CONTESTED SUSTAINABILITY

The Political Ecology of Conservation and Development in Tanzania

Edited by
Stefano Ponte
Christine Noe
Dan Brockington

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CONTESTED SUSTAINABILITY

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JC JAMES CURREY

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Abbreviations

AGB	Above-Ground Biomass
ALOS	Advanced Land Observing Satellites
BMU	Beach Management Unit
BTC	Belgium Technical Cooperation
CAMFED	Campaign for Female Education
CBD	Convention on Biological Diversity
CBFM	Community-based forest management
CBO	Community-Based Organization
CCA	Community Conservation Area
CFMA	Collaborative Fisheries Management Area
Danida	Danish International Development Agency
EEZ	Exclusive Economic Zone
FGD	Focus group discussion
FSC	Forest Stewardship Council
FZS	Frankfurt Zoological Society
GDP	Gross Domestic Product
GEF	Global Environmental Fund
GIZ	German International Cooperation
GTZ	German Technical Cooperation
ICZM	Integrated coastal zone management
IUCN	International Union for Conservation of Nature
JFM	Joint forest management
JUHIWANGUMA	Jumuiya ya Hifadhi ya Wanyama pori Ngorongo, Utete na Mwaseni

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KDC	Kilwa District Council
KfW	German Development Bank
KII	Key informant interview
KIMWAM	Kikundi Mwavuli kwa Wavuvi Mtwara
MANA	Majengo, Naumbu Villages
MBOMAMINJIKA	Matumizi Bora ya Maliasili Miguruwe, Njinjo na Kandawale
MBREMP	Mnazi Bay-Ruvuma Estuary Marine Park
MCDI	Mpingo Conservation and Development Initiative
MJUMITA	Mtandao wa Jamii wa Usimamizi wa Misitu Tanzania (Community Forest Conservation Network of Tanzania)
MKINAI	Mgao, Kisiwa, Namgogoli, and Imekuwa Villages
MNASI	Msanga Mkuu, Namela, and Sinde Villages
MNRT	Ministry of Natural Resources and Tourism
MPA	Marine protected area
MPRU	Marine Parks and Reserves Unit
MUNGATA	Muungano wa Ngarambe na Tapika
NEPSUS	New Partnerships for Sustainability
NFR	National Forest Reserve
NGO	Non-governmental organization
NTFP	Non-timber forest product
PFM	Participatory forest management
PIMA	Poverty and Ecosystem Service Impact
RADAR	Phased Array type L-band Synthetic Aperture
REDD+	Reducing Emissions from Deforestation and Degradation
SECAD	Selous Ecosystem Conservation and Development Program
SHIRIKISHO	Southern Zone Confederation for the Conservation of the Marine Environment
TASAF	Tanzania Social Action Fund

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TAWA	Tanzania Wildlife Management Authority
TAWIRI	Tanzania Wildlife Research Institute
TFS	Tanzania Forest Services
TWANG	Toolkit for Weighting and Analysis of Nonequivalent Groups
UNESCO	United Nations Educational, Scientific and Cultural Organization
USAID	United States Agency for International Development
UTUMI	Utunzaji wa Misitu (forest management)
VLFR	Village Land Forest Reserves
VNRC	Village Natural Resource Committee
WMA	Wildlife Management Area
WWF	World Wide Fund for Nature

Notes on Contributors

Dan Brockington is Research Professor at the Institut de Ciència i Tecnologia Ambientals (ICTA) of the Universitat Autònoma de Barcelona. His research covers the social impacts of conservation, relationships between capitalism and conservation, the work of media and celebrity in development, and long-term livelihood change in East Africa. He has worked mainly in Tanzania and also South Africa, Australia, New Zealand, and India, as well as conducting global overviews of the social impacts of protected areas, media and conservation, and continent-wide examinations of the work of conservation NGOs in sub-Saharan Africa.

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Salaam, where is he also an Assistant Lecturer. Kelvin has broad experience in applying geographic information systems and remote sensing in planning, monitoring, and assessment of natural resources, service provision, climate observations, hazard, risk assessment, and prediction. He is an expert in spatial tracking, spatial modellings for resources state assessment and predictions, and in the creation of spatial databases and web databases.

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Asubisye Mwamfupe was Lecturer at the Department of Geography, University of Dar es Salaam. He held a PhD in Geography, with a thesis examining the vulnerability of farming livelihoods to climate change and the role of local institutions in enabling adaptation to climate change effects. He passed away in October 2021.

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Christine Noe is Associate Professor of Human Geography at the University of Dar es Salaam, where she is also the Principal of the College of Social Sciences. Her research is on conservation and development politics and she seeks to explain how local and international development politics influence rural livelihoods, land tenure, and security dynamics in rural Africa. She is co-editor of several books and articles in international journals and is actively involved in providing leadership in research collaboration and mentorship of young African scholars.

Mette Fog Olwig is Associate Professor in International Development Studies at Roskilde University, Denmark. Her research focuses on the social and political dimensions of climate change, natural disasters, sustainability, natural resource management, and the development sector. Her work is comparative and multi-disciplinary, including both ethnographic fieldwork methods and geographic information systems, as applied for example in Tanzania, Ghana and Vietnam.

Stefano Ponte is Professor of International Political Economy at Copenhagen Business School. He is interested in transnational economic and environmental governance, with focus on overlaps and tensions between private governance and public regulation. He analyses governance dynamics and economic and environmental upgrading trajectories in global value chains – especially in developing countries and in Africa. He is particularly interested in how sustainability standards, labels and certifications shape agro-food value chains, and in how different forms of partnerships affect sustainability outcomes.

Pilly Silvano is Assistant Lecturer at the Department of Geography, University of Dar es Salaam, where she has just completed her PhD. She also holds an MA in Geography from the Norwegian University of Science and Technology (NTNU). Her areas of interest are gender, community-based natural resource governance, conservation, and sustainable forest management.

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Preface and Acknowledgements

In July 2014, the conference 'The Green Economy in the Global South' took place at the University of Dodoma. Organized by a network of institutions in Tanzania, South Africa, the United Kingdom, the Netherlands, and Denmark,[1] it brought together over 200 scholars and included over 60 papers and presentations. On the margins of the conference, a group of researchers started informal conversations and critical reflections on what the 'green economy' was really about, whether it was making a difference to people and nature in Global South contexts, and whether the veritable explosion of 'sustainability initiatives' was worth all the hype. Some of these scholars, broadly involved in the political ecology and political economy fields, were particularly interested in understanding the power dynamics of 'participation' and 'decentralization' that have come to characterize conservation and development initiatives, their legitimacy in the eyes of the communities that they were supposed to empower, and whether they are positively impacting local livelihoods and natural resources.

A smaller group of scholars from the University of Dar es Salaam, the University of the Western Cape, the Center for International Forestry Research (CIFOR, Nairobi), Copenhagen Business School, Roskilde University, and the University of Sheffield then met in Copenhagen in 2015 further to discuss these issues with a view to attempting to secure funding for a research project. Out of this workshop came a more specific focus on trying to understand why sustainability partnerships, and especially those combining conservation and development objectives, were becoming increasingly 'complex' – and whether this complexity was paying off in terms of better inclusion, legitimacy, and indeed socio-economic and environmental outcomes. The group came to think of complexity in relation to the number and variety of actors involved in such partnerships and their institutional set-ups; later, this was extended to include network aspects of complexity. The idea for the New Partnerships for Sustainability (NEPSUS) project came out of these reflections and led to the development of a compar-

1 See https://greeneconomyinthesouth.wordpress.com/hosts-and-organisers.

ative design (covering three natural resource sectors that are key to Tanzania – wildlife, forestry, and coastal resources), a regional focus (on south-east Tanzania) and an interdisciplinary approach (involving scholars from the fields of geography, political science/political economy, sociology, and development studies). NEPSUS eventually received funding from the Danish Ministry of Foreign Affairs in 2016 and started operating in 2017,[2] with Stefano Ponte and Christine Noe as co-Principal Investigators.

This book is the result of the efforts undertaken by the NEPSUS project. It is an unusual collection. It combines multiple disciplinary perspectives which are not separated into single chapters, rather they are combined across them. In terms of authorship, this too reflects the multiple and diverse collaborations that criss-crossed the project. It is not a classic edited collection, composed of different chapters with different authors, moderated, and introduced by a single editorial team. Nor is it a monograph with multiple authors. It is, in fact, rather hard to describe. But perhaps we could call it a 'curated collaboration'. All chapter contributions arise from the same project and overall framework and thus are deeply interconnected. The authors have collaborated in planning meetings for the funding bid and in the research once the project was funded. We have worked together on extended field trips, and on writing workshops in Tanzania and Denmark. Our collaboration has involved shared meals, walks, relay runs, much informal time together as a large group, and in more specifically focused teams. In this context, chapter authorship in this book came to reflect who were most involved in the process of data analysis and writing – a series of overlapping teams. However, some of the materials included in these chapters were first published in a series of working papers,[3] which included valuable contributions by other scholars who later left the project – Matthew Bukhi, Adriana Budeanu, Fadhili Bwagalilo, Elikana Kalumanga, Baruani Mshale, and Emmanuel Sulle.

In case readers cannot discern who was doing what and why, it may help to know that the project was structured into three main work packages (on wildlife, forestry, and coastal resources), which were coordinated by Christine Noe, Asubisye Mwamfupe, and Opportuna Kweka respectively. Their efforts, logistical prowess, and unending energy made it possible to carry out three main periods of group fieldwork in 2017 and 2018, preliminary dissemination trips at the local level in 2019, the final conference, and a myriad of other activities. Opportuna Kweka and Mette Fog Olwig took charge of various NVivo (qualitative data analysis computer software package) training and analysis work-

[2] Consultative Committee for Development Research, Royal Danish Ministry of Foreign Affairs (Grant 01-15-CBS).
[3] See www.nepsus.info/resources-publications

shops. Lasse Folke Henriksen did the same for social network analysis. Dan Brockington made important inputs to almost everything we did. Rasul Ahmed Minja and Robert Eliakim Katikiro were key contributors in the research work on coastal resources. Kelvin Joseph Kamde, Asubisye Mwamfupe, Caleb Gallemore, and Lasse Folke Henriksen populated the 'quant situation room' during their collective stays at Copenhagen Business School (CBS), and asked for more and more computer power. We are also delighted that the three PhD fellows that were key contributors of this project – Ruth Wairimu John, Pilly Silvano, and Faraja Daniel Namkesa – all completed their degrees at the University of Dar es Salaam. Stefano Ponte and Christine Noe tried to keep it all together, adapt to changes they could not control, and make do with some of the surprises that came along the way. Everybody worked a lot more than they thought they would be needed.

We also owe a special mention and thanks to Baruani Mshale, who was especially important at the start of the project through his intimate knowledge of the area and as the manager of survey operations, together with Asubisye Mwamfupe. The survey was carried out with the assistance of four enumerators – Benezet Rwelengera, Ombeni Mosha, Geofrey Mutayoba, and Kelvin Joseph Kamde (the latter then becoming a formal member of NEPSUS as a geographic information systems – GIS – specialist) to whom we extend our special thanks. The NEPSUS team was very lucky to receive key guidance from the Tanzania-based Stakeholder Advisory Board: Julius Keyyu, the Director of Research at Tanzania Wildlife Research Institute; Ezekiel Mwakalukwa, the Deputy Director of Tanzania Forest Services; George Wambura, the Chief Executive Officer of Community Wildlife Management Areas Consortium; Sirili Akko of the Tanzania Association of Tour Operators; Blandina Lugendo of the Fisheries Department at the University of Dar es Salaam; Jasper Makala, Chief Executive Officer of Mpingo Conservation Development Initiative; Rashid Tamatamah, Director of Tanzania Fisheries Research Institute; and Charles Meshack, Director of Tanzania Forest Conservation Group. The Advisory Board helped us immensely, especially at the start of the project in fine-tuning our research questions, modifying the research design, and locating the appropriate research sites. However, the NEPSUS team remains fully responsible for these choices and for the interpretation of results.

The research that is behind this book would not have been possible without the facilitation and collaboration of officers at all levels of government, representatives of the sustainability partnerships we studied, and individuals associated with NGOs, associations, private firms, and community-based organizations. Ultimately, the most important contribution came from the individuals we interviewed at the local level (1,059 for the survey, 331 for key informant interviews, and the participants of 81 focus group discussions), whom we thank for their time

and availability. All quotes and sources in the book have been coded to assure anonymity, unless explicitly allowed otherwise – so we list people to be especially thanked here. All errors, omissions, and inaccuracies are entirely our own.

We also benefited from key feedback from the members of our International Academic Advisory Board: Tor Benjaminsen, Jevgeniy Bluwstein, Luc Fransen, Froukje Kruijssen, and Jens Friis Lund. Ad hoc research collaboration was undertaken with Casey Ryan and his team at the University of Edinburgh and the Mpingo Conservation and Development Initiative (MCDI) in Kilwa, Tanzania. Two collective stays in Copenhagen at the beginning and mid-way of the project were facilitated by the Danida Fellowship Centre.[4] The same role was played by MS TCDC[5] in Usa River during various analysis and writing retreats in Tanzania. Special thanks also go to our invaluable research assistants at CBS (Nicholas Haagensen, Juliane Lang, Dominic Long-Innes, and Amaya Debal) and University of Dar es Salaam (Carlos Buto); Hedy Brink Grønager for impossibly precise budgeting, accounting, and reporting work; Joshua Kragh Bruhn for enthusiastic NVivo training; Mogens Kamp Justesen for key input and support in our survey design; and the Danida Fellowship Centre team for impeccable administrative guidance and support throughout the project. Finally, we would like to thank the participants of the final NEPSUS conference, which took place in Dar es Salaam on 11–12 November 2021 – and in particular the discussants Tor Benjaminsen, Matthew Bukhi, Jevgeniy Bluwstein, Esteve Corbera, Batrice Crona, Luc Fransen, Kathy Homewood, Wilhelm Kiwango, Froukje Kruijssen, Fiona Nunan and Emmanuel Sulle. We could not address all of their constructive criticism in this version of the manuscript, but have committed to do so in other ongoing and future publications.

It may sound overly romantic, but NEPSUS for many of us became like an extended family during these years. We worked together, shared ideas, intellectually sparred, faced challenges, socialized, and partied, had the occasional conflict, lost our heart and/or patience, got tired, and became reinvigorated. We were frustrated for not being able to spend enough time together towards the end, due to Covid-related travel restrictions, but also learned how to collaborate better online. We did not achieve all we set out to do, some of our results merely replicate what others had found already, and other findings pull in all sorts of different directions. But we also provide original insights, exciting new discoveries, and hopefully will inspire policy and project design. We have been surprised by our findings. Our understanding of places and processes we thought we knew has been challenged. This book reflects

4 Danish International Development Agency, see https://dfcentre.com.
5 See http://mstcdc.or.tz.

these multi-faceted processes. It is the result of bricolage, but also structured comparison, bringing out a multi-dimensional view of conservation and development initiatives that arises from sophisticated quantitative and qualitative data and analyses. There is much we could have done differently in NEPSUS; we made many mistakes and had a steep learning curve. But perhaps the ultimate test is that, if given the chance, we would definitively do this all again. We look forward to the opportunity to do so in the future.

Sadly, while we were working on the final draft of this manuscript, our colleague and friend Asubisye Mwamfupe passed away. Asu coordinated the forestry work package and the main NEPSUS survey. He was an engine in the 'quant situation room' during data analysis. His uncanny ability to reach people in a deep and positive way has left many of us very saddened. He is survived by his wife Helen and son Jonathan. We dedicate this book to him.

Stefano Ponte, Christine Noe, and Dan Brockington
Copenhagen, Dar es Salaam, and Sheffield
November 2021

Part I

Issues, Background, and Methods

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1

New Partnerships for Sustainability

STEFANO PONTE, CHRISTINE NOE, AND DAN BROCKINGTON

Introduction

New and more complex partnerships are emerging to address the sustainability of natural resource use in the Global South. These partnerships variously link donors, governments, community-based organizations, non-governmental organizations (NGOs), business, consultants, certification agencies, and other intermediaries. High expectations and many resources have been invested in these initiatives.[1] Yet, we still do not know whether more-sophisticated organizational structures, more stakeholders involved, denser social networks, and more-advanced participatory processes have delivered better sustainability outcomes and, if so, in what sectors and under what circumstances.

To fill this knowledge gap, this book draws from a five-year collective research project, New Partnerships for Sustainability (NEPSUS), which assembled a multi-disciplinary team to analyse sustainability partnerships in three key natural resource sectors in Tanzania: wildlife, forestry, and coastal resources. In this book, in each of these sectors, we assess whether co-management with local communities and private and civil society actors, and putatively more participatory processes in the governance of natural resources, result in positive environmental outcomes and improved livelihoods. We compare these 'more complex' partnerships to relatively 'simpler', more traditional top-down and centralized management systems and to locations where sustainability partnerships are not in place. Within-sector comparisons allow a fine-tuned analysis that is cognizant of historical, location-, and resource-specific issues, which can be used as input for resource-specific policy and partnership design. Comparison across the three different sectors allows the identification of possible common

1 We use the terms 'partnership' and 'initiative' interchangeably in this book. We do *not* mean for the term 'partnership' to indicate that all actors can leverage the same power equally. We are thus cognizant of the possible power disparities and interest clashes among different actors and actor categories that these 'partnerships' may entail.

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experiences and lessons that can be applied to natural resource governance more broadly.

Tanzania is an ideal case to examine these issues because it has implemented several policy reforms involving new forms of partnerships in these sectors (Ramutsindela and Noe, 2012; Rantala and Di Gregorio, 2014). Tanzania is considered an important case study of decentralization and participatory approaches in the management of wildlife, forestry, and coastal resources. This is because, unlike other countries in eastern and southern Africa, Tanzania does not have the problem of defining what is a 'community' in participatory natural resource governance. The Local Governments Act (1982, Decentralization) provides a legal definition of a community: a village. Hence, decentralization goes all the way down to the village level, unlike in other countries where the meaning of community has remained contested. Yet, the implementation of what is stipulated in the numerous policies and laws remains conflictual and contested in all three sectors we examine: wildlife (Igoe and Croucher, 2007; Nelson and Agrawal, 2008; Noe, 2010; Wright, 2017), forestry (Nelson and Blomley, 2010; Treue et al., 2014; Wily and Dewees, 2001), and coastal resources (Cinner et al., 2012; Nunan, 2014, 2019; Raycraft, 2019). Natural resources remain a key component of rural livelihoods in Tanzania (Dokken and Angelsen, 2015; Ponte and Brockington, 2020). The role of these new partnerships is highly significant, particularly given the proliferation of initiatives related to REDD+ (Reducing Emissions from Deforestation and Degradation) and the co-management of wildlife, coastal resources, and forests – and their tourism-related sustainability components (Hara and Nielsen, 2003; Blomley and Ramadhani, 2006; Nelson and Blomley, 2010; Cinner et al., 2012; Benjaminsen et al., 2013; Sulle et al., 2014; Lund et al., 2017).

In academic and policy networks seeking sustainable development, there is a great deal of enthusiasm and energy invested in new and increasingly complex multi-stakeholder partnerships. In natural resource governance, new partnership configurations promise more equitable and sustainable outcomes because they entail various combinations of participation by donor agencies, national and local governments, community-based organizations, local and international NGOs, business, industry associations, and certification agencies (Brockington, 2002, 2009; Berkes, 2007; Ramutsindela et al., 2011; Van Wijk et al., 2015). While partnerships between state and non-state actors are not particularly new, what is 'new' in these emerging partnerships is twofold: (1) they tend to take more complex organizational forms to ensure 'best practice' in deliberation and in facilitating co-management with communities and formal participation of various stakeholders; and (2) they often entail more complex networks of actors (Berkes, 2007; Bush et al., 2013; Mshale, 2016).

These sustainability partnerships are taking shape as contexts of, and narratives about, resource depletion are changing – bringing new international audiences, alliances, and policies to bear on previously local and national issues. Linked to a growing sense of urgency, development agendas now call for innovative measures and transnational and cross-sectoral cooperation and investments (Borras et al., 2011). Thus, wildlife resources now matter in the context of the severe increase in extinction rates due to human activity, wildlife crime, and poaching. Forest cover in the Global South matters in the context of global climate change mitigation and adaptation. Illegal fishing matters in the context of the global decline of capture fisheries. With a similar sense of urgency, experiences of nature's wilderness, and pristine status are being promoted as compensatory, even emancipatory features, almost essential for balancing stressful busy lives of modern consumers (West et al., 2006). This is leading to a commodification of nature and land, including into ecotourism products (Wearing and Wearing, 1999; Igoe and Brockington, 2007; Bluwstein, 2017; Wright, 2017). While conventional narratives on resource depletion place the blame exclusively on actors and processes within the Global South, emerging narratives increasingly link local and global factors and actors (Kottak, 1999; Duffy and Moore, 2011; Moscardo, 2011; Noe, 2020).

These relations are creating new kinds of values to previously existing resources and attracting more actors in competing for their access and utilization (see, inter alia, Remis and Hardin, 2009). New actors are appearing or becoming more prominent as old products and services (e.g., wildlife tourism, timber, fish, coral) come under processes of sustainability certification or are more closely monitored. New products are being devised through new forms of commodification of nature (e.g., carbon credits and payments for ecosystem services), which require a similarly complex apparatus operating from local to global levels (Mshale, 2016). Thus, in addition to a push towards more adaptive, participatory, and collaborative management, new partnerships are arising in part to initiate or strengthen these commodification processes (Wearing and Wearing, 1999; Igoe and Brockington, 2007; Nelson and Agrawal, 2008; Brockington and Duffy, 2011; Duffy and Moore, 2011; Stone and Nyaupane, 2016). By inserting economic logics related to pricing, promotion, and product volume into decision making, commodification distorts the scope and purpose of conservation partnerships (West et al., 2004) – adding new layers of complexity to the understanding of partnership dynamics. In this book, we seek to expand our understanding of complexity in multi-stakeholder sustainability partnerships, and how it may shape sustainability outcomes. We take a political ecology approach to examine how partnerships emerge, which stakeholders are involved in different issue areas, and whether and how different configurations of partnership complexity lead to better legitimacy in the eyes of local communities and/or successful environmental and livelihood outcomes.

Sustainability partnerships and their complexity

Sustainability partnerships are one of the tools of what is variously known as interactive, collaborative, hybrid or multi-stakeholder governance (we use these terms interchangeably in this book), defined as a 'governing arrangement where one or more public agencies directly engage non-state stakeholders in a collective decision-making process that is formal, consensus-oriented, and deliberative and that aims to make or implement public policy or manage public programs or assets' (Ansell and Gash, 2008: 544). The usual argument for the need of this form of governance is that no single institution alone can address sustainability challenges, and thus the engagement of various stakeholders representing the state, business, and civil society is essential, together with the involvement of local communities (Ansell and Gash, 2008; Rana and Chhatre, 2017). But the functioning of these partnerships depends on how institutions and networks of actors are structured, how power and responsibility are shared and devolved, and what flows within them (see e.g., Rana and Chhatre, 2017). Values, principles, and goals are articulated and developed as public and/or private individuals and institutions engage in social exchange, with goals that are not given but negotiated, and are not stable but vary according to the strength of participants who come and go (Jentoft and Chuenpagdee, 2009). The transfer of sustainability challenges away from government regulatory powers and into arenas of private business interest validates the need for further explorations of the conditions that enable or hinder the ability of sustainability partnerships to function and thrive in global marketplaces.

Participation of non-state actors in managing renewable natural resources (wildlife, forestry, and coastal resources) dates to the 1970s and 1980s. The increasing hegemony of broader tenets of the neoliberal orthodoxy, such as decentralization, participation, and marketization (see Heynen et al., 2007), provided the initial stimulus to the emergence of participatory approaches to natural resource governance. Other factors that necessitated the move from centralized to decentralized management systems included increasing pressure by international conservation organizations and clear failure by resource-constrained and newly independent states (see Western and Wright, 1994; Agrawal and Gibson, 1999; Brockington, 2002; Brosius et al., 2005). The perceived needs for collaboration and engagement in partnerships in natural resource governance have become particularly popular since the 2002 World Summit on Sustainable Development in Johannesburg

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(Mert, 2014). They have emerged in the context of increasing willingness by public authorities to delegate social and environmental regulation to business and civil society actors. At the transnational level, in the agro-food and natural resource sectors, many of these initiatives have taken the form of 'stewardship councils' and 'sustainability roundtables'.

The governance set-up of these multi-stakeholder initiatives is meant to ensure (if not just signal) a degree of professionalization, meaningful participation of relevant stakeholders in key decision-making processes, and transparency. As a result, sustainability initiatives are becoming ever more complex in how they facilitate formal participation of relevant stakeholders, manage deliberation, and use technologies/mechanisms that ensure *some* input even from more marginalized actors. Yet, as Cheyns (2011) shows, there are serious gaps between being part of deliberation and being able to shape outcomes. Process consultants employed in multi-stakeholder initiatives and partnerships are often related to, or hosted by, conservation groups (Duffy and Moore, 2011). They also use the expedients of urgency, reaching consensus, and pragmatism to steer deliberation trajectories in specific directions, define categories of 'stakeholder' and frame acceptable formats of engagement (see also Mshale, 2016).

Existing knowledge in the transnational field suggests that institutionally more complex and putatively more democratic and inclusive sustainability initiatives (such as the Forest Stewardship Council) are challenged by competitor initiatives that are more top-down, less democratic, leaner, quicker, more commercially aggressive, and more tuned in with industry interests (Fransen, 2012; Ponte, 2014). Although business-led partnerships are considered more efficient in managing consultative processes and achieving desirable outcomes, compared to government-led initiatives, successes tend to be framed in economic terms, while social and environmental aspects are given a lower profile (Farmaki et al., 2015). The ever more complex web of institutional and governance features, development and managerial systems, time- and resource-consuming meetings, and the enactment of procedures to meet 'good practice', have often improved governance systems in transnational sustainability partnerships. However, they have also slowed down processes, added costs, and in the long run created stakeholder fatigue.

This uneven picture is also emerging in national and local partnerships for sustainability, especially in the field of conservation and development (e.g., Blomley et al., 2008; Agrawal et al., 2011; Persha et al., 2011; Budeanu, 2013; Sulle et al., 2014; Van Wijk et al., 2015). These partnerships are diverse and vary by place and type of resource, with a large range of structures and functions (Moore and Koontz, 2003). Some of the research in this field claims that involving multiple stakeholders through partnerships increases the governability of natural resources, that the diversity of participating actors enhances the capacity to respond to problems (Huxham et al., 2000; Lasker et al., 2001; Berkes, 2007), and that highly polycentric organizational structures yield better environmental outputs than monocentric ones (Newig and Fritsch, 2009). Existing research also suggests that partnerships are more likely to be successful when there is synergy between actors in terms of resources, interests, power, language, and culture (Huxham et al., 2000; Lasker et al., 2001; Vangen, 2003; Mitchell, 2005); when they are backed by a supportive external environment; when all stakeholders can connect their own interests with the common objective of the partnership (Glasbergen et al., 2007); and when relevant actors bring in not only specific resources and histories to the partnership, but also an appropriate *mix* of resources, knowledge, and capabilities (Pattberg and Widerberg, 2016). Effectiveness of partnerships seems also enhanced when actors are ready to negotiate alternative solutions and compromises (Newig and Fritsch, 2009); when they can leverage existing social capital and networks; when stakeholders accept that partnerships evolve over time (Vangen, 2003); and when they operate under a clear political mandate, political pressure and/or political support (Kallis et al., 2009; Pattberg and Widerberg, 2016). Trust is a key aspect of success, both in relation to initiating a trust-building loop, and in sustaining it (Beierle and Konisky 2001; Schuett et al., 2001; Stone, 2015; Vangen, 2003).

But the literature has also shown that the possible erosion of government authority opens opportunities for entrepreneurial actors and alliances to take on the leadership of sustainability, but often without a specific mandate, good accountability or clear guidelines (Ribot, 2002). Different capabilities of actors often result into power imbalances. Smaller and weaker actors – especially those who do not have capacity, organizational skills, and resources to participate as equals in partnerships – are prone to be marginalized in decision making (Booher and Innes, 2002; Ansell and Gash, 2008). Some power imbalances also emerge as a result of lack of expert knowledge to engage into more technical discussions (Ansell and Gash, 2008; Ponte and Cheyns, 2013). Yet, others argue that while too much power imbalance is usually seen as a problem and often causes anxiety among participants, too much equality may hamper the establishment of initiatives or the development of leadership within them (Kooiman et al., 2005). Furthermore, while collaborative arrangements may result in conflicts/tensions in the short run, they may create more durable partnerships in the longer term (Poteete et al., 2010). Finally, networks are also important factors in determining the effectiveness of partnerships in resource governance (Henriksen, 2015). Actors use their networks to share their experiences, values, interests, knowledge, and resources, but also to facilitate

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resource exchange (Booher and Innes, 2002; Pattberg and Widerberg, 2016) and handle possible tensions (Kooiman, 2003). At the same time, for a network to survive, it needs the willingness, capabilities, and resources of the most powerful and influential members of a partnership, thus possibly reinforcing existing power imbalances (Pattberg and Widerberg, 2016).

Partnership *complexity* clearly affects the ability to deliver sustainability outcomes. Yet, the literature is mostly silent on this issue. A few contributions have focused on complexity in terms of the problems to be tackled (Imperial, 2005; Kim, 2015), highlighting the interconnectedness of the natural and social components within the systems that partnerships are targeting (Choi and Robertson, 2014). As components are interdependent, dealing with one component affects another (Imperial, 2005; Jentoft and Chuenpagdee, 2009). At the same time, the complex nature of conservation problems enables powerful actors to pit policies against each other to elbow out groups that fight against the appropriation of natural resources for the benefit of political and business elites (Nelson, 2012). This is the case, for example, when environmental laws are strategically used as reasons to displace and relocate local communities to make land available for ecotourism developments. Therefore, it is relevant to examine how different forms of complexity influence how partnerships work and to what end. Another form of complexity that has been highlighted relates to the structure of partnerships – in terms of form of interaction between actors and type of organizational membership (Kooiman et al., 2005). Some actors have daily interactions, while others are involved only in specific meetings. Actors are involved differently over time and at different levels of the partnership process. Some members are involved as individuals, others represent organizations. Actors come and go, and policies and strategies change over time (Huxham et al., 2000).

In sum, many contributions have examined participation, transparency, accountability, power relations, resource flows – but we still lack a better understanding of the connections between these factors and how different kinds of governance complexity, in its institutional and network components, may affect actual sustainability outcomes. This book starts addressing some of these gaps by unpacking (institutional and network) complexity in and around sustainability partnerships and by linking its constitutive elements to sustainability outcomes – both environmental and socio-economic. In the following discussion, we draw from political ecology approaches (integrated by theories of governance and legitimacy) to further our understanding of the dynamics of sustainability partnerships and how they shape environmental and socio-economic outcomes.

Sustainability partnerships are about power and control

Political ecology pays particular attention to the politics of struggles over the control of, and access to, natural resources, and the role of social constructions of the environment and power relations in shaping partnership dynamics and outcomes (Jones, 2006). Political ecologists have actively engaged in many of the debates surrounding human-nature relations with some of the these studies examining biophysical processes alongside social and economic factors (Bryant and Bailey, 1997), leading to numerous studies that question the relationship between social relations of production, their influence on community choices and access to environmental resources (Peluso, 1993; Fabinyi et al., 2014; Pedersen, 2016). Accordingly, we suggest examining partnerships not only in terms of number of actors, actor categories, the decision-making structure, and the degree of sharing of resource access rights, but also in terms of how they are formed, what networks bind them together, and how their configurations engender various kinds of environmental and socio-economic outcomes.

Actions to protect biodiversity (whether through protected areas or community-based approaches) are inherently political (Bryant and Bailey, 1997; Adams and Hutton, 2007). One of the cornerstones of political ecology is thus to illuminate the links between environmental protection and political dynamics. The field has supported the emergence of literature on the politics and economics of the creation of protected areas (see for example Neumann, 1998; Ramutsindela, 2004; Brockington and Igoe, 2006; West et al., 2006; Bryant, 2015), the role of the state in providing direction, legitimization, and exercise of power and control, and the convergence of non-governmental actors in supporting conservation (Levine, 2002; Igoe and Croucher, 2007; MacDonald, 2010a; Adams et al., 2016). Recently, however, there has been a shift in focus to the micro-politics of struggles over access to resources (Watts, 2013; Gardner, 2016; Wright, 2017) calling for the need to further examine how multiple actors with complex and overlapping identities, affinities, and interests continue to shape local social and ecological relations of power (Rocheleau, 2008; MacDonald, 2010b).

Understanding multi-level actions of different actors is key if we are to make a nuanced contribution to the analysis of sustainability partnerships. This requires acknowledging that political and social processes relate to each other at a number of nested scales, from the local to the global (Bryant and Bailey, 1997), and that control over nature starts from the construction and manipulation of these scales (Swyngedouw, 2004). Many of the themes that weave together political ecology approaches are essentially scalar in their nature and rest on the central importance placed on the role of power relations in shaping access to, and control over, environmental resources and space (Neumann,

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2009). Engaging comprehensively with scalar processes is called for in the assessment of multi-level actions of different conservation actors whose funds and expertise have re-configured African landscapes (Ramutsindela and Noe, 2015; Green, 2016). This engagement is necessary because the conditions that redefine access and control over the local space are inherently embedded in the scale construction processes that partnerships operate.

These observations support the interpretation that international actors may use 'partnerships' in rhetorical and instrumental ways (Crawford, 2003). These partnerships have supported governance reforms often to disguise and legitimize the interventions of external agencies in domestic policy reforms that confound power asymmetries. Contrary to the official discourse of encouraging locally formulated reform strategies, partnerships conspicuously reflect existing power relations. They end up reshaping landscapes and profoundly alter the lives of rural people. The agenda of international agencies remains relatively unchallenged, both in terms of what is included and what is excluded (Crawford, 2003). It is becoming clear that sustainability partnerships are an organized political project in which private sector businesses and their networks are dominant, hence transforming conservation in ways that accommodate the interests of global capital (MacDonald, 2010a). At the same time, despite the cloying and deceitful rhetoric and the adverse outcomes of new partnerships for some of the local partners, they can still provide institutions and resources for otherwise marginalized rural groups to challenge powerful interests (Wright, 2017).

Devolution, decentralization, and community participation

Since the Agenda 21 of the Rio conference advocated for shifting governance from the national to the local level, concerted efforts to decentralize natural resource governance took place, with almost all countries in the Global South undertaking devolution and decentralization reforms (Ribot, 2002; Larson and Soto, 2008). In place of top-down management, principles of 'grassroot' or bottom-up planning and management, such as public participation and co-management, became entrenched. Despite some differences in their formation and outcomes, public participation, collaboration, and co-management relate largely to devolving management powers to local-level governments and other institutions (Ribot and Oyono, 2006; Berkes, 2010). Hence, devolution (the transfer of rights and responsibilities to local groups, organizations and local-level governments that have autonomous discretionary decision-making powers) and decentralization (the transfer of rights and responsibilities from the central to the local branches of the same

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institutions) have been common subjects of discussion in relation to the outcomes of governance reforms locally (Agrawal, 2001; Levine, 2002; Brockington, 2007; Igoe and Croucher, 2007; Larson and Soto, 2008; Mshale, 2008; Nelson and Agrawal, 2008; Treue et al., 2014; Van Wijk et al., 2015) and transnationally (e.g., Cashore et al., 2004; Glasbergen et al., 2007; Pattberg, 2007; Gulbrandsen, 2010; Duffy and Moore, 2011) – including ethnographies of conservation-development funding and of experts (e.g., Koch, 2016; Lund et al., 2017).

Decentralization and devolution in the Global South are closely linked to current discussions on sustainability partnerships – particularly because natural resources are a necessary point of conflict and cooperation between central, local, and peripheral authorities in any attempt to transfer powers from the centre (Ribot and Oyono, 2006). As devolution and decentralization are seen as 'demand-driven' (Mandondo and Kozanayi, 2006), external actors tend to collaborate in placing pressure on governments to build policy frameworks that allow the shift from centralized management systems to devolving ownership and management responsibilities to local communities – as well as allowing a greater role for private sector involvement (Nelson et al., 2007; Schuerholz and Baldus, 2007). As most Global South governments need to build new legal and institutional mechanisms to translate this global-driven orientation into workable situations, they find themselves relying on donors for assistance in policy and legal formulation.

While devolution and decentralization do not always provide the financial resources anticipated, they can empower local communities to effectively negotiate their claims over natural resources (Larson and Soto, 2008; Stone and Nyaupane, 2016) and help building new organizations for channelling opposition against resource extraction and impositions from central government (Wright, 2014). Yet, they can also be (re)appropriated by central governments, or unelected authorities, for their own purposes (Nelson and Agrawal, 2008; Ribot, 2002, 2004, 2006; Benjaminsen et al., 2013; Sulle et al., 2014).

Policies and laws resulting from the devolution and decentralization processes in the Global South are often the result of pressure from donors – the most active being the World Bank. Demand-driven decentralization has consequently forced governments to transfer powers to subgroups rather than to representatives of local populations (Bazaara, 2006), and to transfer resources that have no commercial value while also making decentralized decision making more cumbersome through excessive oversight and approval processes (Namara, 2006; Kiwango et al., 2015). In practice, governments have placed imaginative obstacles in the path of decentralized institutions and choices (Ribot et al., 2006: 1881). Rather than decreasing, bureaucracy and state interference continue – to the point of leading to full re-centralization of conservation efforts in some cases (Dressler et al., 2010: 13). Instead of devolving

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and decentralizing power, governments seem to be reinforcing upward accountability by transferring obligations to local authorities and other actors without sufficient funding, as well as keeping significant control and supervisory roles over the allocation of important commercial opportunities (including revenues from permits and licences) (Mandondo and Kozanayi, 2006; Muhereza, 2006). Devolution and decentralization are composed of contested politics and thus sustainability partnerships are sites of power struggle – these are visibly playing out in decisions about which powers are transferred and which institutions in the local arena are entrusted with these powers (Shackleton and Campbell, 2001; Ribot and Oyono, 2006; Berkes, 2010).

Another key contribution of political ecology has been to unpack the dynamics of community participation in the governance of natural resources (Abbott, 1995; Ribot, 1999; Murphree, 2009), including the actual practices of different actors and their roles and interests in entering a partnership (Sachedina, 2010; Saito-Jensen et al., 2010) as well as the relations of power that determine the distribution of costs and benefits (Dressler et al., 2010; Benjaminsen et al., 2013; Moyo et al., 2016). This work highlights a systematic disjuncture between discourses and actual practices of donors and governments concerning participation, representation, and inclusiveness of conservation laws and projects (Wearing and Wearing, 1999; Ece et al., 2017), to the point that governance reforms seem to have actually led to a narrowing of democracy – leading to mere counting of numbers of 'participants' and 'group' representation, rather than considering community values, needs, and priorities. This strand of research also critiques the practices, interests, and roles of powerful actors in facilitating partnerships with local communities – showing that their actions have empowered some actors while disempowering those already marginalized by conservation schemes (Wearing and Wearing, 1999; Moscardo, 2011). Since the initial focus of partnerships has been around benefit sharing, rather than cost-benefit sharing (Brockington, 2007), many schemes have led to crisis rather than hope for local communities, have increased community burdens, have reinforced state control over natural resources (Dressler et al., 2010; Benjaminsen et al., 2013), and have failed to achieve their ultimate goals – even though they may have successfully enrolled communities in participatory processes (Stonich, 1998; Moscardo, 2011; Noe and Kangalawe, 2015).

Governance

The changing shape of sustainability governance has been a key academic and policy concern, as part of a wider debate on the putative advance and limitations of private authority in governing economy,

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society, and the environment (Cutler et al., 1999; Hall and Biersteker, 2002; Bartley, 2018). Many contributors have highlighted that while there has been a massive emergence of market-based forms of authority (Cashore et al., 2004; Bartley, 2007; Pattberg, 2007; Büthe and Mattli, 2011), this development has not led to a withering away of the state (Gulbrandsen, 2010; Gale and Haward, 2011; Green, 2013; Auld, 2014; Bartley, 2014; Gulbrandsen, 2014). Rather, we are witnessing the birth of hybrid governance forms where business, civil society, and public actors interact at different levels, in parallel and intersecting arenas where domestic and international legal orders can also apply (Levy and Newell, 2005; Bäckstrand, 2008; Abbott and Snidal, 2009a, 2009b; Andonova et al., 2009; Bair, 2017) and where governments can choose to repurpose or replace private governance initiatives (Marques and Eberlein, 2020).

Theories of governance recognize the importance of different stakeholders (state, market, and civil society) and different forms of partnership in solving problems and in creating opportunities. Existing work suggests that governance (in the sense of authoritative setting and implementation of rules) can no longer be exerted exclusively by the state or public actors but through multi-stakeholder partnerships (Edwards et al., 2001; Berkes, 2010; Visseren-Hamakers et al., 2012). Accordingly, many discussions have revolved around the link between the formation of partnerships, the role of local institutions and communities, and the transfer of powers (Ribot and Oyono, 2006; Adams et al., 2016) – generally arguing that partnerships have reinvented conservation governance by setting the agenda and leading discourses and rules that govern access to natural resources (Mercer, 2003; Martin et al., 2011; Visseren-Hamakers et al., 2012). One key concern has been to examine how the interactions between public and private authority operate and what impact they have on the functional quality of sustainability governance (Levy and Newell, 2005; Bäckstrand, 2008; Abbott and Snidal, 2009a, 2009b; Andonova et al., 2009; Bair, 2017).

The main argument for the need of sustainability governance emerging from this massive literature is that no single institution alone is capable of addressing wicked problems effectively and equitably, and thus that the engagement of various stakeholders representing various layers of government, business, and civil society is essential, together with the involvement of local communities (Ansell and Gash, 2008; Rana and Chhatre, 2017). But the functional quality of these initiatives has been shown to also depend on how networks of actors and institutions are structured, how power and responsibility are shared and devolved, and what flows within them (Fransen et al., 2016; Fransen et al., 2018; Henriksen and Ponte, 2018). Values, principles, and goals are articulated and developed as public and/or private individuals and institutions, engage in social exchange, with goals that are not given but

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negotiated, and that are not stable but vary according to the strength of participants who come and go (Jentoft and Chuenpagdee, 2009).

Some existing research highlights trust as a key aspect of the functioning quality of partnerships, both in relation to initiating a trust-building loop, and in sustaining it (Beierle and Konisky, 2001; Schuett et al. 2001; Vangen, 2003). As indicated earlier, multi-stakeholder partnerships have been found to be more successful when there is alignment between actors in terms of resources, interests, power, language, and culture (Huxham et al., 2000; Vangen, 2003). Other facilitating factors emerging in previous research are the presence of a supportive external environment; situations where all stakeholders can connect their own interests with the common objective of the partnership (Glasbergen et al., 2007); and relevant actors bringing in not only specific resources and histories to the partnership, but also an appropriate mix of resources, knowledge, and capabilities (Pattberg and Widerberg, 2016).

However, these conditions are rarely found in practice, and especially in the Global South where appropriation of land and resources under the guise of conservation is rampant (see the burgeoning literature on 'green grabbing', e.g., Benjaminsen and Bryceson, 2012; Fairhead et al., 2012) and where sustainability partnerships often fail to meet their stated goals due to lack of organizational capacity and resources (Pattberg and Widerberg, 2016; van der Ven et al., 2018). In these contexts, a greater variety of actors in sustainability initiatives and therefore a multiplication of interactions among different stakeholders does not lead per se to better functional quality, as each partner represents specific interests, may embody different world views, yields different degrees and kinds of power, and brings with it specific hopes, expectations, and claims (Glasbergen et al., 2007).

Legitimacy

One of the chief concerns of research on sustainability partnerships that include public and private actors is how they develop, gain, and manage legitimacy among different audiences and stakeholders – as they cannot lean exclusively on the sovereign nature of the state to impart their authority (Bernstein and Cashore, 2007; Black, 2008). Partnerships have dynamic elements that are constantly re-negotiated by individuals and institutions. They are shaped by social capital, which can enhance or inhibit local decision-making capabilities. It is therefore important that the assessment of legitimacy of participatory initiatives focuses not only on institutions and leaders, but also examines the networks that are woven around them, and the rules that govern participatory initiatives (Ribot, 1999; Beaumont and Dredge, 2010; Bramwell, 2011).

For the purposes of this book, we use a definition of legitimacy as the 'process where partnerships gain recognition and become accepted as a relevant alternative or supplement to government policy on a particular issue' (Glasbergen et al., 2007) with a view to establishing their authority in governing natural resources. Gaining legitimacy depends on interactive structures and processes in which initiatives operate. To establish and maintain legitimacy, these interventions must pay attention to the needs, power, and interests of different actors.

Recent research on sustainability partnerships has highlighted the importance of managing legitimacy in the views of different audiences and stakeholders (Bernstein and Cashore, 2007; Fransen and Kolk, 2007; Glasbergen et al., 2007; Gulbrandsen, 2010, 2014). It has shown that the balance of different kinds of legitimacy varies in different resource fields and contexts. While more complex forms of multi-stakeholder governance structure are becoming more common (Ponte, 2014), it is also clear that simpler (government- or business-driven) initiatives are still operating across the board. The latter tend to shape governance systems through selective approaches, such as by only occasionally interacting with stakeholders, or by including stakeholders as representatives but in ways that limit their influence (Beaumont and Dredge, 2010; Cheyns, 2011; Fransen, 2012; Ponte and Cheyns, 2013; Ruhanen, 2013).

This body of work shows that in order to be effective, sustainability initiatives need to achieve a balance of three kinds of legitimacy: (1) *input legitimacy*, which includes participation of various categories of actors and groups in the design and operation of relevant initiatives; balance in the type, origin, and function of stakeholders; (2) *process legitimacy*, which relates to procedures allowing or limiting participation and democratic process; quality of governance procedures, system management, accountability, and transparency; and (3) *impact legitimacy*, which often only covers directly attributable outputs (and is indeed known as 'output legitimacy'), such as number of villages involved, area under conservation, quantity of certified timber, number of participants, awareness of initiative in the communities vis à vis expectations; however, pressure is also mounting to also show actual impacts (whether an initiative actually led to, for example, improving fish stocks or the quality of forest cover).

Input and process legitimacy deal with procedural fairness, where the focus is on the quality of the decision-making process in terms of deliberation, participation, transparency, and accountability. In general, for sustainability partnerships to gain input and process legitimacy, there should be participation of all relevant actors and interests – particularly of marginalized groups – and there should be clear accountability mechanisms and transparency (Bäckstrand, 2006). More specifically, *input legitimacy* refers to the need for decisions to be 'derived from the preferences of the population in a chain of accountability linking those governing to those governed' (Mayntz, 2010: 10). Building and maintaining input legitimacy involves assessing whether sustainability governance is open to stakeholder participation and what stakeholders are included and excluded (Bäckstrand, 2006; García-López and Arizpe, 2010; Bernstein, 2011; Partzsch, 2011; Slager et al., 2012). One much studied aspect is how (lack of) inclusiveness affects input legitimacy (e.g., Gilbert and Rasche, 2007; Pichler, 2013; Miller and Bush, 2015; Ponte, 2014; de Bakker et al., 2019).

Process legitimacy is what much of the literature mentioned earlier focuses on, including the nature of decision making, the mechanisms of deliberation, and the features that promote transparency and accountability. Although many sustainability initiatives have set up governance structures that are supposed to enable equal participation of different stakeholder groups, several studies show that these structures are seldom enacted in practice. Scholarly work in this area unveils how everyday problems such as language barriers, access to financial resources, and lack of expert knowledge challenge the inclusiveness of sustainability initiatives (Everett et al., 2008; Schouten et al., 2012; Cheyns, 2014) and/or how actors choose not to participate for ideological reasons (Elgert, 2012). Other work examines the importance of early institutionalization phases and processes of isomorphism – examining the role of small groups of early movers, how specific institutional designs come to be selected, how path dependency may occur, and how mimicry processes take place (Gulbrandsen, 2008; Ponte, 2008; Fransen, 2012; Auld, 2014; Bloomfield and Schleifer, 2017).

Impact legitimacy is associated with a consequential logic and relates to whether governance arrangements contribute to collective problem-solving or to societal goals such as conservation, well-being of local communities, and consciousness raising of ecotourists (Wearing and Wearing, 1999). Impact legitimacy is shaped by three factors: (1) issue compliance, relating to whether members adhere to the agreed norms and rules; (2) implementation, which is concerned with activities having been performed according to plan; and (3) effectiveness – whether outcomes have been achieved (Bäckstrand, 2006).

Analytically, impact legitimacy can be usefully broken down into two main components: (1) impact measured in terms of output (e.g., number of participants, area covered, and/or quantity of sustainability certified product sold) – much of the literature has so far focused on these measures, and indeed claims to measure 'output legitimacy'; and (2) impact measured in terms of actual outcomes (e.g. actual improvements in environmental conditions and/or incomes). Many studies actually examine the outputs of sustainability initiatives at face value (e.g., Espinoza et al., 2012; Miteva et al., 2015). Yet, merely reporting outputs does not offer much insight on how these outputs came about

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or how they could be explained. For instance, boasting the number of certified Marine Stewardship Certification fisheries does not necessarily imply that these fisheries are recovering in practice (Ponte, 2012). It is therefore important to examine how relevant outputs arise and how they have different consequences for different groups of actors.

Structure of the book

This book is not a classic edited collection, as it emerges from a collective research project. Thus, it is best read as a hybrid book, something between a monograph and an edited book, that was curated by three editors but that has important collective elements in each of the chapters. At the same time, it can be approached from different angles by different audiences. It is structured in three parts. Part I of the book should be of interest to all readers who want to learn more about conservation and development – in Tanzania and the Global South more generally. Chapter 3 in Part I is essential reading in combination with any of the other chapters – as it includes all the relevant information on project design and methodology. Individual chapters in Part II will attract readers who are specifically concerned with the political ecology of natural resources we study (wildlife, forestry, and coastal resources), especially in a Tanzanian context. Part III is more relevant to those who want to have a broader and comparative picture of legitimacy in sustainability partnerships and wish to better understand how the institutional and network complexity of these partnerships shapes environmental and socio-economic outcomes. Chapters 8, 9 and 10 in Part III will be more challenging to readers less acquainted with advanced quantitative methods, but each chapter also includes a useful summary distilling the key findings for a broader audience. These findings are also included in the concluding reflections in Chapter 11.

In Part I, we discuss the main theoretical, analytical, methodological, and empirical issues that informed the research project behind this book. In Chapter 2, we provide an overview of how development and conservation interventions in wildlife, forestry, and coastal resources have changed over time in Tanzania. We also chronicle the kinds of discourses and practices they have entailed, and the picture that emerges from contemporary efforts seeking to address a combination of conservation and development objectives. This chapter provides the national-level background upon which the more specific sectoral analyses of wildlife, forestry, and coastal resources in south-east Tanzania will be carried out in later chapters. In Chapter 3, we discuss the overall design of the NEPSUS project (including an explanation of how we operationalized 'complexity'), explain our sector and site selection choices, and

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provide detailed information on what kinds of data collection methods we employed.

In Part II, we present the results of our research efforts in relation to selected sustainability partnerships that are operating in three natural resource sectors in south-east Tanzania: wildlife (Chapter 4), forestry (Chapter 5), and coastal resources (Chapter 6). Each chapter includes: (1) a brief background of the sector (building on the thematic issues introduced in Chapter 2); (2) a discussion of the relevant sectoral policy framework; (3) a background of the areas where we analyse these three natural resources (Rufiji, Kilwa, and Mtwara Rural districts); (4) a discussion of how sustainability partnerships have developed in time (distinguishing between 'more complex' and 'simpler' partnerships) and what actors and networks underpin them; and (5) an analysis of the perceptions that local communities hold of these partnerships – in relation to their functioning and their environmental and livelihood impacts.

In Part III, we carry out comparative and aggregate analyses across different sites and resources to analytically and methodologically expand our political ecology approach – through the analysis of legitimacy and institutional and network complexity. In Chapter 7, we examine the input, process, and impact legitimacy of these partnerships as perceived by local communities. We argue that, to understand the functional quality of sustainability partnerships, we need to examine how they develop, gain, and manage legitimacy locally. We pay particular attention to how these partnerships operate, rather than to their 'ideal' institutional features. In Chapter 8, we examine the complexity of sustainability partnerships by distinguishing its institutional and network components. We find a statistical association between these two components, and that the building of more complex networks tends to predate the joining of more complex institutional governance forms. In the following chapters, we leverage remote-sensing and survey data to further investigate the extent to which environmental and livelihood outcomes are attributable to variation in institutional and network complexity. In Chapter 9, we focus on the relation between complexity and environmental outcomes – as measured both via remote sensing and via perceptions by local communities. We find general consistency in the relationship between institutional complexity and positive environmental outcomes using our remote-sensing data, but more complicated relationships between network complexity and environmental outcomes. We also observe considerable divergence in the relationship between institutional and network complexity and local perceptions of environmental change across study sites. In Chapter 10, we take a closer look at the livelihoods of people across the study sites and the role that different sustainability partnerships play in shaping them. We do so by examining social changes through a particular lens

– the assets that people use and own. We first describe livelihoods in a general sense and then consider how south-east Tanzania compares to other parts of the country. Second, we provide more detail as to the variation and patterns of livelihood found across our study sites. Finally, we consider how prosperity varies according to institutional and network complexity. We find that neither simpler nor more complex sustainability partnerships substantively impact the livelihoods of local communities – with some exceptions. Livelihoods are mostly shaped by other, broader socio-economic factors – such as prices for agricultural products and the quality of transport infrastructure. In Chapter 11, we summarize our findings and provide some reflections on the future of the political ecology of conservation and development.

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2

Conservation and Development in Tanzania: Background, History, and Recent Developments

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Introduction

On 1 July 2020, the World Bank announced that the Tanzanian economy had grown from low to lower-middle income status. The country was upgraded after its per capita income grew above the World Bank's international poverty-line daily expenditure of US $1.25. Tanzania's Gross National Income per capita increased from $1,020 in 2018 to $1,080 in 2019, which exceeded the Bank's 2019 threshold of $1,036 for lower-middle income status. Notwithstanding the many shortcomings of measuring poverty using expenditure (Brockington and Noe, 2021), the World Bank associates this progress with the country's strong economic performance of over 6% real Gross Domestic Product (GDP) growth for the previous decade. This makes Tanzania the second largest economy in East Africa to achieve middle-income status after Kenya. Moreover, this achievement is ahead of the envisioned time, which was 2025.

As the Tanzanian economy achieves rapid growth, the country's conservation estate has also been expanding. Wildlife protected areas alone cover 26% of the country's land surface with fifteen national parks, the Ngorongoro Conservation Area, 28 game reserves and about 33 Game Controlled Areas (GCA) and/or Wildlife Management Areas (WMAs). The latter category was only formally designated in the mid-2000s and covers about 5% of the total wildlife protected areas (Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) 2015). This wildlife protected area network reaches across six ecosystems in the country: the large Selous ecosystem, Tarangire-Manyara, Serengeti, Katavi-Rukwa, Moyowosi-Kigosiand-Ruaha-Rungwa. New forest reserves and wildlife and marine national parks have been added, as have new community-based conservancies, such as WMAs, village forest reserves and Beach Management Units (BMUs). The country has one of the most extensive areas of

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conservation estate in the world (with over 40% of its land banned to people). Has this economic growth been fuelled by conservation investment, as tourism figures imply? Or has it happened despite withdrawing so much land from local production? Or are the two trends merely a coincidence?

The country's endowment of diverse biodiversity and prime natural attraction sites is central to many debates about conservation, human welfare, and development. Its conservation and development partners, as well as public constituencies domestically and internationally, hope to be able to associate both national and local development with the vast protected areas in both terrestrial and marine landscapes. But this is not always easy. As approaches for nature protection have evolved over time, so has the need for redressing the gap between nature and people through different kinds of partnerships – in planning, financing, and managing various interventions for natural resource protection.

While these partnerships increase in number and complexity, the state is attempting to regain control over the country's natural resources. This is especially possible after policy reforms in the 1990s opened for access and much control by the private sector and its multinational networks. Recent actions by the government that incited broader public debate included the enactment of three new pieces of legislation in 2017: the Natural Wealth and Resources (Permanent Sovereignty) Act No. 5 of 2017 (United Republic of Tanzania, henceforth URT, 2017b); the Written Laws (Miscellaneous Amendments) Act 2017 (URT 2017c); and the Natural Wealth and Resources Contracts (Review and Renegotiations of Unconscionable Terms) Act No. 6 of 2017 (URT, 2017a). In a detailed analysis, Noe (2019) suggests that the new laws are meant to facilitate regaining control over natural resources on the part of government – with a view to push back against global forces that had empowered foreign individuals and their companies, and a few local elites.

The Tanzanian government seeks to intensify the exploitation of natural resource-based revenue to support self-funded infrastructural projects, such as road and electricity networks, the revival of the national airline, and hydro-power generation for ensuring domestic and industrial energy production. As outlined in sector strategic plans, this entails the intensification of revenue collection and thus the strengthening of national agencies in different sectors. For example, the Tanzania Forest Services' (TFS) 2014–2019 strategic plan emphasizes the use of forest management and beekeeping to improve production capacity of both natural and plantation forests and apiary (URT, 2014b). The Tanzania Wildlife Management Authority (TAWA)'s medium strategic plan (2016/17–2020/21) envisions resource protection for the benefit of Tanzanians and the world, while leading in contributions to the national economy (URT, 2016). The Fisheries sector's strategic plan (2014–2019) envisions the expansion of marine protected areas (MPAs) with a view to contributing to the nation's development (URT, 2014a). These agencies have gained a powerful presence across the country through revenue collection in their respective sectors.

Donors have historically played an influential role in decision making in natural resource management through their financial contributions to Tanzania's conservation budget (which at times accounted for over 45% of the total). Currently, however, the government aims to increase its capacity to implement self-funded projects – including for the Stiegler's Gorge Hydro-power project, across the Rufiji River, after many failed attempts since the 1970s. This hydro-power project is located in the heart of the region's most protected wildlife areas and forest catchments that support the Rufiji delta and surrounding ecosystems. Once completed, the power station is expected to generate an additional 2,100 megawatts of electricity, which is enough to run the country's industries and beyond and hence supporting further growth (*The Citizen*, 2019).

This chapter presents an overview of how development and conservation interventions in wildlife, forestry, and coastal resources have changed over time in Tanzania, the kinds of discourses and practices they have entailed, and the picture that emerges from contemporary efforts seeking to address a combination of conservation and development objectives. It provides the national-level background upon which the specific sectoral analyses of wildlife, forestry, and coastal resources in south-east Tanzania will be carried out in Chapters 4, 5, and 6.

Wildlife

Discourses and practices in wildlife sustainability partnerships

Wildlife partnerships are often claimed to be improving the effectiveness of biodiversity governance by securing land, facilitating local development and creating business links. Others, however, observe that partnerships reinforce protection for wildlife but mainly lead to wins for only some actors, thereby indirectly aggravating local power struggles. Political ecologists have analysed how this happens through, among other things, supporting protected area expansion, rent seeking, and the rise of local elites, while simultaneously contributing to the continued loss of local land rights.

In recent literature, concerns that wildlife is continuously threatened by increasing human population and related activities have been accompanied by further threats arising from climate change and illicit exploitation for domestic and international markets (Breuer et al. 2016; Shaffer and Bishop, 2016). Three broad models for the restoration of ecosystems have emerged – some focusing on specific species requirements for habitats. The *first* model is linked to a growing consensus that conservation actions must be scaled up to secure large landscapes for wildlife protection. Securing large landscapes for wildlife is closely related to the need for re-establishing ecological connectivity, and networks of protected areas, that have been broken by humans. The logic here is that stand-alone protected areas that are already threatened and isolated have lost their ability to offer protection and refuge for wildlife – hence the need to redefine the appropriate scale of conservation (Adams et al., 2016). The *second* model is linked to the shifting of centres of power from central governments to accord greater responsibilities for wildlife protection to local institutions and communities through community-based conservation. The *third* model is embedded in the idea that nature should be marketed to pay for its own protection while also serving local development objectives. These approaches entail a significant shift in practices and policies that govern the conservation of natural resources (Ribot and Oyono, 2006; Berkes, 2010; Adams et al., 2016), calling for the private sector and development agencies to play major facilitation roles. Support is also mobilized for actions that cover a larger spatial scale, usually addressing a range of development objectives, conservation processes, and land uses (Clark et al., 2014). As the focus moves from traditional protected areas towards socio-economic-ecological landscapes, changes also occur in the number and composition of actors and institutions involved in financing and in the provision of technical and management support.

Theories of conservation biology support the redefinition of scale when emphasizing that meta-populations (spatially structured populations) are affected by spatial patterns of habitat loss hence reducing the ability of species to persist in fragmented landscapes (Clark et al., 2014). Landscape ecology theories emphasize that conservation outcomes are determined by spatial heterogeneity, linkages, and interactions between ecological patterns and processes as well as their variations with scale (Lindborg and Eriksson, 2004; Hilty et al., 2006; Lindenmayer and Hobbs, 2008). These two ecological perspectives suggest that contiguous and un-fragmented habitats support ecological processes and meet the habitat requirements of wildlife species that have extensive home ranges or migrate over large territories.

Over time, these theories have been the basis for partnerships that have effectively changed the discourses on the scale of conservation across the Global South. Although the Convention on Biological Diversity (CBD) builds on these theories and remains the general framework for biodiversity conservation worldwide, other actors are also organizing to support the achievement of the desired landscape connectivity. For example, cultural landscapes are identified and accorded protection status as United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Sites (Breymeyer, 2000; Rossler, 2000), while UNESCO also guides the establishment of Biosphere Reserves based on geographical zoning schemes, which comprise clearly delineated and legally protected core areas, buffer zones, and cooperation areas (Ajathi and Krumme, 2002). The idea of zoning is that core wildlife areas are secured by international laws, with partnerships being developed to facilitate protection of the neighbouring socio-cultural landscapes (recognized as cooperation zones). While UNESCO has retained the mandate to monitor and assess what is reserved, it has also built an integrated landscape management strategy that guides coordination, planning, and management of buffer zones and other land uses around protected landscapes, thus providing cross-jurisdictional consistency (Brunckhorst, 2000).

In 2003, the International Union for Conservation of Nature (IUCN) proposed a conservation category called Community Conservation Areas (CCAs)[1], which was adopted in the Fifth World Parks Congress held in Durban during the same year. This Congress recommended that the recognition of CCAs be an urgent necessity and a tool for strengthening the management and expansion of the world's protected areas, promoting connectivity at landscape and seascape level and enhancing public support for protected areas (Pathak et al., 2004; IUCN, 2005). Specific recommendations were thus made for governments to recognize CCAs as legitimate conservation tools, and to assign them to national and international protected area categories as appropriate. Today, CCAs guide the establishment and management of community-based WMAs across the world.

Another aspect we need to note here is the proliferation of market-based strategies in wildlife conservation, which link biodiversity conservation to economic growth (van der Duim et al., 2015) and champion tourism as a global economic driver of development. Intuitively appealing, the pairing of tourism and conservation seems a convenient pathway out of the contradiction between the mantra of continuous growth and the reality of finite resources (Duffy, 2014), offering an apparent perfect fit for delivering 'win-win-win' solutions for conservation, poverty alleviation, and tourism (Igoe and Brockington, 2007). By covering both conservation and human development, tourism becomes an integral part of the neoliberal conservation-development nexus (Igoe and Brockington, 2007). The World Tourism Organization (UNWTO) has reinforced this message globally for nearly three decades, often in tandem with the UN Secretariat of the CBD.

By shifting the focus from use to conservation of wildlife, neoliberalism enables the extension of commodification beyond land and labour to

1 CCAs are officially defined as natural and/or modified ecosystems that contain significant biodiversity values, ecological services and cultural values, and that are voluntarily conserved by indigenous and local communities through customary laws or other effective means (IUCN, 2005).

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include nature and the environment (West et al., 2004; Igoe and Brockington, 2007). As nature becomes 'capital', human-wildlife encounters as well as animals become 'products' ready to be sold to local and international markets (Duffy, 2014). In effect, tourism operates as a form of governance by shaping how visitors see the destination country, its nature, people, and culture (Ooi, 2005). This is done through a process of *generification*, which involves reshaping local landscapes and values to fit preconceived Western-rooted categories of nature, locality, and diversity (West et al., 2004). In order to pay for values that they derive from experiencing nature and wildlife, tourists need to 'fall in love' with it. This perspective predicates the dependency of tourism on biodiversity and links its success (or decline) to aesthetic values and the ability to attract tourists.

Through commodification, conservation plays a key role in making tourism profitable. The institutional pressure created by tourism leads to the 'flattening of nature' (Duffy, 2014) and a restructuring of conservation practices – transforming conservation actors and local communities into market actors, regardless of whether they have the will or the capacity to perform such functions in a meaningful way. Whereas tourism operators become influential gatekeepers of incoming tourist flows (Wearing and McDonald, 2002) and tourist choices turn into political power (West et al., 2004), partnerships and participatory processes are promoted as a way of balancing the influence of powerful business actors.

In essence, participatory structures that cumulate priorities for conservation and poverty with tourism are meant to uphold the democratic involvement of all parties and secure a just distribution of responsibilities, costs, and benefits from tourism development. The active involvement of local communities and public groups in participatory decision making is intended to provide social accountability (Nelson, 2012) and deter opportunistic appropriation of the benefits of by politicians and business organizations. Consortia of government and business organizations are often able to create an illusion of partnership to local communities and legitimize pre-arranged plans, through clever manipulation of time and information (Anderson and Prideaux, forthcoming). When local communities do not have the time or capability to develop their own vision for tourism development, business exploits this open space for imposing its own, and tends to boost its own economic interests over local social or environmental priorities (Moscardo, 2011).

Reflecting principles of market environmentalism, proposals for market-based wildlife conservation are often grounded on critiques of the chronic inefficiencies of state agencies and their limited competences for handling complex transboundary issues – such as inequality and environmental degradation. The pragmatic efficiency and management skills of business organizations, pitted against limited capabili-

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ties of local communities to coordinate conservation, offer, in theory, a winning proposition for conservation dilemmas. The result is a veritable proliferation of hybrid governance structures as popular models for addressing global sustainability challenges, in private and in public arenas of governance (Hall, 2011).

Despite all this innovation, a persistent complaint among observers concerns the perpetuation of inequities that accompanies hegemonic power structures, and generates conflicts that deepen the negative effects on the well-being of local communities and on conservation. The combined effects of multiple regulatory transformations seem to lead to the consolidation of power and control by the state and business over natural resources. Local communities are left with the responsibility of managing wildlife and their own livelihoods (Nelson, 2012). Top-down governing under the influence of transnational conservation organizations – and the absence of conservation models that are rooted in, and based on, values of local communities – is likely to lead to poor conservation and livelihood outcomes (Nshimbi and Vinya, 2014).

In sum, the rhetorical and instrumental use of ideas of partnership by international conservation and development actors supported governance reforms across the 1990s that sought to scale back state control over resources and enhance local control. But there are two contradictions embedded in these reforms. First, the central state has not always been willing to give up its power. Reforms, particularly over more valuable resources, have been contested (Nelson and Agrawal, 2008; Burgoyne and Mearns, 2017). Second, local control is not just about bestowing powers and authority, it also requires the skills, social, and political capital, and wider understanding of how to wield those powers. However, in many cases the new partnerships have more effectively empowered private companies and NGOs rather than elected village representatives. In the alternative, where elected representatives benefit, they do so privately while the broader village does not (Sachedina, 2010). The consequence is that the partnerships legitimized through the interventions of external agencies have strengthened and continued to confound the power asymmetries that veil natural resource management, at least as seen from villagers' point of view. Contrary to the official discourse of encouraging locally formulated reform strategies, partnerships tend to reflect the power of the state and of markets (MacDonald, 2010).

What justifications are mobilized to support these partnerships? Partnership configurations in natural resources are often shaped by how perceived threats are defined, and their solutions reconciled by different (often global) actors. This includes, for example, concerns that resources are continuously threatened by increasing human population and related activities that have been accompanied by further threats arising from climate change and illicit exploitation for domestic and

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international markets (Breuer et al., 2016; Shaffer and Bishop, 2016). We explore the rationale driving these changes in the next subsections.

Wildlife conservation in Tanzania: Background

The Selous ecosystem is an internationally significant conservation area (and hence it has been a World Heritage Site since 1982). Its fame is connected to being the first and oldest reserve in Africa (having been established in 1905), constituting one of the largest remaining elephant wilderness areas in the world (equivalent to the size of Switzerland). It is often considered the best hunting destination in Africa (Baldus, 2001; Neumann, 2001). In the past, the Selous ecosystem harboured about 60% of Tanzania's elephant population (Baldus and Hahn, 2004), but the recent surge in poaching saw a marked decline in elephant numbers – to the extent that the ecosystem was labelled as a hotspot of poaching (but see Chapter 4 for more recent developments).

In terms of landscape ecology, the Selous ecosystem covers 90,000 km^2 and includes the surrounding national parks of Ruaha and Mikumi, and several forest reserves, Wildlife Management Associations (WMAs) and open areas. Both WMAs and open areas are 'unoccupied' village lands adjacent to protected or conserved sites that are usually used by wildlife seasonally or throughout the year. As elsewhere in the country, connectivity of this ecosystem has been constructed through several WMAs such that the landscape is functionally linked with the 42,000 km^2 Niassa Game Reserve in Mozambique (Noe, 2010). This connection scales up the ecosystem to a transfrontier conservation area, for which a memorandum of understanding was signed in 2007 between the governments of Tanzania and Mozambique.

Wildlife Management Associations, two of which feature as study sites for our project (see Chapter 4), are externally promoted as community-based partnerships. The agreements that underpin them typically involve central and local governments, several villages (and village representatives), a private sector investor and a civil society organization. As a matter of procedure, usually villages form a community-based organization (CBO) to enter into business agreements with private investors. Although villages should voluntarily join the CBO, once an area of the village is identified for conservation, a village has little choice but to enter into an agreement to protect wildlife (Noe and Kangalawe, 2015; Bluwstein and Lund, 2016). In any case, usually member villages of the CBO contribute part of their land and agree to protect wildlife there instead of prior uses such as cultivation, herding, and settlements. The CBO in return obtains revenues from private investments (once approved by the central government).

The government's Wildlife Division and the recently formed TAWA regulate and monitor tourism activities in WMAs while district council representatives sit in WMAs' conservation advisory committees. The districts, in collaboration with the Wildlife Division, also play a role in coordinating anti-poaching activities, while conservation NGOs, such as the African Wildlife Foundation and World Wide Fund for Nature (WWF), contribute technical and financial resources for the establishment of WMAs and CBOs, as well as building human and technical capacity for conservation. Tour operators usually make an agreement with a CBO that has user rights (through their Authorised Association)[2] to use a portion of village land or a WMA for setting up tourist facilities, such as tented camps and lodges. These operators invest in physical property and are involved in promoting the area for tourism activities.

In practice, partnerships in WMAs are not entirely voluntary. Rather, they are a function of the ecological significance of the village land, and thus of the economic potential that can be generated through tourism. The most revealing dimension of communities' loss of power in relation to WMAs is that the law allows communities to exit WMA agreements, *but the land they allocate to the WMA remains locked in*. This way, communities have lost the ability to decide on the use of their land. Consequently, radical changes in the way a WMA decides to enter in business ventures require a general agreement among village members. As wishes, needs, and interests of villages are different, as are influences of local elites within each village, conflicts that arise during negotiations and agreements take a long time to be concluded while the land remains locked in conservation.

Despite claims of decentralization, the ownership and control of land and wildlife in Tanzania remains firmly in the hands of the government. This allows the central government to control financial resources generated through tourism activities (hunting, photographic, and safari tourism), and enables the appropriation and distribution of most benefits. At the same time, the responsibility for managing the land that accommodates wildlife outside protected areas is left to the local communities. Although policies declare interest in sharing costs and benefits between the state and communities, in fact the state controls (and retains) most benefits, while communities are mostly left with the costs of conservation (Igoe and Brockington, 2007). More details on revenue collection and the politics of sharing and utilization are discussed in Chapter 4.

Accordingly, policy reforms in wildlife conservation in Tanzania are better understood as *re-regulation* (Castree, 2008) – a process associated with neoliberalization of conservation (Igoe and Brockington, 2007) – which designates the use of public authority to transform previous-

[2] An Authorised Association is a community-based organization that manages a WMA.

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ly untradeable things into tradeable commodities. This is achieved through different forms of territorialization, such as the transfer of 'village land' to 'general land' which enables CBOs to enter business ventures with private partners, and through delivering rents and issuing concessions to investors on state-controlled territories (Igoe and Brockington, 2007).

Incentives, agreements, and distribution of benefits

In the wildlife sector, one or more villages that contribute land to a WMA register as a CBO, with an Authorised Association as a governing body. While putting this together is financially constraining and time consuming, funds have mostly come from bilateral development partners and international conservation NGOs. Once in place, WMAs are expected to enter into joint ventures or concession agreements with private photographic or trophy hunting companies. Tour operators are required to sign an agreement with the Authorised Association to use a portion of village land or a WMA to invest in physical properties that are used for tourism promotion – usually in return for fee per tourist bed night (in the case of photographic tourism) or a hunting fee (in the case of hunting tourism).

Various fees are charged for photographic tourism activities to generate revenue for WMAs or for the villages that allow private business to operate, but these are determined by the government through a revenue-sharing formula (see Tables 2.1 and 2.2). It is important to note that the use of a revenue proportion for Authorised Associations or villages (65%) is still subject to government control as Authorised Associations are required to allocate at least 15% of their gross revenue for resource protection (including for patrols and to pay salaries for Village Game Scouts); 50% for disbursement to WMA member villages; and at least 25% for Authorised Association management costs. The Authorised

Table 2.1 Revenue-sharing formula for tourist hunting activities in WMAs (%)

Fee types	Tanzania Wildlife Protection Fund	WMA	District council	Treasury
Block fee	25	75	0	0
Game fee	25	45	15	15
Conservation fee	25	45	0	30
Observers fee	25	45	0	30
Entry permit fee	25	15	0	60

Source: URT (2012) WMAs Regulations, p. 65.

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Table 2.2 WMA/village revenue sharing for photographic tourism activities (%)

Institution	Share of total revenue
Village or Authorised Association	65
District Council	15
Wildlife Division	20

Source: United Republic of Tanzania (2014)

Associations can use the remaining 10% as they deem fit. Also, as villages have choices on how to use their funds, most invest in community development projects – as opposed to direct distribution to local residents. What is new here is not so much the expectation that the wildlife economy should bring economic benefits and improved livelihoods – through business opportunities and jobs – but rather the loss of control over the realities of expanding wildlife habitats, numbers, and presence in village lands. Despite the differences in local contexts of various WMAs, their operations are constrained – to the extent that the state and private business are in charge.

As the government intensifies revenue collection, it also re-regulates activities in WMAs. For example, legal revisions were made to the Wildlife Act No. 5 of 1972 to streamline WMA operations (URT, 2009). In 2018, a new law was passed for protection of WMAs as buffer zones and wildlife corridors (URT, 2018b). In buffer zones, the government is still in control of most of the revenue streams despite many promises to empower local communities to manage wildlife resources in their lands. In wildlife corridors, WMAs acquire new legal status as they fall within protected areas under the Ministry of Natural Resources and Tourism. This law reinforces the fact that an irreversible change in land tenure has happened and access to WMAs for non-conservation uses is legally prohibited. This led Benjaminsen et al. (2013: 1087) to denounce the fact that 'despite a decade of rhetoric on community conservation, current trends in Tanzania reflect a disturbing process of reconsolidation of state control over wildlife resources and increased rent-seeking behaviour, combined with dispossession of communities'.

Forestry

Changing discourses and practices in forest sustainability partnerships

The high rate of forest degradation in many countries in the Global South has attracted global attention and has led to new strategies of forest management and new ways of mitigating the impacts of forest

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degradation. Among these strategies are forest governance decentralization, which is built on the premise that state forest management has failed. The process of decentralizing forest governance has happened all over the world, taking a variety of forms: democratic decentralization, where secure powers and resources are transferred to downwardly accountable and representative local authorities; administrative decentralization, with powers and resources transferred to upwardly accountable local branches of the central government; and privatization, where power is transferred to non-state entities (Ribot, 2002).

Since their onset in the late 1980s, forest decentralization has been framed according to a triple-win rationality – improved resource governance, improved rural livelihoods and improved forest biophysical conditions. This approach is embedded in the logic that centralized governance of natural resources cannot address multi-faceted resource-related problems (Ostrom, 1990) and that governance should take place through diversity in institutions and a combination of multiple partners (state, non-state, and rural communities). This way, the argument goes, problems can be addressed by improving resource management efficiency, while ensuring equity and justice for resource-dependent local people (Ribot, 2002; Ostrom, 2005; Andersson and Ostrom, 2008; Rana and Chhatre, 2017). Decentralized forest governance therefore follows the institutional logic of polycentricism, which operates through 'multiple authorities with overlapping jurisdictions' (Andersson and Ostrom, 2008: 71). The premise is that through a selective mix of useful elements and strengths from different actors and institutions, it is possible to 'achieve equity and sustainability in forest governance to a greater extent' (Rana and Chhatre, 2017: 40).

Several scholars have employed a political ecology lens to examine how forestry decentralization policies are unfolding on the ground, critically exploring their social and ecological consequences. In thick context, political ecology examines power in relation to diverse and multiscalar interests over forested lands and their implications on resource access (Robbins, 2004), where access is 'the ability to derive benefits from things' (Ribot and Peluso, 2003: 153). Thus, political ecologists tend to explore a wide range of social, political, cultural, and historical aspects that constrain or enable people's abilities to benefit from material resources and their institutions. In particular, they document the tendencies of central governments to limit powers devolved to local institutions (Ribot et al., 2006) and the reproduction of social inequalities, as local elites take advantage of insecure power transfers to capture the few benefits that the policies bring (Berkes, 2010; Lund and Saito-Jensen, 2013; Persha and Andersson, 2014; Green and Lund, 2015).

According to Scheba and Mustalahti (2015), community participation in forest management efforts and popularity around the world

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started escalating in the beginning of the 1980s, leading to what is globally known as participatory forest management (PFM) (Schreckenberg et al., 2006). Almost 25% of global forest is now under one or another form of community tenure management in different parts of the world. For various institutional or socio-political reasons, community tenure is differently referred to as, inter alia, community forestry, adaptive co-management and community-based forest management (CBFM) (Schreckenberg et al., 2006). Despite their different names, they all aim at devolving the government role of forest management to the community, meaning that the communities who directly engage with forest resources are made part of decision-making processes in all spheres concerning forest governance and management.

Wily (2002), however, has argued that PFM is far more than involving the local community in the use of forest resources and legalizing the same: 'local participation becomes a great deal more meaningful and effective when local populations are involved not as cooperating forest users but as forest managers and even owner-managers in their own right' (Wily, 2002: 31). Although the definition of PFM takes different forms,[3] the key is putting people at the centre of all spheres of forest management. It is usually categorized into two forms: joint forest management (JFM) and CBFM. The former entails joint management between the state and the community, while the latter, at least in principle, puts the community at the very centre of forest control, which should translate into also controlling the benefits.

Of interest is also the emergence of community-based forest enterprises, which are usually linked to forest certification and Reducing Emissions from Deforestation and Degradation (REDD+) initiatives. Community-based forest enterprises are founded on the logic of linking CBFM to the private sector and market actors to facilitate market access and ensure better prices (Humphries et al., 2012; Romero et al., 2017; Badini et al., 2018; Duguma et al., 2018; Hajjar and Oldekop, 2018). In this context, forest certification is framed as a livelihood alternative and a strategy for 'win-win' forest outcomes (Humphries et al., 2018). When implemented within a CBFM framework, forest certification also becomes a locally controlled forestry business model, which can contribute to the prosperity of local people (see Macqueen et al., 2018). This way, CBFM becomes a social enterprise, as it aims to achieve the development objectives of local communities through collective forest management (Duguma et al., 2018). But other analysts question the financial viability of these partnerships (e.g., Humphries et al., 2018) as well as their ecological sustainability (e.g., Cubbage et al., 2015).

[3] These terms include decentralized forest management (Treue et al., 2014), community forest management, and devolution of forest tenure (Vyamana, 2009). See also Blomley and Iddi (2009).

They also highlight how their poverty alleviation potential significantly depends on initial support from governments and other partners for start-up capital, subsidized access to training and technical assistance, skills for navigating complex bureaucratic systems, and reliable access to markets (Humphries et al., 2018). Many have also challenged the much praised sustainability outcomes of community-based forest enterprises (Gullison, 2003; Barrow et al., 2016; Sungusia and Lund, 2016; Gross-Camp, 2017).

The emergence of REDD+ has added another layer to forest management, leading to what some have called the 'commercialization of forest conservation' (Makatta et al., 2015) and to more focus on improving forest condition by supporting its management than on the livelihoods of adjacent communities. While some REDD+ initiatives seem to have been successful, their sustainability has been doubted as the benefits are not clearly defined (Lund et al., 2017). Some scholars see the potential in REDD+ while other see challenges, for example in terms of gender, as women have mostly been marginalized in forest decision making (Larson et al., 2018). In some countries, REDD+ initiatives have increased land tenure security while in others they have decreased it (Sunderlin et al., 2018). Where there are communication barriers and significant social-economic gaps between households, REDD+ initiatives seem to have compromised social safeguards and have further impoverished the poor (Chombaa et al., 2016; Poudyal et al., 2016). Moreover, these initiatives are seen as donor-driven and as paying little or no attention to local and indigenous welfare (Dawson et al., 2018). A country's institutional set-up is also important for REDD+ success, e.g., in relation to land tenure systems and access to forest resources (Ojha et al., 2019).

In sum, since the late 1970s, research and reflections on practice have increasingly highlighted the importance of involving local people in forest management. They have emphasized the importance of forest resources for local livelihoods and the need to secure the rights of local people in relation to the use of forest resources. Furthermore, they have found that forest management would be more sustainable (and more affordable for the state) if local people's knowledge and institutional capacities were incorporated and non-state actors were involved when addressing the causes of deforestation, such as the increased demand for agricultural land, the overgrazing of animals in the forest, wildfires, and the felling of trees for wood as well as charcoal production (Haruyama and Toko, 2005; Blomley and Ramadhani, 2006; Lund and Treue, 2008; Babili and Wiersum, 2010; Ngaga et al., 2013; Rantala and German, 2013; Mongo et al., 2014; Lund et al., 2015; Persha and Meshack, 2016; Sungusia and Lund, 2016). As a result, the international community has long acknowledged the importance of local people's needs in relation to forest management. The 1978 Eighth World Forestry Congress in

Jakarta had the theme 'Forests for People', and major donors since then have been pushing for decentralization in forest management as part of their aid programmes such that 'a wealth of programs and approaches have been created – social forestry, agroforestry, joint forest management, community forestry, community-based forest management, to name a few – to acknowledge and build on the links between people and their surrounding or neighbouring forests' (Colfer, 2005: 38).

Forest conservation in Tanzania: Background

In Tanzania, it took some time before these developments in the international community were reflected in local policies. For a long time, forest management remained largely centralized and forest resources were kept under the control of the state. Mpokigwa et al. (2011: 18) argue that 'the government faced weak financial and human resources capabilities to manage forest resources to meet the increasing demand for forest products and services … [and thus this] management system did not lead to proper protection of the forests as illegal harvesting continued'. In the early 1990s, the Swedish-funded Regional Forestry Programme and Land Management Programme were instrumental in pushing the government to move from vague formulations concerning involving communities in natural resource management to enabling eight communities to become the legal owners of the forests of Duru-Haitemba that had been in the process of becoming forest reserves (Wily, 1997). According to Liz Wily, who was associated with the programmes:

> it is pertinent to note that this change has not come about through the importation of community forestry models … nor from the formulation and then implementation of new policies by central government; on the contrary, the movement has begun *at the village* level, albeit with facilitatory guidance and carried through with the support of involved local authorities increasingly convinced of the "correctness" of the approach. (Wily, 1997: 13)

This approach turned out to be a success in terms of rehabilitating forests that had been in decline because of excessive exploitation by local communities and weak district oversight (Wily, 1997: 2). The Tanzanian government therefore began involving local communities in a similar manner in other forest areas, notably the Mgori forest (see e.g., Zahabu, 2008; Blomley and Iddi, 2009; Kistler, 2009; Babili and Wiersum, 2010). The case of the Duru-Haitemba forest is now considered to have led to the broader establishment of CBFM in Tanzania (Blomley and Iddi, 2009: 5).

Since the 1990s, international donors, including the World Bank and the governments of Finland, Norway, and Denmark, have played an active part in funding PFM partnerships. They have done so through

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funding projects directly in local communities and through funding local or national government institutions (URT, 2006a), the latter being more common today. Various Tanzanian forestry policies were eventually replaced by the National Forest Policy of 1998 and the Forest Act of 2002, which clarify the key role of private actors and local communities in addition to the government in forest management (URT, 1998, 2002). According to Blomley and Iddi (2009: 6), the National Forest Policy of 1998 'aims to promote participation in forest management through the establishment of Village Land Forest Reserves, where communities are both managers and owners of forests, as well as through JFM, where local communities co-manage National Forest Reserves or local authority forest reserves with central and local government authorities'. Village councils were furthermore legally mandated the tenure for forest areas outside forest reserves (Blomley and Iddi, 2009: 7).

Following the Forest Act 2002, all forests in Tanzania have been divided into four major categories (URT, 2002):

1. National Forest Reserves, which consist of: (1) forest reserves; (2) nature forest reserves; and (3) forests on general lands.
2. Local authority forest reserves, which consist of: (1) local authority forest reserves; and (2) forests on general lands under the management of District Authorities and provisions of the Local Government Act.
3. Village forests which consist of: (1) Village Land Forest Reserves; (2) community forest reserves created out of village forests; and (3) forests which are not reserved but are located on village land and of which management is vested in village councils.
4. Private forests, which are: (1) forests on village land held by one or more individuals under a customary right of occupancy; and (2) forests on general or village land, which rights of occupancy or a lease has been granted to a person, partnership, corporate body, NGO, or any other body or organization for the purpose of managing the forest.

As explained by Blomley and Iddi (2009: 7), National Forest Reserves and local authority forest reserves can be managed for both protection (e.g., catchment forests) and production (e.g., plantations and natural forests, including mangroves and some *miombo* woodland reserves).[4] The Act further emphasizes the decentralization of forest management and delegates 'responsibility for the management of forest resources to

[4] These are woodland ecosystems that are dominated by trees of the genus *Brachystegia* including *Julbernardia paniculata, Brachystegia lingifolia, Brachystegia floribunda* and *Isoberlinia*.

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the lowest possible level of local management consistent with the furtherance of national policies' (URT, 2002; Blomley and Iddi, 2009: 7).

The two overall forms of participatory forest management are: JFM and CBFM. Today, more than 60 districts are involved in JFM in Tanzania, with about 50 Village Land Forest Reserves (VLFRs) having been established. Also, more than 50 districts have CBFM. Particularly important for our discussion is not just the existence of these categories, but how they interact with the interests of different actors involved and how these interactions affect land-use practices and resource governance on the ground. Tom Blomley (personal communication, 24 January 2017) suggests an interesting mix of factors at work. He observes that the government had encouraged JFM to protect catchment forests with high biodiversity, but the uses and benefits allowed from these forests meant that there was, in practice, very little of material importance that could be shared with the communities who were 'jointly' managing these forests with the central government. Moreover, even when there were things to share there was no agreed means of sharing them. So, few agreements were actually signed. Meanwhile, in production forests which are also covered by the laws of joint forest management there is little incentive for the government to engage in JFM as it does not want to share the revenues it enjoys from them. Finally, elite capture and multi-level corruption (Brockington, 2007, 2008) remain serious challenges – in addition to difficulties in holding the government accountable for improving forest-dependent livelihoods and forest conditions when management has been decentralized (Fordia, 2011).

Comparatively, VLFRs have been more successful because the central government has no say in them – villages declare them. However, they require the endorsement of the district council to approve the by-laws. But as the councils have an incentive to capture and over-exploit forests before they are protected, NGOs have taken the lead in establishing VLFRs in Tanzania, which are now over 300. Agrawal et al. suggest that 'in practice, most forestry projects and policies involve multiple actors and different actors are often responsible for specific forest governance tasks … [yet none] of the major actors relevant to forest governance is likely to perform uniformly well along all the dimensions'. As a result, they recommend 'efforts to promote complementarity of interests and capacities among government, private and community actors' (2011: 388). This emphasis on multiple actors reflects the increasing focus on partnerships. At first, the only non-state actor involved in PFM was the local community, but now it is possible for a community to include other actors.

Community-based forest management has been lauded for improving forest conditions and governance in Tanzania (Blomley and Iddi, 2009; Mwamfupe et al., 2019). Local communities have been given the power to make decisions over their forest land and benefits accrued

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from it. However, the approach has also been blamed for restricting forest access among local communities and for the failure of socio-economic benefits to trickle down to households.

The latest developments in relation to PFM in Tanzania are largely externally driven by global concerns related to climate change. Of particular importance is the new international focus on the UN framework initiative for REDD+ and on forest certification schemes. These schemes involve a host of new stakeholders and thus are leading to even more complex partnerships. The government of Norway has been a key actor in supporting REDD+ in Tanzania. In April 2008, it signed a Letter of Intent with the government of Tanzania that set a framework for a Climate Change Partnership focusing on REDD+ (NORAD, 2014). The REDD+ projects are funded as part of Norway's International Climate and Forest Initiative, which seeks to: 'i) work towards the inclusion of emissions from deforestation and forest degradation in a new international climate regime; ii) take early action to achieve cost-effective and verifiable reductions in greenhouse gas emissions; iii) promote the conservation of natural forests to maintain their carbon storage capacity' (NORAD, 2014: xviii). REDD+ has led to new challenges such as a need for new technical skills, the problem of vague local rights in relation to carbon, and insufficient rules regarding benefit sharing.

Forest certification aims at ensuring that forest products are harvested from sustainably managed forests with acceptable standards on respecting human rights and maintaining ecological functions. Forest certification is largely driven by non-state actors (Cashore et al., 2006) to enable consumers to purchase sustainable forest products (Auld et al., 2008; European Tropical Forest Research Network (ETFRN), 2010; Kostiainen, 2012; Teketay et al., 2016), and offers an opportunity for local communities to earn premium prices from certified forest products (Cashore et al., 2006). In general, all certification schemes include standard setting, a certification process and an accreditation mechanism (Nussbaum and Simula, 2005). The NGO Mpingo Conservation and Development Initiative (MCDI) played an important role in introducing forest certification to Tanzania by supporting communities to live up to the Forest Stewardship Council (FSC) requirements (Masao, 2015). Challenges related to forest certification include the high costs that certification incurs, weak governance, and uncertain economic benefits (Cashore et al., 2006; Kalonga et al., 2015).

Incentives, agreements, and distribution of benefits

As indicated above, there are two main approaches to forest management in Tanzania. First is joint forest management, which requires that the government signs agreements with local communities adjacent to National Forest Reserves. In joint forest management agreements, the government is entitled to a larger share of sales from National Forest Reserves than local communities. The national forest agency, Tanzania Forest Services (TFS), is responsible for collecting revenues from these reserves and for managing revenue distribution to communities in the joint forest management arrangement.

However, the dominant approach has been one of CBFM in Tanzania. This entails villages deciding to reserve part of the village land and declare it as a Village Land Forest Reserve (VLFR), from which sales of forest resources are accrued by the village. Non-governmental organizations often provide technical expertise and finance the process of establishing community-based forests. District councils have been responsible for providing regulatory services and overseeing the law once village land forests become operational. According to the Forest Act of 2002, villages may retain 100% of forest product sales (after tax) but may choose to share this income with the district in return for services rendered. Differently from wildlife, the sharing formula in forestry is not fixed – but it is expected that the larger portion remains in the village. A key role in introducing forest certification, supporting communities to live up to the FSC requirements, has been played by MCDI (Masao, 2015). However, challenges relating to forest certification persists due to the high costs of certification, weak governance, and uncertain economic benefits (Cashore et al., 2006; Kalonga et al., 2014).

Coastal resources

Changing discourses and practices in coastal resource sustainability partnerships

Coastal and marine environments, including seafood, coral reefs, and mangroves ('coastal resources' thereafter), are highly productive and complex ecosystems that provide diverse ecological fits, livelihood options and income to hundreds of millions of people around the world (Béné et al., 2006; UNEP, 2006; Zeller et al., 2006; Andrew et al., 2007; FAO, 2014). However, these important ecosystems have experienced severe and potentially irreversible destruction due to a combination of local to global natural and anthropogenic forces (Courtney and White, 2000; Fernandez, 2007; Baquiano, 2016). Consequently, during the last three to four decades, many governments in the Global South have introduced natural resource governance systems in search of the best approaches to achieve conservation objectives while at the same time securing livelihood needs in coastal social and ecological systems.

These reforms have steered management goals away from strict conservation objectives and towards the 'sustainable use' of resources, which entails an expansion in the number and kind of stakehold-

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ers involved and the development of various forms of collaborative arrangements. These arrangements are characterized by the transfer and/or sharing of rights, roles, and powers from central to local public authority (decentralization), and from state to non-state actors – including local communities, business, and NGOs. The main challenges in the management of coastal resources, in addition to climate change, have been accommodating development and economic activities at the same time as responding to pressure on resources such as mangrove, fish, and corals.

Along with other natural resources, the governance of coastal resources in the past three decades has shifted from centralized management by the state to systems based on devolution of power and responsibility to local government, communities, and non-state actors. These approaches are commonly referred to as 'community-based' coastal management or 'co-management' (Christie and White, 1997; Pomeroy, 1998). The term co-management has been particularly popular and characterizes a system that allows for the integration of social, economic, and environmental issues, and facilitates community participation and ownership (Christie and White, 1997; Pomeroy, 1998). Christie and White (1997) called this a paradigm shift – from a central to a collaborative approach in the management of natural resources, where science and policy instruments are informed by more traditional ways of managing resources among communities. Most of the literature distinguishes between state-led and community-led co-management. State-led co-management is characterized by administrative sanctions and is often seen as politicized and marred by lack of capacity and financial and human resources. Community-led co-management is seen as being based on social, rather than administrative, sanctions, but also as suffering from free-riding and unequal power relations within a community (Kearney et al., 2007).

Co-management of coastal resources entails two related processes: (1) decentralization (full or partial) of authority from central to local government authority (a vertical movement); and (2) the involvement of non-state actors and local communities (a horizontal movement) (Baquiano, 2016). On paper, participatory governance facilitates the involvement of coastal communities in planning and management, in allocating resources and in enforcing regulations (Kuperan et al., 2008). Proponents of this approach argue that it is the most appropriate management approach for coastal resources as they are embedded in complex socio-ecological systems that require meaningful consideration of both social and ecological dimensions (Sorensen, 1997). However, the process of co-management is complex and context-dependent (Pomeroy, 1994). The degree of community-level engagement and control can be quite different – ranging from consultative to coordinative, complementary, and critical (Pomeroy, 1994, 1995; Sen and Nielsen, 1996). Participation by communities can be limited to consultation in the design phase, but can also involve active roles in implementation – leading to different degrees of legitimacy at the community level (Oracion et al., 2005).

Often, co-management involves a series of donor-assisted projects and the integration of communities in the governance of coastal resources (Courtney and White, 2000). The original focus of co-management was conservation, but it became clearer over time that local communities involvement in enforcement is difficult when they are dependent on coastal resources for their livelihoods (Fernandez, 2007). As a result, co-management is now seen as performing four different key functions: conservation, enforcement, participation of local communities (knowledge and capacity building), and socio-economic development (Pomeroy, 1999; Kuperan et al., 2008; Pinkerton and John, 2008).

One of the key processes that allows participation of communities in co-management of coastal resources is decentralization. In many cases, community participation is limited to the dissemination of information (Kweka, 2011), a lower step of what Bruns (2003) calls the 'ladder of participation'. Communities are not homogenous (Agrawal and Gibson, 1999) and for decentralization to be effective there is a need for clear institutional mechanisms. For co-management to work properly, high levels of accountability and transparency are needed between different actors as well as the willingness of the government to share power with the private sector (Kearney et al., 2007). The coastal resources literature suggests that potential benefits of these processes can include: social and economic development; decentralization and more participatory decision-making processes; reduction of conflicts; increasing welfare of resource users; and increasing financial resources for the state and possible reduction of challenges to its authority (Pinkerton, 1989). Another important process is a government's definition of property rights, which can assign legitimacy and allocate power to different actors and configurations of actors in these partnerships (Kearney et al., 2007; Thiel, 2010).

But it is also important to keep in mind that partnerships are socially constructed through interaction among different actors (Fernandez, 2007). Positive interactions can be nurtured by trust and commonality of mandate, and evolve around the sharing of resources, expertise, vision, and systems at various levels of management. They develop within the fabric of existing social capital, knowledge, group dynamics, working relations, concerted action, consensus building, and formal and informal rules (Fernandez, 2007). Partnerships exercise power where specific spaces are created as governable objects. They place claims to empowerment of local communities that are supposed to enhance community capacity to control and improve participation in the management of coastal resources (Johnsen and Hersoug, 2014).

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In the best cases, local communities are actively engaged in designing, monitoring, planning, and entering into agreements, and participate in responsibilities, power and obligations (Kearney et al., 2007). But this seems to be the exception rather than the rule. Partnerships enact a political regime that is constructed and negotiated between multiple public and private actors, some of whom are focused on profit maximization, not on conservation efforts per se (Quist and Nygren, 2015).

In the literature, we find four types of property right regimes that operate in co-management of coastal resources: state-owned (restricted for community use and considered reserved areas); private-owned (assigned to individuals or companies for business purposes); communal (used and managed by the community); and open access (used by any of the other partners) (Pomeroy, 1999). In reality, pure state and pure community ownership are rarely found (Pomeroy, 1999). The government can formally recognize community rights, but this may lead to conflict, as it shapes the incentives of local resource users to conserve the resources. Co-management is time consuming and is associated with high costs of implementation, monitoring, and enforcement (Kuperan et al., 2008). Its enforcement ranges from the imposition of government fees and fines to social sanctions, such as asking someone to leave the community. Social sanctions may be particularly problematic when resource users are unwilling to report fellow users in the case of breach of rules (Fernandez, 2007). Fleishman (2006), for example, argues that while co-management is seen as an 'innovative' way of addressing conservation, it is also associated with high transaction costs that can sometimes lead to negative sustainability outcomes and benefit local elites, at the expense of the community as a whole.

Coastal resource conservation in Tanzania: Background

After independence in 1961, the government continued to enshrine colonial rules and laws in governing natural resources. It was only in 1972 that new fisheries legislation was passed, followed by efforts to conserve parts of the coastal and marine environment. These efforts gave rise to establishment of marine reserves, restrictions on the size of fishing nets, as well as licensing of both fishers and fishing vessels (URT, 2018a).

The well-being of most coastal people in Tanzania is tightly dependent on the 'robust and healthy' coastal environment (URT, 2006b). However, most coastal communities are overly poor with rates of illiteracy, low schooling, and health status relatively high compared to other regions of the country (URT, 2010). Yet, coastal resources are a significant source of wealth. Commercial ventures for coastal resources have developed around perceived lucrative businesses such as for mangrove, sea cucumbers, prawns, octopus, lobsters, and some bigger-fin fish such as large pelagic fish, those dwelling in coral reefs, and a variety of small pelagic fish. Some of these resources are known to have been heavily exploited, calling for concerted efforts from the government to regulate the fisheries that target them. As a result, many partnerships have been pursued in attempts to conserve these resources.

The Arusha Resolution in 1993 set out sixteen principles and acted as a springboard for implementing integrated coastal zone management (ICZM) in Tanzania (Torell et al., 2004). The goal was to connect the government, communities, and sectoral and public interests to create and implement an integrated plan for the protection and development of coastal habitats and resources (Masalu, 2003). Public safety, appropriate land use, sustainable resource stewardship and economic development, and conflict resolution are all pillars of ICZM. The strategy was to connect local projects to each other and provide them with insight and support needed to tackle issues beyond the community-scale scope such as large-scale economic forces related to tourism and mariculture (Torell et al., 2004). It also set out to improve local and national decision-making process by providing support for conflict resolution (Masalu, 2003). By supporting sustainable development at the national and local level, ICZM sought to improve people's livelihoods and contribute to positive national development (Masalu, 2003).

Another common approach in the governance of coastal resources in Tanzania has been the designation of marine protected areas. These were first implemented in Tanzania in the 1970s when several areas were proposed as marine reserves. But due to lack of capacity and poor management, many of these reserves remained only on paper (Bryceson, 1981). The Marine Parks and Reserves Act No. 29 enacted by the government in 1994 allowed the creation of proper marine protected areas (Machumu and Yakupitiyage, 2013), which now operate under the auspices of the Marine Parks and Reserves Unit (MPRU, a semi-autonomous organization under the Ministry of Livestock and Fisheries Development). Marine protected areas in Tanzania are classified into two types: marine parks, where multiple uses (falling under the IUCN category IV) are allowed; and marine reserves, which are 'no-take areas'. Presently, there are three marine parks (Mafia Island Marine Park, Mnazi Bay-Ruvuma Estuary Marine Park (MBREMP), and the Tanga Coelacanth Marine Park) and fifteen marine reserves in Tanzania (Katikiro, 2020).

Beach Management Units (BMUs) are another instrument that has been set up to manage coastal resources sustainably. Although they were first started on Lake Victoria in the 1990s, their adoption in coastal areas started only in the mid-2000s. They function as a part of the local government, but in theory allow for decentralized fisheries management decisions to be made at the community level. The Units are supported by the Department of Fisheries, via its field office under district councils. The number of BMUs is on the rise in Tanzania, and some are grouping to form collaborative fisheries management areas (CFMAs). However, in many local communities, members often feel that they are increasingly curtailing their rights to access coastal resources. Similar tensions are also arising in marine parks, where conflict between managers and resource users persist – the latter feeling that access to resources has become too restricted. Community groups in marine parks are represented through village liaison committees, which are often blamed for failing to represent local needs and interests (see Chapter 6).

In addition to these approaches, other specific measures have been undertaken to preserve fish stocks and other coastal resources. These include a commercial harvesting ban of mangrove trees that is implemented in an attempt to restore their positive effects on the coastal ecosystem (Mshale et al., 2017), and input and output control measures – including gear restrictions and boat licensing. The main legislations governing coastal resources are the Fisheries Act of 2003 (amended in 2019) and more specific legislation on marine parks and reserves, environmental management, forestry, land use, and local government. Lack of coherence between these laws and their associated policies have often resulted into conflicting implementation of actions to conserve coastal resources.

Incentives, agreements, and distribution of benefits

As is the case in the wildlife and forestry sectors, the government is also seeking to intensify revenue collection from coastal resource extraction. In the past decades, the fiscal strategy for the sector on coastal Tanzania has focused on revenue generation from export royalties, Exclusive Economic Zone (EEZ) fishing licences, registration of vessels and licensing, and fish levies. Export royalties and licence fees for fishing vessels greater than 11 metres in length accrue to central government via the Department of Fisheries (FAO, 2004). Local communities through BMUs and other community-based organizations feel that this needs to be reviewed so that part of it will accrue to local village committees (see Chapter 6). Commercial fishing in the EEZ has been exclusively exploited by Distant Water Fishing Nations vessels, with weak control or very minimal supervision from the government of Tanzania. The Deep-Sea Fishing Authority Act of 1998 has been amended and the new Act, passed in early 2020, has introduced regulations to guide EEZ fishing activities to increase the benefits to local communities and the nation at large.

Fish levies accrue to local government. Recently, the district councils in Kilwa, Kibiti, and Mafia commissioned BMUs to act as agents for levy collection in landing sites. Inefficiencies within BMUs in collecting

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levies and in reporting collections led to the stripping off of this task. To BMUs, levy collection was an important venue of fund-raising, as they could to retain 2% of the collections for their activities, such as patrol and monitoring of coastal resources.

Finally, marine parks are also supposed to collect and distribute revenue to local communities accruing from park entry fees. However, this remains a problem in the current operation of MBREMP. The MPRU regulations require that each park allocate 20% of their revenues to local communities. But collections at the MBREMP gates located at Msimbati and Kilambo have been low, due to lack of tourist infrastructure that could attract visitors to the Park. Despite these low collection levels, community members demand that funds are disbursed to their villages. The Marine Park, however, collects all user fees into a common basket that is disbursed by MPRU to local communities and local government agencies (see Chapter 6).

Conclusion

Development and conservation interventions have changed over time in Tanzania, with contemporary discourses and practices seeking to address a combination of conservation and development objectives in the country. This chapter has chronicled changes in development and conservation discourses broadly, while drawing from partnership practices in wildlife, forest, and coastal resource sectors in Tanzania. Whereas local and national development have largely depended on natural resources, initiatives that combine conservation and local development are closely linked to the recent formation of sustainability partnerships.

Although sustainability partnerships have operated for over three decades in Tanzania, their ecological and livelihood outcomes are only gradually surfacing on the ground. Protected terrestrial and marine ecosystems have grown in size and coverage, and partnerships have become more complex. Table 2.3 summarizes what is novel in these partnerships across the three resource sectors we examine in this book, in terms of: the nature of partner contribution, nature of business, and issues of resource access.

In sum, Tanzania's natural resources sector has gone through a historical process of decentralization that has determined how these resources are managed and utilized for local and national development. As a result, new and more complex forms of governance have proliferated, followed by the emergence of conservation-oriented business ventures in communal lands (Igoe and Brockington, 2007). A common core principle in the functioning of these partnerships has been that conservation tends to be required, while local development tends to be wanted

Table 2.3 Sustainability partnerships in wildlife, forestry, and coastal resources nature of partner contribution, resource access issues, and revenue collection

	Wildlife	Forestry	Coastal resources
Nature of partner contribution	- Two or more villages contribute to WMA land; - A CBO manages the WMA; - The government and NGOs provide regulatory and technical assistance	- Villages provide land as VLFRs in community-based forest management; - The Government and NGOs provide regulatory and technical assistance	- Coastal villages form a BMU; - Villages within MPAs participate in village liaison committees
Resource access issues	- All consumptive use and non-conservation activities are prohibited in WMAs	- Access to forest is restricted under Community-Based Forest Management	- Restrictions are imposed in marine parks; - Ban on mangrove harvest; - Gear restrictions; - Licensing
Revenue collection	- Tanzania Wildlife Authority (wildlife utilization and revenue collection); - WMAs can also enter into business with private sector actors	- TFS involved in timber sales from NFRs; - VNRCs on behalf of villages supervise and collect revenues from VLFR sales	- MPAs (park fees); - BMUs/local government (fish levies)

Source: authors

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(De Boer and Van Dijk, 2016). This distinction is important as it reflects the priorities defined by the institutional set-up of these partnerships in Tanzania. Except for the forestry sector, a large share of critical discussion regarding impacts of partnerships relates to the control of economic benefits enjoyed by local elites (Bluwstein, 2017; Wright, 2017). These critical studies essentially question the use of the term 'partnership' because, in reality, decision-making and revenue-sharing structures and practices are often lopsided, generating disadvantage for community members who are not part of any elite grouping (Sachedina, 2010; Ahebwa et al., 2012).

As Tanzania's current leadership attempts to implement self-funded infrastructural projects, it imposes strict measures on local utilization of resources. As such, conservation partnership sites operate at the nexus of state agencies, community-based organizations, and private businesses interests in wildlife, forestry, and coastal resources. As would be expected, powerful actors continue to circumscribe the already marginalized actors, with some arrangements implying possible irreversible changes in local resource tenure. A closer look at these issues is needed to achieve a fine-grained understanding of the manner in which unequal and poorly distributed benefits arise from these partnerships. Chapters 4, 5, and 6 will provide more details of these issues in the presentation of empirical findings of research in the three sectors of natural resources in Tanzania.

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3

Design and Methodology

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Introduction

The main objective of the project behind this book was to assess comparatively whether and how forms of partnership characteristics and dynamics of governance affect sustainability outcomes across different renewable resource systems (wildlife, forestry, and coastal resources). We define a partnership as a configuration of actors, norms, and institutions that mediates interactions and distribution of roles and rights for managing a specific renewable resource in an identified place. We deployed a mixture of methods to explore whether and how different forms of partnership complexity affect sustainability – in relation to environmental and livelihood outcomes. Data collection methods included key informant interviews (KIIs), focus group discussions (FGDs), participant observation, social network data, a survey, satellite images, and remote sensing. This chapter provides a detailed discussion of the overall design of the New Partnerships for Sustainability (NEPSUS) project, site selection criteria, and data collection methods. Data analysis methods will be discussed in following chapters, with one exception (software-assisted qualitative data analysis, which we cover in this chapter). We will also reflect on the challenges involved in carrying out truly interdisciplinary research.

Resource selection

We examine three natural resource systems (wildlife, forestry, and coastal resources) that are central to any measurements of sustainability (Benjaminsen et al., 2013; Dokken and Angelsen, 2015). Tanzania provides an ideal case because all three resource systems are managed under different partnership arrangements. Using all cases from one country reduces variation in government contexts and frameworks.

Moreover, all cases from the same country share a similar evolution from centralized to putatively decentralized management approaches that emerged around the same time (in the late 1990s). While the case studies differ in specific resource types and particular actors involved, there are several similarities across sectors that allow for meaningful comparison, such as the normative complexity of the objectives of the partnerships. All cases seek to attain both environmental and livelihood outcomes, while improving natural resources governance at the local level. In each resource type, we also sought to minimize variability by selecting sites that are relatively comparable in terms of socio-economic and agro-ecological factors.

All three sectors we selected in Tanzania have by now established traditions of:

1. 'simpler', more centralized and top-down conservation initiatives, such as game reserves, forest reserves controlled by central or local governments, and marine parks; and
2. 'more complex' partnerships (see discussion below) that are based on different degrees and forms of co-management and involve more stakeholders: Wildlife Management Areas (WMAs); combinations of community-based forest management (CBFM) with timber certification and REDD+ initiatives (Reducing Emissions from Deforestation and Degradation); and Beach Management Units (BMUs).

These resource systems have specific histories and are embedded in specific contexts and networks of actors – which we analyse in the sectoral chapters of this book (see Part II). But we also carry out comparative analyses to understand whether, how and to what extent the governance complexity of these partnerships (in their institutional and network components) influences their performance (see Part III).

Site selection at the regional, district, and local levels

We selected the macro-region of south-east Tanzania for the following reasons:

1. The different resource types are located in contiguous areas that are, in the context of nationwide variation, agro-ecologically and socio-economically similar. All are coastal regions at a similar latitude and with similar topography, with livelihoods that depend largely on farming.
2. This region hosts simpler partnerships for all the resources studied: various National Forest Reserves in Kilwa, the Selous Game Reserve in Rufiji, and the Mnazi Bay-Ruvuma Estuary Marine Park (MBREMP) in Mtwara.

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3. The study sites are well known for pioneering community participation in conservation for the respective resources studies (WMAs, CBFM, and BMUs), allowing us to assess partnership complexity and compare across resources.

This broad study region was divided into study sites in three different districts, each characterized by different types of natural resource governance. We selected Rufiji District in Pwani Region because it hosts various WMAs that border the Selous Game Reserve. We selected Kilwa District in Lindi Region to explore the formation and compare the performance of forest management partnerships. Kilwa has a well-developed CBFM programme with Forest Stewardship Council (FSC) certification and REDD+ initiatives and has many organizations that are working to support local communities' participation in conservation activities. Finally, we selected Mtwara Rural District in Mtwara region because it features two categories of collaborative fisheries governance, BMUs and MBREMP (see Map 3.1).

At the local level, villages were selected based on a preliminary complexity scoring (see Table 3.1) that sought to identify simpler, more complex, and control sites. The different degrees of partnership complexity were first determined ex ante to guide the identification of appropriate sites for fieldwork, through a combination of scoring that included: (1) the number of actors and actor categories involved in the partnership; and (2) the complexity of the institutional set-up (decision-making system and degree of sharing of access rights) (see details in Ponte et al., 2017).

Following preliminary fieldwork that took place in February and March 2017 in Rufiji, Kilwa, and Mtwara, and a validation exercise with the NEPSUS Stakeholder Advisory Board in Dar es Salaam in April 2017, the site selection matrix was partially adjusted to reflect local realities (see Tables 3.2, 3.3, and 3.4). Some of the originally selected village sites were exchanged for others that best fit the two categories of complexity. Two other adjustments should also be noted: (1) in coastal resources areas all villages along the coast had become part of one BMU or another by the time of fieldwork; thus we could not select proper 'control sites'; and (2) in wildlife areas, not all sites fall in the same districts (sites adjacent to Selous Game Reserve are actually in Kilwa District; see Table 3.2, Map 3.2). More detailed information on the various sites is available in the NEPSUS background working papers dedicated to each sector (Katikiro et al., 2017; Kweka et al., 2017; Noe et al., 2017a, 2017b; Kalumanga et al., 2018; Bwagalilo et al., 2019; Kweka et al., 2019; Mwamfupe et al., 2019; Noe et al., 2019).

Table 3.1 Preliminary complexity scoring for site selection.

	Forestry			Wildlife			Coastal resources		
Institutional set-up	Forest reserves	CBFM + FSC certification	None	Game reserves	WMAs	None	Marine parks	BMUs + CFMAs	None
Complexity factors									
Number of actors	medium	high		medium	high		medium	high	
Number of actor categories	low	high		low	high		medium	high	
Complexity of the decision-making system	low	high		low	high		medium	high	
Degree of sharing among different actor categories in accessing rights	low	high		low	high		medium	medium	
Complexity scoring	simpler	more complex	control	simpler	more complex	control	simpler	more complex	control
General site selection	two villages adjacent to national forest reserves in Kilwa	four villages in Mpingo Conservation and Development Initiative, Kilwa	two non-CBFM villages	two villages adjacent to Selous Game Reserve in Kilwa	four villages in two WMAs in Rufiji	two villages close to the Rufiji Open Area	four villages in Mnazi Bay-Ruvuma Estuary Marine Park, Mtwara	two BMUs in the MNASI CFMA	two non-BMU villages

Source: authors.

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Table 3.2 Final wildlife site selection.

Simpler partnership	More complex partnership	Control site
Game reserve	WMAs	Non-WMA
Sites adjacent to Selous Game Reserve (Kilwa)	MUNGATA and JUHIWANGUMWA (Rufiji)	Villages next to the Rufiji Open Area (Rufiji)
Kandawale, Ngarambi	Ngarambe, Tapika (early movers); Mloka, Ngorongo Mashariki, (latecomers)	Nambuju, Tawi

Source: authors.

Table 3.3 Final forestry site selection.

Simpler partnership	More complex partnership	Control site
Sites adjacent to National Forest Reserves (Kilwa)	Mpingo Conservation and Development Initiative (MCDI) (Kilwa)	Non-CBFM sites (Kilwa)
Kiwawa, Migeregere	Kikole, Nainokwe (early movers) Likawage, Mchakama (latecomers)	Mavuji, Ruhatwe

Source: authors.

Table 3.4 Final coastal resources site selection.

Simpler partnership	More complex partnership	Control sites
MBREMP (Mtwara Rural)	Four BMUs (Mtwara Rural)	none
Msimbati (coastal/early mover) Nalingu (coastal/latecomer) Namidondi (inland/mangrove) Mahuranga (inland/riverine)	Namela, Msanga Mkuu (early movers) Kisiwa, Mgao (latecomers)	none

Source: authors.

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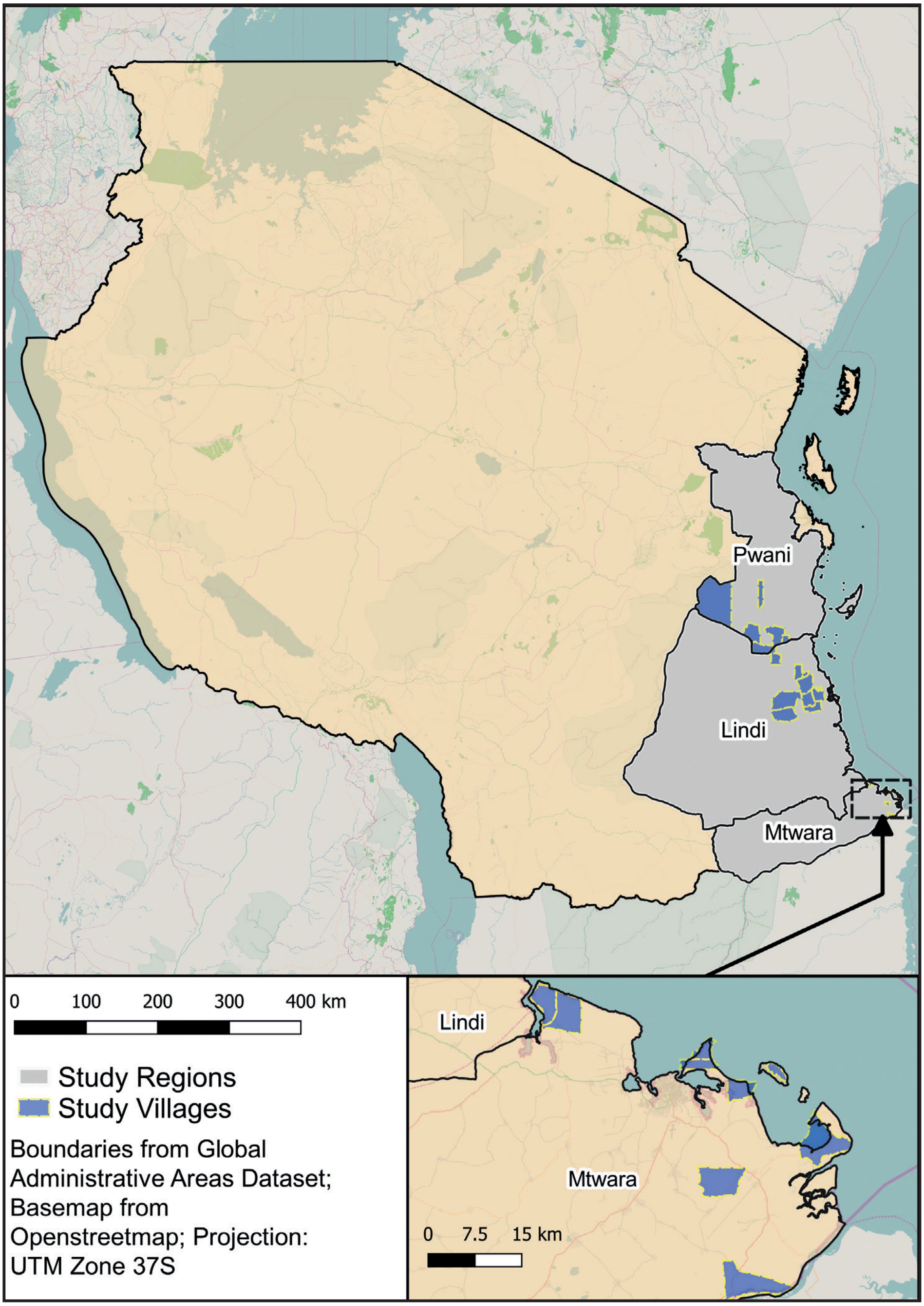

Map 3.1 Location of the three NEPSUS study areas. Source: elaboration by the authors.

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Site selection in wildlife

'Simpler' partnership: Villages adjacent to Selous Game Reserve in Kilwa District

Two villages that border the Selous Game Reserve in Kilwa District (Kandawale, Ngarambi) were selected to represent 'simpler partnerships' for the NEPSUS project (see Table 3.2). They are among nine villages that border the Reserve in the stretch between Liwale and Rufiji districts and which were involved in the community-based wildlife management activities of the Eastern Selous Conservation project. This project was phased out in 2000 when funding from the donor, Belgian Technical Cooperation, ceased. By then, these villages had trained village committees and game scouts, conducted sensitization seminars, and engaged in land-use planning. They did not, however, formalize their partnership as a more complex WMA due to insufficient funds and a border conflict with the Reserve. Border conflicts make community conservation arrangements impossible as these hinge on accurate land-use plans which allocate areas for wildlife. If the village boundaries are not agreed, then a land-use plan cannot be created.

More complex partnership: Villages located in Wildlife Management Areas in Rufiji District

We worked with two WMAs in Rufiji District, Muungano wa Ngarambe na Tapika (MUNGATA), and JUHIWANGUMWA. MUNGATA is an early-mover partnership linking two villages (Ngarambe and Tapika, both selected for our study) located in southern Rufiji at the north-eastern edge of the Selous Game Reserve. Beginning in the early 1990s, GTZ worked with the Rufiji District Council through the Selous Conservation Program to initiate community-based wildlife management in these and other villages around the Reserve. Later, WWF helped formalize the partnerships by establishing a WMA. Registered in 2006, MUNGATA is among Tanzania's first WMAs and has been a model for others. It successfully received wildlife user rights, attracted private hunting investors, and built good relations with the neighbouring Selous Zonal Station at Kingupira. However, MUNGATA has also experienced a range of conflicts – including a court case with a hunting investor, increasing human-wildlife conflicts, and internal leadership disagreements.

JUHIWANGUMWA is a latecomer partnership. This WMA includes thirteen villages and was formalized in July 2016. We randomly selected two of these villages for in-depth investigation (Mloka and Ngorongo Mashariki). Although a relatively new WMA, JUHIWANGUMWA's villages have undertaken community-based wildlife conservation since the early 1990s through the Eastern Selous Community programme,

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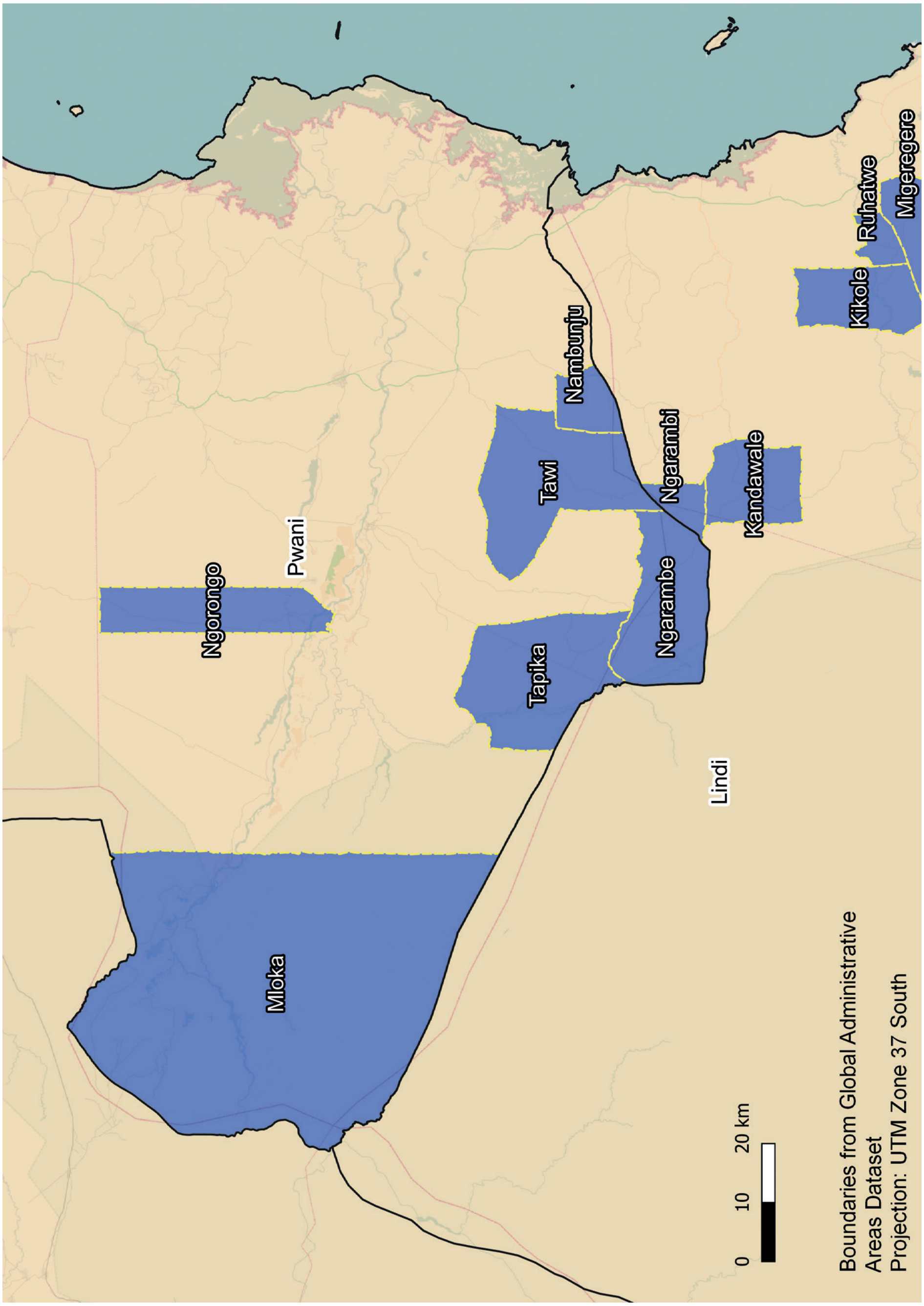

Map 3.2 Location of wildlife sites. Source: authors.

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financed by Belgian Technical Cooperation until the early 2000s. In 2006, Belgian Technical Cooperation and the European Union extended this funding, starting a second phase intended to create a WMA. This objective, however, was delayed by border conflicts between the villages and the Selous Game Reserve. It was only some years later that these were resolved in court, and the WMA was ultimately registered in 2016.

Control sites: Villages adjacent to the Rufiji Open Area

Open areas are village lands which happen to accommodate wildlife that roam outside protected areas. Wildlife is only marginally protected in these areas as villagers are not formally involved in conservation. Although the open area status allows district councils to issue resident hunting licences, the control of hunting in this arrangement presents significant challenges as illegal activities have increased rapidly in the recent years. Two villages adjacent to the Rufiji Open Area were selected randomly (Nambunju and Tawi). We consider these villages as control sites because they are in proximity of the Selous Game Reserve but have no form of partnership. Although wildlife utilization continues in village lands in which the District Council issues resident hunting licences, there is no formal partnership with villages under which hunting takes place.

Site selection in forestry

Simpler partnership: Villages adjacent to National Forest Reserves in Kilwa

Kilwa District hosts several National Forest Reserves owned by the central government and managed through the Tanzania Forest Service. Its numerous Village Land Forest Reserves, by contrast, are managed by village communities and other actors (including NGOs). Under special arrangements, communities can take part in the management of National Forest Reserves through joint forest management, but neither of the villages selected for the NEPSUS project (Migeregere and Kiwawa) have established such arrangements (see Table 3.3, Map 3.3).

More complex partnership: Villages partaking in community-based forest management (Village Land Forest Reserves)

Community-based forest management was first established and introduced in Village Land Forest Reserves (VLFRs) in Kilwa District through the Danida-supported Utunzaji wa Misitu Tanzania (UTUMI) project, which operated between 1998 and 2002. At the end of the project, the Mpingo Conservation programme (now the Mpingo Conservation & Development Initiative – MCDI) continued to play a key role in

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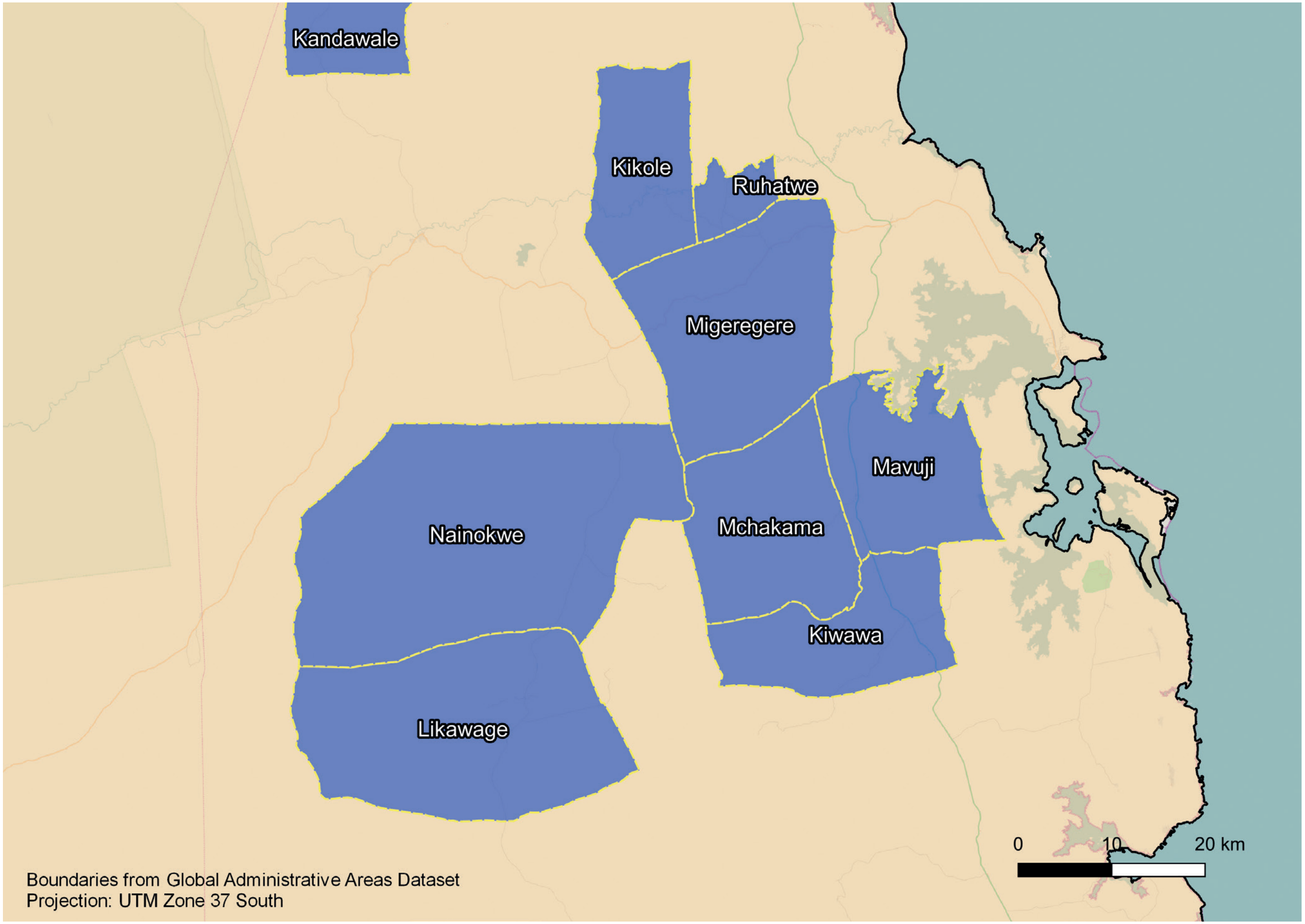

Map 3.3 Location of forestry sites. Source: authors.

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CBFM in Kilwa District. The organization continues to support certified sustainable harvesting of blackwood (*Dalbergia melanoxylon*, Mpingo in Kiswahili) through a Forest Stewardship Council Group Certificate Scheme and other work to help communities benefit from forest conservation on village land.

Villages that have been part of the MCDI Group Certificate Scheme for more than five years (Kikole and Nainokwe) are considered to be early movers (see Table 3.3). These villages were also involved in the UTUMI project that ended in 2002. Latecomer sites include villages that started CBFM and joined the MCDI scheme within the last five years (Likawage and Mchakama). These villages were not part of the UTUMI project.

Control villages: Villages without forest reserves

Mavuji and Ruhatwe villages have not set aside VLFRs, nor are they adjacent to a National Forest Reserve. They are thus considered 'control' sites for the purposes of the NEPSUS project.

Site selection in coastal resources

Simpler partnership: Villages in the Mnazi Bay-Ruvuma Estuary Marine Park

Mnazi Bay and the Ruvuma Estuary were identified as priority areas for the conservation of global marine biodiversity in 1995. The Mnazi Bay-Ruvuma Estuary Marine Park (MBREMP) was gazetted in 2000, the second marine park established in Tanzania after Mafia Island Marine Park.[1] It began operations in 2002 with support from United Nations Development Programme (UNDP) / Global Environmental Fund (GEF) and the Fonds Français Pour l'Environnement Mondial. The Park is located in Mtwara Rural District, Mtwara region, and stretches from the north in Msanga Mkuu Ras near the entrance of Mtwara port for 45 km south to the Ruvuma river on the border with Mozambique. The Park includes seventeen villages with 44,000 residents. As shown in Table 3.4 and Map 3.4, we selected five sites within MBREMP to be able to cover all three main agro-ecological areas (seafront, interior, and riverine), and to include experiences from villages that had joined the Marine Park early in its establishment (in 2002) and in a second wave of expansion (in 2005–2007).

1 Government Notice No. 285, published on 4 August 2000.

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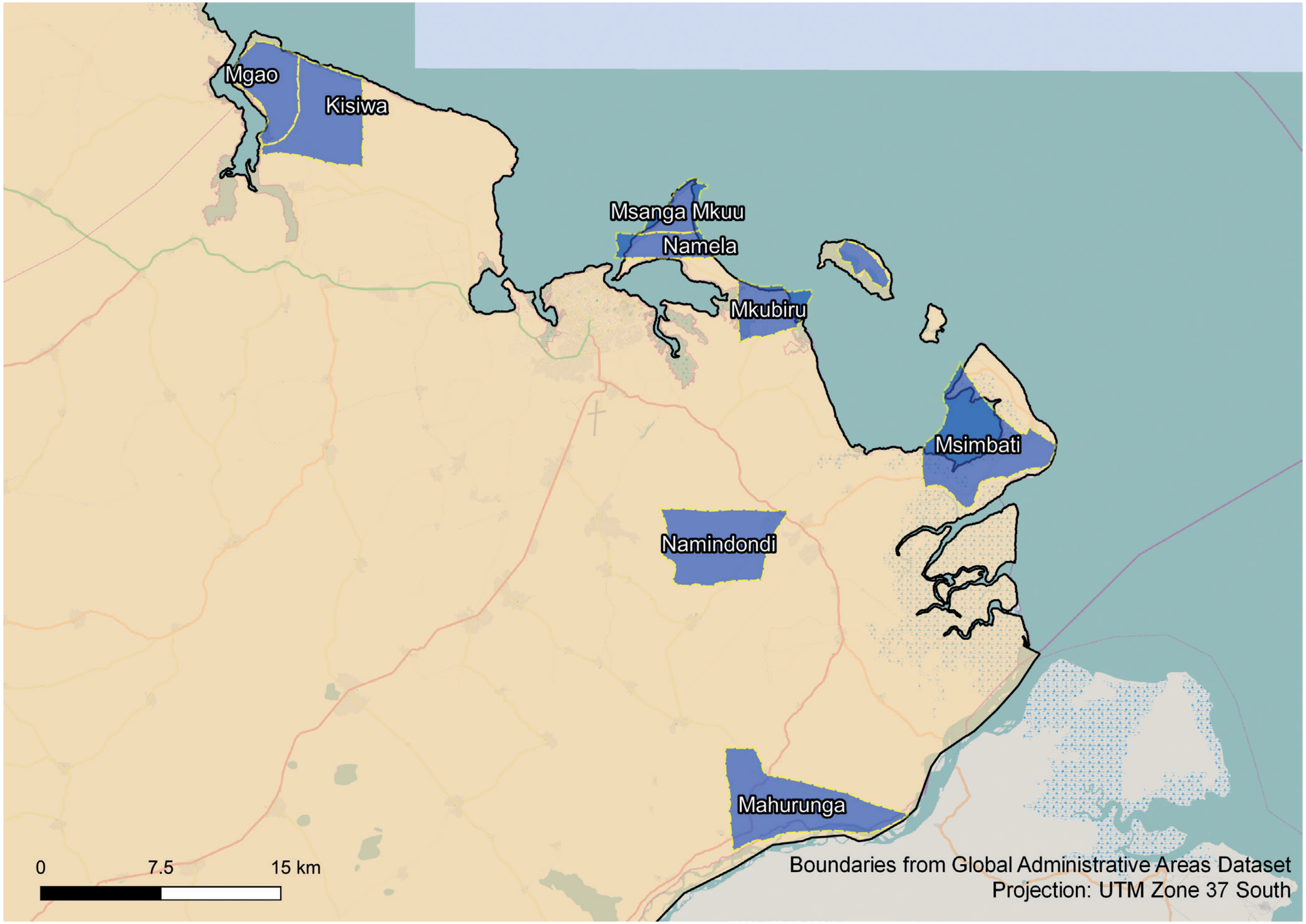

Map 3.4 Location of coastal resources sites. Source: authors.

More complex partnership: Villages with Beach Management Units

For the NEPSUS study, we selected four Beach Management Units (BMUs) that are part of two different collaborative fisheries management areas (CFMAs). Msanga Mkuu and Namela (together with a third BMU, Sinde) constitute the MNASI CFMA. These villages established their BMUs more or less at the same time. Two other BMUs (Kisiwa and Mgao) formed their BMUs later and are now part of MKINAI CFMA (Mgao, Kisiwa, Namgogoli, and Imekuwa villages). There are no control sites in Mtwara Rural as all villages are part of one or another BMU on the coastline.

Data collection methods

In this section, we provide some detail on what data we collected and how. Specific discussions and challenges related to data analysis methods are included in following chapters. Where possible we also used secondary databases and results from previous and current research projects and community baseline surveys to build 'before-after' comparisons. To undertake this work, we used a mixture of full team field visits, and more intensive and longer fieldwork undertaken by three PhD students that the project funded (Pilly Silvano, Faraja Daniel Namkesa, and Ruth Wairimu John).

Socio-economic data collection

The NEPSUS research employed a broad portfolio of data collection methods that the members of the research team have practised over many years of work in Tanzania and elsewhere. The diversity of methods enabled critical reflection and triangulation of data. A summary of research activities carried out at the village level is included in Table 3.5. In total, we carried out 331 KIIs, 81 FGDs and a survey with 1,059 respondents.

We carried out KIIs with representatives from key organizations to explore the history and current performance of different governance arrangements, the legitimacy of partnerships, and perceptions on the environmental and socio-economic outcomes of partnerships – as well as to map social and inter-organizational networks. In interviews, informants were also asked to fill in a roster of their peer network within the partnerships, detailing the strength of their social ties and the frequency of their interaction. We also included questions about organizational collaboration. In order to obtain a list of potential respondents, a mapping of stakeholders was conducted, which provided an overview of various actors' involvement in sustainability partnerships. Interview guides for key informants both at the national level

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Table 3.5 Research activities carried out in each village (key informant interviews and focus group discussions).

District	Name of village	Category	Respondents in survey	Number of KIIs	Number of FGDs
			Wildlife		
Kilwa (Wildlife)	Kandawale	Simpler	43	14	4
	Ngarambi	Simpler	44	13	4
Rufiji (Wildlife)	Mloka	Complex late	42	20	7
	Ngorongo M	Complex late	45	13	5
	Tapika	Complex early	41	12	5
	Ngarambe	Complex early	44	20	9
	Nambunju	Control	47	13	4
	Tawi	Control	47	12	5
	Total		353	117	43
			Forestry		
Kilwa (Forestry)	Migeregere	Simpler	45	4	2
	Kiwawa	Simpler	44	2	2
	Mavuji	Control	44	20	5
	Ruhatwe	Control	45	22	5
	Likawage	Complex late	44	3	2
	Nainokwe	Complex early	43	3	2
	Kikole	Complex early	43	24	4
	Mchakama	Complex late	44	2	1
	Total		352	80	23

		Coastal resources			
Mtwara (Coastal)	Msimbati	Simple early	45	22	2
	Mahurunga	Simple early	43	8	2
	Namindondi	Simple late	40	14	2
	Namela	Complex early	45	16	2
	Msanga Mkuu	Complex early	46	28	1
	Mkubiru	Simple late	47	17	2
	Mgao	Complex late	44	15	2
	Kisiwa	Complex late	44	14	2
	Total		354	134	15
	Grand total		1059	331	81

Source: authors.

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and with individuals at the household level were developed for these purposes. Digital audio recorders were used to record the interviews if the informant granted informed consent.

For *wildlife*, in-depth interviews were conducted with officials involved in wildlife conservation and management. These included officials from NGOs, donors, and government agencies. At the national level we interviewed government officials from the wildlife division and Tanzania Wildlife Management Authority (TAWA). We also interviewed representatives of international conservation organizations such as the World Wide Fund for Nature (WWF), the Frankfurt Zoological Society (FZS), Belgium Technical Cooperation (BTC), and donor representatives from the United States Agency for International Development (USAID), German International Cooperation (GIZ), and the USAID PROTECT offices in Dar es Salaam. At the district level, we interviewed the District Game Officer, District Natural Resources and Land Use Planner, District Agricultural Officer and an officer from the Tanzania Social Action Fund (TASAF) office. At the village level, we interviewed Village Executive Officers, Village Chairpersons, Village Game Scouts, Village Natural Resource Committee (VNRC) leaders, WMA leaders, and other villagers.

For *forestry*, key informants were purposively selected from organizations that were directly involved in forest management at the national and local levels. These included non-government organizations, business actors and more specifically timber buyers, government authorities, and research institutions. At the national level, we interviewed government officials from the Forestry Department, Tanzania Forestry Service Agency, and TASAF. At the district government level, we interviewed the District Forest Officer, District Beekeeping Officer, the District Natural Resource and Land Use Planner Officer, and the Community Development Officer under the Kilwa District Council. We also interviewed representatives of MCDI, WWF, ActionAid, Tumaini Jipya kwa Wanawake Kilwa (New Hope for Women in Kilwa – TUJIWAKI), a timber trading company, Tanganyika Christian Refugee Service, the Aga Khan Foundation, and the Association of Timber Buyers in Lindi Region (UWAMBALI). At the village level, we interviewed village elders, leaders of the village government, VNRC leaders, representatives from the community-based conservation network of Tanzania (MJUMITA) groups and other community-based organizations.

For *coastal resources*, officials from various organizations were purposively selected for in-depth interviews. Their selection was guided by the roles that the organizations play in relation to fisheries governance. Thus, key informants here included officials from the Ministry of Agriculture, Livestock and Fisheries, the Marine Parks and Reserve Unit (TAFIRI), Tanzanian Industrial Fish Processors Association (TIFPA), Umoja wa Wavuvi Wadogo Dar es Salaam (UWAWADA) fishers association at the national level, and District fishery officers as well as NGO employees from WWF, Kikundi Mwavuli kwa Wavuvi Mtwara (KIMWAM), SHIRIKISHO, Sea Sense and SWISSAID, and officials from MBREMP and BMUs at the district level. Furthermore, in-depth interviews were also conducted with individuals at the household level to collect their life histories.

We collected *secondary data* through a review of books, published scientific papers, journal articles, reports, permits, management plans, and unpublished materials to provide background information and complement information collected from primary sources. Other statistical information such as demographic and socio-economic profiles of the districts and villages studied were also collected across the three sectors. Some of the documents reviewed from district-level stakeholders were reviewed under the condition of maintaining the providers' confidentiality due to their sensitivity.

We convened *focus group discussions* in local communities to gather data on community narratives and perceptions of environmental and socio-economic change, and the history, dynamics, legitimacy, and impact of partnerships. The focus groups were organized in places of participants' choice within villages and targeted groups included youth, women, and mixed groups. Participants were introduced to the purpose of the project and the objectives of the discussions.

The PhD students were able to spend enough time at the study sites to carry out extensive *participant observation*. In the wildlife sector, Ruth Wairimu John used her time in the villages to observe the communities' livelihood sources and alternative livelihood sources provided by different initiatives. She attended village and group meetings to acquire an understanding of the communities generally and their key socio-economic issues in particular. She also observed farming practices whereby villagers live within their farms to protect their crops from wildlife damages. She also followed Village Game Scouts in their activities. In the forestry sector, Pilly Silvano observed various cultural practices in relation to conservation issues, how men and women were involved in partnerships' decisions, activities, and distribution of benefits, forest management practices undertaken by men and women, meeting attendance, and interactions between men and women and between local and external actors during partnership decisions and discussions. In the coastal resources sector, Faraja Daniel Namkesa was able to observe activities at the village landing sites, such as fish landing and auctioning, fish processing, gear repair, and vending activities.

A questionnaire-based *survey* was administered using the Open Data Kit (ODK) suite of tools as the main method to gather data for quantitative statistical analysis of socio-economic outcomes at the household and community levels, perceptions of partnership processes and functioning, and perceptions of environmental outcomes. Households were selected through stratified random sampling to ensure proportional representation under different strata (male and female-headed households; different poverty/wealth ranks; household location in the village between near and far households). The questionnaires contained the same modules across resource types in order to compare outcomes, but also allowed for some adaptation to resource specificity.

We determined our sample size based on a mixture of sampling theory, research team capacity, and norms of village-based research in Tanzania. Sampling theory commonly suggests that a sensible sample size for questionnaires in each village is 30. This would provide sufficient datapoints in at most six cell contingency tables. In parametric statistics, 30 also provides a useful minimum for regression analyses. Common practice in Tanzanian research (Ellis and Mdoe, 2003) is to interview 30 families in each village for survey purposes. However, 30 is not the optimal number: it is an acceptable minimum. We had the capacity to interview more people in each village and asked teams to approach at least 40 and up to 50 people, producing a range of responses between 40 and 47 in the sites (see Table 3.5).

The NEPSUS survey employed a stratified random sampling to ensure spatial coverage such that at least each sub-village had to be represented in the sample, given local politics of resource governance and the importance of proximity to the resource. Since the project focused on local communities, the unit of analysis was the household. The sampling process followed these steps:

1. Village offices were consulted for general village information such as the number of households, number of sub-villages;
2. Every village was then divided into its sub-villages and each sub-village had a roster of heads of households. Some of the rosters had outdated information, and thus it was important to get assistance from sub-village leaders who could update the information and inform sampling frames at particular sub-villages;
3. With the assistance of sub-village leaders, enumerators approached sampled heads of households.

A total of 1,059 questionnaires were administered in 24 villages across the three resource sectors; Wildlife (353), Forestry (352); and Coastal (354) (see Table 3.5). Of all interviewed heads of households, 24% were female respondents – either spouses of heads of households or heads of female-headed households (see Table 3.6). The dominance of male household heads reflects the patriarchal nature of south-eastern Tanzanian societies. The average age of respondents was 46 years. Only three (0.3%) heads of households were below the age 20 while 217 respondents (20.5%) were aged 60 years and above. The general level of

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education among respondents was low (see Table 3.7), with 60% having only a primary school education and 23% having no formal education at all. Those with tertiary level of education accounted for only 4% of respondents.

We followed our study villages' evolving position in *social networks* across four intervals covering the years up to, during, and following the introduction of new resource management systems (2000–2004, 2005–2009, 2010–2014, and 2015–2018). Deploying event- and document-based sampling strategies and respondent-driven link-tracing techniques (Heckathorn and Cameron, 2017), we collected social network data characterizing the network of organizations engaging in business and governance collaborations, financial and technical support, and on issues related to the focal resource in our study villages and among key region- and state-level governance bodies, as well as the connections between village governance organizations and these other actors. We coded all identified organizations into three mutually exclusive organizational types: government, private sector, and NGOs. We triangulated three information sources to identify these networks, collected during multiple fieldwork trips to the study sites.

First, all village visitors are obliged to sign the village guestbook, which records visits from corporations, NGOs, donors, and government officials. Consulting guestbooks as far back as those records were available in each village, we constructed initial lists of village collaborators. Second, to fill in potential omissions due to missing guest books, recording lapses, or collaboration that did not involve direct village visits, we consulted policy and conservation project documents obtained from national archives, expert interviews, and online research. We used these materials to code time-stamped collaborative relationships, adding new organizations encountered to the list of village partners constructed from the guestbooks. Third, to verify collaborations and to identify the nature of the collaborative relationships, the team interviewed representatives from village councils and Natural Resource Committees about the organizational partners with whom they had collaborated on sustainable forest management. The existing list of organizations from the guest books and documents informed these interview questions, and we asked respondents to elaborate on the nature of specific collaborations and to identify further collaborators not yet on the list. Informants also provided details on the timing of collaborations according to the periodization outlined above.

These network data helped us analytically construct the village-level 'ego networks'. Importantly, ego networks differ from population networks in that they focus on the relationships between a focal actor (*ego*), the actors that ego has direct relationships with (*alters*), and the relationships between the alters and egos. By aggregating up the ego networks, a more regional view can be obtained where inter-

Table 3.6 Age and gender of respondents (%).

	Age group						
Gender	10–19	20–29	30–39	40–49	50–59	60+	Total
Male	0.2	8.4	18.8	19.9	12.6	16.5	76.4
Female	0.1	3.1	5.9	6.9	3.6	4.0	23.6
Total	0.3	11.5	24.7	26.8	16.1	20.5	100.0

Source: NEPSUS survey.

Table 3.7 Respondents' highest level of education (%).

	Highest level of education of respondents						
Gender	**No formal education**	**Primary incomplete**	**Primary complete**	**Secondary incomplete**	**Secondary complete**	**Vocational training**	**University**
Male	15.4	9.3	46.7	1.0	3.0	0.7	0.1
Female	7.5	2.3	13.3	0.6	0.0	0.2	0.0
Total	22.8	11.6	60.0	1.6	3.0	0.8	0.1

Source: NEPSUS survey.

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connectivities across the villages can be identified, providing a view of the field-level governance processes. Yet, the level of analysis that can sensibly be performed on such a network is limited. Network processes that involve various steps in the network such as information diffusion cannot sensibly be analysed, because actors that are located at a higher distance in the aggregated ego network, *could* be located at a lower distance if a village network not included in our sample brings those actors in close connection. Therefore, we make a number of reservations when we analyse the village networks together.

To the extent possible, we complemented these village-level network data with the extended ego network of region-level governance orchestrators. This too enabled us to get a view of the field-level dynamics at the regional level, providing us with a broader mapping of the organizations involved intensely or less intensely in governance processes linked to the focal resource (and affecting the villages). We based this mapping of orchestrator networks on documents and interviews.

Environmental data collection

NEPSUS's intention to examine environmental change for aspects of forestry, wildlife, and coastal resources set an ambitious data collection agenda which we were only able to partly fulfil. The best data we collected were for changes in forest cover. Here we were able to get complete, precise, and accurate measures of change using a variety of remote-sensing techniques (see details in Chapter 9). We were not able to acquire actual wildlife counts for the study villages, so in this case we used measures of habitat change, and specifically habitat fragmentation, as a proxy for wildlife. This measure would capture the conversion of forest to farmland, and, hence, transitions from land which is more hospitable to wildlife to land which is less conducive to biodiversity. In relation to marine resources, we were again unable to acquire reliable data on fish stocks. However, we obtained accurate data on the condition of mangrove forests and on coral reefs from satellite data. A summary flowchart of data processing operations is shown in Figure 3.1.

Detecting nationwide forest biomass change

To assess forest biomass change at the national scale, we used imagery collected by the Phased Array type L-band Synthetic Aperture Radar (PALSAR 1 and 2) instruments carried by the Advanced Land Observing Satellites (ALOS and ALOS-2), which have often been used to assess tropical woody biomass changes (McNicol et al., 2018; Mitchard et al., 2009, Ryan et al., 2012). They are particularly useful because they have the capacity to penetrate the forest canopy, providing information about forest structure.

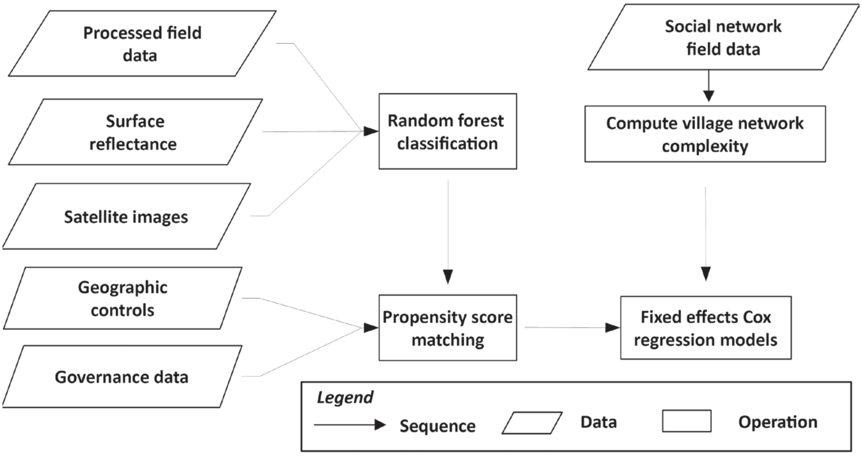

Figure 3.1 Flowchart of environmental data processing operations.
Source: authors.

Using the Google Earth Engine (GEE) platform, we collected Japan Aerospace Exploration Agency (JAXA) ALOS mosaic images from the 25m resolution seamless global L-Band SAR product covering all of Tanzania in 2007 (ALOS) and 2017 (ALOS2). We then followed specific data pre-processing procedures.[2] In GEE, we calibrated images to units of radar backscatter (gamma0 in 'natural units') and applied an Enhanced Lee filter to suppress the impacts of speckle on biomass estimates, as implemented in Samuel Bower's image processing algorithm.[3]

To train the model, we relied on ground-truth points with known Above-Ground Biomass (AGB) for radar analysis from Permanent Sample Plots established in Tanzania by the University of Edinburgh (P.I. Professor Mathew Williams). Spatial locations for the Permanent Sample Plots were used to generate zonal statistics (mean γ^0 backscatter for all radar image pixels intersecting the plot area) using the 'raster' package (Hijmans and van Etten, 2012) in R 3.5.1 (R Core Team, 2020). We then predicted mean plot-level γ^0 values from plot-level AGB using a linear model. Model performance was good for both ALOS and ALOS 2, with an R^2 of 0.77.

Using this model to predict AGB for the areas covered by our imagery, we then turned back to GEE to classify change following the definitions of forest, deforestation, and degradation applied in McNicol et al. (2018): we classified pixels with estimated AGB above 10 tC ha^{-1} as forest. Pixels that were considered forested in 2007, and whose AGB were estimated to fall below 10 tC ha^{-1} by 2017, were classified as Defor-

2 See www.eorc.jaxa.jp/ALOS/en/palsar_fnf/fnf_index.html.
3 See https://bitbucket.org/sambowers/biota.

ested, while pixels that were non-forest in 2007 that crossed the 10 tC ha^{-1} threshold were considered Afforested. Pixels that lost more than 25% of their AGB but remained above 10 tC ha^{-1} (and thus were still classified as Forest) were classified as Degraded.

Detecting forests in the study villages

While the above methods are helpful for identifying broad patterns of forest change across Tanzania, we require more granular data, available over a longer time period, to assess the relationship between institutional and network complexity and forest governance. In order to assess this relationship, we need to be able to observe change from forested to non-forested areas at multiple points across time in the finest possible detail. This is partially because of the need to mitigate selection biases, noted above, and partially because the risk of a given forest patch becoming deforested depends on local geographic conditions, such as proximity to cropland, that change over time, particularly in mosaic landscapes like those in the study villages.

To create datasets that would meet these requirements, we used GEE to collect 10-metre resolution annual composite imagery for multiple years from 2000 to 2018 from Sentinel-2, Sentinel-1, Landsat-8, Landsat-7, and Landsat-5 for all of Kilwa and Rufiji districts. Several studies have used these resources to detect changes in forest and non-forest land cover (Chander et al., 2009; Haeusler et al., 2012; Rüetschi et al., 2019). Due to differences in image availability and quality, only certain years were selected for analysis, which differed slightly across the two districts. For each location and time period selected, we used common error correction techniques (Turks, 1990; Japan Association of Remote Sensing, 1996) and then calculated the natural digital vegetation index, enhanced vegetation index, normalized difference water index, normalized difference built-up index (Farr et al., 2007), ratio (3:5–4:6), ratio (5:4–6:5), and ratio (2:11) Sentinel-1 values, as well as including a digital elevation model. All of these strategies have been found to support effective classification (Green et al., 1998; Farr et al., 2007; Xue & Su, 2017).

Once the images were prepared, we used a random forest classification algorithm (Pal, 2005) in GEE to group the images' pixels into a standard land-cover classification system. While the system distinguishes multiple types of forest, we aggregated these types into a single forest category to simplify the analysis presented below. To train and validate the classifiers, we used 4,500 sample points, 2,000 of which were forest cover, composed of ground-truth points collected with Etrex, a Garmin 64s GPS, and a Samsung tablet with Locus Map, georeferenced Topo sheets, and very high-resolution Google Earth imagery (Klinkenberg, 2019). We randomly assigned 60% as training points, reserving 40%

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for validation. We generated a confusion matrix using our validation sample for all the classified images. In Kilwa, all images achieved at least 90% accuracy.

Detecting coral

To map coral reef coverage offshore in Mtwara region, we used Sentinel 2 and Landsat 5 images for 2000, 2009, and 2019, processed using GEE. For each time period, we applied the same processing and classification techniques. We first applied the F mask algorithm (Frantz et al., 2018) to remove cloud cover and then used the modified Otsu thresholding algorithm (Karuppanagounder and Genish, 2012) to separate land from water. As Wicaksono and Hafizt (2013) advise, we then applied GEE's 'hazeRemovalDeepwater' function for atmospheric correction using dark pixel subtraction to remove hazing. To reduce glint resulting from sea surface sunlight reflection, we fit a linear model between near-infrared and the red, green, and blue bands and calculate the minimum near-infrared in the image (Harmel et al., 2018). We then performed water column correction to reducing water column attenuation effects, which can cause misclassification (Hafizt et al., 2017). Following this, we computed the Depth Invariant Index (DII) model, as modified by Lyzenga (1981). After clipping the image to the area of interest, we smoothed the image using a boxcar kernel. Using a random sample of 70% of our ground-truth points for training and an additional 30% for validation, we used a random forest classification algorithm to identify land, coral, seagrass, and deep water, computing a confusion matrix and overall accuracy for each final image. We attained a general accuracy of 89% for 2019, 83% for 2009, and 84% for 2000.

Detecting mangrove

To map the mangrove of Mtwara region, we used images from Radar Sentinel 1 for 2018, ALOS PALSAR for 2009, Optical Multispectral Sentinel 2 for 2018, Landsat 5 for 2009, and Landsat 5 for 2000. We used the Digital Elevation Model SRTM. Google Earth Engine platform was used to access all images. The F mask algorithm was used to mask out clouds in Sentinel 2 images and Landsat 5 images as elaborated by Frantz et al. (2018). Lee speckle filter was used to correct the speckle noise in Sentinel 1 and ALOS PALSAR as elaborated by Lee et al. (1994). The process of mapping mangrove accurately involves creation of different supportive datasets. In this study, several datasets were generated. From Sentinel 1 and ALOS PALSAR, the Radar percentiles as 10th, 50th, and 90th percentiles datasets were created in GEE. From the DEM, the slope, aspect, and hill-shade datasets were created in GEE. From the Sentinel 2, and Landsat 5, we elaborated the NDVI, NDWI, NDWBI as in Green et al. (1998). Likewise, we created in GEE the mNDWI as in Chen et al. (2017), with band ratio 54, band ratio 35 as in Green et al. (1998).

To enhance the mapping accuracy, water bodies from the land were separated. In masking water bodies, the study used the modified Otsu thresholding algorithm as elaborated by (Karuppanagounder and Genish, 2012). The study used the 'hazeRemovalDeepwater' function in GEE for atmospheric correction using dark pixel subtraction (Haze) as advised by Wicaksono and Hafizt (2013). The 'clipCollection' function was used to clip the image to the area of interest and apply the boxcar kernel to smoothen the image. The 'randomColumn' function was used to randomize the field collected data for 'healthy mangrove', 'degraded mangrove', and 'young/dwarf mangrove' to create the training and validation datasets in GEE. The field data was randomized as 70% for training dataset and 30% for validation dataset. The random forest classifier was used to classify the image and use the 'errorMatrix' function to generate the confusion matrix and 'accuracy' function to generate the overall classification accuracy. For the year 2018 the general accuracy attained was 96%, 92% for the year 2009 and 87% for the year 2000.

Qualitative data analysis using NVivo

The data analysis procedures we undertook for the various purposes of this book are explained in the relevant chapters (see Chapters 8 and 9 in particular). Here, we only reflect upon qualitative data analysis we undertook with NVivo – as it was used in several chapters. The NEPSUS research project involved researchers with different disciplinary backgrounds and expertise. This was a great strength but, at the same time, a challenge. NVivo is software which supports the organization, coding, and analysis of qualitative data. It can be challenging for researchers to analyse qualitative data if they usually work with quantitative data. Furthermore, NVivo has several features that can lead to a rather quantitative analysis. This is problematic if the qualitative data used has not been collected in a statistically significant manner. A central challenge was therefore to organize an NVivo coding process that ensured an inductive and qualitative approach to the analysis. The project included various sources of quantitative and qualitative data and it can be difficult for all members of the team to understand and benefit from all the data. Even though it is not an easy task to coordinate a coding process that involves more than ten researchers, it proved significantly useful. After coding, it was much easier for all members of the research group to find and use relevant qualitative data. Another advantage we identified was that the preparation process for coding led to important conversations concerning synergies, analysis, definitions, and interpretation of data among the team members (see Olwig, 2018 for a detailed description of our approach to analytical coding using NVivo).

The analysis of the qualitative data was facilitated with the assistance of NVivo 11 and 12 software packages. Data editing was performed to ensure texts were readable and understood. Coding is not just a process of organizing data; it is also an analytical process. This means that the organization of data will depend on the analytical approach that is adopted. In order for the researchers involved in coding to establish and work with a common analytical framework, joint preparation is crucial and for this purpose we organized several workshops.

A codebook was established between the members of the research group. We decided to work only with codes that were central to our analytical foci and agreed on avoiding the creation of purely descriptive codes. The aim was to end up with approximately 50 parent nodes.[4] Even when there is a codebook, it is difficult for the coder to remember that the codes exist if there are too many. In order to select the appropriate codes, we adhered to the following procedures.

1. Based on the preliminary findings of the quantitative survey, interesting trends, paradoxes, and gaps were determined that the qualitative data could help to answer. Codes were then created which could help find these answers.
2. Codes were developed based on preliminary findings from the fieldwork.
3. Codes were also developed based on cross-cutting issues identified by the team during a debriefing meeting following the fieldwork. Using this approach enabled us to work closely with the data which is a key factor to successful inductive research.
4. While coding, we suggested codes that we found were missing in the codebook.
5. Once coding was completed, codes were reviewed, and various queries run to identify patterns and themes.
6. We did not code unnecessarily, e.g., if information is common knowledge or already captured in the quantitative survey, there is no reason to code for this information in the qualitative data. Of course, if the interviewees elaborate or add other kinds of information that go beyond the survey, it could be coded.

[4] In NVivo, it is possible to work with first-level codes, often referred to as parent nodes. These parent nodes can then contain subthemes that are called child nodes. A parent node includes the information from all the child nodes as well as any information that has been coded to the parent node, but not a child node.

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The process of selecting approximately 50 codes to create the first version of the codebook took one day. The codes are key to the analysis. Identifying the most appropriate and interesting codes is therefore central to good analytical work and should not be rushed.

Once the codebook had been agreed upon, we used a two-step test-coding process to ensure intercoder reliability. In other words, we assessed how similarly each coder understood and applied the codes from the codebook. After an initial test-coding, each team member coded the data file individually without speaking to each other and compared the results afterwards. We repeated this process until the team members felt that they were coding in a similar way. It is, of course, unlikely that everyone will ever code in exactly the same way, no matter how much they are trained. This iterative repetition nevertheless helps to improve homogeneity.

NVivo proved to be a useful tool for organizing qualitative data and making it more accessible. In addition to this, it provided the researchers with a structure for discussing and analysing the data together as a group. It also turned out to be a useful exercise for highlighting the nature of qualitative data and why it is important. As mentioned before, the NEPSUS project involved an interdisciplinary group of researchers, some of whom were not used to working with qualitative data. Throughout the preparation and the actual coding process, several of the researchers involved emphasized their changed perception of qualitative data. They pointed out that it had become clearer to them why qualitative data is important, and what sort of information can be acquired from qualitative data. This was an unexpected but positive outcome of the NVivo coding process.

Collaborative writing and team building

The last method we must mention may seem rather ordinary. But it was vital. We met with reasonable frequency throughout the project as an entire team, both in Tanzania and in Denmark. We shared food together – that we cooked communally – and went out for large meals. We celebrated ceremonies, holy days and even went on large competitive running races. We did this at the early stage of the project as we were working on methods and study design, in the early stage of fieldwork as we tested those methods, and towards the end of the project as we analysed and wrote up the data. The result of these collaborations was that we gained a much better insight into each other's data and methods, and the interpretation of those data. Ethnography and studies of science has taught us that the writing is part of the method of doing research. In our case it is these collaborations which has produced the joyfully innovative quality of this book.

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Part II

Sectoral Analysis

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4

Sustainability Partnerships in the Wildlife Sector in South-east Tanzania

CHRISTINE NOE, RUTH WAIRIMU JOHN, AND DAN BROCKINGTON

Introduction

The need for partnerships in Tanzania's wildlife sector was first called for to save the Selous Game Reserve. In particular, Baldus et al. (2003) recommended a multi-donor approach in protecting the landscape and its unique wildlife diversity following the level of threats at that time. As this chapter will demonstrate, the international response for this call shapes our conceptualization of conservation partnerships in the rest of the country. After two decades of promoting conservation partnerships in Africa and the culmination of the World Parks Congress (2003), the questions that emerge from our cases remain relevant for this discussion today. However, instead of asking who possesses the social legitimacy to participate in managing the protected area and related natural resources (the overarching question of 2003), we examine the context in which partnerships have eventually emerged, the processes that support the acquisition and maintenance of legitimacy, as well as the sustainability outcomes of different emergent configurations. Our inquiry is against the background of two decades of nurturing partnerships involving the state, local and international NGOs (non-governmental organizations), communities, and the private sector.

As Ponte et al. (2017) demonstrate, the partnerships that we studied in the NEPSUS project (New Partnerships for Sustainability) are new in their context and process. These partnerships have taken shape as contexts of, and narratives about, resource depletion change – bringing new international audiences, alliances, and policies to bear on previously local and national issues (Ponte et al., 2017). This implies that we must understand complexity in sustainability partnerships and how it may shape sustainability outcomes. Accordingly, this chapter places partnerships in the wildlife sector in an overall historical context – arguing further that they have their genesis from the country's colonial history of external influence in matters relating to wildlife. In our

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view, this history matters because it determines how various (old and new) partners have acquired and maintained legitimacy in the country's conservation policy and practices.

Brief background

Owing to its fame, the Selous Game Reserve is the genesis of many conservation and business partnerships in Tanzania. The business side of it, which relates mostly to community and tourist hunting, evokes narratives of environmental destruction hence calling for the participation of an increasing number of actors and actor categories. For example, in the mid-1980s, the Frankfurt Zoological Society (FZS), a German NGO, claimed that the Reserve was in danger of losing its rhino and elephant populations and that, as a matter of urgency, Tanzania was required to approach the international community for assistance (Stephenson, 1987). The Federal Republic of Germany responded in the same year, placing the Selous Game Reserve in its official development cooperation with the government of Tanzania. That same year, the Selous Conservation Program was established as a partnership comprising Tanzania's Wildlife Division and German Technical Cooperation (GTZ). Other partners such as Belgium Technical Cooperation (BTC) joined the mission with specific interest in supporting conservation activities in the eastern parts of the Reserve.

For the first time, the GTZ-funded Selous Conservation Program and the BTC-supported Eastern Selous programmes introduced community-based conservation in village lands around the Reserve. By the year 2000, about 51 villages in seven districts around the Reserve had been involved in the conversion of village lands into some sort of wildlife buffer zones (German Technical Cooperation – GTZ, 1998; Baldus, 2008). These programmes significantly influenced the content of the first wildlife policy (URT, 1998), which became the cornerstone for the adoption of village wildlife areas known today as Wildlife Management Areas (WMAs).

However, several crises emerged in recent years and have made Selous infamous in conservation circles. These include threats to the Reserve's ecology from ongoing industrial projects – including uranium, oil, and gas exploration, as well as the Stiegler's Gorge electricity generation project. The ecosystem has recently been the hotspot for poaching (United Nations Educational, Scientific and Cultural Organization, henceforth UNESCO, 2015; World Wide Fund for Nature, henceforth WWF, 2016). Recent reports claim that the Selous elephant population could disappear within a very short period of time if urgent measures are not taken to stop industrial-scale poaching (WWF, 2016). It is estimated that between 2009 and 2014, the population of approximately

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45,000 elephants declined to approximately 15,000 (URT, 2016). Due to these threats, the Selous Game Reserve was inscribed in the List of World Heritage Sites in Danger (IUCN, 2017). This called for more commitments to protect wildlife. As the following passage suggests, recent calls for partnerships correspond closely with the country's historical conservation mantra – the Arusha Manifesto – that had pledged for international assistance in wildlife protection:

> In light of huge challenges facing the Selous Game Reserve like poaching, encroachment and poverty in its buffer zones, but also in light of the significance of this magnificent and unique ecosystem of global importance, the German government is committed to supporting the Tanzanian government in protecting the Selous Game Reserve for the benefit of present mankind and future generations. (Egon Kochanke, German Ambassador to Tanzania, 17 June 2017)

This was the opening statement of the joint press release at the launch of the Selous Ecosystem Conservation and Development Program (SECAD) in 2017. In the Memorandum of Understanding, the German government announced the provision of Euros €18 million for SECAD, to be implemented over a five-year time frame. Other co-financing and implementing partners, FZS and the World Wide Fund for Nature (WWF) committed approximately €400,000. As a powerful actor with involvement since the early times of Selous Conservation Project (URT, 2016), FZS is responsible for SECAD's activities inside the Reserve in relation to supporting law enforcement, key species protection initiatives and ecological monitoring; WWF will advise the Reserve management on outreach and community conservation, thus leading activities that are focused on the sustainable management of resources in priority areas around the Reserve (URT, 2017).

Beyond SECAD and its partners, there are other ongoing conservation commitments in and around the Reserve. For example, Germany has committed €100 million since 2012 for biodiversity protection and rural development in Tanzania (Ramutsindela and Noe, 2012). Out of these, €18 million were set aside for the rehabilitation of the Selous Game Reserve and its surroundings. Different German development agencies including FZS, the German Development Bank (KfW), and German International Cooperation (GIZ), are directly involved in the implementation of activities funded by these commitments. In a different joint press release of 31 March 2016, the Minister for Economic Cooperation and Development of the Federal Republic of Germany, Dr Gerd Müller, announced funding for the acquisition of two Husky A-1C Aircraft to support the Tanzanian wildlife authorities in countering the poaching threat and monitoring wildlife and habitats. One of these aircraft was to join an earlier one that operates specifically in Selous for FZS (URT, 2016).

Clearly, the German government has been historically a prominent bilateral partner, with several of its agencies implementing different activities. However, other donors and international conservation NGOs (such as BTC, WWF, International Union for Conservation of Nature (IUCN), and United Nations Educational, Scientific and Cultural Organization (UNESCO)) have maintained strong connections to the Selous. Their activities in and around the Reserve reconfigure local land use, natural resource institutions, and relations. As such, these actors make WMAs (and village lands) a complex site for interrogating the newly emerging partnerships for wildlife protection. Against this background, we consider WMAs as a form of partnership that is characterized by a very complex network of actors who assume and maintain different roles and interests in wildlife protection. Partnership complexity relates to the ecological importance of the Selous, which attracts the attention of powerful actors, but also to the formation of WMAs, which dictates the nesting of local resources and their institutions into some sort of partnerships (between villages, with the Reserve authorities/central government, and with external conservation proponents). Before providing the details of the local context, the next section highlights the policy and legal environment through which different actors managed to converge their interests and actions that have significantly shaped access and control of land and its resources by the local communities.

Policy and legal framework for wildlife conservation partnerships

Responding to higher rates of wildlife poaching incidences in the late 1980s, the government of Tanzania, together with development partners, carried out major reforms in the wildlife sector in the late 1990s (Nelson and Blomley, 2006; Nelson, 2012; Sulle and Banka, 2017). Among other things, these reforms introduced the first Wildlife Policy of Tanzania, 1998, which formalized local community participation in the management, control, and sharing of benefits from wildlife and other resources found within village lands (URT, 1998; Nelson and Blomley, 2006; URT, 2014). In 2007, this policy was revised to recognize district councils as responsible institutions for formulating and enforcing by-laws, providing technical support and conservation education to villages as well as preparing physical and development plans that protect wetlands and wildlife (URT, 2007: Section 3.1.2). This policy further recognizes villagers and private landholders as the key stakeholders who are bearing the costs of property damage by marauding animals and forgoing other social and cultural benefits (URT, 2007: Section 3.2.4 d).

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These policy statements provide solid ground for villagers and district councils' claims to have a large stake in conservation efforts and benefits. However, this has been one of the sources of struggle between local and the central government, with the latter maintaining its control and powers over the management of wildlife resources found in local jurisdictions. First, this is because all wildlife is legally the property of the state – making all activities pertaining to wildlife to be authorized by the Director of Wildlife. Second, district authorities are required by law to support development and awareness in their jurisdiction (URT, 1982). This contradiction raises a paradox because district authorities have a mandate for their development activities but do not have one allowing them to utilize natural resources to raise funds required for financial and human resources. Nevertheless, reforms that occurred throughout the 1990s were deemed necessary because the policing of wildlife by the central government was no longer effective, and a collaborative model that would include local communities was regarded as essential.

The long-term goals of reforms in the wildlife sector targeted the improvement of the tourism industry. These interventions were meant to reverse the long-term decline in wildlife populations and ecosystems through increased engagement of key actors, and especially local communities, in the protection of wildlife. Consequently, conservation and tourism activities are administered at two levels of the government: the central government (i.e., Ministry of Natural Resources and Tourism) and the local government (i.e., district councils and their local authorities which include village councils and wildlife Authorised Associations, see Figure 4.1). The Ministry is responsible for policy formulation and overall administration and coordination of all activities related to the development of wildlife and tourism in the country. The Ministry uses several policies, legal and institutional frameworks to govern wildlife and tourism activities occurring in protected areas and village lands that support wildlife.

Governance reforms that shaped the institutional structure in Figure 4.1 were implemented at the same time as the World Bank's structural adjustment programmes of the 1990s (Nelson et al., 2007; Noe and Kangalawe, 2015) which was expected to have two distinct outcomes in the wildlife sector: first, to increase domestic and foreign direct investment in wildlife tourism; and second, to cut down the costs of running the sector by eliminating redundant programmes in various government agencies (Teskey and Hooper, 1999). The results of these interventions are yet to be fully realized mainly because several policies, legal and institutional frameworks have either been partially reformed or re-adjusted to institute more state control over natural resources that were previously sought to be decentralized (Benjaminsen et al., 2013; Ramutsindela and Noe, 2015; Wright, 2017). As such,

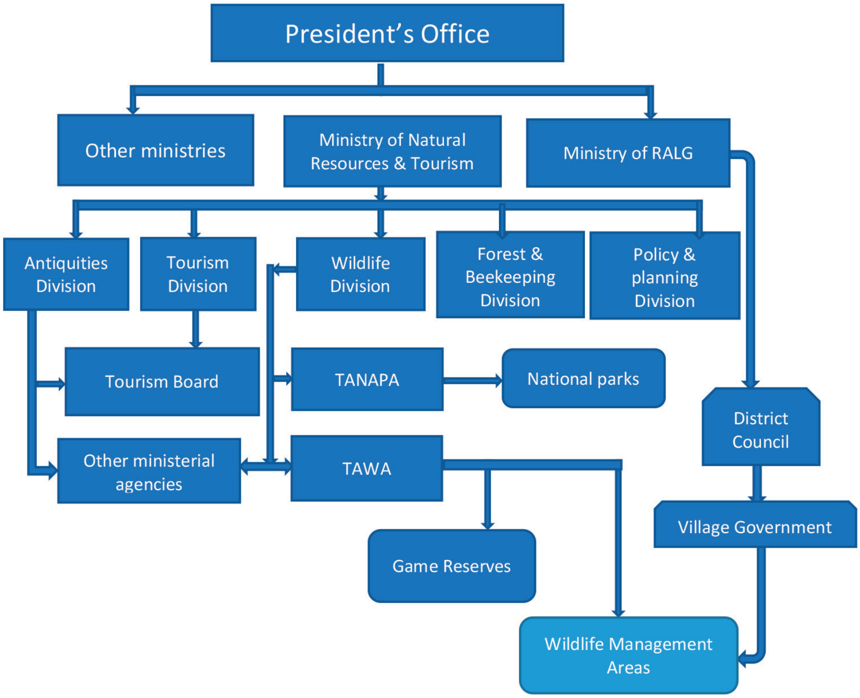

Figure 4.1 The institutional structure of wildlife governance in Tanzania.
Source: authors.

there has been a continuous institutional struggle over who should control what resources in wildlife areas, especially those involving WMAs and/or open areas that are found in village lands.

Local context

Rufiji is a well-conserved district. Sixty per cent of its land area is wildlife conservation estate. This proportion does not even include village areas that have recently been set aside for wildlife and forest protection to form village forest reserves or WMAs (Map 4.1). Of this 60%, about 48% is represented by the Selous Game Reserve and 12% by National Forest Reserves (URT, 2016). This proportion of conservation land is very high – even compared to Tanzania as a whole, which is in itself one of the most conserved countries in the African continent.

Farming remains the main economic activity for the majority of people, who are composed of four main ethnic groups, namely, Ndengereko, Matumbi, Ngindo, and Makonde. Farmers grow rice, benefiting

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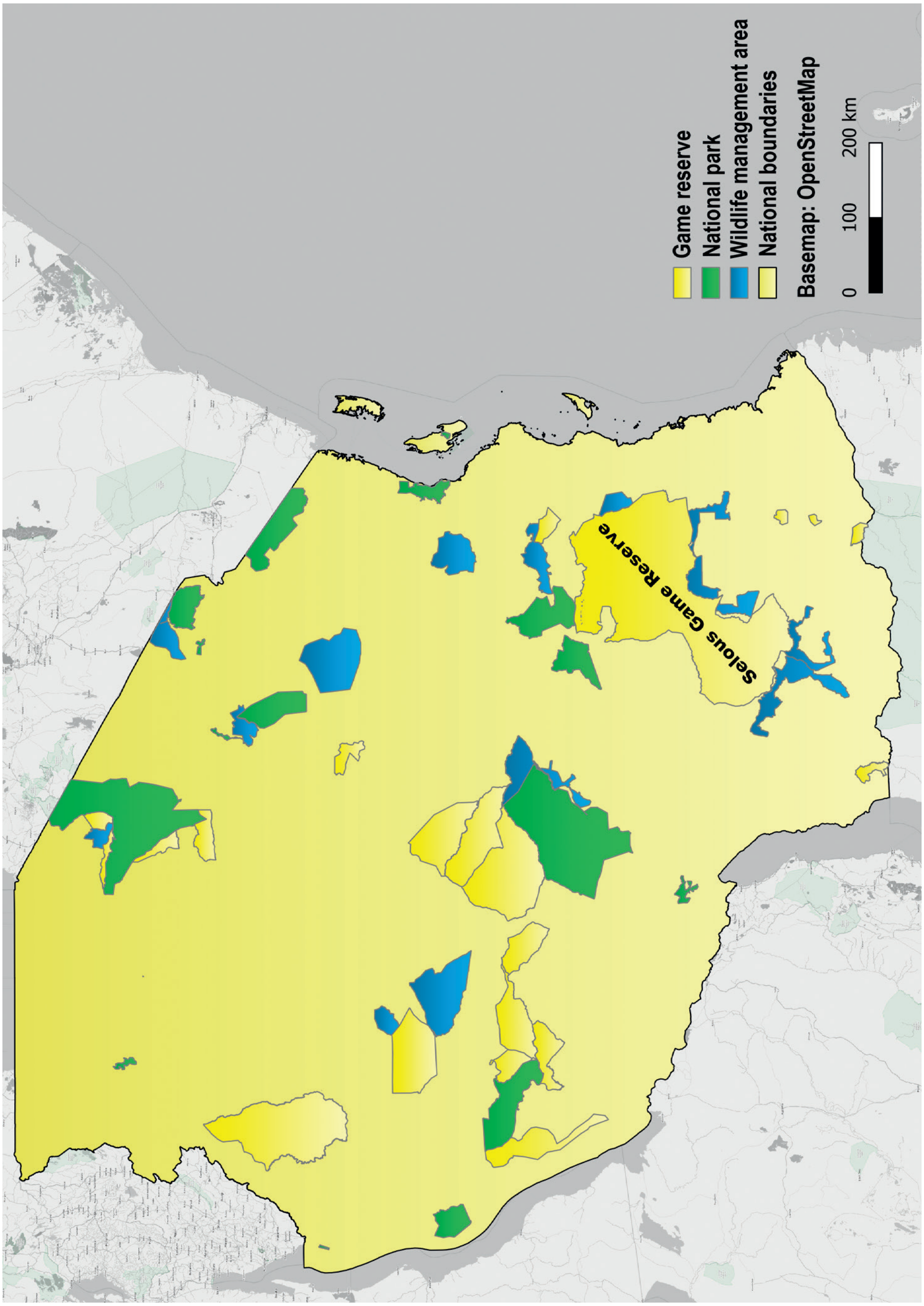

Map 4.1 Wildlife Management Areas in Tanzania. Source: authors.

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from periodic flooding of alluvial soils, as well as maize and other crops such as cassava, millet, sesame, cashew nuts, and fruit trees. Animal husbandry and associated farming practices are relatively new and mainly introduced by the Sukuma ethnic group.

This region of Tanzania is well known for its relatively low levels of economic development. The tourist trade does not bring in many visitors, there is little industry and, until recently, poor infrastructure. Education levels are low (see Figure 4.2), and farming is the main source of livelihood. Our survey data, as presented in Figure 4.3, shows that 96% of respondents (N = 354) depend on farming as their main livelihood activity. Other sources of income (3%) come from casual labour and civil servant jobs. Business as a livelihood option is carried out by only 1% of the villagers. However, business is found to be the second main source of livelihood by 23% of the respondents. This implies that people farm but also do business seasonally (mainly in food vending and running kiosks).

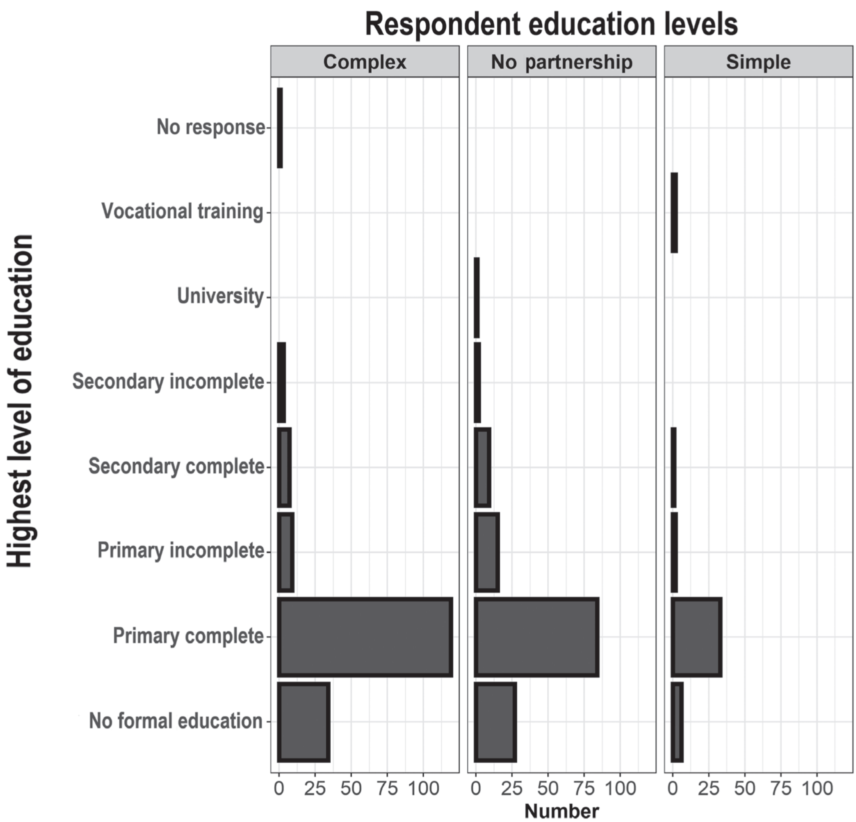

Figure 4.2 Education levels in wildlife sites. Source: NEPSUS survey.

Livelihood activities of the majority of households in Rufiji District have little to do with the current proportion of land under conservation. In one sense this is not surprising as conservation laws mean that people are not allowed to live in or use natural resources from these lands. In another sense it is disappointing because it shows that, despite the much vaunted economic benefits that were expected to emerge from wildlife corridors that crossed village lands, these are yet to materialize. The situation becomes even starker when we consider the problems of human-wildlife conflict.

We can also break down livelihood data according to partnership type. This reinforces the point that, throughout the study area, farming dominates (Figure 4.4). Many families, however, also combine other livelihood activities, although these are less common in the simple partnership areas than they are in the other locations (see various combinations in Figure 4.5).

The development of conservation partnerships in the District relates to the historical and current threats to the Selous ecosystem. Government agencies such as the Tanzania Wildlife Management Authority (TAWA), which is charged with the protection of wildlife in and outside

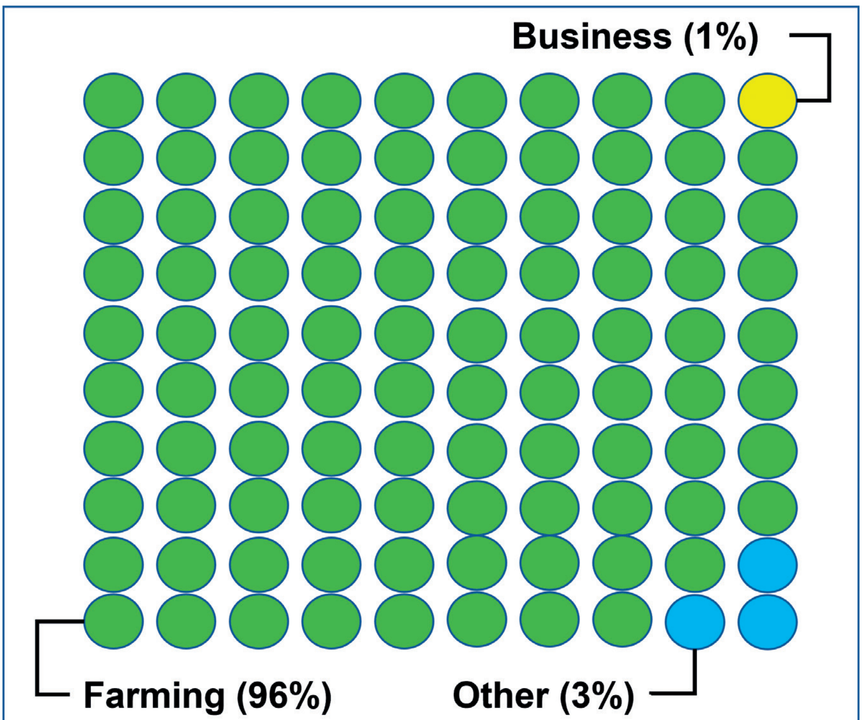

Figure 4.3 Main sources of livelihoods in wildlife sites. Source: NEPSUS survey.

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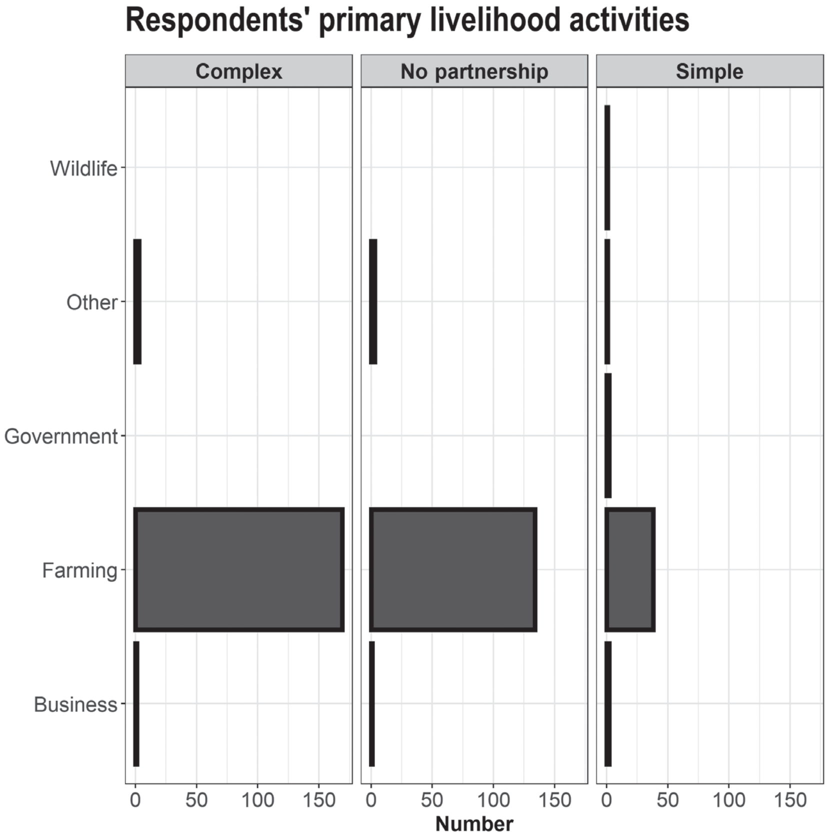


Figure 4.4 Primary livelihood activity by partnership type in wildlife sites.
Source: NEPSUS survey.

the Reserve and the Tanzania Wildlife Research Institute (TAWIRI), which is the responsible organ for conducting and coordinating research in the county collaborate with scientists, development, and conservation partners as well as other central and local government institutions to raise awareness about the increasing threats to wildlife. Some of these partners include the World Elephant Centre, Grumeti Funds Tanzania, Nature Conservancy, the Wildlife Conservation Society, and Tour Operators of Tanzania. Through support for research, TAWIRI provides legitimate grounds for interventions on matters of wildlife protection.

Other bilateral partners such as the German government (through its different development agencies – KfW, GIZ, and the FZS), the US (through the United States Agency for International Development, USAID) and conservation NGOs, such as WWF, work closely with the

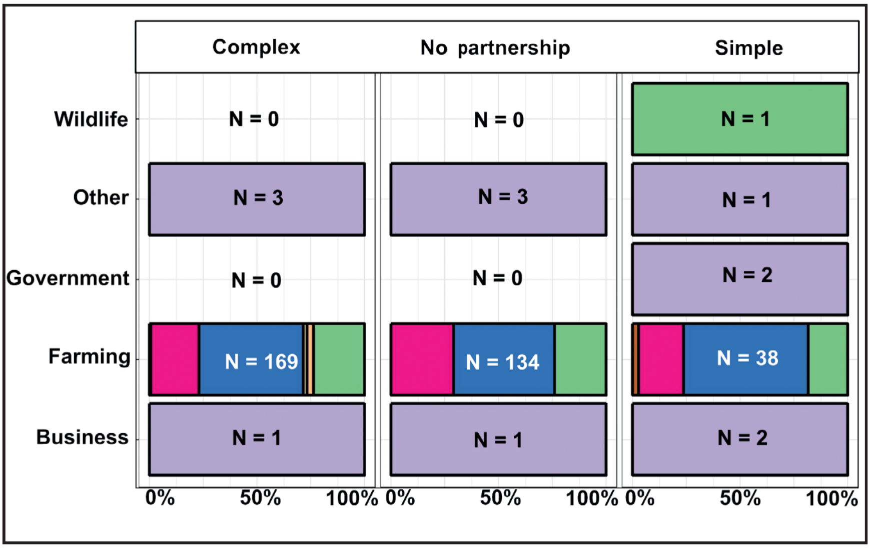
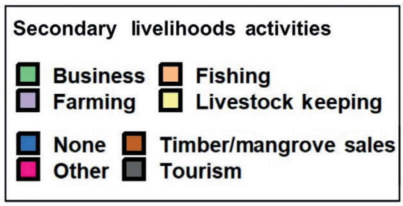


Figure 4.5 Secondary livelihood activity by partnership type in wildlife sites. Source: NEPSUS survey.



District Game Office and the Selous management sectors at Matambwe and Kingupira, as well as the villages adjacent to the Reserve. Different projects of these partners in the Selous ecosystem have sustained a conservation vision of creating a contiguous wildlife colony that stretches across over 350 kilometres at its widest point (Map 4.2). As such, the size of the ecosystem has expanded from 100,000 km^2 in the 1990s to 145,808 km^2 (without factoring in the new WMAs and village forest reserves). The desirability of displaying the village areas that are currently part of the wildlife habitat shown in Map 4.2 is constrained by the fact that these land categories are in hundreds at the moment and most of them have not yet arrived at the final stages of registration. This is to say that there are more wildlife habitats than currently detected in the maps.

These international partners are currently implementing a co-financed SECAD. The main objective of the programme is to strengthen the capacity of the Reserve management to protect wildlife by improving communication systems, ranger skills, and baseline ecological assessment. This support has a specific species focus on black rhinos and elephants in the ecosystems that are shared with local communities. Specifically, FZS coordinates these partnership activities within

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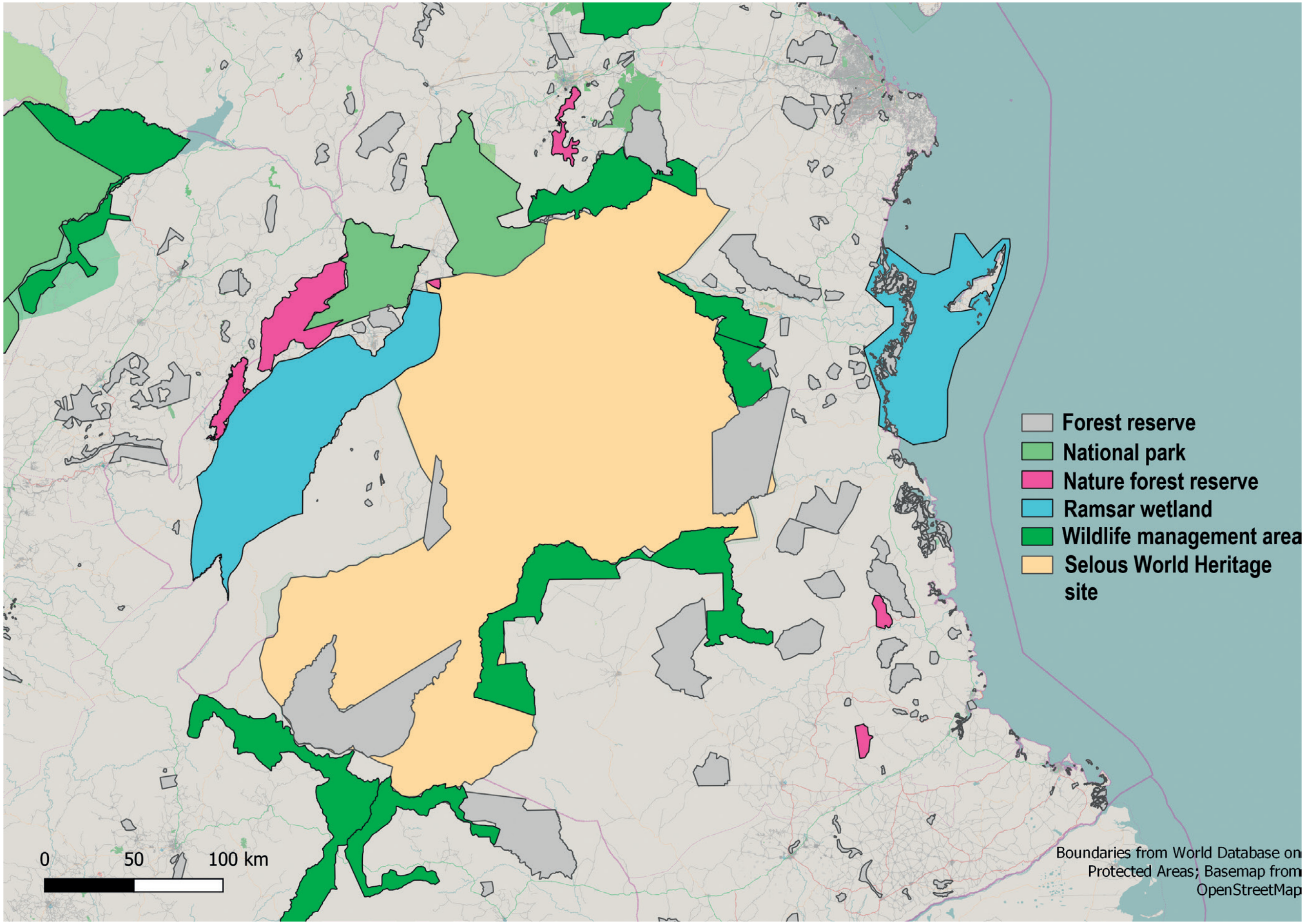

Map 4.2 The expanded Selous ecosystem. Source: authors.

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the Reserve, while WWF does so mainly in its buffer zones and wildlife corridors. This makes WWF visible and better known in our study villages and WMAs.

It is important to appreciate how powerful these international forces are. Noe (2019) shows that the World Heritage Commission (WHC) of UNESCO has stipulated that additional land should be gazetted to the Selous Game Reserve to compensate for perceived damage to the sanctity of 'the property' (to use WHC language). Thus, proposals to mine uranium inside the Reserve, or build a dam at Stiegler's Gorge are met with strong international pressure to expand it to compensate for these losses. The pressure takes the form of explicit threats to remove the property from the list of World Heritage sites.[1]

The current local partnership networks should be understood in the context of their long history of conservation interventions in the area. Our tracing of the work of these partners on the ground captured narratives from key informants in the villages who recall first visits of foreign technical advisers such as Rolf Baldus in 1988, David Kaggi in 1993, and Rudolf Hahn in 1996 – all of them relating to GTZ's Selous Conservation Program. In the words of one key informant:

> There was resistance since the days of David Kaggi and Rolf Hahn. However, these people enticed us with our favourite thing: wild meat. They told us that we were stealing it from ourselves because we had no clear procedure for harvesting. We believed them because we ate wild meat but knowing that it was illegal. (WILD020KII)

They were working with a German government project which has pioneered community-based conservation through its GTZ-funded Selous Conservation Program in over 46 villages around the Reserve since 1988 (Noe, 2010). These schemes were predicated upon sharing revenues and meat from tourist hunting wherever such hunting takes place in village lands, which are usually adjacent. They required partnerships between state government, village and district governments, and tourist hunting companies.

Sustainability partnerships in wildlife

More complex partnerships: Wildlife Management Areas

Community-based wildlife conservation, herein Wildlife Management Areas (WMAs), is not unique to Tanzania. Rather, it is a manifestation of the global hybrid forms of governance that support conservation-oriented business ventures (Igoe and Brockington, 2007). It is well

1 It is not clear on what ecological data these recommendations are based, or whether this is driven by arguments based on the amount of land involved.

known that hybrid governance models are institutional innovations that emerge by involving private actors in conservation, creating new regulations and standards for social behaviour, and opening a scope for business models geared towards social and environmental goals (van der Duim et al., 2015). Within this broader context, WMAs are facilitated largely by international NGOs concerned with wildlife conservation. The agreements that underpin them typically involve private sector investors, central and local governments, a number of villages (and village representatives), and a civil society organization.

As a matter of procedure, usually villages form a CBO to enter into business agreements. Although villages should voluntarily join the CBO, once an area of the village is identified for conservation, a village has little choice but enter into an agreement to protect wildlife (Noe and Kangalawe, 2015; Bluwstein and Lund, 2016). Usually, member villages of the CBO contribute part of their land and agree to protect wildlife in place of prior uses such as cultivation, herding, and settlements. The CBO in return receives a share of revenues obtained from tourism activities carried out within their area. Government as a partner operates through the Wildlife Division and the recently formed TAWA, which regulates and monitors tourism activities, and collects revenues generated from tourism ventures. District councils are also involved through a conservation advisory committee for the WMA.

Non-governmental conservation and development partners contribute funds to enable the establishment of the WMA and CBOs, as well as building human and technical capacity for conservation in areas such as resource management planning. Tour operators usually make an agreement with a CBO that has user rights (through their Authorised Association) to use a portion of village land or a WMA for setting up tented lodges for tourists. These operators invest in physical property and are involved in promoting the area for tourism activities. They offer compensation to villages, usually based on a fee per tourist bed night (in the case of photographic tourism) or a hunting fee (in the case of hunting tourism).

The two WMAs we researched were formed at different times. Muungano wa Ngarambe na Tapika (MUNGATA) was formed by the two villages Ngarambe and Tapika and became among the earliest registered WMAs in the country. Having been registered in 2006, MUNGATA became a model for other WMAs in the country in relation to successful receipt of wildlife user rights, experience with private hunting investors and good relations with the neighbouring Selous Zonal Station at Kingupira. However, MUNGATA is also known for lacking progress, as many kinds of conflicts have emerged (including a court case with hunting investors, internal leadership disagreements, and increasing human-wildlife conflicts).

In Ngarambe and Tapika, the Selous Conservation Program pioneered conservation partnerships which are locally described as '*maliasili*' (lit. 'natural resources'). Local narratives suggest that WWF started working in the villages in early 1990 – around the same time as the Selous Conservation Program and with the similar objective of strengthening *Maliasili* committees (an NGO initiative) and local security systems to protect wildlife in village lands. An influential individual, Muhsin Shein, and his private hunting company Game Frontiers of Tanzania, have also been active in these villages from mid-1990s. Other partners who seek to support community involvement in conservation came later with, for example, the Belgian Technical Cooperation introducing the Eastern Selous Conservation Project in Mloka and Ngorongo villages from 2006. Again, these were based on partnerships between tourist hunting companies, the state government, and district government authorities.

Jumuiya ya Hifadhi ya Wanyama pori Ngorongo, Utete na Mwaseni (Ngorongo, Utete, and Mwaseni Wildlife Reserve, JUHIWANGUMWA) is a partnership of thirteen villages that was registered in 2016.[2] Out of these, two partner villages (Mloka and Ngorongo Mashariki) were involved in our research. Although the WMA is relatively new, the villages have been involved in community-based wildlife conservation since the early 1990s through the Eastern Selous Community Program, which was financed by Belgium through BTC. While the programme was phased out in early 2000, extended technical and financial support from BTC and the European Union facilitated the second phase of support starting from 2006. This support focused specifically on the establishment of the WMA, which was nevertheless delayed by border conflicts between the villages and the Selous Game Reserve. The conflict was resolved in a court case, allowing the registration of the WMA in 2016.

The primary focus of these partnerships (which we consider 'more complex' in the context of the NEPSUS project) has been to promote wildlife as a competitive land use through the anticipated increase of tourism-related activities. The concerted efforts to create WMAs relate primarily to making wildlife attractive to local communities through tourism, which is considered the key element for bridging conservation efforts and local development needs. From this perspective, partnerships are claimed to be improving the effectiveness of conservation governance by securing land while also creating business links for local development.

2 The partner villages are Mloka, Mwaseni Mibuyu Saba, Mtanza-Msona, Nyaminywili, Kipugira, Kipo, Ndundunyikanza, Ngorongo Magharibi, Ngorongo Mashariki, Kilimani Magharibi, Kilimani Mashariki, Utete Mashariki, and Utete Magharibi.

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The social networks of Wildlife Management Areas

Figure 4.6 visualizes the social network that binds together the two WMAs we selected (MUNGATA and JUHIWANGUMWA). It shows that the government, through its organs, both central (TAWA, TAWIRI, and the Wildlife Division) and local (Rufiji District Council – abbreviated to RDC in the figure – and Selous Matambwe and Kingupira sections), is at the core of the network. This is most likely attesting to the fact that ownership and control of wildlife resources in Tanzania are still highly centralized hence requiring other partners to coordinate their activities from the top. Bilateral partners (Japanese, US, German, and Belgium governments or their agencies) are well represented due to their funding roles. International conservation interests are represented by WWF, also linked to local development through ASEA Brown Boveri, a private company taking part in the Access to Electricity Program.

It is crucial to note that village councils are partners mainly through WMAs, which have representation through the national Community Wildlife Management Areas Consortium. The consortium acts as a go-between for hunting companies and villages. It promotes the business opportunities that WMAs can provide to hunting companies and helps with tendering arrangements that authorities governing WMAs need in order to attract investors. This explains its links to private hunting companies (Game Frontiers and Hamis Kibola Safaris) that have had long-standing operations in WMAs. Other business partners in the network are also private hunting companies (Tanzania Wildlife Safaris, Luke Samaras Safaris) who operate within the Reserve. Villages are represented through WMAs, thus do not appear to be directly connected to business partners. Their participation and benefits continue to be shaped by others in the network.

Partnerships generalize conservation benefits without differentiating hunting from photographic tourism. Yet, in the study villages, the difference is significantly reflected in the lack of representation of private non-hunting tourism businesses. On the one hand, photographic tourism currently lacks transparency and central coordination of partners by the village councils. On the other hand, hunting tourism is centrally captured and controlled by the state.

MUNGATA Wildlife Management Area

Figure 4.7 shows the specific social network of MUNGATA WMA, which is differentiated by the partner roles and their weight in that role (measured by number of arrows towards a node). The heaviest node for MUNGATA is the Rufiji District Council (RDC in the figure), with sixteen lines leading to it. TAWA is the second most linked partner with ten lines leading to it. This implies that all other partners must be connected to the government before commencing their activities

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in various villages. The District Game Officer monitors all wildlife-related activities in the villages while the District Council Advisory Board provides legal and technical support for all the investments in WMA (URT-Wildlife Conservation (WMA) Regulation 2012). TAWA and the Wildlife Division are connected to the WMA through wildlife utilization and protection responsibilities. These have close connection also with the Selous Matambwe and Kingupira sectors. These government actors are connected to WMAs through patrols that spill over to villages. Their main interest is therefore to ensure wildlife protection outside their borders.

As the main conservation NGO in this network, since 2003 WWF has facilitated the establishment of MUNGATA WMA by supporting capacity building and awareness raising among the local communities about the benefits of WMA. This was mainly done by organizing and facilitating leaders and Village Game Scouts to attend trainings. As a way of connecting conservation and development, WWF was also in collaboration with ASEA Brown Boveri. Indeed, the latter supplied electricity from a diesel-fired generator in Ngarambe village for four hours a day to a school, dispensary, mosque, local government office, small businesses on the main road, and a few homes.

The US Embassy, with USAID as the implementing agency, has collaborated with TAWA and Wildlife Department to protect wildlife through a wide range of governance support efforts, – with focus on improving game rangers' capacity in planning and conducting patrols. Since 2017, the same agency has also been in this network as a provider of social support to orphanages in Rufiji and the neighbouring districts through Jipeni Moyo Women and Community Organization (JIMOWACO). It also supports Campaign for Female Education (CAMFED), an international NGO that promotes secondary school enrolment for girls. While USAID has in the past been providing financial support for WWF, recently its policy changed from supporting NGOs to contracting private companies (Interview, USAID, Dar es Salaam, 10 February 2017). This is a new model that was developed by the USAID to start funding private voluntary organizations with contractual agreements to work with WMAs, in place of NGOs.

The World Bank provides financial support for infrastructure development in the Reserve through a nationwide project called Resilient Natural Resources Management for Tourism and Growth. Whereas TAWA represents the government as an implementing agency of the project at the Selous, the World Bank supported the construction of water wells at Ngarambe village through the Rufiji District Council in 2005.

Network arrows are fewer between MUNGATA and hunting safari companies that operate inside the Reserve and these are mainly con-

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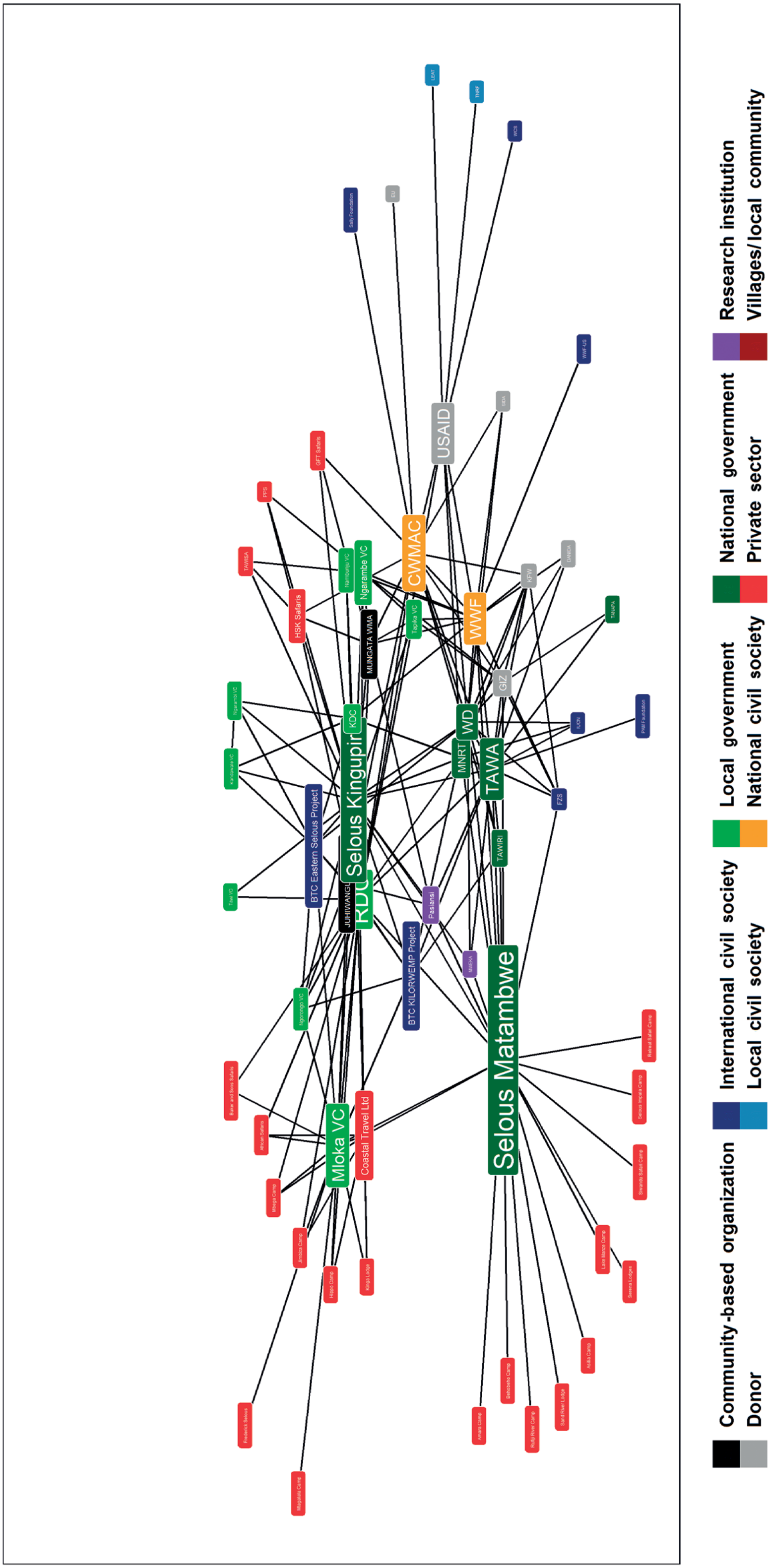

Figure 4.6 Partnership social networks in Rufiji Wildlife Management Areas. Source: authors.

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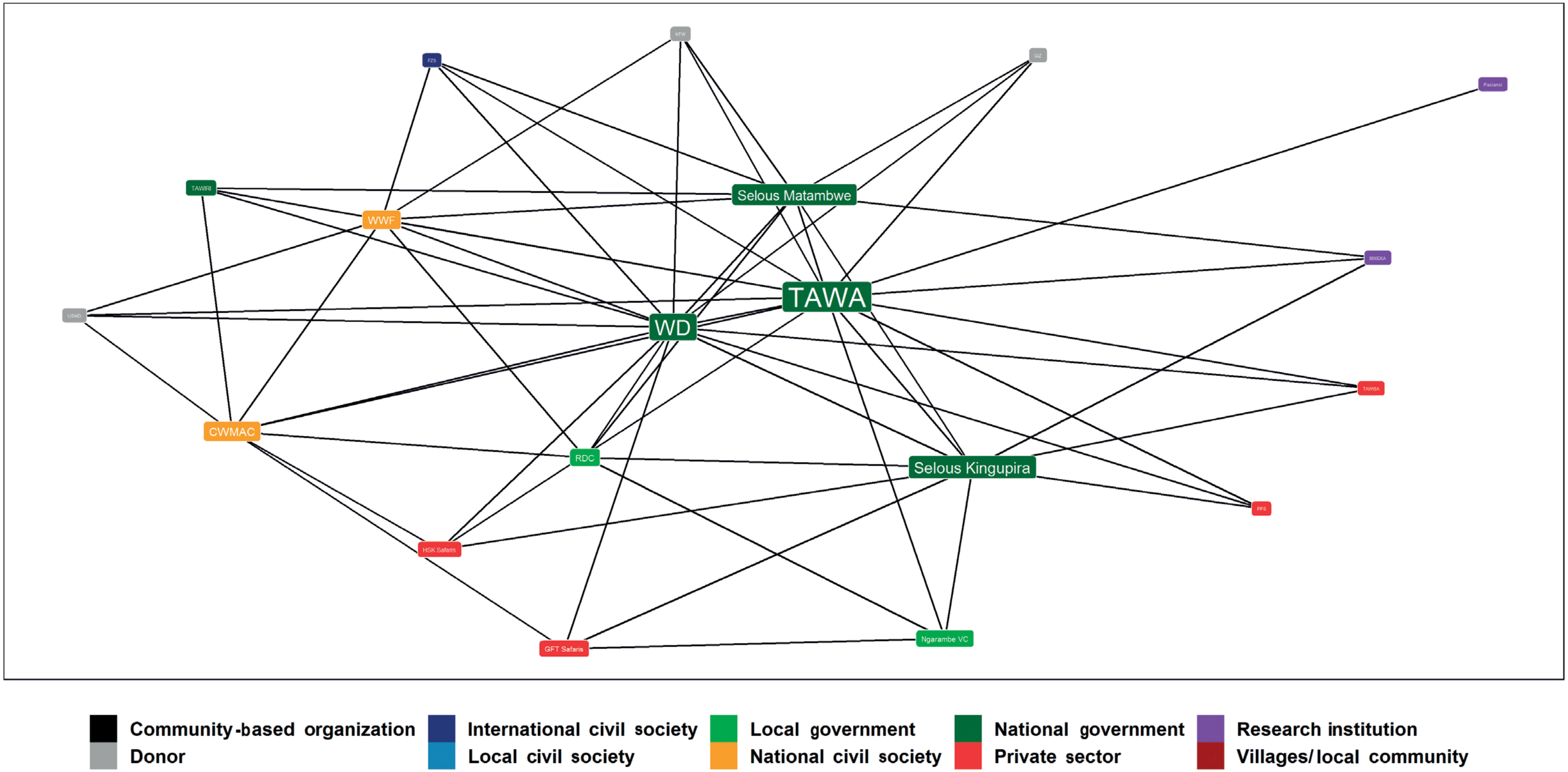

Figure 4.7 MUNGATA Wildlife Management Area partnership network. Source: authors.

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nected through the Kingupira section of Selous Game Reserve, TAWA, and the Wildlife Department. Although their connections are typically for operational reasons, they are also required to act on 'moral obligations' for local development, hence their involvement in providing health services and support to schools. As discussed in the previous section, Game Frontiers of Tanzania and Hamis Said Kibola are private hunting companies that appeared on the scene, in the mid-1990s and 2013 respectively. These have their own connections with government agencies at different levels, and most importantly with the Community Wildlife Management Areas Consortium. The consortium works to establish good relations, develop markets, and enhance business opportunities that are in line with conservation objectives.

It is important to note that the consortium was set up by WWF with financial support from USAID as a result of a signed Memorandum of Understanding in 2012. As such, USAID pays the salary of the Executive Director of the consortium. Also, USAID extends support through contracted partners who then work with the WMAs. This includes Promoting Tanzania's Environment Conservation – a private company contracted by USAID to provide financial and technical assistance to start business enterprises in WMAs. Since the company is a partner of USAID, it is also automatically a partner of the national consortium (because it facilitates the WMA process through their contractual agreement with USAID). The company's activities in WMAs include strengthening and diversifying a nature-based economy, and supporting anti-poaching and trafficking, policy, research, and advocacy.

JUHIWANGUMWA Wildlife Management Area

The network of actors for JUHWANGUMWA is densely concentrated at the district level as well, with key nodes being TAWA, the Wildlife Department, and the Selous Game Reserve's Matambwe and Kingupira sections. Since 2006, BTC has been providing financial support to the Eastern Selous project, which continued since 2013 through a new project called Kilombero and Lower Rufiji Wetlands Ecosystem Management Project (KILORWEMP). Since the WMA has not yet started to operate any business, its other partners are those providing social support, including the Tanzania Social Action Fund (TASAF), JIMOWACO, and CAMFED. Other livelihood support is received in some of the WMA villages from the Japanese government through Rufiji District Council. This support includes new improved rice seeds. Although the site is considered complex due to the formalized structure of the WMA, its more recent time of WMA formation makes it more significantly reliant on business links (see Figure 4.8).

Simpler partnerships

Two study villages of Kandawale and Ngarambi are considered 'simpler partnerships' from the perspective of the NEPSUS project (see Chapter 3) because they have not formalized their relationship with the Reserve or any other conservation actors. Although these villages are close to it, with ample opportunities for generating wildlife revenues, Belgian Technical Cooperation's support to Eastern Selous project did not successfully complete the formation of their prospective WMA (Matumizi Bora ya Maliasili Miguruwe, Njinjo na Kandawale, MBOMAMINJIKA, see Figure 4.9). The Eastern Selous project phased out before this was achieved. These two villages are only related informally with the Selous Game Reserve's Kingupira, Miguruwe, and Matambwe sections, which are responsible for patrols and protection of wildlife, anywhere it is found. The two villages work under TAWA and with some connections to other conservation partners in the Reserve FZS, GIZ, and WWF. As elsewhere, TASAF supports poor households through the Rufiji and Kilwa district councils.

Control villages

The two villages of Nambunju and Tawi are relatively far from the Reserve, hence they have not been directly targeted for wildlife protection campaigns. Yet, this should be stated with caution given the fact that these villages have large forest reserves (Kiwengoma and Namakutwa) that host a large number of elephants which move in from the Selous during dry season.

The impacts of wildlife partnerships

Existing research

The Wildlife Policy of Tanzania (URT, 2007) acknowledges that the wildlife sector faces a number of problems, including persistent illegal harvesting of wildlife, low staff morale, limited human resources to carry out conservation activities, and low budgetary allocation for wildlife conservation at local government level (URT, 2007). As in many other African countries, these constraints are associated with the increased incidence of poaching in Tanzania, despite the heightened effort to develop community-based conservation in the past three decades.

In 2014, the Poverty and Ecosystem Service Impacts of Tanzania's Wildlife Management Areas' (PIMA) study provided an assessment of the ecological and social-economic viability of WMAs. The project focused on benefits, costs, and their distribution between state, com-

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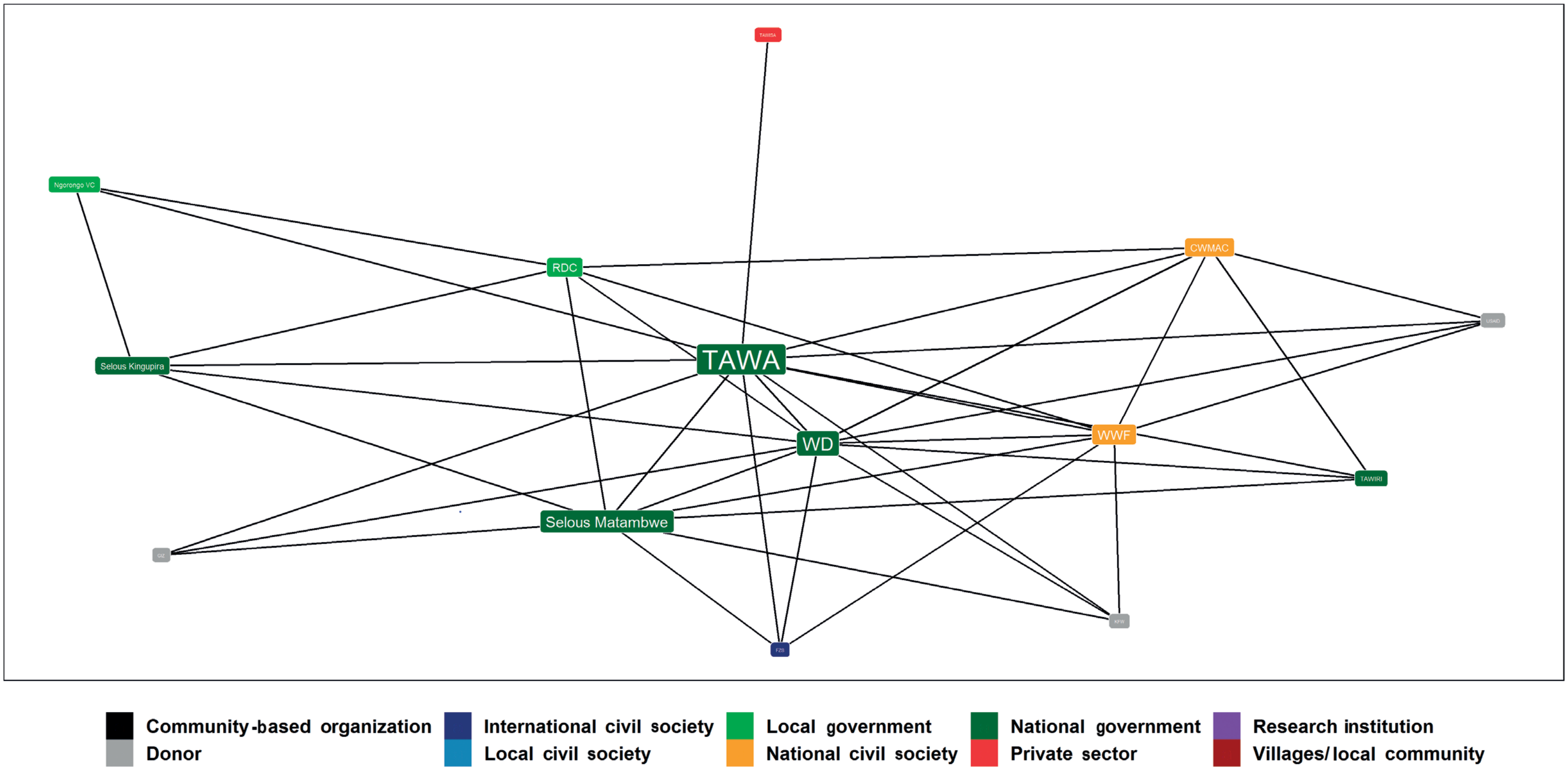

Figure 4.8 JUHIWANGUMWA Wildlife Management Area partnership network. Source: authors.

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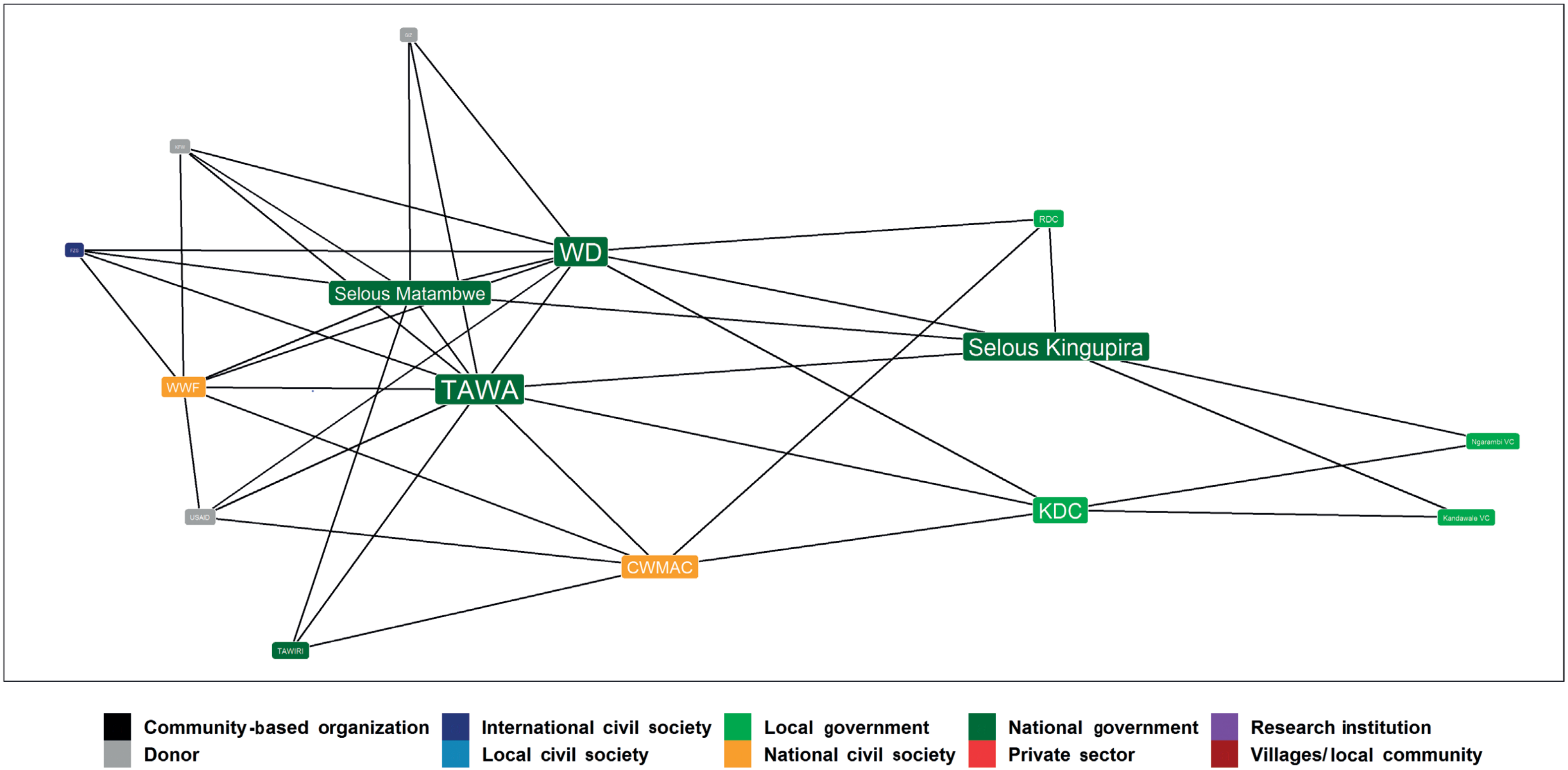

Figure 4.9 Simpler partnership network in wildlife sites. Source: authors.

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munity and households. Household-level information on wealth and livelihoods was collected through surveys and wealth ranking exercises, supplemented with WMA- and village-level information on WMA governance, including revenue distribution. This information was gathered in 42 villages, both inside and outside six WMA areas, in northern and southern Tanzania (Homewood et al., 2015). The PIMA project combined socio-economic data with aerial surveys that were conducted in collaboration with TAWIRI, focusing mainly on WMAs. The analysis of aerial counts of wildlife population in the WMAs suggests that elephant carcasses counted in WMAs such as Makame (Longido District) and Liwale (Lindi District) exceeded live elephants spotted in those areas (Burgess et al., 2015). Although the study did not establish the cause of these deaths and the age of the carcasses, the timing of the survey was at the height of the poaching crisis in the country, with DNA evidence locating many seized tusks as coming from the Selous Game Reserve.

It is suggested by WWF (2016) that WMAs have been an effective means of expanding area coverage for conservation beyond protected areas. The seventeen WMAs that have either been registered or are in an advanced stage of registration represent land set aside for wildlife amounting to over 28,389 km^2 (WWF, 2014). This means that about 3% of village land that lies outside other kinds of protected areas has been secured for wildlife protection.[3] Yet, WMA governance has also created conditions for further threats to wildlife because this expansion is associated with the extension of state control over village land rather than empowerment of local communities (Burgess et al., 2015; Homewood et al., 2015; Mariki et al., 2015; Wright, 2017). Most local livelihood activities, including agriculture and grazing, have in part or fully been foreclosed resulting in conflicts and various kinds of livelihood impacts in the local communities (Bluwstein and Lund, 2016; Moyo et al., 2016). Wildlife protection and human livelihoods are therefore undermined by a combination of legal constraints of access and lack of compensation for loss, which create different kinds of local livelihood insecurities. In the following section, we build upon this existing picture through an analysis of survey perceptions on the impacts of wildlife partnerships as collected in the NEPSUS project.

Perceptions from survey results

A considerable amount of energy, time, money, and activity has gone into forming different forms of wildlife partnerships. Even their simpler versions are a significant feature in the institutional architecture of

[3] This percentage differs from the one reported in CITES (2016), which indicates 5%. This is most likely because it combines areas in WMAs and the Game Controlled Areas.

local governance. But what are the perceived impacts of these partnerships on wildlife governance and populations, and on local livelihoods?

The results of our survey presented in this section show ambiguous results. On the one hand, a clear local view emerges that access to resources use has been reduced because of the restrictions these partnerships brought in. On the other hand, once in place, the activities of wildlife conservation do not seem to significantly affect the lives of most people, for good or bad. They experience few benefits, few immediate extra harms (at least in the short term), and the day-to-day politics of wildlife governance do not seem salient in their everyday lives.

However, a clear local view emerges that access to resources use has been reduced because of the restrictions these partnerships brought in. Restrictions on access to wildlife resources are most clear in complex partnerships (WMAs), where 80% of respondents say that access has become more complex (Table 4.1).

At the same time, Table 4.2 shows that most people report no benefits from new wildlife partnerships (65% of respondents in the complex partnerships and 88% in the simple partnerships). While access to wildlife resources is diminished, only 25% of people in complex partnerships, and just 7% in simple partnership thought that the change in wildlife governance was changing access to resources for their household. Furthermore only 34% in complex partnerships (and 15% in simple partnerships) thought it was changing resource use for the community. Only twelve households reported to have lost land (eight in

Table 4.1 Change in restrictions on access and use of wildlife resources reported by respondents (2007–2017) (%).

Partnership	More	Same	Less	Do not know	NA
More complex	80	12	2	6	1
Simpler	39	3	13	14	32
Control	38	9	1	7	46

Source: NEPSUS survey.

Table 4.2 Benefits of wildlife partnerships reported by respondents (%).

Partnership	Jobs	Game meat	Training	Increased wildlife	Other	None
More complex	6	8	8	4	9	65
Simpler	0	1	2	5	5	88
Control	0	0	0	0	1	99

Source: NEPSUS survey.

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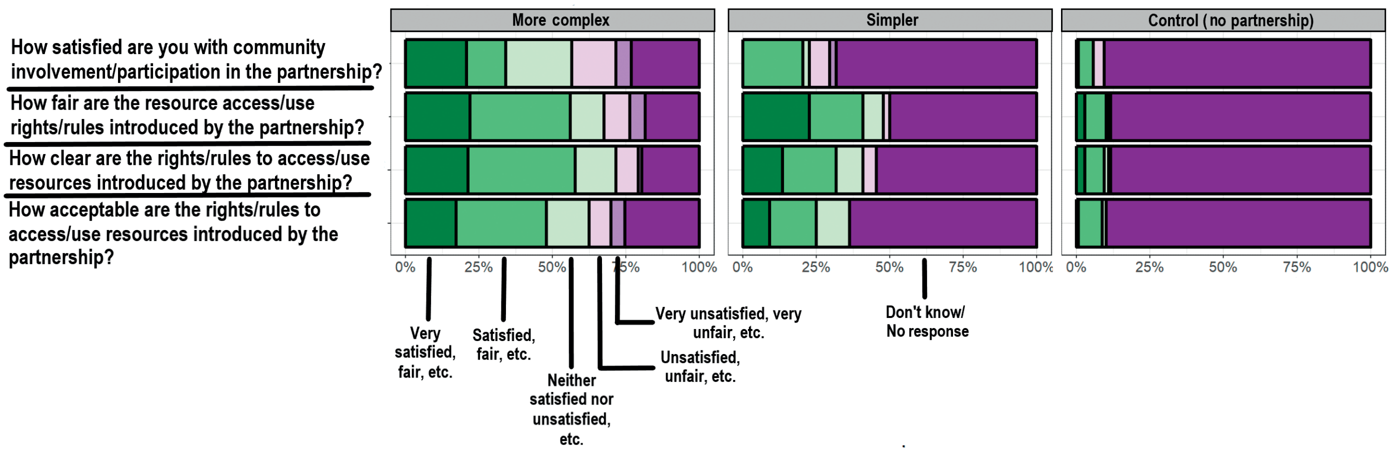

Figure 4.10 Levels of satisfaction in wildlife sites. Source: NEPSUS survey.

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Table 4.3 Perceived fairness, clarity, and acceptability of new access rules reported by respondents in wildlife sites (%).

Partnership	Very fair	Fair	Neutral	Unfair	Very unfair	Don't know	NA
More complex	22	34	12	9	5	16	2
Simpler	16	20	5	2	0	13	43
Partnership	**Very clear**	**Clear**	**Neutral**	**Unclear**	**Very unclear**	**Don't know**	**NA**
More complex	22	36	14	8	1	17	2
Simpler	11	19	7	3	0	15	43
Partnership	**Very accept-able**	**Accept-able**	**Neutral**	**Unaccept-able**	**Very unaccept-able**	**Don't know**	**NA**
More complex	17	30	15	8	5	23	3
Simpler	6	20	8	0	0	22	43

Source: NEPSUS survey.

Table 4.4 Perception of change in wildlife populations reported by respondents (%).

Partnership	Increased a lot	Increased	Same	Decreased	Decreased a lot	Don't know
More complex	34	28	13	18	6	1
Simpler	21	49	26	5	0	0
Control	16	24	21	25	12	1

Source: NEPSUS survey.

complex partnerships, four in simple). This may indicate some adaptation (at least in terms of perception) to wildlife resources, or it may reflect the fact that, in the round, wildlife resources are a relatively minor part of natural resource use. Perhaps more importantly, most people thought that the new rules brought in were fair, clear, and acceptable – or they expressed no opinion about them (see Table 4.3). The people who were dissatisfied with the rules were a minority. Substantial proportions, approaching or exceeding 50%, were generally satisfied. These patterns are also apparent in Figure 4.10.

At the same time, it is also clear that many people thought that wildlife populations have increased (see Table 4.4) and that a large majority of them reports damage imparted by wildlife (see Table 4.5), with 70–77% of families in *all* communities, not just those in partnership villages experience some form of crop loss. However, in most instances

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Table 4.5 Households reporting loss of crops to wildlife (%).

Partnership	Yes	No
More complex	77	23
Simpler	70	30
Control	77	23
Overall	75	25

Source: NEPSUS survey.

Table 4.6 Extent of damage by wildlife reported by respondents (%).

Partnership	No answer	<25	25–50	51–75	>75
More complex	23	37	28	6	5
Simpler	43	27	23	3	3
Control	40	46	12	1	0

Source: NEPSUS survey.

few lose more than 25% of their crop and most people 'only' lose up to 25% of their crop (see Table 4.6). Given that it is more likely that these people do not experience heavy losses, then this means that a significant loss (over 25% of the crop) is a minority experience (affecting 31% of the population).

People who experience these losses are keenly aware of the injustices involved. As one key informant told us:

> The thing is humans have no financial value but animals have. The government has acted in support of this in different ways. For example, do you know that elephants are in the highest value note of Tanzania? That is, the TSh 10,000 note has elephants in it, the 5,000 thousand has a rhino and a giraffe, the 2,000 has a lion, and the 500 has buffalo. Then comes less valued animals: the coins have impala, ostrich, rabbit, etc. You see that the government has put elephants as a symbol of the highest valued thing? This is the image of the country ... But when you come here ... there is no one with 10,000 in their pocket, just like that! The value of these animals does not come to us but the costs of protecting them does. Conservation is not for humanity but financial valuation. (WILD021KII)

From these data it is apparent that living with wildlife can be a problem. But it is not universally a problem for everyone in the same way, and it is most inconvenient for a minority of people. It is not a defining experience for all residents. Thus, there is both the need and opportunity for wildlife partnerships to make a substantial difference to people's lives in two ways. It could reduce the harm done by crop damage, and it could

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bring more economic benefits from wildlife. Both measures would make a significant difference to the lives of poor rural people.

Figure 4.11 makes it clear that many villagers are not aware of who is working on wildlife conservation in the different study sites. We can observe that over 30% of respondents were of the opinion that it is mainly communities through their own initiatives that conserve wildlife resources. Government involvement is perceived relatively low, especially in no-partnership villages where over 40% of respondents were not aware of any conservation organization in their villages.

Women in particular have had limited access to information on how the partnerships work and what benefits may accrue from them. This happens even though they participated in the initial village assembly that discussed plans and elect leaders. This was confirmed by those who participated in meetings for the establishment of JUHIWANGUMWA, a relatively new WMA:

> We know there is [a WMA] but we have no idea how it runs. We see leaders going and coming to meetings but it is not clear what progress has been made. Initially the village assembly was held and we participated to elect five representatives to the WMA. After that, there is nothing coming back to us. (WILD21FG)

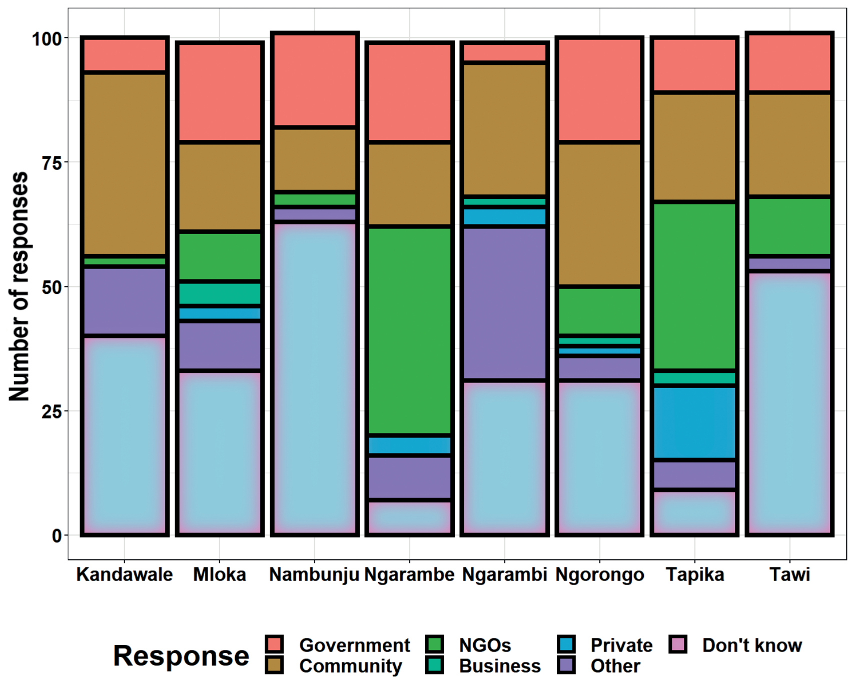

Figure 4.11 Knowledge of wildlife conservation organizations. Source: NEPSUS survey.

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In other cases, however, the disengagement, and lack of knowledge and understanding of what is going on comes on the back of decades of imposed government policy and top-down development planning that make much decision making opaque and difficult to comprehend, even if the consequences remain hard to live with. As one key informant expressed it:

> Now we have the wilderness to our necks. And I can bet, we still see this land here just because it cannot be moved to another place. WMA is not anything real. The land is ours but we have given it willingly to wildlife that we have no control over. The few benefits that can be driven from them have taken ages to come. Only those who know how the world is working can understand the direction of the wind and tap it. (WILD35KII)

Important minority views

The survey findings we examined above suggest that most people experience relatively minor losses, or no loss at all, from wildlife. The larger misfortunes are concentrated on a minority. In the same vein, most people appear to be generally approving of, or otherwise disengaged from, new governance arrangements for wildlife. But in addition to these general tendencies arising from the survey data, there are important minority views and strident objections to the status quo that we must capture as well. These are best brought out by the more qualitative data which demonstrate some of the significant fault-lines of inequality and disadvantage which permeate the politics, and ultimately the sustainability of partnerships in the wildlife sector.

Instances of human-wildlife conflict can include personal tragedy. During one of the team's field visits in February 2017, researchers came close to these day-to-day experiences when a hyena injured an elderly man and killed a young boy during the same night in one of the villages where we carried out our research. In another village, a family lost two children to a leopard that broke into the house while they were sleeping. A full record of these events is rarely available at the District game office, but narratives about of them abound.

An element of callousness is visible in some of the responses to these disasters from conservation authorities (including fellow villagers). For example, a Village Game Scout told us that 'yes, animals kill people but this is just like any other accident; cars knock people in the cities too. Do people get rid of them?' (WILD01FG). A more egregious form of violence takes place between reserve authorities and some local residents. In one of the villages, strong voices emerged from youth groups. These pointed to lives lost in the Reserve due to shooting by rangers. In the past, villagers used to fish in Rufiji River which meanders but roughly follows the border of the Reserve. It is highly risky to engage in fishing because the border is not clear in the river. Moreover, villagers are still tempted to fish in temporary lakes in the Reserve which can be well stocked with large fish. Villagers reported that if caught, illegal fishers are shot at on sight, and if killed their bodies cannot be retrieved and buried. More than ten people were reported dead in this particular village in a span of ten years.

> We speak of the bullets ... they kill us. Many people from this village have disappeared after they went fishing and this has become an everyday thing. It happened hardly two weeks ago when a group of villagers went fishing but one was killed whilst in the boat, the other two returned to the village. Several others were detained and tortured. (WILD24FG)

> We are human beings. We crave for meat. However, those who attempt to enter the Game Reserve for meat or fish they don't come back. It has become more and more common. (WILD27KII)

Violence, however, can work both ways:

> Two of our Village Game Scouts plus the Village Executive Officer (VEO) were badly injured when they were doing patrols in the WMA area. They met Wasukuma pastoralists who beat them to near death. One woman Village Game Scout broke her arm twice and she has never recovered. Since Village Game Scouts are not employees but just volunteers, there is nothing she can get from the WMA she was working for. Her children are just wandering around because she is currently attending clinics in Dar es Salaam. This testifies that you can take care of these animals but nothing in return for your life. (WLD35KII)

Stymied hopes in the absence of investment

The practical business of forging sustainable partnerships which meet both conservation objectives and local development goals hinges on working effectively with hunting companies, whose clients and trophy fees can bring money into the area. This was brought home particularly clearly in the case of MBOMAMINJIKA WMA, which is made up of the land of a collective of nine villages and distinguished by the fact that the process of WMA establishment somehow stopped before it could become fully operational. All the committees are in place, the Village Game Scouts have been trained and go on patrol, and there are land-use plans and a large area of village-owned wildlife habitat ready for a suitable company to take over for tourist hunting. But the crucial final steps that would allow the company to set up shop, and which would also allow for wildlife to be harvested for local consumption have not been taken. As a result, the land sits unused and the villagers gain nothing at all from being so close to the Selous and all its wildlife resources.

This is galling for all the people we spoke to because they have seen their neighbouring villages share legally harvested wild meat for local

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consumption, and benefit from the presence of tourist hunting and its revenues. It is galling because they have done so much work and have set aside such a large area, and yet wildlife is causing serious problems of crop damage. When the Village Game Scouts began their patrols ten years ago, there were many signs of poaching. But that has now subsided, and the elephant numbers are rebounding. They were particularly troublesome in Ngarambi, which is closest to Selous, where elephants drink from the village water points every night and there is lots of elephant dung scattered close around the village. It is also particularly galling because the elephant damage is stalling an incipient development path that these villages looked set to benefit from.

At the same time, these villages have been doing rather well from the sesame seed business. Some recent work documents the resurgence of this in several parts of Tanzania, and it is bringing considerable benefit, in part because of higher commodity prices and in part because of new marketing arrangements (Corbera et al, 2017; Brockington, 2021). Sesame has the advantage of being relatively wildlife damage proof, in that it is not eaten by elephants but only baboons, monkeys, and rodents. As a result of sesame seed sales, people described building 'good houses' and buying motorbikes (half the elders in a focus group in one of the villages we did our research had bought motorbikes). Despite the malfunctioning WMA, some people had been improving their lives, and village economies were growing. Yet, particularly in some villages, the situation was becoming hard because people have been losing their food crops to elephants, making it difficult to save and build up assets – as sesame sales have to compensate for food crop losses (see also Chapter 10).

The benefits and hazards of living with investors

In places where tourism investments have taken place, two contrasting local perceptions arise. The first is one suggesting that investors can be good at cultivating local support and try to provide meaningful forms of local benefit that are appreciated by villagers. This was clear in some of our focus groups:

> The first investor sponsored twenty children for secondary education. Also employed youths – some of which are teachers and Sheikh/Imams – who have changed the generation. Others have managed to move to Dar es Salaam. These things have direct impacts at the family level. (WILD01FG)

> The first investor offered education and scholarships and was good – but had a political motive. However, he was still the one doing many things including taking youths to school, building the mosque, etc. In 2014, there was hunger and he brought many tonnes of food, sugar, and dates ... The investor started to support the villages through paying of Village Game Scout salaries and hunting. (WILD02FG)

> [Company name] came in and assisted with many things – protection of wildlife by supporting patrols, youth employment, bush meat and food donations. (WILD04FG)

These narratives refer specifically to the hunting areas of MUNGATA WMA. In the other WMA where photographic tourism is prominent, the narratives are different. In one focus group discussion in one of the villages, participants told us that

> Tourists pay bed nights – this comes to the village income for community development activities such as dispensary building and servicing of the village boat … Direct donations have been made by investors – an English medium primary school, tractor, and ambulance … These investors have private contracts with the village council for running their tourism businesses but are not legally bound to support community development … A boat with capacity of 35 people was bought by the village government from tourism revenues that private investors pay as land rent. (WILD18FG)

The other perception is one where villagers see through the cunning of investors, rather than their altruism. We can illustrate this with the case of MUNGATA. Between 2002 and 2012 village land that made up the MUNGATA WMA was set aside for four land uses: farming and settlement, resident hunting, tourist hunting, and village forest harvesting. After ten years, the WMA General Management Plan was revised – supposedly by the partner villages (through their representatives to the Authorised Association). The new plan (2012–2022) included significant changes with two important livelihood areas omitted: forest harvesting and resident hunting, both of which were merged to form one contiguous tourist hunting block. This makes the entire land of the two villages to have only two uses: farming that is combined with settlements, and tourist hunting. Villages are virtually surrounded by wildlife areas with little room for expansion (see Figure 4.12).

But this is not a new process either. Border conflicts between villages and the Selous Game Reserve existed even before the WMAs were started. Almost all the villages that border the Reserve reported these conflicts (some of which are still ongoing). In some instances, it is the state, not capital in collusion with the state, that actually dispossesses. For example, in Ngarambi and Kandawale, Selous Game Reserve officers marked the border between the Reserve and the villages to make it more visible. However, this entailed a significant portion of thirteen village lands being included inside. Similarly, a conflict over the extension of Ngarambe-Rufiji village border, which took land belonging to Ngarambi-Kilwa village happened during the process of establishing MUNGATA WMA. This is an example of 'accumulation by dispossession' (Harvey, 2004) where capital (entrepreneurial hunting companies) has allied effectively with local leaders (district and village

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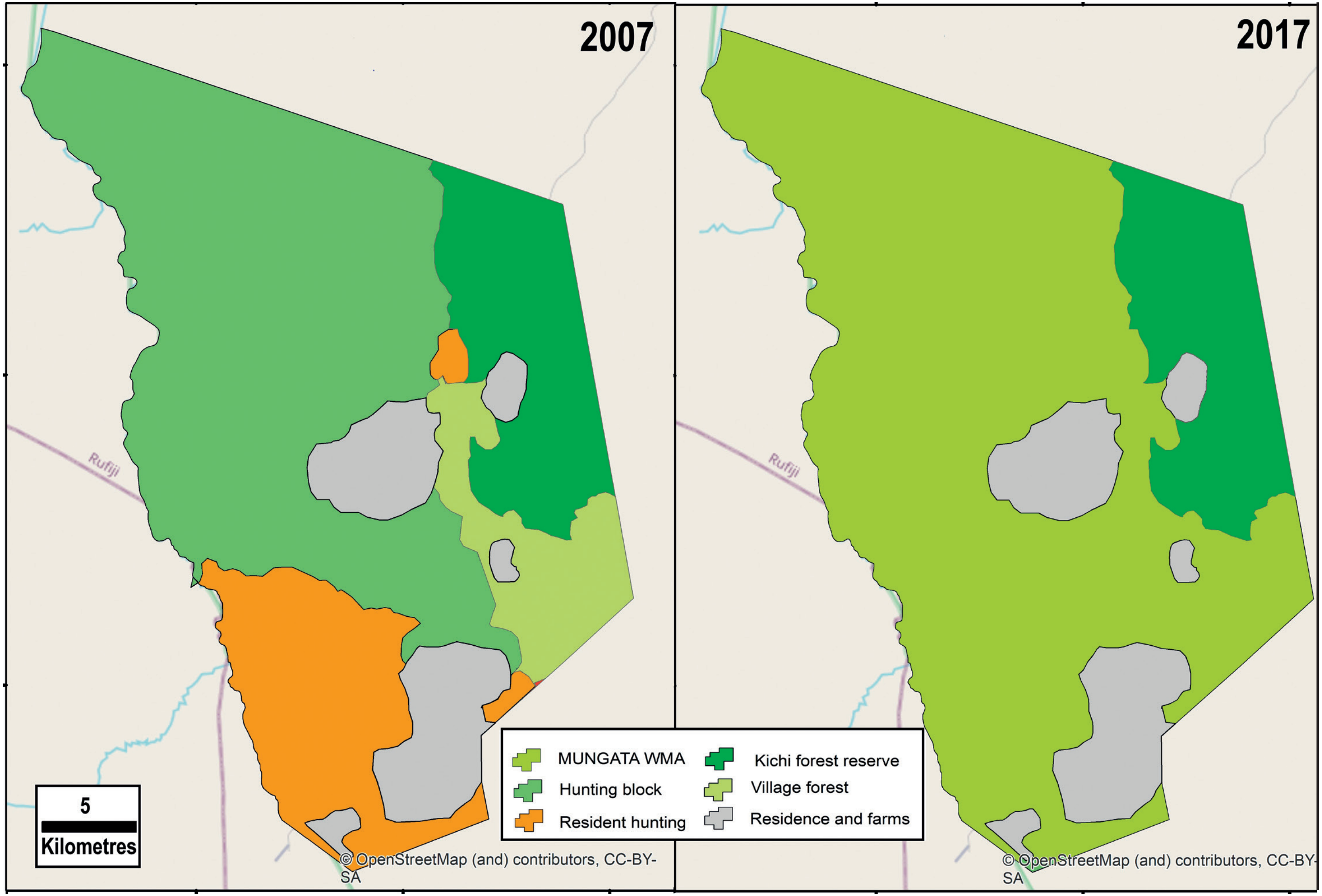

Figure 4.12 Land-use changes in MUNGATA Wildlife Management Area. Source: MUNGATA CWMA office (Ngarambe) (2017).

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governments) to persuade them to hand over significant areas of land which they will be able to use for their own revenue-generating projects and which villagers will not be able to use for their own purposes. Meanwhile, the possibility of dangerous or damaging wildlife growing in number and straying onto villagers' farms increases.

Discussion: The conservation paradox

In *Fortress Conservation*, Dan Brockington (2002) argued that conservation could be successful and sustained if the misfortunes of wildlife conservation in Tanzania were concentrated on a minority. Writing with respect to the Mkomazi Game Reserve (now national park) he argued that few people had lived in the Reserve before a conservation clampdown, few people went in, few people suffered from the evictions and exclusion. For most people the Reserve is an irrelevance. It is a large area of land to which it is dangerous to get too near, but their lives are oriented elsewhere.

In this chapter, we have highlighted an interesting parallel to that finding, with two important exceptions. Most people are not directly affected by conservation areas or by the new partnerships governing the land around them. A minority have benefited or lost out. Very few people have lost any land. Most people are reasonably happy (or at least not too unhappy) with the new arrangements. But to understand the politics and problems facing any moves to 'just conservation' we will have to understand the tails of these distributions, at either end. These important exceptions are that most people find access to wildlife resources more restricted than it once was, and that most people have experienced some form of crop damage – and have experienced it frequently. For most people it is relatively minor, in the sense that they do not lose everything. Instead, living with wildlife is like being taxed by a callous but hands-off government. They always take something and will not give you anything back. But we cannot tell yet what the implications of these losses are for food security. Most people think that these problems are increasing.

So, we have a strange situation where people are irritated because they are living with wildlife, possibly in ways which make a fairly significant hole in their household budgets. They think that these problems are increasing (as wildlife numbers increase), and stronger conservation policies over larger land areas mean that they are likely to further increase. But they are largely indifferent to, or happy with, these new arrangements. Conservation remains a marginal issue in their lives and wildlife a thorn in their sides. The economic engines of their lives are elsewhere.

This should not diminish the fact that this is an area where conservation injustices are being perpetrated – and this generates considerable resentment among those affected. There is little useful livelihood change brought by sustainability partnerships. Some people are resentful and angry about the unfulfilled promises of change. Others have experienced more food and life insecurity, with increased crop damage, injury, and deaths from problem animals and killings of villagers from 'shoot-to-kill' practices. These insults are combined with restricted access to fertile lands and forests. They will be enhanced when the extent of recent forms of accumulation by dispossession are realized.

Nonetheless, in the main, we have a paradox of costly wildlife but locally irrelevant conservation. These politics hinge on activities and interests of minorities (bad contracts, corruption, lack of transparency, unkept promises). The progressive possibilities that WMAs contain cannot be entirely ruled out. As Wright (2017) has argued, these new structures can be used to challenge power structures but, as our analysis of sustainability partnerships at work shows, this will not be easy.

Our focus on partnership complexity is novel in that we have managed to compare sites with different concentrations and types of partners, as well as institutional frameworks and social networks. Yet, our analyses of partnership configurations, processes, and outcomes have mainly reinforced the view that, rather than local empowerment, different actors have created conditions for re-centralization – where securing land and strengthening wildlife protection are prioritized over community needs. It seems that security for wildlife has improved, but for local livelihoods has somewhat deteriorated.

Conclusion

This chapter has presented the analysis of rich empirical data focused on wildlife sustainability partnerships. How different forms and levels of partnership complexity affect the workings of governance arrangements and their outcomes will be further covered in later chapters – comparatively and in the aggregate to also include experiences in forestry and coastal resources. The primary data that we have analysed here dealt primarily with perceptions of change, as reported to us by our respondents, with additional insights provided by secondary documents from government, key informant interviews (KIIs), and focus group discussions. It is clear from our data that a considerable amount of energy, time, money, and activity has gone into forming and managing different kinds of partnership. Even the simpler versions are a significant feature in the institutional architecture of local governance. In contexts of general poverty and significant problematic interactions with wildlife, what might their impact be?

Although our analysis in this chapter is more on perceptions, it sets the beginning of an important argument. That, with or without conservation partnerships in villages that border protected areas, wildlife presents a cost to many people both in terms of the damage it does and the lost opportunity to benefit from it. These costs are concentrated only on a minority. The measures to deal with, and benefit from, wildlife and to improve wildlife governance are not issues that greatly preoccupy most people. Thus, while there is dissatisfaction with current affairs, there is also a lot of ignorance and relative indifference. Therefore, new partnerships, whether complex or simpler, are not defined by high levels of local participation but by the top-down directives that mostly come with facilitation and funding from different actors.

Wildlife Management Areas were promoted as a genuine representation of village interests in wildlife protection. But villagers in these rural areas have had no choice over the top-down processes that create new resource partnerships, despite the participatory claims embedded in them. The governance of WMAs follows an austere logic of centralized control over resources (Bluwstein et al., 2016) and regulates access in a way that disempowers villagers (Noe and Kangalawe, 2015). Revenue can also disappear through corruption that involves local- and national-level leaders as well as private investors (Benjaminsen et al., 2013). Finally, tourism-related revenues are still highly regulated and optimized towards ensuring wildlife protection, rather than people's welfare, making a mockery of notions of community-based conservation (Moyo et al., 2016: 232).

This lack of participation can allow influential stakeholders to benefit from their technical, political, and financial powers to facilitate forms of dispossession by accumulation. This bodes ill for the justice of outcomes in the longer term. It is particularly concerning given that incidences of wildlife damage appear to be increasing in villages with partnerships (both more complex and simpler). As the need grows to manage and govern wildlife issues effectively and fairly, the apparatus for doing so is not forming adequately. This makes it harder for their outcomes to be just and generally beneficial.

Some of our survey data suggest a more ambiguous scenario in relation to rights of access to wildlife. These restrictions are most clear in the more complex partnerships where wildlife numbers have rapidly increased in the village lands. Most people experience few benefits related to employment, but others have extra harms. Some of the most problematic situations are those related to deaths and injuries that are reported to be increasingly caused by wildlife rangers who implement a shoot-to-kill policy. Although this is raised by minority voices in all the villages bordering the Reserve, they are important for future analysis of the emerging resource militarization.

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Projecting these observations into the future, two scenarios come to mind. One possibility is that these partnerships will begin to bring benefits to local communities. After all, current mainstream state-based protected areas bring relatively few benefits locally and these have to be shared among many recipients. Changing the arrangements and creating new business opportunities and partnerships on village lands could set in process new economic activities and employment opportunities. Alternatively, given the inadequacies of WMAs in Tanzania and their failures to devolve real power to villagers or provide real benefits, it is possible to expect that these new arrangements may make things worse. They could increase the reach not only of dangerous wildlife but also of aggressive conservation authorities.

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5

Sustainability Partnerships in the Forestry Sector in South-east Tanzania

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Introduction

This chapter analyses the role and impacts of forest governance partnerships using the case of community-based forest management (CBFM) in Kilwa District, Tanzania. Almost 40% of Tanzania's Mainland is covered by forest, occupying an estimated 35.2 million ha of land (Blomley et al., 2008; URT, 2012). Tanzania's forests form one of the most important natural resource sectors in the country in terms of its ecological functions and socio-economic potential (URT, 1998; Blomley et al., 2008; Blomley and Iddi, 2009; Schaafsma et al., 2012). Forest management and access to forest resources is important for Tanzania's revenues, commercial interests, local livelihoods, and environmental outcomes. Kilwa District was among the first in Tanzania to establish National Forest Reserves (NFRs) and Village Land Forest Reserves (VLFRs). The former are managed by the central government and include protected areas as well as areas set aside for the sustainable harvesting of timber and other forest products, while the latter are solely controlled by the local communities, and it is in this type of reserve that CBFM can be established. The context for CBFM in Kilwa District is mainly related to addressing unregulated logging and forest destruction that have been singled out as the main reasons for deforestation and forest degradation. As a result of its perceived positive impacts on both environmental and socio-economic sustainability outcomes, CBFM is becoming increasingly popular in Tanzania. As part of this process, partnerships are established in order to support CBFM. In Kilwa District, as will be further discussed below, CBFM partnerships involve a variety of actors, including non-governmental organizations (NGOs), businesses, certification agencies, government authorities, timber traders, and local communities. Our study shows that CBFM partnerships have led to positive environmental outcomes while benefiting the local villages, although primarily at the community level, as opposed to the household level.

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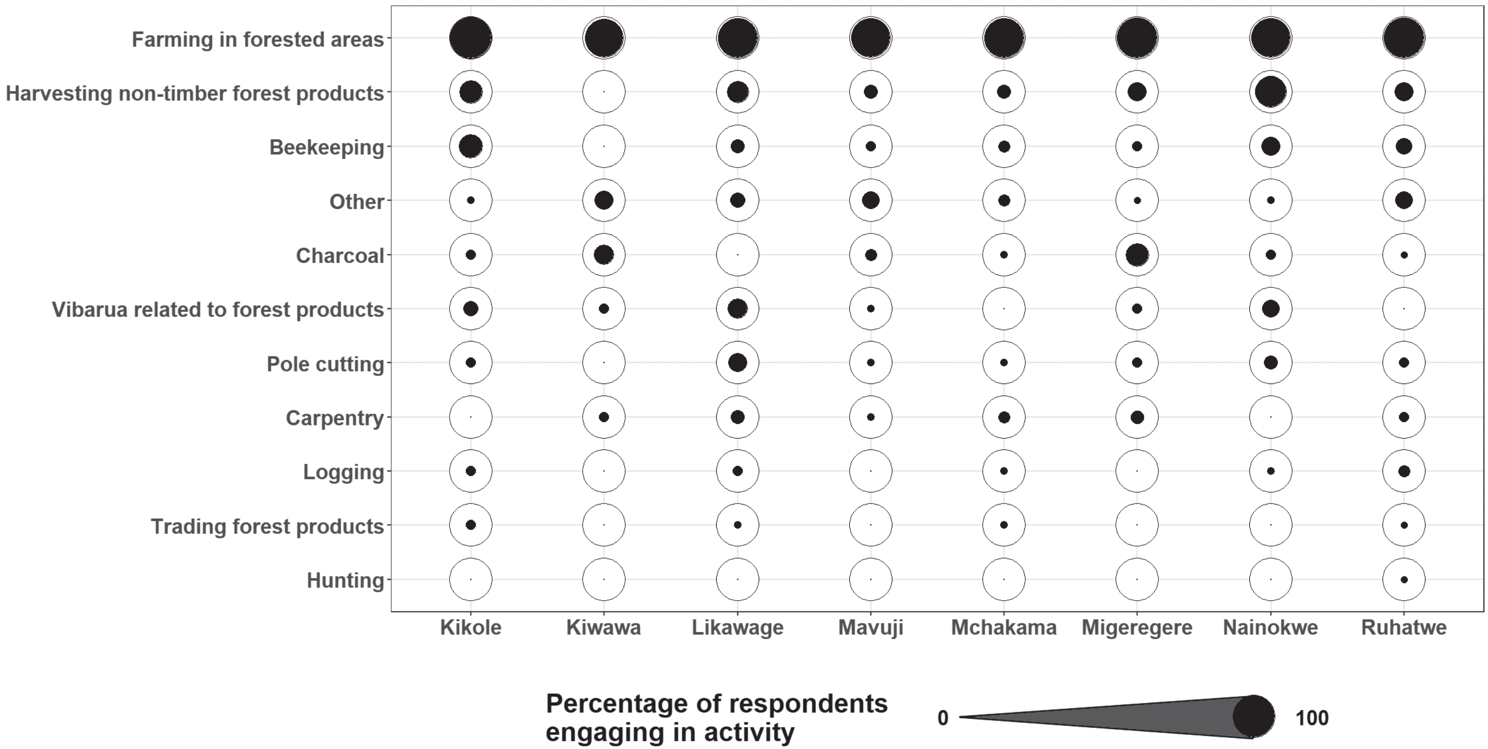


Figure 5.1 Livelihood options in forest sites. Source: NEPSUS survey.

Brief background

Kilwa District is endowed with vast coastal forests and sparse open deciduous *miombo* (woodland ecosystems that are dominated by trees of the genus *Brachystegia*). Yet, there are central contradictions between many local livelihoods and the continued existence of these large forest areas. The main source of food and income is farming, which often depends on land clearance. Crop farming is the main source of livelihood for 95% of households, with, in forested areas, about 85% of surveyed households depending on it (source: NEPSUS survey). Crucial new cash crops such as sesame seeds entail changing the cultivation regime, and observations showed that several village lands with forests have been cleared to pave the way for new sesame farms (see also Corbera et al., 2020).

Farming does not necessarily denude the landscape of trees. Cashew nuts (a tree crop) are often planted on older farms, as the soils tire. But this is a very different sort of tree cover from the *miombo* it replaces. At the same time, natural forests are valued for their resources, including beekeeping, charcoal making, and non-timber forest products (NTFPs). Figure 5.1 shows forest-related livelihood options in the eight villages surveyed as part of this study. These are Kikole, Likawage, Mchakama, and Nainokwe that have CBFM, and Ruhatwe, Mavuji, Kiwawa, and Migeregere that do not have it. As can be seen from Figure 5.1, approximately 29% and 20% of Migeregere and Kiwawa villages practice charcoal making. These two villages do not have CBFM but are located close to the main roads to the urban centres, which provide a market for charcoal. Beekeeping was found in Kikole (30%), Nainokwe (19%), and Ruhatwe (13%). Key informant interviews and focus group discussions suggest that in Kikole and Nainokwe, which were among the first villages to implement CBFM, beekeeping has mostly been associated with initiatives to diversify forest products and services and livelihood options through CBFM. Beekeeping was also promoted in Ruhatwe by the Aga Khan Foundation. More generally, about 20% of respondents in our sample have been using the forest to collect NTFPs. This is especially the case in Nainokwe village.

Community-based forest management in Kilwa District: Main actors

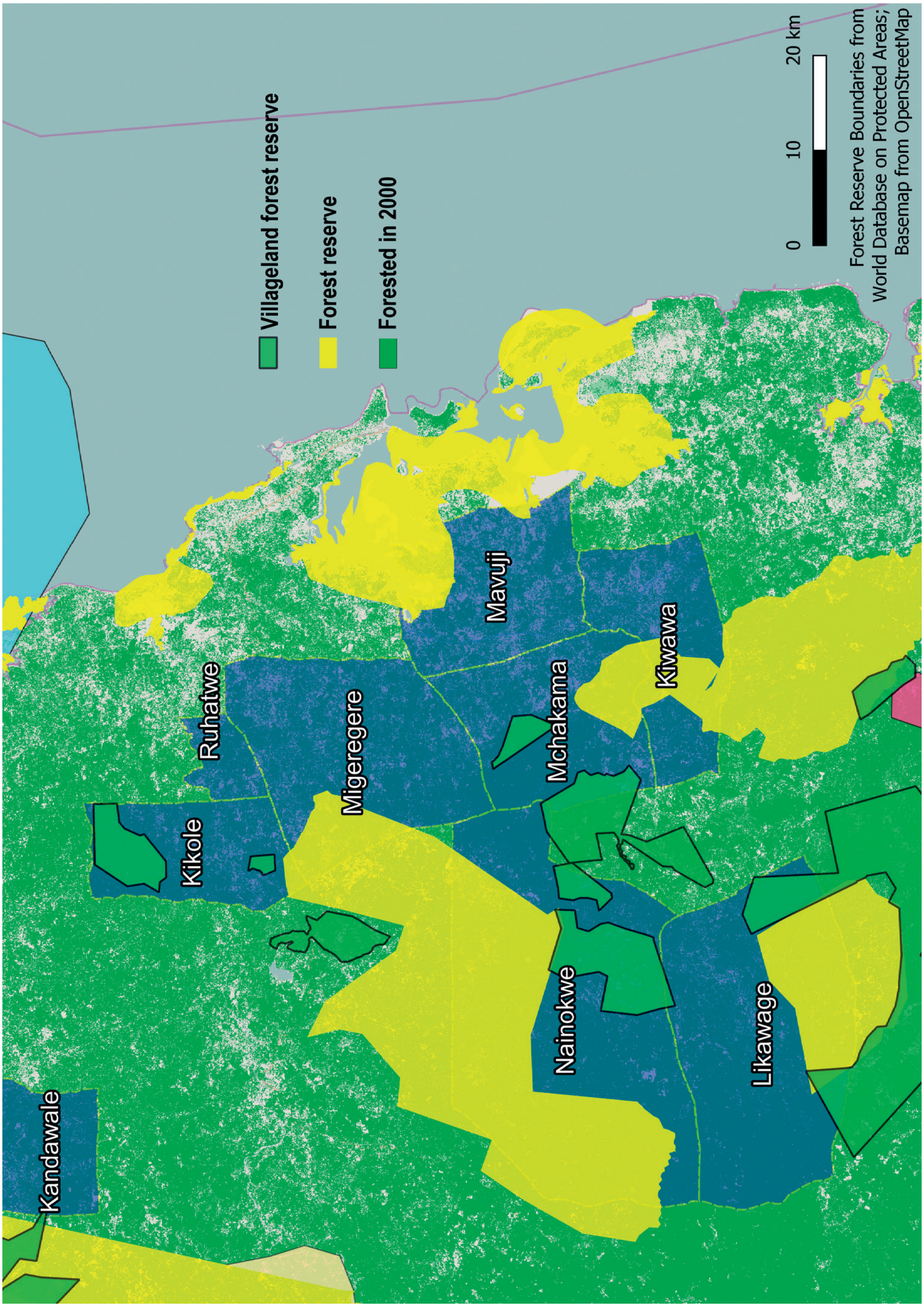
The introduction of participatory forest management in Kilwa District is largely attributed to the support of the Danish International Development Agency (Danida) which promoted local awareness of community forestry through the Utunzaji wa Misitu project (UTUMI). This project reached out to local communities to raise awareness on the rampant deforestation rates and to implement two forms of participatory forest management: Joint Forest Management (JFM) – joint management between the state and the community of forests reserves; and CBFM – where the communities are both managers and owners of the forest. The UTUMI project was innovative because, for the first time in Kilwa District, it introduced the concept of community engagement in forest management. Before UTUMI, neither villages surrounding the NFRs (e.g., Somanga Simu and Marandego villages) nor villages with forests in their village lands (e.g., Kikole and Ruhatwe villages) were formally engaged in forest management. Forest management was perceived to be a state affair (see Wily and Haule, 1995; Wily, 1997; Wily and Dewees, 2001). Villagers and other non-state actors were mere observers. Kilwa District was part of the project and the participatory forest management activities were piloted in four villages, Somanga Simu (JFM), Marandego (JFM), Kikole (CBFM), and Ruhatwe (CBFM).

The envisaged outcome of the UTUMI project was 'improved management and biodiversity conservation of the forests and woodlands of Lindi Region through sustainable village-based land-use practices contributing to improving the livelihood of rural communities' (Kibuga, 2004: 4). Initially, the implementation of the UTUMI project was expected to last between fifteen and twenty years (Kibuga, 2004). Danida, however, moved away from funding area-based projects and decided instead to support the implementation of the participatory forest management component under the National Forest Programme in the Ministry of Natural Resources and Tourism, Forest and Beekeeping Division. Even though the UTUMI project was phased out in June 2014, it laid a foundation for participatory forest management in some parts of Kilwa District, particularly CBFM. At the time of our study there were no successful JFMs in Kilwa District.

After the UTUMI project, the Kilwa District Council continued to receive financial support to implement participatory forest management activities from the National Forest Programme (participatory forest management component) under the Ministry of Natural Resources and Tourism and indirectly through NGOs such as the Mpingo Conservation and Development Initiative (MCDI), and the World Wide Fund for Nature (WWF). The former has been playing a key role in facilitating CBFM activities in Kilwa District, in collaboration with the Kilwa District Council and other actors. It has been operating in various parts of Tanzania but is more dominant in Kilwa District where it has its headquarters. The organization started in 1995 as the Mpingo Conservation Project focusing on researching and conserving the East African blackwood (*Dalbergia melanoxylon* in Latin, *Mpingo* in Swahili). It was registered as an NGO in 2004 and took over the UTUMI activities of supporting community-based approaches within the context of the National Forest Policy (URT, 1998) and the Forest Act No. 4 of 2002 (URT, 2002) which laid the groundwork for CBFM activities (see Bwagalilo et al., 2019). The MCDI has managed to sustain one of the UTUMI villages in its CBFM programme (Kikole village – see Map 5.1) and it has continued to enroll many more villages. The other UTUMI CBFM village (Ruhatwe) failed to continue the CBFM activities due to a border dispute with its neighbouring village (Migeregere, see Map 5.1).

Between 2010 and 2014, MCDI, in collaboration with the Kilwa District Council and other actors, piloted the UN framework initiative for Reducing Emissions from Deforestation and Forest Degradation (REDD+) in the villages implementing CBFM in their VLFRs. The REDD+ projects in Kilwa District attracted another layer of state and non-state actors in forest management in Kilwa District that provided different types of financial and technical support. In general, management of the VLFRs has stimulated multi-stakeholder engagement and collaborative processes in forest management in Kilwa District. Additionally, the MCDI has implemented REDD+ initiatives in Kilwa District, and some other villages in Lindi Region, and has secured a Group Certification Scheme from the Forest Stewardship Council (FSC) for the villages that manage VLFRs. Eleven villages in Kilwa District are currently members of the MCDI certification scheme.

In addition to the organizations officially involved in managing forest resources, there are multiple development actors operating in the villages examined by the NEPSUS project). Organizations such as Tanganyika Christian Refugee Service, ActionAid, the Aga Khan Foundation, and the Tanzania Social Action Fund have been supporting villages with various initiatives that influence livelihoods at the community level or a section of a population in a village. These development actors are most prominent in villages which do not have CBFM. This is partly because such organizations find that CBFM villages have been able to mobilize resources and entrepreneurial skills in order to address some of the issues which non-CBFM villages are still struggling to solve due to relatively inadequate resources. Organizations such as the Aga Khan Foundation, Tanganyika Christian Refugee Service, and ActionAid have thus focused on educational support, renovation of classrooms, and advocacy for children justice. They have also been supporting villages by establishing and running Village Community Banks. In CBFM villages, such activities have been taken care of by organizations such as MJUMITA (Mtandao wa Jamii wa Usimamizi wa Misitu Tanzania, the Community Forest Conservation Network of Tanzania) and WWF as part of CBFM implementation.



Map 5.1 Study villages and forest land use by geographic cluster. Source: Elaboration by authors.

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Social networks: MCDI's significance in forest sustainability partnerships in Kilwa District

The social network of actors in the study villages we selected in Kilwa District suggests that MCDI, the Kilwa District Council (KDC), and Tanzania Forestry Service (TFS) are the three most important actors in the implementation of participatory forest management (see Figure 5.2). Interviews with the Kilwa District Forest Officer and the CEO of MCDI suggest that MCDI and the Kilwa District Council have been working together since 1995. In fact, MCDI was originally hosted within the Kilwa District Council premises.

The close collaboration between MCDI and Kilwa District Council is evidenced by the following excerpt from our interview with the CEO of MCDI:

> When we use land-use plans, we take the district technical team to the field. When we use their staff such as their lawyers, we can cover their allowances. We don't pay the technical fees. There are facilities such as vehicles which we can share. They may need a vehicle to go to the rural areas, and we simply provide them with that. (Interview with MCDI executive officer, February 2017 in Kilwa District)

Records in CBFM villages show frequent joint visits between MCDI and Kilwa District Council officials. To villagers, this demonstrates that MCDI and Kilwa District Council are working towards forest management together in a harmonious way. Yet, MCDI and TFS support forest resource governance in different ways. While TFS is more concerned with state-owned forests and the collection of forest resource revenue from both NFRs and general land, MCDI is more concerned with encouraging and supporting villages to establish VLFRs and to collect revenue from the same. There is an implicit conflict of interests between these two organs even though they manage the same resource.

The MCDI is arguably the organization that plays the most central role in CBFM in Kilwa District and has performed four major roles: as initiator, as convener, as facilitator, and as mediator. Currently, MCDI is the dominant facilitator of CBFM in Kilwa District. In order to convince the villages to implement CBFM, and since the MCDI started off by continuing the work initiated by the UTUMI project, it was ideal and strategic to start off working with the village Kikole, which was one of the UTUMI pilot villages, and thus already exposed to the experiences of participatory forest management. Kikole became the first village in Africa to have a certified forest by the FSC. The experiences of Kikole and a few other villages, including Nainokwe, which were among the earliest entries into a CBFM arrangement, were then used by the MCDI to provide references for other villages that aspired to be part of CBFM. Apart from the legal requirements stipulated in the Forest Act No. 4 of

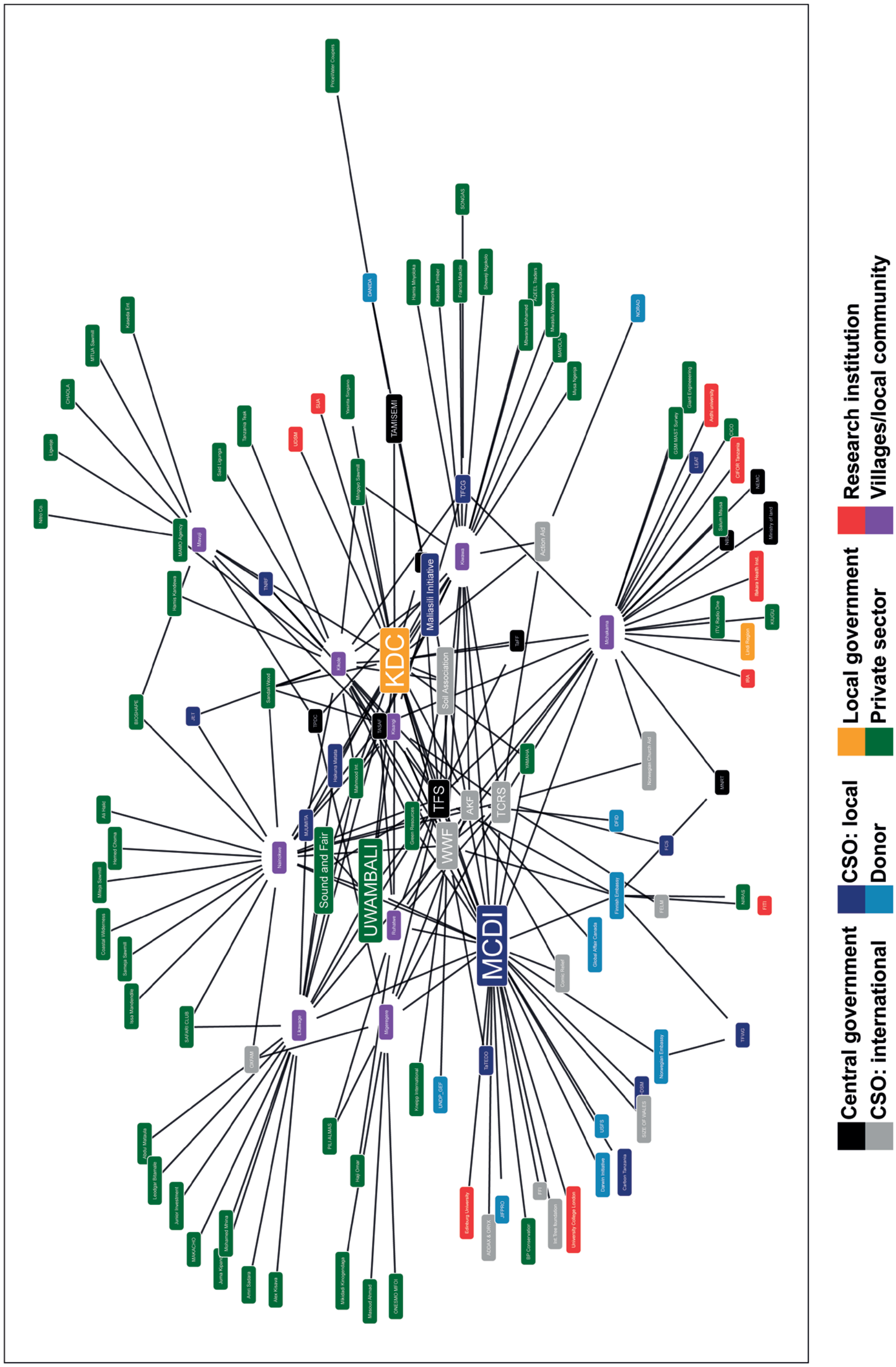

Figure 5.2 The social network of actors in forest village sites. Source: authors.

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2002, the decision for a village to be part of the CBFM through MCDI is based on whether the village has forested land within its boundaries with potential to accrue financial gains, for example by containing wood that can be sold through the FSC scheme. Management of forests through CBFM involves some costs such as patrolling, controlling fires, and meetings on management; a portion of the income obtained from selling certified timber is directed to cover such costs.

MCDI has also become a focal convener of collaboration between local communities and other actors in the social network. It has linked CBFM villages that have certified forests to each other and to timber buyers. It works with an established network of donors, organizations such as the WWF and government authorities such as the Kilwa District Council, also providing an important link to business actors such as timber buyers who are important as purchasers of timber from CBFM villages. Through this network of actors MCDI has also managed to integrate other forest management strategies with CBFM. They introduced FSC certification and REDD+ projects in the areas successfully, mainly because the two strategies operate under a CBFM institutional set-up (see below).

An important role as an intermediary facilitator has also been played by MCDI. This facilitation includes supporting villages with technical, logistical, and financial resources in the initial processes of establishing CBFM. The organization has furthermore been training villagers on various aspects which facilitate communication between different actors. For instance, MCDI is knowledgeable of tree species, general conditions of forests, and villages in need of timber buyers. Timber buyers may thus sometimes obtain information about specific species of timber through MCDI, which would provide information both ways. This has been the same with research institutions and other non-government agencies aspiring to work with local communities. In 2009, MCDI managed to process an FSC group licence and invite all the CBFM villages in the District to be part of the group certificate. Without this support, villages could not have managed the complexity and afforded the costs of obtaining the certificate. In Kilwa District also, MCDI has been a key player in implementing pilot REDD+ projects. In the process of establishing these, awareness of local communities on the process, practice, and benefits of such was raised. While CBFM and the FSC appear by now to be well understood by local communities, REDD+ remains still unclear. Villagers have hesitated to sign contracts related to REDD+. Some villages have prior bad experiences with land grabbing and may be worried that REDD+ could lead to a similar scenario. The most unclear part has been the benefits which were supposed to be accrued through selling carbon credits.

Mediation is critical in order to harmonize collaboration among actors. The MCDI has been a key mediator in resolving conflicts and misunderstandings. For example, Mbate forest is located between Ruhatwe village and Migeregere village and border conflicts prevented the two villages from entering into a CBFM arrangement. Despite the failure to resolve these conflicts, MCDI has been trusted to be a reliable mediator. The credibility of MCDI does, however, face a particular challenge. Our interview material suggests that the leadership of the Sound and Fair timber buying company is composed of former members of the MCDI. Because MCDI cannot be a timber buyer as well as an NGO, Sound and Fair was established as a commercial entity. There could be potential conflicts of interest between the two since MCDI is responsible for monitoring certified forest and products and ensuring local benefits, and Sound and Fair is the buyer.

Perceptions on changes in forest governance

In this section, we examine impacts of CBFM on forest governance by looking at: changes in forest management practices, how forest products are marketed, how the income from funds obtained from the forests are distributed, how clear the local community finds the rules and rights to access and use of forest resources, and how satisfied local communities are with their involvement in forest governance partnerships.

Forest management practices

The implementation of CBFM has significantly changed forest management practices in the relevant villages. When a CBFM is implemented, a Village Natural Resource Committee (VNRC) is established, which, according to our findings, has had a significant impact on forest patrolling and reporting on the conditions of the forest. Patrols have minimized both illicit logging and forest fires. Forest patrols are an important aspect of CBFM in ensuring VLFRs are protected against intruders, and also serve in reporting on the forest condition. Patrols are done by VNRC members, who have set aside a certain amount of VLFR income to cover equipment, tools, and allowances to members involved in patrols. Patrols in non-CBFM villages are not conducted in a coordinated way and these have no incentives to encourage the practice. Illicit logging is observed to take place in non-CBFM villages more than in CBFM villages. Another effect of lacking patrols is intrusion of livestock keepers into forests. Miya et al. (2012) identified the dramatic increase in livestock keeping in Kilwa District, resulting from improved infrastructure such as better roads, as among the major drivers of deforestation. In the non-CBFM village Kiwawa, it was observed that occasional patrols would be done by members of the Village Environmental Committee, but members lacked incentives, equipment, and skills compared to VNRC members.

Market availability for forest products

The implementation of CBFM has also changed the marketing of forest products in CBFM villages, where it has been observed that they receive more income from selling fees compared to the past. Marketing is now controlled by the village instead of Kilwa District Council as it was before the implementation of CBFM, when income from forests was not retained by villages. In a key informant interview, one participant was quoted as saying:

> Before MCDI and CBFM, forest management was poor. Marketing of forest products was done through the District Council. The benefits of the forests were not much compared to now. In the past we were getting TSh 20/- for each piece of log while now we are getting 300/- per a similar piece as selling fee. (Interview with Likawage Leadership, March 2018 in Likawage Village)

Villages participating in CBFM, such as Mchakama and Likawage, have been planning to expand the areas of their VLFRs in order to maximize revenues from selling certified timber. However, they increasingly face the challenge of unreliable markets. The most dominant and valuable tree species is the East African blackwood. Companies that are buying timber have concentrated their efforts in Nanjilinji A village, which has a relatively large forest with plenty of blackwood. Traders are not interested in forests with only small and scattered amounts of the species. The poor road infrastructure during rainy seasons, especially for villages such as Nainokwe and Likawage, also creates logistical challenges. Another challenge leading to unreliable markets relates to FSC certification. Buying timber from certified forests means offering premium prices, which some timber buyers find is relatively expensive compared to purchasing from uncertified forests. In Nainokwe, TFS has even been observed to compete with VLFR in selling timber, taking advantage of that fact.

Benefit sharing

Funds obtained from VLFRs are distributed based on the allocations approved by the CBFM villages. The distribution of income earned after selling timber harvests is as follows. Village government 50%, VNRC 45%, MCDI 5%. The Forest Act No. 4 of 2002 indicates that villages have the right to retain 100% of VLFR income. The 5% paid to MCDI covers part of the costs that MCDI incur in supporting CBFM in particular villages; they argued that this percentage is paid with the villages' consent. However, in a dissemination workshop held in January 2019 to district-level stakeholders in Kilwa District, MCDI commented that the organization no longer takes the allocation from villages.

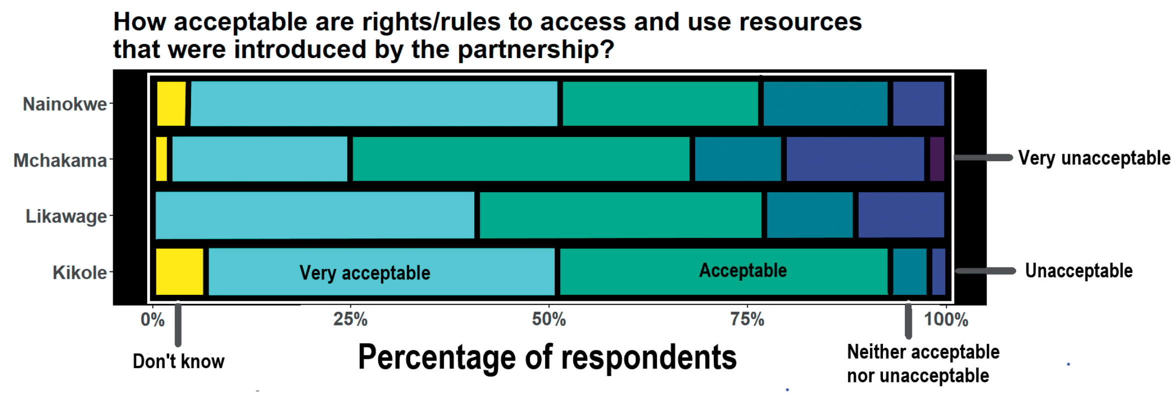

Figure 5.3 Local perceptions of acceptability of rules and rights to access and use of forest resources reported by respondents. Source: NEPSUS survey.

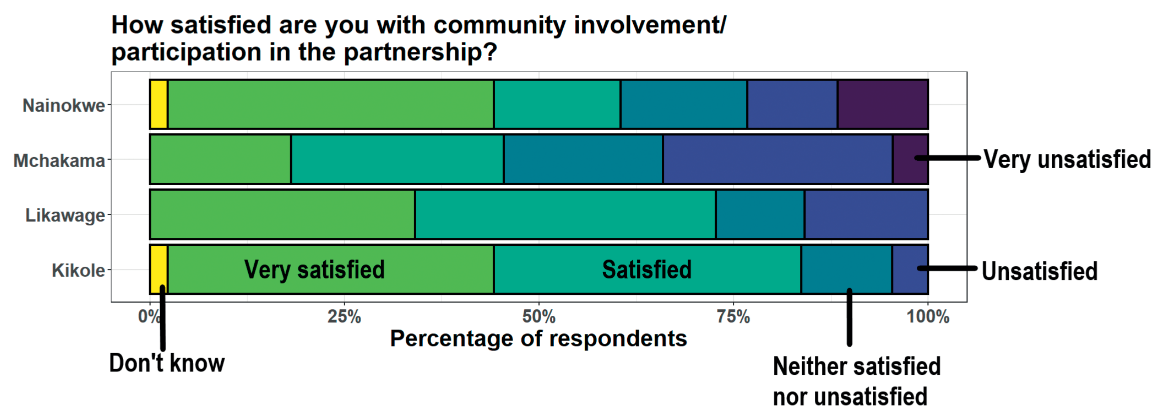

Figure 5.4 Perceptions of performance of partnership leadership. Source: NEPSUS survey.

There are no JFM agreements with villages in Kilwa District. This means that there are no agreements regarding joint management between the state and communities of forest land. However, TFS has been implementing timber harvesting in villages such as Kikole, Nainokwe, and Likawage and has attempted to convince Kiwawa villagers to include part of their village forest in the NFRs. In that arrangement, the village would have obtained only 10% of sales while 90% would go to TFS. The proposal was declined by villagers. Kikole is also adjacent to the Mitarure National Reserve and, while not involved in a JFM agreement, TFS works with the village in timber harvesting processes. However, Kikole villagers complain of unkept promises.

Perceptions of the acceptability of rules and rights to access and use of forest resources in CBDM villages

The NEPSUS project collected respondents' views on the acceptability of rights/rules to access and use resources that were introduced by forest governance partnerships. The findings are shown in Figure 5.3.

Many accept the rules and regulations. Among the most acceptable are those which prohibit forest destruction through illegal harvesting of trees, charcoal burning, farming, grazing, hunting in forest areas, and burning of forests; zoning of VLFR areas, and arresting and charging of intruders are also generally found to be acceptable. Other acceptable rules include control of logging and collection of NTFPs, as well as certification of forests. Most of the reasons for accepting these rules are associated with visible benefits accruing from forest income. Some of the rules that are not acceptable include those which restrict accessibility of fertile land for crop growing and the cultivating of lands closer to village forests, and rules/rights governing distribution of benefits that leave out some hamlets of specific villages such as in Nainokwe village. Another set of unacceptable rules are those that prohibit collection of firewood, which is the main local source of energy. Officers of the Ministry of Natural Resources of Tanzania prohibit the charcoal trade irrespective of the source of the wood.

Local satisfaction with community involvement in forest governance partnerships

Satisfaction of community involvement in partnerships is of paramount importance. In total, more than 65% of surveyed households in the CBFM villages stated that they were satisfied or very satisfied with their community's involvement in forest governance partnerships (Figure 5.4). Likawage and Kikole villages were the most satisfied. The reasons listed by respondents for satisfaction of community involvement in the partnerships include decision-making processes being participatory, as they involve the village assembly which every

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villager can attend, and income from forests being directed to priorities proposed by villagers through participatory channels such as in routine village meetings. Others are satisfied with partnerships because they lead to increased awareness and knowledge of forest conservation and because, through partnerships, there is prohibition of and protection of forests from illegal harvesting. Finally, respondents mentioned that there are visible benefits in terms of community projects that have been facilitated by income from the forests. Those not satisfied mentioned two elements: that they do not benefit from VLFR funds (for instance, Kichonda is one of the two hamlets of Nainokwe and many in this hamlet claim that the benefits of VLFR are not accessible to them); and that they are concerned about both limited involvement and limited accountability of leadership.

Perceptions on the livelihood impacts of forestry sustainability partnerships

The socio-economic impact of forest governance partnerships can be measured at two levels: at the household level, and at the community level (via community asset creation). In the following we discuss whether and how the respondents perceive that they have obtained benefits from the partnerships at these two levels, as well as in what ways the forest governance partnerships have influenced their livelihoods.

Perceived household-level benefits

Survey respondents were asked to identify the main benefits that their households have acquired as part of the implementation of forest governance partnerships. Almost 64% of all respondents said their household has not benefited from partnerships in forest conservation. This concern is particularly apparent in Mchakama village, where 93% of respondents said that they have not benefited at all from partnerships. Those who benefited mention receiving conservation education, training opportunities on forest conservation, and training on income-generating activities. Monetary payment is mainly through being part of VNRC, where allowances may be obtained, or engaging in activities such as felling trees during the timber harvest. There is no direct distribution of funds obtained from VLFR to households. Family losses due to partnerships were not identified by many. Only 6% of respondents from Likawage and Mchakama complained that due to partnership implementation they had their access to fertile land limited or that their farms were taken as part of the VLFR.

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Perceived community-level benefits

Our study explored the perceptions of local communities in CBFM villages in relation to what they perceive to be the benefits of being involved in CBFM partnerships at the community level. About 63% suggest that their villages have benefited from the CBFM partnership. In Figure 5.5 we present the kinds of community/village-level benefits that were mentioned.

About 43% of the interviewees said that the community has received conservation education, 29% received monetary benefits that were accrued through involvement in forest-related activities, and 21% mentioned training opportunities both in forest conservation and livelihoods skills. Many included as the main benefits of sustainability partnerships conservation knowledge, conservation skills, provision of financial and non-financial resources for conservation, support of social services, and the establishment of alternative income-generating activities.

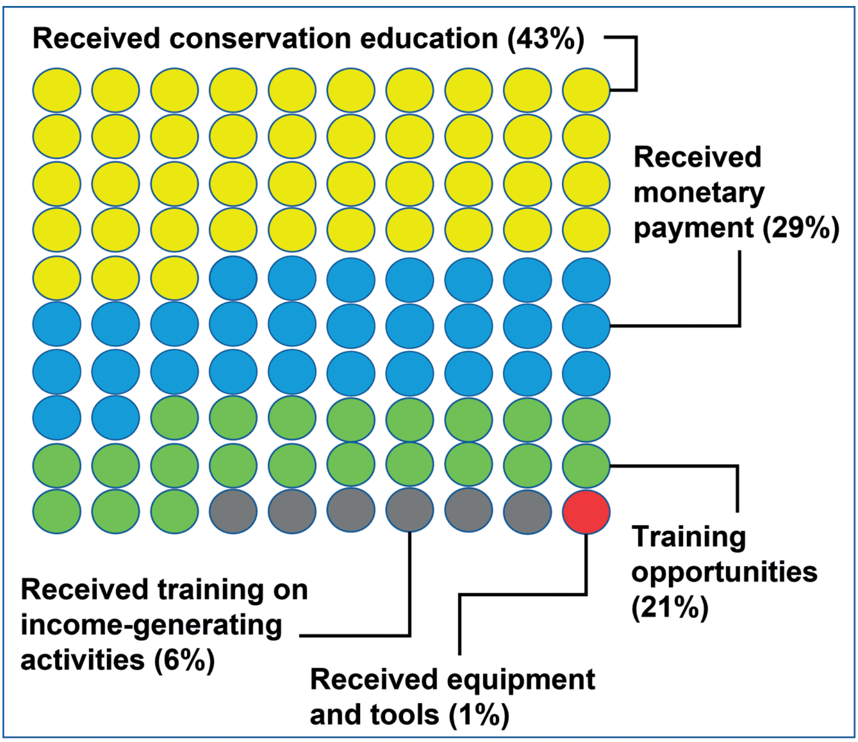

Figure 5.5 Perceptions of community-level benefits in forest sites. Source: NEPSUS survey.

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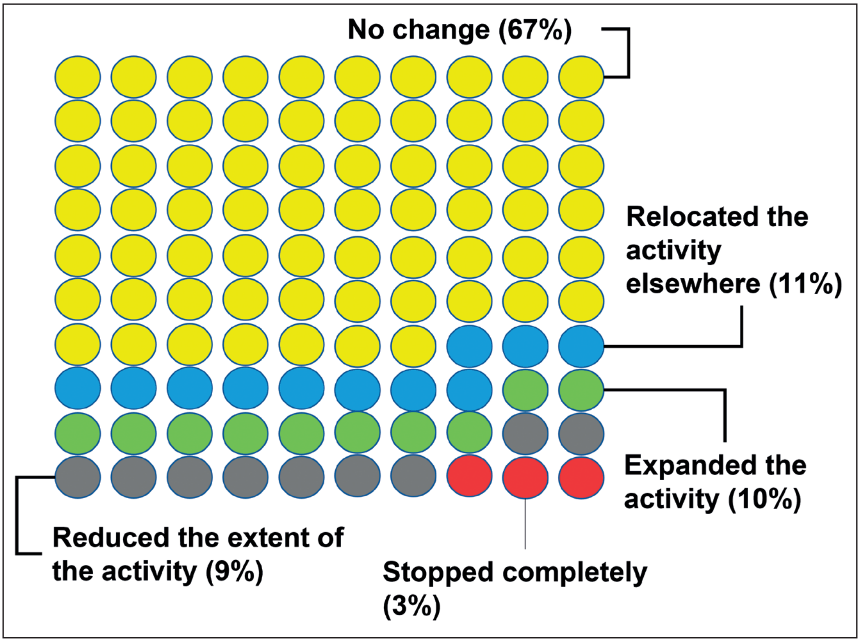

Figure 5.6 Changes in farming following the implementation of partnerships in community-based forest management villages. Source: NEPSUS survey.

Perceptions on changes in livelihood options

Across all CBFM villages, 10% stated that they had expanded farming activities and almost 20% had either stopped farming completely, relocated their farming activities or reduced the extent of the activity, and 67% of respondents were not affected in any way by the implementation of partnerships (Figure 5.6). Tourism was not mentioned among respondents. However, during key informant interviews and focus group discussions in Nainokwe and Likawage villages, it was noted that there had been hunting tourism.

Perceptions on changes in livelihoods

Besides improved forest conditions, the ultimate expected outcome of forest governance is that local communities' livelihoods will improve. This study explored local perceptions of the improvement of livelihoods over the past five years. There is a difference in terms of perceptions of livelihood improvement between CBFM and non-CBFM villages. Those arguing that their livelihoods have improved or improved a lot are 43% in CBFM villages compared to 24% in non-CBFM villages. Local communities in all the CBFM villages overall report some livelihood improvements. Key informant interviews and focus group discussions

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suggest that income from VLFRs has made a difference in financing social services provision and infrastructure. The link between partnerships and local livelihoods does not seem to be taking place at the household level.

There could be different factors determining changes in livelihood outcomes in CBFM and non-CBFM villages that are unrelated to CBFM. During focus group discussions in Kikole villagers, it was reported, for example, that sesame farming is largely what is leading to improvement in livelihoods (see also Corbera et al., 2020). Of those arguing that livelihoods have improved, 85% cited farming, especially of sesame, to be the main factor. Market prices for sesame and cashew nuts are important in determining income from farming. Others have mentioned livestock keeping, petty business, and income related to forest products.

A decline in livelihoods has been associated with the poor performance of agriculture. More than 90% of those who argued that livelihoods have declined cite poor performance of agriculture to be the main factor. This has been linked to poor farm productivity due to climate variability, pests, and limited access to areas for farming. Also mentioned are poor market prices for cash crops such as pigeon peas, sesame, and cashew. The rest mentioned health reasons as being behind the failure to produce adequately and sustain their lives, as well as poor business performance. Finally, some mentioned changes in forest regulations that constrain them from accessing income through NTFPs. The reasons for improvement and decline in livelihood conditions are similar in all CBFM villages. The identification of agriculture as the main determinant of livelihood performance suggests that the contribution of forest conservation through CBFM arrangements does not have a major direct influence on livelihoods.

Conclusion

The collaboration of different actor categories and the legal and policy channels through which they interact with local communities have led to more-complex institutional set-ups and forest management operations in Kilwa District among villages that have chosen to engage in CBFM. Despite this complexity, CBFM in the study sites appears to have led to clearer procedures, benefit sharing, and decision-making processes, which have improved the governance of forests. The accountability of conservation-related institutions at the local level has furthermore improved in CBFM villages compared to non-CBFM villages. Improved governance is positively correlated to local perceptions of improved forest conditions. While local communities involved in CBFM perceive more benefits at the community level through investments in service provision initiatives, there is not much that has been

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reported at the household level. Benefits are unequally distributed between village hamlets.

The key focal organization in Kilwa District in relation to forest management has been MCDI, which has earned the trust of many in the local communities in the CBFM villages. This trust is evident through the dependency of villages on MCDI for technical advice on CBFM, REDD+ and sustainability certification. Trust is also based on the widespread local perception that MCDI has transformed forest management in Kilwa District from less profitable forest resources for relatively few individuals to community-level benefits visible through implemented projects from the money accrued from the CBFM. Also, the frequent visits of MCDI officials in the villages has kept them closer to local communities than district government officials. This trust has given legitimacy to MCDI's implementation of various CBFM or associated activities. The awareness of local problems has made MCDI harness the opportunity to link forest conservation and resolving of such problems, and it is thus considered responsive to local challenges. It has good working relations with the District Forest Office and the two have been supporting each other in terms of the logistics necessary to support forest conservation initiatives. Thus MCDI has been a bridge linking local communities and Kilwa District Council when it comes to forest-related matters. Another advantage that it has over government agencies is the fact that, being a non-government organization, it is less bureaucratic than the District Council. This makes both decision making and action taking quicker. Despite this trust, the transparency of MCDI has been questioned in one area – the problematic relationship between it and the timber buyer Sound and Fair.

The ability of MCDI to understand local challenges through frequent interaction with local communities has strengthened local belief in CBFM. The question is now whether this legitimacy will stand the test of time by continuing to deliver the desired outcomes. Partnerships with CBFM have led to a change in how the local communities access the timber markets and have made them increasingly dependent on external actors, in particular MCDI. The nexus between farming and forest conservation is furthermore a critical issue, together with the extent to which community-level benefits will be accompanied by household-level ones. An equitable distribution of benefits will remain important for the local community if conservation is to make sense in the long run.

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6

Sustainability Partnerships in the Coastal Resources Sector in South-east Tanzania

OPPORTUNA KWEKA, ROBERT ELIAKIM KATIKIRO, FARAJA DANIEL NAMKESA, RASUL AHMED MINJA, AND STEFANO PONTE

Introduction

As discussed in chapter 2, the complexity of coastal and marine environments is closely related to its ecological and socio-economic productivity. The ecosystem is a critical source of income and food for millions of people while at the same time providing diverse ecological fits (Béné et al., 2006; UNEP, 2006; Zeller et al., 2006; Andrew et al., 2007; FAO, 2014). This 'conservation plus' arrangement is characterized by the transfer and/or sharing of rights, roles, and powers from central to local public authority and from state to non-state actors – including local communities, business, and non-governmental organizations (NGOs) working as partnerships.

Partnerships are socially constructed through interaction among different actors (Fernandez, 2007). Positive interactions can be nurtured by trust and commonality of mandate, and evolve around the sharing of resources, expertise, vision, and systems at various levels of management. They develop within the fabric of existing social capital, knowledge, group dynamics, working relations, concerted action, consensus building, and formal and informal rules (Fernandez, 2007). Partnerships exercise power where specific spaces are created as governable objects. They claim to empower local communities and are supposed to enhance community capacity to control and improve participation in the management of coastal resources (Johnsen and Hersoug, 2014). In the best cases, local communities take active engagement in designing, monitoring, planning, and entering into agreements, and partake in responsibilities, power and obligations (Kearney et al., 2007), but this is the exception rather than the rule. Partnerships enact a political regime that is constructed and negotiated between multiple public and private actors, some of whom are focused on profit maximization, not on conservation efforts per se (Quist and Nygren, 2015).

Co-management is time consuming and is associated with high costs of implementation, monitoring, and enforcement (Kuperan et al., 2008). Its enforcement ranges from the imposition of government fees and fines to social sanctions, such as asking someone to leave the community. Social sanctions can be particularly problematic when resource users are unwilling to report fellow users in the case of breach of rules (Fernandez, 2007). Fleishman (2006), for example, argues that while co-management is seen as an 'innovative' way of addressing conservation, it is also associated with high transaction costs that can sometimes lead to negative sustainability outcomes and the benefit of local elites, at the expenses of the community as a whole.

In this chapter, we examine two kinds of partnerships for the governance of coastal resources: (1) one that is 'simpler', Marine Parks (MPs); and (2) one that is 'more complex', Beach Management Units (BMUs). In this chapter, we focus on the Mnazi Bay-Ruvuma Estuary Marine Park (MBREMP) and on four BMUs, all located in Mtwara Rural District.

Background

Tanzania's fisheries

Important coastal resources in Tanzania include fisheries, mangrove, and coral. Although fisheries are the most exploited coastal resource, mangrove and coral are equally important as they provide important habitats and sources of food for fish and other aquatic resources. Fisheries is a key sector and an important source of livelihood and food security for coastal populations in Tanzania. The sector contributes to 1.6% of GDP, with a vast share of the catch coming from inland fisheries. Exploitation of marine fisheries is largely restricted to territorial waters (less than 12 miles from shore). Despite having a large Exclusive Economic Zone (EEZ), Tanzanian fishers have not had access to an adequate fishing fleet for deep-sea exploitation in the EEZ.

The Tanzanian coastline extends for approximately 1,400 km between Kenya and Mozambique. The coastal plain is narrow, along Africa's eastern seaboard on the Indian Ocean. The marine territorial sea constitutes an area of 64,000 km^2 and the EEZ[1] is currently approximately 223,000 km^2. Several permanent and seasonal rivers and numerous creeks traverse the coastal plains (Nhnyete and Mahongo, 2017). The continental shelf is narrow and steep, covering a total surface area of about 17,900 km^2. It is characterized by fringing coral reefs, seagrass, and island habitats. The coastline is affected by the monsoon regime, with two typical seasons: the south-east monsoon (*kusi*) from May to

1 In 2012, the United Republic of Tanzania applied to the Commission on the Limits of Continental Shelf under the United Nations Convention on the Law of the Sea (UNCLOS) to extend its EEZ by 61,000 km^2 but this has not yet been finalized.

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early September, and the north-east monsoon (*kaskazi*) from November to March.

Marine fisheries in Tanzania include artisanal multi-species gear fisheries and coastal shrimp trawl – both targeting fisheries resources mostly within territorial waters. Some foreign fishing fleets operate in the EEZ which extends up to 200 nm from the shoreline. Marine fisheries contribute 10–15% of the total fishing production in Tanzania (Lee and Namisi, 2016). Contributions from aquaculture, with the exception of seaweed farming, are minimal. Fishery catches in Tanzania are dominated by inland fisheries, with an average of 85% of the national fish catch, mainly from Lake Victoria and, to a lesser extent, Lake Tanganyika (Breuil and Grima, 2014).

Several studies show that coastal marine resources of special significance are composed of small and medium pelagics, demersal fish in deep water and coral reef areas, and lagoon and intertidal species. Small pelagics include scads, herring, and anchovy. Medium pelagics include Spanish mackerel, bonito, barracuda, mackerel, and wolf herring (Jiddawi and Öhman, 2002; Muhando and Rumisha, 2008). Demersal species include different species of shark, ray, skate, sole, catfish, and shrimp. Coral reef fish species include emperor, snapper, sweetlips, parrotfish, surgeonfish, rabbitfish, grouper, and goatfish. The lagoon and intertidal pond species include octopus, squid, crabs, and a variety of bivalves. There is also an artisanal fishery targeting tuna and tuna-like species within the Tanzanian EEZ (URT, 2012; Breuil and Grima, 2014).

Current fish catches are estimated at 340,000 mt per year, excluding catches of tuna and tuna-like species by distant water fleet nations in the EEZ. Marine fishing is limited to the near shore due to lack of a domestic fleet of deep-sea fishing vessels. The status of marine resources is unclear due to lack of data. Nonetheless, national authorities have often reported that the potential of marine fishery in inshore waters is around 100,000 mt per annum. However, this is based on stock assessments conducted in the early 1980s. There are no estimates of the fish potential in the EEZ (URT, 2012; Breuil and Grima, 2014). Frame surveys, which are undertaken to provide official statistics on fisheries, are not carried out regularly and do not provide precise indications of fish stocks. Official statistics rely on the few surveys which have been successfully performed, such as the 2009 Frame Survey, which reports 36,320 fishers on the coastline of Tanzania, of which 7,000 were operating without vessels ('foot fishers'). Other surveys reported 36,323 fishers in 2014 and 48,529 in 2016 (URT, 2016). It is not clear how reliable these assessments are. Catch statistics suggest that they have been declining in volume but increasing in value – due to supply shortages arising from destructive fishing activities and environmental change. Figure 6.1 provides a (relatively unreliable) picture of marine waters statistics in Tanzania in the past 40 years.

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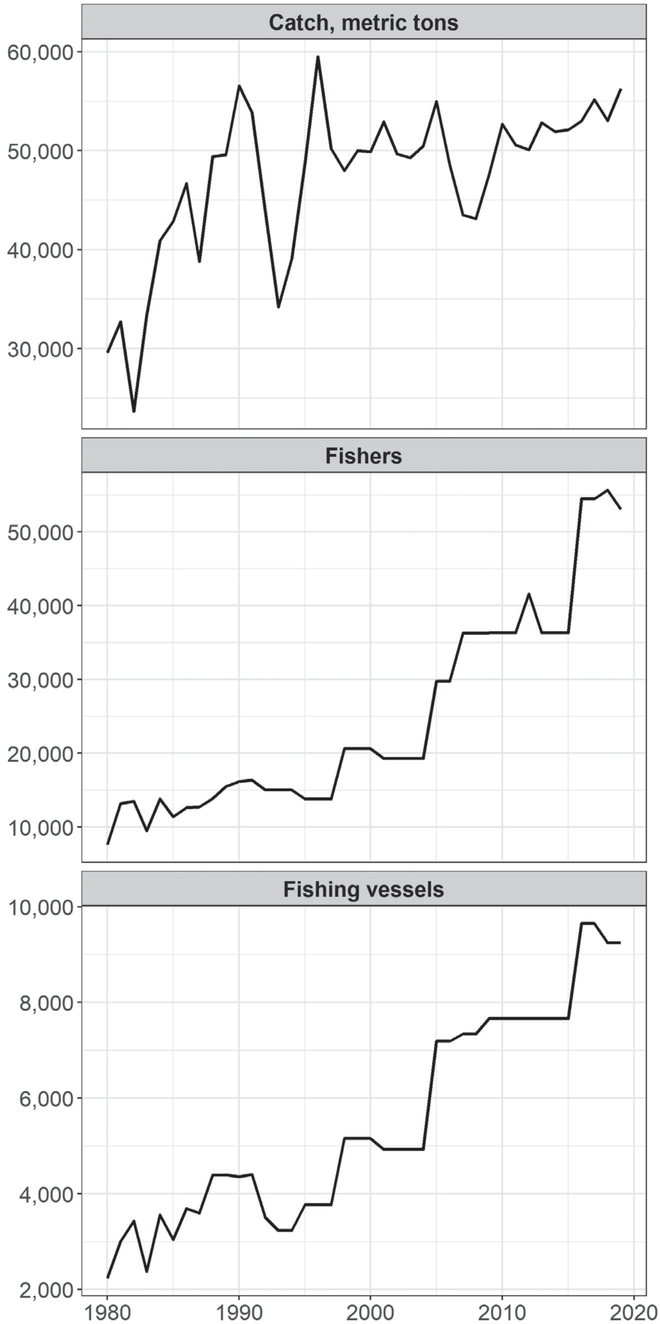

Figure 6.1 Production trends for marine fisheries in Tanzania (1980–2016). Source: Fisheries statistics from the Ministry of Agriculture, Livestock and Fisheries.

Unlike terrestrial resources, coastal resources in Tanzania began to receive significant attention only in the past three decades. Management of terrestrial resources – wildlife and forests – were addressed with considerable attention and rules during the colonial era. In the immediate post-independence period, Tanzania continued to apply colonial laws and regulations on natural resources. Since no concerted efforts were undertaken on coastal resources, they were particularly exposed to over-exploitation and degradation, leading to adverse effects on livelihoods (Ruitenbeek et al., 2005).

The fisheries legislation that existed during the early independence period was not sufficient to fend off the quick growth of catches in the fishing sector. Although in the 1970s the government had established the first marine reserve, it was not until 1994 that the government enacted the Marine Parks and Reserves Act, followed by the establishment in 1995 of the first marine protected area (MPA), the Mafia Island Marine Park. Numerous other efforts also began in the early 1990s, when the government, with assistance from donors, started to tackle coastal and marine resources problems using the integrated coastal zone management (ICZM) approach (Tanzania Coastal Management Partnership, TCMP, 1999), coupled with its National Integrated Coastal Management Policy of 2003. In tandem with ICZM, various government initiatives were undertaken by the National Environment Management Council under a programme known as Tanzania Coastal Management Partnership. Daffa's (2011: 60–61) review of the institutional and legal framework for fisheries identified a number of laws and several gaps in the governance of coastal resource such as weak institutions, collaboration and exchange of information, insufficient capacity of the authorities, lack of involvement of financial institutions, and limited capacity of business compliance with changes in laws.

The overall institutional framework for management of coastal resources in Tanzania comprises several items of legislation (see details in Katikiro et al., 2017) and many different actors and institutions – leading to conflicting and unnecessary overlaps (Gustavson et al., 2009). Different line ministries have applied their powers towards coastal resources, such as the Division of the Environment of the Vice-President's Office, the National Environmental Management Council, which is largely a watchdog for compliance, sectorial ministries such as the Ministry of Livestock and Fisheries, the Ministry of Natural Resources and Tourism, the Ministry of Energy, as well as local government authorities. Currently, the ministry responsible for overall management and coordination of this sector in Tanzania mainland is the Ministry of Livestock and Fisheries Development through the Department of Fisheries Development.

Mangroves and coral also represent an ecosystem of ecological and economic significance for Tanzania. For years, mangroves were managed as forest, but this did not prevent their over-exploitation by coastal communities (Semesi, 1988, 1992). Although the Tanzanian government has maintained the protected status of mangroves as territorial reserves, it has largely failed to manage them as well as it has managed other forest reserves. Placing the management of mangroves under forestry makes it difficult to handle coastal resources holistically. Unlike mangroves, coral reefs which support diverse marine ecosystems in Tanzanian waters, including over 500 species of commercially important fish and invertebrates, are regulated through fisheries regulations, and especially the Fisheries Act of 2003 and the Marine Parks and Reserves Act of 1994.

Mtwara Rural District

Our study was conducted in Mtwara Rural District, located in southeast Tanzania. The District has a population of 228,000 inhabitants (Tanzania National Bureau of Statistics, hereafter NBS, 2013), a population density of 57 people per km^2 (NBS, 2012) and covers an area of approximately 4,000 km^2. Table 6.1 shows the total number of registered fishers in the six coastal villages of the eight selected in our project, as reported in the 2018 Frame Survey. In Mtwara Rural District, fishing is one of the top three reported livelihood activities, after farming and business (see Kweka et al., 2019 for details) and is estimated to account for 12% of economic activity in the District (URT, 2018). Communities in this area face several challenges associated with fishing activities, including illegal fishing practices such as dynamite fishing and the use of beach seines, both of which destroy corals and the sea bed.

Table 6.1 Registered fishers and fishing gear in Mtwara Rural District.

Village	Number of fishers	Traps	Hooks and lines	Nets	Spears	Beach seines	Long-line hook	Fishing nets
Msimbati	171	94	9	-	-	39	-	13
Namela	113		42	266	2			
Msanga Mkuu	239	26	-	256	10	-	13	
Mgao	200	5	32	23	21	-	-	-
Mkubiru	236	7	8	392	37	-	-	-
Kisiwa	62	6	60	-	-	9	1	-

Source: Mtwara Rural District Frame Survey, 2018.

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Simpler partnership: The Mnazi Bay-Ruvuma Estuary Marine Park

Background

In Tanzania, marine protected areas (MPAs) are classified into two types: marine parks (where extractive and non-extractive activities are allowed) and marine reserves (no-take areas where extractive activities and disturbance are strictly prohibited). Currently, there are three marine parks in Tanzania – Mafia Island Marine Park, the Mnazi Bay-Ruvuma Estuary Marine Park (MBREMP) and Tanga Coelacanth Marine Park (TACMP) – and fifteen marine reserves, all operating under the Marine Parks and Reserves Unit (MPRU), which is a semi-autonomous body under the Ministry of Livestock and Fisheries Development and responsible for the overall management of MPAs in mainland Tanzania. A summary of the main characteristics of MPAs is provided in Table 6.2. Despite having a territorial sea of 32,000 km^2, Tanzania has gazetted only 2,173 km^2 as MPAs. This is relatively low when compared with 40% of the terrestrial area that has been declared as wildlife and/or forest protected area (URT, 2014).

Table 6.2 Marine protected areas of mainland Tanzania.

Type	Name	Location	Size (km^2)	Year established
Marine parks	Mafia Island Marine Park	Mafia District	822	1995
	Mnazi Bay-Ruvuma Estuary Marine Park (MBREMP)	Mtwara District	650	2000
	Tanga Coelacanth Marine Park	Tanga and Muheza districts	554	2009
Marine reserves	Dar es Salaam Marine Reserve System North: Bongoyo, Mbudya, Pangavini, Funduyasini	Dar es Salaam Region	350	1975
	South: Kendwa, Inner and Outer, Inner and Outer Sinda		58	2007
	Mafia Marine Reserves System – Nyororo, Shungimbili, and Mbarakuni	Pwani Region	21	2007
	Tanga Marine Reserves System-Ulenge, Kwale, Mwewe, and Kirui	Tanga Municipal Council and Mkinga District	52	2010
	Maziwe Marine Reserve	Pangani District	2.6	1975

Source: Francis and Machumu (2016)

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Protection of marine biodiversity in Tanzania is of great significance because the ecosystems found therein are of high natural and socio-economic value and are currently facing a range of threats. Many people along the coast and in hinterland areas are highly dependent on the goods and services provided by marine ecosystems such as fisheries, tourism, and coastal protection from storms. These ensure livelihoods, food security, well-being, and cultural values. Increasing human activities, including ongoing exploration of natural gas and oil in offshore fields, are putting these ecosystems at significant risk. As natural gas exploration started to expand, communities within the marine park villages felt that the presence of such economic activities had not yielded the expected benefits. Key informants also mentioned lack of compliance with conservation regulations by gas companies such as discharging wastewater into the sea on several occasions (CRKII12032018). While conservation and gas extraction were expected to co-exist, this model was never operationalized. Besides gas exploration activities, the marine ecosystems in Tanzania, like in many regions of the world, face a myriad of stressors including destructive fishing practices (with dynamite fishing), over-fishing, rapid population growth, growing markets, and increasing coastal development (Berdej et al., 2015).

History, actors, and networks

After the Mafia Island Marine Park, MBREMP is the second one that was established in Tanzania covering an area of 650 km^2, of which 450 km^2 is land. The remaining 200 km^2 are marine areas, including mangroves, coral reefs, sand dunes, seagrass, and pristine sand beaches. It was established in 2000 through what was supposed to be a consultative process that involved several stakeholders, including representatives of local communities, district authorities, the Ministry responsible for natural resources, scientists, and NGOs (Table 6.3). This process began in 1998, but already in 1995 initiatives had started with a view to protecting biodiversity in the area currently occupied by MBREMP. These initiatives also led to the production of a report with recommendations to the government of Tanzania to consider the area as a priority for the designation of a marine park (Gawler and Muhando, 2004).

Prior to the establishment of MBREMP, ecological and social assessments were carried out to gather data on existing conditions of biodiversity and the socio-economic profiles of communities in this area. Most of these surveys took place between 1996 and 2000. These surveys offered baseline information that could be used to develop a management plan for the Park (Tortell and Ngatunga, 2007). The appraisals of the surveys showed that the area supports a complex and diverse system of coral reefs, mangroves, and seagrass beds. They also indicated a high degree of dependence on marine resources for the local communities living in the area and that a majority of those communities were economically poor, with limited livelihood options besides fishing (Malleret, 2004).

As with all marine parks in Tanzania, MBREMP is state-controlled. The main implementing entity is the Park management under the supervision of a warden-in-charge. The team for implementing its operational activities includes wardens and park rangers, who execute various duties including enforcement, livelihood enhancement, research and monitoring, and environmental education. They are also responsible for day-to-day administrative tasks, including human resource management and accounting. Although the stated philosophy of MBREMP is that it should be community-driven, the reality is quite different. Local community members are supposed to be represented in Marine Park activities through village liaison committees and the MBREMP Advisory Board. Nonetheless, the mechanisms of community representation remain vague and not functional. As a result, power seems to reside mostly in the Park authority. In our survey, 57% of respondents said that the government, which in this case has vested power in the Park authority, is the only stakeholder with the sole responsibility of managing coastal and marine resources. Ninety-two per cent of survey respondents explained that they were not involved directly in any activity or committee related to natural resource management.

Table 6.3 Main actors in MBREMP and their interests and obligations.

Actor	Interests and obligations
Park authorities	Conservation of marine biodiversity and enhancement of local livelihoods; Governance.
Local government	Staff of the Marine Park, and village governments: Issue fishing licences; Collect revenue from fishing and other resources.
Villages in the marine park	Right to access and use the resources; Village liaison committees work with the Marine Park to protect the resource.
NGOs	Work with Marine Park and communities, or other partners in the Marine Park; Keep community involved in marine conservation activities; Lobbying and advocacy: financing, education, awareness.
Tourism business and other private companies	Extraction, profit, corporate social responsibility, comply with Marine Park rules.

Source: authors

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Figure 6.2 shows the changes in the network of actors involved in MBREMP in five periods (1995–1999, 2000–2004, 2005–2009, 2010–2014, and 2015–2018). The number of actors has increased, and new actors with different interests have emerged. While the Rural Integrated Project Support Programme was the main actor in the period 1995–1999, in 2000–2004 a number of local and international NGOs and academics got involved, mainly with the aim of providing technical expertise. In 2005–2010, a larger number of business actors entered the network.

The relationship among actors and how these have influenced the objectives of MBREMP has not been well documented so far in the literature. This mapping exercise tells a story of lack of stability of MBREMP's management as it depends on the funding from different, short-term sources. We also observe that there is a lack of structure in the working relationships between key actors. For example, there are no regular meetings between and among resource users (local communities) and tourist/hotel operators. Village liaison committees and other voluntary groups such as honorary rangers interact with the Marine Park on an ad hoc basis. Each group tends to work on their own. In the past, however, it was thought that they could be meeting regularly for feedback and planning, as remarked in one of the FGDs:

> Residents were invited to attend several meetings organized by the Park management. The initial arrangement was that our Liaison Committee, which started with eight members [they are now twelve], would meet with MBREMP after every four months. The last time we met was in 2015 and there was only one meeting! (FGD1)

Current operation of MBREMP and relations between actors

The operation of MBREMP continues in line with Tanzania's commitment to meet Aichi[2] Target 11, which called for the protection of at least 10% of coastal zone by 2020 (Thomas et al., 2014). Currently, MBREMP is implementing its action plan, which entails preserving marine and coastal biodiversity as well as ensuring the sustainable development of fisheries in line with its General Management Plan (URT, 2011). Through the MPRU, the government is responsible for financial and institutional support. This, however, does not curtail MBREMP from seeking financial assistance from other agencies, including international conserva-

2 In 2010 Parties to the United Nations (UN) Convention on Biological Diversity (CBD) agreed to reduce the rate of biodiversity loss within a decade by achieving 20 objectives that are commonly known as the Aichi Targets. Target 11 requires that biodiversity conservation be based on measures of ecological integrity that result from an ecosystem approach to management (retrieved from www.cbd.int/doc/decisions/cop-10/cop-10-dec-02- en.doc).

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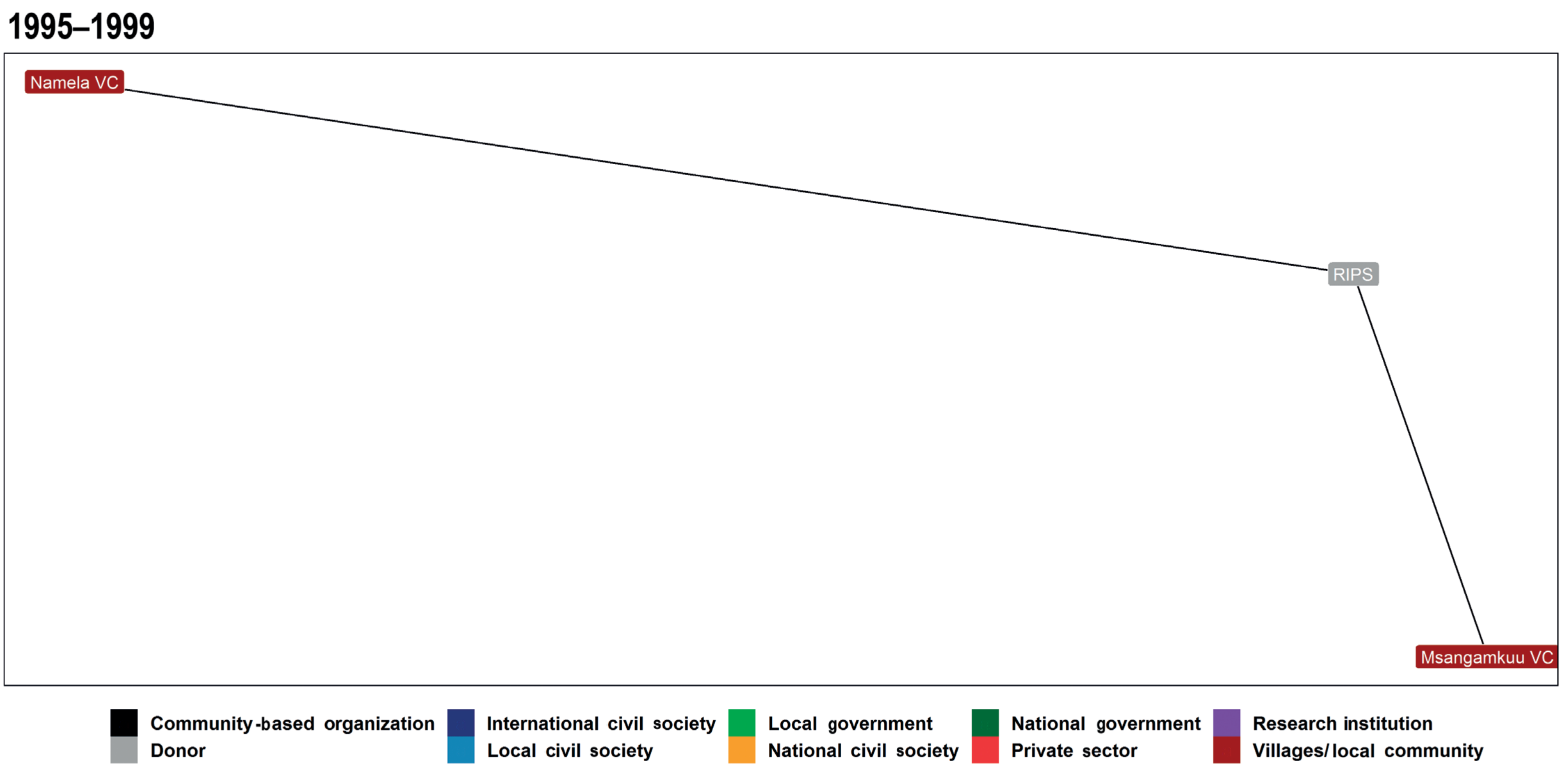

Figure 6.2 Actors and their networks in four selected villages in Mnazi Bay-Ruvuma Estuary Marine Park (1995–2018). Source: Elaboration by authors.

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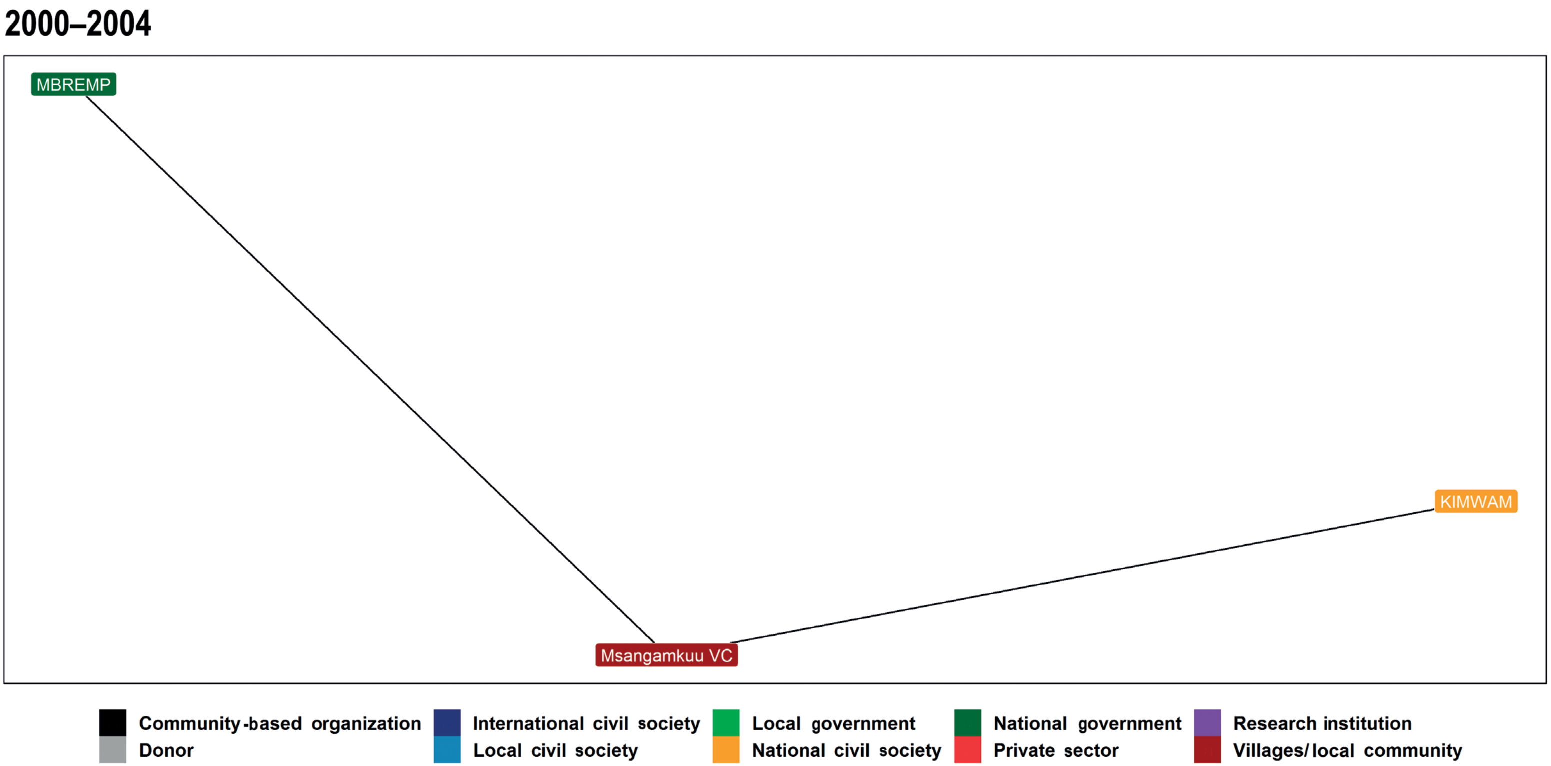

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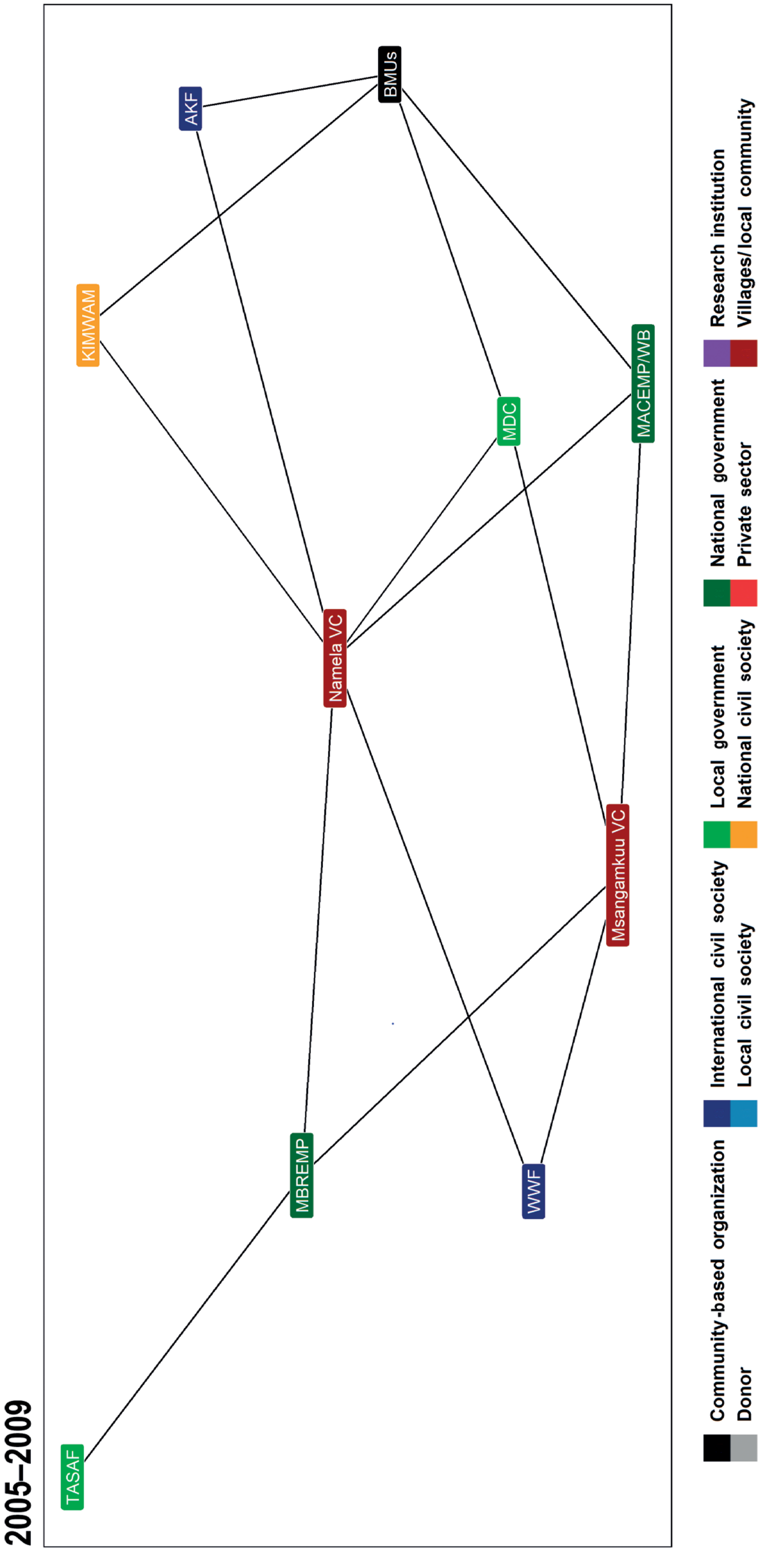

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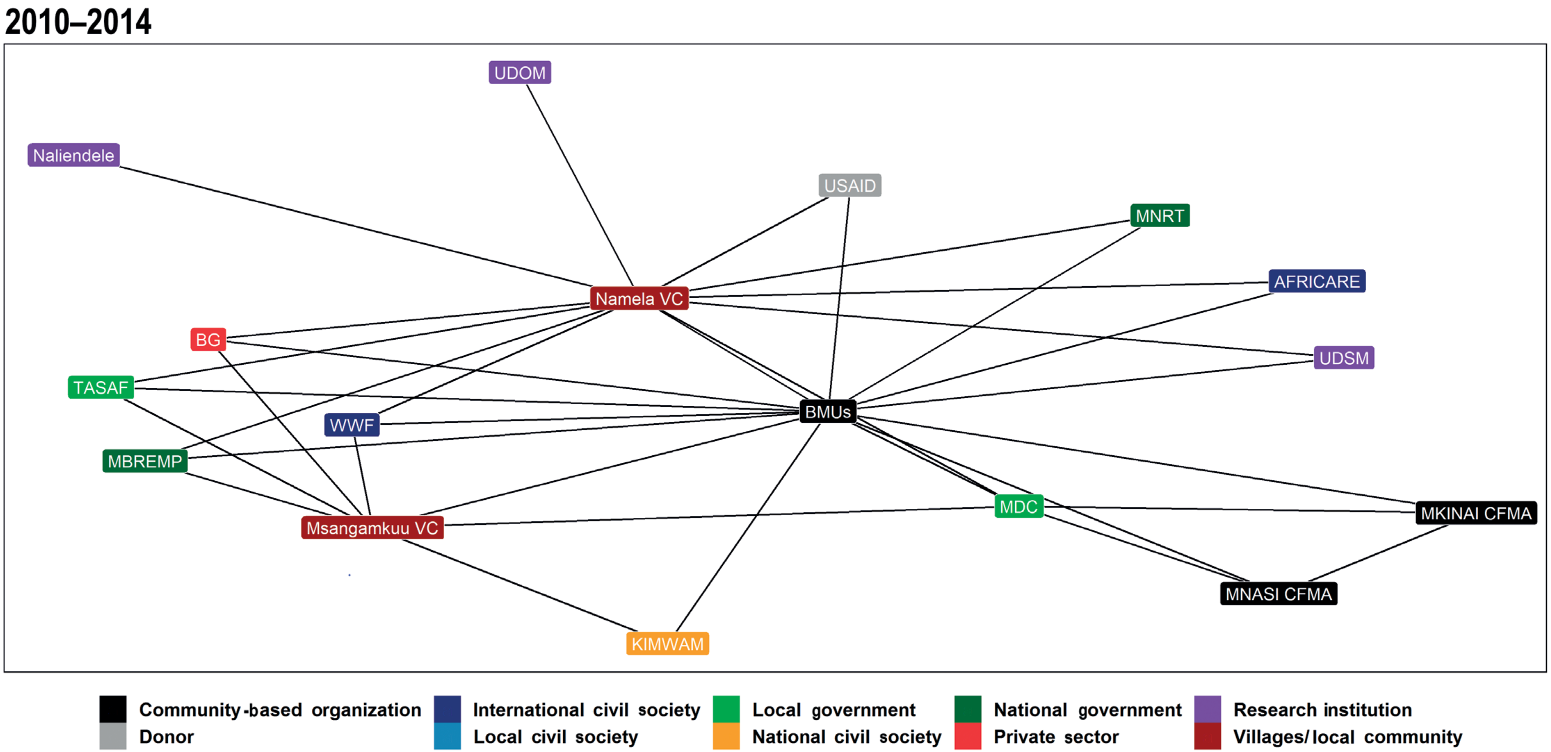

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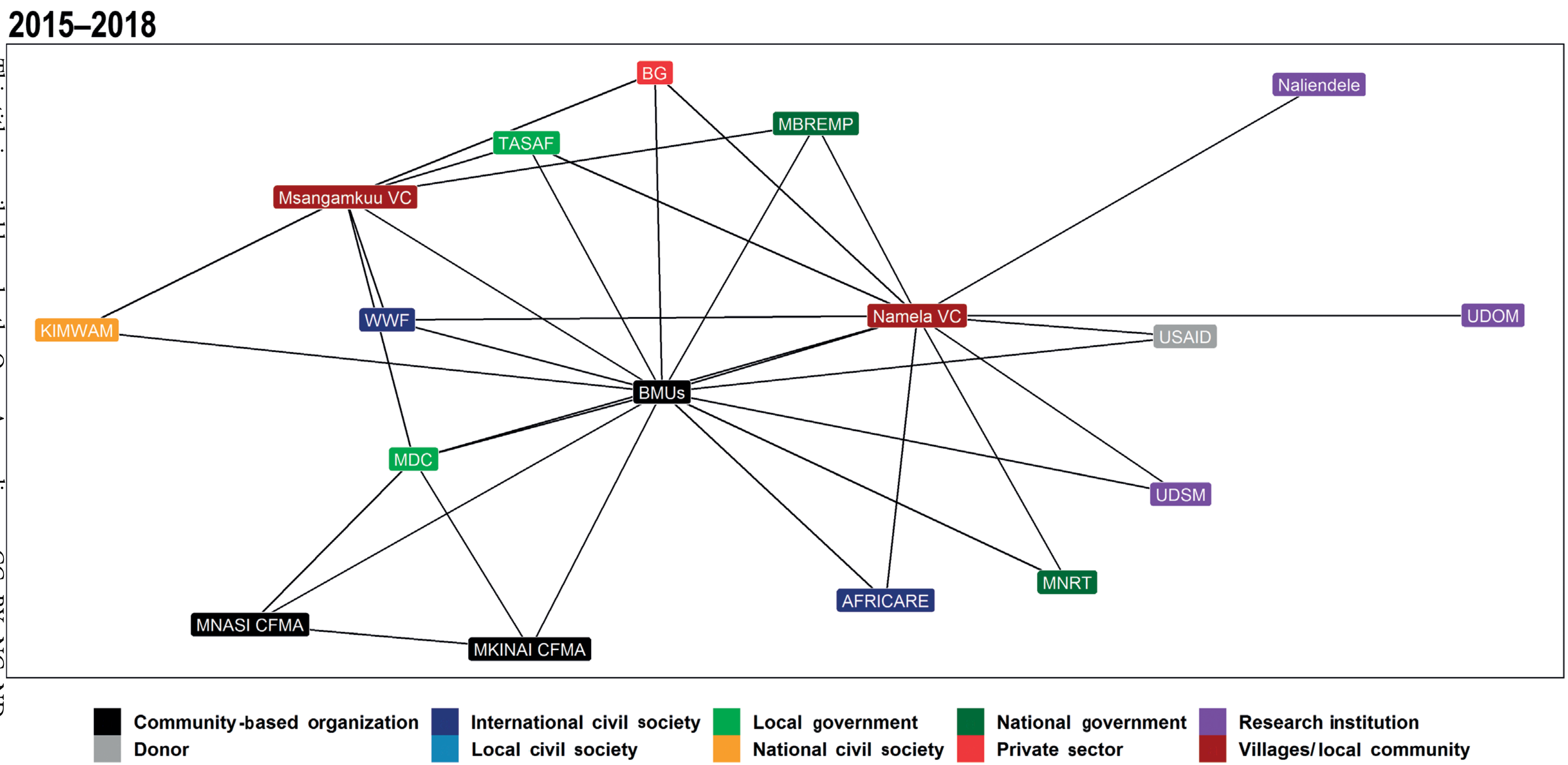

Figure 6.2 continued.

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tion organizations and the United Nations Development Programme. Since the end of donor funding for MBREMP, a lack of adequate funding has been restricting the proper implementation of its activities. Much of the management strategy outlined in the General Management Plan has not been effectively implemented (National Audit Office, henceforth NAO, 2018). Moreover, the General Management Plan itself has not been reviewed despite the fact that there should be stakeholder consultative meetings to review and update it every ten years.

In the context of limited financial capacity and a limited budget from the government, some activities such as regular patrols to ensure compliance on resource user extraction activities, as well as awareness raising activities and environmental education, have decreased. This in turn has consequences on previous efforts undertaken to ensure that MBREMP meets its conservation and livelihood enhancement goals. A recent institutional performance audit carried out for the MPRU indicated lack of safeguards (NAO, 2018), irrespective of financial constraints. Moreover, there has been a resurgence of illegal harvesting activities, conflict, and lack of trust between MBREMP and various stakeholder groups. These challenges are increasing as it lacks funds to conduct regular meetings with the communities to iron out misunderstandings and conflicts, and to work towards mutual cooperation. Given this situation, many villagers are complaining that MBREMP has not performed according to their expectations (see details below).

Several other tensions characterize the relations between MBREMP and its stakeholders. One of these tensions is between MBREMP and gas companies since the latter operate through NGOs rather than government to achieve their corporate social responsibility goals. This has led to little involvement or direct support for MBREMP, although other companies such as Maurel and Prom and Tanzania Petroleum Development Company work in direct contact with the communities in Msimbati and Madimba, providing support in terms of social services (Kweka et al., 2019).

The National Environmental Management Council and MBREMP are required to monitor the activities of these companies in relation to pollution. During a participant observation at a meeting of councils, it became very clear to us that there is also tension between MBREMP and the District authorities. While the District issues licences to fishers and collects taxes, MBREMP tries to limit the number of fishers in order to restore the fish stock. The presence of these contrasting objectives – on the one hand the District's efforts to support livelihood and income-generating activities, and on the other hand MBREMPs' chief goal of promoting conservation – creates internal tensions.

In a broad sense, lack of appropriate strategies for information sharing, coupled with little trust, has resulted in a poorly cooperative environment among actors. Our field research and interviews with key

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informants suggest that there is information mismatch and leakage on patrol as well as on enforcement activities between MBREMP and other actors. Moreover, community members complain that the Marine Park often violates the agreement to include village liaison committee members in patrol activities. At the same time, MBREMP officials complain of a lack of trust due to the perception that the police seem to circumvent the community and side with the culprits of illegal fishing. Police are also blamed for their reckless handling of culprits, including instituting charges in a way that are eventually quashed during court hearings, as highlighted in a statement by a MBREMP officer: 'Villagers will seize illegal fishers and take them to the police but in a couple of days they will see these people walking free after paying a "peanut fine". This is the reason villagers decided to act themselves' (CRKII137160).

While it is clear that MBREMP currently holds the power when it comes to the governance of the Marine Park, other actors had a significant influence during its establishment. For example, NGOs – especially the Southern Zone Confederation for the Conservation of the Marine Environment (SHIRIKISHO) – played a major role in sensitizing community members to the importance of conservation of marine biodiversity. The role of SHIRIKISHO in working to stop dynamite fishing is indisputable (Katikiro and Mahenge, 2016). This organization is also reported to have played a key role in enhancing mutual understanding and in conflict resolution, particularly for villages such as Mkubiru, Nalingu, and some parts of Msimbati, which had been strongly resisting the operations of MBREMP. In the past, Kikundi Mwavuli kwa Wavuvi Mtwara (KIMWAM) and SHIRIKISHO worked with MBREMP even though the terms of the collaboration were not clear since they had been based on non-binding agreements. Some of these agreements are reported to have been often violated, leading to further misunderstandings that break trust and foster conflict. Interactions between the Park authority and community members are also known to have been weak due to past failures in meeting the promises made during the early process of establishing the Park.

Therefore, the lack of formal collaborative mechanisms between MBREMP and relevant actors is an important factor in explaining its troublesome operation. It spearheads conflicts of interest and causes unnecessarily strained relationships. In the past, working relations were still reasonable as they were largely built on incentives. For example, MBREMP could shoulder the costs of patrolling, and thus officials from other agencies could join in and be rewarded in the form of allowances. A lack of benefit sharing, particularly the supposed proportional distribution of gate-user fees with local communities, remains a problem in the current operation of MBREMP. Marine Parks and Reserves Unit regulations require that each park allocate 20% of

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their revenues to local communities. Collections at the MBREMP gates located at Msimbati and Kilambo have been low, partly due to lack of tourist infrastructure that could attract visitors to the Park. Despite low levels of collection, community members are demanding that the funds are given to their villages. However, the Marine Park puts all user fees collected into a common basket that is then disbursed by MPRU to local communities and local government agencies.

'More complex' partnerships: Beach Management Units

Background

The requirements for the establishment of Beach Management Units (BMUs) by local authorities as a tool to support fisheries management was stipulated by the Fisheries Act number 22 of 2003 (URT, 2003). These Units are established under the administrative structure of fisheries department at district level. According to URT (2003), a BMU is a group of devoted stakeholders in a fishing community whose main functions are the management, conservation, and protection of fish in their locality – in collaboration with the government. They started to be established in late 1990s in Tanzania following the decline of fish catch and fisheries conditions in Lake Victoria. In the 2000s, the government then introduced them nationwide. According to Kanyange et al. (2014), about 204 BMUs have been established along the marine coast of Tanzania.

The establishment of BMUs is also supported by the Fisheries regulations of 2009 which provide guidelines on the type of activities that BMUs should perform, as well as on how their structure should look. They are formed at the village level and can establish collaborative fisheries management areas (CFMAs) with other BMUs in the same ward. Regulation 13 requires that a BMU should be composed of representatives of resident communities. Essentially, BMUs are supposed to represent fishing communities in a co-management arrangement where different actors are brought together to share responsibilities (Kanyange et al., 2014). They are considered to be decentralized units for the management of fisheries resources (Ogwang et al., 2009). The establishment of BMUs was conceived as the best solution to tackle problems behind the decline in fish catches in coastal Tanzania, since it allows local communities to participate in resource management (Eggert and Lokina, 2010; Jentoft and Chuenpagdee, 2015).

In Mtwara, BMUs were first established in 2009 by the government through the support of Marine and Coastal Environment Management Programme, a project supported by the World Bank. In 2013, WWF started a project to strengthen the existing BMUs and introduced new BMUs in villages which did not have them. In order to strengthen the

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existing BMUs, WWF provided training on awareness and capacity building to BMUs leaders, assisted them in establishing the BMUs (election, data, meeting, records keeping) and provided funds for different activities. They also supported the creation of CFMAs.[3] There are three operating CFMAs in Mtwara Rural District, all set up with WWF support: MNASI (Msanga Mkuu, Namela, and Sinde Villages), MKINAI (Mgao, Kisiwa, Namgogoli, and Imekuwa villages), and MANA (Majengo, Naumbu villages). MNASI borders with MBREMP. As a matter of fact, part of the water area demarcated for MNASI is also part of the MBREMP, something that the two organizations will have to resolve, as the rules of fishery operation are quite different in the two institutional set-ups.

Structure of Beach Management Units

The structure of a BMU comprises the General Assembly, the BMU committee and three sub-committees. The General Assembly includes all registered members of a BMU and elects the BMU committee. As part of this process, a chairperson, vice-chairperson, secretary, treasurer and any other position that is identified by the BMU guidelines are supposed to be elected. The committee includes members that represent boat owners, fishing labourers, fish processors, gear makers, fish mongers and traders (Ogwang et al., 2005). Thirty per cent of BMU executive committee members should be women. However, we noted during fieldwork that there have been serious delays in conducting BMU general meetings due to poor attendance or lack of quorum. As a result, BMU committees are either elected by relatively few members or through members re-electing themselves. In one of the BMUs we researched, the incumbent leadership decided to take over the responsibility of running the BMU after several unsuccessful attempts to hold a meeting for the election of new office bearers. Moreover, some BMU leaders have been suspected of involvement in illegal fishing business:

> BMUs' supervision is not good. The BMUs' leaders can't educate me because they are also not perfect leaders. The BMUs' leaders need to be close to the people. They need to be educated to abandon dynamite fishing … There are a few people in the BMUs who do whatever they want. (CRKII2K2408)

Sub-committees are given the task of implementing various activities under the BMU committee. They include a patrolling committee, a finance committee, a planning committee, and a statistics commit-

[3] CFMA activities include: carrying out fish surveys, marking fishing grounds, mapping the water area that belongs to the CFMA, helping to manage the fish camps, and facilitating patrols.

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-tee.[4] In every BMU, the statistics committee is responsible for data collection. Trusted BMU members record data on fish weight, type of fish and where it was fished – as well as on various gear used in fishing. These sub-committees are in reality active only in BMUs where data collection is supported by conservation NGOs. In other BMUs, their operations are hampered by limited resources, and particularly a lack of weighing/measuring equipment.

Another role of BMUs is that of monitoring, control, and surveillance: they undertake patrols to control illegal fishing activities. However, patrols are normally carried out along the coastline and not in deep water. This is due to the fact that patrolling teams lack modern boats to execute their tasks. Moreover, BMUs are not supported by the majority of village members, which raises concern on the safety and security of patrolling teams. As a result, patrols are not conducted regularly.

Fisheries regulations require landing sites to live up to specific hygiene standards, and BMUs are entrusted to keep these and beaches clean. They are also responsible for the collection of fees from fishers. In the areas studied, membership fees and licence fees were actually collected. In fact, in order to obtain a fishing licence, the fisher must get an authorization from the BMU leader and pay a fee. Fees that are collected are supposed to be used for BMUs activities. The BMU fee of TSh 2000 was seen by many fishers as an additional and unnecessary cost to bear.

> I do not have a licence because … I need to go to the district office; the fare is 4,500 and in addition to paying 2,000 to the BMU and then the licence is 15,000. Then we have to wait until the officer comes to the landing site to give it to us. We need a letter from the BMU to get the licence and this is increasing again the cost … BMUs are not needed here. We can organize ourselves and protect from illegal fishing. (CRKII3M 10 March 2018)

Actors, roles, and networks

Table 6.4 lists actors, their roles and interests for the BMUs in our study area. Actors include local NGOs, such as KIMWAM and SHIRIKISHO. The former has been mainly supporting fishers to form an association and helps to access loans for buying boats and other fishing gear, while the latter has been pioneering the fight against dynamite fishing in Mtwara region. Other actors include the Aga Khan Foundation, SWIS-

[4] Some of their roles include: developing BMU management and development plans; prepare budgets; collect data on fish catch, value and gear; monitor, control and surveillance of possible illegal practices; cleaning of the landing sites; conflict resolution; authorization of fishing licences to BMU members within their jurisdictional areas; and collection of membership subscriptions (URT, 2003).

Table 6.4 Actors in Beach Management Units and their roles and interests.

Actors	Interests and obligations
Local communities (fishers, fish traders, mangrove cutters, cleaners)	Extraction and protection of marine resources Fishing activities Habitat protection Location and physical access to resources Conservation activities
Recreational users (site visitors, divers, boat cruisers, water sports, etc.)	Non-extractive use of marine resources Contribute to business and conservation efforts Habitat protection
Fish traders	Fish trade
Farmers	Crop cultivation and agro-forestry
Curio sellers	Direct sales to tourists
Seaweed farmers	Income generation from sales of seaweed
Fish farmers	Production and sales of farmed fish
Local government	Licensing fishing and fish trade
Central government	Regulation
NGOs (KIMWAM, SHIRIKISHO)	Promoting and supporting activities for the sustainability of marine resources Capacity building and environmental education Provision of loans
International NGOs (WWF, Aga Khan Foundation, SWISS AID)	Livelihood support Activities for poverty reduction Capacity building/training

Source: authors

SAID and Africare, which have supported various livelihood diversification efforts, such as fish farming and poultry rearing. Some of these actors are no longer working on the ground but may have shaped livelihoods in these areas.

Figure 6.3 shows a historical account of the networks that bind these actors, revealing first a switch from the presence of development partners to an increasing role of non-state actors, such as NGOs, business, and other civil society actors, and then a movement back to central state intervention. In general, it is clear that the number of actors has increased and that actors of different nature have become connected with the BMUs. Government and NGOs are the main actors who have been involved from 1994 to 2018, rather than those in BMUs.

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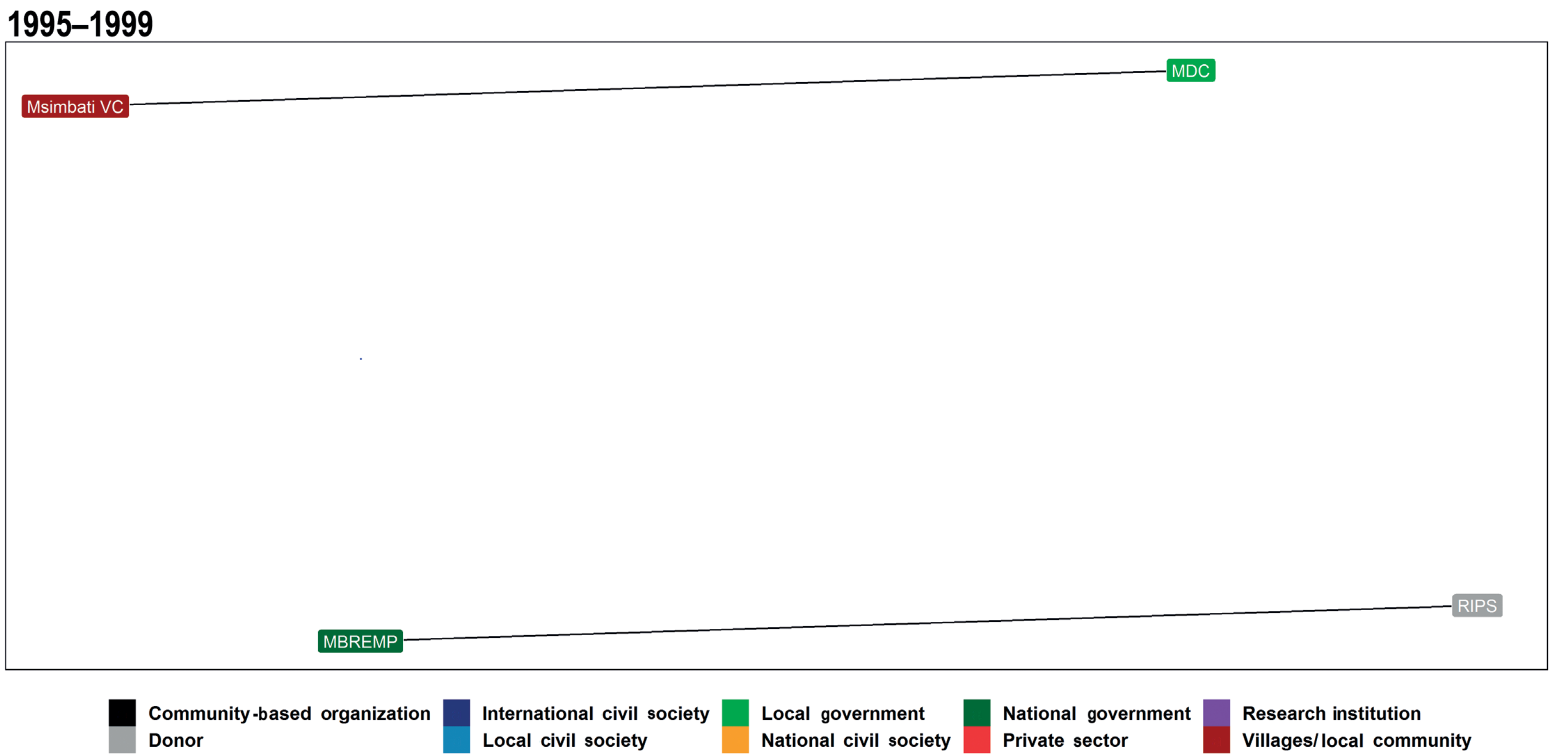

Figure 6.3 Actors in Beach Management Units and their networks. Source: Elaboration by authors.

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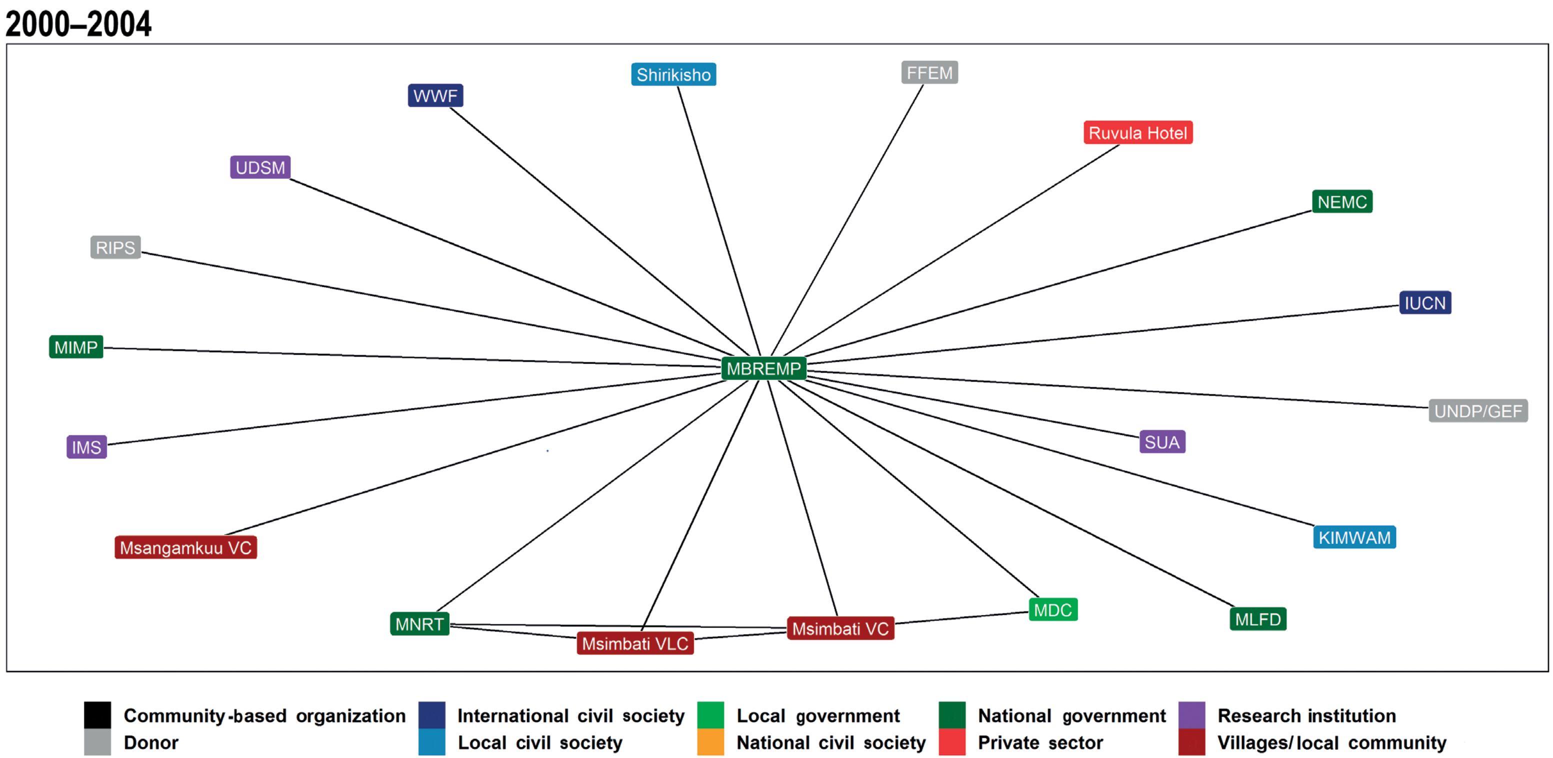

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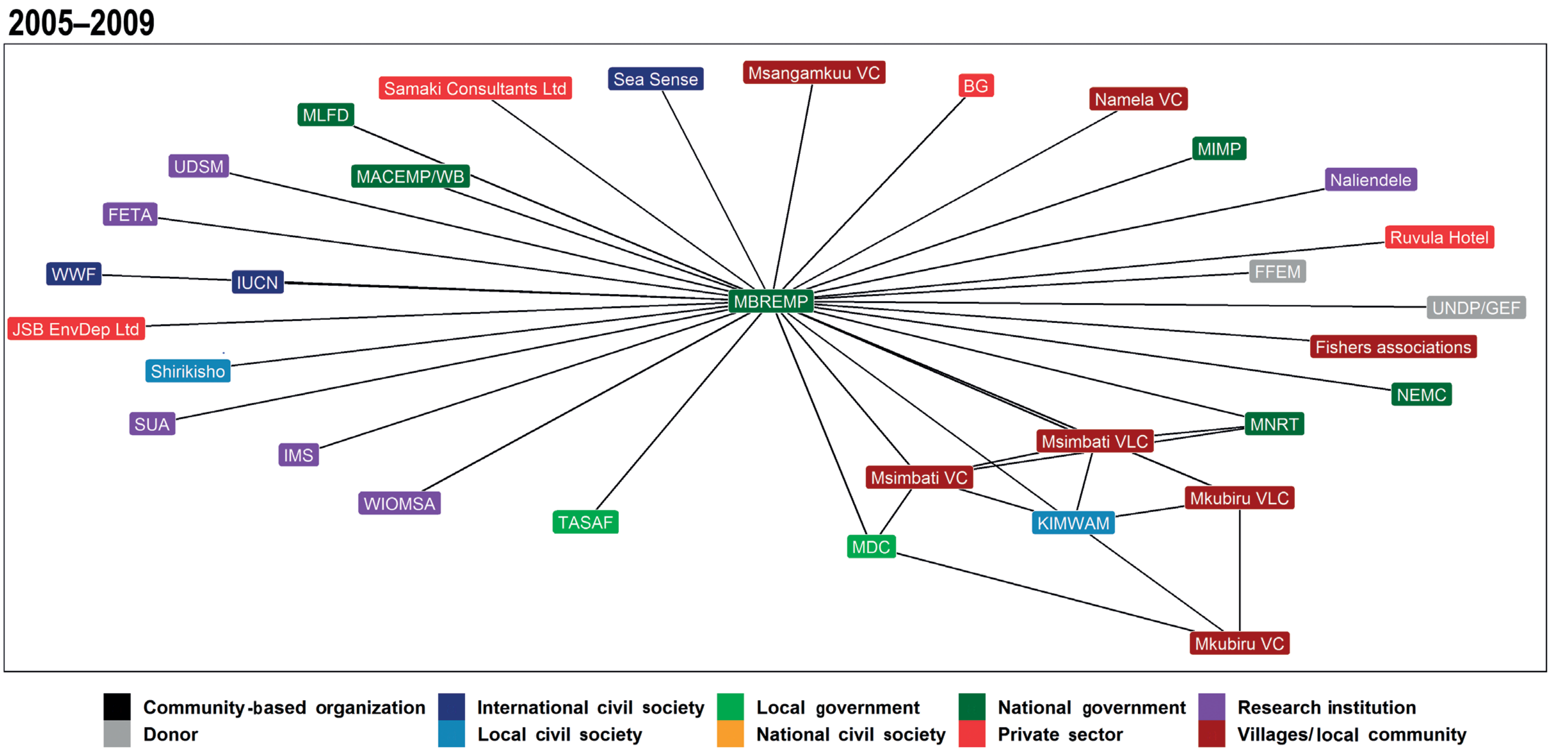

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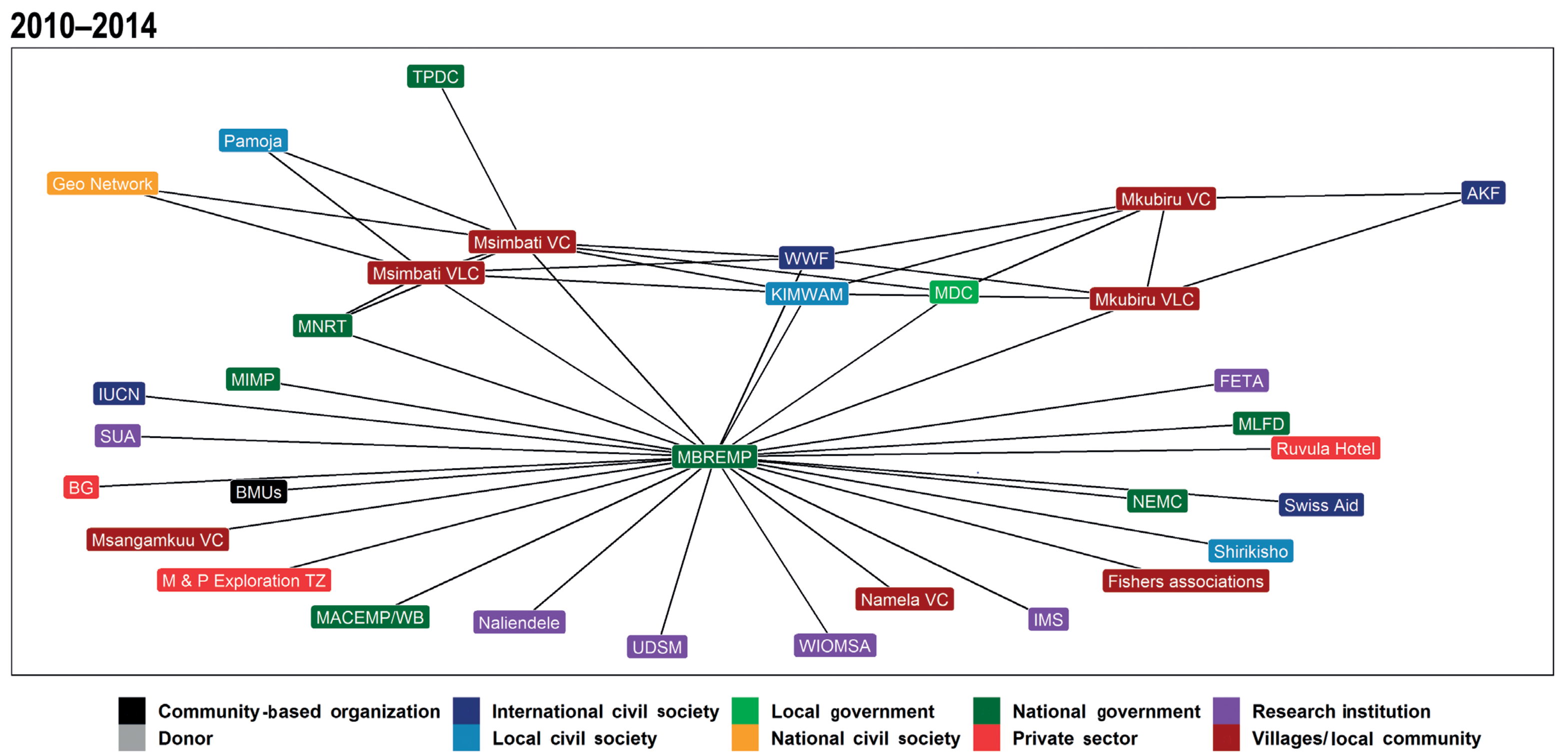

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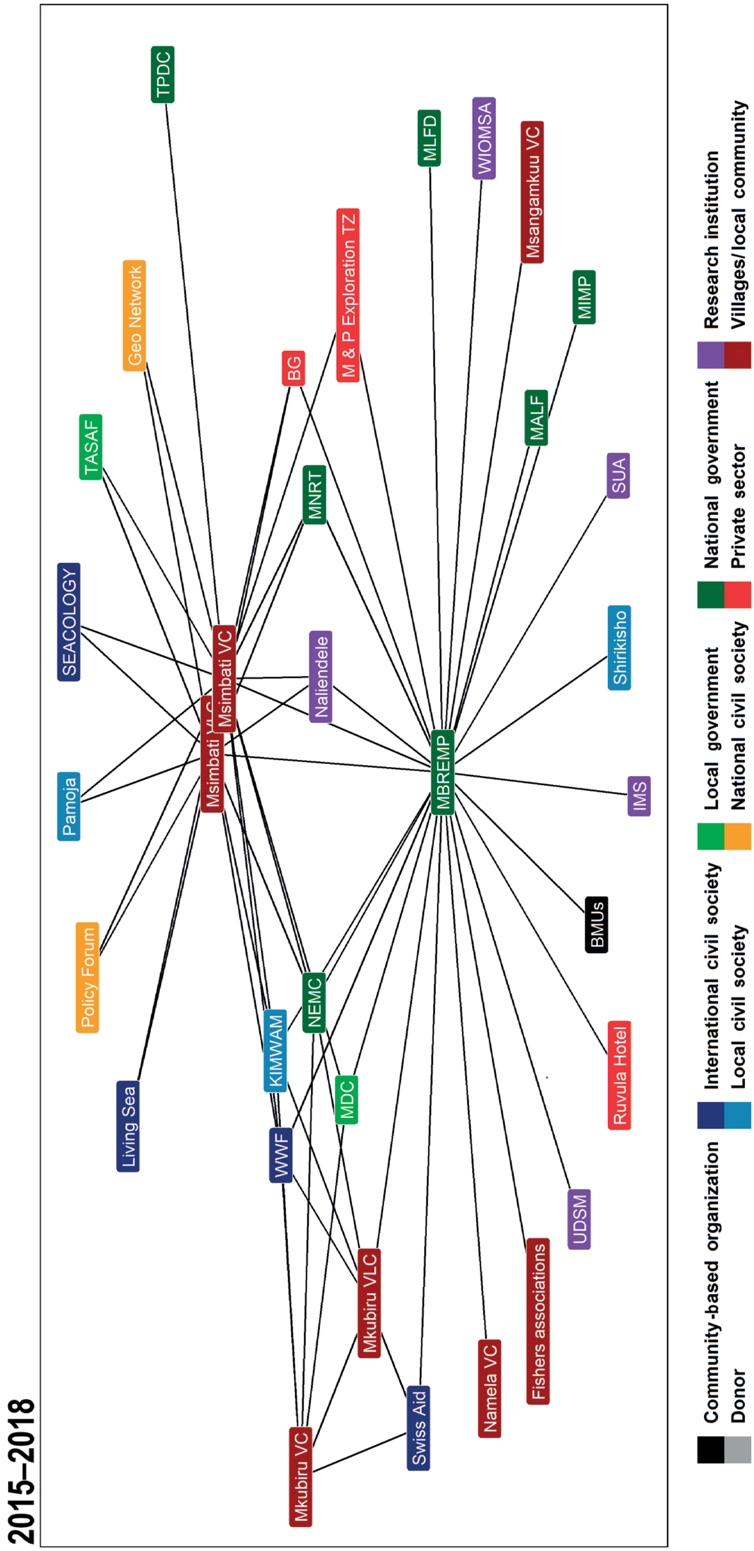

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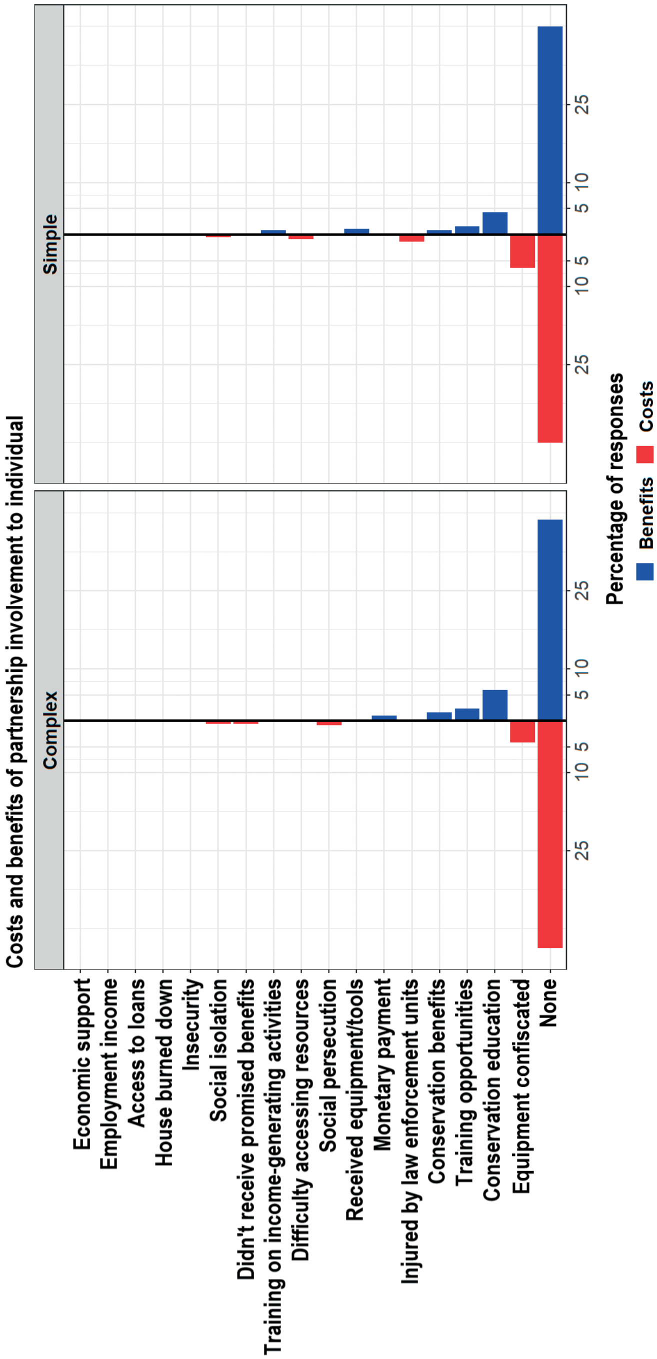

Figure 6.4 Reported costs and benefits of partnerships to individuals in coastal sites. Source: NEPSUS survey.

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Partnership performance

In this section, we analyse perceptions by local communities (as reported in our NEPSUS survey) of the performance of MBREMP (a 'simpler' partnership) and BMUs (a 'more complex' partnership) in relation to three main areas: (1) perceived costs and benefits of partnerships for individuals; (2) changes in livelihoods in the aggregate at the community level; and (3) the status of fish, mangrove, and corals. These reflections arise from responses to our survey data and relate to perceptions from local communities. Quantitative data on actual outcomes are available in Chapters 8 and 9 of this book.

Perceived costs and benefits of partnerships

Respondents were asked what they perceived as costs and benefits at the individual level that may be related to partnership activities. The results are displayed in Figure 6.4. The figure shows that most respondents reported neither benefits nor losses in both BMUs (more complex) and MBREMP (simpler). The few benefits mentioned included conservation, training opportunities, monetary benefits, and receiving equipment and training related to alternative income-generating activities. The losses mentioned include loss of fishing equipment, injuries by law enforcement, difficulty in accessing resources (in MBREMP, included as complex in Figure 6.4) and social persecution (in BMUs, included as simple).

Qualitative data coming from interviews and focus group discussions can provide more insights. Some of the benefits listed by BMU respondents, for example, suggest that they are doing relatively better than respondents in MBREMP (CR37KIICFMA090318RM). For example, they mentioned:

1. Increase value of the fish and the trade by compelling fishers to sell at the land sites;
2. Establishment of fishing groups and provision of loans to enable the purchase fishing nets;
3. Offering community services;
4. Increased trade; and
5. Increased cooperation;

At the same time, they also mentioned:

1. Lack of trust on use of funds raised by issuing fishing licences;
2. Lack of cooperation between Village Environment Committee and the BMU committee, with the former being more powerful;

3. Lack of prioritization of fishers in the BMUs; and
4. Lack of harmonization of laws, leading to conflict.

During our dissemination activities in these communities, it became clear that fishers do not actually play a major role in BMUs. They are not adequately represented in the development budget of the District Council and thus they lack access to loans. Currently, loans disbursed by the District Council targets women and youth as beneficiaries. These loans, however, are useful in contributing to welfare of communities due to their significant impact on income, asset ownership, and nutrition.

Perceptions on changes in livelihoods

Figure 6.5 shows the perceptions on changes in livelihoods in aggregate terms. In general, a significant proportion of respondents reported that livelihood quality has declined in both MBREMP and BMU areas. The former, however, seems to have a larger proportion of respondents reporting improvements. Still, the reasons behind improvement or decline in livelihoods are not related to the partnerships themselves, as almost all respondents related it to broader socio-economic change (source: NEPSUS survey).

The lack of support to livelihoods in both types of partnerships, and the fact that some fishers are used to dynamite fishing and do not have access to alternative fishing gear, are mentioned as the main factors limiting sustainability. Both partnerships depend on fines and fees from the fishers to support their financial needs; MBREMP is also supposed to collect user fees from tourists at the gate. At the time of our fieldwork, however, the two gates at Msimbati and Kilambo did not seem to be operational. Very few tourists visited the area and this situation is unlikely to change due to the presence of gas extraction in the area, which infrastructure makes the Park less attractive for tourists. In both kinds of partnerships, communities expected to benefit from livelihood diversification projects. In BMU areas, villagers reported that they were ready to form village community banking groups and waited for further guidance from BMUs and support from the NGOs, but these were not forthcoming. At the MBREMP gate, communities expect to receive some income as a result of the distribution of user fees, but this also remains to be an unfulfilled promise.

Figure 6.6 compares household wealth in BMUs and MBREMP. The figure shows that ownership of assets is very similar in the two areas, except that the housing characteristics in the MBREMP area are poorer. This is attributed by more respondents reporting to have houses made out of mud walls, earth floor, and grass roof in the MBREMP area than in BMUs (see also Chapter 10). This is partly explained by the fact

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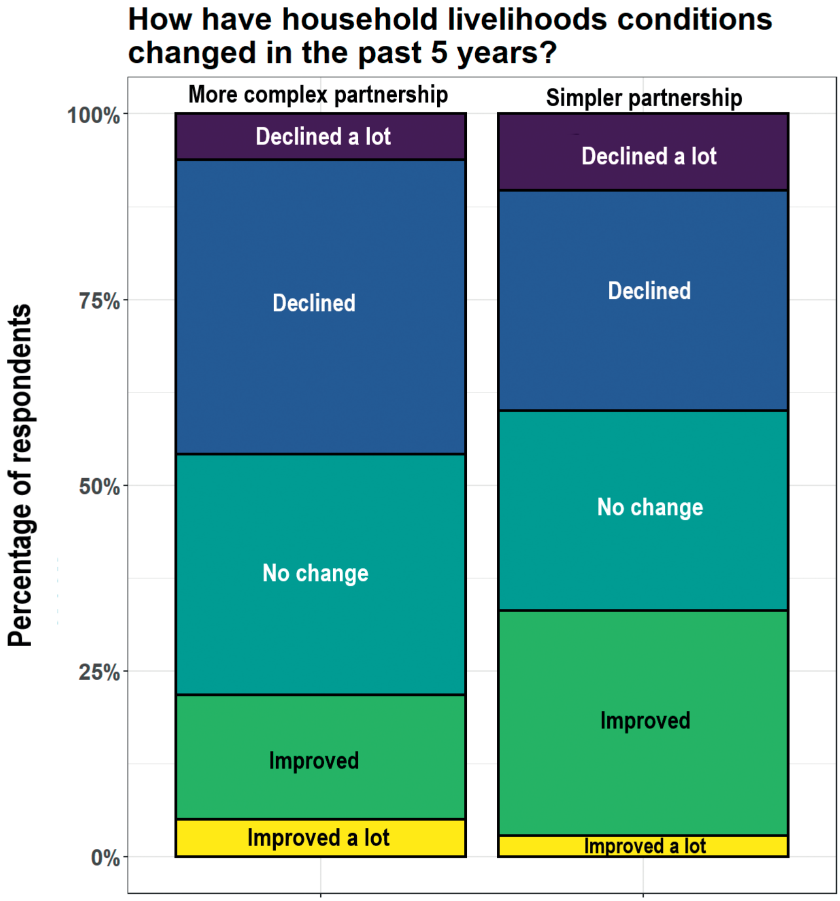

Figure 6.5 Perceptions of changes in livelihood conditions in coastal sites. Source: NEPSUS survey.

that households in BMU villages reported diverse livelihood activities including those with higher remunerations as compared to those in MBREMP. This uneven development observed in the two areas is also attributed to limited access to fisheries resources because of stringent conditions imposed by the Marine Park.

Perceptions on the status of fish, mangrove, and corals

In this section, we report local perceptions on changes in the ecological status of three types of coastal resources – fish, mangrove, and corals. In terms of the causes of perceived fish stock increases (see Figure 6.7), respondents most often referred to the recent campaign to wipe out dynamite-fishing activities. This is not connected with BMU or MBREMP activities, but to the increasing role of central government

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through various initiatives, including the recent formulation of multi-agency task force that aims at curbing destructive forms of fishing activities. The second reason most often mentioned is improving knowledge on conservation in the community, which seems similar in MBREMP and in BMUs, together with fewer people engaging in destructive activities to harvest marine resources, and increasing enforcement.

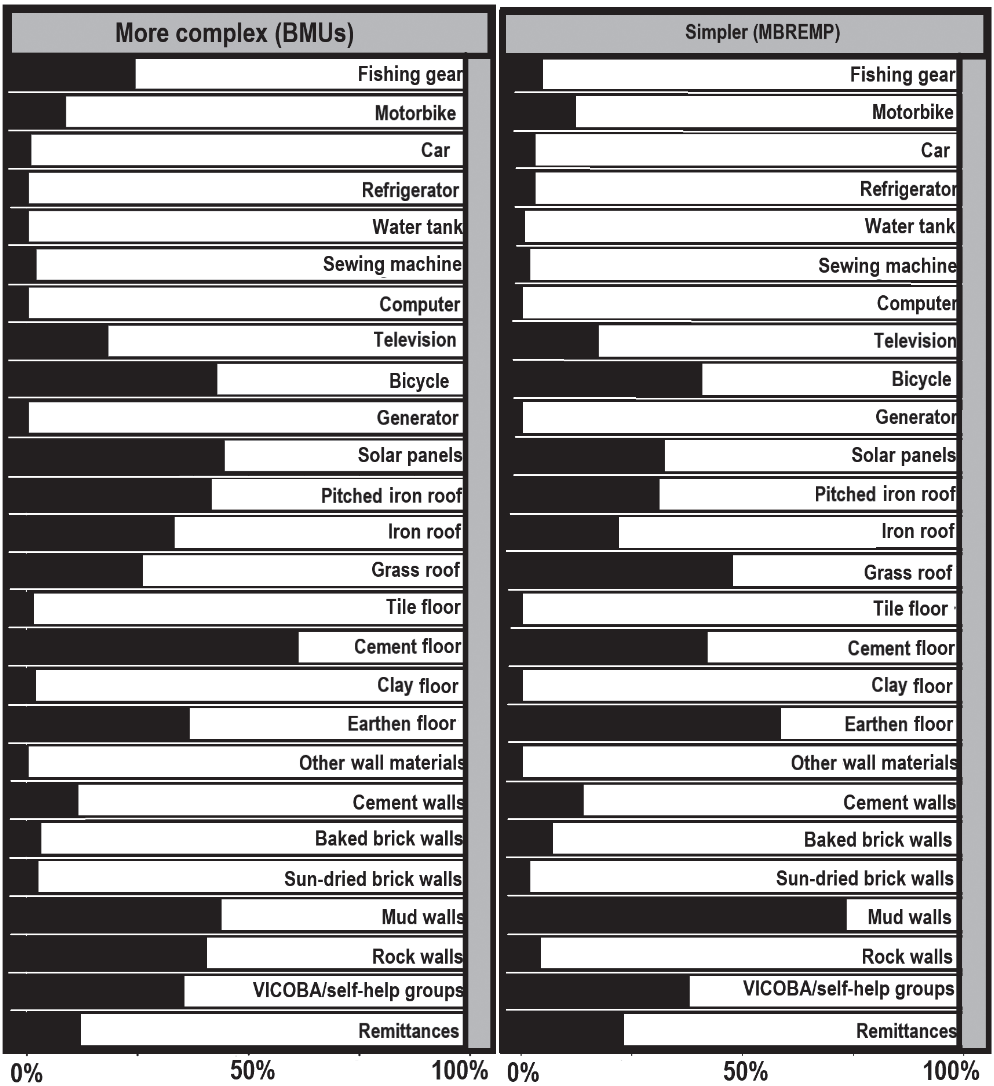

Figure 6.6 Household assets in coastal sites. Source: NEPSUS survey.

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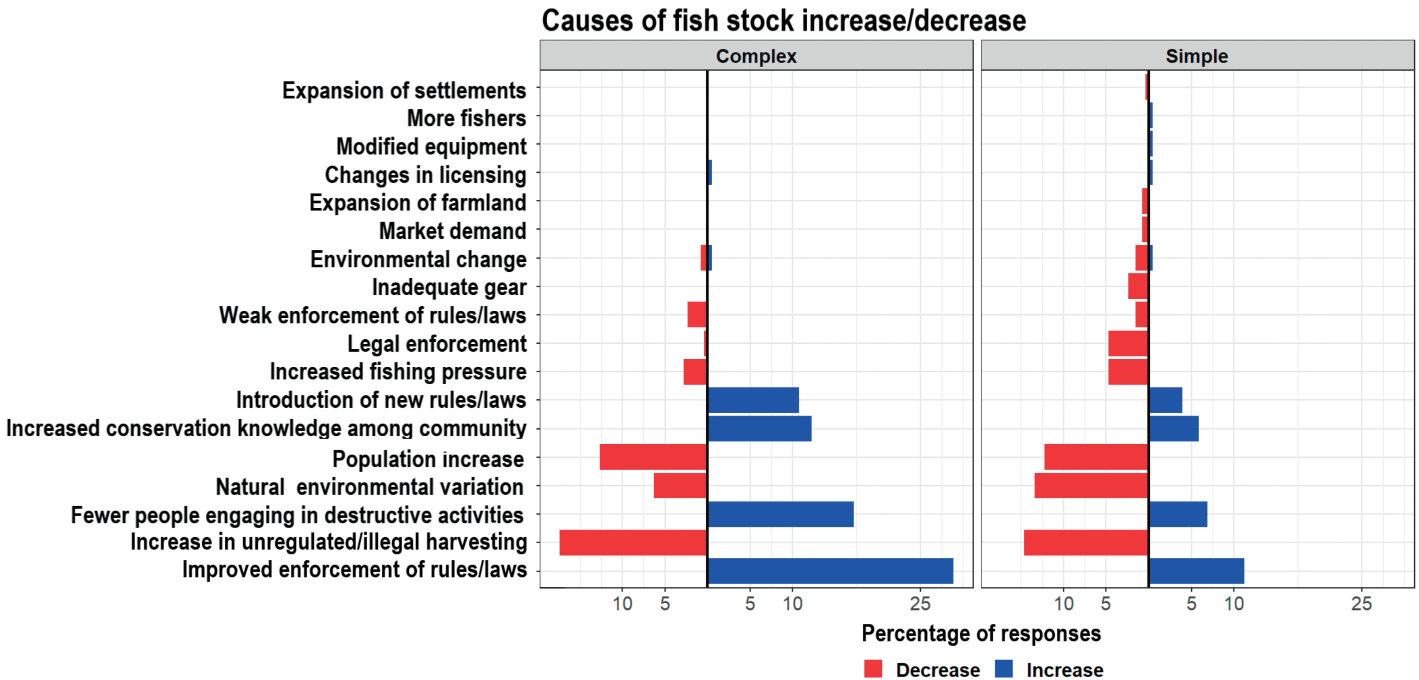

Figure 6.7 Perceived causes of fish stock increase/decrease reported by respondents. Source: NEPSUS survey.

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Most people in both MBREMP and BMU areas reported improvements in the stock of mangroves (see Figure 6.8) – and that mangrove use (as wood for firewood, charcoal or building materials for houses and fences) is decreasing. Probings during focus group discussions (FGDs) and key informant inteviews indicated that communities were also aware of the protection of coastal areas against coastal erosion and storms provided by mangroves. Respondents also mentioned that there are several issues that threaten biodiversity in mangrove areas: these are mangrove harvesting, clear-cutting, unsustainable fishing methods, harvesting of macro fauna, particularly edible shellfish, and erosion. Unlike other areas of Tanzania, such as Rufiji, there is very little large-scale conversion of mangrove forest to make ponds for shrimp farming in Mtwara. Nonetheless, there are some patches where mangroves were cleared for salt farms. However, recently salt production has become less remunerative, leading to the abandonment of many of these farms. It was revealed in FGDs that mangrove harvesting in MBREMP and BMUs is deemed to be sustainable, although there is a higher incidence of cutting of preferred species for firewood and building poles.

Interviews and FGDs indicate that there has not been much restoration of degraded mangrove sites. Most of the reported restoration programmes in MBREMP were the ones spearheaded by WWF, the Tanzania Social Action Fund (TASAF), and local NGOs, as well as by joint village efforts with a push from MBREMP and district government. These restoration programmes, however, do not seem to have instilled a spirit of stewardship towards mangroves – these efforts came to an end when the lead organizations stopped funding them.

Further information on the status of mangroves was elicited through oral histories. We asked elder members of the community to narrate patterns and resource user trend in mangroves over the years. One respondent remarked that there was serious mangove clearing in 2004–2005:

> Back in the early 2000s, the mangrove was harvested a lot. The area was opened and the degradation of the beach increased. This year we have TASAF who wanted us to plant mangrove and we asked for seeds and they brought us seeds and we planted in January 2018. Now the mangroves are in good condition. (KII20032018NM)

In relation to coral, Figure 6.9 shows that most people in both areas report improvements in its status, compared to five years before. Results from our interviews indicate perceptions that corals might have been damaged in the past because of the prevalence of dynamite fishing.

> Blasts – dynamite fishing has contributed a lot in fish decline. This is because blasts destruct corals which are habitats for fish and therefore causing massive death of fish in and near the corals. Dynamite fishing is a very destructive method of fishing though those who do it benefit within a short time because they get many fish in a short time. (KII21)

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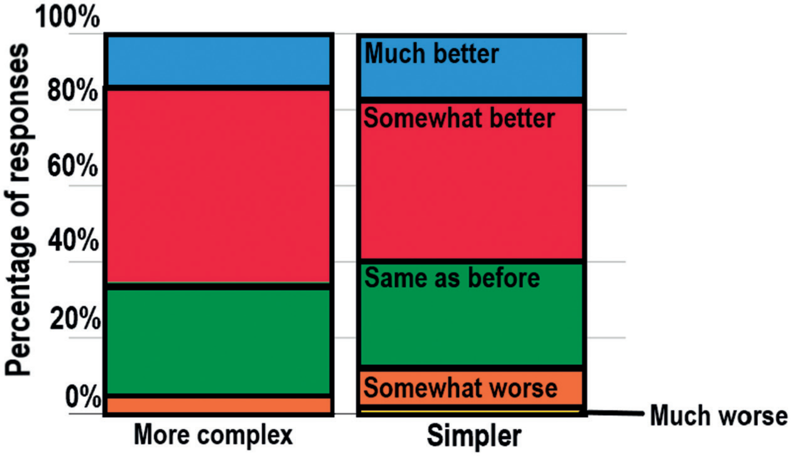

Figure 6.8 Changes in mangrove forest (2012–2017) reported by respondents in coastal sites. Source: NEPSUS survey.

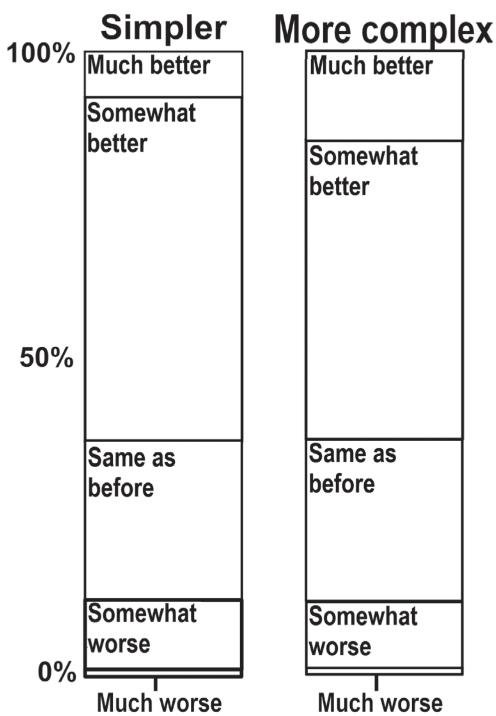

Figure 6.9 Changes in coral conditions in (2012–2017) reported by respondents in coastal sites. Source: NEPSUS survey.

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The status of coral is said to be better than in the past, but still not ideal, because degraded coral takes a long time to restore and there are places where dynamite fishing is still carried out, as noted by one respondent:

> In the 1960s and 1970s – there were very good corals and the ocean was good. The fish was available … In the 1980s and 1990s they started using poison and dynamite, which are destructive to corals, and fish became unavailable. In 2000, when the Marine Park people came, the ocean began to change again and became beautiful. It has become better but is still not the best. In some areas, people continue to destroy the ocean. There are corals that are continuing to grow but it takes time. Fish are now slowly coming back, following the 2017 anti-dynamite operation. (KIINN)

Discussion

Neither MBREMP nor BMUs seem to be working properly in managing coastal resources. The former is steered from above and has little contact with the communities. In marine conservation, and particularly in MPAs, engagement of diverse actors is critical and is often perceived to be an important attribute for enhancing participation and legitimacy (Scholz et al., 2004; see also Chapter 7). As is common in top-down governance of natural resources, the government of Tanzania is responsible for providing financial and regulatory incentives to attract partners towards conservation. In MBREMP, different actors seem to be aware of the objectives and possible areas for partnerships but lack a clear understanding on how this could be implemented for mutual benefit. The process of establishing MBREMP was marked by misunderstandings and lack of trust that contributed to conflict and hostility between different actors (Katikiro et al., 2015). This made some actors perceive that their values and position on marine resources were ignored resulting in a shift from support to opposition against the Marine Park.

Lack of clear objectives for the partnership and its implementation, as well as limited space for partners to bring in their resources, lead to unintended outcomes. While we found evidence on the perceived improved status of corals and mangroves, there were no clear explanations of whether this was linked to the operation of MBREMP or its partners in implementing conservation objectives. This suggests weaknesses in the configuration of the Marine Park as there are no mechanisms that could enable partners to bring their assets and skills to help deliver conservation goals. Indeed, local communities who are the main resource users have no clear channels through which they could bring their local knowledge, concerns, and interests to bear on the management of the Park. Increasing meaningful stakeholder participation in marine parks (MPs) is thus important to achieve conservation and development targets (Yates, 2014; Nenadovic and Epstein, 2016).

Previous studies (Sunderlin et al., 2005; Himley, 2009; Bennett and Dearden, 2014; Barrios-Garrido et al., 2019) have indicated tensions commonly occurring between conservation and livelihoods in MPs. This came out clearly as evidenced by increasing conflicts and resistance to conservation in MBREMP (Raycraft, 2019). Dependence on marine resources is still high, especially in seafront villages, and thus many villages still prefer to access areas that have been designated for conservation purposes including the core zones (no-take areas) of the Park. Balancing conservation and livelihood needs is crucial in addressing tensions and conflicts that might be created to perceived decline in livelihoods and associated opportunities (Bonsu et al., 2019).

The establishment of MBREMP was problematic and did not lead to a partnership with significant participation of local communities because the agenda was controlled by the more powerful actors (donors and the government). This led to a feeling of lack of ownership among local residents. Proper communication and accommodating of their needs would have helped to form a stewardship spirit. Although earlier initiatives leveraged NGOs to raise awareness, this was not effective as participation was mainly related to material incentives (per diem for participation). Such an approach has not led to sustained participation of local communities. When participatory elements remain on paper, both conservation and socio-economic outcomes are likely to be negatively affected.

Our study indicates an absence of shared influence across partners and that influence is still much vested with MBREMP, which remains solely responsible for the day-to-day activities of the Park, including fund-raising. Other partners have minor roles and are not necessarily the beneficiaries of the direct outcomes of conservation of marine biodiversity. Previous studies illustrated the importance of collaborative ties between partners (Sterling et al., 2017; Chen et al., 2019), a clear attribute that is missing. Understanding the values held by different groups of actors involved in a partnership is useful in establishing mechanisms that would facilitate their effective participation (Buchan and Yates, 2019). Communities perceive that they draw little benefit from MBREMP.

The BMUs have also had their share of problems, including poor methods of establishing alternative income-generating activities, unfulfilled promises and expectations, poor involvement and participation of local communities, and inadequate transparency. They have been mostly unable to stop illegal fishing practices and, when dynamite fishing was eventually (and for the time being) curbed, it was thanks to government action through anti-dynamite operations led by the District Commissioner. Still, other illegal fishing practices such as beach seine fishing are still taking place in BMUs.

Lack of community support has affected the effectiveness of BMUs more than in the case of MBREMP because BMUs depend on the community for implementing their activities. Poor or negative relations between BMUs committees and the local community have undermined the effort and commitment of committee members in executing their duties. In sum, relatively little has been achieved by BMUs so far. The only perceived achievements are linked to raising awareness on fisheries rules and regulations. Communities are aware on their illegal practices but lack feasible alternative options for their livelihoods.

Conclusion

The introduction of MBREMP and BMUs in Mtwara Rural District, Tanzania, does not seem to have yielded the expected outcomes of either. Both face governance challenges related to structural, financial, and participatory failures. Structurally, MBREMP has created village liaison committees which are not functioning adequately. They were only incentivized when NGOs had resources to involve them in building awareness, and even then they were seen by villagers as preaching instead of helping the local community own the process. While, in the setting up of MBREMP, the local community was involved, the process was then captured by the the central government and local elites. As for BMUs, their committees are functioning in parallel to the Village Environmental Committees and often clash with them and even with the village governments. Financially, both MBREMP and the BMUs are poorly equipped and the funds accrued from fines and fees are not enough to support alternative livelihood activities.

Communities generally perceive these partnerships as focusing on conservation and therefore see them as beneficial only as far as the ecological outcomes are concerned. But communities also see that these partnerships have not been successfully addressing their major social and economic needs, such as the provision of suitable fishing gear. The perceived upswing in fish stocks of late is actually deemed to be linked to the work of a special task force, not the operation of the BMUs or MBREMP per se. The decrease in coral and mangrove use for building is motivated more by other factors, such as broader socio-economic change, than by the presence of these partnerships. Lack of support for alternative livelihood activities and the possible return of dynamite fishing are still major challenges.

The structures of the BMUs and MBREMP need to be revised thoroughly to improve the actual role of communities and fishers in the governance of coastal resources. This could improve a sense of ownership and increase cooperation and trust. The benefits accrued from the income resulting from fees or fines must be transparent and shared broadly, no matter how small, as it would improve stewardship. Another important way to support fishers and limit the pressure on resources near to shore would be to facilitate access to boats and gear to allow them to fish in the deep sea.

The results presented in this chapter suggest that, at least in coastal resources, the overall complexity of partnerships does not seem to show significant differences in how their performance is perceived. Both simpler (MBREMP) and more complex (BMUs) partnerships have been facing major challenges and their livelihood and ecological impacts have been relatively minor, although comparatively better for BMUs than for MBREMP. This general lacklustre performance may be explained by the lack of proper participation from local communities, but also by the duplication of administrative structures that has led to confusion and conflict.

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Part III

Comparative Analysis

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7

The Legitimacy of Sustainability Partnerships in South-east Tanzania

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Introduction

In Chapter 1 of this book, we discussed how sustainability partnerships that seek to govern natural resources bring together different state and non-state actors with often diverse and competing interests. One of their chief concerns is to develop, gain, and manage legitimacy among different audiences and stakeholders because they cannot lean exclusively on the sovereign nature of the state to impart their authority (Bernstein and Cashore, 2007; Black, 2008). In this context, we understand legitimacy as the 'process where partnerships gain recognition and become accepted as a relevant alternative or supplement to government policy on a particular issue' (Glasbergen et al., 2007). In this chapter, we seek to contribute towards a better understanding of the legitimacy of sustainability partnerships from the perspective of local communities. We critically examine the factors that influence different kinds of legitimacy and examine whether the rhetoric supporting the presence of many actors in sustainability partnerships pans out in terms of perceived results – given that these actors may be of very different natures and pursue different objectives. We pay attention to how these partnerships operate rather than their 'ideal' institutional features. To do so, we examine and compare a selection of sustainability partnerships in south-east Tanzania (see previous chapters for details) that attempt to balance conservation and development goals in wildlife, forestry, and coastal resources. This creates a certain degree of overlap with some of the resource-specific material presented in Chapters 4, 5, and 6, but the analysis in this chapter is focused exclusively on legitimacy, and from a comparative perspective.

We empirically assess the legitimacy of selected sustainability partnerships in south-east Tanzania through two main lenses: (1) input and process legitimacy; and (2) impact legitimacy. We seek to answer three key questions on legitimacy: first, how do different kinds of sustainability partnerships develop, gain (or fail to gain), and manage legiti-

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macy in local communities? Second, what kinds of legitimacy do they seek and how? Third, which paths of legitimacy building and maintenance yield what kinds of perceived conservation and socio-economic outcomes?

Assessing legitimacy in the selected case studies

On the basis of the reflections arising from the literature – as discussed in Chapter 1 – we build and apply a composite indicator of legitimacy. First, we distinguish between input and process legitimacy on one side (based on a logic of procedural fairness),[1] and impact legitimacy on the other side (based on a logic of consequences). Second, we define a series of indicators and proxies to gauge the various elements of each more precisely. Third, we draw from a survey of local communities to score each indicator and reflect upon key informant interviews and focus group material to interpret these results. Fourth, we provide a simple aggregation measure that can assess the overall legitimacy of a sustainability partnership from the point of view of local *perceptions*. Due to space constraints, we do not attempt to measure legitimacy from the point of view of other actors and stakeholders (such as domestic and international NGOs or regional government).

Our findings are based on research conducted in twelve of the villages which featured in the larger NEPSUS project (New Partnerships for Sustainability). In this chapter, we examine only sites that have formed partnership agreements, as they are the only ones that can provide insights on their legitimacy. For wildlife, we examine data from two selected villages each in two Wildlife Management Areas (WMAs) in Rufiji District – Muungano wa Ngarambe na Tapika (MUNGATA), and Jumuiya ya Hifadhi ya Wanyama pori Ngorongo, Utete na Mwaseni (JIHUWANGUMA) (see details in Noe et al., 2017b, 2019; and Chapter 4). In the forestry sector, we examine four villages that have substantial community-based forest management (CBFM) activities in Kilwa District (see details in Mwamfupe et al., 2019; and Chapter 5). Finally, in the coastal resources sector, we select four study villages within Mnazi Bay-Ruvuma Estuary Marine Park (MBREMP) to cover all three main agro-ecological areas of the Marine Park (seafront, interior, and riverine). Moreover, we examine four villages that are part of two different Beach Management Units (BMUs). All coastal sites are in Mtwara Rural District (see details in Kweka et al., 2019; and Chapter 6). Data for the current analysis were drawn from four data sources: (1) a question-

[1] Although the existing literature has made a lot out of differences between input and process legitimacy, when examining our empirical data, we found this distinction somewhat artificial as, in many cases, elements of both overlaps.

naire-based survey; (2) key informant interviews; (3) secondary documents, such as relevant project texts, written agreements, minutes of partnership meetings, reports generated by the partnership project, and/or local government officials; and (4) focus group discussions (see details in Chapter 3).

For input and process legitimacy, we select the following perception indicators having in view a better understanding of issues of awareness, acceptance, participation, trust, transparency, and accountability – the basic building blocks of legitimacy:

1. *awareness* of the partnerships and related rules and access rights to a resource; this is important for examining the overall knowledge in the local communities that a partnership is indeed taking place and what rules and practices are entailed in the related activities; we argue that a higher level of awareness is a precondition for legitimacy;
2. *acceptability*, fairness, transparency, and clarity of rules and rights; we examine whether they are perceived as just and equal and argue that a higher level of acceptability indicates a higher degree of legitimacy;
3. *participation*; we identify the degree to which local-level meetings related to sustainability partnerships are attended; this alone does not indicate the quality of participation (as meetings could be attended because the actions of the partnerships raise contentious issues), but together with other indicators can signal better legitimacy;
4. *quality of community involvement*; we argue that better satisfaction with community involvement indicates better legitimacy; and,
5. *leadership performance*; this indicator is linked to the previous one but focuses more specifically on leadership and accountability.

For impact legitimacy, we selected indicators that could capture perceptions on:

1. the *socio-economic* impacts that the partnership has had at the household and community levels; the distinction between household and community impacts is important as we cannot assume that the two are necessarily moving the same way; we argue that improvements in both realms indicate a higher level of legitimacy; and,
2. the *environmental impacts* of the partnership in relation to stocks of forest, wildlife, and coastal resources.

Our composite indicator of legitimacy is based on (1) scoring the components of each kind of legitimacy (input/process and impact) through a points system that is linked to the assessment of intervals and averages of specific indicators; and (2) scoring the two main elements of legitimacy separately and then adding their scores to arrive at a total legitimacy measure (see Table 7.8 below for details).

Input and process legitimacy

Awareness of partnerships and knowledge of rules and regulations

Comparatively, a majority of survey respondents indicated that they were aware of the basic rules and regulations governing wildlife, forestry, and coastal resources. Specifically, a relatively large number of respondents expressed awareness of the restrictions imposed on protected areas (see Table 7.1). Within each sector, we noted several interesting findings.

In relation to wildlife, the results of our household survey show that a minority of respondents (32%) correctly held the view that once an area is reserved for a WMA it is no longer part of the village land. At the same time, a large number of respondents (about 82%) appeared to know the basic rules of wildlife protection. A significant number of the respondents (60%) noted wrongly that investors can embark on securing hunting rights without consulting the authority responsible for managing the WMA. Worryingly, a substantial proportion of respondents inaccurately held the view that foreign hunters are obliged to provide part of the meat from hunted animals to the village where hunting was conducted (WFG210217). These responses indicate a general lack of knowledge about recent and important changes that have occurred in the regulations. The revised Wildlife Regulations of 2018 provide for WMA to enter into agreements with hunting investors, which means that investors cannot hunt without the WMA approval. In the past, however, it was the Wildlife Division which entered into these agreements. Hunters could pay for hunting concessions without involving communities and provided free meat from the hunt, as part of their moral obligation. Finally, a majority of respondents (69%) accurately agreed that it is part of the WMA's leadership responsibility to make the income and expenditure reports available to the village.

In forestry, our findings indicate that in CBFM villages, most local community members correctly identify that conservation and development activities that are carried out mostly by NGOs, chiefly Mpingo Conservation and Development Initiative (MCDI) but also other organizations. They identify local government as important but mainly through its collaboration with MCDI. A high majority of respondents (89%) are aware that it is not allowed to collect firewood from the Village Land Forest Reserves (VLFRs). This improved awareness level was confirmed in an interview in one of the CBFM villages:

> Awareness level of the local community has improved, especially on the importance of conserving forest and the value attached to the forests. Also, the Village Natural Resource Committee (VNRC) members receive allowances for their involvement in forest conservation [allowances for patrols and VNRC meetings] and health insurance benefits. We are happy about this, and now you can see that people are requesting more land to be placed under the Village Land Forest Reserve. Many have realized the benefits from the sustainable timber harvest of 2016 (FOR39KII).

Regulations that guide the management of VLFR funds reflect transparency and accountability in the eyes of local communities. Table 7.1 shows that slightly more than half of the respondents understand that it is imperative upon the VNRC members to involve the village assembly while making decisions on the sensitive subject of income and expenditure. However, 36% believe that VNRC members are not consulting anyone else in making decisions over expenditures. Finally, in CBFM villages, 68% of respondents were aware that the Kilwa District Council receives a share of VLFRs revenue.

In coastal resources, respondents in both BMU and MBREMP villages expressed awareness of the rules and regulations associated with protection and management of marine resources (see Table 7.1). For example, a considerable number of respondents remarked that fishing in deep waters is not restricted.

They also reported that fishers fail to reach those areas due to lack of appropriate fishing vessels and gear. In a focus group discussion, one participant stated:

> We know they restrict us to fish in some areas of the Marine Park. They gave us instructions and training – that we should stop using small size nets and dynamite. We thought these are just normal teachings as we have our traditional way of guarding the area. Once you want to restrict areas, there is a need to consider the number of people using the area. They wanted to take the areas with fish, and we depend on those areas. We accepted these recommendations (CRFGD09).

Yet, a substantial number of survey respondents felt that the responsibility for handling all marine resources and environment issues is solely of the government. Overall, the survey results indicate that people have at least some level of awareness and knowledge of rules and regulations for marine resources.

When results across the three sectors are aggregated and calculated within a score scale of 0–5 to establish overall levels of awareness (see Table 7.2), they confirm that respondents in all the three study sites show relatively high levels of awareness of conservation rules and regulations. Comparatively, partnerships dealing with the governance of forestry and wildlife resources have been relatively more successful in

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Table 7.1 Community awareness of governance of wildlife, forestry, and coastal resources (%).

	Statements	Responses		
		Correct	Incorrect	Don't know
	Wildlife sites			
1	Intruders into the WMA are arrested and will be charged	82	4	14
2	The WMA is no longer village land	32	46	22
3	Investors can buy a right to hunt on the WMA without consulting the WMA authority	13	60	27
4	Foreign hunters have to give the meat of hunted animals to the village	48	27	25
5	WMA leaders must submit revenue and expenditure reports to the village	69	10	21
	Forestry sites			
1	Intruders into the VLFR are taken to the village council to be charged	89	6	5
2	Villagers are not allowed to collect firewood in the VLFR	89	10	1
3	The VLFR is no longer village land	68	24	8
4	Decisions to allocate and spend income generated from VLFR are not done by the VNRC members only	56	36	8
5	Kilwa District Council does not receive any income from the VLFR	68	10	22

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		Coastal sites			
1	It is not allowed to fish in deep waters	BMUs	81	8	11
		MBREMP	72	13	15
2	The government is the only stakeholder with the sole responsibility of managing coastal and marine resources	BMUs	34	60	6
		MBREMP	37	55	8
3	Dynamite fishing is allowed in deep waters	BMUs	59	39	2
		MBREMP	56	36	8
4	Fishing license is only required for commercial fishing	BMUs	66	27	7
		MBREMP	55	34	11
5	Fishing restrictions apply to migrant fishers only	BMUs	77	11	12
		MBREMP	69	17	14

Source: NEPSUS survey.

Table 7.2 Levels of awareness of conservation rules and regulations in wildlife, forestry and coastal sites (%).

	Very aware (scoring 4–5)	Aware (scoring 3)	Less aware (scoring 1–2)	Not aware (scoring 0)
Wildlife sites(WMAs)	36.4	40.5	12.1	11.0
Forestry sites (CBFM)	59.8	19.5	20.7	0.0
Coastal sites (BMUs)	44.1	23.5	25.7	6.7
Coastal sites (MBREMP)	40.0	18.3	29.1	12.6

Note: aggregate scores are based on responses to questions included in Table 7.1. Source: NEPSUS survey.

creating awareness on basic rules and regulations on protected areas than those operating in the coastal resource areas.

Acceptability, fairness, and clarity of rules and rights

In our study, we also examined local perceptions on the fairness, clarity, and acceptance of rules and rights to access and use of the three sets of resources. First, in all three study sites, a majority of respondents found access and use rules and rights to be fair, clear, and acceptable (see Table 7.3), but less so in WMA sites. In coastal resources, this is more so in BMU villages than in MBREMP villages.

Table 7.3 Perceptions of fairness, clarity and acceptance of new access rules and rights in the forestry, wildlife, and coastal study sites (%).

Site	Type of partnership	Fair	Neither fair nor unfair	Unfair	Don't know	N/A
Forestry	CBFMs	78	8	13	1	0
Wildlife	WMAs	56	12	14	16	2
Coastal	BMUs	71	14	12	3	0
	MBREMP	37	17	46	0	0
Site	**Type of partnership**	**Clear**	**Neither clear nor unclear**	**Unclear**	**Don't know**	**N/A**
Forestry	CBFMs	77	14	8	1	0
Wildlife	WMAs	58	14	9	17	2
Coastal	BMUs	70	19	6	5	0
	MBREMP	46	27	27	0	0
Site	**Type of partnership**	**Acceptable**	**Neither acceptable nor unacceptable**	**Unacceptable**	**Don't know**	**N/A**
Forestry	CBFMs	76	11	10	3	0
Wildlife	WMAs	47	15	13	22	3
Coastal	BMUs	62	22	11	5	0
	MBREMP	47	20	33	0	0

Source: NEPSUS survey.
Survey questions:
– *How fair do you consider the new rules introduced by the partnership for your community?*
– *How clear are the rights/rules to access and use resources that were introduced by the xx partnership?*
– *How acceptable are rights/rules to access and use resources that were introduced by the xx partnership?*

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Focus group discussions and key informant interviews suggest that this arises from the imposition of new restrictions on fishing gear by the Marine Park authorities, which was not accompanied by the successful facilitation of alternative livelihood activities:

> The relationship between MBREMP and local people was good in the early days. But after a few years, people started to challenge MBREMP, including resisting their activities. This bitter relationship emerged due to the fact that people felt that they were going to lose access to fishing resources and that MBREMP was imposing rules and restrictions that affected their livelihoods. For example, MBREMP was enforcing and controlling the use of fishing gears but without providing alternatives, and people did not like this idea. The current situation is somewhat calm, but this does not mean people are supporting the MBREMP fully (KIIM120318).

Respondents from CBFM areas identified clear rules in relation to the prohibition of farming, grazing in the VLFRs, permits for the collection of non-traditional forest products, and the prohibition on harvesting small trees. The main reason for this result is that transparent and protracted negotiations took place between MCDI officers and the village authorities. Many respondents (about 76%) readily accept these rules and regulations, especially those prohibiting forest destruction through illegal harvesting of trees, charcoal burning, farming, grazing, hunting in forest areas, and burning of forests, as well as zoning of VLFR areas, and arresting and charging intruders.

It ought to be noted that parts of these communities also point out specific rules which are perceived to be unfair. For instance, some of the BMU and MBREMP villagers held that restrictions on the use of certain fishing gear such as small-mesh nets (beach seines), and zoning of fishing areas to be unfair. Other rules considered to be unfair are restrictions on the harvesting of mangroves, on selling personal plots of land without a special permit from the Marine Park, and regulations around fishing licensing. In sum, even if rules may be perceived to be clear, fair, and acceptable, many people hold reservations on the *manner* in which they are enforced and/or how their rights to access and use are considered or disregarded.

Participation in partnership meetings

Attendance of village-level meetings is an important avenue through which local communities can actively participate in decision making on issues that directly or indirectly affect their welfare. Results from the survey show that attendance of meetings related to partnership implementation is generally low (see Table 7.4). Attendance is somewhat higher in CBFM villages than in WMA, BMU, and MBREMP villages. Relatively few respondents in the coastal and forestry sites

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Table 7.4 Meeting attendance on issues related to partnership implementation (%).

Site	Type of partnership	Attended	Did not attend
Forestry sites	CBFM	43	57
Wildlife sites	WMA	31	69
Coastal sites	BMU	24	76
	MBREMP	20	80

Source: NEPSUS survey.

Survey question: *Did you attend the last village meeting on issues related to partnership implementation?*

reported that they had never had any meeting related to partnerships. But a sizeable number of respondents in the wildlife sector said they never had a meeting. These may represent a section of the community who are either indifferent or feel that their attendance at such meetings will not make a difference. Another possible reason can be linked to recent changes in the local government structure, as indicated in a focus group discussion:

> For the past three years, we have not held village meetings where we would receive information about what is going on. The reason for this is changes in the local government structure. We were initially under the District Council but Utete has been upgraded to Township Council. The two villages were also included in the township, which caused the collapse of the Village Council. We now have sub-villages. This has huge implications because the structure of the WMA was anchored on village councils. Sub-villages are not legal entities recognized by WMA regulations. This means that there are no longer village assemblies where reports and decisions about WMAs are made. There is no direct connection between the WMA and sub-villages. So, we ask, under this arrangement, would the WMA still exist? Where do we ask for information when the Village Council has been dissolved? As such, WMA is made of village land but the villages no longer exist (WILD05FG).

Quality of community involvement

Local perceptions of fairness, clarity, and acceptability of rules and rights to access and use of natural resources is one thing, but satisfaction in relation to local community involvement in these partnerships is another. Perhaps not surprisingly, respondents in villages where more community-based forms of management are operating expressed that they are generally satisfied with their communities' involvement. In general, communities in the CBFM partnerships appear to be relatively more satisfied with their participation compared to those in the BMU and WMA partnerships (see Figure 7.1).

Among the coastal sites, respondents living in BMU areas are more likely to express satisfaction than those residing in Marine Park villages. Indeed, one of the respondents described the community's relations with the MBREMP as follows:

> If you introduce an issue concerning the Marine Park in a village meeting, it may end right there. If you talk about Marine Park, you add salt to an injury. The Marine Park has not held any meeting with the community here who are important stakeholders. That much I know. If you want meetings not to be conducted smoothly just introduce the issue of MP. They (MBREMP) have not been close to the people (KIIM120318).

A sizeable proportion of respondents across the three study sites is not impressed with the level of involvement in these partnerships (see Figure 7.1). This can be linked to two sets of factors – the question of involvement of local communities in these arrangements, and the perceived benefits flowing to them. When respondents were probed further to explain why they were not satisfied with the partnership set-up, they expressed discontent about not having been consulted in decision-making processes.

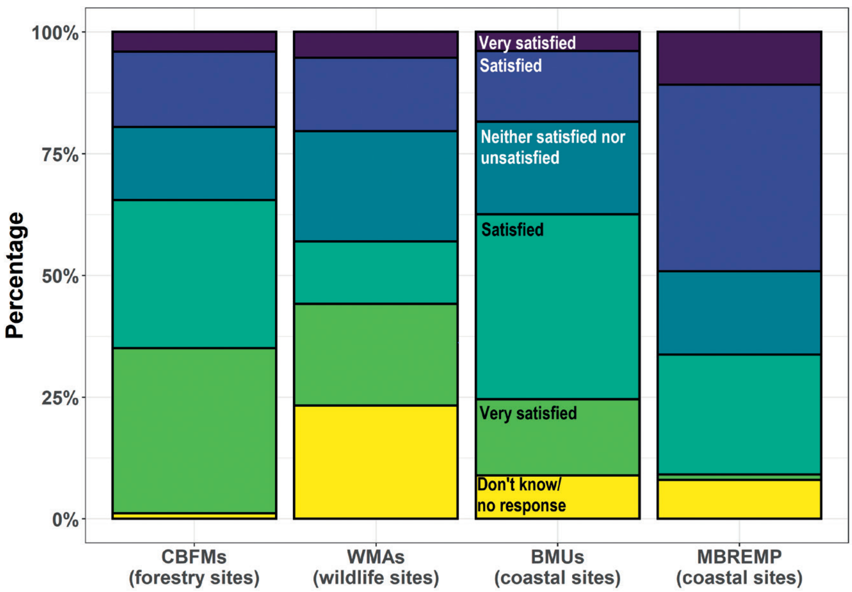

Figure 7.1 Perceptions of the quality of community involvement.
Source: NEPSUS survey.

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One telling finding is that involvement of local communities has yet to meet the level expected even by the communities themselves. Local communities are aware and know that they ought to be engaged but hold reservations on the degree of engagement and collaboration with these partnerships. In addition to lack of socio-economic benefits (see next section), they also complained about unfulfilled promises, limited accessibility to farmlands near forest reserves, mistrust between the sustainability partnership leadership and villagers, lack of support on alternative livelihood activities, lack of feedback on revenue generation and sharing, boundary conflicts between CBFM villages and non-CBFM villages, and crop destruction by wild animals.

Leadership performance

Another important element for process legitimacy is whether the communities perceive the leadership of sustainability partnerships as performing per expectation. The legitimacy of a partnership can be questioned and may eventually be challenged if the target communities perceive the leadership as unresponsive, unaccountable, and untrustworthy. The results of the household survey are not especially encouraging on this aspect (see Figure 7.2).

Among the three sectors, the best leadership performance was found in forestry study sites, where many were generally satisfied with the

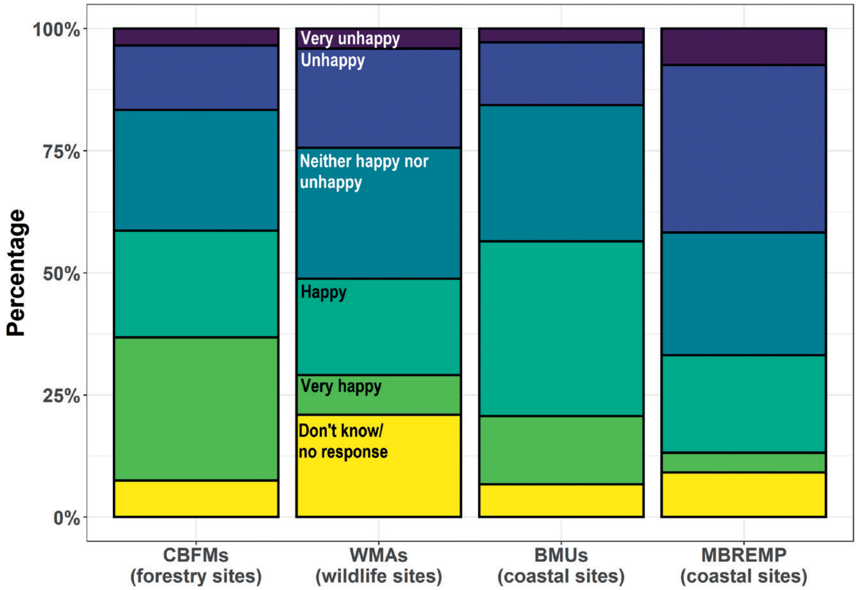

Figure 7.2 Perceptions of the performance of partnerships' leadership.
Source: NEPSUS survey.

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stewardship played by leaders in relation to forest conservation awareness campaigns, participatory decision making over VLFR's income and expenditure, as well as in facilitating efforts in improving livelihoods (see Mwamfupe et al., 2019: 49). The BMU sites are also noteworthy, where local residents gave them credit for their awareness-raising campaigns against destructive fishing practices.

> They [the BMUs] are trying to do their best but they face resistance from fishers who use illegal gear. They need assistance, from the village government to the district. As villagers we also have to support them. A BMU is made up of our people and what they have been doing is for the benefit of our village. They have helped to a certain extent to raise awareness and eventually make people reduce destructive fishing activities. But they lack resources and people work there on a voluntary basis (KIIK170318).

Overall, the top reason mentioned by respondents for their being unhappy or very unhappy was lack of involvement – especially in coastal sites – including lack of regular interactions with communities and top-down imposition of decisions. The second top reason was poor performance, indicated by lack of commitment, non-fulfilment of responsibilities, low pace in taking and implementing decisions, and failure to respond in a timely manner to resource-specific problems – such as attacks on villages by wild animals and the concerns raised by fishers. In coastal sites, unfair treatment in application of rules was cited as the second leading reason for not being impressed by the performance of leadership in coastal partnerships.

Impact legitimacy

The second part of our analysis examines impact legitimacy through two lenses: perceptions on the socio-economic benefits arising from sustainability partnerships (both at the household and community levels), and perceptions on the environmental outcomes of these partnerships.

Perceptions on the livelihood impacts of sustainability partnerships

Respondents were asked to mention benefits which their households had obtained from the partnerships operating in their villages, and they were also asked to mention benefits their communities had received from these partnerships. Two sets of findings arising from our survey are particularly relevant for our discussion on impact legitimacy. First, respondents perceived receiving fewer household-level benefits than community-level benefits. As Table 7.5 shows, a large majority of respondents across the three sectors pointed out that they did not accrue any direct household benefit from the sustainability partnerships, but with a lower incidence in forestry sites. Second, conservation knowledge was mentioned as the main benefit of the partnerships in all three sectors, followed by training opportunities.

> The biggest impact of the partnerships has been that many people have changed their mindsets about forest management and understand that they own the resources. This increases their responsibility to sustainably conserve such resources. This has made some villages to apply for expansion of areas that should be under FSC. For example, Likawage had 17,000 hectares under FSC and now has expanded to 30,000 hectares (FOR01KII).

Table 7.5 Perceived socio-economic benefits of partnerships (%).

Perceived benefits (household level)	**Forestry**	**Wildlife**	**Coastal**	
	CBFM	**WMA**	**BMU**	**MBREMP**
None	64	73	81	86
Conservation education/knowledge	29	13	12	9
Training on conservation issues	19	9	2	1
Training on livelihood activities	1	1	1	2
Support for equipment/tools	0	0	1	1
Monetary payment/support for alternative income-generating activities	4	6	0	2
Access to loans/microfinance	14	13	5	3
Other	2	9	4	2
Perceived benefits (community level)	**Forestry**	**Wildlife**	**Coastal**	
	CBFM	**WMA**	**BMU**	**MBREMP**
None	19	47	40	72
Conservation education/Knowledge	63	28	43	19
Training on Conservation issues	21	18	11	3
Training on Livelihood activities	9	7	2	0
Support for Equipment/tools	1	2	3	3
Monetary Payment/Support for alternatives income gen. activities	10	8	3	2
Access to loans/Microfinance	1	2	3	3
Other	7	5	3	3

Source: NEPSUS survey

Survey questions:
- *What benefit has your family obtained from partnership xx?*
- *What benefit has your community received from partnership xx?*

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Table 7.6 Perceptions on livelihood conditions (%).

Resource	Type of partnership	Improved	No change	Declined
Forest	CBFM	43	24	33
Wildlife	WMA	31	25	44
Coastal resources	BMUs	22	32	46
	MBREMP	33	27	40

Source: NEPSUS survey
Survey question: *In general, how do you compare your livelihood condition now and 5 years ago?*

Two categories of training were mentioned: training sessions tailored at addressing conservation issues; and training sessions on alternative livelihood activities. Finally, similar numbers of respondents reported receiving equipment, tools, monetary payments, or support for alternative income-generating activities. In sum, respondents admitted having received more monetary payments or support for alternative income-generating activities than equipment or tools. These are found mostly in forestry sites and to a lesser extent in wildlife sites (see Table 7.5).

When it comes to broader perceptions on changes in livelihoods, 43% of respondents in CBFM villages and 31% in WMA villages maintained that they have improved or have improved a lot. In the coastal study sites, 33% of respondents from MBREMP villages reported this vis à vis 22% in BMU sites (see Table 7.6). Yet, when it comes to attribution of these changes, 85% of those arguing that livelihoods have improved cited farming, especially sesame cultivation, as the main causal factor in CBFM villages (Mwamfupe et al. 2019; see also Chapter 5). Similarly, in the wildlife and coastal sites, the reasons behind changes in livelihoods do not seem to be related directly to the partnerships themselves but rather to broader social, economic, and political change (Kweka et al. 2019; Noe et al. 2019; see also Chapters 4 and 6). Decline in agricultural income due to poor harvests and dwindling prices for some farm produce were cited to be factors behind falling livelihood conditions even though some respondents also mentioned crop destruction by wild animals in wildlife sites. Because partnerships are not seen as a major factor in shaping livelihoods, we have omitted this aspect from the calculation of legitimacy scores in Table 7.8.

In sum, sustainability partnerships seem to have had limited effects on socio-economic and livelihood outcomes, with the possible exception of CBFM, and to be more inclined towards the provision of training on conservation issues than in facilitating the development of alternative livelihood activities.

Table 7.7 Perceptions on environmental impacts (%).

Resource	Type of Partnership	Aspect	Better/ increase	Same as before	Worse/ decrease	Not known
Forest	CBFM	Village Land Forest Reserve	78	12	9	1
Wildlife	WMA	Wildlife population	73	7	14	6
Coastal	BMUs	Fish stock	41	15	41	3
		Coral health	59	25	11	5
		Mangrove cover	53	25	4	18
	MBREMP	Fish stock	16	14	63	7
		Coral health	44	18	9	29
		Mangrove cover	45	21	10	24

Source: NEPSUS survey
Survey question: *How has the condition of the Village Land Forest Reserve/status of wildlife population/ fish stocks/corals/mangrove forests changed in the past five years?*

Perceptions on the environmental impacts of sustainability partnerships

Many respondents held the view that environmental conditions have improved in relation to forestry reserves, wildlife populations, and the status of corals and mangroves, while they were concerned with the state of fish stocks. Specifically, 78% of respondents described VLFRs to have improved forest conditions. Likewise, more than 50% of respondents in BMU villages described better conditions for corals and mangroves compared to about 45% in MBREMP villages. While 73% in WMAs perceived an increase in wildlife populations, 63% of MBREMP, and 41% of BMU residents reported a decrease in fish stocks (see Table 7.7).

Respondents attributed the decline in fish stocks to increasing unregulated and illegal fishing practices and population increase, as well as environmental factors. They attributed the increase in wildlife populations and better conditions for forests, corals, and mangroves to three common factors: improved enforcement of conservation rules, improved environmental and conservation knowledge among community members and fewer people engaging in destructive activities.

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Discussion

Table 7.8 shows the results of the overall legitimacy scoring of the four partnerships. It shows that CBFM partnerships have managed to establish positive input and process legitimacy in the communities where they operate – across the various indicators. Both WMAs and BMUs score lower. The former are perceived as having improved awareness of conservation rules (which are also perceived as acceptable, fair, and clear), but have failed to properly involve the communities and their leadership is seen as not performing well. The latter score less well on awareness and on acceptability of rules, negatively on participation, but better than WMAs on the quality of community involvement and on leadership. With the exception of levels of awareness of rules, MBREMP is seen as failing across the board.

While MBREMP is a 'simpler', more top-down, state-controlled set-up with (in theory) some elements of local participation, CBFM, WMAs, and BMUs are different forms of 'more complex' community-based natural resource partnerships. Our input and process legitimacy scoring results suggest that adding participation elements to essentially top-down systems does not seem to be enough to build legitimacy. At the same time, even within putatively community-driven partnerships, major differences arise between more successful (CBFM) and less successful (WMA and BMU) partnerships. While all partnerships have been successful in raising awareness of conservation rules, this is far from enough to build input and process legitimacy – as the CBFM case suggests, acceptable, fair, and clear rules are important; proper community involvement mechanisms are important, including participation to village-level meetings; and leadership and proper communication are important.

This comparative picture is replicated in relation to impact legitimacy. What distinguishes CBFM from WMAs and BMUs is the perception that there are some household-level benefits. All three are perceived as having had a positive impact on socio-economic conditions at the community level and on the environment, but this is far more marked in CBFM areas. The scores for MBREMP are, again, negative across the spectrum. Not only did it fail to establish input and process legitimacy, it is also perceived as having failed to deliver the expected socio-economic outcomes. Lack of material incentives at the household level in wildlife (WMAs) and coastal resources (BMUs and MBREMP) have severely limited their legitimacy in the eyes of local communities. Fishers and consumers of bush meat were affected by access restrictions and/or the benefits of sustainability partnerships went to a small number of wealthy investors (in WMAs).

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Table 7.8 Composite scoring of legitimacy.

	CBFM	WMAs	BMUs	MBREMP	Source
Awareness of conservation rules	++	++	+	+	Sum of 3, 4, and 5 scores as in Table 7.2
Acceptability	+	++	+	-	Average of the ‘fair’, ‘clear’, and ‘acceptable’ scores as in Table 7.3
Participation	+	-	--	--	Scores as in Table 7.4
Quality of community involvement	+	-	+	-	Sum of ‘very satisfied’ and ‘satisfied’ scores as in Figure 7.1
Leadership performance	+	-	+	-	Sum of ‘very happy’ and ‘happy’ scores as in Figure 7.2
Overall score on input and process legitimacy	6	1	2	-4	Sum of + and - of previous five rows
Socio-economic impacts of partnerships at household level	+	-	--	--	Proportion of ‘none’ over sum of all other impacts (%) as in top part of Table 7.5
Socio-economic impacts of partnerships at community level	++	+	+	-	Proportion of ‘none’ over sum of all other impacts (%) as in bottom part of Table 7.5
Perceptions on environmental outcomes	++	+	+	-	Score ‘better/improved’ as in Table 7.7
Overall score on impact legitimacy	5	1	0	-4	Sum of + and - in the previous four rows
Total legitimacy score	5,5	1	1	-4	Average scores on input/process and impact legitimacy

Notes:
Scoring system for meeting participation and livelihoods: >50% ++; 40-50% +; 30-40% -; <30% --
Scoring system for all other lines: >75% ++; 50-75% +; 25-50% -; <25% --

Source: authors

These results suggest that individual impacts of partnerships on socio-economic conditions of individual households are important, and thus that community-level benefits (whether socio-economic and/or environmental) are not enough to ensure legitimacy. Overall, with the exception of CBFM, sustainability partnerships seem to have been more focused on conservation training than on ensuring that these are coupled with individual household-level benefits in addition to obviously important community-level benefits. In sum, the ability of creating material benefits from conservation activities is necessary but not sufficient to establish legitimacy – these benefits need to reach individual households as well as the community as a whole. When community-level benefits are involved, fair sharing is more likely to happen when communities perceive rules as fair, are better involved in procedures and have trust in their leaders.

Conclusion

In this chapter, we examined the functioning of selected sustainability partnerships from the perspective of local communities – with a view to improving our understanding of how putative participatory schemes gain (or fail to gain) legitimacy. As sustainability partnerships bring together different state and non-state actors with often diverse and competing interests, it is essential to assess whether they pay attention to the needs, power, and interests of different actors. Understanding the dynamics of legitimacy is important, as it allows suitable compromises to be made at the lowest possible jurisdictional level, thus potentially minimizing the power gaps that are likely to open across scales and jurisdictions. These compromises are particularly important because in conservation-cum-development partnerships new limitations affecting livelihoods are placed on resource access.

Overall, our results paint a clear picture that despite deliberate, evolving, and persuasive efforts to create legitimacy primarily by raising awareness on the relevant rules and regulations, sustainability partnerships have eventually struggled to gain and maintain legitimacy. Indeed, building legitimacy commenced with creating awareness on the agreed norms and rules, stakeholders' eligibility to participate as well as the existence and applicability of mechanisms that promote accountability and transparency in those partnerships. But local communities are yet to perceive these partnerships as responsive, accountable, and trustworthy arrangements that are able to strike a delicate balance between community welfare and conservation goals – and this is crucial for the viability of participatory schemes in the long-term. We also confirmed that outcomes have been varied for different groups of actors in a partnership. Communities living in forestry resource sites

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acknowledged relatively higher levels of socio-economic and environmental outcomes accruing from sustainability partnerships than their counterparts in wildlife and coastal resource sites. Poor or lack of implementation of partnership activities has been associated more prominently with lack of transparency, accountability, oversight, and involvement. This has culminated into significant levels of community dissatisfaction with the overall partnerships' performance.

We found that lack of material incentives in wildlife partnerships (WMAs) and fisheries partnerships (BMUs and MBREMP) in south-east Tanzania severely limited their legitimacy in the eyes of local communities. Fishers and consumers of bush meat were affected by access restrictions, and alternative livelihood activities failed (in BMUs and MBREMP) or their benefits went to a small number of wealthy investors (in WMAs). In sum, these partnerships have struggled to gain and maintain input, process and impact legitimacy. While building legitimacy needs to include the creation of awareness on the agreed norms and rules, and on stakeholders' eligibility to participate – as well as on the existence and applicability of mechanisms that promote accountability and transparency – this is not sufficient for sustainability partnerships to become accepted as alternative or supplements of government policy. These partnerships are generally *not* perceived as responsive, accountable, and trustworthy.

In conclusion, improved conservation knowledge and enhanced enforcement of conservation rules have contributed to some improvements in the environmental conditions of forestry, wildlife, and coastal resources in south-east Tanzania. But sustainability partnerships have been more inclined towards the provision of training on conservation issues than the development of alternative livelihood activities. As a result, they have had limited effects on socio-economic and livelihood outcomes, especially at the individual household level. They have thus failed to strike a balance of conservation and socio-economic outcomes, with the possible exception of CBFM. This has culminated into significant levels of community dissatisfaction with their performance.

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8

The Governance Complexity of Sustainability Partnerships in South-east Tanzania: Institutional and Network Components

LASSE FOLKE HENRIKSEN, CALEB GALLEMORE, RUTH WAIRIMU JOHN, FARAJA DANIEL NAMKESA, AND PILLY SILVANO

One of the central aims of this book is to develop a more sophisticated concept of governance complexity and, more specifically, to examine how variations in systems of natural resource governance produce different environmental and livelihood outcomes. In this chapter, we outline a conceptual framework for analysing the governance complexity of sustainability partnerships into institutional and network components. We apply this distinction in following chapters to assess the contributions of both forms of natural resource governance complexity to environmental and livelihoods outcomes.

Social networks

One aspect of natural resource management to which researchers have recently started to pay attention is the role played by social networks in sustainability partnerships (Bodin et al., 2006). Network theorists point to social networks as potential positive mediators of collective action coordination, power imbalances, legitimacy gaps, and collective learning processes. The general argument is that social networks that are denser, and where actors are more intensely and reciprocally connected, tend to generate better outcomes. In terms of community social networks, Tompkins and Adger (2004) claim that dense community networks can produce resilience, aiding communities in better adapting to unexpected environmental changes. Newman and Dale (2005) responded critically to this statement by pointing out that not all community networks are equally effective for addressing environmental change. While diverse community networks rich in bridging ties can provide communities with resources that enable them not only to adapt but also to be proactive, closed networks characterized by intense community-internal bonding and social closure can in fact hamper the ability of communities to be proactive. While Newman and Dale (2005)

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emphasized the importance of high diversity and bridging – and of low bonding and closure – as key qualities of community networks, in this chapter we will show that a combination of bridging and bonding are more likely to produce the most favourable outcomes for communities.

Classical network theory juxtaposes highly connected social networks with networks that are fragmented or less connected. If a researcher observes a lot of social ties in a social network, the network has a higher density and as a result is less fragmented. If and when a network is highly dense in social ties, its actors are more likely to trust each other and exchange information. Dense networks also enable monitoring and sanctioning of behaviour (Granovetter, 1985; Coleman, 1990). Dense networks therefore provide a social infrastructure that enables communities to overcome collective action problems, lowering the cost and risk of collaboration (Ostrom, 1990; Burt, 2004; Siegel, 2009) and promoting community members' compliance with shared norms and ideas (Coleman, 1990). However, if community networks are solely dense internally among community members (bonding) with no or only few ties to external stakeholders (bridging), the risk is that shared community norms stand unchecked and do not align with stakeholder expectations or knowledge.

The structure of community networks often reflects the underlying distribution of power and status (Podolny, 2010). Even if community networks have high levels of bonding and bridging, the distribution of social ties internally among community members and between community members and external stakeholders can be highly uneven. While networks can be dense or fragmented, they can also be more or less centralized. In a highly centralized network, most ties are concentrated around one or few actors, whereas a network in which social ties are distributed evenly across actors is decentralized (Freeman, 1978). Some degree of centralization can make networks efficacious at propelling prompt collective action efforts (crisis or disaster management) because the most central actor(s) can serve as a command centre from which uniform decisions and action recipes can flow (Hossain, 2009). Yet, if networks become too centralized there is a risk of social ties moving from reciprocated high-trusting relationships to hierarchical relations involving large power asymmetries, and as a result the collaborative advantages of organizing through more equally distributed community networks may suffer (Bodin et al., 2006).

Sandström et al. (2014) point to the critical function of bridge-building between local communities and their stakeholders for the latter's acceptance of novel co-management initiatives. As they report, 'strivings towards legitimate co-management require skilful manoeuvring of the present institutional landscape as well as deliberate strategies for the evolution of social networks' (Sandström et al., 2014: 60). On the function of social networks in making strategies of co-manage-

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ment legitimate, they list as critical the composition of the stakeholder network and the inclusion and commitment of government actors. They also point to the role of social ties in promoting the ongoing adjustment of processes and agendas according to key stakeholders. A risk of focusing too much on external ties can be that, while external legitimacy is enhanced, co-management can lose legitimacy internally with communities, especially if network centralization is high and managers end up being perceived as elite actors pursuing their self-interests (Knoke, 1993).

Networks with a good mix of bonding and bridging features are known to promote learning and innovation (Powell, 1990; Vedres and Stark, 2010). Bonding ties involve dense networks with resulting high levels of community trust and tight social control. Yet the imposition of strict social norms through networks dense with bonding ties may discourage experimentation and innovation. Also, if bonding ties become too abundant, this is often associated with a reduction in bridging ties which are known to be a source of fresh information and knowledge likely to enhance learning and innovation (Granovetter, 1973; Burt, 2004). The presence of bonding ties and absence of bridging ties can therefore result in homogenization of experiences and ecological knowledge among communities (Crona and Bodin, 2006).

While so far, we have argued that a combination of bonding and bridging ties in community networks may lead to more successful co-management initiatives, research on these various aspects is still scarce to date. While most existing research on social networks and co-management identifies social networks as a progressive force that promotes legitimacy and learning, and irons out power imbalances, we take a more agnostic and explorative approach. We argue that how social networks affect co-management outcomes relies on the composition and structure of the network in place. Rather than stating that social networks are necessarily a progressive force in co-management, our ambition is to separate out the network compositions and structures that respectively enable and hamper successful co-management.

Complexity

Our interest in complexity reflects Elinor Ostrom's (1995: 34) straightforward contention that 'if complexity is the nature of the systems we have an interest in governing (regulating), it is essential to think seriously about the complexity in the governance systems that are proposed'. Building on W. Ross Ashby's 'Law of Requisite Variety,' which holds that, to be effective, regulating systems must have at least as many possible states as the systems they regulate, Ostrom (1995) argues that polycentric, complex, and flexible governance

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systems are more likely to meet this standard than simpler, centralized, top-down approaches.

When considering the human and non-human aspects of natural resource governance systems simultaneously, as is done, for example, in fields like coupled human-natural or social-ecological systems (Liu et al., 2007; Cumming et al., 2020), the complexity problem becomes even greater. In her 2009 Nobel Prize lecture, Ostrom (2010) elaborated her long-running criticism of simple models of social life that divided governance into markets and states; assumed individuals to be materially self-interested, rational, and almost all-knowing; and, in her view, criticized institutions that failed to fit these modes instead of adjusting models to fit a more complex world.

To deconstruct governance entities' behaviourally complex, spatially overlapping, and procedurally multi-level activities, Ostrom (2005, 2010) and other scholars developed the concept of 'action situations' – the particular combination of biophysical conditions, social characteristics, and concrete behavioural rules amidst which communities, organizations, and individuals make choices about natural or other resources. For Ostrom, action situations were more than just institutions understood in the sense of 'rules of the game' (North, 1990) in one popular formulation. First, action situations involve 'rules in use' (Ostrom, 1995) which may be informal or even habitual to the point of only being noticed when breached. Second, the way rules in use affect natural resource management depends on how action situations are connected to one another. While this point is implicit in some of Ostrom's work on polycentricity and the importance of supportive nested hierarchies of institutions, it has been more thoroughly developed in recent work on linked action situations (McGinnis, 2011) and the ecology of games framework (Lubell et al., 2010; Scott and Thomas, 2017; Hamilton et al., 2018), both of which emphasize the structure of relationships between action situations in explaining their outcomes.

These and similar theoretical and empirical developments help respond to an important reservation about research in the Ostromian tradition, which is that much of the empirical analysis in this vein has tended to be quite local in focus, making it difficult to consider how broader connections affect local action situations (Cumming et al., 2020). They also resonate with a growing literature on the role of networks in natural resource management, which both theorizes what sorts of network structures might be optimal for effective management of complex socio-ecological systems (Bodin and Crona, 2009; Crona and Hubacek, 2010; Bodin et al., 2020; Rhodes et al., 2020) and compares observed systems to theoretically optimal arrangements (Alexander et al., 2017; Pittman and Armitage, 2017).

Despite their divergent ontologies and methodological approaches, all these literatures indicate the importance of two broad classes of phenomena for natural resource management outcomes. Whether we think in terms of action situations, polycentric ecologies of games, or complex interactions within social-ecological systems, in all cases we are addressing some conception of institutions, on the one hand, and a structure of relationships on the other. Despite both elements being at least implicitly present in each of these frameworks, however, empirical analyses in these traditions tend to emphasize either one or the other. On the one hand, studies of common-pool resource management often focus on rules in use but pay less attention to network patterns; on the other, research emphasizing network structures, although frequently addressing the degree to which institutions map onto ecological relationships, seldom engages directly with rules in use.

Decomposing governance complexity into its institutional and network components

The previous chapters suggest that research should address both institutional and network dimensions of 'governance complexity' – in the context of the political economies and ecologies in which governance arrangements are embedded. Integrating institutional theory and the literature on network forms of governance helps us analyse how norms interact with the concrete pattern of relationships among stakeholders that affect natural resource use. After a brief section where we develop this theoretical argument, we propose governance complexity metrics appropriate to both institutional and network components. Finally, we summarize the evolution of these two dimensions of complexity in our study sites over time. Our descriptive analysis of the evolution in institutional and network complexity in south-east Tanzania informs our further inquiries in Chapters 9 and 10 into whether and how institutional and network complexity shape environmental and livelihood outcomes.

In this chapter, we focus narrowly on regulatory institutions, formalized sets of rules and commonly accepted understandings of how to adhere to the rules locally. Institutions are most often durable 'sticky' structures that guide and govern what are considered appropriate behaviours in specific organizational fields (Clemens and Cook, 1999). Distinct from Ostrom, this view of institutions arises from new institutionalist theory, indicating that field-specific institutions generally result from local community actors' efforts to translate formal regulatory codifications to specific situations through rule-making institutional work (DiMaggio and Powell, 1991). For example, codified resource management systems such as those implemented by forest managers in order to obtain certification from the Forest Stewardship Council (FSC) are not implemented in a uniform manner across the globe but depend

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on local interpretations and translations, as actors like auditors, forest managers, state officials, forest workers, and community elites adapt rules and practices to local conditions (Jespersen and Gallemore, 2018; Piketty and Drigo, 2018; Miles, 2020). This perspective on institutions, as simultaneously generalized, durable, and locally embedded, suggests that the networks of actors in which institutions are embedded should shape how they operate (Henriksen et al., 2022).

Our use of the term 'network' builds on the tradition of network governance in recognizing that the character and structure of the relationships between organizations are important in shaping how organizations and fields are governed (Podolny and Page, 1998). The network governance tradition in economic sociology, a scholarly approach that has more recently also made inroads into environmental governance literature (Bodin and Crona, 2009; Gallemore and Munroe, 2013; Henriksen et al., 2022) commonly refers to a governance network as 'any collection of actors (N> 2) that pursue repeated, enduring exchange relations with one another and, at the same time, lack a legitimate organizational authority to arbitrate and resolve disputes that may arise during the exchange' (Podolny and Page, 1998: 59). Network governance studies address 'lateral or horizontal patterns of exchange, interdependent flow of resources, and reciprocal lines of communication' (Powell, 1990: 296) between organizations. Network governance operates neither through hierarchical relations with one-way flows of control from leaders to subordinates, nor through episodic transactions between buyers and sellers, but instead through durable, non-contractual, and interactive exchange relations between organizations often based on a high level of trust (Powell, 1990; Perrow, 1993; Uzzi, 1997).

In this chapter, we take a place-based organizational approach to networks, defining them as a series of relationships among a specific set of organizations that are active in an area where a sustainability initiative operates (Ahuja et al., 2012). To be sure, organizational networks always intersect networks of inter-personal relationships that do much of the heavy lifting of relationship maintenance (Henriksen and Seabrooke, 2016). Our measurement of inter-organizational collaboration considers formal activities such as funding and governance collaboration as well as informal, perceived collaboration documented through interviews with villagers and key personnel at the organizations in question (see 'Data collection methods' in Chapter 3). Yet when we analyse networks, we focus on the connections that emerge from inter-organizational collaboration and thus focus on organizations as the nodes. In the present chapter, we collapse the four types of collaboration mapped in the data collection – technical support, financial support, business collaboration, and governance coordination – under one heading.

The network governance tradition has developed ideal types that are useful for assessing the extent to which elements such as trust and reciprocity are key principles of organizing vis à vis bureaucratic or market forms. However, our approach to network governance also considers that hierarchical relations and transactional exchange can be central mechanisms for embedding formal regulatory institutions in local communities. An example of this type of embedding is when powerful local actors form an elite alliance that position them at the centre of networks with broader access to information, resources, and decision-making fora (Moeliono et al., 2014). The governance ego networks we analyse in this chapter centre on villages as focal nodes, but also include ties to research institutions, NGOs, community-based organizations, donors, government agencies, and businesses.

Measuring institutional and network complexity

In this section, we disentangle the 'governance complexity' of different sustainability partnerships into its institutional and network components. We use the *institutional* complexity we assessed in Chapter 3 to differentiate 'more complex', 'simpler' and 'control' partnerships, and relevant villages. That metric was based on: (1) the number of actors and actor categories involved in the partnership; and (2) the complexity of the institutional set-up (decision-making system and degree of sharing of access rights). At the outset, the research conducted for this book was set up for comparison, *minimizing variation in broader societal institutions* across the study sites (hence the focus on south-east Tanzania) and *emphasizing variation in institutional complexity*. We therefore selected study sites by identifying villages affected by different levels of institutional complexity and different timing of natural resource governance onset (see details in Chapter 3). We therefore selected villages in each of the three sectors affected by 'more complex' sustainability partnerships, others affected by 'simpler' ones, and villages that had no formal governance system in place (except for the coastal sector, where no 'control sites' were available, as all coastal villages are part of Beach Management Units).

Sectoral comparison

We expected network complexity to positively correlate with institutional complexity, as the latter often entails participation of, and coordination between, a wide set of stakeholders. When many different actors are present in a network, the network is usually, though not necessarily, more complex. We also expected empirical variation on network complexity both within simple and complex governance systems. Complex systems, for example, could include many different actors but without significant coordination across them. Similarly, simple systems might include few actors formally but actually embed more actors informally. To score network complexity, we aggregated a range of ego network complexity measures (that is, measures of complexity focusing on study villages' immediate network). The measures we selected[1] highlight different aspects of network complexity – including the density of the village ego network, the dispersion of ties, and the heterogeneity of ties and actors.

We begin our data description by focusing on the distribution of network complexity in relation to different categories of institutional complexity for the entire observation period. We scaled the network complexity measure to range from zero to five, with all the ego network measures making up the index weighted equally. As expected, the top leftmost panel in Figure 8.1 shows that villages that are not in any partnership (control sites) have the lowest median network complexity, that villages that are in simple partnerships have a higher median network complexity than control sites, and that villages in complex partnership have the highest average. The median is 1.2 for villages with no partnership, 2.8 for villages with simpler partnerships, and 3.8 for villages with more complex partnerships. These differences are substantial when considering the scale is from 0 to 5. Villages with more complex partnerships exceed the median network complexity of villages with no partnerships with 320%, and exceed the median network complexity of villages with simpler partnerships with 140%.

At the same time these median differences between partnership types in terms of network complexity gloss over substantial variations. These variations become clear when we consider the lower and upper quartiles of the network complexity distribution. For example, the upper quartile of villages with no partnerships has a network complexity score of 3.15, whereas the lower quartile of the more complex partnerships has a slightly lower network complexity of 2.95, indicating that more complex partnerships do not always build complex networks and that villages with no partnerships sometimes do. The upper quartile of villages with simpler partnerships has a network complexity on par with the median network complexity of villages with more complex

1 We included the total number of ties of the villages in the village ego network; the average number of ties of all actors in the entire village ego network; the dispersion in the distribution of ties among all the actors in the entire village ego network; the dispersion in the distribution of actor types; the dispersion in the distribution of actor types weighted by the tie density in the village ego network; the average number of ties among the unique actor types in the network; and the average number of ties that connect different actor types.

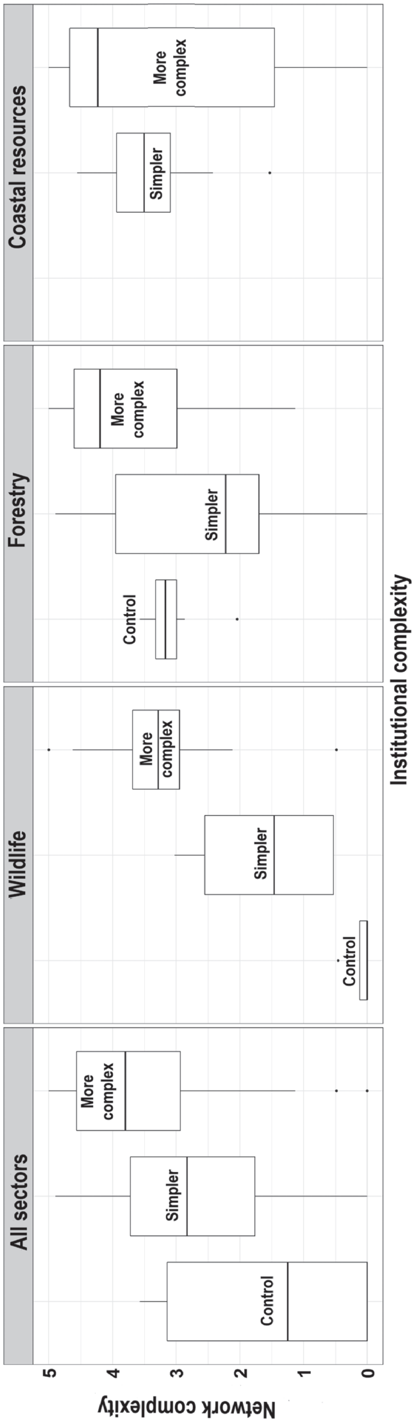

Figure 8.1 Distribution of network complexity. Source: authors.

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partnerships (3.8), indicating that a non-negligible share of the simpler partnerships builds networks of considerable complexity.

In the adjacent plot we indicate how these overlaps in the distribution are to a large extent due to sector-level differences. The most substantial and statistically significant difference in network complexity between simple and complex partnership is in *wildlife*. Here, the median network complexity is around 1.5 for villages in areas with simpler partnerships, whereas for villages in more complex partnerships the median is around 3.3. This is a large substantial difference of more than 100%. In the case of wildlife, the lower quartile of the distribution for more complex partnership even exceeds the upper quartile of the distribution for simpler partnerships which indicate that the median difference is highly significant.

In *forestry* the median difference in network complexity between simpler (1.5) and more complex partnerships (3.25) is more than 100% and so also substantial, but the difference is less significant because a non-negligible share of the simpler partnerships has a network complexity score on par with the median network complexity of the more complex partnerships. Curiously, in the case of forestry the villages with no partnerships have a higher median complexity than the villages with simpler partnerships. This leads to a highly heterogenous distribution in the median network complexity for villages with no partnership between wildlife and forestry, meaning that the median network complexity for villages with no partnerships across all sectors is a poor indicator, and that instead we need to take sector differences seriously.

In the *coastal* sector where all villages were involved in partnerships, we observe a less substantial 20% difference in median network complexity between simpler partnerships (3.5) and more complex partnerships (4.2). This difference is not very substantial but still significant. In fact, the lower quartile of villages with more complex partnerships in fact has a network complexity of 1.5 that is substantially lower (100% lower) than the lower quartile of villages with simpler partnerships, which has a network complexity of 3.0.

To sum up, in our mapping of how well partnership complexity maps onto observed differences in network complexity, we find that villages involved in institutionally more complex partnerships exhibit a substantially higher network complexity than simpler partnerships (+140%) and villages with no partnerships (+320%). Yet, these substantial differences gloss over a very heterogenous distribution across the three sectors studied. In the case of wildlife, the median differences observed are good indicators of the underlying distribution. However, in the case of forestry, villages with no partnerships have a relatively high median network complexity and villages with simple partnership have a group of highly network complex villages which are on par with the median villages with more complex partnerships. In the case of the

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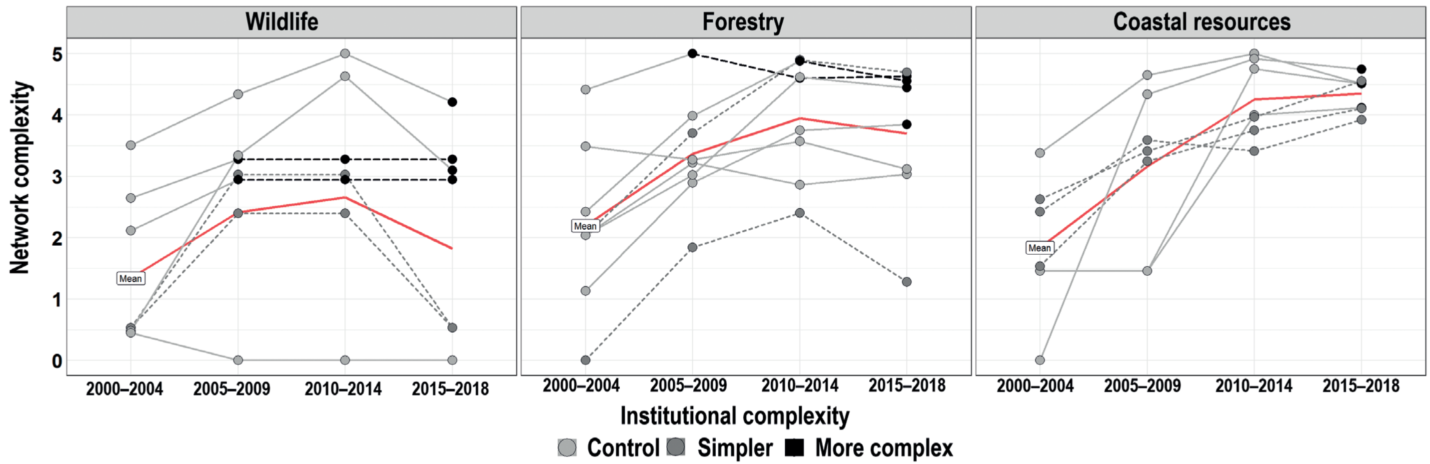

Figure 8.2 Governance complexity trajectories. Source: authors.

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coastal sector, villages with more complex partnerships only have a slightly higher median network complexity than villages with simpler partnerships, and there is a group of villages with more complex partnership that in fact have a very low network complexity. These sector-level heterogeneities mean that we cannot consider the relationship between the institutional complexity of the partnerships and their actual network complexity to be associated mechanically. This points to the importance of accounting for sector-level differences as well as the importance of capturing not only the institutional complexity of partnerships but also of the complexity of the networks in which they are embedded.

Complexity trajectories

We continue our analysis by plotting the trajectories of the study villages along the two complexity dimensions outlined in the above sections. In Figure 8.2, we observe variation in network complexity (vertical axis) and institutional complexity (colour of points) over time (horizontal axis) in the three sectors. In line with what we know from the literature and our field research, the plot tells us that 'governance complexity' (the combination of network complexity score on the vertical axis and the institutional complexity score indicated by the dot colour) increased in all three sectors throughout most of the observation period. In the coastal sector, governance complexity grew in all villages across the four observation periods, whereas for forestry and wildlife growth in complexity happened only prior to the 2010 to 2014 window, after which a slight decline can be observed. We note that in all cases growth in network complexity happened prior to villages entering institutionally 'more complex' partnerships. We also note that in villages where we can observe changes in network complexity after entering a more complex partnership, network complexity declines slightly afterwards.

In only one 'no-partnership' case in the wildlife sector did network decrease from the first to the last observation period. Also, while there is considerable variation in the intensity of network growth across villages, most villages kept their rank position in the distribution. This means that most villages that started with a high network complexity relative to other villages within their sector in the same time period, also ended with a high network complexity relative to other villages. Conversely villages that started with a low-rank position in the distribution, also ended with a low rank. Despite this pattern, we did see some cases where villages leapfrogged from a low to a high rank in the forestry and coastal sectors, suggesting that in these cases network building is likely to be associated with village efforts in the partnership formation and implementation process as well as the activities of partnership "orchestrators" such as the MCDI who played a very active role in network building in the forestry case.

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In all three sectors, we find that in 2000 there were no institutionally 'more complex' partnerships in place in any of the study villages (see details in Chapters 4 to 6). In the forestry and wildlife areas, the first complex partnerships were introduced in the 2005 to 2009 window, while in the coastal sector area the first 'more complex' partnerships came later in the 2015 to 2018 window. We can also observe some villages jump from no partnerships to 'more complex' sustainability partnerships whereas other villages move from 'simpler' partnerships to 'more complex' partnerships. In terms of network complexity, we observe a general upward trend over time, with a steeper increase in the coastal sector, a slighter increase in the forestry area and a barely detectable increase in the wildlife area.

Another empirical question that our project sought to address was whether network complexity precedes institutional complexity or vice versa. A more detailed and context-specific tracing of partnership formation processes is available in previous chapters. What we are highlighting here is that entering 'more complex' partnerships commonly entails prior significant network building. We note that in all villages where institutionally 'more complex' partnerships became effectual, this was preceded by a process of network building, during which time villages developed higher network complexity. In some villages, growth in network complexity was consistent across all periods, while in some villages initial growth was followed by stagnation or a slight decrease after entering a 'more complex' partnership. For villages that had no partnerships throughout the observation window, we generally observe a stagnant trajectory of network complexity. In the wildlife area, we observe one village with very low network complexity in the 2000 to 2004 window, decreasing to zero in the remaining observation period. In the forestry area, we observe two such villages which are both in the range of medium network complexity across the observation period.

To conclude, in Table 8.1 we summarize the above findings by observing the distribution of governance complexity along the two dimensions of institutional and network complexity. Here, we classify what partnership category villages were in towards the end of our study period. To simplify our network complexity measure, we constructed a dummy for all villages that were above the median within a sector towards the end of our study period. Again, this table demonstrates that villages that end with a higher network complexity also tend to be those villages who have entered a 'more complex' partnership. Yet, there is also some cross-over of 'simpler' partnership villages that developed higher network complexity, and some 'more complex' partnership villages that have failed to do so.

Table 8.1 Governance complexity of partnership villages at end period (2015–2018)

	Low network complexity	**High network complexity**	
Complex partnership	Likawage Ngarambe Ngorongo Tapika	Kisiwa Mgao Msangamkuu Namela	Kikole Mchakama Nainokwe Mloka
Simple partnership	Mahurunga Migeregere Kandawale Ngarambi	Mkubiru Msimbati Kiwawa	
Control	Mavuji Ruhatwe Nambunju Tawi		

Legend:

Red: wildlife villages; green: forestry villages; blue: coastal villages

Source: authors

Conclusion

In this chapter, we argued that research on governance complexity should pay more attention to the interactions between (and combinations of) institutional and network complexity in the governance of natural resource sectors. The literature on sustainability governance increasingly instructs researchers to pay attention to network complexity yet has neglected the fact that institutional and network complexity, while related, are not identical. For this reason, we introduced and outlined an analytical distinction between the two, with the first dimension focusing on rule and the second dimension focusing on the structure of actors and ties involved in governance. We showed that there is a statistical association between these two dimensions (although the intensity and significance of this association is highly sector-dependent), and that the building of more complex networks tends to predate the joining of more complex institutional governance forms. We interpret this as an indication that partnership initiation processes afford, as well as call for, network-building processes. Most cases of network growth prior to partnership formation, however, led villages to consolidate their position in the rank distribution. This suggests that the level of complexity of the networks in which villages were already embedded prior to partnership take-up might partially explain the propensity of villages to enter into a partnership (what we

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might term a *network capacity selection* effect). Yet, there were still cases of villages in the forestry and coastal sectors that climbed from a low to a high network complexity rank. This conversely indicates that villages with little network complexity at the outset might have been afforded network resources by the partnership process and/or actively engaged in network building, leading them to develop more complex networks (what we might call a *network capacity building* effect).

While these findings are not conclusive, they do point to the necessity of accounting for both sector and village-level heterogeneity (including selection effects) if we are to draw inferences about how and why the trajectories of institutional and network complexity impact on the performance of natural resource partnerships. In the following chapters we present regression results that address these inferential challenges and further investigate the extent to which environmental and livelihood outcomes are attributable to variation in institutional and network complexity.

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9

The Environmental Impacts of Sustainability Partnerships in South-east Tanzania

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Introduction

In this chapter, we use two primary data sources to assess the differential environmental impacts of 'simpler' and 'more complex' sustainability partnerships involved in natural resource governance in south-east Tanzania. First, we use remotely sensed data to assess changes in forest cover in the Kilwa and Rufiji sites (relevant to assess forestry and habitat conditions for wildlife) and mangrove cover and coral conditions in Mtwara (relevant to assess coastal resources). Second, we examine perceptions of change among survey respondents in relation to the quality of the three major resources of interest over the five years prior to survey administration. In Chapters 4, 5, and 6, we presented descriptive statistics on the survey data to examine resource-specific issues, and in relation to legitimacy in Chapter 7. Here, we apply more-advanced statistical techniques for cross-sectoral comparative purposes. While we find general consistency in the relationship between institutional complexity and positive environmental outcomes using our remote-sensing data, we observe considerable divergence in the relationship between network complexity and remotely sensed environmental outcomes, as well as in local perceptions of environmental change, and institutional and network complexity.

We begin our discussion with a brief overview of patterns of change in forest, coral, and mangrove cover in our study villages between 2000 and 2018, derived from remote-sensing data (details on data collection methods are available in Chapter 3; here, we focus our discussion on analytical methods). We then present results from Cox proportional hazards models using propensity-score matched data. These estimate the risk that 10 metre by 10 metre patches that were covered in forest, coral, or mangrove in 2000 would become another type of land cover or sea floor in subsequent observed years. Propensity-score matching is a technique commonly used to assess the effectiveness of protected areas. It helps adjust for selection bias that occurs

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because protected areas are often established in places where there is less land-cover change pressure (Gaveau et al., 2009; Pfaff et al., 2015; Cuenca et al., 2016). These models allow us to disentangle the relative contributions that *institutional* and *network* complexity make in explaining environmental changes. We then turn to an analysis of perceived changes in environmental quality based on survey responses using proportional odds logistic regressions – again to distinguish the relative contributions of institutional and network complexity to perceived change. We conclude with a discussion of convergences and divergences between the remote-sensing and perception results.

Statistical methods

Analysis of remote-sensing data

To examine the relationship between institutional and network complexity and environmental outcomes, we applied the same set of methods for all the different land-cover and sea-floor types described in Chapter 3 (forest, mangrove, and coral). In each case, we study whether or not pixels of the land cover of interest in 2000 persist as that type of land cover over time. Cox (1972, 1975) proportional hazard models are commonly applied to such questions (Vance and Geoghegan, 2002; Busch and Vance, 2011; Reid et al., 2019), as they provide a means to estimate how different variables are related to the time it takes until the occurrence of an event. Cox models permit time-varying covariates, which makes them particularly attractive, given that both our institutional and network complexity variables change over time.

For each land-cover type, we used the raster (Hijmans and van Etten, 2012) package in R 3.6.2 (R Core Team, 2020) to identify all pixels of that land cover in the study villages in each district as of 2000, and then track those pixels (or, in the case of Kilwa, which is the largest district and very heavily forested, a random sample of those pixels) across subsequent years to identify any change to another land-cover type. For Rufiji, this amounted to approximately 3.8 million forest pixels, for Kilwa, a sample of 5 million forest pixels, and, for Mtwara, 206,000 coral and 271,000 mangrove pixels. We then identified control variables characterizing relevant aspects of each pixel's geographic situation (which differ depending on the district and resource in question) for the entire time period the pixel was under the initial land cover.

As noted above, studies of the impacts of geographically specific governance arrangements, like protected areas, often suffer from selection bias because governance systems are non-random located. To address these challenges, many studies use matching methods, which build samples that are comparable on key confounding variables from an existing observational dataset, as a way to assess governance regimes' actual treatment effects. Many existing approaches construct matches via propensity-score analysis, using binomial regressions to predict whether or not an observation was in the treatment group and then creating a sample of observations with similar predicted probabilities of treatment (Dehejia and Wahba, 2002). This approach has a few drawbacks in our case. First, eliminating observations also means eliminating information. Second, the method only works for a single treatment group, while in our case we are interested in comparing two different types of institutional complexity treatment, 'more complex' and 'simpler' partnerships, with control villages. Griffin et al.'s (2014) Toolkit for Weighting and Analysis of Nonequivalent Groups (TWANG), which we use for our analysis, takes a different approach to matching, applying machine-learning algorithms to optimize propensity-score-based weights to create balanced datasets. This method has the advantage of using all available observations and is capable of creating matched samples for multiple treatments.

The variables on which we matched differed slightly across the study sites due to differences in our capacity to identify distinct land-cover classes in areas with different resource types and, in the case of Mtwara, the stark differences between one of the resources in question (coral) and forest/mangrove areas. In each case, however, we selected matching variables designed to capture the primary geographic characteristics of a plot likely to affect both its degradation risk and the likelihood for it to be or become part of a 'simpler' or 'more complex' partnership set-up. Table 9.1 presents the matching variables used in the analysis.

Due to the very large size of these datasets (in the low millions of pixels for Kilwa and Rufiji and the mid-100,000s for coral and mangrove in Mtwara) and the fact that the TWANG algorithm uses machine learning to optimize weights, the matching process was quite computationally intensive, requiring approximately one month to complete for Kilwa and Rufiji and several days for the two resources in Mtwara, following several additional days computing distances to identify the nearest village coast. After using TWANG's algorithm to construct observation weights based on data on the pixels' geographic situation as of 2000, we turned to the survey package (Lumley, 2010) in R 3.6.2 (R Core Team, 2020) to estimate our Cox models.

Analysis of survey-based perception data

To assess the relationship between institutional and network complexity on the one hand, and perceived changes in environmental quality on the other, we relied on data from our survey. The survey featured an item asking respondents to rate their perception of changes in the quality of forest (in Kilwa), wildlife (in Rufiji), and mangroves

Table 9.1 Variables used to conduct machine-learning-based propensity-score matching, by study district.

District	Matching variables
Kilwa	Distance to major roads Distance to nearest cropland Distance to nearest human settlement Distance to nearest forest edge Terrain ruggedness index Forest type in 2000
Rufiji	Distance to major roads Distance to nearest cropland Distance to nearest forest edge Terrain ruggedness index Forest type in 2000
Mtwara – mangrove	Distance to nearest coastline Distance to edge of healthy mangrove Distance to edge of any mangrove Distance to nearest terrestrial built-up area
Mtwara – coral	Distance to nearest coastline Distance to seagrass cover Distance to edge of continental shelf Water depth Distance to nearest terrestrial built-up area

Source: authors

and coral (in Mtwara) over the previous five years. Respondents could report that resource quality was 'Much worse', 'Worse', 'About the same', 'Better', or 'Much better'. To reduce statistical noise due to differences in respondents' thresholds for considering something to be 'much' worse or better, as opposed to simply worse or better, we collapse 'Much worse' and 'Worse' into a single category, 'Worse'; and 'Much better' and 'Better' into a single category, 'Better', for our analysis.

Because the resulting variables are ordinal, we analyse them using proportional odds logistic regressions. Unlike the case for our remotely sensed data, these data are cross-sectional, and, because households are clustered in villages, lack sufficient spatial distribution to conduct meaningful propensity-score matching based on geographic characteristics that might act as confounding variables. As a result, these models should be understood only to identify associations between institutional and network complexity and perceptions of changes in natural resource quality. They provide much weaker evidence of causal association than our remote-sensing analysis.

Environmental change: Results from remote-sensing data

Change in forest cover

The vast majority of forested areas in Tanzania as of 2007 remained forested in 2017. During the same time period, however, the country experienced a net loss of forest areas, with deforested area approximately five times afforested or reforested area (see Figure 9.1 and Map 9.1). While new forest growth is spaced throughout the country, forest loss has been concentrated along an arc stretching from the south-eastern coast to the north-west.

As can be seen in Map 9.2, our study sites are located in an area that has been characterized by similar forest change trends to the country as a whole, with deforestation and degradation outpacing the growth of new forest areas (though, notably, many stable forest areas experienced biomass growth during the time period). Deforestation and forest degradation have been especially pronounced along the main road near the coast, which connects the region to commercial activities in Dar es Salaam.

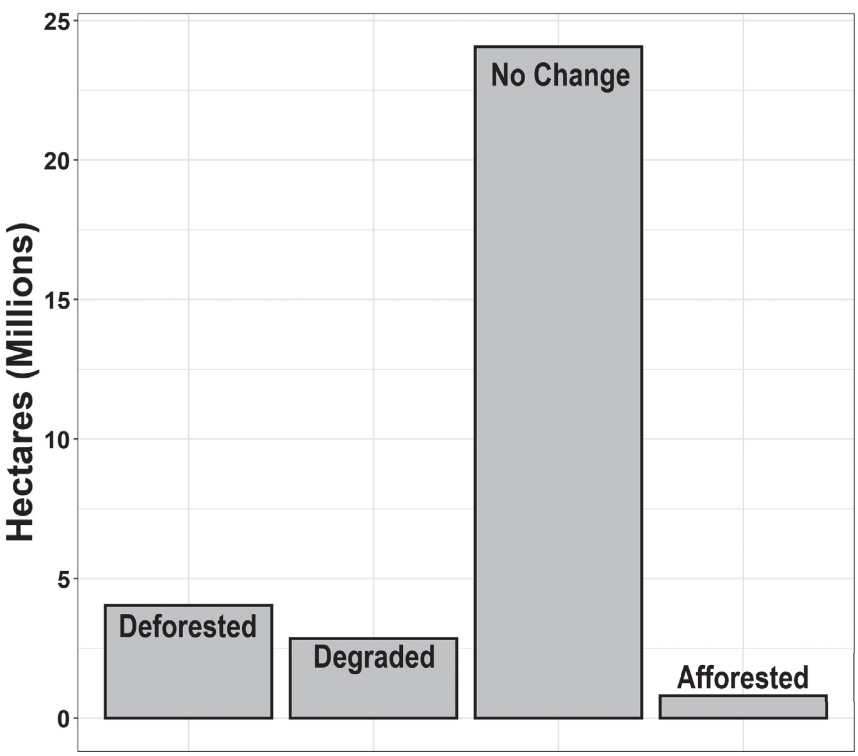

Figure 9.1 Summary of forest change in Tanzania, 2007–2017. Source: authors.

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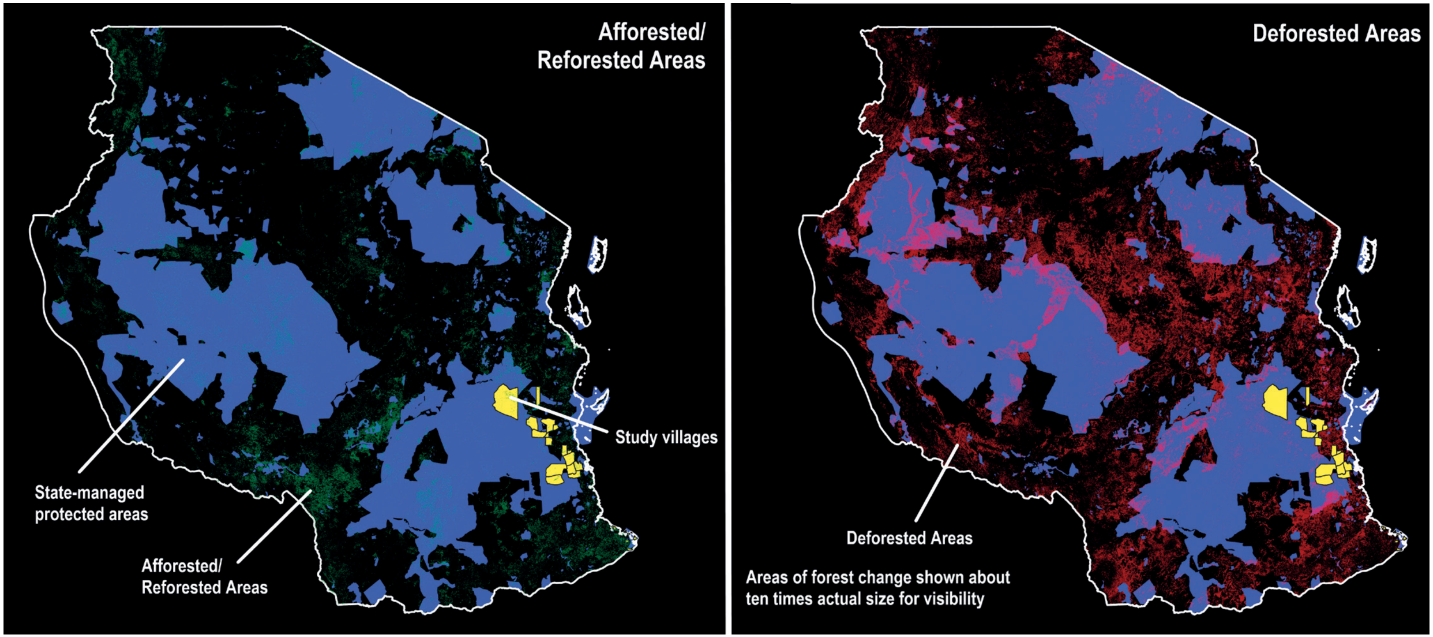

Map 9.1 The geography of forest change in Tanzania, 2007–2017. Source: authors.

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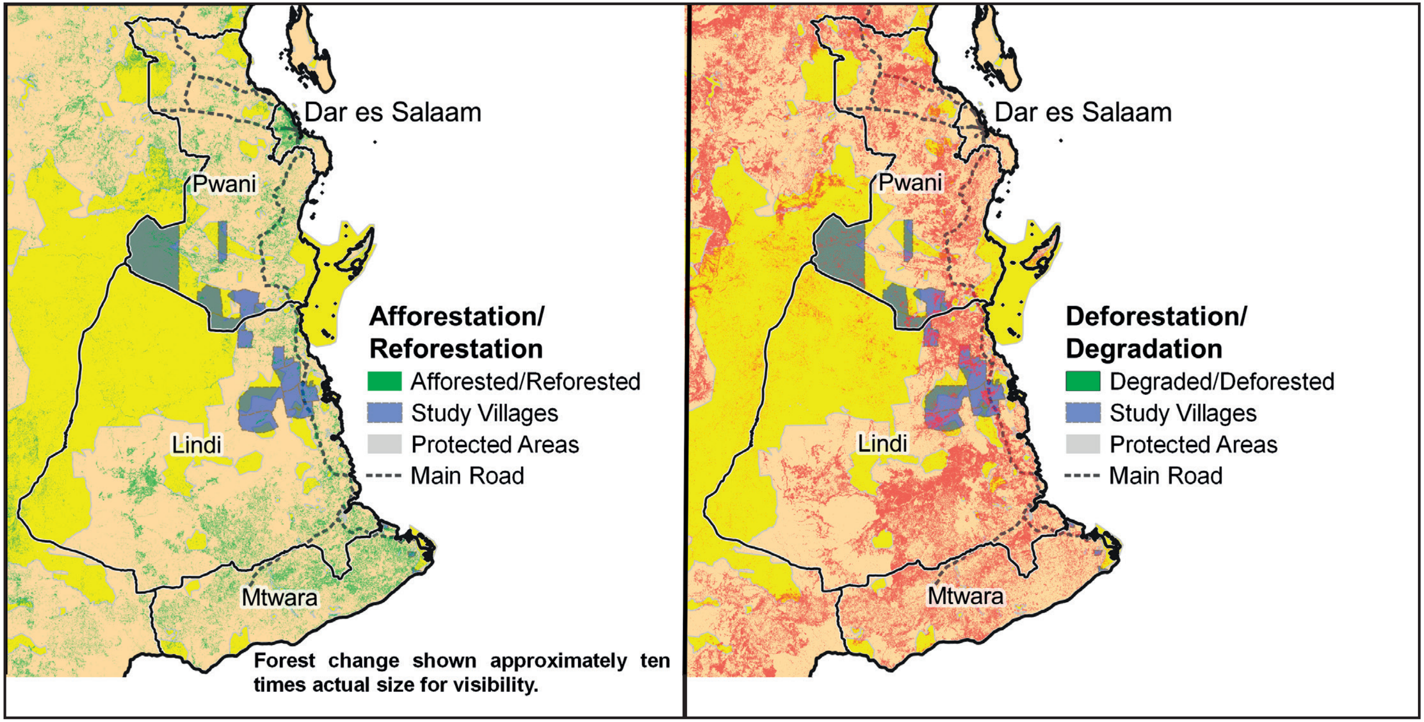
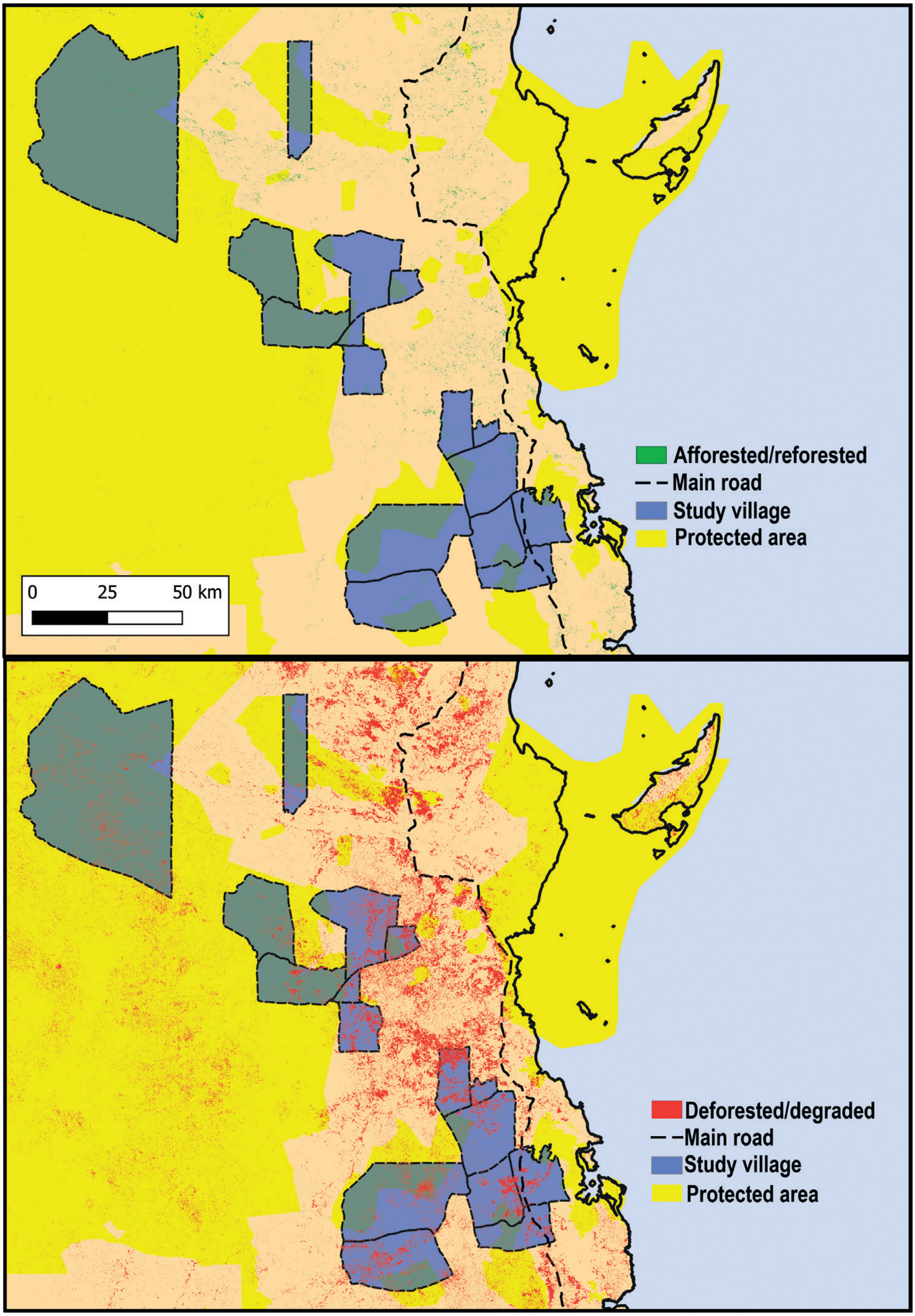


Map 9.2 The geography of forest change in the study regions, 2007–2017. Source: Elaboration by the authors.



Map 9.3 The geography of forest change around the study villages in Kilwa and Rufiji, 2007–2017. Source: authors.

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Reflecting these dynamics, our analysis of environmental outcomes in Kilwa and Rufiji focuses on forest loss, or, more correctly, its prevention. In the case of Kilwa, this is the most logical choice, as forest cover maintenance is the primary objective of the governance systems in question. In Rufiji, our rationale is more pragmatic. While forest loss necessarily contributes to landscape fragmentation, which generally has negative consequences for biodiversity, particularly for megafauna, we are faced with an additional challenge in that wildlife population data have generally not been effectively tracked over time in a publicly accessible manner. While there are some publicly available wildlife sightings datasets, these are just as (or more) affected by differing levels of local foot traffic as they are by actual wildlife populations. For these reasons, we take forest loss and consequent fragmentation to be an important proxy indicator of wildlife governance mechanisms' environmental impacts.

As can be seen in Figure 9.2 and Map 9.3, in our study villages in Kilwa and Rufiji, where forest quality is a relevant environmental outcome (in the latter site, for wildlife habitat), forest recovery, with few exceptions, is not a dominant landscape feature. Forest recovery

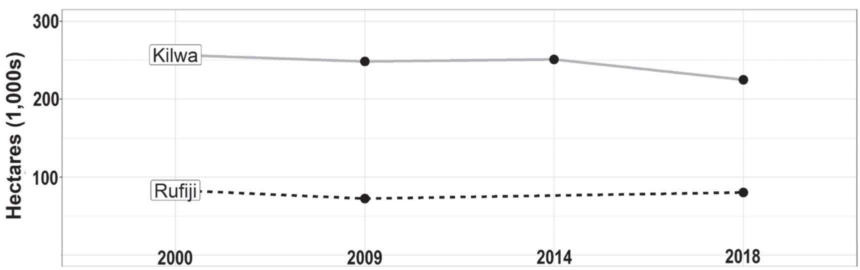

Figure 9.2 Summary of forest change in the study regions, 2007–2017. Source: authors.

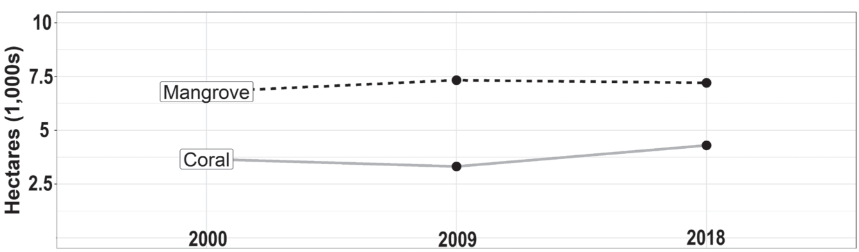

Figure 9.3 Summary of coral and mangrove change in areas contiguous to study villages in Mtwara, 2000–2018. Source: authors.

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is interspersed with considerable forest loss, reflecting both timber extraction activities and the churn that one would expect in a mosaic, swidden landscape. While at the scale presented in Map 9.3 considerable forest loss near the main road to Dar es Salaam is clearly visible, we also observe substantial deforested areas elsewhere.

While the study sites in Kilwa and Rufiji have collectively experienced considerable forest loss, this is a landscape characterized by swidden agriculture, and thus one with regenerating fallow areas. As can be seen in Figure 9.2, total forested area declined slightly in study villages in both Kilwa and Rufiji between 2000 and 2018. But this change is not dramatic, and there is evidence of some recovery in Rufiji between 2009 and 2018. This relative aggregate stability notwithstanding, Figure 9.2 and Map 9.3 clearly demonstrates that deforestation and forest degradation in these study areas is spatially heterogeneous.

Change in mangrove and coral

Even more so than in the case of wildlife data, fish stock estimates – let alone estimated changes – are difficult to find. Lacking such data for the coastal resource areas, we tracked the health of coastal mangroves and coral. These resources provide a critical habitat and spawning ground for numerous marine species that support livelihoods in the study sites, and thus can reasonably act as a proxy for marine ecosystem quality.

Figure 9.3 demonstrates that, similarly to forest cover in the study sites in Kilwa and Rufiji, coral and mangrove areas off the coast from the study sites in Mtwara and within the Marine Park (MBREMP) have been relatively stable and indeed are slightly higher in 2018 than in 2000. However, this aggregate stability masks spatial heterogeneity. As can be seen in Map 9.4, some areas in the study region have been particularly affected by coral and mangrove destruction and degradation, through it is important to remember that these densities are also driven simply by the location of greater extents of healthy coral and mangrove in different areas, particularly within the boundaries of the MBREMP area itself. That different sustainability partnerships in Mtwara affect environmental outcomes, however, can be quite clearly seen in the inset map in Map 9.4, which shows the locations of ground-truth points collected to train the remote-sensing data. During the collection process, the ground-truth team also recorded whether or not there was evidence of dynamite damage to corals. There is a clear distinction between ground-truth points collected within and outside MBREMP, which demonstrate evidence of dynamite damage to be substantially more common outside the marine protected area's boundary.

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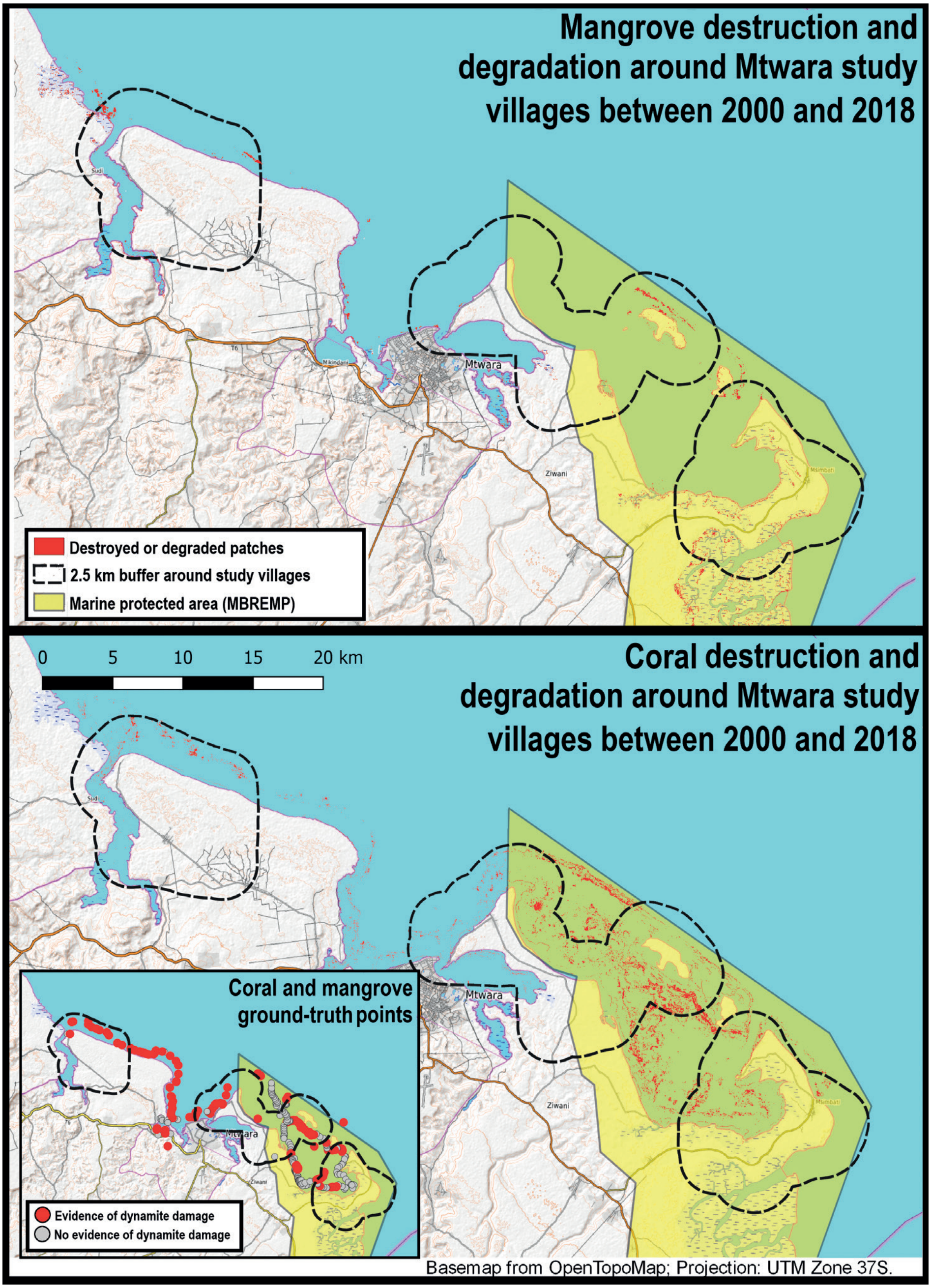

Map 9.4 Destruction and degradation of healthy coral and mangrove patches around Mtwara study villages, 2000–2018. Source: authors.

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Impacts of institutional and network complexity on environmental change

Evidence from remote sensing

Figures 9.4, 9.5, 9.6, and 9.7 present results from Cox models predicting change in the land-cover types of interest discussed previously in this chapter. Each model includes spatial fixed effects, whose areas vary across models to adapt to different local conditions, as well as some additional control variables. For simplicity, we focus on the coefficients and predicted effects of only our variables measuring institutional and network complexity. In the case of *institutional* complexity, these are binary variables that take on the value of 1 for pixels that fall within an active governance type for at least part of the time step under observation. In the case of *network* complexity, we use the index described in Chapter 8, which is defined at the village level for each time step in the model. The plots provide concordance estimates, which are computed by taking pairs of one observation whose land cover did undergo a change, and one observation that did not undergo a change and computing the proportion of pairs for which the predicted probability of land-cover change was higher for the pixel that actually experienced change. A concordance value of 0.5 would be equivalent to a random guess, while a concordance of 1 would indicate perfect prediction.

Figures 9.4 and 9.5 present each model's estimated coefficients and 99% confidence intervals, on an odds scale. On this scale, a one-unit increase in the independent variable listed on the left would be expected to multiply the odds (that is the probability that an event occurs divided by the probability that it does not occur) that a pixel experiences deforestation by the coefficient value, holding all the other variables in the model constant. Because, like other forms of regression, Cox models generate coefficient estimates controlling for all the other variables in the model, they help us disentangle the relationships between variables measuring institutional and network complexity and forest loss. In the case of the binary variables for different management categories, this means the difference between the risk of change for a pixel under a 'more complex' or 'simpler' institutional set-up and a pixel under open-access management. Thus, values less than one indicate that the variable is negatively related to forest loss, while values greater than one indicate a positive association. Because these models include very large numbers of observations (in the hundreds of thousands of pixels for Mtwara and 5 million for Kilwa and Rufiji), the confidence intervals are often very precise, sometimes narrower than the point indicating the coefficient estimate itself, so we present confidence intervals as thick bands and the coefficients as black dots.

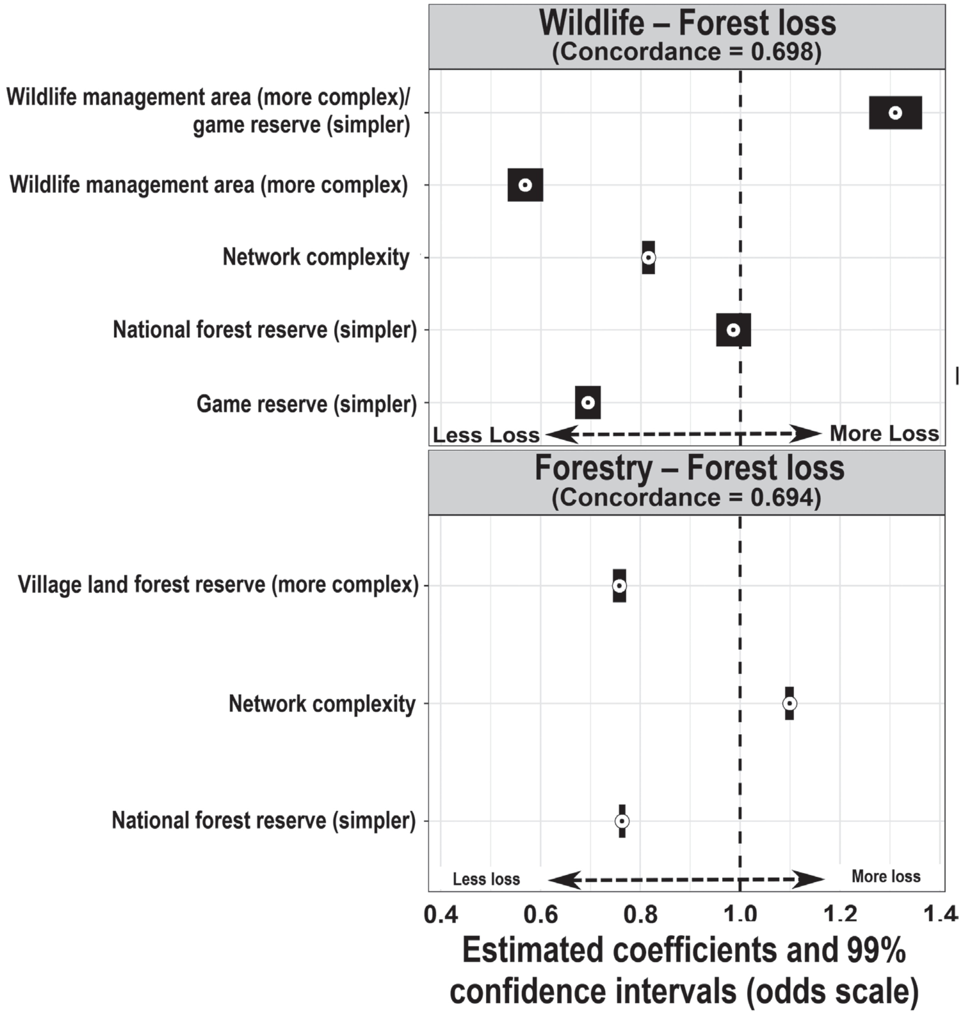

Figure 9.4 Estimated effects of institutional and network complexity on the odds a pixel is deforested. Source: authors.

Except in the case of areas where sustainability partnerships with 'simpler' institutional complexity operate in Rufiji, all the estimated coefficients for institutional and network complexity variables are statistically significantly different from zero. Given the very large sample sizes for these models, however, this should come as no surprise. More importantly, the coefficients are quite large, indicating substantively meaningful effects on land- and sea-floor-cover change. While it is clear from Figures 9.4 and 9.5 that both 'more complex' and 'simpler' partnerships are generally associated with decreased resource loss,

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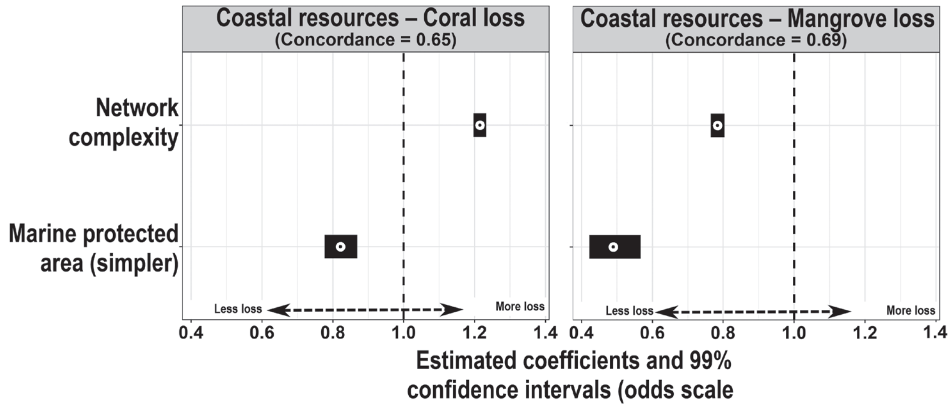

Figure 9.5 Estimated effects of institutional and network complexity on the odds a mangrove or coral pixel is destroyed. Source: authors.

'more complex' institutional set-ups slightly outperform 'simpler' ones in protected forests in the forestry and wildlife cases. This is indicated in Figures 9.4 and 9.5 by the fact that the estimated coefficients for 'more complex' institutional set-ups in these settings are further below one than the estimated coefficients for 'simpler' arrangements in the same research site.

There are, however, notable exceptions. In wildlife, for example, one site where the claimed boundaries of a recently established 'complex partnership' (a Wildlife Management Area) overlap a 'simpler' partnership area (the Selous Game Reserve). This overlapping area has higher rates of forest loss than control areas. This elevated deforestation is a curious and not readily explainable finding. In the coastal resources case, MBREMP dramatically outperforms the Beach Management Units (BMUs) in both mangrove and coral protection. This is logical, as MBREMP has an explicit mandate to conserve mangrove and corals, while BMUs are more narrowly focused on fishing activities (and indirectly coral through bans on dynamite fishing).

The estimated coefficients for *network* complexity are as we expected in only two out of the four models presented in Figures 9.4 and 9.5. In the wildlife and mangrove models, network complexity coefficients are below one, indicating that sites with higher network complexity tend to have less forest and mangrove loss. In the forestry and coral cases, by contrast, we find network complexity to be positively related to forest and coral loss. This may be because network complexity can cut in both directions, depending on the nature of the network. In the case of forestry, networks include private sector firms that are engaged in timber extraction, many of them sourcing timber from Forest Stewardship Council (FSC)-certified Village Land Forest Reserves (VLFRs). As sus-

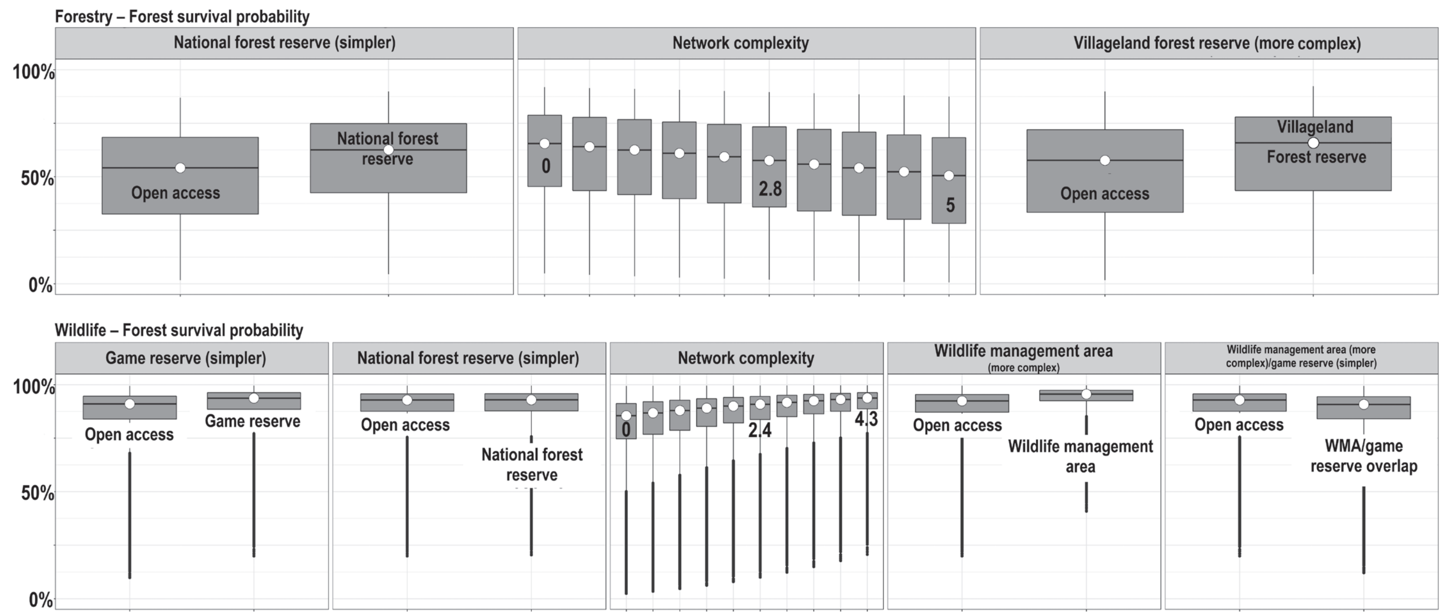

Figure 9.6 Simulated difference in expected forest loss. Source: authors.

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tainable forestry is associated with some forest harvesting at the same time as private sector networks grow, this could account for the association we find. A similar pattern may be at work in the case of coral loss. There, network complexity might reflect more commercial connections that could be increasing demand for fish and, consequently, incentives for dynamite fishing, which, as seen in Map 9.4, appears to be adequately controlled in MBREMP but not elsewhere. If these pressures impact corals, but not mangroves, this might account for the difference in estimated coefficients.

While Figures 9.4 and 9.5 clearly identify the direction of effect for our institutional and network complexity variables, getting an intuitive sense of the magnitude of a variable's effect from odds ratios alone can be challenging because they are not on a percentage probability scale. Furthermore, because Cox model coefficients are multiplicative, rather than additive, as in ordinary least squares regression models, the substantive effect of a variable depends on the values of all the other variables. To better interpret how our models suggest institutional and network complexity shape sustainability outcomes, it is helpful to look at a distribution of actual observations. The boxplots in Figures 9.6 and 9.7 provide a way to visualize institutional and network complexity's effects on a probability scale across a representative sample of pixels. To construct the figure, we took a random sample of 1,000 of the pixels in each model that survived until the final time period. For each of our complexity variables, we then took these samples and set all of them to the same value for the variable of interest. For example, we created one dataset from Kilwa where all the observations were set to be inside a community-based forest management (CBFM) area (more complex), another where they were all within a National Forest Reserve (simpler), and another where they were all in open-access areas (control). This created a new dataset, consisting of each of the 1,000 randomly selected pixels set to each of the simulation values for the variable of interest.

While this approach allows us to examine the expected impacts of institutional and network complexity across a representative sample of pixels, the simulated values would not capture the uncertainty of our model coefficients. To capture this uncertainty, we took each simulated dataset described above and then predicted the probability that each pixel in the dataset would survive until the final time period given the simulated value of the independent variable of interest. We computed these values 1,000 times, each time taking a random draw from the distribution of our estimated model coefficients.

Together, these two procedures create distributions of predicted probabilities of survival to the final time period for a representative sample of observations for which different values of our variables of interest are simulated. To make these estimated effects clear, we visualize the distribution of these predicted probabilities using boxplots, a

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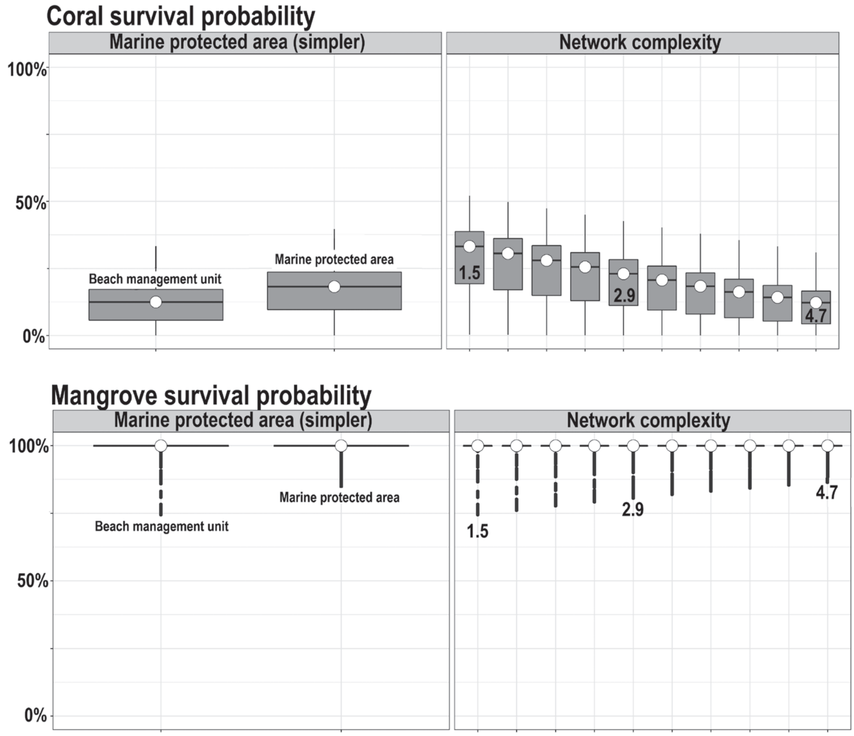

Figure 9.7 Simulated difference in expected mangrove and coral loss.
Source: authors.

common method of displaying distributions. This approach highlights the nonlinearity of the relationship between institutional and network complexity and land-cover or sea-bed change, which is important to keep in mind in interpreting the graphic. In situations where pixel survival is already relatively high, as, for example, for forested areas in the wildlife case and mangrove areas in the coastal resources case, then the effects of complexity are substantively small, even though they are a proportionately large reduction in deforestation risk. For pixels in the lower quantile of survival probability in the wildlife case, for example, shifting from an open-access (control) area to a more complex Wildlife Management Area (WMA) is associated with about a 4–5% increase in survival probability. While that might seem substantively small, it is large in relation to the already low risk of deforestation, such that the lower quartile of survival probabilities for forest pixels in WMAs is about the median survival probability level in open-access areas.

Beginning with institutional complexity, Figures 9.6 and 9.7 both reinforce and temper our interpretation of Figures 9.5 and 9.6. In both the wildlife cases, we find the lower quartile of simulated survival prob-

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abilities for pixels in the more complex WMA governance regimes to be close to the median simulated survival probability for pixels in control areas. In the forestry case, the more complex VLFR governance regimes have roughly 10% higher median survival rates than the control areas. In both cases, this is a substantively larger improvement than observed for simpler governance regimes (Game Reserves and National Forest Reserves) in the two sites.

Network complexity is a bit more mixed in its substantive impacts than might at first appear from Figures 9.4 and 9.5. While network complexity has a meaningful effect on forest protection in the wildlife case, with the lower quartile of simulated survival probabilities for pixels set to the maximum network complexity value approximately the median simulated survival probability for pixels set to the lowest observed network complexity, this is the exception. For coastal resources, the relationship between network complexity and mangrove survival is positive, but mangroves already have sufficiently high survival rates that the substantive effect is miniscule. In the forestry case, network complexity is associated with modest reductions in survival probability for the lower quartile across the variable's range. The negative relationship between network complexity and coral survival is substantial, with the upper quartile of simulated survival probabilities for pixels set to the highest observed network complexity, approximately that of the lower quartile for pixels set to the lowest observed value of the variable.

On balance, the evidence presented in Figures 9.6 and 9.7 should increase our confidence in the positive contribution of institutional complexity to forest protection, although, because of satellite image availability, we cannot make firm claims about the role of institutional complexity in the protection of coral resources. For both the wildlife and forestry cases, we find statistically and substantively significant increases in the probability of forest patch survival under more complex institutions, which perform at least as well as simpler institutions.

The case for network complexity is far murkier. While we find statistically significant, positive relationships between network complexity and land-cover or sea-bed protection in two of our models, we only find substantially meaningful relationships in the wildlife case. One major possibility to consider here is that network complexity itself might be outcome-neutral. That is, network complexity could enable either protection or destruction, depending on context, and it certainly might matter which actors are involved in a complex network. If a village's network complexity arises from the presence of numerous firms, for example, that might be associated with market forces increasing the attractiveness of more extractive economic activities. Future research that can disentangle the effects of different types of actors within natural resource governance networks could likely shed more light on these issues.

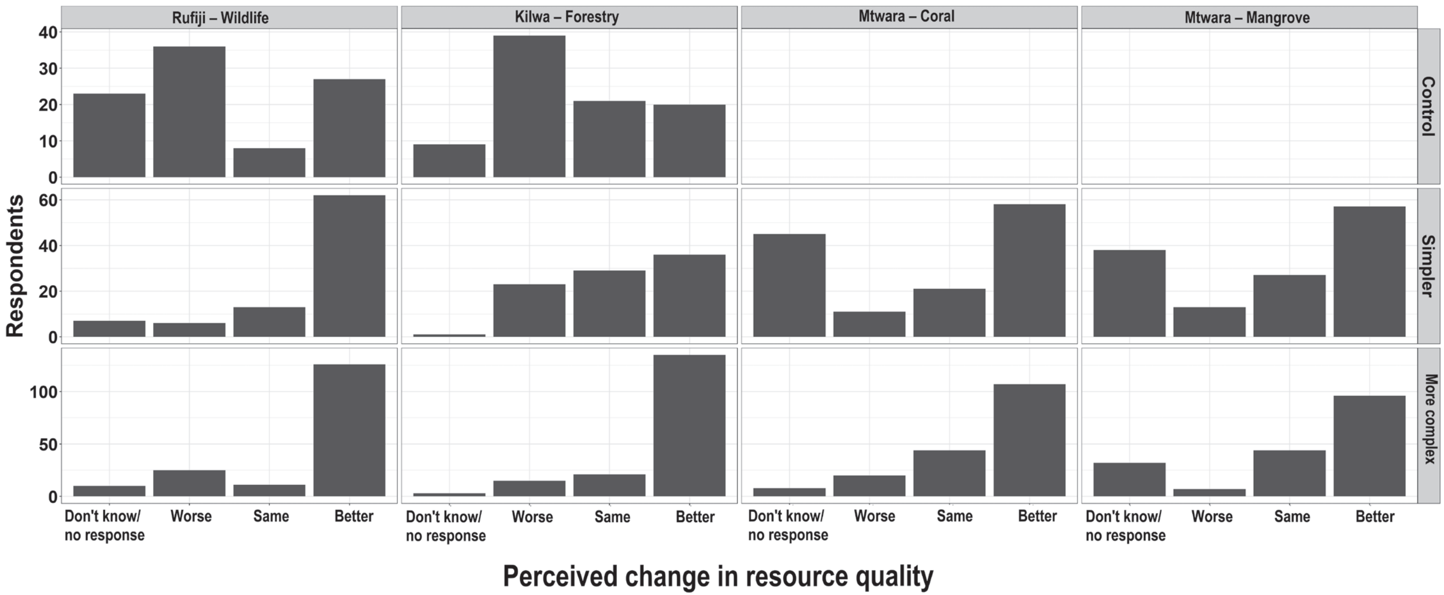

Figure 9.8 Perceived changes in resource quality (2012–2017). Source: authors.

Perception evidence from the survey

While much more subjective, the perceptions of our survey respondents regarding changes in resource quality can provide other sources of evidence on environmental impacts that can be triangulated with the analysis carried out from remote-sensing data. Figure 9.8 presents results from survey questions where respondents were asked their perceptions of changes in the quality of the resources being investigated in their area over the previous five years. A quick glance shows a clear difference in perceptions of resource quality between respondents in control sites on the one hand and those with 'more complex' and 'simpler' partnerships on the other. It is not clear, however, whether or not there is a significant difference between the perceptions of respondents in 'more complex' and 'simpler' partnerships.

Figure 9.9 presents simulations from proportional odds logistic regression models predicting survey respondents' perceptions of changes in resource quality presented in Figure 9.8. Because responses on this item are on an ordinal scale, it is not feasible to use ordinary least squares regression to disentangle the relative contributions of institutional and network complexity to respondents' perceptions of environmental change. Proportional odds logistic regression models adjust for the response nonlinearity resulting from ordinal data. These models also allow us to control for a key geographic factor likely to affect environmental change – distance from the main coastal road leading to Dar es Salaam, as well as to test whether and how household characteristics might affect perceptions of environmental change.

We find statistically significant relationships between institutional and network complexity and perceptions of environmental change only in the forestry case. There, we find statistically significant evidence that residents of villages engaged with more complex partnerships (VLFRs) are much more likely than those in control villages and villages with simpler partnerships to report positive perceptions of forest quality. Conversely, however, we also find a significant negative relationship between network complexity and perception of positive environmental outcomes. This is a rather puzzling result, although it is possible that higher network complexity might be associated with more awareness of forest issues in the forestry case, because this network complexity, as noted in previous chapters, is driven largely by the efforts of a major regional conservation organization.

We find no significant relationships between institutional and network complexity in the other two resource cases. At first, this might seem surprising, as we do find statistically significant associations between institutional and network complexity and environmental outcomes in both of these cases. There are, however, some important contextual differences between the cases that may account for these null results. First, as seen in Figures 9.6 and 9.7, the impact of institu-

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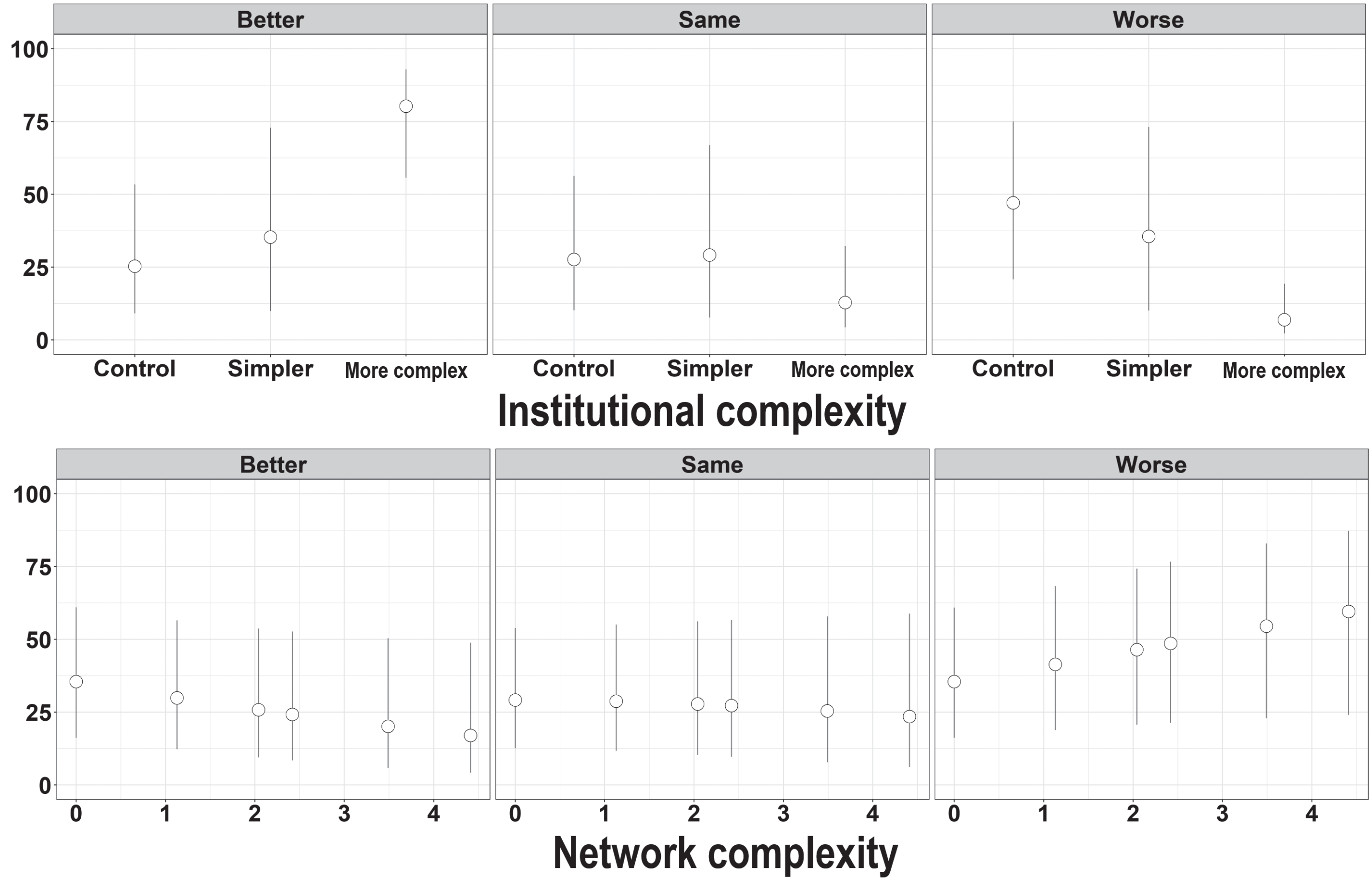

Figure 9.9 Change in predicted perceptions of environmental quality change (2012–2017). Source: authors.

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tional complexity on forest survival is much greater in absolute terms in the forestry than the wildlife case, simply because forests already have a higher survival probability in the wildlife case than the forestry one. This is also true of mangrove patches in the coastal resources case. The inverse may also be true for coral – which exhibits considerable change in Mtwara, although for the opposite reason – there, areas that hosted coral in 2000 seem to have degraded rapidly. As a result, even if the differences between these outcomes are relatively important across institutional and network complexity, the absolute differences may be sufficiently marginal to escape general perception. Second, our remote-sensing analysis only addresses levels of land-cover and sea-bed loss. It is not necessarily the case that the quality of patches that are not fully converted during the observation period is increasing. That is, we might expect correlations between our remote-sensing results and respondents' propensity to report that environmental quality has become worse, but not necessarily better. Finally, in the wildlife case, in particular, the link between the variables studied in the remote-sensing analysis, forest cover, wildlife quality, and the respondent-reported outcomes, is rather indirect.

Conclusion

On balance, the evidence presented in this chapter makes a strong case for the relationship between a higher degree of both institutional and network complexity and the maintenance of forest cover, although we find network complexity to have a more modest contribution than institutional complexity. This is certainly the case for forested areas in forestry and wildlife sites and for mangrove in coastal resource sites (although only for network complexity). While these findings support the plausibility of our key hypotheses regarding the relationship between complexity and environmental outcomes, we also find at least two interesting divergences. First, we find the opposite relationship between network complexity and coral protection (more complex sites are less able to protect coral). However, this should be interpreted in the context of limited availability of satellite imagery of sufficiently high quality, and the fact that efforts against dynamite fishing have been carried out mainly by the regional commissioner, rather than by BMUs or MBREMP. Second, we find no consistent relationships between either form of complexity (institutional and network) and the perceptions by survey respondents on local environmental change. Granted, qualitative assessments of overall quality of resources like forests, wildlife, mangroves, and coral are highly subjective and, in the case of wildlife, more distantly related to our objective outcome measures than in other cases.

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In conclusion, the evidence on environmental outcomes presented here gives us reason to be hopeful about the potential for (institutional and network) 'more complex' forms of sustainability partnership to support effective natural resource management, but it by no means gives us reason to think complexity is sufficient. Nor, as we have seen in the previous chapter, should we think that institutional complexity simply emerges on its own. It must often be deliberately and laboriously constructed and maintained and it involves previous work building complex networks. It could certainly be the case that it matters considerably just which interests are doing the constructing.

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10

The Livelihood Impacts of Sustainability Partnerships in South-east Tanzania

CALEB GALLEMORE, KELVIN JOSEPH KAMDE, ASUBISYE MWAMFUPE, LASSE FOLKE HENRIKSEN, AND DAN BROCKINGTON

Introduction

Natural resource use and governance is fraught terrain in Tanzania. Effective use of natural resources can provide a pathway to sustained prosperity. Failure to do so may result in continued poverty. Given this context, and if we are to understand the impacts of sustainability partnerships, then we have to consider what difference new natural resource governance regimes make for the people who live in these spaces. How do they affect their lives, livelihoods, and prosperity?

In this chapter, we take a closer look at livelihoods of people across the different study sites and the role that different sustainability partnerships play in shaping their current circumstances, and their future. We do so by examining social changes through a particular lens – the assets that people in our study sites use and own. First we describe livelihoods in a general sense and consider how south-east Tanzania compares to other similar parts of the country, demonstrating its relative poverty. Second, we provide more detail on the variation and patterns of livelihood found across our study sites. Finally, we consider how prosperity varies according to the institutional and network complexity of the sustainability partnerships examined in this book.

The study area and the national context

South-east Tanzania is an overwhelmingly rural area, with small towns and numerous villages. Furthermore, population density is generally low and the frontier with as-yet-undeveloped land is rarely closed in many of the more remote locations. Part of the reason why so many natural resource governance initiatives are possible in this area is precisely because there is a good deal of wildlife habitat and forests which could be conserved through suitable forms of village-level planning. Accordingly, the livelihoods of the Tanzanians we interviewed in

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our survey are overwhelmingly rural. The abundance of wildlife and timber does not, however, mean that many people pursue livelihoods dependent upon them.

Few people who live in the forestry and wildlife areas reported relying upon either resource for their livelihood. Their occupations are predominantly farming, with some fishing on the coasts (Table 10.1). For many farming is their only occupation. Businesses are a secondary interest, as is the limited engagement in the timber trade. Indeed, few mention undertaking *kibarua* work – the informal wage labour that is so common in other parts of Tanzania. Casual work indicates either a shortage of land, and/or a desire by labourers for money to finance diverse projects. The lack of casual work in our study sites reflects aspects of both. The relative abundance of land reduces the need for casual labour, as does the lack of economic opportunity.

Furthermore, the forms of agriculture that have been long practised in this area have not been particularly commercial. The lack of good infrastructural links for many years made it relatively expensive to export crops from the region. Many farmers practise forms of shifting cultivation, growing cashew nuts in fields that have become less fertile. There has also been an historic paucity of cattle – meaning no ploughing and no liquidity that livestock would afford.

This is changing: livestock herders are coming into this region. There is now a paved road all the way from Dar es Salaam to Mtwara, with a bridge over the Rufiji River. New high-value cash crops, such as sesame and valuable timber species, can be exported relatively easily (Corbera et al., 2017). However, south-east Tanzania still lags behind the rest of the country in many key development indicators. Indeed, it is known for its relative poverty. Figure 10.1 compares housing characteristics

Table 10.1 Primary and secondary occupations.

	Farming	Livestock	Fishing	Wildlife/ Tourism	Timber	Business	Other	None
Primary								
Wildlife	341	0	0	1	0	4	9	0
Forestry	334	1	0	0	0	9	8	0
Coastal	199	0	116	0	0	25	14	0
Secondary								
Wildlife	13	3	5	1	1	80	85	166
Forestry	16	18	10	0	4	78	84	142
Coastal	112	5	76	0	2	63	35	60

Source: NEPSUS survey

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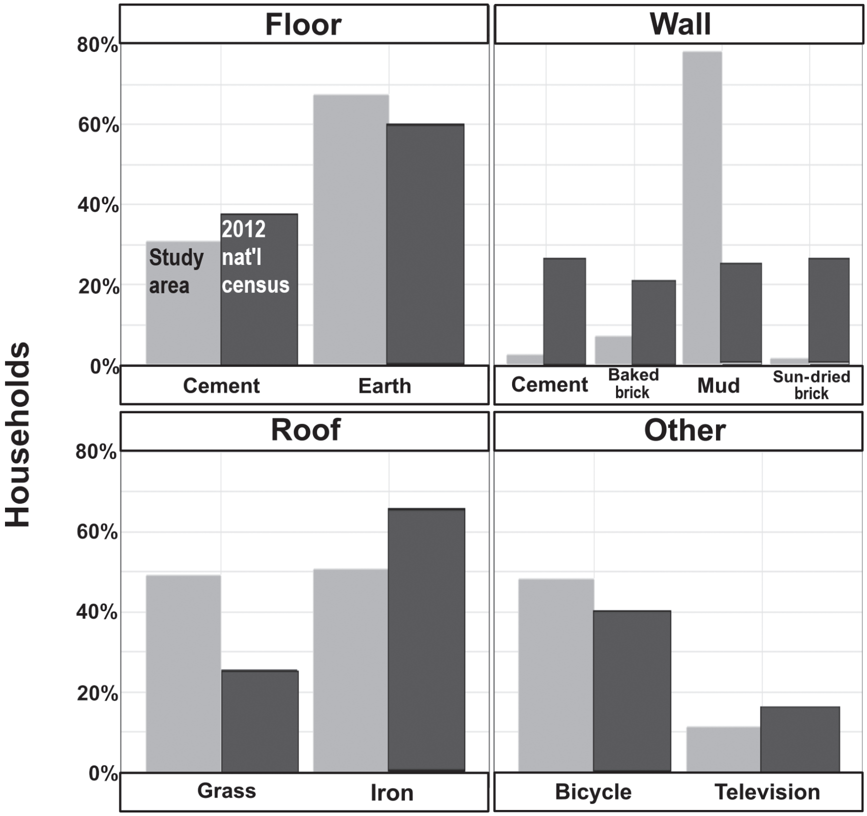

Figure 10.1 Comparison of housing materials and assets between survey respondents and 2012 Tanzanian census. Source: authors.

and other assets for the region, and for Tanzania as a whole in the 2012 census. Figure 10.1 demonstrates that households in our sample were much more likely to have less desired household characteristics (particularly mud walls and grass roofs) than the country as a whole. We also find that they are rather less likely to report owning a television and rather more likely to report earthen floors than the average Tanzanian household.

The situation is more nuanced within the region, however. Figure 10.2 makes a similar comparison to Figure 10.1, but in this case compares households across different study sites, and within their regions. Here we find important differences in how households in the three different resource areas are situated. Households in Mtwara, the coastal resources site, report more widespread ownership of desired assets than is the case for their region as a whole, likely reflecting their better access to lucrative fishing and improved roads to commercial centres, relative to other districts in their region. We find a similar, although less pro-

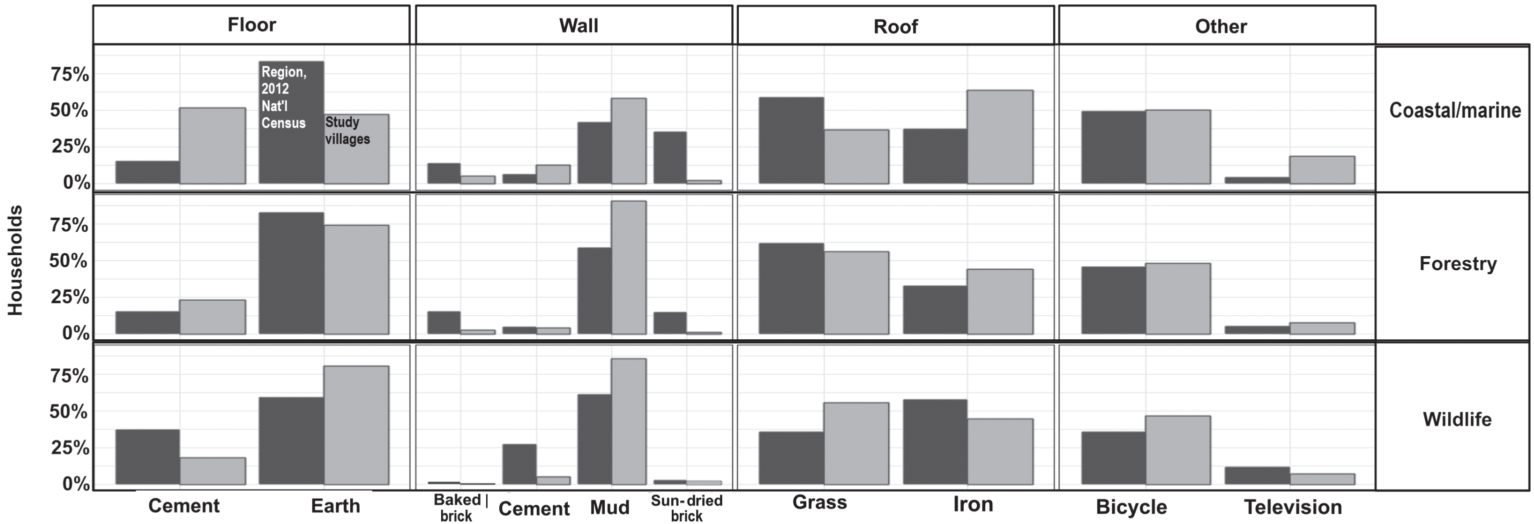

Figure 10.2 Comparison of study area household assets to percentage of households reporting those assets in their region in the 2012 census. Source: authors.

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nounced, pattern in Kilwa, the forestry study area. While these villages do not have access to fishing opportunities, some of them are also relatively close to the main improved road. The households in Rufiji, in the wildlife study sites, by contrast, tend to be located further inland and, hence, further from the main improved road, than the bulk of the households in their region. In contrast to the other two study areas, study households in Rufiji have notably poorer asset profiles than those reported in Tanzania's 2012 survey for Pwani Region as a whole.

Measuring wealth by comparing assets

Household assets across Tanzania were recently investigated in a large-scale historical study in which villages that had been surveyed in the past by researchers were revisited, often by the same researchers, in order to explore changes to livelihoods and prosperity (Brockington and Noe, 2021). Assets refers to productive assets (land, ploughs, livestock, businesses) as well as things like houses and education. In that context, assets are a useful dimension of enquiry because they can provide the basis for localized measures and interpretations of wealth (Howland et al., 2019; Brockington and Noe, 2021). In these areas, wealthy households are often recognized as such by virtue of their assets. If they are poor, it is because they lack such assets. Assets therefore are a good measure to track and provide new insights that were not available from poverty-line surveys, because productive assets are systematically excluded from such data. However, while at face value it may seem relatively straightforward to assume that if people have more 'stuff', they are wealthier, it quickly becomes more complicated than that. What is 'stuff' worth, to whom, and how does that vary from place to place and over time?

In order to compare livelihoods characteristics across the study villages, it is necessary to develop a measure that can make sense of a heterogeneous bundle of household resources reported in our NEPSUS survey. In order to reduce this complexity to a single measure, livelihoods studies typically rely on dimensional reduction techniques such as factor analysis, principal components analysis, or structural equation modelling (Córdova, 2009; Michelson et al., 2013; Smits and Steendijk, 2015; Steinert et al., 2018). Studies that use these approaches typically extract the first factor or component (that is, the factor or component explaining the most variation), taking this measure to represent generalized wealth (Hackman et al., 2021). When asset indices are compiled from large datasets, this technique is commonly used to generate a comparative wealth score (as measured in assets) across the sample.

There are a few problems with this approach. First, and of the greatest concern for our project, it assumes a uniform relationship between assets and wealth across diverse social contexts, which may not be empirically supportable (Howe et al., 2009; Steinert et al., 2018; Poirier et al., 2020). In other words, the typical method for deriving livelihoods indices presumes that the utility and social meaning of a given type of asset is independent of the local contexts the household holding that asset might face. Within our study area, any particular asset can mean different things for different people. Owning a large fishing boat denotes wealth on the coast, but foolishness inland. Wealth in assets, or particular forms of assets, does not necessarily equate to an abundance of all assets. A herd owner with many cows may not have invested equally in his daughters' education. One of the challenges we face in working with assets is how to render asset portfolios commensurable at different sites in order to make comparisons across them (Johnston and Abreu, 2016). If, as Steinert et al. (2020) find in a study across the urban-rural gradient in South Africa, assets contribute differently to the underlying wealth construct across spatial contexts, then analyses that fail to account for these differences would be explaining spatial variation, as much as the target construct, wealth.

Second, the factor component approach essentially assumes that wealth is one-dimensional and that wealth as an underlying construct will explain the majority of variation in asset holdings. If this is not the case, using the first factor or component as the asset index to represent wealth is an unfounded choice. If wealth is in fact multi-dimensional (Ul Haq et al., 2018; Hackman et al., 2021) then, even if the first factor or component of a dimension-reduction technique captures an aspect of wealth, failure to analyse other factors or components with meaningful explanatory power could result in faulty conclusions as a result of throwing away information. If, on the other hand, something other than generalized wealth (such as geographic location or local social contexts, or availability of roads or electricity) explains most of the variance across asset holdings, then it would be possible that analyses using this technique might wind up explaining differences across this other dimension rather than the target dimension, wealth.

Finally, assets are not necessarily a good proxy for other aspects of prosperity, such as high incomes, expenditure or low morbidity (Johnston and Abreu, 2016; Howland et al., 2019). Wealth and poverty are multi-faceted (Alkire and Foster, 2011). We track assets because they are important, and relatively easily counted. But we cannot draw conclusions on the basis of assets about other forms of wealth. That would require different research design and survey instruments.

Given these concerns, we provide a technique for constructing asset indices that, to our knowledge, is novel. Rather than employing common dimensional reduction techniques, we abandon the idea that asset indices should be measuring an underlying construct like generalized wealth as derived from factor analysis or propensity scores.

Instead, we base our comparisons on relatively simple probability measures. We assume, first, that valuable assets are unevenly distributed and, second, that assets' value will generally be inversely proportional to their availability. In other words, more valuable assets will be rarer. From these two assumptions, it follows that asset holdings will differ across households, with rarer assets concentrated in more affluent households. If that is the case, then computing the probability of observing a particular combination of assets should provide information about households' relative asset rankings, with less probable asset combinations corresponding to more affluent households.

We then compare the actual asset portfolios we observed with the chance of such portfolios occurring randomly. We compute the probability that we would observe each household's particular combination of assets if all asset classes in the village were randomly assorted. For example, imagine a village of 10 households in which there are only two assets surveyed, motorbikes, and solar panels. Let us say there were three motorbikes and four solar panels observed in the village. Household A has both a motorbike and a solar panel. As the probability of owning a motorbike if they were randomly distributed in the village is 30% and the probability of owning a solar panel is 40%, the probability of having exactly this set of assets is 0.3 times 0.4, or 12%. Household B has a motorbike but no solar panel. That means this household's score would be 0.3 times 0.6 (that is, the probability of having no solar panel by random chance), or 18%. This basic technique generalizes to any number of asset classes and households. The probability of having large asset portfolios is low. Because households with more assets will have lower probabilities, we can subtract their probability, as a proportion, from 1, creating an index in which higher scores correspond to possession of more valuable assets.

This approach allows us to be agnostic about the dimensions of social differentiation underlying households' different asset profiles. But it does not address the concern we had that the same asset might mean different things in different local contexts. How can we compare fishing boat ownership on the coast with livestock ownership inland? It is possible to calculate the monetary worth of each asset. This does produce a commensurable common currency. But the numbers resulting are not always reliable. Land values can be hard to calculate. The value of livestock for example, varies across seasons. Other assets (bicycles, televisions) can depreciate. Perhaps most importantly, the social meaning of assets is not determined by their monetary worth. Turning assets into money produces numbers that have been calculated on a consistent comparative basis, but not necessarily a good measure of prosperity.

To address this second issue, we adopt a simulation approach. First, we take each household's asset profile and place it in every village in our dataset, computing their asset score according to the technique in the above paragraph using the asset distributions in the comparison village. This creates 24 scores for each household – one for each village in the survey. This dataset has two uses. First, we can compute the standard deviation of scores for each household across villages to see how unstable the measure is. If the standard deviation is high for any particular part of the sample (or the sample as a whole), this would indicate that asset profiles differ substantially between at least some of the groups in the dataset and might indicate that comparisons across the sample are unwise. If, conversely, the standard deviations are low, this would give the researcher confidence that the measure is robust in this specific application. Second, presuming that the standard deviations are not alarmingly high, we can compute the mean score for each household across all the villages, effectively incorporating additional information about the household's assets, in a local context, across all the villages studied. Finally, to make the measure more intelligible, and because the probability approach may make it difficult to make distinctions between the more affluent households in the dataset, we can convert each household's mean score into a percentile ranking across all households in the dataset to create their final asset score for analysis.

To assess the stability of our asset score, we conduct simulations in which we placed each household in every other village in the dataset, computing its asset measure in each village. We then compute the mean and standard deviation of these measures for each household across all the villages. Dividing each household's standard deviation by its mean gives us a measure of the typical deviation in the household's asset score across villages, as a proportion or percentage of its mean asset score across villages. Figure 10.3 shows the distribution of this measure, allowing us to assess the measure's stability. We find that the standard deviation of households' simulated asset probability measures across villages differed at most about 7% from their mean. We interpret this to indicate that asset profiles are therefore sufficiently constant across the survey site for us to use household's asset scores to make comparative assessments. As noted above, we further normalize the household's asset scores by converting them into percentiles across all the households in the dataset.

Modelling the relationship between governance complexity and assets

We have established that we can use assets to model the relationship between institutional and network complexity and livelihoods outcomes. As we have seen in the previous chapters, however, there is good reason to believe that the livelihoods impacts of these types of complexity are likely to play out differently across social hierarchies in

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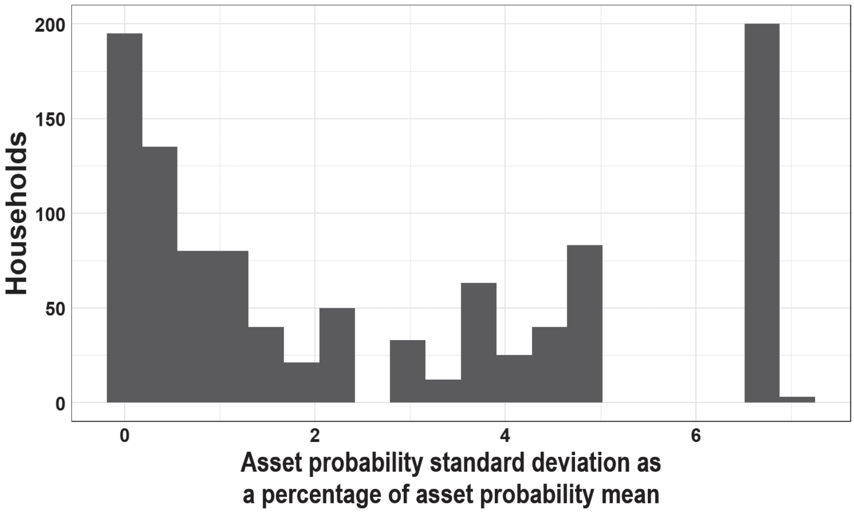

Figure 10.3 Distribution of the standard deviation of households' simulated asset probability scores computed across villages, as a percentage of their mean simulated asset probability score. Source: authors.

the affected villages. Ordinary least squares regression, which would be a common approach for assessing relationships between variables like these while controlling for potential confounders, however, is designed only to model the expected mean of the dependent variable.

If we have reason to believe that the relationship between the independent and dependent variables in a model might actually be different depending on the value of the dependent variable, then ordinary least squares regression is an insufficient tool. In this case, quantile regression, which can predict arbitrarily chosen quantiles of a distribution, rather than just the mean as in ordinary least squares regression, is particularly helpful (Koenker and Hallock, 2001). Like ordinary least squares regression, quantile regression estimates coefficients that represent the predicted change in the dependent variable with a one-unit increase in the relevant independent variable but, rather than representing a change in the dependent variable's expected mean, the coefficient represents a change in a particular quantile of the independent variable. Estimating multiple models for different quantiles provides a picture of how the relationship between the independent and dependent variables changes over the range of the dependent variable. This is very helpful when, as in this case, we expect nonlinearities, different relationships for households with different asset levels, or stair-stepped relationships (Cade and Noon, 2003). Unlike ordinary least squares regression, model fit in quantile regression is not straightforwardly assessed via an R^2 measure, but poor model fit can be detected using a statistical test developed by He and Zhu (2003). We estimate quantile regression models using the quantreg package (Koenker, 2021) and compute the He and Zhu (2003) goodness-of-fit test with the Qtools package (Geraci, 2016) in R 3.6.2 (R Core Team, 2019).

Estimated coefficients and 95% confidence intervals for quantile regression models for the 25th, 50th (median), and 75th percentile of household asset scores, along with an ordinary least squares estimation, are presented in Figure 10.4. As expected, we find substantial differences in associations between institutional and network complexity and livelihoods depending on the quantile predicted. We also see substantial differences in these relationships across resource cases. These differences defy simple explanations, and it is important to remember that, because this is a cross-sectional analysis, we cannot rule out selection biases. Nevertheless, these differences are quite consistent with our previous quantitative and qualitative findings.

Because the results differ substantially across resource cases, it is perhaps most straightforward to take the cases one at a time. Beginning with the wildlife case, we find no association between household asset scores and institutional complexity, but we do find that there is a positive relationship between network complexity in 2010 and asset scores at the time of the survey, although, notably, only for the median and upper quartile of households by asset score. Unfortunately, we cannot say much about this relationship for the bottom quartile, as, based on the He and Zhu (2003) test, the model for the 25th percentile for wildlife is not well fit. Nevertheless, the fact that we do not find a statistically significant relationship between network complexity and asset scores in the ordinary least squares regression model for wildlife does suggest that the relationship breaks down at lower asset ownership levels.

The forestry case also exhibits interesting variation across asset scores. While in all cases villages with simpler institutional partnerships show lower asset scores, we also find a negative relationship between institutionally more complex partnerships and median asset scores, but not for the lower and upper quartiles. Finally, in the coastal resources case, we find positive relationships between network complexity and household asset scores across all three of our modelled quantiles, although the magnitude of the relationship declines as the quantile increases. We also find that the institutionally more complex partnerships (Beach Management Units) are also associated with higher asset scores at the lower quartile but not at the others. Indeed, the relationship between more complex institutions and asset scores is quite negative for median asset scores, although it narrowly misses conventional levels of statistical significance.

It seems likely that these different patterns reflect important differences in the types of resources at stake in the three cases, as well as the ambiguity of network complexity that we observed in the previous

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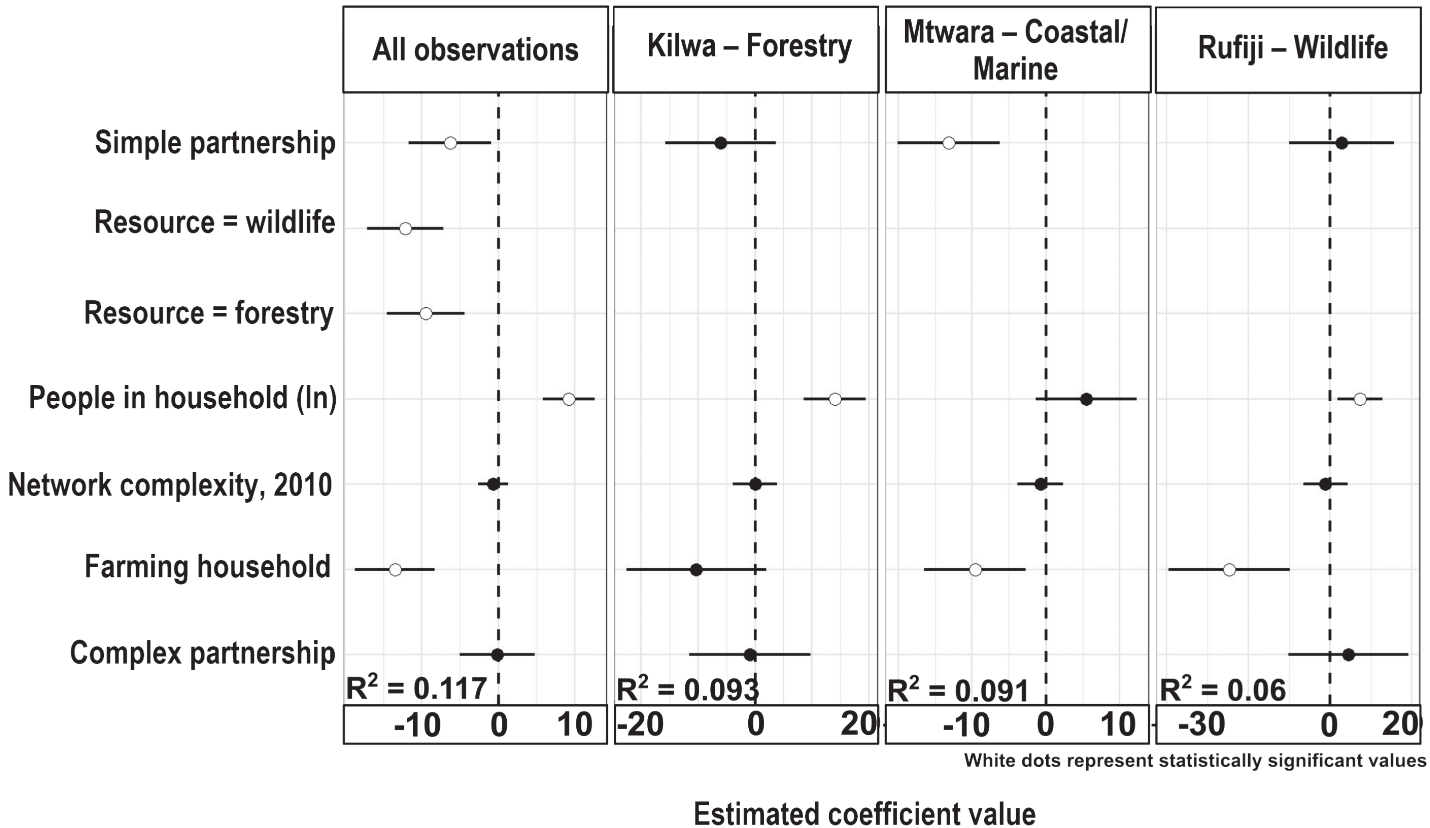

Figure 10.4 Coefficient plots for four regression models predicting households' asset score percentile. Source: authors.

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chapter. First, as noted in previous chapters, the bulk of the households in our dataset are primarily farmers, and they generally do not report high levels of use of the resources regulated by the partnerships we study, with the notable exception of fisheries in Mtwara, the coastal resources case. Relatively affluent households, however, may be better positioned to take advantage of economic opportunities provided by more commercial resource use. If this is the case, then it should not be surprising that network complexity contributes more positively to asset scores for the median and upper quartile in the wildlife case. Nor conversely, is it surprising that the presence of partnerships has the most downward pressure on asset scores for households near the median asset score in the forestry case – those are the households that might be better positioned to take advantage of some timber extraction or clearing for cropland, but which might lack the social power to avoid facing costs from resource restrictions.

Yet if this were the whole story, it would be difficult to make sense of the coastal resources case, which exhibits yet again different patterns. Here, the more complex institutional set-up appears to be positively associated with asset scores for the lower quartile, is nearly statistically significantly negatively associated with median scores, and is indifferent to the upper quartile. Network complexity, by contrast, is positively associated with asset scores across all quantiles modelled, although to a lesser degree as the quantile increases.

Village-level analysis

To provide further insight on these complex relationships, we decided to take an holistic view of the relationship between some key past and contemporary variables at the village level. To capture institutional complexity, we construct binary variables that take on a value of 1 when the village is involved in a simpler or more complex partnership, and 0 otherwise. To capture network complexity, we use the village's network complexity measures as of 2010 and 2015. Finally, as a measure of overall village affluence, we take advantage of the fact that metal roofing is a very common high-value investment for households in the area, and such roofing is detectable using medium-resolution satellite imagery.

The rooftop analysis started by exploring the Google Earth images on how the rooftops were seen from those images. The exploration discovered that visually, the iron sheet rooftop can easily be detected and differentiated from other rooftops and other land covers. Also, the exploration discovered that older rusted iron sheets can also be well detected due to the visible mixture of brownish and whitish stripes of rust on top of it. Only the thatched rooftop was not well detected and

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there was a visual mixing with other dryland covers such as bush and grasslands. Our main focus was to analyse the expansion of metal roofs over time: therefore we decided to eliminate the thatched rooftops in the rooftop detection analysis. To test the accuracy of metal roof detection, data of 700 metal roofs were collected from the field and 900 from the household survey locations. Expert knowledge and elements of visual image interpretations guided the manual digitization of the rooftops in Google Earth. The range of historical images available for the villages in Google Earth were used as the baseline to capture the historical metal roof data. Likewise, the current images available for the villages in Google Earth were used to capture the current metal rooftop data. The metal roofs detection analysis was conducted in all 24 study villages and the accuracy of metal roof detection was 100%, meaning that all the metal roofs collected from the field were 100% accurately digitized from Google Earth.

We use the increase in metal roofs per household as an indicator of increased affluence, and we also use this measure to reconstruct an estimate of past village endowments. Assuming a linear increase in metal roofs per household over time, we estimate what this value would have been in 2010 to provide a common baseline for all villages. This provides a way of estimating villages' relative affluence at a period prior to the establishment of many of the institutionally more complex partnerships.

We present correlograms relating these variables across all villages and for villages separated by resource in Figure 10.5. One point that is immediately clear is that, as we have had several occasions to remark before, the coastal resources case is quite different from the other two. Whereas in forestry and wildlife the concentration of metal roofs in 2010 is highly correlated to both institutional and network complexity, the opposite is true for the coastal resources case. That is, the villages under a simpler partnership arrangement – in the Mnazi Bay-Ruvuma Estuary Marine Park (MBREMP) – were relatively more affluent than the villages that would go on to form more complex partnerships. In forestry and wildlife, the reverse applies. This initial arrangement is particularly important to consider given the negative correlation, particularly strong in the wildlife and coastal resources cases, between metal rooftop concentration in 2010 and subsequent growth. In other words, if metal rooftop concentration is a meaningful indicator of affluence, relatively poorer villages were catching up with more affluent villages in all three areas, but especially so in wildlife and forestry.

As a result of these patterns, for the coastal case there is a positive correlation between institutional and network complexity and measures and increases in the concentration of metal roofs, while this relationship is negative in the forestry and wildlife cases, although only weakly so in forestry. However, we cannot determine from this analy-

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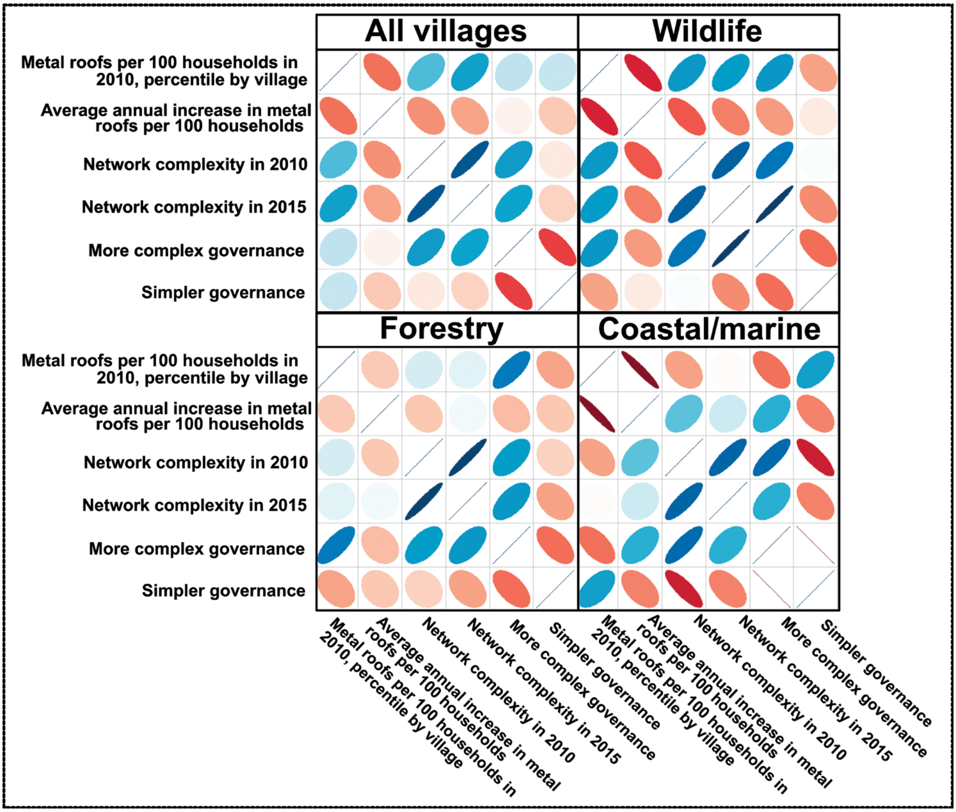

Figure 10.5 Correlograms for village-level institutional complexity, network complexity, and affluence variables. Source: authors.

sis whether this is because institutionally more complex partnerships suppress livelihood improvements or simply because the villages that established these partnerships in these two cases tended to already be more affluent than their peers, limiting their scope for upward mobility. Given the negative association we found in the previous analysis between more complex institutional set-ups and median asset scores in forestry, it does seem plausible that the institutional complexity might be related to households that could otherwise be in a position to upgrade to a metal roof to be unable to do so.

Conclusion

In the mid-2010s, Corbera and colleagues tried to examine the influence of Reducing Emissions from Deforestation and Degradation (REDD+) payments and participatory forestry arrangements on household live-

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lihoods for families that were taking part in Mpingo Conservation and Development Initiative (MCDI) forestry schemes in Kilwa District (Corbera et al., 2017). They were unable to find any difference between households receiving payments for forest products and those receiving none. But this was because of a recent boom in sesame seed prices which had made farming that crop suddenly, and dramatically, profitable. It swamped the influence of any benign and locally supportive forestry arrangements.

We can see shades of the same processes in the findings above in the forestry and wildlife sites. Most people in these study sites are poor farmers. Their livelihoods will improve to the extent that their farming revenues increase. The general catch-up they have been demonstrating to richer fishing villages (as indicated by the metal roof analysis) shows the benefits of improved transport arrangements and local agricultural booms. They will feel keenly the costs of crop damage and other forms of human-wildlife conflict that threatens their main livelihood. But the benefits of sustainability partnerships have to be sizeable if they are to be picked up generally. Particular minorities – government elites, elected representatives – may be well placed to profit from these arrangements but their general impact will be low.

Fishing, in contrast, has already been bringing in substantial returns to coastal villages. Most people there are primarily fishermen and women. Many others work in industries associated with fishing. Farming is still important, but the fortunes and misfortunes of fishing have been driving overall levels of wealth for some time. In this context, changed access to fishing resources is having the effect of reducing and restricting activities which could harm the resource (witness the decline in dynamite fishing). The dynamics and impacts of sustainability partnerships on prosperity are thus likely to be quite different from those in forestry and wildlife areas.

Innovations in natural resource governance matter. They can make laws more just, and fairer. They can introduce new business opportunities. They can safeguard these resources more effectively. But this does not mean that, for wildlife and forestry, they are introducing changes to the prosperity of agricultural communities that are visible at the village scale.

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11

Contested Sustainability

DAN BROCKINGTON, CHRISTINE NOE, AND STEFANO PONTE

In this book, we have drawn from political ecology, integrated by analyses of governance, legitimacy and social networks, to better understand the dynamics of sustainability partnerships and how they shape environmental and socio-economic outcomes in Tanzania. We paid particular attention to struggles over the control and access of natural resources, and how they influence community choices and access to environmental resources (Peluso, 1993; Bryant and Bailey, 1997; Fabinyi et al., 2014; Pedersen, 2016). We examined 'sustainability partnerships' not only in terms of numbers of actors, actor categories, and decision-making structures, but also in terms of which networks bind them together and how their configurations lead to particular kinds of environmental and socio-economic outcomes. We questioned whether key actors use sustainability partnerships in instrumental ways (Crawford, 2003), and observed that these initiatives can sometimes disguise and legitimize the top-down interventions of central government.

While donor-driven decentralization has led governments in the Global South, including in Tanzania, to transfer powers locally, this has often been accompanied by cumbersome decentralized decision making (Namara, 2006; Kiwango et al., 2015). Governments have placed imaginative obstacles in the path of decentralized institutions and choices (Ribot et al., 2006: 1881) and thus rather than decreasing, bureaucracy and state interference continue – now including some forms of re-centralization (Dressler et al., 2010: 13). Instead of decentralization, we are witnessing accountability transfers that move obligations to local authorities without sufficient resources allocated to them to carry out their tasks (Mandondo and Kozanayi, 2006; Muhereza, 2006).

As no single institution alone is deemed to be capable of addressing sustainability problems, the engagement of various stakeholders in natural resource governance has been seen as essential, together with the involvement of local communities (Ansell and Gash, 2008; Rana and Chhatre, 2017). In the contexts we examined in south-east Tanzania, we observed a multiplication in the number and variety of actors engaged in sustainability partnerships. These actors often represent different interests, express different world views and bring with them specific hopes, expectations, and claims (Glasbergen et al., 2007). Smaller and weaker actors – especially those who do not have capacity, organizational skills, and resources to participate as equals in partnerships – have been marginalized in decision making (Bennett, 2017). We have also shown that the functional quality of sustainability partnerships in Tanzania depends on how they are embedded in networks of actors and institutions. To some extent, we have shown that social networks can act as potentially positive mediators of collective action coordination and collective learning processes, especially those that exhibit a mix of bonding and bridging features.

These observations are particularly important in Tanzania, as its economy moves towards middle-income status and as its conservation estate expands. New wildlife national parks, forest reserves and marine parks have been added in the past few decades, as have new community-based conservancies. Tanzania has now one of the most extensive areas of conservation estate in the world and its endowment of diverse biodiversity and prime natural attraction sites has become central to debates about conservation and development. At the same time as sustainability partnerships are increasing in number and complexity, the Tanzanian government is also attempting to regain control over the country's natural resources to support self-funded infrastructural projects. This entails the strengthening of revenue collection and thus the national agencies that carry that out in different sectors.

The sustainability partnerships we examined in south-east Tanzania entail a loss of control over resources for most people and some limited benefits for others. We observed commonalities in how constrained local operations are to the extent that the state and private business are often effectively in charge. Re-centralization has continued, with the state extending its arm to (re)gain control of most revenues generated at the local level, again with some exceptions in the forestry sector. Powerful actors continue to limit the agency of already marginalized actors, with some arrangements implying possible irreversible changes in local resource tenure.

Lessons from wildlife, forestry, and coastal resources in south-east Tanzania

Wildlife

In the wildlife sector, we have shown that a considerable effort has gone into forming different partnerships – aimed at sustaining wildlife conservation and enabling communities living with wildlife to prosper from them. We found that wildlife presents a cost to some people, both in terms of the damage it does and the lost opportunity to benefit from

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it. Yet, these costs are concentrated on a minority of people. Most people are not preoccupied with wildlife management measures and how to improve wildlife governance. Wildlife numbers have increased rapidly in village lands close to protected areas. Most people draw a few benefits related to employment, but others have experienced extra harms. Some of the most problematic situations are those related to deaths and injuries that local communities report in areas contiguous to the Selous Game Reserve.

There is general dissatisfaction with Wildlife Management Areas (WMAs) in our study areas, but also a lot of relative indifference. The WMAs are not being characterized by high levels of local participation but rather by the top-down directives that mostly come with facilitation and funding from different actors. Although they have been promoted as a genuine representation of village interests in wildlife protection in Tanzania, villagers in the rural areas we worked in southeast Tanzania have little, if any, influence over the top-down processes that govern them. The governance of WMAs has instead followed an austere logic of (re)centralization of control over resources (Bluwstein et al., 2016) and has regulated access in a way that generally disempowers villagers (Noe and Kangalawe, 2015). Tourism-related revenues are still highly regulated and optimized towards ensuring wildlife protection, rather than people's welfare, making a mockery of notions of community-based conservation (Moyo et al., 2016: 232).

Forestry

Many forest management operations are emerging in villages in southeast Tanzania that have chosen to engage in community-based forest management (CBFM). In our study sites, CBFM appears to have led to relatively clearer procedures than in wildlife and coastal resources, with benefit sharing and decision-making processes leading to clear improvements in the governance of forests. Furthermore, the accountability of conservation-related institutions at the local level appears to be better in CBFM villages than in non-CBFM villages. While local communities involved in CBFM perceive clear benefits arising at the community level, these benefits are not filtering to the household level in ways we could capture in our quantitative data.

There is a widespread local perception that the Mpingo Conservation and Development Initiative (MCDI) has transformed forest management in the area from less profitable forest resources for relatively few individuals to community-level benefits visible through projects implemented with funds accrued from CBFM. Also, frequent visits of MCDI officials in the villages has kept them closer to local communities than are district government officials, leading to better legitimacy at the local level. The Initiative has also built good working relations with the district-level authorities and the two have been supporting each other in terms of the logistics necessary to support forest conservation partnerships. The question is now whether this legitimacy will stand the test of time, especially in relation to how farming and forest conservation will be balanced, and to what extent livelihood outcomes will filter down to the household level.

Coastal resources

In coastal resources, neither the marine park we examined – Mnazi Bay-Ruvuma Estuary Marine Park (MBREMP) – nor Beach Management Units (BMUs) seem to be working properly. We have seen that MBREMP is steered from above and has little contact with the local communities. The process of establishing the Marine Park was marked by misunderstandings and lack of trust that contributed to conflict and hostility between different actors (Katikiro et al., 2015). There were no mechanisms that could enable partners to bring their assets and skills to help deliver conservation goals. Dependence on marine resources remains high in the area, especially in seafront villages, where fishing is the main source of employment for most people. Here, many villagers still prefer to access areas that have been set aside for conservation purposes. A better balancing between conservation and livelihood needs is crucial in addressing tensions and conflicts arising from perceived loss in livelihoods and associated opportunities (see also Bonsu et al., 2019), but this has not happened yet. Our findings indicate that influence is still much vested with MBREMP, which remains solely responsible for the day-to-day activities of the Marine Park.

The BMUs have also had their share of problems, including poor methods of establishing alternative income-generating activities, unfulfilled promises and expectations, poor involvement and participation of local communities, and inadequate transparency. They have been mostly unable to stop illegal fishing practices, and dynamite fishing was curbed (for the time being) thanks to government action through an anti-dynamite operation led by the District Commissioner, not through BMUs or MBREMP. Other illegal fishing practices, such as beach seine fishing, are still taking place. Poor relations between BMUs' committees and village administrations undermine the effort and commitment of committee members in executing their duties. The only perceived achievements are linked to raising awareness on fisheries rules and regulations. Communities are aware of their illegal practices but lack alternative options for their livelihoods. The general lacklustre performance in both MBREMP and BMUs arises not only from lack of proper participation from local communities, but also from the duplication of administrative structures, which has led to confusion and conflict.

Lessons from comparative and cross-sectoral analyses

Legitimacy

As sustainability partnerships bring together different state and non-state actors with often diverse and competing interests, we found it essential to assess whether they pay attention to the needs, power, and interests of different actors. Therefore, we found it particularly relevant to examine the dynamics of legitimacy, as it allows compromises to be made at the lowest possible administrative level, thus potentially minimizing the power gaps that are likely to open across scales and jurisdictions. These compromises are particularly important as sustainability partnerships place new limitations on resource access that can affect local livelihoods.

Sustainability partnerships sought to build legitimacy by creating awareness on norms and rules, on the eligibility to participate as well as communicate the existence and applicability of mechanisms of accountability and transparency. But local communities are yet to perceive these partnerships as responsive, accountable, and trustworthy arrangements. Communities living in forestry resource sites perceive relatively better levels of (collective) socio-economic and environmental outcomes accruing from sustainability partnerships than their counterparts in wildlife and coastal resource sites. In the latter two sectors, this has culminated into significant levels of community dissatisfaction with sustainability partnerships.

We also observed that lack of material incentives in wildlife partnerships (WMAs) and fisheries partnerships (BMUs and MBREMP) in south-east Tanzania severely limited their legitimacy in the eyes of local communities. Fishers and consumers of bush meat were affected by access restrictions, while alternative livelihood activities failed (in BMU and MBREMP), or their benefits went to a small number of wealthy investors (in WMAs). In sum, these partnerships have struggled to gain and maintain legitimacy. While building legitimacy needs to include the creation of awareness on agreed norms and rules and on the eligibility of stakeholders to participate – as well as on the existence and applicability of mechanisms that promote accountability and transparency – this is not sufficient for sustainability partnerships to become accepted as alternatives to, or supplement of, government policy.

While improved conservation knowledge and enhanced enforcement of conservation rules have contributed to some improvements in the environmental conditions of forestry, wildlife, and coastal resources in south-east Tanzania, the sustainability partnerships we examined have been more inclined towards the provision of training on conservation issues than the development of alternative livelihood activities. As a result, they have had limited effects on socio-economic and

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livelihood outcomes, especially at the household level. They have thus failed to strike a balance of environmental conservation and improved livelihoods, with the possible exception of CBFM. This has culminated into significant levels of community dissatisfaction with their performance, and a general lack of legitimacy.

(Re)centralization and militarization

Our research suggests that, across the sectors we examined in southern Tanzania, central government is trying to reassert its authority while paying lip service to decentralization and devolution. This is happening chiefly under the guise of improving ground surveillance to tighten natural resource protection, and involves a transition from 'lenient' security operations to a more paramilitary force. In wildlife, officers are currently undergoing military training, after which they will operate with army ranks under the Tanzania People's Defence Force – with the purpose of creating a unified chain of command and control and full authority to punish, sue, and handle crimes – including 'shooting to kill' poachers. In one of our study villages, several interviewees reported having lost family members because they had been shot dead by game rangers when they attempted to enter a game reserve for fishing or hunting. Several others have been injured or killed by hyenas and elephants, which are moving increasingly close to settlements and farms. The situation is becoming increasingly tense, and villagers continue to lose hope, life, and traditional livelihood options due to the prioritization of wildlife security and thus tourism over people's welfare (Noe, 2019). Although these dynamics may suggest that the interests of wealthy foreign hunters are conditioning the nature of governance by state authorities, a more likely explanation is one of an increasingly authoritarian regime seeking to enhance surveillance and control at the local level.

In forestry, officials of Tanzania Forest Services (TFS) – a central government agency – have also received military training and have been arresting illegal loggers through patrols and inspections at check points. A problematic shift is taking place from supporting local communities in conservation efforts to punishing after violations occur. This is not ideal, as illegal logging is actually declining in CBFM villages, and protection of forest resources has been more effective there than in forests where TFS operates. Finally, in coastal resources a concerted effort by an ad hoc national-level task force has been active in military-style raids and confiscation of gear and dynamite since 2015. At the same time, local BMUs have been unable to perform patrolling duties properly due to lack of resources, and conflict with other layers of local government. Additionally, an initiative started in early 2017 by the District Commissioner in Mtwara has involved naming and shaming reported dynamite fishers, who are identified through a local network of informants and required to report to the police on a regular basis. According to the NGO that has been keeping records of dynamite blasts in Mtwara, there has been a major decrease in these instances since the start of this initiative (Kweka et al., 2019).

Complexity

A key objective of the project behind this book was to assess whether more-complex sustainability partnerships were actually performing better than relatively simpler ones in natural resource governance. To address this question, we examined the institutional and network elements of complexity. We introduced and outlined an analytical distinction between the two, with the first dimension focusing on rules and the second dimension focusing on the structure of actors and ties involved in governance. We showed that these two dimensions are related (although the intensity and significance of the statistical association is sector-dependent) and that the building of more complex networks tends to predate the joining of institutionally more complex partnerships. This means that initiation processes of sustainability partnerships need to include processes of network building as well. While there have been villages that were already embedded in complex networks, and thus had a higher propensity to enter into an institutionally more complex partnership, other villages have climbed from lower to higher network complexity, meaning that getting involved in a partnership led them to develop a more complex network.

Environmental impacts

Our analysis of the relationship between partnership complexity and environmental outcomes suggests that a higher degree of both institutional and network complexity is positively correlated to better maintenance of forest cover – with network complexity having a more modest contribution than institutional complexity. This is relevant for our case studies of forestry, wildlife (in relation to habitat conditions), and coastal resources (in relation to mangroves). As for coral conditions, we found that more complex sites are actually *less* able to protect coral. Finally, we found no consistent relationships between either form of complexity (institutional and network) and the perceptions by survey respondents on local environmental change. Overall, we are moderately optimistic about the potential for 'more complex' forms of sustainability partnership to deliver better environmental outcomes, but complexity per se is not sufficient. We should also avoid concluding that institutional complexity emerges on its own – it needs to be deliberately and laboriously constructed and maintained and it involves previous network-building efforts.

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Livelihood impacts

In forestry sites, sustainability partnerships (whether simpler or more complex) have had little general impacts on livelihoods vis à vis other factors – such as improved transport arrangements and local agricultural booms (especially in sesame production). In wildlife areas, the costs of crop damage and other forms of human-wildlife conflict arising from better wildlife protection have affected the main source of livelihood (agriculture), without bringing widespread benefits in terms of employment or alternative sources of livelihood. Government elites and elected representatives may be well placed to profit from sustainability partnerships, but their impact on the overall population has been relatively limited. However, in neither wildlife nor forestry sites could we see any relationship between different kinds of partnership and outcomes in terms of asset ownership – as wildlife and forestry are marginal activities compared to agricultural activities.

In coastal sites, in contrast, fishing brings in substantial returns and most people are primarily fishers – but with many others working in associated industries. Farming is the main activity, but fishing remains an important driver of local livelihoods. While restrictions on accessing coastal resources limits the activities which could cause harm, this also entails a negative impact on socio-economic conditions in absence of alternative sources of livelihood.

Looking ahead: The political ecology of conservation and development

If we set these findings into the context of political ecological writings then three conclusions stand out clearly. The first derives from the current context that is animating the growth and future of conservation. We write at a time when conservation planning is full of grand planetary ambitions. These include plans to conserve half the Earth by 2050, or 30% of the planet by 2030, or stop farming, livestock keeping, and fishing on 30% of the planet – and expect tourism to make up for lost revenues (Dinerstein et al., 2019, 2020; Mogg et al., 2019; Leclère et al., 2020; Strassburg et al., 2020; Waldron et al., 2020; Jung et al., 2021). Our study sites are important because these are places which have already realized these visions; indeed, they have exceeded them. Well over half of the land across these regions is already set aside for conservation. This region is an interesting test case of what a well-protected planet could look like.

For many political ecologists the push for more conservation space is disconcerting. In some instances, there is a startling lack of mention of where people might be found in these spaces (Agrawal et al., 2021). In

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other instances, where people's presence is mapped (Schleicher et al., 2019), this seems to incur unreasonably cross responses (Brockington, 2021). Yet there is real concern that without due recognition of conservation's violent past the push to expand conservation estate could replicate past mistakes (Tauli-Corpuz et al., 2020; Kashwan et al., 2021; Mukpo, 2021). Many conservationists insist that they are only interested in models of inclusive conservation. But the lack of attention to people's presence, and attention to the legally possible ways of doing conservation in different countries, means these assurances ring hollow.

In many ways the study sites in which we were working are already in this future state. More than 60% of the land surface of this region is covered in protected areas – and forms of protected area which forbid human use and occupation. Large areas of land have been added through community-based and community-grounded means (forest reserves and WMAs). Beach Management Units and marine national parks are prominent on the coast. Should the future earth that we find in south-east Tanzania reassure or concern the critics?

In terms of wildlife conservation, the situation is alarming. Conservation here is violent. It is continually acted out on the ground through diverse forms of low-level skirmishes, hostilities, and opposition. Guards kill villagers fishing in the Reserve illegally. Elephants and other wildlife raid crops and livestock. Villagers attack game rangers and trap and kill animals that are a problem to them. In terms of forestry conservation, there is more room for effective partnerships. Managed timber concessions are yielding local benefits, if predominantly at the village level, with a visible impact on forestry. There remains a need to ensure that benefits filter down to the local level. For coastal resources, the story is predominantly one of ineffective proliferation of institutions and of lack of livelihood alternatives that can make up for more restricted access.

Greater complexity of partnership does not seem to have an impact on local livelihoods or for habitat. Some forests do better in complex partnerships, but the same cannot be said in relation to coral reefs. Villagers are not growing their asset base through wildlife conservation, nor are more-complex partnerships associated with better habitat than simpler partnerships. Instead, the changing governance and opportunities for market-based conservation in this region is associated with strengthening central government control and influence. Villagers can commit their land to wildlife management associations but cannot change their minds. Their land can be re-zoned through canny operators influencing naive village governments. In this respect the debate between the virtues of simpler or more complex partnerships that we reviewed at the start of this book (Newig and Fritsch, 2009; Ponte, 2014; Moore and Koontz, 2003; Pattberg and Widerberg, 2016) is only partially helpful. The most important factors that shape the experience of people living in areas where sustainability partnerships operate is the power and reach of central government.

Yet we cannot leave matters with this obvious conclusion, for the plain paradox that also emerges from our study is that terrestrial conservation interests are both dominant *and* marginal. They are dominant in terms of the sheer area of land covered, and so can loom large in people's mindsets and decision making. They loom quite literally in the form of the wildlife invading fields and in the deaths of friends and family at the hands of security forces. But, on land, conservation interests are also peripheral. The tourist industry is not well integrated into most rural economies, especially in south-east Tanzania. Residents are farmers and small business-owners. The most important things in their lives are crop prices and transport infrastructure. The centralized control of wildlife and the multiple stakeholders and hierarchies required to make community conservation (of wildlife and of timber) happen to increase the distance and separation of most rural Tanzanians from spheres of conservation activity. In this sense, living with conservation in Tanzania may be like sharing a house with a hibernating bear. It does occupy a large part of the living room, but if you keep out of its way you will not notice it that much. But you must be absolutely certain that you never cause the bear to notice you.

With respect to marine resources, people engaged with fishing, and conservation efforts can be much more impacted. Here, there is much more potential for conservation efforts to be welcome, if they effectively restore fish stocks, but only to the extent that these abundant fish are then available to local populations. Conservation is very much central to people's lives in these contexts. The bear is awake and roaming around.

A vital aspect of this paradox, and again a key concern of political ecologists, is the role of ecology and non-human nature in driving the outcomes (Barua, 2017, 2019; Robbins, 2019). Conservation consequences and human well-being are not determined mainly by governance arrangements. They are driven by elephant fecundity and ethology, and by the ecology of the favourite cash crops in the region (sesame and cashew nuts) that are relatively immune to elephant deprivation. They are shaped by hidden fish populations, and the role of different habitats in fostering fish through different stages of their life cycle. At the same time, they are also shaped by distant markets that make these crops more valuable, or conflicts (e.g., in Syria) that render former sources of sesame unavailable. Conservation outcomes are the product of high finance and marauding herds of investors as well as elephants (Dempsey, 2015; Bracking, 2016). The challenge of understanding sustainability outcomes in these landscapes has to include all these aspects of political ecological study.

Finally, we must also recall that, while conservation is violent, imposed, and centralizing, and while it creates scenarios in which resurgent elephant populations reclaim lost territory, there is a third aspect we must also emphasize. The outcomes of new sustainability partnerships clearly show the power and role of local agency and dynamics. The proliferation of tourist lodges in Mloka village was only possible because of the multiple deals that village residents, and the village leadership, struck with ambitious local and international investors. Furthermore, while the extension of conservation territory through WMAs and new forms of neoliberal governance is violent and problematic and has resulted in dispossession through re-zoning, for some villagers the problem was that the reforms did not go far enough. More competition, with more investors – and a better functioning market for their products – may have produced a better outcome for the villagers. Worst of all was the case of stymied market development in the JUHI-WANGUMWA WMAs. A failed WMA creates a gap in the landscape and villagers' expectations. As political ecologists have reminded us on several occasions (Gardner, 2012; Wright, 2017; Shapiro-Garza et al., 2019) the new market logics and governance arrangements create opportunities for local actors which give them means of engaging and working with otherwise largely extractive states. The changes wrought by MCDI in the forestry sector were a generally welcome form of market-based intervention. The confusion surrounding the proliferation of institutions with respect to coastal resources implies that more clarity – and better functioning – of the new institutions would be welcome.

We have seen that in the case of wildlife, protected areas and space for wildlife prosper. The government has legally secured village lands for wildlife through the recent regulations that are specific for wildlife corridors, dispersal areas, buffer zones, and migratory routes (URT, 2018). We have seen that some hunting companies have done well, experienced as they are in dealing with wildlife authorities. We have seen that certain wild animals (elephants in particular) are experiencing a resurgence. But rural village populations are not being sustained as well as they would like. They continue to experience crop damage, even as their cash crops prosper (sesame in particular). They remain marginal to the tourist industry and to decision making. We have seen that, in forestry, new alliances have brought in new revenues to particular groups. Here, more local benefits and fewer local costs are visible. But in both wildlife and forestry, whereas the natural environment is well sustained by more complex partnerships, there is little general difference to prosperity that is visible. Finally, perceptions data in coastal resources suggest that fish stocks seem to be recovering. A moderate improvement in mangrove and coral conditions also provides ground for some optimism. But these trends have little to do with the operation of conservation and development initiatives.

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Where something is happening (restricted access to fishing grounds in the core zone of the marine park), alternative livelihood options are not materializing, and people remain sceptical of the overall benefits of sustainability partnerships.

Overall, sustainability discourses and practices are not necessarily about more prosperous societies and less degraded environments. They are about reconfiguring power relations and enrolling new actors onto existing projects. In some respects, what we learned from the New Partnerships for Sustainability (NEPSUS) project is not new. Our conclusions have been reached before, in relation to other analyses of the political economy of conservation and development. But that is partly the significance of our findings. Despite all that is new in the way in which conservation is done in Tanzania, so much still remains the same.

All of this begs questions as to the meaning and value of terms like 'sustainability'. If we see sustainability in terms of the standard indicators, then it is possible to point to larger protected areas, to new areas of village-based conservation (for wildlife and trees), more forest cover in these protected areas and new potential revenue streams. But it is misleading to use terms like 'sustainability' to cover these complex and changing networks and partnerships. It is also misleading to refer to these initiatives as 'partnerships', given the large inequalities in power and influence that are exercised by different actor groups within them. Rather we need to see what is sustained and which groups gain what.

Our final point is more methodological. We can be all the more certain of the relative lack of change because of the robustness of the methods we employed. We were able to collect high quality qualitative and quantitative data that allowed us proper triangulation. We interviewed many people, but also collected remote-sensing data. Working with software-supported qualitative analysis, social network analysis, and statistical analysis of matching pairs has been a special revelation. The rigour (and in some cases the computer power and time) involved in them are remarkable. These data analysis methods greatly improved the comparative dimension of the project. If we are to learn something new about the way in which 'sustainability partnerships' function in the future, then these sorts of techniques, embedded in a mixed methods approach, promise rich rewards.

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