8.28: Cover of the learning material booklet focused on sustainable resources use, this booklet was used as learning materials by K2C environmental monitors as they engage communities, and is a resource for use by future environmental monitoring programmes

Source: Blyde Restoration Project- booklet on learning material sustainable resource use in local communities, see Thifhulufhelwi et al, 2022.

8.6.2.4 Shared learning tours for showcasing the Blyde Restoration Project to local and international stakeholders

Through collective action by the BRWG, local interests were mobilised on supporting restoration NRM work in the Blyde landscape as these areas are key biodiversity and water source areas. One of the many examples was the field tours organised for the conference delegates as part of the 2017 Grassland Society of Southern Africa conference. The main focus was to demonstrate the practical examples of collective action of restoration NRM practices in

which we led conference delegates on in-field excursions to demonstrate the Blyde restoration work and to engage with the BRWG partners. There was strong interest in further showcasing the Blyde restoration work at the national level and an article was also published in the Grassland Society of Southern Africa (Figure 8.29 below). After these knowledge-sharing engagements, more partners expressed interest in being part of and supporting the BRWG and this led to more stakeholder engagement and funding proposals, especially with partners downstream of the Blyde landscapes including private conservation and tourism agencies who

GSSA MID-CONGRESS TOUR

Invasive Alien Plant control and Biomonitoring: ecosystem restoration and custodianship from grasslands to rivers

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Overview of the restoration and biomonitoring GSSA 2017 tour

On the 27th July delegates from the 2017 GSSA annual symposium held at Wits Rural Facility joined a field tour to the Blyde and Klaserie Catchments. The objective of the tour was to highlight the restoration and biomonitoring work carried out in these catchments supported by AWARD through the USAID funded RESILIM-O programme, and the linkages between grassland degradation (and restoration) and river health (and monitoring). The tour was also aimed at stimulating discussions amongst congress delegates on the need for development of restoration techniques and local custodianship processes for grassland and aquatic ecosystems affected by plantation forestry and IAP invasion.

Background and overview of the Blyde area

IAPs are major drivers of global change, contributing to ecosystem degradation and biodiversity loss in grasslands worldwide, and with also significant impacts on aquatic ecosystems. At the local scale, both the upper Blyde and adjoining Klaserie catchments are of national significance, renowned for their biodiversity and strategic watersheds. However, many ecosystems in these catchments are affected by IAPs, which negatively impacts on both the biodiversity and the water based ecosystem services emanating from these ecosystems. Although partially protected through the Blyde River Canyon Nature Reserve along with a few smaller nature reserves, a large proportion of these catchments have been transformed through plantation forestry, utilizing alien plant species such as pine, eucalyptus and wattle (see figure 1).

These plantations have functioned as seed sources for extensive invasions

by the same species in untransformed or "natural" areas of the catchments, especially grasslands and riparian areas, including areas within the above protected areas. Approximately 30% of the grasslands have been permanently transformed by plantation forestry in these catchments, with an equivalent amount invaded by IAPs. The different grassland and riparian ecosystems involved are all nationally classified as Threatened Ecosystems under NEMBA, as a result of the above. At the same time water quantity and quality has also been negatively affected in the rivers and streams by these plantations and IAPs.

Historical and current restoration and invasive alien plant management

The first interventions to address the growing threats posed by IAPs in the Blyde and Klaserie catchments were initiated in the early 1990s, following the emergence of widespread evidence of the impacts of IAPs on water and grassland biodiversity during the preceding decades. This culminated in a major restoration effort by government's Working for Water (WWF) under the collaborative Save-the-Sand project (1999-2004) between WWF, AWARD, and other partners. The restoration effort continued expanding over the years, with several IAP control programmes under the Department of Environmental Affairs, commonly referred to as the Natural Resource Management Programmes (NRMPs) or "Working for" programmes.

The Blyde Restoration project

Through the USAID funded RESILIM-O programme², AWARD initiated the Blyde Restoration project in 2014, as a collaborative process with NRMP practitioners and other land managers in order to collectively address the

IAP control and restoration challenges faced in the upper Blyde and Klaserie catchments. The main objective of this collaborative project is to support the restoration of degraded ecosystems, and the maintenance of these and adjoining healthy ecosystems, in order to sustain biodiversity and ecosystem services in this area in the long term. A key focus has been on the development of collective action amongst ecosystem restoration practitioners involved in restoration.

Building Custodianship through aquatic biomonitoring

Also through the USAID funded RESILIM-O programme, AWARD, in collaboration with the Department of Water and Sanitation is working with Private nature reserves in the Lowveld to build custodianship of reserve managers in monitoring their water resources. The objective is thus to strengthen a stewardship orientation to water resources management with landowners in protected areas in the lower Olifants River Catchment (including the Blyde and Klaserie rivers) through biomonitoring.

Reflections from the field tour

Two sites were visited during the tour (see Figure 1), with the 1st site at the Klaserie River focussed on biomonitoring, and the 2nd site on top of Mariepskop Mountain on restoration. Thabo Mohlala from AWARD introduced the work on river biomonitoring and custodianship to the delegates and gave a demonstration of the biomonitoring technique used. At the top of Mariepskop delegates were able to view the spectacular Drakensberg escarpment and the Blyde River Canyon, while Jan Graf, also from AWARD, gave an overview of the RESILIM-O programme and the restoration work.

GSSA MID-CONGRESS TOUR

The delegates, including practitioners and academics from different sectors, actively engaged in the field tour with various questions and comments on the work presented. During the biomonitoring discussion delegates specifically asked about the role that the Klaserie River played in the larger Olifants system, and Thabo noted the good quality of the water and the refuge role which the Klaserie plays for a number of aquatic species. Further questions focussed on AWARD's further work in relation to water resources management in the Olifants Catchment, with Thabo noting the support provided to, and the collaboration with, key partners such as SANParks and the Department of Water and Sanitation through sister projects under the RESILIM-O programme. During the restoration discussion the size of the restoration challenge was noted specifically by several delegates, and suggestions for potential ways of addressing this, such as utilization and value-adding, were made. Further discussions focussed on the importance of participation in restoration processes by all stakeholders, from practitioners, researchers, land owners and local land users.

Although the tour was not an in-depth learning event, the delegates appreciated the exposure to a new area and context in terms of natural resource management, and the challenges experienced locally and efforts made to address these. Delegates also noted the exceptional natural beauty and uniqueness of the area.



Figure 1: Map of the Blyde Restoration project area, showing the location of the Blyde and Klaserie Rivers and the two sites visited during the tour



Figure 2: Thabo Mohlala from AWARD introducing the river biomonitoring and custodianship work to GSSA participants during the tour, along with a demonstration of the SASS5 tool at the Klaserie River (site 1)



Figure 3: Jan Graf from AWARD introducing the restoration work in the Blyde and Klaserie Catchments to GSSA participants on top of Mariepskop Mountain (A), with a view of the alien plant invasions on the northern slopes of Hebron Mountain adjacent to Mariepskop (B) (site 2)



Figure 4: Photo of pines invading grassland on top of Hebron Mountain in the Blyde Catchment



¹<https://www.environment.gov.za/projectsprogrammes>

²RESILIM-O: Resilience in the Limpopo River Basin - Olifant's Catchment, see www.award.org.za

Figure 8.29: Publication on the Blyde restoration

Source: Grassland Society of Southern Africa (2017, pp. 44–45)

8.7 Conclusions

As highlighted above, ETADS pathways in this study are conceptualised as expansive learning processes which are carried through the co-construction of second stimulus tools that enable the emergence of emancipatory agency that allow for transformations of power2–power1 relations. These ETADS are interlinked in what Engeström and Sannino (2021) refer as coalesced expansive learning cycles in heterogeneous coalitions for activating emancipatory agency towards reconceptualisation of restoration NRM practices as common good. Below, I have presented the three ETADS pathways as coalesced expansive learning cycles in which a series of emancipatory second stimulus tools were co-visioned, co-developed and taken up as new and reframed tools for advancing the restoration NRM practices as sustainability commons (see Figure 8.30).

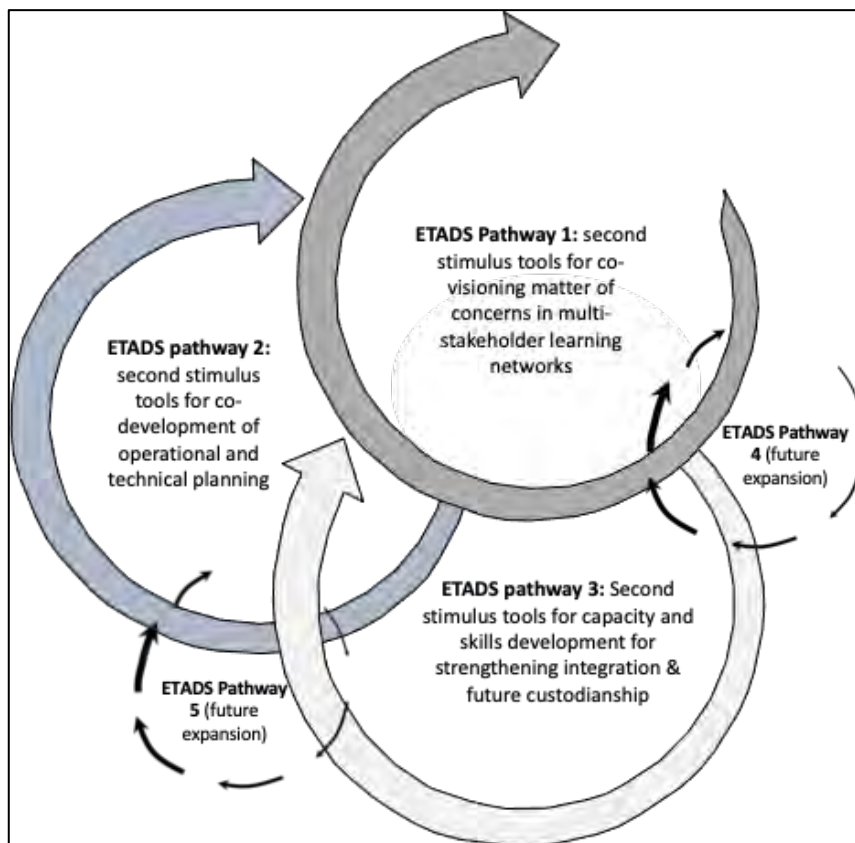


Figure 8.30: Coalesced expansive learning via ETADS pathways as co-inquiry towards fourth generation heterogeneous coalitions

Source: Adapted from Engeström and Sannino (2021)

In summary, Figure 8.30 reflects that in order for the heterogeneous coalitions of activity systems in the Blyde landscapes to collectively work together in an integrated approach, a co-learning network was required (i.e. BRWG) to effectively function as an emancipatory second stimulus tool. To sustain the learning network, the need for other second stimulus tools was realised and these led to the co-development of governance tools such as ToR and integrated proposals for attracting new funding opportunities and investments especially targeting the private sector (ETADS pathway 1). However, the development of funding strategies and proposals required a collation of data and information to fully understand and quantify the restoration needs and develop a comprehensive restoration strategy. As such, a *series of technical and operational* second stimulus tools were co-developed as second stimulus tools under ETADS pathway 2, and these include: mapping, wetland mapping, ecosystem service assessment, biomass assessment; prioritisations; and cost-benefit analysis. These tools were critical for informing the emerging and future implementation of restoration NRM projects and guiding management actions for future land-use developments. In order to cement the collective governance and custodianship of restoration NRM as a sustainability common good that was fully inclusive of previously excluded communities, a dedicated focus on supporting capacity development and training initiatives for institutionalisation of the restoration work for relevant local actors such as landowner CPA structures and long-term skills and career development for the youth as future management and practitioners on their land was needed (ETADS pathway 3), and developed over eight years which made up the linked Phase I and Phase II of this research.

As discussed above, it is important to note that all ETADS 1, 2 and 3 became separate expansive learning processes carried through the co-development and implementation of second stimulus tools. Of the three ETADS, only ETADS 1 remained centrally supported by the formative interventionist team, in which the AWARD team members even after the closure of AWARD continue to contribute to leading the convening and coordination of the BRWG as a learning network, even though other partner organisations are now more fully involved. I continue to play a role in this structure, even after I officially left the employ of AWARD and after the data generation for this study had been completed in 2022. ETADS 2 which focused on the development of second stimulus tools for technical and operational implementation of restoration NRM was led by the technical group (supported by external experts) and this continues to re-enforce itself as new technical tools are required or through the revision of existing tools such as the Integrated Strategic Management Plan. ETADS 3 also became a full

expansive learning cycle with two sub-cycles focusing on capacity development for CPA governance and youth skills career pathways. The formative interventionist team only led the initiation aspects of ETADS 3 through the visioning workshops, and after that, the expansive learning processes were carried through the co-development of the second stimulus tools including youth training, project pilot implementation, a partnership with K2C (additional mediation role) and support from the NRMP practitioners (i.e. leading operational and training aspects of project implementation). All the three expansive learning processes which were embodied by the three ETADS were coalesced but were not necessarily at the same stage of development (some emerged earlier than others and potential new ETADS were also triggered through the process; see examples of ETADS 4 and 5 future expansive learning processes). The key driving force of this coalescing process was the interconnectedness and interdependence of second stimulus tools (i.e. one reinforces the other). An example of this was that the impact of the BRWG learning network, which was the second stimulus under ETADS 1, was enabled and strengthened through the use of technical tools (ETADS 2) in order to transform current uncoordinated practices towards collective planning and implementing restoration NRM projects. Without technical operational tools, the BRWG learning network would not have concrete guiding tools to strengthen integration across different restoration NRM and land-use management practices. The impact of these integrated practices is seen as socio-ecological justice and ethical–political expansion of the object, through the beneficitation and custodianship of the CPAs’ governance structure, local communities, and the youth (ETADS 3).

Chapter Nine: Practical Application of Fourth Generation CHAT For Advancing Transformative Learning in Restoration NRM Practices

9.1 Introduction

This study provided learning insights and tools by using lenses from CHAT and expansive learning as guiding methodologies to support the co-engaged processes among multi-stakeholders involved in the implementation and governance of restoration NRM and related land-use management practices. As can be seen from Chapters One through Eight, the study was extensive in scope and took place over eight years. I was the main generator of the data for the study, although I worked collaboratively with a strong formative interventionist team, as reported. I also worked closely with my supervisors and with international experts in the field of CHAT research to develop the necessary analytical tools to guide the study. None of this was easy, but in the end, I was able to explain the emancipatory transformative agency pathways that emerged through double stimulation along the co-defined pathways using collaboratively developed double stimulation tools in the process that I was centrally part of from the start of the BRWG and further development.

Here, and in a summative way, I simplify the key learning insights gained from this study into practical actions that can be adopted for future implementation of restoration NRM practices. In simple terms, the ETADS provided us with tools for deep exploration of how to cultivate the emergence of emancipatory agency within the context of complex socio-ecological contradictions. To avoid the theoretical jargon, I present the learning insights in two parts; first, the reflections on the facilitation of co-engaged depth inquiry processes through practical steps (see Figure 9.2 below) on how to facilitate expansive social learning in NRM contexts and second, I reflect on vertical and horizontal learning as expansion of the restoration NRM object. Part of the recommendations in this chapter were co-developed, supported and shared with all activity system groups, including the national rulemaking, implementation and governance partners in the Blyde landscape, which are also summarised in a more extensive report on capacity development for implementation of expansive social learning interventions in restoration NRM practices (Thifhulufhelwi et al., 2022) (see Figure 9.1).

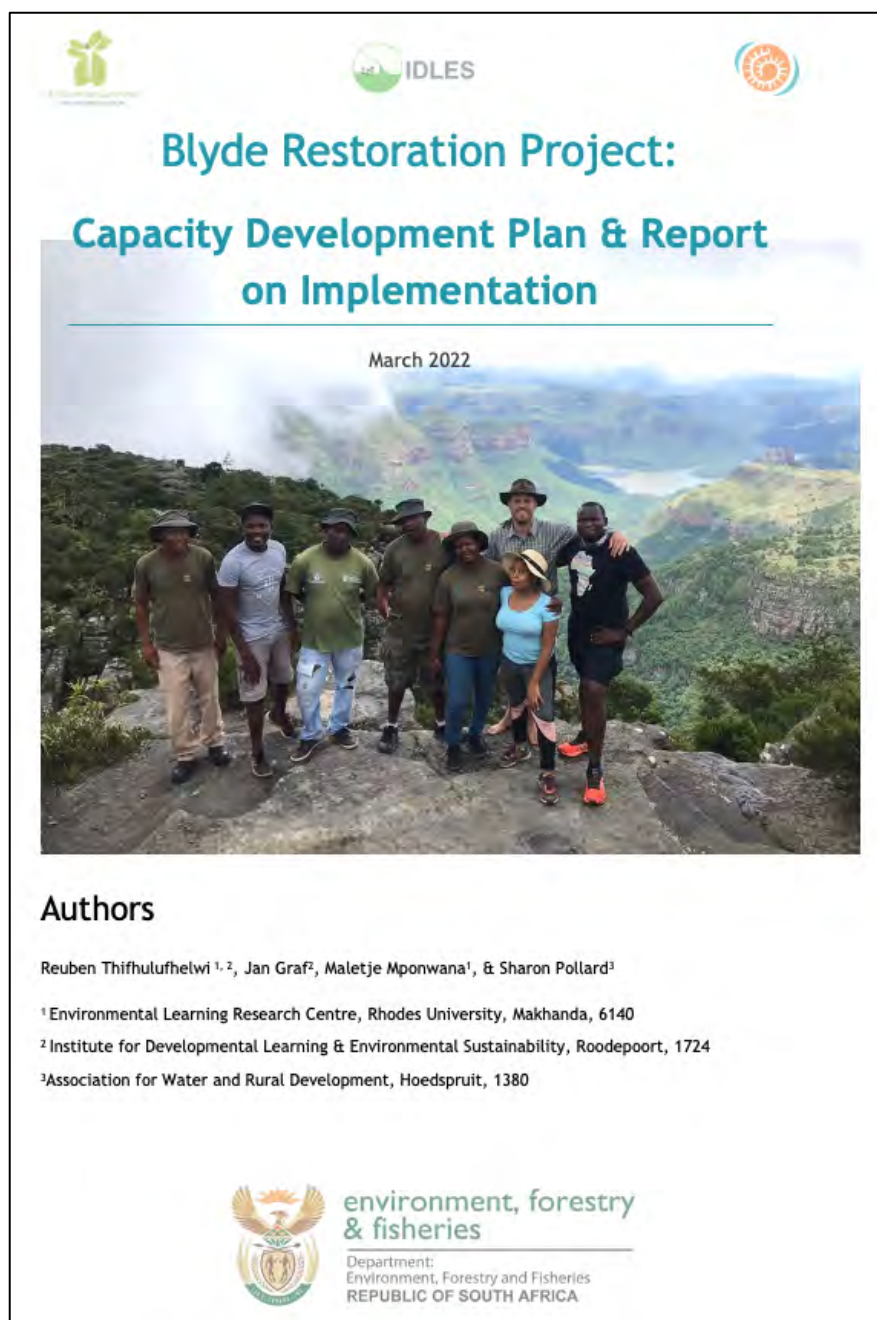


Figure 9.1: Cover page of the capacity development report

Source: IDLES, Thifhulufhelwi et al. (2022)¹²

¹² The work in the report was carried out under the Blyde restoration project and draws on insights from this thesis. As reflected across this thesis, key partners were IDLES, AWARD, K2C and stakeholders in the BRWG. Importantly, and part of the scalability of the process, is the fact that this report was supported by the Department of Environment, Forestry and Fisheries.

9.2 Learning as Horizontal and Vertical Interplay Between Multiple Coalescing Expansive Learning Processes

One of the biggest challenges in engaging and navigating contradictions in complex socio-ecological practices such as the restoration NRM is the problem of defining the boundaries of engagements. Restoration NRM as sustainability commons means everyone has a role to play but the questions are – what role, at what level, with what tools and what capacity is required? There are no right answers for these questions and in some cases, there might not be an answer at all; in such cases, we need to provide a learning process that supports actors to find their answers. This study's context was framed by the focus on supporting actors at different levels to confront their own work practices to envision and re-imagine their answers to such questions as solutions to guide developments in their practices. We need to acknowledge that facilitating learning processes may be a bit easier when engaging in bounded space (i.e. single organisation or group of actors doing similar things), however, as shown in this study, when dealing with critical sustainability challenges that transcend across multi-level boundaries such as in the case of restoration NRM practices in post-apartheid South Africa, the conceptualisation of a learning process becomes more complex and demands cross-sectoral solutions. Engeström and Sannino (2021) refer to societal sustainability challenges as utopias of heterogeneous coalitions and the framing of learning needs to recognise the multi-levelled and interconnectedness (coalesced) nature of engagements of different actors/activity systems. As such, the reframing of restoration NRM practices as sustainable commons requires the framing of learning processes as horizontal and vertical interplays across constellations of activity system groups as discussed in previous chapters. To make sense of the above, in the Capacity Development Plan (Thifhulufhelwi et al., 2022) we developed an illustration (see Figure 9.2) to visually express the potential future implementation and governance of restoration NRM practices, drawing on a social skills ecosystem model which Lotz-Sisitka (2000, drawing on the work of Spours et al., 2018), highlighted as having potential for environmental sustainability (green skills) research and learning contexts which are complex and involve multiple partners that learn together at different levels. In this diagram, we (Thifhulufhelwi et al., 2022) show the importance of the second stimulus tools for co-enquiry and co-learning within a process flow that shapes the reframing of restoration NRM practices as sustainability commons, as evidenced across this thesis and articulated more clearly in Part II of the study.

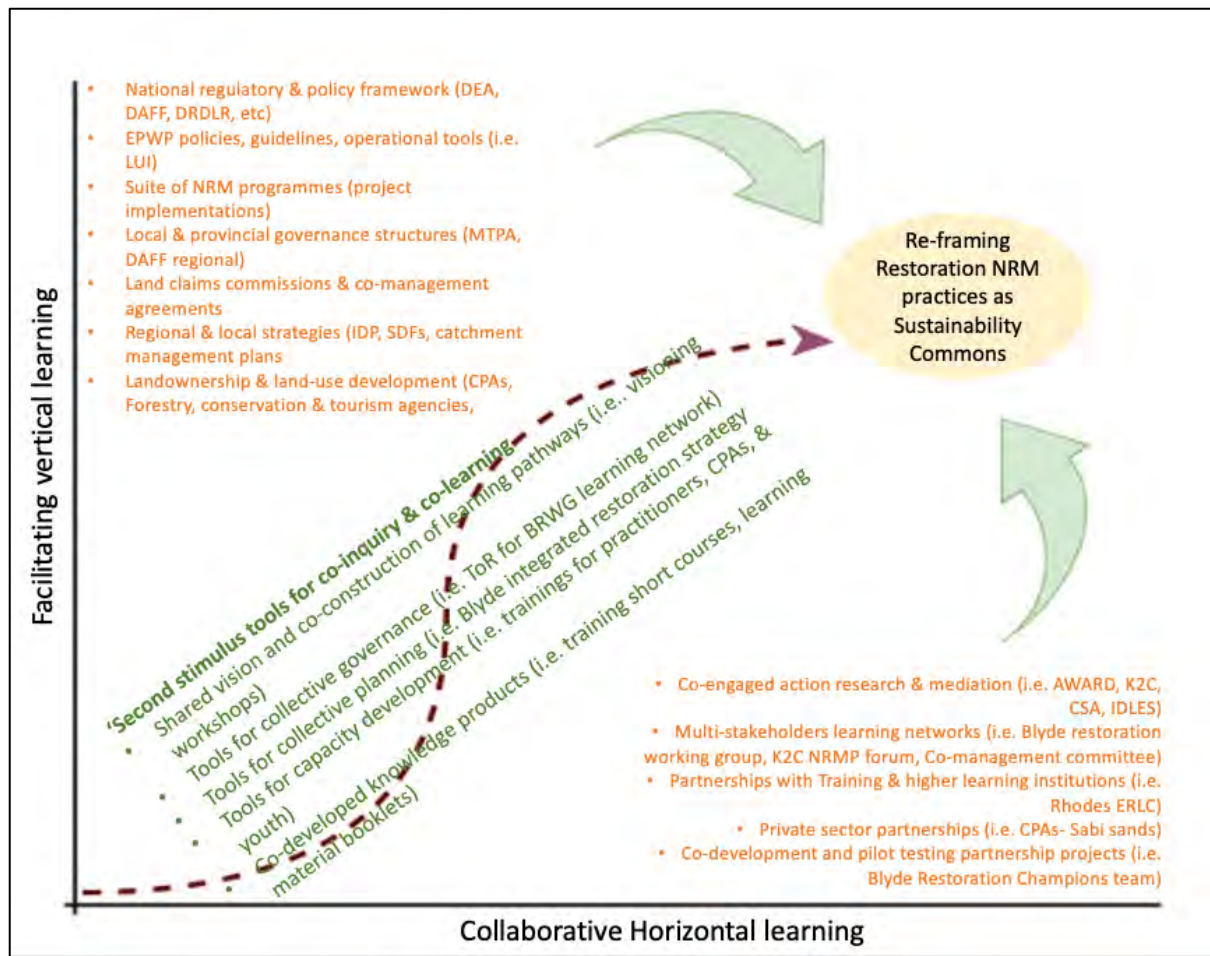


Figure 9.2: Visual illustration representing the advancement of restoration NRM practices as sustainability commons via co-development of second stimulus tools as pathways for Emancipatory Transformative Agency by Double Stimulation

Source: IDLES, Thifhulufhelwi et al. (2022)

Synthesising the findings of this study, Figure 9.2 above highlights the transformation and advancement of restoration NRM practices as multi-level learning processes through facilitating horizontal and vertical collaborations and alignments. *Facilitating vertical learning* involves a process of rethinking the traditional top-down approach, with a focus on drawing knowledge and experience (historicity of practice) from governance structures to inform the development of second stimulus tools that are co-visioned and co-implemented. This also involves ensuring the alignment of mandates across governance structures. An example, in this case, is the understanding that unjust land restitution processes have direct implications for land-use developments and implementation of restoration projects – this was demonstrated by the conflicts between practitioners and CPA communities. As such, the misalignment of mandates in the regulatory and operational frameworks was one of the key drivers of deep-

seated contradictions that constrained collaborations and integration on the ground, evident in the navigation of PDCs. *Collaborative horizontal learning* entails the co-creation of platforms, networks, partnerships and other forms of relations that enable the activation of collective agency in transforming practices. Without the collaborative horizontal learning, it is nearly impossible to facilitate the vertical learning, especially the reform of governance rules and norms. As such, collaborative horizontal learning provided the incubation and enabling spaces for the emergence of emancipatory agency. The collaboration also provided a space for piloting and testing new ideas (concrete actions), and this was evident through the co-piloting of the RCTs and developing CPAs–Sabi Sand partnerships as examples of co-visioned pathways for support future custodianship of restoration practices.

Mediation capacity is a critical component in collaborative horizontal learning, and this was demonstrated by long-term investment from AWARD to lead the facilitation and support the Blyde Restoration Project between 2014-2022, especially from 2015 onwards when the formative intervention research emerged, and this also enabled other mediators to establish themselves in the space including K2C (since 2017) and IDLES (since 2020). The mediation role is often held in civil society organisations, and this provides flexibility especially when confronting PDCs that are deep-seated in structures of governance where an external mediation process is preferred and allows actors to engage without directly conflating their mandates within the broader governance frameworks. An example of this is that the Blyde restoration practitioners felt constrained to directly engage in trying to reframe their own governance tools although they recognised the gaps, and the mediation through AWARD enabled them to activate their emancipatory capacity in the context of collective learning for the catchment as part of the BRWG learning network which later became a key mediating structure. Therefore, by facilitating vertical and horizontal learnings, it is possible to support the emergence of emancipatory agency for actors to iteratively inform (i.e. dialectically) the rulemaking governance structures in developing operational tools and regulations that are responsive and adaptive to the ever-changing contextual challenges on the ground.

As shown across the study, the collaborative horizontal learning has been a gradual process enabled by commitments from multi-stakeholders. The USAID RESILIM-O implemented through AWARD can be regarded as a catalyst for initiating the multi-stakeholders collaborative learning. Since 2017, K2C has become a key mediation agency through the SANBI GEF5 Biodiversity Stewardship and Mainstreaming projects, and recently through the

USAID Resilient Waters programme. SANBI is further involved through the Living Catchments project which aims to support local networks (communities of practice) in facilitating social learning and knowledge mediation for sustainable management of ecological infrastructure, and the Blyde landscape is one of the selected implementation sites for the Living Catchments project (implemented via K2C).

The interplay of vertical and horizontal learning was concretely enacted by the implementation of LUI projects. This was the operational and planning support LUI project which funded the support of overall coordination and convening work. The LUI was funded by the national rulemaking as an initial tool for continuing coordination of the BRWG as a learning network beyond the AWARD support. This was an important recognition from the rulemaking activity systems to invest in strengthening co-learning initiative at catchment level. In addition, the national rulemaking activity systems also provided funding for collaborative implementation of teams, through expanding the RCT model. This came after the pilot of the project was seen as a critical step towards custodianship and the national department invested in expanding the model. This was through and implementation LUI which was managed by a collaboration of AWARD, K2C and Blyde CPAs, with the support of the BRWG partners. The implementation LUI was framed to strongly reflect the capacity development initiative for CPAs and new landowners and communities' youth in biodiversity and NRM career pathways. As such, the two LUI projects were key tools for concretely demonstrating the interplay of facilitating vertical and collaborative horizontal learnings. The CPAs–Sabi Sands was also a key partnership for expanding the horizontal collaboratives by engaging piloting a different model as example of breakaway from the traditional EPWP as the main model for restoration NRM practices. This also demonstrated opportunities for community driven partnerships, in which both government and private sector are seen as enablers and key actors towards establishing and sustaining multi-stakeholder catchment management partnerships.

As reported across the study, and in Chapter Eight specifically, development of formal training capacities was identified as one the key long-term skills development pathways, especial for the youth. Building on this, the collaborative horizontal learnings were expanded to work with institutes of high learning (most notably Rhodes University) in exploring the development of NRM curricula processes in the context of the climate crisis. In 2020, we were supported by the Rhodes University ELRC team in developing a short course on introduction to social learning and stakeholder engagement within NRM contexts. This course drew on learning

insights and shared case studies from the Blyde restoration work, with me being one of the key course developers¹³. The course enrolled 23 youth from the Blyde landscapes to support their continuous learning processes through participating in the course and we further worked collectively with them in developing change projects in their work practices under the Blyde Champions Team and the K2C Environmental Monitors programmes. The social learning and stakeholder engagements short course is one of the co-developed knowledge outcomes and the intention is to continue to offer this in future to support youth and NRM practitioners.

9.3 Sustainability of Expansive Learning Processes Beyond Formative Interventions

The impact and value created through the Blyde Restoration Project in advancing the NRM practices is fully realised and embraced by the stakeholders and partners. There was a significant progress and new learning opportunities created under all key objectives of the project, although the project encountered some challenges which constrained certain activities (as discussed above). The strong partnerships and interactions across different communities of practice and working groups (such as NRMPs, protected area management, forestry management, land claims co-management, monitoring, etc.,) through the BRWG, provided a shared learning space for collaboration and exploration of relevant institutional and governance arrangements to address the future sustainability of restoration and related NRM practices. In response to the challenges of lack of funding and administrative constraints in existing funding models such as LUI, the Blyde Restoration Project partners conceptualised the Catchment Investment Programme as an alternative model and a tool for facilitating collaborative funding processes at catchment scale within the BRWG focusing on fundraising (with some of their activities reported on in Chapter Eight). Other key partners such as South African Environmental Observation Network and Kruger-2-Canyon (K2C) were critical in taking over roles of coordination and funding key activities beyond the support from AWARD, and these include the establishment of long-term monitoring of ecological infrastructure and supporting capacity development of youth through internships. Therefore, the success of the Blyde Restoration Project should be seen as a collaborative effort and one of the key lesson

¹³ Weaver, M., Rosenberg, E., Cockburn, J., **Thifhulufhelwi, R.**, Chetty, P., Mponwana, M., Mvulane, P. (2021). Short Course Handouts Bundle for the Training of Trainers Course: *“Introductory course to facilitating social learning and stakeholder engagement in natural resource management contexts”*. Environmental Learning Research Centre, Rhodes University, Makhanda.

from the project is the need to strengthen scale-scale partnerships and coalesced activity systems as a strategy for institutionalisation of the project into multi-governance structures with distributed capacities. The biggest learning insight is that such a process of expansive learning and transformative agency requires long-term commitments from the mediation formative interventionist team, which was the role played by AWARD from 2013–2022 and this, also developed within a partnership approach, enabled the emergence of other key mediation institutions such as K2C, SAEON, IDLES and the capacitated NRMPs.

9.4 Reflections and Insights on Power-dynamics Contradictions and Their Transformation in Fourth Generation CHAT

As discussed above, in the Blyde Restoration Project¹⁴, the co-development of both second stimulus tools provided an enabling space for the emergence of emancipatory agency and these are referred to as ETADS pathways as outlined in Chapters Seven and Eight (see also Appendix A). As noted in this study, the driving force for the emancipatory agency was through confronting PDCs. As indicated in Chapter Seven, PDCs in this study were embedded in structures of decision making which produce governance and operational frameworks that regulate implementation of restoration NRM practices. The navigation of PDC as power2–power 1 relations does not only require the co-creation of a second stimulus but also concrete evidence that is practical and applicable as an alternative to the current governance tools. This is what Engeström (2001) refers to as experimenting in order to fully grasp the dynamics, potentials and limitations of the model in stage 4 of the expansive learning cycle. In the case of the Blyde Restoration Project, collective learning was realised through the convening of regular multi-stakeholder meetings that were guided by the co-developed ToR of the BRWG (ETADS 1). To ensure integration on project implementation, BRWG partners co-developed a series of technical and operational tools which were all embodied by the restoration strategy under ETADS 2 – the pilot testing of a RCT provided concrete evidence for implementing multi-partnership projects for supporting capacity development under ETADS 3. In the other study partly documented in this PhD, the Legalemeetse co-management case reported on in

¹⁴ As also shown in the paper we wrote on the Legalemeetse co-management case studies (see Lotz-Sisitka et al., 2023; Appendix A). I draw on the analysis of the case study from this paper (Legalemeetse CPA formation, which has some similarities, but also subtle differences to the Phase II of this study) reflectively in this section, to also help me reflect on the key findings around PDCs and expansive learning in this thesis.

our paper (Section 7.12, Lotz-Sisitka et al., 2023, Appendix A), it was the CPA committee that provided the space for co-engaged depth inquiry which led to the collective drafting of a new co-management agreement which gave local communities rights (ETADS 1), in which CPAs were able to express their emancipatory agency (power1) to envision different models including expanding tourism investment for maximising beneficiation to their communities (ETADS 2), as part of reforming power2 structures that constrained and denied them access to management of their land. This led to a renewed vision and interest for youth to participate in co-management and land claims engagement as they see themselves as future custodians of the land.

Therefore, this reiterates the argument that mediation means are not value neutral and *it is the process of co-development of second stimulus tools that give direction to emancipatory transformation*. In this, and the Legalameetse case (Lotz-Sisitka et al., 2023; Appendix A), the ETADS became the pathways for ethical–political expansion of both the restoration NRM and the co-management objects demonstrated in the two studies (i.e. restoration NRM practices as commons goods in the Blyde case study, and co-management of protected areas for cooperative governance and livelihood beneficiation in the Legalameetse case). In both case studies that I was involved in, but particularly in the PhD study reported on here, there was evidence of navigating and advancing PDCs as power relations were transformed (i.e. power 2–power 1) between the governance systems and the actors. In this PhD study, I was able to make this more explicit in Chapter Eight via the three ETADS pathways that developed. However, in the paper we produced (Lotz-Sisitka et al., 2023, Appendix A), another example of this lay in the co-creation by government agencies and CPA communities of the new co-management agreement as a reframed tool for governance of protected areas management in the Legalameetse case. In the Blyde case, the co-visioning and co-development of the new Integrated Restoration Strategy and multi-partners pilot testing of projects became an emancipatory second stimulus tool to guide co-engaged learning processes at different coalesced activity system levels among national government, programme implementers, landowners and the private sector in transforming restoration NRM practices as sustainability commons.

As we encountered what Sannino (2020) refers to as utopian challenges in fourth generation CHAT, it seems important to be clear that this involves dealing with contradictions regarding power relations. This is especially true in the Global South which has experienced significant historical governance structuring that, despite post-colonial governance regimes, continues to

produce power2 agency (i.e. subjugation as perhaps paradoxically as noted in this study that was practiced in colonial and apartheid eras). As shown in this study, this requires formative interventionist researchers who are able to pay special attention to emancipatory agency as the ethical–political expansion of the objects under development. As such and as co-developed via the paper on the Legalemeetse case that I contributed substantively to (see Appendix A), in this study, I have argued for the need to adopt an ETADS conceptualisation as a critical framing via co-development of second stimulus tools as instruments for change in heterogeneous coalitions as shown in Figure 8.28 (coalesced expansive learning in Blyde restoration case). Sannino (2020) refers to the coalesced expansive learning cycles as the unit of analysis for studying how learning for enacted utopias takes place and can be fostered in fourth generation activity theory. She further argues that addressing contradictions in enacted utopias requires

...multiple interacting and overlapping learning cycles, which situate at multiple hierarchical levels and are both relatively independent and interdependent. They require one another to emerge and sustain themselves. They are meant also to operate across sectors of social services. (p. 56)

As indicated in the orientation section of Phase II, my study was evolving in similar forms of complexity at about the same time that Sannino was writing the above. As indicated in the orientation section, I found the emerging work on fourth generation CHAT useful in helping me to articulate how my own study was morphing between third and fourth generation CHAT between Phase I and Phase II. However, I also found I needed a more explicit rendition of this via engagement with the emerging PDCs which I have explicated in this study, and I also needed a dialectical theory of power and a way of thinking about the ethical–political expansion of the object of the study. Co-engagement at theoretical and methodological levels allowed me to explicitly explicate this in this study, as a contribution to the emergence of fourth generation CHAT as presented in Chapters Seven and Eight of this study.

9.5 Framing of ETADS Pathways and Second Stimulus Tools

It is still not clear how ETADS fully emerged, and this may differ from one study to another based on the context. In the case of the Blyde Restoration Project (and also in the Legalemeetse case captured in our paper in Appendix A), ETADS pathways first emerged as learning actions in the BCCLWs, but when these were further deepened, they expanded in focus as long-term learning actions that required a series of engagements and tools that were co-constructed in the

BCCLWs. An example from the Blyde case study is that the need for an Integrated Restoration Strategy was initially seen as the main solution to enable coordination and alignment between different implementation programmes. However, it was through the explicating of different components of the restoration strategy that practitioners realised that this was a long-term learning process that required a learning network (the BRWG) to enable stakeholders to convene for learning together, and to co-develop technical operational tools that could guide their collective planning and capacity development of both practitioners and CPA communities including youth in order to ensure co-visioning and cooperative governance of restoration NRM practices. Therefore, the emergence of three ETADS pathways discussed in Chapter Eight did not emerge directly only in the BCCLWs, but were more accurately conceptualised through *an ongoing process of co-engaged in-depth inquiry involving focus groups, reflections, and change laboratories and the co-development of tools that served to deepen the identified learning actions* (i.e. leading to the development of the Actual Integrated Restoration Strategy in practice). The deepening processes enabled practitioners, national government and local CPA communities to confront the underlying PDCs that were producing uncoordinated programme implementation that was not initially advancing the ethical-political dimensions of restoration NRM practices (i.e. inclusive sustainability commons). In simple terms, practitioners initially identified the strategy as a technically envisaged solution, and in most cases, this could have been commissioned to a consultant who could develop the strategy and hand it to practitioners for implementation. This process is very common in many governance models. We can conclude that if this was adopted as the way forward, the three ETADS discussed in Chapter Eight would not have emerged and the transformation of PDCs would have become impossible, as power² structures would have continued to constrain the enactment of power¹ agency in concrete terms (via co-creation of second stimulus). This may be the case in many cases where strategies are developed but the implementation fails or is considered unsuccessful – perhaps this is where *the framing of ETADS provides a breakaway, with an emphasis on emancipation*.

In the Legalameetse case – discussed in the paper that I co-authored at the critical juncture of this PhD (see Appendix A), the emergence of ETADS pathways was mainly informed by the historical developments of previous co-management agreements as second stimulus tools which were not adopted. The first agreement was largely developed as a prescribed model by the government and the model was used as a template to develop co-management agreements in all state-owned protected areas. However, this agreement was largely considered

unsuccessful as the CPA communities argued it did not give them power as rightful landowners (i.e. emancipatory agency). In this case, as documented in the paper, AWARD was initially interested in working with government managers and communities in supporting sustainable conservation management, but the CPAs reached out to AWARD for support with the re-development of the co-management agreement as a governance tool for their collaboration with the government. As such, when the mediation team from AWARD which I was part of, started engaging the CPAs in Legalameetse, the process for developing the new co-management agreement was already underway between CPAs and the government. This was a second attempt to review the initial agreement developed in 2007. As such, the emancipatory intention was clearly defined (the government is in total control of their land, and they need co-management agreements that enable communities to transform power2–power1 relations). The call out to AWARD was a first step towards enacting their power1 agency. While not articulated as such in the paper, but which I now see in hindsight, CPAs were already trying to confront their PDCs by rejecting the first version of the agreement and calling for re-development with a specific focus on giving communities power1 on management governance decision-making processes as new landowners after successfully claiming the land back. With support from the AWARD mediation team, a series of visioning workshops were conducted in which the re-development of the co-management agreement was collectively agreed upon by CPAs and the government and this is where ETADS 1 was fully conceptualised – later followed by the emergence of ETADS 2 on the co-exploration of sustainable beneficiations models and ETADS 3 on youth development for future custodianship.

Therefore, *sometimes ETADS can emerge during formative interventions even though the deepening process is required to fully contextualise the second stimulus as learning actions that embed the ETADS pathway* (as discussed above). In some cases, *the ETADS are driven by the historicity of PDCs in which the direction of transformation is already set in motion by policies on affirmative action, socio-ecological justice and related emancipatory processes*. An example is the cultivation of emancipatory agency in Legalameetse CPA communities (captured in the paper in Appendix A) which stems from the legislative framework for the government to actively support local communities who were historically subjugated by the colonial and apartheid laws, including their lands and livelihood being forcefully taken away. As was also the case in the Blyde restoration case reported on in this PhD study, the direction of emancipation was broadly recognised through the land claims process which is led by different government agencies; however, the concrete transformational power2–power1

relations in practice were only realised through the collective visioning of ETADS pathways and co-creation of second stimulus tools by the BCWG, CPAs, government agencies and other stakeholders.

Furthermore, the contextualisation of ETADS within the expansion of the object is critical, as the second stimulus needs to be embedded in the actual practice and owned by the agents of change (i.e. participants or actors). An example of this is how the land claims laws provide a broader framing of land restitution, yet this is a national process and does not sufficiently empower the CPA communities and youth who are focused on a specific activity in restoration NRM in the Blyde case or co-management of a protected area in the Legalametse case. Therefore, *a series of second stimulus tools were required to fully contextualise what emancipation for these communities could look like in the context of their activity and practices*, as carefully explicated in Chapter Eight of this study.

9.6 Expansion of ‘Spearheads’ or TADS Pathways into ETADS and Coalesced Expansive Learning Cycles

In theory, the emergence of ETADS may be seen as a ‘*simultaneous process*’ in which three or more expansive learning cycles are conceptualised, and they are developed in parallel, hence the ‘coalesced cycles’. However, this may not be the case *as different ETADS may emerge at different stages and build off each other*. In this study, the co-visioning and co-creation of second stimulus tools under ETADS pathway 1 activated the emergence of other ETADS. For example, in the Blyde case, it was the establishment and formalisation of the BRWG (ETADS 1 second stimulus tool), which provided learning space for all partners to collectively envision the technical and operational processes (ETADS 2 second stimulus tools), but the impact of second stimulus tools under ETADS 1 and 2 enabled the collective actions for BRWG partners to co-develop and demonstrate practical implementation of project activities which activated the capacity development of communities and youth (ETADS 3 second stimulus tools). Therefore, the emergence of the three ETADS in this study was a ‘*gradual process*’ over the lengthy expansive learning process. It is important to note that neither we (the formative interventionist research team) nor the BRWG partners had envisioned the ETADS as fourth generation CHAT (heterogenous coalitions) when we started out on the process as explained in Chapters Four to Six. Therefore, what later became three ETADS, were initially viewed as TADS pathways and learning actions that could be implemented within weeks to a few months

(as discussed in Chapters Four to Six). These learning actions were seen as steps or ‘spearheads’ towards advancing the restoration IAP control with a specific focus on coordination and collective learning.

But it was later through the deepening of the co-engaged depth inquiry that expansion of the object was realised in which the focus was now on restoration NRM as sustainability commons and this is where PDCs were encountered and the three ETADS were conceptualised as pathways for transforming power2–power1 relations. Thus, it is important to note that not all identified learning actions or ‘spearheads’ must be re-conceptualised as ETADS but in concluding this study, *I recommend the exploration of the emergence of ETADS through the expansion of TADS pathways* (note that I have earlier indicated the preference for this language over ‘spearheads’ given the violent connotations of the latter). As noted by Sannino (2020) and Engeström and Sannino (2021), the collective identification of ‘spearheads’ in change lab interventions provides the direction of transformation, and in this study, I have argued, similar to Jalasi (2018), that TADS ‘pathways’ (similar in conceptualisation to ‘spearheads’ in CHAT theory) are the first step in probing towards ethical–political expansion of the object and the conceptualisation of ETADS via co-engaged in-depth inquiry (dialectics of power2–power1 relations, as shown in the analytic framework for navigating PDCs, see Figure 7.4).

9.7 Mediation Role of Formative Interventionist Researcher(s) in Facilitating ETADS As Coalesced Expansive Learning Cycles

The development of ETADS through the co-creation of second stimulus tools in this study, required strong and consistent mediation by the formative intervention team to co-mediate the direction of the expansive learning process. As indicated at the start of this study, I was part of this team from the start; initially, I was a more inexperienced researcher but as time went on, I became a leading mediator of the formative intervention processes working with a core team. Overall, I was also the main documenter of the main activities and engagements that informed this study and these were critical data management processes that allowed me to continuously track the transformative learning over time. The documentation process also served a connecting purpose to bring together formative interventionists during team reflection before and after engagements.

As noted above, second stimulus tools as mediation means are not value neutral, they are purposely focused on desired transformations. In this case, the desired direction is the

emancipatory transformation through onto-epistemic and ethical–political groundings and the ethical–political expansion of the object (as discussed above) and in Chapters Seven and Eight.

In many expansive learning research processes, the role of the formative interventionist researcher has been portrayed as a leading researcher in the design and facilitation of formative engagements with the help of tools from activity theory, such as the activity system triangle model of the activity system, four-field quadrant depicting the collective zone of proximal and the cycle of expansive learning (Engeström, 1987/2015) among others. These provide important guidance in understanding the systemic nature of problem situations, identifying the conflict of motives and conceptualising the possibility of learning processes in directions for future transformation. Furthermore, the efficient use of these tools has a strong grounding in the design and implementation of successful change labs, and as shown in this study, these were productively used at different times. In broad terms, a successful boundary crossing CL emphasises the importance of full documentation of all sessions through recording, video recording, and detailed notes and this is where the role of a formative intervention team has been described as important in expansive learning studies (Virkkunen & Newnham, 2013).

However, when engaging in heterogeneous coalitions and coalesced expansive learning, as shown in this study, *the role of the formative interventionist (as an individual researcher) must be re-conceptualised as a researcher who plays different roles over time in mediation teams.* This is mainly because facilitating coalesced expansive learning processes that are carried through the co-creation of a series of second stimulus tools is an impossible task for a single researcher or even a small team. *A new configuration of what is meant by a formative intervention team is warranted as more capabilities are required to facilitate the multi-levelled expansive learning processes,* as was encountered in this research. As such, and based on my experience in this study, fourth generation CHAT demands *a transition from formative interventionist researcher to mediation teams that allows for researchers to take on both supportive and leadership roles like I have demonstrated throughout my career as discussed in the opening of this thesis* (see researcher positionality and career progression during the course of study).

The transition and growth of a formative interventionist researcher (normally a single researcher) into mediation teams also places a challenge for future fourth generation CHAT studies, as they would seem to need to be embedded in programmes of work such as the

AWARD RESILIM-O in order to fully explore the full potential of ETADS and coalesced expansive learning processes. I was fortunate to be able to do this as a documenter and co-engaged mediator who developed more experience in the mediation role over time. As such, in facilitating multi-levelled learning processes, a bigger mediation team of capable facilitators, leaders and expert knowledge specialists would seem to be required, as also shown in this study and described in Chapter Eight, because at some point the coalesced expansive learning processes run in parallel and draw from each other.

Therefore, I argue that the role of mediation in fourth generation CHAT should transform towards a collective capacity of mediation teams. This is critical to ensure the legitimacy of expansive learning studies as *more attention should be paid to developing competencies as collective mediators of transformative learning practices*. Therefore, successful fourth generation CHAT is likely to be situated in well-capacitated programmes with capabilities to pull together mediation teams of researchers as opposed to individual researchers implementing isolated projects perusing individualised qualification goals. This has been shown in similar projects in our research programme where for example Pesanayi's PhD study also required multi-actor mediation teams (Lotz-Sisitka et al., 2021). Doctorate studies conceptualised in such group-based mediation teams also have their own challenges, as PhD scholars need to identify suitable foci within the broader emerging process. In this study, I focused on the emergence of PDCs and was able to articulate these as ETADS, which we were able to test in a paper and which I was then able to elaborate on in this thesis via the detail of the Blyde restoration case.

This requires significant reflexive co-engagement capability from the formative interventionist researcher (PhD scholar) with the capabilities to collaboratively work on both practical and theoretical aspects of such a study, while still maintaining the qualities of a claim to new knowledge and independent study. In addition, as shown in this study, it requires a commitment to the long-term process, and I was fortunate to be able to be part of this process over eight

years. Initially, I planned it to be shorter but due to circumstances¹⁵, I was able to stay with the process for the eight years of empirical study.

9.8 Confronting and Mirroring Power-dynamics Contradictions in Multi-levelled Change Laboratories

One of the key attributes of the expansive learning theory is learning together, as collective action is critical in achieving steps of a classical expansive learning cycle (Engeström, 1987). These steps consist of learning actions accomplished by actors, guided by the research team through facilitated formative intervention engagements such as BCCLs. It is through these facilitated formative intervention engagements such as BCCLs that participants collectively envision new solutions including analysis of historical, present and future factors that could enable or constrain their envisioned learning pathways. The analytical mirror data is then used during intervention sessions to inform the concrete design and implementation of learning actions (Sannino, 2020, 2008; Engeström et al., 2013; Engeström & Sannino; 2011).

Sannino (2020) further reiterates the emphasis on presenting concrete examples of conflicting stimuli:

In the CL, the conflicting motives are brought into the open by presenting to the participants evidence and examples of problems and disturbances within and across their work activities. These examples serve as first stimuli, often conveyed in the form of videotaped critical accounts, situations and encounters. (p. 4)

However, when dealing with PDCs in the context of onto-epistemic and ethical–political groundings, it is not always possible to present concrete evidence of first stimulus and openly confront contradictions in critical realist interventionist engagements. Below I have presented some examples from both the Blyde case and the related Legalameetse case (documented in the paper I co-authored, see Appendix A) on the need to adapt some of the expansive learning tools when engaging in ethical–political expansions and navigating PDCs.

¹⁵ This included being able to follow the initial years for formative interventionist work in a workplace (AWARD), with a few years of full time PhD study. This allowed me to continue mediation of field-based engagements, and deepen theoretical and analytical work that I had started while in the AWARD workplace. The last part of the study was conducted while in full time employment again (writing up and deepening of reflections).

The *first example* is when the formative interventionist research team from AWARD was asked to ‘sit out or leave early’ in workshops with CPA communities. This was in the initial engagements with Blyde CPAs, and the AWARD team was considered to not have legitimacy in the process even though we were supporting and mediating the process between CPA communities and implementation practitioners. As such, when certain agenda items such as the finalisation of the land claim restitution were tabled, these were considered internal private matters, and we were asked to leave the room. To respect the process, we left the room until the CPAs called us back. Some could argue that this is evidence that there was no trust at this point in the process. However, this was actually related to the sensitivity around land ownership problems in South Africa, seen as matters of concern tainted by deep historical injustices and how many local communities lost their positions. As such, open trust is not considered an option in many cases and this makes it impossible to facilitate some of the key methodological aspects of change laboratories such as recording sessions, and in some cases, even talking about the landowners resulted in conflicts. This is an example of PDCs that are embedded in power structures. In the case of the Blyde restoration projects, unless one is working in a government department that deals with engaging communities on land claims matters, it is difficult to fully engage in such matters of concern in open conversation, or in what Sannino (2020) refers to as multi-levelled change labs – even then, this might not be the case. This also provides evidence that PDCs are deep-seated structural tensions that are not easy to navigate even though the tensions are known to the public – this continues to constrain the emergence of power. Therefore, a different form of formative engagement is required when dealing with matters of concern that entail such sensitivity. As such, as shared in the previous chapters, after CPA communities specifically requested that meeting discussions should not be recorded, we used a different approach through separate meetings in which CPAs felt safe to engage in matters regarding land claims and co-management agreements.

The *second example* is the engagement with the National Department of Forestry on decision-making processes that regulate the management of government forestry reserves and plantations. The BRWG partners had identified transformation in forestry management as a key component in which official recommendations must be made by the national cabinet to decommission forestry plans in the Blyde landscape areas. This was not a high-level decision-making process as there was a cabinet decision in the early 2000s to decommission forestry and implement restoration activities to create the Blyde National Park. One of the main conflicts of motive was the role of forestry in the socioeconomic development of local

communities through job creation, and as such, the original decision to decommission forestry was retracted 10 years later and the Blyde National Park proposal collapsed. As part of the Blyde Restoration Project, and after a series of regional engagements with regional leaders, the AWARD formative intervention team was tasked to engage the national forestry department as a high-level rulemaking activity. We were invited to present to the national committee of directors but similar to the CPA engagement, the AWARD team was restricted and only allowed to present and then asked to leave the meeting as the directors deliberated on the proposal. We were then called in again only to be notified that an official communication would be sent to us when the project is endorsed, with directives on what roles can be developed in accordance with the operational rules and regulations. Again, this was evidence of how the role of the interventionist team is affected when engaging PDCs which are key drivers of ethical–political expansion of the object. However, the formative intervention team was still not allowed to present direct meeting evidence as official accounts of discussions (e.g. national directors committee specifically requested that only the meeting notes from their secretary should be used as official accounts of the meeting).

The *third example* is from the CPA communities in the Legalametse co-management case. In this case study (see Appendix A), AWARD had been working with Legalametse CPAs for a period of three years between 2013–2015 to develop a strong contextual understanding of the onto-epistemic and ethical–political factors which produce the contradictions that are constraining the development of co-management agreements between CPAs communities and government. This further enabled AWARD to be recognised as a lead mediation team by government authorities and a series of critical realist workshops were facilitated in which second stimulus tools deconstructing the historicity of land claims were openly engaged. In addition, AWARD was also able to appoint other mediating institutions such as the INR who led the development of second stimulus tools for ETADS on exploring models to maximise beneficiation to CPAs communities from a sustainable management of protected areas point of view. Therefore, as the coalesced expansive learning expanded through ETADS in both the Legalametse (Appendix A) and the Blyde restoration case (this study), more capacity was required from the formative interventionist team and additional mediators were co-opted to lead formative intervention engagements.

In the Legalametse case (Appendix A), AWARD was already accepted as the central mediating agent by CPA communities who are the key agents in activating power¹, and this was opposite from the Blyde CPAs who had no prior mediation relationship with AWARD and took years for the mediation team to build a relationship with the Blyde CPAs. The difference here is that in the Blyde, the central expansive learning process was initially established with the practitioners from implementation programmes (see Chapter Four) and CPAs were involved later as new activity systems under the governance group (see Chapter Eight) – we did not have enough time to focus just on building relationships before diving into deep-seated landownership concerns. In Legalametse, the CPAs were the central activity system and that allowed the AWARD team to build relations in the early years as explained in the paper in Appendix A. Both cases, however, reflect that PDCs and ethical–political expansion of the object *require strong relational agency as the foundation for facilitating co-engaged in-depth inquiry*. When facilitating multi-levelled expansive learning processes, the methodological tools may need to be adapted to suit the contexts, and this means that a boundary crossing CL at the local scale may not be facilitated using the same tools and process as the national-level CL.

9.9 From Boundary Crossing to Heterogenous Coalitions

One of the key points of discussion in CHAT research is the bounding and boundaries of expansion in the object and associated activity systems. The questions are: When do you know that this is the limit of activity systems to work with? And when do you know this is how far to trace the expansion of the object? These are certainly some of the questions I struggled with in this research, and it was through this struggle that the conceptualisation of ETADS became a possibility that I could work with. As shared earlier in the study, in Chapters Four and Five, I was mainly working with the four implementation activity systems in exploring the challenges in the IAP control object but as the contradictions deepened, the object started expanding beyond just IAP clearing as an activity and towards restoration NRM practices as a collective of a different kind of restoration activity (for the common good). This expansion drew in additional groups of activity systems, which I later framed as a constellation of activity system groups (i.e. implementation, governance and rulemaking groups as discussed in Chapter Seven). These constellations of activity systems did not necessarily share the IAP control object but are broadly working towards socio-ecological justice in which restoration NRM practices

are managed as objects for sustainability commons (Chapter Seven). This was the emergence of my inquiry into fourth generation CHAT through ETADS (Chapter Eight).

In most expansive learning studies in the context of sustainability concerns in Southern Africa, the engagements have predominantly been facilitated through third generation CHAT, which in most cases has been referred to as *boundary crossing formative interventions* with multiple activity systems. However, the unit of analysis has always been a partially shared object which is bounded within a single expansive learning cycle. Possible exceptions are the work in the Legalameetse case (see Appendix A), and the study led by Pesanayi (2019, which was expanded via research in associated research teams, see Lotz-Sisitka et al., 2021) which were also morphing into fourth generation CHAT, a similar to what occurred as this study was also maturing. We note that this ‘morphing process’ from third to fourth generation CHAT is potentially important in contexts such as ours, and I would recommend that CHAT researchers involved in longitudinal expansive learning studies involving complex objects, consider this potential and its implications.

In this study, I was able to identify and clarify that there was a range of *immediate objects* across the interacting groups of activity systems; these objects included the implementation of IAP control, co-management through land claims, land-use development such as forestry, and biodiversity conservation. As such, all these are aligned at a high level in the contexts of sustainability and socio-ecological justice. It was practically impossible to work with third generation CHAT across the constellation of activity systems as these were different objects of inquiry.

In the quest for eradicating homelessness, Sannino (2020) presents the central questions to understand: “How do different sectors and organisations learn to enact utopias for equity and social justice? And, how can educational research concretely contribute to this learning?” (p. 2). Sannino (2020) further proposes that a fourth generation activity theory unit of analysis involves studying how learning for enacted utopias takes place and can be fostered. As such, multiple interacting and overlapping learning cycles were identified in her research, including the ministries’ state agencies and programmes, neighbourhood associations, NGOs, housing unit work with clients, and municipalities. As explained in the orientation to Phase II of this study, this work, together with collective reflections on the Legalameetse case which led to the

co-authored paper in Appendix A, helped me develop an adequate language of description for this study.

Drawing from Sannino's work on homelessness utopias in Finland as a fourth generation CHAT, it is apparent that a series of activity systems were involved across sectors, multiple organisations and different hierarchical levels to inform the coalesced expansive learning cycles. This is an example of macro-analysis of learning actions, in which the focus of the analysis is at a high level with less detail on specific engagement with different activity systems. She explained this by tracing the implementation of the three coalesced CLs across sectors which brought together different groups of activity systems, but for such coalesced CLs to be possible, a series of detailed formative interventions within and between activity systems was still required.

In the Blyde and the Legalameetse cases, the coalesced expansive learning process was carried through and embedded in the ETADS pathways. The facilitation of formative engagements was led by the involvement of different actors, including specialists who led the development of specific second stimulus tools, and the AWARD mediation team was more responsible for high-level macro-level mediation at local, regional and national levels. Therefore, especially in the Blyde case, I argue that *the role of the formative interventionist team includes both 1) mediation for facilitation of formative engagements through multi-level BCCLs, including support by other mediators as well as 2) high-level analysis to foster learning as both vertical and horizontal interplay across the heterogeneous coalitions.*

9.10 Insider Formative Interventionist Mediation Teams in Fourth Generation CHAT

As highlighted above, the role of formative intervention requires re-configuration as we move towards the fourth generation CHAT. When engaging and navigating power relations, there is a need for a focus on a cooperative mediation team to build strong *relational agency competency and connections* as they carefully engage with the onto-epistemic and ethical-political groundings. I refer to relational agency competency in reference to Edwards' work on relational agency (Edwards, 2005, 2011, 2015) but with specific attention to the capabilities and capacity of the mediation team to transform towards becoming an *insider formative interventionist team* through building functional relations that are situated, embedded and accepted or endorsed within both structures of power² and power¹. Building the relational agency competency may take years to develop, as the mediation intervention team work

collectively with different activity systems groups as shown in the Blyde case examples above when working with NRM programme practitioners, CPA communities and engagements with local and national government structures of power. In the above examples, I have shown how difficult it can be to engage PDCs when the relational agency competencies are not fully developed. I demonstrated this by reporting on the Blyde CPAs and national forestry examples, where the AWARD mediation team was initially not fully trusted as insiders to participate in key meetings by both power2 and power1 structures, i.e. the Blyde CPA management committee (power1 structure) would request AWARD team to leave meetings when discussions of land claims decisions were being made. Despite numerous prior engagements, the AWARD team was excluded from engagements for the development of co-management agreements (power1 second stimulus tool). The AWARD team was similarly excluded in meetings with the national forestry directors committee when decisions were made on the governance tools (power2 structures) for management forestry practices in the Blyde. As such, the AWARD team started building relational competencies between 2015–2017 to engage with Blyde CPA structures and the forestry governance structures from local, regional and national and this later enabled the emergence of ETADS 3 in which CPAs and youth as discussed above, which were co-developed between 2018–2022 in Phase II of the research. This relational capacity advanced AWARD's position to become a trusted insider formative invention team, which allowed for full engagement on matters such as landownerships. As indicated above, as the PhD researcher, I also grew in my own relational agency capability through this process, starting out as a junior researcher, documenting and assisting and later leading the formative intervention workshop process at times, although always working collaboratively. I also took on some of the more complex aspects of analysing and theorising the work we were doing, again collaboratively with researchers in our research group and my supervisors, and in various field-based conference interactions, but also with much struggle and reflexive determination to make sense of what I was observing.

In the Legalameetse case (see Appendix A), it took the AWARD team at least two years between 2014–2015 to build functional relations with Legalameetse CPAs which then enabled the emergence and implementation of the three ETADS discussed in that paper. In the three years of building relational agency competency, AWARD engaged in a series of meetings including both with the CPA management committee and each of the six different communities. The AWARD mediation team also engaged with the protected area management team, the tourism development agency, the local government authorities and the regional and

national co-management forums. Through all these engagements, the AWARD team presented their expertise, capacities, skills and experiences in facilitating transformative learning initiatives. It was through these relational engagement activities that AWARD's capacity through the mediation team was recognised and accepted to fully participate in internal decision-making processes on land management. This is an example of the complexities of engaging in onto-epistemic and ethical-political contextualities as these require mediation as an insider.

Furthermore, when engaging with complex deep-seated contradictions such as PDCs, the role of mediation should strongly reflect insider formative interventionist roles (see Mukwambo et al., 2023). There is evidence that shows that many of the sustainability challenges around water, biodiversity, and action for climate change in Southern Africa can be argued as engaging matters of concern within sustainability challenges that are rooted in onto-epistemic and ethical-political groundings, and deep-seated historical contradictions that reflect power-dynamic generative mechanisms as discussed at the start of Chapter Seven. This study builds on this work, but also builds on Sannino's work on TADS, to emphasise *emancipation* via ETADS with a specific focus on the development of second stimulus tools for advancing the ethical-political expansion of the object. To advance the ETADS work in fourth generation CHAT, I recommend that *there is a need to further deepen the existing work on understanding especially the ethical-political expansion of the object, which this study has sought to contribute to. As shown in this study, ethical-political expansion of the object draws strongly on onto-epistemic grounding and manifests as complex and deeply rooted PDCs which are not always obviously noted in the first instance or spoken empirical data. However, depth ontology is well studied and understood in critical realism and drawing on this, I have demonstrated the need to embrace the complementarities between CHAT and critical realism in developing tools for navigating power relations and cultivating ETADS in CHAT research in this study.*

9.11 Conclusion and Summary of the Main Contribution

In short, the main contribution of this study was to explicate a long-term (eight-year) expansive learning process that was firstly established within a third generation CHAT design, but through co-engaged depth enquiry that opened up in the first phase of the study, morphed into a fourth generation CHAT study characterised by deep-seated PDCs, made most obvious by conflicts that were present between NRM implementing agencies and communities who had a

claim to the land where the restoration IAP control practices were being implemented. Few tools for collaboration were visible at the start of the research. The object expanded to be more focused towards ethical–political expansion, and as a result, *I was able to develop and co-develop tools for analysis that have helped to explicate a key dynamic of fourth generation CHAT, notably the way in which emancipatory agency emerges from PDCs that require ongoing and careful co-development of double stimulation tools conceptualised along TADS pathways that become ETADS as they are realised.* This required a reframing of the study via Phase II in the latter parts of the research, and the development of new theoretical and methodological tools and processes, which I articulated along the lines of *coalesced activity systems, a sustainability commons-oriented object of activity and the ETADs processes catalysed by co-developed double stimulation tools that were emerging in parallel.* This required *reframing the concept of formative intervention research from individual researchers to mediation teams that are able to work with an expanding network of mediation researchers over time.* It also required a high level of reflexivity on my part to maintain the focus on the team-based research descriptions, while also aiming to clarify the contribution of this study to new knowledge.

Across all of this was the challenges I experienced not only in being part of a mediation team learning to and growing in experience of working in formative interventions in complex social-political contexts of runaway objects, but also in organising and representing the data in ways that were true to the situation, but that were not overwhelming. To do this, I adopted more of a meta-reflective approach to the data analysis, which in hindsight seems to have been adequate for the task at hand, given the scope of the study.

It is my hope that the study will inspire other researchers to engage with fourth generation CHAT potential, even though it is a daunting task for an individual PhD scholar. *As shown in this study, this way of doing research can also contribute substantively to social change and social-ecological justice, which as sought out or called out by the communities in this study, was the core ethical justice question that I was responding to in a context where coloniality and apartheid has left many communities disenfranchised, despite their interest in for example taking up land ownership and contributing to important sustainability processes such as restoration of NRM practices.* It is indeed the emancipatory agency of such people that pedagogical research ought to support, not only their emancipatory agency but also that of those stakeholders who are constrained by policies and procedures such as those found in

EPWP that constrained their intention to contribute to the common good. Ultimately the study has shown the importance of co-designing collaborative expansive learning and transformative agency pathways out of the PDCs that constrain us all.

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Appendices

Appendix A: The Emancipatory Nature of Transformative Agency: Mediating Agency from Below in a Post-Apartheid Land Restitution Case- Lotz-Sisitka et al., 2023

CHAPTER 10

*The Emancipatory Nature of Transformative Agency
 Mediating Agency from Below in a Post-Apartheid Land
 Restitution Case*

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 and Maletje Mponwana*

Introduction

Cultural-historical activity theory (CHAT) research has established an impressive body of scholarship that advances social understanding of human agency in the transformation of society, much of which is captured in contributions to this volume (cf. Hopwood (Chapter 15); Sannino (Chapter 2); Stetsenko (Chapter 3); Bal and Bird Bear (Chapter 8)). The main tenets of this work, building on the historical legacy of Vygotsky and Marx, affirm that humans are not passive recipients of external stimuli or influences but are active co-creators of the world(s) they inhabit. They are capable of using and producing cultural tools to take power over their own volitional action(s) (cf. Sannino, 2015, Chapter 2 of this volume; Hopwood & Gottshalk, 2017). Vygotsky's major legacy in coming to understand transformative agency is that the cultural tools produced and used as mediational means are critical in the emergence of transformative agency (Sannino, 2015, 2020, Chapter 2 of this volume; Stetsenko, 2019; Hopwood, Chapter 15 of this volume) and thus in the transformation of human activity. As shown by Sannino (2015, 2020), such tools offer stimulus for volitional action that can break paralysis, especially when conflicts of motives are experienced. The second stimulus generates movement in the formation of transformative agency in a social process that Sannino (2020, Chapter 2 of this volume) describes as 'transformative agency by double stimulation' (TADS). Engeström and colleagues explain the educational significance of this work as follows:

Based on Sannino's recent work on transformative agency by double stimulation (TADS), a truly *educational approach to agency* is gaining traction. In double stimulation, a person or group faces a paralysing conflict of motives (first stimulus) which is resolved by identifying a meaningful artefact that is

The Emancipatory Nature of Transformative Agency

231

turned into a sign (second stimulus). Today's critical learning challenges typically do not have obvious or 'correct' solutions. They require a pedagogy that allows learners to face conflicts and construct artefacts to help break out of their paralysis. The paradigm of double stimulation . . . offers a starting point for a pedagogy of agentive actions and expanding possibilities. (Engeström et al., 2022, p. 1; our emphasis)

Mediation means and second stimuli tools are not value neutral. When produced and used in expansive learning processes that purposely focus on desired transformation(s) in society away from historical oppressions, exclusions and injustices (e.g. away from coloniality, racism, patriarchy, environmental degradation, extractivism), they tend to be or become tools that are explicitly ethically and politically constituted; that is, they are imbued with transformative ethical-political motives in their development, uptake and use. For example, something as general as a map or system diagram can gain onto-epistemic and ethical-political meaning if used as second stimuli in resolving a land claim by communities disenfranchised by apartheid (cf. later in this chapter). Stetsenko (2021, Chapter 3 of this volume) argues for giving more attention to onto-epistemic and political-ethical groundings in CHAT research, proposing what she calls a 'transformative activist stance' (Stetsenko, 2011, 2019, 2020, 2021), by which she means that people are engaged in world-making(s) that either challenge or change the existing status quo in the direction of a better world order. Responding to, inter alia, the impacts of anthropocentrism, coloniality and the neo-liberal roll-back of welfare states, an interest in articulating the transformative activist nature of cultural-historical activity research is becoming more visible,¹ with studies explicitly seeking to reduce what Stetsenko (Chapter 3 of this volume) notes as a reductionist 'domestication' of Marx and Vygotsky's original transformative and transgressive intent.² Sannino and Engeström (2018) similarly remind us of the revolutionary intent of Vygotsky's work.

Onto-Epistemic and Ethical-Political Groundings

Situated in the global South, in southern African countries, our work finds its onto-epistemic and ethical-political grounding in protracted struggles against colonial and imperial rule most explicitly characterised by racism and marginalisation of the black majority. Our countries have been deeply affected by decades and centuries of what Walter Rodney (2018) terms 'structured under-development' and the continuities of coloniality. Disenfranchisement, inequality and environmental degradation are

widespread, with climate change posing a major threat to food and water security, affecting people's livelihoods. In this context, we have engaged in numerous expansive learning projects stemming from Vygotsky's legacy, especially cultural-historical activity theory as developed by Engeström (2015, 2016; Engeström & Sannino, 2010, 2021; Sannino & Engeström, 2018). This body of work has offered co-engaged formative intervention methods, the theory of expansive learning (Engeström, 2015, 2016) and the theory of transformative agency (Sannino, 2015, 2020, 2022), which have helped us to develop and deepen ways of co-learning our way(s) into collectively desired transformations in settings where issues are complex, outcomes are unknown and the need for emancipation from prejudice, racism and related historical oppressions is palpable.

The communities that we work with regularly choose to transform oppressive forms of activity shaped by the cultural-historical nexus of coloniality, environmental degradation, social injustice, poverty and exclusion. These are onto-epistemic³ and ethical-political in that they arise from memories and experiences of prejudice, racism and oppression and actively seek out emancipatory alternatives in a decoloniality of power (Mignolo, 2011; Rabaka, 2009) or what Rabaka (2009) frames as '*the dialectical process of revolutionary decolonization and revolutionary re-Africanization*' (p. 7; original emphasis). In elaborating expansive learning, transformative agency and activity transformations inspired by the ethical-political motives of historically marginalised communities, we⁴ have indicated that this involves, inter alia, transgressing unsustainable and socially unjust norms (Lotz-Sisitka et al., 2017); decolonial epistemic acts such as foregrounding cognitive justice and Indigenous knowledges, languages and cultures (Mukute, 2010; Mukute & Lotz-Sisitka, 2012; Pesanayi, 2019; Mphepo, 2020); the formation of solidarity relations (Mudokwani & Mukute, 2019), navigating power relations (Kachilonda, 2015; Jalasi, 2018); gender justice and reflexivity (Jalasi, 2018, 2020; Mphepo, 2020); and a concern for the common good (Lotz-Sisitka, 2017; Mukute et al., 2018). We have also elaborated a diversity of mediation tools and processes that typically extend from Change Laboratories as a key method (Pesanayi, 2019; Lotz-Sisitka & Pesanayi, 2020; Mphepo, 2020). We have also argued for ontological depth in better understanding deep-seated structural tensions and contradictions (Mukute & Lotz-Sisitka, 2012; Mukute 2016; Pesanayi, 2016) which we have under-laboured with the relational depth ontology offered in Bhaskar's critical realism⁵ (cf. Bhaskar, 2014, 2008, 2009). While we have been able to elaborate aspects of emancipatory agency from below as emergent from CHAT-inspired expansive learning

research, we have not as yet fully articulated *how* emancipatory agency from below emerges via TADS, hence this chapter.

Harvey (2002) notes that humans, society and their mediating social relations become ‘ontologically irreducible moments’ in complex reproductive and/or transformative dynamics. As well explained by Sannino (2020, 2022) and Jalasi (2020), it is the *mediating social relations* that require articulation in educational settings where reflexivity, sayings, relatings and doings emerge from these mediating social relations as modalities of human agency. Agency can be reproductive as it can reproduce social structures and the material foundations of the social, or it can be transformative in the sense that it can alter the future conditions of its own capacities. Such transformations may not, however, be emancipatory or freedom-seeking, hence we include a focus on emancipation in this chapter (cf. Lotz-Sisitka, 2016 for further elaboration on emancipatory orientation to environmental education). All of this gains meaning only when agency emerges from ‘a concrete set of cultural traditions and within the material and ecological boundaries of an actually existing community’ (Harvey, 2002, p. 175) that introduces ‘spatio-temporal rhythmicity’ and ‘geo-historical processes’ (after Marx; cf. also Bhaskar, 2009), which in our context include decolonial ethical-political (Rabaka, 2009) emancipation questions into the sphere of mediating social relations and associated reproductive and/or transformative-emancipatory outcomes of agency.

Emancipation and Co-engaged Depth Inquiry

Of interest to us in this chapter is dialectical transformation of oppressive power relations in transforming activity via the emergence of emancipatory forms of transformative agency from below. By agency ‘from below’, we mean freedom-seeking forms of agency among the most marginalised and excluded, with freedom-seeking defined not only in economic terms (i.e. transgressing class structures) but also in decolonial, non-anthropocentric terms (i.e. transgressing social-relational absences – e.g. absence of cognitive justice – and ecological ills). De Sousa Santos (2015) and Rabaka (2009) are among those that argue for framing the world in ways that reach beyond Marxist theory on labour and capital to more fully include patriarchy, coloniality, racism, anthropocentrism and their intersections (cf. also Bhaskar, 2009; Moore, 2015; Rabaka, 2009).

The conventional use of the term ‘emancipation’ indicates a process of being set free from legal, social or political restrictions. We use the concept of emancipation as used in critical realism, where it is recognised that

emancipatory agency involves co-engaged *depth inquiry* into the deep-seated structural causes of the oppressions being experienced; that is, the stratification of the situation (Price, 2020; Bhaskar, 2008, 2009). This makes possible the ethical absencing of ills and the dialectical potential of transforming power relations (Bhaskar, 2008). This resonates with the co-engaged inquiry into the deep-seated structural tensions and contradictions as used in CHAT inspired by historical materialist geo-historical rationality that imbues Marxist theory, but which is to some extent reframed by decoloniality and non-anthropocentrism (cf. de Sousa Santos, 2015; Rabaka, 2009).

We explicitly elaborate how TADS, as explicated in CHAT by Sannino (2022, Chapter 2 of this volume), can be emancipatory (hence we refer to emancipatory transformative agency by double stimulation (ETADS)), joining the movement in this direction opened by Sannino in her work on homelessness (2020, 2022), Ko and colleagues (2022), and Bal and Bird Bear (Chapter 8 of this volume) in their work on decolonial praxis via expansive learning. We do this by investigating *onto-epistemic depth and ethical-political movement* visible in three interrelated instances of the emergence of emancipatory agency from below. These emerged via three interrelated ETADS process pathways over a six-year period in a rural community who were engaged in ‘getting back the land’ in the Lekgalameetse Nature Reserve, set in the Olifants River Basin in South Africa (Pollard et al., 2021). To ‘get back the land’, the historically disenfranchised community were actively engaged in co-management via formation of a common property association (CPA) to claim back and collectively manage the nature reserve (land) from which they had been forcibly removed under apartheid/colonial rule. The complexity is that the land they were claiming is valuable conservation land protecting the water source of the community and catchment (AWARD, 2015–20). As such, the ETADS in focus emerged not only via community motives to reclaim their land but also via motives orientated to the wider common good, making this object of natural resources management activity complex from an onto-epistemic as well as ethical-political perspective.

Background and Historicity to the Lekgalameetse Nature Reserve

Early colonial natural resources management (NRM) (e.g. conservation) centred mainly on ‘preservationist’ or ‘fortress conservation’ approaches (Findlay, 2015) that excluded Indigenous communities who were the original custodians of the land. Reserves were created from an assumption that nature needed to remain ‘pristine’ and ‘wild’ and people should be

excluded from such spaces. While ethically motivated from a nature conservation perspective, NRM activity was politically charged as it excluded and forcibly removed local people from their land. Imbued with colonial racism, local black people were positioned as ‘exploiters and degraders of land [sic]’ (Jones & Murphree, 2013; von Maltitz & Shackleton, 2004). This manifested as a degenerative form of environmental racism (Kahn, 1989; Carruthers, 2006) that separated Indigenous resource-dependent black South(ern) African communities from the land (Magome & Murombedzi, 2012).

The case of Lekgalameetse Nature Reserve, in focus in this chapter, suffers a legacy of displacement and disenfranchisement as black communities in the area were forcibly removed and clustered into marginal lands. This disrupted their long cultural histories of agriculture and land use because the areas were crowded, soils were of poor quality and there was a lack of water in the marginal areas. Black people were also subjected to poor-quality education under separatist social engineering policies of the colonial and apartheid state (Christie & Collins, 1982). Cumulatively, these policies and practices resulted in a loss of cultural histories of using the land and degradation of people’s agency, capabilities and opportunities for NRM (cf. also Pesanayi, 2016, 2019). This altered communal ways of living on the land under traditional leadership structures. The pernicious effect was marginalisation and alienation of people as collective landowners and farmers.

Following the 1994 first ever democratic election in South Africa, legislation was passed to address land dispossession via: (1) land restitution that makes it possible for people who were evicted from their land to get it back; (2) land redistribution to address the racial inequality in land ownership; and (3) redress. Land restitution has been particularly complex in areas considered to be important for conservation because South African law entrenches the conservation status of such land, putting land claimants in a difficult position. In response, the South African government introduced a co-management model to establish collaborative management strategies in the form of common property associations (CPAs) involving government conservation agencies and land claim beneficiaries who are to jointly manage the land, as is the case for the members of the Lekgalameetse community who are the agents of interest in our chapter. This makes co-management via CPA formation an intentional emancipatory land restitution policy tool conceptualised to redress 300+ years of colonialism and apartheid rule.

It is within this deep-seated oppressive history and contextual background that we, working in and with the non-governmental organisation named Association for Water and Rural Development (AWARD), were engaged in a six-year CHAT-informed formative intervention supporting community agency for taking up ownership of their land via three broadly constituted expansive learning cycles in the formation of a CPA. In this process, mediation tools, constituted as a series of second stimuli for ETADS, became particularly significant in deepening the onto-epistemic and political-ethical dimensions of the formative intervention, expanding the depth and breadth of the transformative agency that emerged, as we will elaborate next.

Co-management and the Object of Expansive Learning

As outlined earlier, the history of the object of co-management is infused with intersecting and non-static ethical-political dynamics. As elaborated in what follows, these include issues of coloniality, race, time, space, environmental ethics, cultural disenfranchisement, community and intergenerational relations, as well as professional and political boundaries.

Our involvement in CPA formation was a response to a request for support from community leaders instrumental in establishing the Lekgalameetse CPA, resulting in a six-year expansive learning process in which AWARD, with its long history of transformative research and development at the transboundary level, worked alongside and with the Lekgalameetse CPA leaders. Expansive learning was supported by AWARD whose object was to support improved transboundary water and biodiversity governance and management of the Olifants Basin, where the Lekgalameetse Reserve was proclaimed as a critically important watershed area with biodiversity benefits (Pollard et al., 2021). There was therefore a partially shared object between the CPA committee and AWARD at the start of the expansive learning process, which centred on NRM *with* communities.

Focal data for this chapter draws from a series of expansive learning processes, enacted mainly in Change Laboratories (CLs) (Engeström et al., 1996) conducted between 2015 and 2020 but supplemented by other forms of engagement including meetings and interviews with high-level government directors and field training with youth. Formative interventionist researchers (Chikunda, Thifulufhelwi, Mponwana⁶) were part of an AWARD team that actively supported the co-development of mediating

learning tools throughout the expansive learning process. The CLs were initially conceptualised between the CPA management committee and AWARD activity systems, and their partially shared object was guided by third-generation CHAT (Engeström & Sannino, 2021). The CPA management committee consisted of representatives from six CPAs that have claimed the Lekgalameetse Reserve.

As the object expanded via the expansive learning and transformative agency processes described next, so did the range of actors and activity systems involved. Figure 10.1 shows the initial activity systems involved in the CPA formation formative intervention at the start of the process, and Figure 10.2 shows three separately evolving yet related expansive learning cycles involving a greater diversity of activity systems configured around a range of different yet related concerns to the overall object of CPA formation. ETADS processes are represented as emergent from and parallel to each other, involving the use of a variety of double stimulation tools (elaborated next). The numbers 1–6 indicate learning actions in the expansive learning cycle, as articulated in Engeström (2015) and Engeström and Sannino (2010). Figure 10.2 shows that the formative intervention (cf. Sannino et al., 2016) evolved into an early form of fourth-generation CHAT (Engeström & Sannino, 2021) involving heterogeneous coalitions of actors from an expanding range of activity systems who were engaged in separate but related and at times parallel expansive learning processes associated with CPA formation. As the configuration of actors became more complex in the overall formative intervention, the role of second stimuli in the varied expansive learning trajectories that were related to CPA formation gained increased significance in expansive learning and ETADS.

Next we describe how we worked formatively with the heterogeneous coalitions of actors mentioned earlier from an ever-increasing range of activity systems (Engeström & Sannino, 2021) involved in co-management, land restitution and CPA formation (Figure 10.1) along three relatively distinct yet relationally emergent ETADS pathways (Figure 10.2). We use the concept of ‘pathways’ to denote related yet divergent unfolding processes of expansive learning using second stimuli that lead to observable emancipatory transformative agency outcomes and ethical-political expansion of the object of activity.

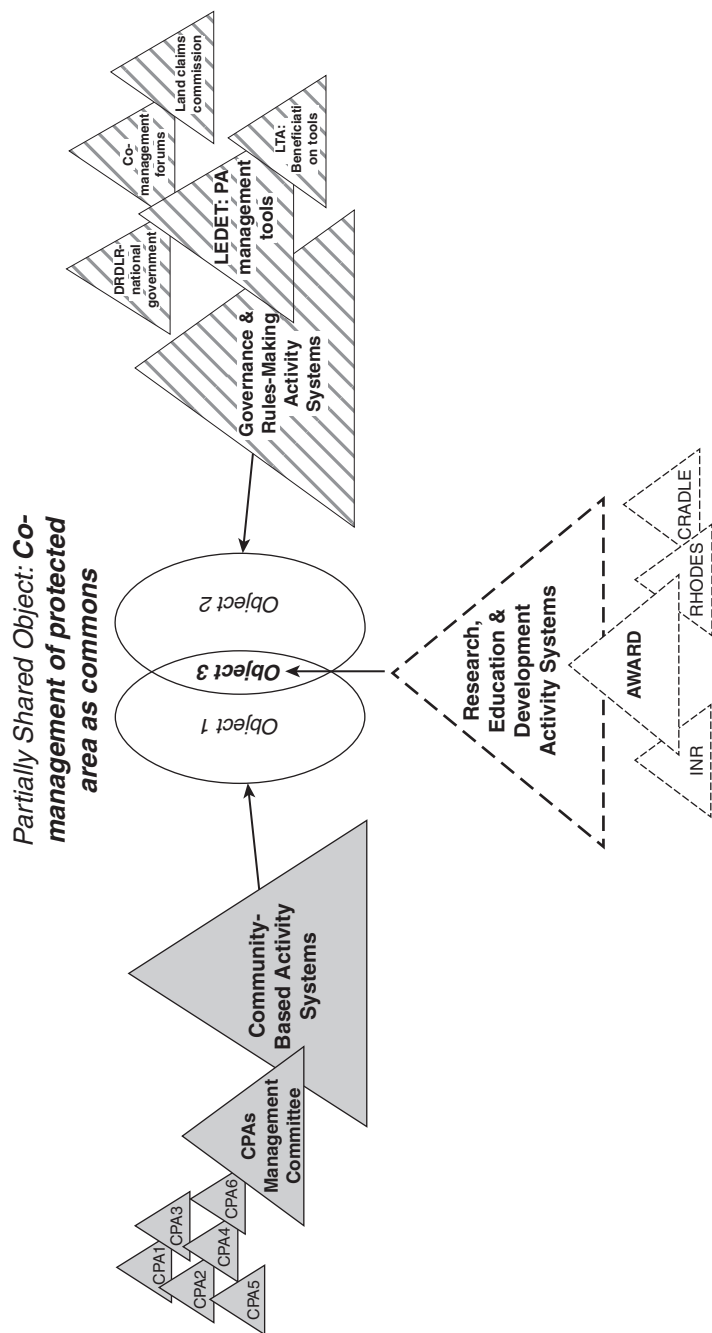


Figure 10.1 Interacting activity systems in the third-generation CHAT configuration.

Caption for Figure 10.1 (cont.)

- Key:
- Community-Based Activity Systems (grey):
- CPA management committee: central activity system throughout the expansive learning process. The committee is made up of twelve representatives elected from the six CPAs.
 - Six CPAs: Indigenous communities who were forcefully removed and have successfully claimed their land in Lekgalameetse.
- Governance Activity Systems (clear):
- LEDET: local government department responsible for protected area management, tasked with facilitating co-management development between the state and six CPAs. Central activity system in co-management.
 - LTA: local government department responsible for commercialisation and tourism development of protected areas. LTA is not directly involved in the co-management process but consulted through LEDET.
 - DRDLR: national government department responsible for addressing rural development and land reform issues across the country. Rule-making activity system.
 - Land claims commission: national-level commission for addressing issues and supporting development of land restitution. Tools development activity system.
 - Co-management forums: national and regional platforms for co-learning and co-development of co-management processes for CPAs to meet and learn together and engage with government departments involved in land restitution and co-management.
- Development, Education and Research Activity Systems (hatched):
- AWARD: local non-governmental organisation playing a mediation role in supporting capacity development for socio-ecological justice.
 - INR: Institute of Natural Resources (a research and development institute at the University of KwaZulu Natal).
 - Rhodes University Environmental Learning Research Centre and visiting researchers from CRADLE, University of Helsinki: supported AWARD with conceptualising learning and mediation tools.

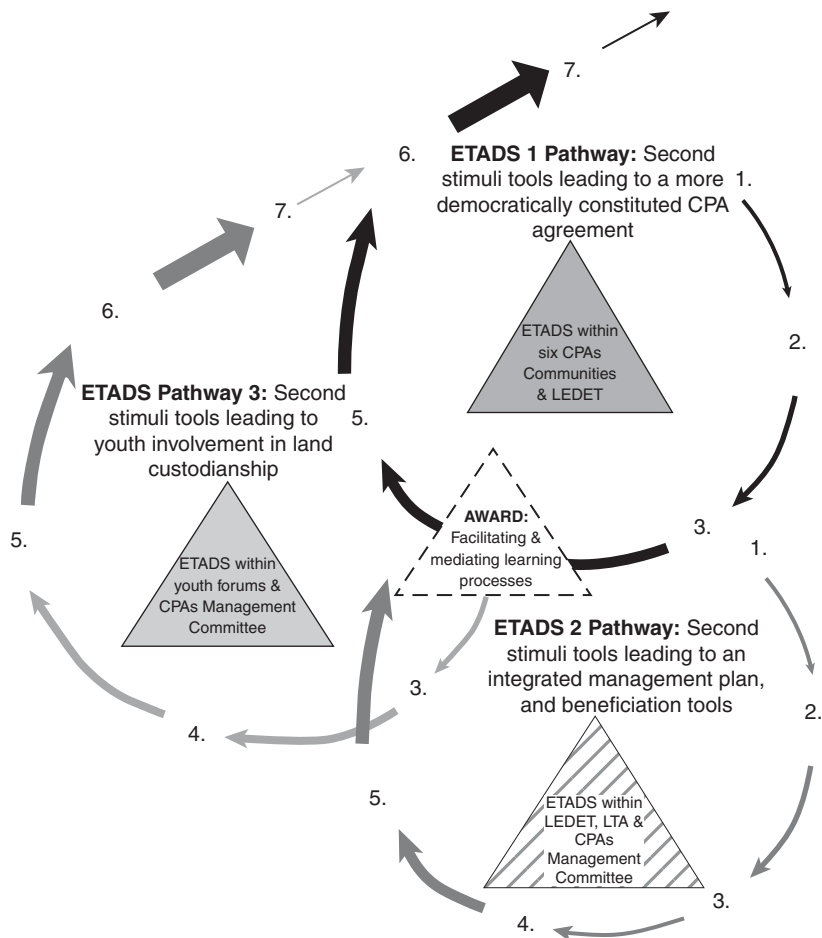


Figure 10.2 ETADS pathways and learning actions.

Emancipatory Transformative Agency by Double Stimulation Pathways

The First Stimulus

The first stimulus was expressed as dissatisfaction with the initial co-management agreement during AWARDs initial engagements with the CPA management committee in July 2015.

The Emancipatory Nature of Transformative Agency 241

- CPA: There are many people who come here to ask our expectations but they don't help us. We want you to be an exception and help us with our struggle. It's been a long time since 1998, we have been promised different expectations, but they don't deliver. We are frustrated, we have been talking and nothing is happening. We entered into a co-management agreement in 2007 but nothing has happened since then.
- CPA: The 2007 co-management agreement make us depend and wait for the government to help us, it does not give us power.
- CPA: LEDET must devolve their power, and transfer power of control of the nature reserve to the community, they must not just hand over the area without providing training, and we don't want to be given something we don't understand.
- CPA: We have claimed land which is a protected area, we are required by law to co-manage with the government but we don't know how to do this, none of us has experience in this; as it is now LEDET [provincial government department] managing on their own.

The issues around the failures of the initial co-management agreement were a great concern and they provided the first stimulus to direct the formative interventionist expansive learning process. This led to engagement with a third activity system, LEDET, the governance activity system. LEDET are expected by legislation to engage communities on land restitution issues and co-develop a co-management agreement. However, LEDET had their own internal contradictions, expressed during our engagements with them.

- LEDET: We are very much committed and willing to develop good co-management practices and ensure beneficiation to CPA communities, but the truth of the matter is land restitution issues are more complicated . . . Most of us are from these communities even though we work for the government, and now people think we are the one blocking their benefits.
- LEDET: Yes government does have big brother syndrome of just doing things at times, but we also have our issues in this co-management thing is not a one size fits all. We are also learning how best to do it.
- LEDET: We are guided by legislation and processes. Sometimes these take too long, and I don't think CPAs understand these. Most of them want instant benefits which is impossible. There is a need for capacity development and it's our responsibility to support that but the reality is we have over 30 co-management nature reserves for the whole province on our shoulders.

NRM co-management is fairly new in South Africa and CPAs and government agencies are learning as the process unfolds, with

challenges emerging related to unequal power plays between state and community and institutional and financial insufficiencies with negligible beneficiation outcomes (Findlay, 2015). The expressions of CPAs and government here were a strong indication of the need for co-engaged expansive learning processes in exploring co-management as a commoning activity, with its ethical-political object complexities (cf. also Kachilonda, 2015). In response, researchers from AWARD committed to providing formative mediating capacity for co-management development.

The first stimulus was unpacked into two processes. First, we conducted contextual profiling of all key activity systems to understand their historical, current and potential roles in co-management. Second, we conducted an in-depth historical analysis with the CPA committee and community members to examine tensions and contradictions around governance and management of Lekgalameetse as a protected area, tracing the evolution of contradictions from the apartheid regime and colonial conservation logics. The historicity was mainly informed by the CPAs' ethical-political expressions that the 2007 co-management agreement does not give them management power and makes them depend on and wait for help from the government. The central contradiction was between the emancipatory policy intention of the co-management policy (tool) and its perverse realisation as a non-emancipatory practice in the Lekgalameetse CPA formation processes.

Following identification of the ethical-political contradiction, processes towards developing the 2007 agreement were explored further, which showed that the government had not adequately consulted CPAs in the initial co-management agreement. The 2007 agreement was then used as a mediating second stimulus towards co-developing a new co-management agreement among AWARD, six CPAs and LEDET. This was a third-generation CHAT process involving multiple activity systems, including institutions of higher learning (Figure 10.1). As shown next, significant evolution and movement occurred via the clarification of further contradictions, conflict of motives and second stimuli in the expansive learning process as the formative intervention unfolded over time. The shared ethical-political emancipatory motive was to address initial oppressive constraints and strengthen ownership of the CPA formation process by land claimant communities.

ETADS 1 Pathway: Second Stimuli Tools Leading to a More Democratically Constituted CPA Agreement

Between August 2015 and May 2016 a series of CLs took place involving AWARD, the CPA management committee (primary activity system) and the governance activity system (LEDET). The process started with

The Emancipatory Nature of Transformative Agency 243

a historical analysis within the CPA; that is, the historicity of forced removal and land restitution was initially conducted with the primary activity system but was further deepened with representatives of the six CPAs present. This process increased understanding of the contradictions as experienced by the CPAs, which revealed a *conflict of motives* associated with wanting to take ownership of the land but not feeling skilled enough to do so. The conflict of motives manifested in an *articulation of the conditions for emancipatory agency* and an *explicit interest in transforming power relations* articulated as critiques of historical and contemporary forms of oppressive relations, a desire to move beyond these with knowledge and skills and a more democratically constituted CPA agreement, as shown here.

- CPA: We want to be part of the management but the current process of engagement with LEDET is not empowering us because there is no co-management agreement.
- CPA: We want to manage our own land but we don't have the capacity Today when I hire you, I need to induct you, but back then [referring to the apartheid era], the Generals [referring to Italian generals who were given the land by the colonial government] were using the people, not skilling them.
- CPA: Are we in a position to learn? The answer is yes. We told LEDET that we need to be capacitated as a CPA because we don't have the resources. We want LEDET to move from their position of power, of them having the final say on everything We can say we don't want to co-manage Lekgalameetse without knowing what it is exactly that we are going to do.

Interesting for understanding the *emancipatory dimension* of transformative agency is the evidence that the CPAs were expressing their agentic capabilities (what Bhaskar refers to as Power 1 relations) towards learning how to manage their own land. They signalled acute dialectical awareness of past colonial oppressions and contemporary governance structural constraints, as governance practice emerged as being paradoxically oppressive (what Bhaskar refers to as Power 2 relations). A question orientation to activity system analysis in the local vernacular language (see Figure 10.3), used as a second stimuli, allowed CPAs to explore the co-management agreement object beyond the current conflict of motives. This further activated Power 1 relations in dialectical movement against oppressive Power 2

relations. Figure 10.3 shows the first double stimulation tool, a question-orientated heuristic of their activity system centred on the CPA committee's object of a more democratic co-management agreement.

This second stimulus tool was used by CPAs as a guiding learning framework and scaffolding tool for unpacking the co-management object (Figure 10.4), showing the second stimulus in movement, as the CPAs went on to use it as their tool for planning and facilitation.

From here, the CPAs developed a set of questions and articulated their skills development needs, which included training on legislation and governance tools for protected areas. LEDET were invited to conduct the training. This was a breakthrough emancipatory agency moment as the CPAs felt progress and recognition from the government, evidenced here.

CPA: You see, this is what we have been crying for, to be supported by the government. After these training sessions, we are starting to be hopeful that the real co-management will happen soon.

CPA: This is not just training on knowing how to do co-management, but also to give us new expectations. Some of us now know that you can't just do anything in the reserve. I really like how they explained all the protected area laws and what is possible in terms of development. We are going to make copies and share this information with our members from the six CPAs.

The training process mostly offered by LEDET (government) was another second stimulus tool, deepening CPA understanding of the co-management object and opening up co-learning pathways between government and CPAs (power 2–1 transformations). The training focussed on different types of co-management agreements, including full-lease (no co-management responsibility for CPAs), part-lease and full co-management (CPAs have equal power to the government). This helped CPAs to understand co-management types suited to their needs. Before starting with the co-development of the new co-management agreement, another second stimulus tool was employed. This took the form of a learning exchange for Lekgalameetse CPAs to the Makuluke CPA, where another CPA is successfully co-managing a piece of reclaimed land in the famous Kruger National Park, and further learning exchange involving CPAs from different parts of South Africa and co-management experts in a two-day workshop. The purpose was to share experience with the Lekgalameetse CPAs.

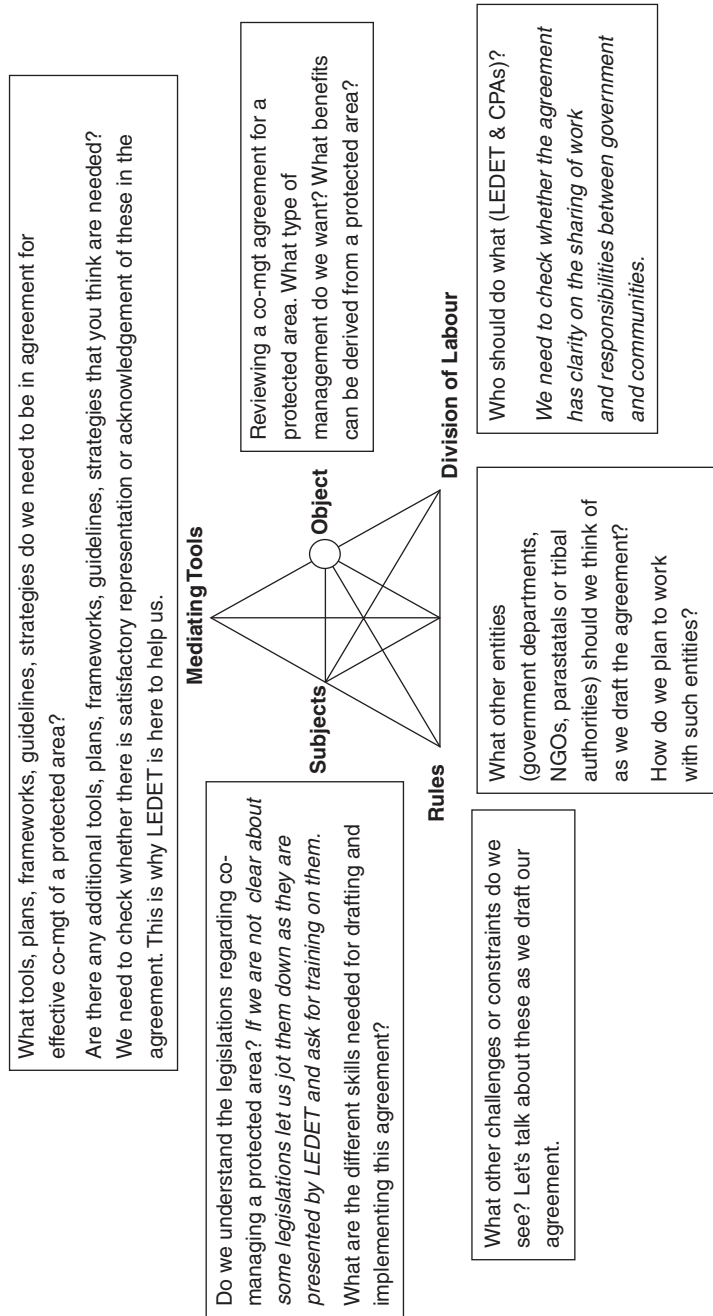


Figure 10.3 First double stimulation tool: A question-orientated heuristic (adapted from Engeström, 2015).



Figure 10.4 CPA committee member using the activity system heuristic to engage other members of the six CPAs to deliberate the shared object of a more democratic co-management agreement.

These three second stimuli tools enabled emancipatory transformative agency characterised by a transformation in power relations and greater empowerment of the CPAs. They were able to participate meaningfully in co-developing a new co-management agreement that was more democratically constituted around their interests and concerns, released in 2019 (Pollard et al., 2021). This strengthened cooperative governance between government and communities and led to a reduction in LEDET's self-identified 'big brother syndrome'.

As the agreement was concretely conceptualised, the co-management object expanded towards an interest in developing beneficiation mechanisms to ensure that protected areas are sustainably managed (ETADS 2 pathway) and youth capacity development for future custodianship (ETADS 3 pathway).

ETADS 2 Pathway: Second Stimuli Tools Leading to an Integrated Management Plan and Beneficiation Tools

The CPA management committee remained the central activity system, AWARD remained the main mediating activity system and LEDET remained the main governance activity system, but other activity systems

joined the formative intervention processes. By this time the six CPAs were also actively involved, complementing, informing and expanding the CPA committee's inputs. Between 2017 and 2019, a series of CLs were conducted between the CPA management committee and the Institute for Natural Resources (INR), supported by AWARD and LTA and occasionally LEDET (see Figure 10.1).

The strategic management plan of Lekgalameetse Nature Reserve commissioned by LEDET in 2013 states that: 'We see a collaborative partnership between the State and the relevant communities in the ongoing conservation and sustainable use of the Lekgalameetse Nature Reserve. From this partnership, we envisage securing: Meaningful and sustained benefits derived for the Mamashiane, Cypress, Mangena, Balloon, Madeira and Paris communities (6 CPAs)' (LEDET, 2013).

The expression of 'sustained benefits from the management plan' was a key catalyst for expanding more democratic and inclusive aspects of co-management activity. Given the realities of economic alienation and disenfranchisement, as well as poverty conditions, throughout the early engagements between 2015 and 2017, youths and the entire community only considered financial benefits when they talked of benefiting from their reclaimed land, as indicated in this extract.

- CPA: We are not getting any benefits at all from this land, actually we are suffering more. We don't have jobs, when we heard that we're claiming this area, land claim commissions said that people must not be suffering more than before but it is even getting worse.
- CPA: It is right to protect nature, but you cannot tell a hungry person that it is important to protect nature if you don't give anything to those people. That is the main thing, how those people will benefit from the land.

This revealed a second *conflict of motives*, namely the need to conserve natural resources (water supply/catchment viability/biodiversity) versus establishing businesses for economic benefits to address historical and contemporary economic exclusions. This reflects neo-liberal tendencies to commodify natural resources in the guise of development, which produces a cultural view that natural wealth has no value unless it is 'privately owned' and exploited (Fioramonti, 2017). People are socialised in this kind of thinking at home, at school and in the world of work. According to this ideology, to contribute to development, nature requires top-down control (ideally via investment to maximise output) and must be

commercialised through market channels (Fioramonti, 2017). Neither the preservation of natural beauty to enhance the welfare of ecosystems nor the management of natural resources for the common good is seen as contributing to economic growth. This has serious consequences for agency, and ultimately may further disenfranchise communities as their water dries up and land is degraded and commodified into the ‘private property’ of the more powerful. This contradicts the Indigenous community’s cultures where more benign co-existence-based relations with nature existed.

This discourse revealed an immediate need for beneficitation but also a dislocation from own cultural histories and relations with the land. The CPA members recognised this in their discourse of ‘it is right to protect nature’ but simultaneously recognised the conundrum of ‘you can’t tell a hungry person to protect nature’, starkly revealing the conflict of motives.

Further second stimuli tools helped to surface deliberations on the relationality of people and nature in order to probe the conflict of motives in more depth, with an understanding that if people are able to develop stronger bonds to their ecologies (as before the colonial/apartheid disruptions of their land-based cultures), they are increasingly likely to care for them in sustainable ways within a values framework of co-existence rather than commodification (Pesanayi, 2016, 2019). Systems thinking⁷ tools for exploring ecosystem services in communities were used in a learning exercise focussing on the ecosystem services of the Makhutswi River that flows through most of the six CPA communities:

Problematising item: Work individually for 5 minutes and write down in your own words and own language what benefits or disbenefits you, your family or your community currently get from the river. As an example, think about: are you still able to go swimming in the river? Are you still able to fish in the same way that people did in the past?

The same activity was repeated for the upper part of the river which is right inside the Lekgalameetse Nature Reserve. This allowed CPA members to compare ecosystem services from the different portions of the river. Adding to this was another second stimulus tool that involved co-development of causal-loop diagrams and concept maps for the two portions of the river. Participants used this to articulate relations between the communities and the river and its ecosystem services, and later discussed the two representations (Figure 10.5), which were further developed by the formative intervention team (Figure 10.6) in a follow-up reflective co-engaged process. This provided an opportunity for mirroring back the insights articulated

by the CPA members to the CPA management committee and CPA members more widely.

Participatory mapping and development of causal-loop concept maps (Figure 10.6) was a critical auxiliary stimulus to resolve conflicts of motives on the need to conserve nature versus financial benefits. Second stimuli engagements were conceived as ‘active authoring of events and frameworks for understanding, as people play a role in constructing the very situations they attempt to comprehend’ (Maitlis & Christianson, 2014, p. 58). The building of concept maps or causal-loop diagrams is a volitional process in the sense that it involves (re)creating a situation by ‘changing the psychological field’, producing new meaning in a task at hand (Vygotsky, 1932/1987, p. 357 in Hopwood & Gottschalk, 2017, p. 26). Engeström and Sannino (2016) indicate that the collaborative construction of the second stimulus involves the actions of questioning, analysing and modelling.

The concept maps were constructed to reflect the organisation of the declarative memory system and they facilitated sense-making and meaningful learning on the part of individuals who make concept maps and those who use them (Haase, 2013). Ison and colleagues (2013) indicate that the more stakeholders understand the issue in question, the more they are



Figure 10.5 Participants in a systems thinking workshop developing causal-loop diagrams.

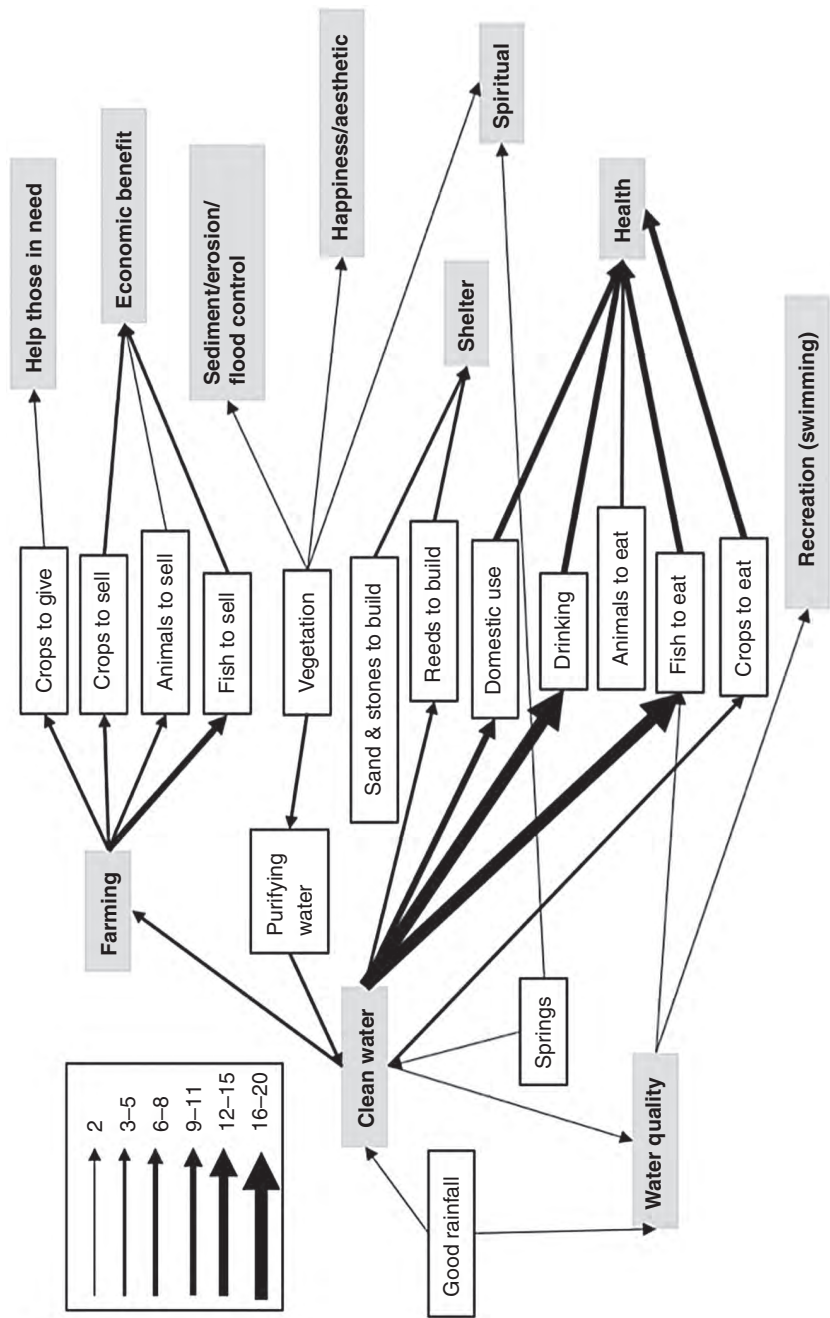


Figure 10.6 Causal-loop diagram of ecosystem services and benefits from healthy rivers from Lekgalameetse; the river flows through the six CPA communities, thus offering a common referent.

The Emancipatory Nature of Transformative Agency 251

likely to engage the issue. An outcome of these ‘exercises’ was enhanced understanding of the nature–culture relationship associated with the concept of beneficiation, and not just financial gain, as shown in these extracts.

- CPA: I did not know that things are all connected, surely we need more people and institutions to be involved in this.
- CPA: I wish to be part of the people who are reducing vulnerability regarding our natural resources and to have a better understanding of how our natural resources should be preserved optimally and how our lives will be improved in the process.
- CPA: Before we had the workshops, we did not follow biodiversity management very well, and we could not link a protected area that much to issues of wellbeing and even things like job creation.

The extracts show that the deepening of understanding of the object of activity is a crucial dimension of emancipatory agency formation as CPA members came to frame the beneficiation possibilities in their own terms. Engagement in co-construction of the second stimuli allowed CPA members to consider beneficiation from their land not just in financial terms (dominant discourse) but also in terms of health, shelter, spirituality, joy, solidarity and recreational forms of beneficiation. To further concretise this, AWARD and INR worked with the CPA management committee and youth through an eighteen-month learning process that focussed on three categories, each with its own numerous second stimuli tools:

- participatory mapping of Lekgalameetse cultural and natural assets
- exposure to conservation-based enterprises including shared learning events with other CPAs in South Africa and from other countries (cf. ETADS 1 pathway)
- collaborative development of a beneficiation model suitable for Lekgalameetse that involved implementing one of the non-monetary community beneficiation activities in the reserve.

This ethical-political expansion process following the initial co-framing of beneficiation beyond the financial only was driven by key guiding questions, which were leading co-designed second stimulus tools that were collaboratively developed in a CL workshop by INR, the CPA committee, a Lekgalameetse youth forum and AWARD:

- What do we have in Lekgalameetse Nature Reserve that we can benefit from?

- What kind of beneficiation enterprises are suitable for a protected area like Lekgalameetse Nature Reserve?
- What beneficiation model is suitable for Lekgalameetse Nature Reserve?

ETADS 3 Pathway: Leading to Youth Involvement in Land Custodianship

Emerging out of, but developing partly in parallel to, the first two pathways, a third ETADS process pathway focussed on exploring future sustainability pathways for custodianship and continuity of the co-management catalysed in ETADS pathways 1 and 2. This emerged as a call-and-response action whereby both the CPA management committee and LEDET called for the need to work more pro-actively and explicitly with youth as future custodians of the land. This reflects initial CPA interest in an empowered and informed approach to managing the land following decades – if not centuries – of disenfranchisement from the land, cultural disruption, de-skilling and lack of skills development and learning for transformative agency and change.

This call came after three years of the expansive learning processes between CPAs and LEDET which set the more democratic co-management agreement and the beneficiation tools in place, offering guiding tools and principles for youth to build on. From 2018 onwards, the object of co-management was expanded via an intergenerational ethical-political intentionality, focussing on capacity development of youth, shown in these CL extracts.

- LEDET: I think we have now developed good processes and principles in place for co-management engagements, and it's time to broaden this to include youth development. This is one of the key focus areas from the government side, to ensure that there is long-term custodianship of these processes.
- CPA: We are now happy with how we engage with LEDET And different training we have done helped us to understand co-management better and we are now working off the new draft agreement But we are all old here, perhaps I'm the youngest but still old, so we need to pass the baton to our kids. They must know what we are doing here.
- CPA: Our youth are not really interested, when we talk about co-management they ask if there is money. They don't know

The Emancipatory Nature of Transformative Agency 253

how this legacy is important and all potential opportunities that will come in future.

From these expressions discussed fully in CL workshops, the youth forum emerged as a new important activity system. Four youth from each of the six CPAs were selected to work collaboratively with the CPA committee in all co-management engagements. AWARD continued to play a mediating role for youth capacity development with support from LEDET. However, further exploration revealed that youths expressed disconnection from the land as most were born after the painful experience of forced removal of their parents and grandparents:

Youth: I have never been inside the reserve, it's fenced and we are not allowed inside. All we know is that people with money like tourists from overseas go inside.

Youth: I am surprised that you are saying this thing [reserve] is ours and we should participate in managing it but I don't know it well enough.

Youth: My grandmother is always talking about the good life when they stayed in Lekgalameetse, I would want to know more about the place.

Youth: We are not getting any benefits at all from this land, actually as young people we are suffering more. We don't have jobs, when we heard that we're claiming this area, land claim commissions said that people must not be suffering more than before but it is even getting worse.

In addition, elderly CPA members expressed that they really have to bring young people onboard as most of them are ageing.

CPA: We should find ways to involve them [youths], we are ageing and very soon we should retire, and most of us in this room are towards our graves.

The tensions expressed in these statements indicated that the youths had little connection with the ancestral land that they were expected to co-manage, beyond in some cases memories of their grandparents to which they were partially alert. The *conflict of motives* was in knowing that it is their ancestral land versus not being sure what it is like and what benefits it can offer them. Elderly people showed a related *conflict of motives* to that of the youth; eager or curious to have youth involved in the venture of co-management of ancestral land without being sure how to go about it.

With these findings emerging in Lekgalameetse, AWARD decided to deploy young people in the AWARD Young Professionals internship programme to respond to the challenge revealed in the conflict of motives with the youth in Lekgalameetse. The AWARD internship programme provided a second stimulus in which both the CPA youth forum and AWARD interns collaboratively designed smaller cycles of innovative learning using three mediation tools:

- *Walking the land with elders*: This took the form of an open and flexible five-day field excursion over two months. Different elderly persons who once stayed in the reserve led a group of twenty-four young people to different parts of the reserve, sharing how they used to live and manage natural resources in a communal way. Former residential sites, cultural sites such as graveyards and sources of livelihoods like water and farmlands, as well as cultural taboos and myths that helped in conservation during that time, formed the focus of much discussion. Occasionally, cultural dances and songs were performed by the elders to emphasise the type of life that they adored but that was now slowly vanishing. Field activities also included walking the land with experts to learn more about the birds and trees, with some focus on invasive plants that threatened biodiversity in the reserve. Youths' experiences were as follows:

Youth: I enjoyed walking through the land of our ancestors, and to see the beauty of our nature, the mountains, beautiful rivers, different trees, above all the fresh air.

Youth: It was a great and awesome learning experience, I enjoyed the walk to the top of the mountain and saw different types of trees. Mostly I appreciate the way we now relate to one another.

Youth: The tour was a great one. I am happy because I now know the land of our ancestors.

Youth: I enjoyed every moment of it, the history of the land and people, it just connects me to this place. It will be good to learn more about conservation.
- These comments show some movement from the paralysis expressed earlier to explicating new possibilities or potentials in the activity (Sannino, 2015), in which youth are beginning to see themselves as connected to the place, their ancestral land.
- *Participatory mapping with the elders*: Participatory or community mapping was used as a second stimulus tool to support cohesion between

elders and youths, and to support fuller understanding of the geography and ecology of the land. Agentive comments were:

- Youth: At least our elders are opening up to us, I liked the group work.
- Youth: I am happy I applied my geography skills, haven't had the opportunity since I left school. I am getting to know more about this reserve.
- CPA elders: If we continue like this, we will have some of the youngsters joining us in this journey of co-management . . . the future will be good indeed.

- *River health monitoring activities:* River health monitoring using citizen science tools took place at different sites, inside in the reserve, downstream in commercial farms and further down in communities. The quality of the river deteriorated from very pristine in the reserve to completely unpotable as the river passed through crowded communal lands. This second stimulus helped the youth to undertake citizen science monitoring to assess their water quality, and via this appreciate the importance of conserving a high-biodiversity area like Lekgalameetse Nature Reserve as a common good that provides clean water and other ecosystem services for communities close to the reserve (the CPA communities) but also others downstream. As stated by one youth: 'I am now confident the water here in the reserve is very clean, I can drink straight from the river, something that I can never do downstream.'

The combination of these second stimulus tools over time led to the activation of youth interest and agency to participate in co-management processes of their land, from an informed understanding of different socio-ecological systems and management practices. There was also evidence of improved relations with elders who could see intergenerational continuity in land ownership and management commitment emerging. Youths suggested and collectively agreed to develop a socio-ecological field guidebook based on their learning, to share with others. AWARD assisted with providing inputs on biodiversity and water resource management, while the CPA elders offered inputs of cultural historicity. The expansion of the object here was ethical-political in its extension of intergenerational solidarity.

Concluding Discussion

In each of the three ETADS pathways described herein, a range of second stimuli tools were co-created and used in the ongoing formative intervention mediation processes. Through the ETADS process pathways, CPA members and youth were able to have a more complete understanding of how co-management works in practice. The activation and emergence of emancipatory transformative agency by double stimulation emerged as community members firstly expanded their object by actively engaging in drafting a new co-management agreement, developing co-developing beneficiation models and engaging youth in the communities to regenerate cultural-historical (yet disrupted) connections to their land in order to empower them to take up custodianship of the land in time. What is significant about these processes is that they are founded on co-engaged depth inquiries that ‘dig deep’ into histories of disenfranchisement, disempowerment and exclusion, from which communities wished to break free, as shown by their insistence on training and empowerment, developing the co-management agreement directed by their interests in empowerment and their struggles to reclaim the land, not just technically but also in ways that were beneficial to them, and in ways that had longer-term intergenerational solidarity intent. They were able to achieve this via co-engaged formative intervention inquiries that were effectively also inquiries into emancipatory human activity and that led to a transformation of power relations between communities and government, and transformations in community relations between elders and youth.

The spatio-temporality of the process is also significant, as the evidence shared of the emergence of emancipatory agency requires adequate time and attention to be given to the deep, structural aspects of society and place, including by those that it most concerns. Bhaskar (2009, p. 23) argues that ‘radical intellectuals’ such as implied in the roles of co-engaged researchers in CHAT-inspired formative interventionist research, such as the CPA members, AWARD researchers, LEDET and their partners, ‘need to illuminate how alternative futures can be coherently grounded in the deep structures of what already exists, of what people already know and have’. Our research shows that in determining and establishing alternative futures coherently grounded in what already exists, communities are able to learn to act together in forming such alternative futures. The educational process of co-creating transformative agency by double stimulation appears to be central to the emergence of emancipatory agency from below, challenging and transgressing power relations that hold oppressive

unsustainable norms, practices and relations in place (cf. also Lotz-Sisitka et al., 2017; Pesanayi, 2019; Jalasi, 2018; Mpepho, 2020).

As indicated earlier, Bhaskar (2009) offers a non-reductive, relationally stratified vantage point on co-engaged depth inquiries which can help us to interpret the ethical-political expansion of the object as outcome of the formative intervention described herein. In reflecting on the ETADS outlined in this case, we see evidence of interrelated:

- (1) *geo-historical directional rationality* orientated towards the common good, as communities worked on redressing 300–500 years of colonial imposition in restituting their land, while also taking contemporary needs for water resource management and conservation into account in the interests of the common good (note that this geo-historical rationality is not necessarily linear and cannot be equated to imperial time)
- (2) *intergenerational solidarity* as communities sought the means to empower not only the adults in the CPA management committee and associated CPAs but also the next generation of youth who would in time become the custodians of the reclaimed land
- (3) *ethical-political transformative praxis* as communities sought to challenge inadequate responses and approaches from government and a history of racism, apartheid and exclusion, while also giving attention to the ethics of co-beneficiation and principles of sustainability (water resource management and conservation)
- (4) *transformed power relations* between the government and the CPA – a clear outcome of the process that was consolidated via the co-management agreement, and extensions thereof in the form of beneficiation arrangements. This emerged via a dialectical process of enabling community agentive capability via ETADS that challenged and changed oppressive power relations and structures.

As elaborated earlier, the emergence of emancipatory agency involves responsive mediation in which second stimuli, suitable to arising contradictions and conflict of motives, need to be co-developed as the formative intervention process unfolds. These are not easily pre-determined. The emergence of ETADS pathways involves at times complex and parallel forms of movement over time that are not necessarily linear (as shown by our three iteratively related, at times parallel ETADS pathways). It also involves critical, systemic and socially engaging second stimulus tools with the power to challenge the historicity of the *longue durée*. Most importantly, movement from oppression to emancipatory praxis cannot be done

for communities as is the intention with most development interventions. Rather, communities can take ethical-political ownership of co-directing the emancipatory direction of their own development in the formative intervention process – in our case, working *with* AWARD, LEDET and others. Bhaskar (2009) argues that what constitutes agents' wellbeing must be discovered by them, in and via process(es) of co-engaged depth inquiry, such as that demonstrated in the formative intervention described here. As indicated, we have sought to articulate how TADS in CHAT can be a form of *emancipatory agency from below* among those most historically excluded and marginalised. Such a process is necessarily ethical-political and requires a 'transformative activist stance', as articulated by Stetsenko, but also emancipatory transformative agency from below to be realised in *freedom-seeking transformations of the object of human activity*, as shown in this case.

Acknowledgements

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Notes

1. See, for example, Engeström (2009), Stetsenko (2019, 2020, 2021), Engeström and Sannino (2021), Ko and colleagues (2022), Bal and colleagues (2019, Chapter 8 of this volume), and Sannino (2020, 2022), among others. Our research adds to this body of work.
2. Here we note contemporary theoretical debates on limited interpretations of Marxism; for example, Rabaka (2009) points out that 'Classical Marxism privileged class and the proletariat as the agents of revolutionary social transformation, while unwittingly neglecting the overlapping, interlocking, and intersecting nature of racism and sexism in capitalist and colonial societies' (p. 10).
3. Fanon (1952 [2008], p. 2) poignantly argues that ontology and sociology are intimately related, with the latter powerfully structuring but not confining the former (also known as his revolutionary stance) – it is in this decolonial sense that we use 'onto-epistemic'.
4. 'We' here does not refer to us as authors only but to the CHAT research community associated with the Environmental Learning Research Centre at Rhodes University of which we are part.

5. This is because, as described by Harvey (2002), ‘the world is composed of a complex array of material entities and causal processes which are not immediately available to everyday experience’ (p. 165). We have also drawn on Bhaskar’s (2008) concept of ‘absenting ills’, which is a dialectically constituted ethical concept, and his dialectical articulation of transforming power relations (Power 2→1 transformations). While this philosophical under-labouring is useful for its explicit engagement with emancipation and ethics, and a dialectically framed generative orientation to transforming power relations via agency, it lacks an adequate theory of learning (Lotz-Sisitka, 2016). In our view, this is how critical realism and CHAT best intersect, noting too that Bhaskar’s critical naturalism is rooted in and elaborating of Marx (Harvey, 2002).
6. Employed by AWARD at the time the ETADS processes unfolded, with ongoing interaction in the community site during postgraduate studies (Thifhulufhelwi and Mponwana), supported by Chikunda and the lead author (Lotz-Sisitka), who was also supporting AWARD staff to develop the CHAT orientation to their research-based praxis at the time of its emergence.
7. Systems thinking emphasises interrelationships between different components and patterns over time (Meadows, 2008). Pollard, Biggs and Du Toit (2014) add that systems thinking is necessary in a world where multiple, interconnecting drivers lead to complex problems causing undue pressure on natural resources such as water, creating vulnerability for humans and other species.

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261

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263

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Appendix B: Informed Consent Form for Research Participants



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INFORMED CONSENT DECLARATION (Blyde CPAs and Youth Team)

PHD Project Title: An exploration and expansion of learning and agency for transforming ecosystem restoration practices and developing socio-ecological learning systems for sustainable natural resource management

Original M.Ed. title: *An exploration and Expansion of Learning and Agency in Ecosystem Restoration practice. A case of Natural Resource Management Programmes in the Blyde Catchment.*

Researcher: **Mr. Reuben Thifhulufhelwi** from the Department of Education (Environmental Learning Research Centre), Rhodes University has requested my permission to allow the Blyde four CPAs (Communal Property Association) and Youth Team to participate in the above-mentioned research project.

The nature and the purpose of the research project, and of this informed consent declaration have been explained to me in a language that I understand.

I am aware that:

1. The purpose of the research project to explore and expand learning processes associated with restoration Invasive Alien Plants (IAP) control practice in the Blyde catchment, in an attempt to examine challenges faced by the Natural Resource Management programmes (NRMPs) and to envisage new transformative learning pathways that can potentially enhance the effectiveness and resilience of restoration IAP control practice. This study is framed in two parts, with part 1 focused on working with the four agencies implementing restoration IAP control and related natural resource management practices, namely: Working for Water (WfW), High Altitude Teams (HAT), SANParks Biodiversity social project, and the Indigenous Forest management section of the Department of Agriculture, Forestry Fisheries (DAFF-IFM), and these agencies form part of the larger NRMPs implemented nationwide throughout South Africa. Part 2 of the study focuses on working with the new land owners or Communal Property Association (CPAs), and other related catchment residents, on exploring capacity development (with specific focus on youth) and custodianship building for institutionalization of restoration IAP control practices and related NRM practices. As such, the overall intention of the study is to explore systemic expansive learning pathways to support capacity development and the development of socio-ecological learning spaces, through co-injury processes for effective and sustainable natural resource management in the Blyde catchment landscape.
2. This consent form is an extension of part1 research conducted under Reuben's M.Ed. carried out from 2016-2018. The Rhodes University has given ethical clearance to this research project and the clearance certificate [2016.11.2], as well as the PhD upgrade proposal was provided as evidence.
3. By participating in this research project the CPAs will be contributing towards development of socio-ecological learning spaces in which both the Natural Resource Management Programmes (part1) and CPAs or new land owners (part2) will be collaboratively implementing the ecosystem restoration programmes for livelihoods benefciations, biodiversity conservation

Rhodes University, Research Office, Ethics
Ethics Coordinator: ethics-committee@ru.ac.za
t: +27 (0) 46 603 7727 f: +27 (0) 86 616 7707
Room 220, Main Admin Building, Drostdy Road, Grahamstown, 6139



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and sustainable utilization of natural resource. This research (part2) will focus on capacity development for CPAs members and youth in both the implementation and governance of NRMPs.

4. CPAs members will participate in the project by participating in capacity development workshops, field learning trainings, and collaborative visioning workshops. The youth will also develop their own change projects focused in different aspects of NRMPs implementation and governance.
5. The participation of the four CPAs will be negotiated with all four CPAs and the chairperson of the committee will be the signatory if the CPAs agree to participate in this research. The Youth team emerged as one of the expansive learning pathway for capacity development from part1 of this research, in which a youth team constituted by CPAs members was proposed as a future sustainability strategy for custodianship and institutionalization of NRMPs to be managed by land owners. As such, a team of 8 CPAs youth was selected. Part2 of this research aims to work with this team for capacity development. Their participation in this research will also be negotiated and the team leader will be the signatory representing the consent of the team.
6. The participation is entirely voluntary and if any of the CPAs or Youth team member at any stage wish to withdraw from participating further, they can do so without any explanation required or any negative consequences.
7. The research ethics of this study in relation to data protection, confidentiality and dignity; transparency and honesty; accountability and integrity; as well as academic professionalism, were clearly explained by the researcher. As such, pseudonyms will be used to ensure confidentiality and the research outputs including publications and conference proceedings will be shared with all participants.
8. To ensure data protection, the primary data including transcripts from workshops will be saved on computer hardware such as memory cards and will never be saved in any online systems including google drives, dropbox. Also the data will be saved using codes which will be developed and only understood by the research. At the end of the research study, all audio, video and personal data will be destroyed or returned to participants.
9. Neither the CPAs nor Youth Team will be compensated for participating in the research. However, the CPAs are currently getting compensated through short-term employment in the restoration IAP control project, funded through AWARD (the organization I was working full-time while conducting the M.Ed. (part1)).
10. The researcher intends publishing the research results in the form of research dissertation, conference proceedings, journal papers, book chapters. However, confidentiality and anonymity of records will be maintained and that CPAs or Youth Team names and identity will not be revealed to anyone who has not been involved in the conduct of the research.



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11. The CPAs and Youth team will receive feedback in the form of emails and telecommunications, as well as during capacity development change laboratory workshops regarding the progress and results obtained during the study.
12. Any further questions that CPAs or Youth Team might have concerning the research or my participation will be answered by the researcher, Mr. Reuben Thifhulufhelwi, thanyani.reuben@gmail.com, 078 864 6564/ 081 263 4516
13. By signing this informed consent declaration I am not waiving any legal claims, rights or remedies that CPAs or Youth Team may have.
14. A copy of this informed consent declaration will be given to both the CPAs and Youth Team, and the original will be kept on record.

I, LAURENCE BERNARD MOGARANE have read the above information / confirm that the above information has been explained to me in a language that I understand and I am aware of this document's contents. I have asked all questions that I wished to ask and these have been answered to my satisfaction. I fully understand what is expected of my child during the research.

I have not been pressurised in any way to take part in this research. By signing below, I voluntarily agree that the CPAs and Youth team may participate in the above-mentioned research project.

[Signature]
CPAs chairperson

LB MOGARANE 21/05/2019
signature Date

Reuben Thifhulufhelwi
Researcher

[Signature] 21/05/2019
signature Date

Appendix C: Signed permission letter to use AWARD data for purposes of PhD Research

06/11/2019

Reuben Thifhulufhelwi
AWARD
P O Box 1919
Hoedspruit
1380

PERMISSION AND AGREEMENT TO USE AWARD DATA FOR PURPOSES OF PhD RESEARCH THESIS

Dear Reuben,

The Association for Water and Rural Development (AWARD) hereby grants you permission to use data that is the intellectual property of the company generated under the RESILIENCE IN THE LIMPOPO BASIN: Olifants (RESILIM O) project funded by USAID, as well as under the Blyde Restoration Project funded by the Department of Environment, Forestry & Fisheries Natural Resource Management Programmes Chief Directorate. The permission to use data is subject to the following conditions:

1. THESES/DISSSERTATIONS/PROJECT REPORTS

- a. Nothing in this agreement shall prevent a registered student of any university from submitting a thesis, dissertation or project report based on the results from the research arising from this work, for the purposes of obtaining a degree. The AWARD may see the draft material during the writing up period and may, within thirty (30) days of receipt, request the exclusion of confidential or sensitive information, and to correct any errors of fact. If required, the examiners shall be appointed by the university under an agreement of confidentiality between the university and the examiners. A Party may request that access to a thesis, dissertation or project report be restricted for a period up to two (2) years. Such a request will not be unreasonably denied.

2. INTELLECTUAL PROPERTY

- a. The ownership of background intellectual property existing prior to the commencement of this agreement will be and remains unaffected hereby.
- b. The rights of ownership of foreground intellectual property will be managed in accordance with the provisions of the Intellectual Property Rights from Publicly Financed Research and Development Act, Act 51 of 2008.

3. CONFIDENTIALITY

- a. For the purpose of this clause, "Confidential Information" means specifications, drawings, circuit diagrams, tapes, discs and other computer-readable media, documents, information, technical and commercial data, techniques and know-how.
- b. That data/information, agreed or noted by the involved Parties to be confidential, may be passed from one Party to another for the purpose of the research, and that Confidential Information may arise from the research.
- c. The Parties undertake to treat the Confidential Information as strictly confidential, not to divulge to any third party or sell, trade, publish, reproduce or reverse engineer any of the Confidential Information and not to put in use for any purpose unrelated to the Collaboration, in any manner, any Confidential Information without the disclosing Party's prior written consent;



- d. The obligation of confidentiality of clause 3 shall not apply to information which:
- i. Becomes known by third parties through no fault of the Parties hereto;
 - ii. Is or becomes published otherwise than by unauthorized publication in breach of this MOU;
 - iii. Is independently developed by an employee of a receiving Party who has not had access to any of the Confidential Information disclosed to the receiving Party by the other Party;
 - iv. Is in the public domain;
 - v. Can reasonably be demonstrated to be known to the Parties prior to disclosure under this MOU;
 - vi. Is disclosed to the Party or Parties by another party entitled to disclose the information;
 - vii. The Parties hereto agree to release; or
 - viii. Is required to be disclosed by law.
- e. The student and associated researchers shall undertake the above obligations of confidentiality irrespective of whether s/he is a staff member.

4. PUBLICATION

- a. It is intended that the results of the research arising from this agreement should be published in accordance with normal academic practice. In order to protect the Confidential Information and any proprietary rights, no Party may publish or publicly disclose the results of the research or any Confidential Information without the prior written consent of the other Parties.
- b. All involved parties shall be entitled to an electronic copy of the resultant research and/or thesis.

Sincerely
Derick du Toit
Assistant Director
AWARD

Appendix D: Example of a Back-to-Office (B2O)



Version 2- August 2016

Phase II B2O Report

Bringing Process Data and Statistics from the Field Back to the Office

Complete after a field event and submit to MERL via Vhutshilo@award.org.za within a week or the last day of the month.

1. Making the Connection

What was the field event? (Workshop, meeting, course, conference, talk, etc.)	Workshop followed by field visit next day
Where did it take place?	WfW offices, Nelspruit & Mariepskop, Lowveld Plantations
When did it take place? (date)	12-13 Feb 2018
Purpose of the event	Engaging DEA NRM national Operational Support and Planning (OPS) on the proposed long term Restoration and IAP control Strategy for the upper Blyde, Klaserie & Sand catchments, and facilitating discussions and decisions with regional partners around key aspects of the strategy.

KRA and Project to which the event relates	KRA 3, Blyde Restoration
Intended RES-O Outcome Towards Which the Event Contributes	KRA3, Blyde Restoration outcomes, development of restoration strategy
Name(s) of Author(s) Complete with colleagues where possible	Reuben, Jan & Silindile
Who else from AWARD attended?	
Who else should you (the author) send this B2O to?	Sharon, Charles

2. TraiNet Data

To decide if the data from this event should be logged on TraiNet, please complete:

Could participants learn new information or skills relating to climate change, biodiversity and/or water management?	Yes, the discussion was focused on development of technical operation planning tools for sustainable management of key biodiversity and freshwater systems.
Was there a lead facilitator or instructor?	Yes, Reuben & Jan from AWARD
Was there a defined learning program with learning objectives/outcomes?	Yes, for DEA national to provide inputs and endorse the Blyde restoration plan & related tools
Was the event run/organised/initiated or funded either by the Sub-Grantee or by AWARD?	Yes, organised and led by Reuben & Jan from AWARD
Did the Sub-Grantee or AWARD make a substantial input in the event (e.g. a presentation or planning the program)?	Yes, presentations were made by AWARD team and technical inputs from DEA national and the Restoration partners

3. Reflections

Reflect on the event and what you have learnt about the catchment and your work. Consider things not immediately obvious from the agenda, that struck you individually or as a collective.

What new insights did you gain from this event, or this event in relation to previous ones? Please summarise any key observations regarding the context and/or about your role in the process or AWARD's work in general.	General observations: Workshop day 1, It was a good meeting with positive feedback and valuable suggestions from DEA national operational support (OPS) on the work we are doing in the Blyde (including the Restoration strategy and a several further aspects). A number of decisions were also made by the group, including OPS support for the proposal we have developed for SA Airforce transport of restoration teams to inaccessible areas in the Blyde. The valuation of ecosystem services (resource assessment) in the Blyde area was a major requirement indicated by OPS, in order to motivate for more funding. OPS gave useful suggestions on potential options for the endorsement of the Blyde Restoration Working Group as well as the Blyde Restoration Strategy at regional and national levels. National director Mr xx and deputy director Mr xx committed to a minimum of one regional engagement per year. This is a good start even though we were hoping for more (but they are spread very thin). It was good to see multiple issues (as being experienced in the Blyde) being looked at from different perspectives (national vs regional, etc.), shedding light on sometimes quite different considerations from the different positions. This has allowed for a greater appreciation of the situation in which the different parties find themselves in. It was evident that quite a number of processes are taking place at national level that are similar to what we are doing or planning, and indicated the need for us to align our processes with the national work happening (i.e. the MUCP tool, compartment development (see below), GIS tools development, etc.) OPS noted that DEA national is in the process of developing compartments/polygons for the whole country to which all restoration planning and implementation in the future will be tied. There is a possibility that the polygons we have delineated through our mapping process could be incorporated into this national layer. This needs further exploring with the relevant people at DEA national. There was agreement for piloting the introduction of the GIS mapping and data management tools developed by HAT into WfW and SANParks BSP in the Blyde. This is a very positive step forward in improving the GIS and data management tools of restoration practitioners in the Blyde.
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	Overall it was a good meeting, considering that this was the 1st between the Blyde Restoration Group and OPS, but commitments to collaborative actions (or at least discourse that reflected this) was missing slightly on day 1 (there was a lot of “you must/need to” as opposed to “we must/need to”). Field visit day 2: There was a lot more commissive talk, interest, and decisions on collaborative actions evident and agreed on during the second day (by director & deputy director), incl. on piloting the new Management Unit Clearing Plan (MUCP) tool as a medium term planning tool for restoration in the Blyde, collaborating on wetland mapping and assessments, and wetland data sharing and integration to support wetland restoration. Getting commitments from the management authority (MTPA) to secure the restoration investments made by DEA NRM in the longer term was emphasised strongly by director & deputy director. Getting commitment from Land-owners was also noted as NB from OPS. These both link to our objective of supporting development of institutional arrangements securing the restoration practice in the longer term. The need for specialist inputs to wetland assessments and restoration planning, as well as timber utilization and value adding was noted by Deputy director. The need to approach Environmental Protection Infrastructure Programme (EPIP) was noted to support infrastructure maintenance, especially roads, to ensure access to areas that need to be restored. The need for an integrated plan that covers all the ecological restoration, management and maintenance needs and brings all the different programmes currently focussed on all these different aspects together, was stressed. They also noted that this should all be brought together under a big LUI application in the future. The importance, beauty and uniqueness of the area, and the development opportunities it presents was noted by both Michael and Ahmed. Michael noted his concern about the proposed mining in the Blyde catchment. Both Ahmed and Michael expressed their appreciation for our efforts in getting them out to the Blyde and exposing them to the work done and the reality on the ground. Our local partners also expressed their thanks for our efforts and the importance of this collective effort. Overall these two days have been very valuable in moving towards improved vertical coordination and alignment between DEA national and regional (as also affecting the Blyde).
Have any new questions emerged (from you or others) about the context	The heavy emphasis on the monetary valuation of ecosystem services and linking this to investments in restoration by OPS, although the rationale behind this is understood (showing return on investment or cost-benefit analysis), does raise some concerns. There is extensive

and / or your work arising from this event?	critique of this approach in securing biodiversity/environment/nature and equitable access to the benefits (and decision making around this), and poses the question how do we best respond to this emphasis on monetary valuation.
Have you identified any new challenges regarding the context and/or your work? Do you have any ideas as to what should / could be done about this?	Mr xx (NRMPs regional programme leader) noted that Mr xx (one of the 3 WfW project coordinators in the Blyde area) will be transferring to Limpopo and that his position will not be filled. This will put further capacity strains on the Mpumalanga WfW programme, which is already seriously understaffed. (Brendon also noted 2 other positions in Mpumalanga that have been frozen in the last year). This is a challenge we have identified before, and clearly remains a problem.
Have you gained any new insight regarding progress in relation to the baseline conditions there were previously in this context? (You need not reflect on this if this is a new context or project.)	See above The MUCP tool links strongly to our Strategy & IAP inventory mapping. HAT GIS tool links to our GIS cap dev plans in the Blyde. Wetland collaboration links to our plans to look into other forms of ecological degradation and their restoration in the Blyde, to support integrated restoration and NRM. OPS support for the proposal we have developed for SA Air Force transport of restoration teams.

4. Communications

Help us communicate about the catchment and our work.

- Submit photographs of the event to the Media and Communication or MERL Unit.
- Send a note about potential social media posts to the Media and Communication or MERL Unit
- Did you hand out any RESILIM-O pamphlets, media packs, calling cards, reports, educational materials, etc? Please name the items and the number you distributed:

RESILIM-O material distributed	Number of Copies Distributed

- Were you given any pamphlets, reports, calling cards, educational materials etc.? Please list these below and send copies to the AWARD Media and Communications team.

1.

2.

You are Done! Please submit your B2O to Vhutshilo@award.org.za with copy of supporting documentation like the register, minutes or a report.

Written by:

Reuben, Jan & Silindile

13 February 2018

.....

NAME

DATE

ADDITIONAL DOCUMENTS APPENDED:

- Attendance register
- Photos
- Presentations

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Appendix E: Terms of reference for the Blyde Restoration Working Group

Blyde Restoration Working Group: Terms of Reference



1. Introduction

The Blyde Restoration Working Group¹⁶ is a group of practitioners, managers, land-owners and researchers involved in invasive alien plant control, restoration, conservation management, sustainable forestry management, and associated natural resource management practices in the upper Blyde, Klaserie, Sabie and Sand River Catchments. The aim of the group is to facilitate the coordination, collaboration and development of IAP control and ecological restoration within the focus area in order to secure biodiversity, water, and associated human livelihoods. The group has been communicating, meeting and collaborating around these objectives since 2015.

2. Members

The group consists of representative members from DFFE NRM programmes (WfW, WoF, WfWet), DFFE Forestry, MTPA, SANParks, SANBI, York Timbers, SAFCOL/KLF, SAEON, Sabi-Sands Wildtuin, IUCMA, Blyde 04 CPAs, TGME, K2C NPC, AWARD, CSA, IDLES (see end of document for acronyms) and others. The group's collective activities are currently facilitated and coordinated by IDLES in partnership with DFFE, SAEON and K2C. Joining of the group and attending engagements is open and inclusive to all stakeholders within these catchments.

3. Rationale

The upper Blyde, Klaserie, Sabie and Sand sub-catchments constitute a high-priority biodiversity and water resource area within the Mpumalanga and Limpopo Provinces, as well as the larger Olifants and Sabie

¹⁶ The group is currently discussing a potential new name for the group with the recent inclusion of the Sabie Catchment.

Catchments. This is recognised within various national and provincial plans and strategies, including the National Strategic Water Source Areas, National Freshwater Ecosystem Priority Areas, the National DFFE NRM Prioritization, and the Mpumalanga Biodiversity Sector Plan among others. However, the ecological functioning and biodiversity of this area is threatened through various forms of ecosystem degradation (incl. invasion by IAPs, wetland degradation, stream and river degradation, erosion and siltation, etc.). Ecosystem degradation such as this threatens the various benefits derived by local people from these ecosystems through sustainable land (and water) uses, and increases the vulnerability of ecosystems to both current and future global changes (such as climate change), reducing their ability to adapt to such threats. Consequently, the restoration of degraded ecosystems is seen as an important natural resource management practice in this area by the Blyde Restoration Working Group in order to establish healthy and resilient catchments and their associated ecosystems.

All the group members noted above from the public and private sectors, are involved in restoring degraded land, clearing IAPs, and maintaining healthy land within these catchments. Despite the efforts invested and the progress made by the various organizations involved in IAP control and wetland restoration in the area over the past thirty years, restoration has also experienced significant challenges and set-backs during this period, and the extent of invasion and other forms of degradation still poses a significant threat to local biodiversity, water security and livelihoods. Partners have reflected on this long history of implementation, the many previous and ongoing institutional changes, and have emphasized the need to learn from history and build on previous efforts. Partners have equally acknowledged the complexity of the situation, and the need for collaboration and coordination amongst multiple entities with various stakes, mandates, expertise and capacities in the area.

In line with this, the group has been actively identifying challenges and constraints hampering progress of restoration and developing tenable and appropriate responses to address these challenges and work towards fulfilling its objectives. The coordinating partners have been supporting this process through the use of collaborative-enquiry, reflexive and social learning approaches.

4. Purpose

This group aims to facilitate collective action by all natural resource management stakeholders in implementing large-scale and sustainable ecosystem restoration in the upper Blyde, Sabie, Sand and Klaserie Catchments. **The objective of the Blyde Restoration Working Group is to support the restoration of degraded ecosystems, and the maintenance of these and adjoining healthy ecosystems in the upper Blyde, Sabie, Sand and Klaserie Catchments, in order to sustain biodiversity, ecosystem services and the human livelihoods dependent on these, within these catchments in the long term.**

The group aims to achieve this through:

- the collaborative development of joint long-term Strategies & plans for restoration and IAP control,
- coordinated and aligned implementation of restoration activities,
- supporting coordination, alignment, and collective action,
- supporting the development of tenable and appropriate institutional arrangements amongst key stakeholders, in collaboration with other structures to guide governance processes and ensure long term sustainability of these restoration efforts,
- supporting the development of a better understanding of the ecosystems and biodiversity of the focus catchments and their status, functioning, integrity, and restoration and management needs,
- supporting the development of custodianship through restoration and natural resource management amongst local land-owners and communities,
- supporting the capacity development of practitioners on key skills within the restoration and associated natural resource management practices,
- the collaborative development of new IAP control methodologies and restoration approaches,
- support for Sustainable Forestry Management & compliance,

- development of a monitoring network, to measure restoration impacts and to support learning and adaptive management,
- facilitation of research on key restoration, conservation and associated livelihoods knowledge needs,
- supporting the development of proposals for funding of restoration activities as well as the development of new funding mechanisms,
- the development of partnerships to support the restoration practice,
- sharing its experiences and learning with the broader natural resource management, restoration and conservation sectors.

5. Roles and responsibilities

The group aims to coordinate activities through a number of different avenues including meetings, regular communication, joint field excursions, and an online data-sharing platform (currently being developed).

5.1 Large group meetings

The Blyde Restoration Working Group as a whole aims to meet two to four times yearly. Two of these meetings will be dedicated to supporting the alignment of the annual plan of operations (APOs) of the various implementing partners (in support of coordinated implementation), further partners updating each other on relevant developments, and any arising, relevant issues benefiting from group deliberation. These meetings will be held during the last quarter and the first quarter of each year (based on the APO and budgetary cycles of the majority of partners). Further meetings will be focussed on the development of collective tools, products or processes such as joint Restoration Plans and Strategies. Meetings will be coordinated, facilitated, and recorded by the coordinating entity with the support of partners.

All partners commit to:

- delegating at least one representative to attend these meetings (as far as possible), with these delegates being in a position to share the status and plans of the work of their individual organizations,
- raising matters of mutual relevance, and discussing these collectively,
- making decisions on actions where necessary through consensus,
- sharing information on planned and completed implementation activities (such as spatial data for IAP clearing or restoration areas),
- sharing information from these meetings (whether data or actions or others) with the relevant people within their organizations,
- completing or implementing agreed on actions, and feeding such information back to the group if so agreed,
- lead sub-groups on specific topics or issues where the group identifies the need for such,
- providing venues and logistical support for meetings on occasion.

5.2 Smaller “activity focused” group engagements

In addition to the large group meetings, smaller group or “one-on-one” meetings or field excursions will be arranged on an ad hoc basis for specific tasks that are aimed at advancing the BRWG objectives. These may include:

- partners updating each other and exchanging of information,
- planning and coordination of particular implementation activities or other joint activities,
- facilitating technical or specialist inputs or comments on tools, products or proposals being developed for the group (such as Restoration plans),

- conducting focused activities such as IAP and wetland mapping or biodiversity assessments,
- conducting training, capacity development or learning events.

5.3 Coordination of the group

- The Blyde Restoration Working group (BRWG) is currently coordinated by the Institute for Developmental Learning and Environmental Sustainability (IDLES) in partnership with the DFFE, SAEON and K2C.
- The coordinating entity (IDLES) is responsible for calling and coordinating meetings and engagements, minute taking at these, and distributing Actions & Agreements reports and associated information from meetings to all members following these (within three weeks).
- The coordinating entity is responsible for following up with partners in relation to actions committed to at meetings by such partners, and communicating outcomes or sharing information with specific or all group members (as pertinent).
- The coordinating entity is also responsible for managing and storing all important information, datasets, products and documents developed by, or on behalf of, the BRWG, as well as sharing these with partners where requested.
- The coordinating members will also represent the BRWG in shared learning engagements with other catchments and projects such as conferences, learning exchange events, external workshops and meetings.

5.4 In general the members of the working group commit to:

- fostering collaboration and coordination on operational and management aspects of relevance to ecological restoration and associated natural resource management,
- sharing all relevant communications or new information with all group members (where not in conflict with the procedures of a member's organization),
- seeking to make available relevant information or data held by the organisations they represent to assist the group or other partners within the group (where not in conflict with the procedures of a member's organization),
- notifying members of the group, as soon as practical, of any urgent matters arising which may affect the aims of the group, or of the individual members,
- open and inclusive discussions, and to provide complete, accurate and meaningful information to partners,
- to carry out actions, tasks, and activities agreed upon by the group in a reasonable time frame,
- alert the group of any potential risks and issues that could impact on the group's work, as they arise,
- support facilitation of meetings, workshops, trainings, etc., and to contribute to capturing of actions and agreements and minutes of meetings, and share these with the larger group of partners,
- respecting information and data origin and ownership of other partners where these have shared such with the group, and abiding by specific requests from sharing partners in relation to such data or information (for instance where confidentiality is indicated),
- all partners should notify the BRWG if they intend to use (i.e. for proposal development) any products, datasets or related information produced by and for the BRWG, and proper acknowledgement should be made to the group and/or to specific entities or individuals that led the development of such products,
- active reflection and learning from ongoing processes in the restoration and associated practices and activities carried out by the group.

6. Relationships with other forums and partnership structures

- The BRWG is committed to building relationships and collective actions with other relevant forums and partnership that share similar objectives of restoring and sustainably managing ecological infrastructure and catchments.
- The group partners are committed to share the group's work and information with such relevant structures in the Blyde, Klaserie, Sand, and Sabie Catchments.
- The partners are also committed to inviting other stakeholders to join the BRWG, and the coordinators should be notified of new or potential stakeholder who would like to join the group.
- The group partners have been and continue to engage, communicate and share information with the Blyde Interim Co-management Committee and other relevant structures or institutions in the area playing important roles in the natural resources management both in technical and governance aspects.

7. Specific contributions from partner organizations

The group partners highlighted the need to identify a set of key focus areas and associated skills, competencies and expertise critically needed for the development of important tools or products, analysis of information or datasets, the implementation of specific activities, etc., particularly where these are seen as important gaps in the current restoration and associated practices. In future, group members willing to share their expertise and commit to carry out associated activities, would identify themselves and the area of competence where they could contribute, and for these to be listed within this terms of reference¹⁷. These key focus areas include:

- Spatial data development & analysis and spatial planning: GIS and field work including mapping of ecological infrastructure and degradation issues (i.e. IAPs, wetlands, erosion, etc.), historical Nbal analyses, spatial prioritizations, etc.
- Specialist technical inputs, advice and informational material to biodiversity, ecology, species identification, catchment management, etc.
- Application of key ecological management and restoration techniques (i.e. fire management, IAP treatment).
- Implementation and management of restoration teams and projects: development of annual plans of operations (APOs), design and implementation of training for restoration teams, budgeting, etc.
- Coordination and broader project management: Supporting coordination of the BRWG and development of partnerships at catchment level, strategic planning, and funding proposal development.
- Capacity development & training: Developing of training content and courses for restoration teams and partners. Lead development of skills development pathways for potential careers of restoration teams and development of partnerships with higher learning institutions.
- Research and monitoring: Supporting the development of research processes, forge partnerships with research institutions, support development of student projects, support development of monitoring projects to track restoration progress and broader impact of restoration.

8. Official endorsement, commitments, and support by partner organizations

- The BRWG is a voluntary group of partners and does not hold any official or formal mandates. Nonetheless, in order to ensure the objectives of the group are actively being pursued and achieved, and

¹⁷ Many such activities have already been carried out by partners under a number of different projects over the past years.

to carry out collaborative joint activities (whether planning or implementation related), the group has advocated for the official endorsement of the group by the respective partner organizations.

- Endorsement of the group's terms of reference by the appropriate high-level decision makers within each partner organization was proposed in BRWG meetings and agreed on by partners in order to ensure commitment to carry out agreed to actions.
- To enable and initiate this process, all current partners will identify appropriate internal processes and personnel within their organization and subsequently facilitate endorsement of the terms of reference. This will in turn be communicated with the group coordinators, and where required the group coordinators can support such endorsement engagements within partner organizations.
- Endorsement will be through formal signing of the group's terms of reference, and formal commitment through delegation of personnel to attend and represent the organization or entity in the BRWG engagements or activities.

Organization:

Name(s) of delegated representatives:

Name of signing representative:

Signature:

Acronyms

AWARD	Association for Water and Rural Development
CPA	Communal Property Association
CSA	Conservation South Africa
DFFE	Department of Environment, Forestry and Fisheries
HAT	High Altitude Teams
IAPs	Invasive Alien Plants
IDLES	Institute for Developmental Learning & Environmental Sustainability

IUCMA	Inkomati-Usuthu Catchment Management Agency
K2C	Kruger to Canyons Biosphere Region NPC
KLF	Komatiland Forests
MTPA	Mpumalanga Tourism & Parks Agency
NPC	Not for Profit Company
NRMPs	Natural Resource Management Programmes
SAEON	South African Environmental Observation Network
SAFCOL	South African Forestry Company Limited
SANBI	South African National Biodiversity Institute
SANParks	South African National Parks
VAI	Value Added Industries
WfW	Working for Water
WfWet	Working for Wetlands
WoF	Working on Fire

Appendix F: Summary of relevant projects implemented by Institute for Developmental Learning & Environmental Sustainability (IDLES) as Scaling of Expansive Learning into new transformative learning pathways.

Company Overview:

IDLES is a local NGO in the natural resource management and developmental learning sphere. Our team has combined experience of over forty years in the socio-ecological practices including ecological restoration, Invasive Alien Plant control, biodiversity conservation, climate resilience, and community development, collective learning and participatory processes, transformative learning and knowledge diversity in associated natural resource management fields.

We have a range of skills and expertise including project design and management, stakeholder facilitation and engagement, formative intervention action research, GIS mapping and data analysis, evaluation and reporting, and capacity development and learning. We have extensive knowledge and experience of the bio-physical, social, management, and institutional contexts of the broader Olifants Catchment, having worked in the area since 2013 with different partners. We have and continue to work with various Government entities, NGOs and other organisations in the Lowveld and Escarpment region of Mpumalanga and Limpopo, with the Restoration Invasive Alien Plant control work in the Blyde landscape being one of our flagship projects. We have an extensive professional network with a range of different experts, allowing collaborative partnering and the addition of key skills and capacity to any project.

Name	Institute for Developmental Learning and Environmental Sustainability (IDLES)
Registered & physical addresses	389 Greenshank Avenue Groblerpark, Roodepoort, Gauteng, 1724; 73 Duiker Street, Hoedspruit, Limpopo, 1380
Company Registration Number	NPC Registration Number: 2017/267833/08
Email Address	Info.idles2017@gmail.com

Contact Person	Reuben Thifhulufhelwi/ Jan Graf
Team members:	Reuben Thifhulufhelwi (Director & Senior Research Associate, 2020-2022) Jan Graf (Senior Research Associate) William Mponwana (Research Associate) Nakisani Mposi (Research associate- GIS and data technician) Hanli Human (Research Associate)

Selected projects relevant to Restoration Invasive Alien Plant control and Transformative learning in Natural Resource Management practices

1. **01/2020-ongoing:** Coordination and facilitation of the Blyde Restoration Working Group in partnership with Dept. of Forestry, Fisheries and the Environment NRM Programme (DFFE NRM), South African Environmental Observation Network (SAEON), and Kruger to Canyons Biosphere NPC (K2C NPC). Focused on coordination, alignment, integrated planning and monitoring of invasive alien plant control and restoration efforts in the Blyde, Sabie, Sand and Klaserie Catchments, amongst NRM and restoration agencies, Protected Area management, Forestry management, and land owners.
2. **10/2020-ongoing:** Development and installation of long term hydrological, meteorological and vegetation monitoring and research network in Klaserie and Blyde Catchments, and ongoing operation and data collection for SAEON (in support of long term ecosystem restoration impact monitoring and research in the broader Blyde area). Capacity development for community based environmental monitors (for K2C NPC). Support for broader catchment hydrological research.
3. **07/2024-ongoing:** peatland mapping, sampling and assessment in support of ecological infrastructure mapping and assessment for the Blyde, Klaserie and Sand Catchments in partnership with WetRest NPC, SAEON, and Mpumalanga Tourism & Parks Agency (MTPA).
4. **10/2023-11/2024:** Capacity development of Community Liaison Officers, Transformational learning course for Community Engagement Practitioners in the Greater Kruger landscape, WWF Khetha Programme (with Realife Learning NPC).
5. **8/2024-12/2024:** Development of Invasive Alien plant, vegetation, and veld condition map as well as Skillset requirement assessment in support of the development of a 5-year IAP clearing and catchment restoration implementation plan for the Blyde Catchment under the K2C Catchment Investment Programme for the Nature for Water Facility, K2C NPC, and The Nature Conservancy.
6. **02/2024-03/2024:** Peatland mapping and assessment, Maputaland, KwaZulu-Natal, South Africa with WetRest NPC for WildTrust.
7. **11/2022-03/2023 and 06/2024-07/2024:** Development and subsequent implementation of Vegetation monitoring plan and associated reporting for the AFR100 Blyde Expansion Restoration project, K2C NPC.

8. **01/2020-03/2022:** Implementation of the Blyde Restoration Project funded by DFFE NRM (in partnership with K2C NPC and AWARD). Key focus areas included ecological restoration and IAS management, water security, natural resource management, biodiversity conservation, and development of partnerships and associated governance arrangements in the Blyde, Klaserie and Sand Catchments. Focus areas included project lead, design, planning and implementation; facilitation and coordination of communities of practice (including the Blyde Restoration Working Group); development of restoration plans; ecological infrastructure mapping and assessment; capacity development and mentoring; GIS data management and analyses; reporting; monitoring, evaluation and learning.
9. **05/2022-06/2022:** Capacity development of participants within the E4D programme in terms of Sustainable Natural Resource Management in the Blyde Catchment for the Southern African Wildlife College.
10. **06/2022:** Basic GIS training for Ingwelala, Umbabat Private Nature Reserve.
11. **06/2020–11/2020:** Scoping, stakeholder engagement, and strategy development for local catchment partnerships within the K2C Biosphere (for the K2C NPC with funding from Pisces Foundation). Facilitation of visioning process for Communal Property Associations in relation to natural resource management, beneficiation, and capacity needs as key partners in catchment partnership.