

# Unpacking Changing Multi-Actor and Multi-Level Actor Ties in Transformative Spaces: Insights from a Degraded Landscape, Machubeni, South Africa

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## Supplementary Material 1

**Table S1.** Design principles, interpretations, application in the Machubeni Case Study.

Design Phase [32]	Application and interpretation of principles per stage
<b>Problem definition Phase</b>	The problem definition phase was conducted without imposition by the transformative space-makers. Different actors noted that the culture of collaboration was ineffective, and there was little knowledge sharing and learning across actors, sectors, and scales. The joint framing process resulted in the formulation of the transformative space called the Masibambisane multi-actor forum
<b>Operationalization phase</b>	<i>Types of participants</i> Actors involved in the Sustainable land management (SLM) project were convened. <i>Quality of participation</i> Actors involved in the SLM project were identified, and social network analysis was employed to examine the changing social-relational pattern of multi-actor and multi-level actor ties
<b>Tactical Phase: Methods and Tools</b>	Social network analysis and qualitative methods were used to map and examine the changing horizontal and vertical multi-actor ties within a transformative space.
<b>Outcomes Phase: Measuring network dynamics</b>	See results section
<b>Reflection Phase</b>	See results section

**Table S2.** Actor groups identified as members of the transformative space (Masibambisane multi-actor Forum).

Scale	Name of Agency	ID	Number of actors in Phase 1 (March 2018 to March 2019)	Number of actors in Phase 2 (April 2019 to March 2020)
National	Rhodes University	RU	13	12
Provincial	Department of Economic Development, Environmental Affairs, and Tourism	DEDEAT	4	4
Provincial	Department of Rural Development and Agrarian reform	DRDAR	4	4
District Municipality	Chris Hani District Municipality	CHDM	2	0
Local Municipality	Emalahleni Local Municipality	EM	15	12
Community-level	Traditional leaders Council	TLC	7	7
Community-level	Masibambisane Multi-actor Forum executive	MMF executive	4	4
Community-level	GEF5 Community liaison officers	CLO	2	2
Community-level	Conservation Agriculture Hub	CA	12	12
Community-level	Land Rehabilitation Hub	LR	17	17
Community-level	Rangeland Management Hub	RG	13	13
Community-level	Training and Knowledge Hub	TK	5	5
Community-level	Monitoring and Evaluation Hub	ME	5	5
Community-level	Gender Equity Hub	GE	5	5
Community-level	Youth Hub	YH	5	1

**Table S3.** Centrality measures i.e. in-degree and betweenness over time (common goals).

Phase 1			Phase 2	
Actor groups	In-degree	Betweenness	In-degree	Betweenness
Rhodes University	15	13.44	11	4.0861
Conservation Agriculture	14	11.00	14	1.0179
Land Rehabilitation	13	1.41	13	0.5818
Rangeland Management	13	0.11	12	0.5818
Training and knowledge sharing hub	14	0.11	10	0.1818
Monitoring and Evaluation Hub	14	0.11	13	0.1818
Gender Equity Hub	14	0.11	14	0.4920
Traditional Leaders Council	14	0.11	14	1.0179
DEDEAT	7	0.10	14	1.4929
Emalahleni municipality	4	0.01	4	0.1818
DRDAR	6	0.10	0	1.4929
MMF exe.	14	3.90	14	2.0172
CLO	14	8.10	14	1.8610
Youth Hub	8	2.00	14	1.8361
Chris Hani District municipality	3	0.01	0	0

**Table S4.** Centrality measures i.e. in-degree and betweenness over time (information-sharing network).

Phase 1			Phase 2	
Actor	In-degree	Betweenness	In-degree	Betweenness
Rhodes University	15	31.17	16	0.5
Conservation Agriculture	9	9.54	13	1.2
Land Rehabilitation	9	2.28	12	0.5
Rangeland Management	10	5.92	12	0.5
Training and knowledge sharing hub	10	10.6	13	1.2
Monitoring and Evaluation Hub	10	5.92	13	1.2
Gender Equity Hub	9	0.29	13	1.2
Traditional Leaders Council	15	9.76	13	1.2
DEDEAT	1	0	13	0.5
Emalahleni municipality	4	0	0	0
DRDAR	2	0	13	0.2
MMF exe.	12	3.92	12	1.2
CLO	12	3.92	13	0.5
Youth Hub	9	4.29	8	0
Chris Hani District municipality	0	0	0	0

**Table 5.** Centrality measures i.e. in-degree and betweenness over time (Inter-organisational trust network).

Phase 1			Phase 2	
Actor	In-degree	Betweenness	In-degree	Betweenness
Rhodes University	14	17.48	16	12.00
Conservation Agriculture	11	4.47	12	4.8
Land Rehabilitation	10	13.3	13	0.6
Rangeland Management	11	2.78	12	0.6
Training and knowledge sharing hub	8	1.22	13	0.7
Monitoring and Evaluation Hub	9	1.76	12	0.8
Gender Equity Hub	9	0.67	13	1.5
Traditional Leaders Council	13	16.12	2	0
DEDEAT	9	5.32	12	0.8
Emalahleni municipality	2	0.12	1	0
DRDAR	0	0	8	0.7
MMF exe.	11	1.59	13	1.5
CLO	11	2.23	13	1.5
Youth Hub	8	0.85	13	1.8
Chris Hani District municipality	0	0	0	0

## References

32. Pereira, L.; Frantzeskaki, N.; Hebinck, A.; Charli-Joseph, L.; Drimie, S.; Dyer, M.; Eakin, H.; Galafassi, D.; Karpouzoglou, T.; Marshall, F.; et al. Transformative spaces in the making: key lessons from nine cases in the Global South. *Sustain. Sci.* **2019**, doi:10.1007/s11625-019-00749-x.