Utrecht University

Master's Thesis – master Sustainable Development

Rural Youth Acting as Catalysts

Exploring the role of ecochamps in facilitating co-management processes in the Umzimvubu Water Catchment, in South Africa

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Preface

This research presents a local Non-Governmental Organization (NGO) program aimed at empowering young people to become drivers of change in sustainable initiatives at the community level, addressing environmental issues and promote rural development in the upper Umzimvubu Water Catchment (UWC) in South Africa. This research was developed as a part of the Water-Energy-Food (WEF) project, titled "Water-Energy-Food Communities: A Multi-Actor Nexus Governance for Social Justice." The project is co-conducted through a collaboration between Utrecht University and the University of Groningen in the Netherlands, and the University of Fort Hare and North-West University in South Africa.

My interest in sustainable initiatives began during my internship at the World Resources Institute, where I had the opportunity to delve into the importance of governance approaches to empower communities. This research represents the final stage of my career as a student and young individual, and my profound commitment to making a significant contribution to the broader field of environmental governance.

Conducting this research was a journey filled with continuous challenges, where I learned the importance of resilience and believing in myself. From navigating my first experience as a researcher from the Global North in the fieldwork process to moments of feeling lost in the elaboration of data and writing. By visiting South Africa, I fell in love with the historical richness, the nature, the diversity, the tradition, and culture that this country upholds, and last but not least, the beauty and kindness of the people who live in the rainbow nation. However, during my twenty-day experience, I confronted the complexity of socio-economic challenges, poverty, and environmental issues the country faces.

My hope is that this research will contribute to ongoing efforts to showcase the vital role young people can play in shaping their environments and driving sustainable outcomes. By shedding light on the experiences of ecochamps in the upper Umzimvubu Water Catchment, I aim to provide valuable insights for strengthening collaboration between local communities and UPC stakeholders, whereas outlining the role of community youth in achieving better resource management. I also hope to offer useful insights for future researchers.

Dedication

I would like to dedicate this research to the youth of Matatiele for their incredible efforts, working behind the scenes, to contribute to the development of rural livelihoods and the conservation of natural resources in the upper Umzimvubu Water Catchment in South Africa. This remarkable group of youth shows me that hope for changing people's well-being exists in remote areas of South Africa.

"Youth means grappling with all kinds of problems. It means resolving them in spite of all difficulties, pushing aside the dark clouds of despair, and advancing toward hope. [...] One who undertakes such an endeavor would certainly be considered a leader of the twenty-first century." (Ikeda, 2010, pp. 4–5).

Abstract:

This research examines the role of rural youth in facilitating collaboration between local communities and stakeholders, leading to co-management processes in the Upper Umzimvubu Water Catchment (UWC) in South Africa. Specifically, it focuses on a group of young community members, known as ecochamps, who contribute to rural development and environmental conservation through their collaboration with stakeholders from the Umzimvubu Catchment Partnership (UCP). Positioned as intermediaries, the ecochamps act as catalysts for enhancing interactions between these two groups.

The research employes a co-management framework to identify key areas where ecochamps play a critical role, while youth agency theory is applied to outline the youth participation in decision-making, leadership and environmental stewardship. The integration of these two frameworks provides a comprehensive lens to explore how ecochamps can facilitate joint decision-making, knowledge integration, and community empowerment. These three factors emphasize the importance of shared authority, responsibility, knowledge exchange, and community empowerment in natural resource management.

Data for this research were collected over a five-month period in Matatiele, South Africa, through a mixed-method approach. The first phase involved household surveys, focus group discussions, and interviews with local stakeholders. The second phase comprised more in-depth insights gained through semi-structured interviews conducted via Microsoft Teams. Both quantitative and qualitative data were collected, allowing for a robust analysis of the ecochamps' role in facilitating co-management.

The findings reveal that ecochamps play a pivotal role in bridging communication gaps between traditional and scientific knowledge systems, empowering communities, and promoting localized sustainability practices. However, their influence on strategic decision-making within UCP meetings remains limited, as they are often perceived as consultative rather than integral participants in governance processes. Although they successfully integrate traditional practices, such as rotational grazing, into resource management, the broader application of their knowledge within formal UCP governance structures is inconsistent. In terms of community empowerment, ecochamps contribute significantly to building capacity and social cohesion, but their impact tends to focus on addressing practical challenges rather than influencing broader governance decisions within the UCP.

The research concludes by highlighting the need for further investigation on youth agency in governance approaches, particularly in contexts where collaboration between stakeholders and local communities is essential for success in natural resource management.

Key words: youth agency, co-management, joint decision-making, knowledge integration, community empowerment, South Africa

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1. Introduction

Across many countries, from low to high incomes, young people are leading sustainability initiatives in collaboration with local governments and other stakeholder[1] groups such as NGOs and traditional authorities (Amponsem et al., 2019; Ingaruca et al., 2022; Chan et al., 2021). In 2017, the United Nations Department of Economic and Social Affairs, Population Division (UNDESA) reported that young people, defined as a group of individuals between 15 and 35 years old by the African Union (2012), constitute a considerably larger proportion of the population in low-income countries, representing around one-fifth of the total population (UNDESA, 2017). Many of them in African countries face significant obstacles, as sustainability challenges[2], regional insecurity, and limited economic opportunities (Bleck et al., 2023).

With the growing urgency of addressing a wide range of challenges, governments have the crucial responsibility to solve both environmental and societal issues (Intergovernmental Panel on Climate Change [IPCC], 2023). Authors argue that youth participation in governance approach is key to success (Palmy-David & Buchanan, 2020; Trivelli & Morel, 2021; Arshad et al., 2013; Asare-Nuamah & Mandaza, 2020). For instance, in climate governance[3], youth are increasingly stepping in to ensure that their voices are heard and their innovative ideas shape the policies that will determine the future of our planet (Ingaruca et al., 2022). By actively engaging youth in governance approaches, collaborative solutions can be generated that are more effective and equitable in addressing key sustainability challenges (Arshad et al., 2013). Additionally, emerging evidence outlines the active participation of youth in sustainability activities, showcasing their ability to address sustainability challenges. For instance, in Ghana, youth have actively participated in adaptation strategies at both the community and national levels (Amponsem et al., 2019). In the Philippines, young women have taken action to implement nature-based solutions by planting mangroves to prevent flooding and raising local community awareness (Morrissey et al., 2015). In Peru, a youth organization for climate change has advocated for a more inclusive form of governance to develop better national climate policies that takes into account both community and youth challenges (Ingaruca et al., 2022). Despite their significant actions, youth participation in decision-making is often overlooked, especially in rural areas in the Global South (Arslan et al., 2021a; Arslan et al., 2021b; Trivelli & Morel, 2021). This oversight limits youth ability to participate in decision-making processes that shape governance approaches (Kozar et al., 2014; Asare-Nuamah & Mandaza, 2020). As a result this leads to hinder the creation of successful approaches to sustainability challenges (Palmy-David & Buchanan, 2020; Trivelli & Morel, 2021; Arshad et al., 2013; Asare-Nuamah & Mandaza, 2020).

[1] Any groups or individuals who are influenced by or have the ability to influence decision-making processes of any kind. These groups or individuals, including NGOs, government agencies, research institutions, and citizens, have a stake in these processes (Haddaway et al., 2017).

[2] Examples of sustainability challenges are climate change, global poverty and inequality, and natural resource depletion. Sustainability challenges also refers to environmental and societal challenges (Amponsem et al., 2019; Ingaruca et al., 2022).

[3] A subset of governance systems, such as environmental governance. Compared to climate governance that focuses more on climate policies, environmental governance is defined as a set of processes, regulations and institution that influence decision-making and actions to regulate the management of natural resources and address environmental issues (Savan et al., 2004).

Across a wide spectrum of environmental governance approaches, co-management stands out as a decentralized approach to enhance the management of natural resources environmental[4] (Armitage et al., 2009; Berkes, 2007; Folke et al., 2002; Jentoft, 2005; Lebel et al., 2006; Mikalsen et al., 2007; Armitage et al., 2012). Decentralization refers to a form of governance in which citizens, local communities, and marginalized groups are included in the policy and decision-making processes (Berkes, 2010; Masuku et al., 2020). Co-management involves multiple stakeholders - government agencies, local communities, the private sector, and NGOs - sharing power, authority, and responsibility in managing natural resources (Borrini-Feyerabend et al., 2004; Cash et al., 2006; Berkes, 2009). Co-management is also considered a collaborative process between government agencies and local communities, in which these stakeholders negotiate and agree on a set of arrangements to regulate the management of natural resources by sharing power, authority and responsibility (Berkes, 2009; Carlsson & Berkes, 2005; Parsons et al., 2021). Therefore, co-management refers to a decentralized approach in which multiple stakeholders collaborate together to enhance the management of natural resources through a set of arrangements that facilitate the sharing of power, authority and responsibility. Such arrangements can take many forms, and this variation is often referred to as a long process, with many overlooked factors influencing its success or failure (Berkes, 2009; Carlsson & Berkes, 2005). At one extreme of this process are arrangements in which there is consultation with local communities but where full control remains with government agencies. At the other end of the process are arrangements in which full control is invested in local communities and there is minimal contribution from government agencies (Carlsson & Berkes, 2005). Scholars have outlined that co-management is not a panacea (Zulu, 2013; Bown et al., 2013). For example in South Africa, co-management has failed to achieve its promises of financial benefits, resource utilization, and sharing power with local communities (Cundill et al., 2013). In Malawi, despite the implementation of co-management initiatives, existing power structures remain largely unchanged, and the limited devolution of responsibility prevents communities from assuming full control over their resources (Chinangwa et al., 2016). Additionally, in other regions of the Global South, co-management has often reinforced existing power dynamics and fails to allocate rights and responsibilities equitably among stakeholders (Dressler et al., 2010; Cronkleton et al., 2012). Emerging research outline that individual agency can play an important role in facilitating co-management arrangements. For instance in Brazil, the active participation of local leaders in decision-making processes enhanced the management of natural resources through co-management arrangements with state authorities (Sattler et al., 2015). A recent study by Siddique et al. (2024) in Bangladesh outlines that women should be engaged in co-management to facilitate engagement with local communities. Another case in Tanzania shows that youth play a crucial role in facilitating water management activities at the local level to improve the livelihood of the community and protect key water resources in the area (Ngowi et al., 2018). Scholars have shifted from seeing co-management as a fixed set of formal arrangements to recognizing it as an evolving process, where negotiations and agreements develop through multiple stages (Berkes, 2009; Carlsson & Berkes, 2005; Parsons et al., 2021). A more recent study in New Zealand outlined the importance of considering co-management as a

[4] Natural resource management is necessary for the long-term use of ecosystem services, and it should try to integrate socio-economic aspects with environmental challenges (Ostrom et al., 1999; Berkes & Folke, 1998). Whereas the term management refers to the process of regulating internal patterns and making operational decisions to manage resources (Ostrom & Schlage, 1996). In this process of managing resources, collaboration among stakeholders is the cornerstone (Cundill et al., 2013).

process, in which different stakeholder groups collaborate together to regulate the management of natural resource by sharing authority and authority (Parsons et al., 2021).

Worldwide, rural areas are being recognized as cultural landscapes that serve multiple functions and embody historical, environmental, and cultural significance (Antrop, 2005; Martineza et al., 2010). However, the management of natural resources in these landscapes is complex. Even though scholars emphasize the importance of including local communities in the management of such areas, governments face significant challenges in effectively integrating local communities into environmental governance approaches (Leys & Vanclay, 2011). This research presents a case in the upper Umzimvubu Water Catchment (UWC) in South Africa. In this context, rural youth are promoting sustainability initiatives at the local level in collaboration with stakeholders from Umzimvubu Catchment Partnership (UCP). Also known as ecochamps, this group of rural young people contribute to improving the livelihood of local communities in rural areas, while providing essential support for conservation activities in the watershed (The Dutch Research Council, 2021). The concept of community-based champions was previously introduced in the Palmiet Catchment in Durban between 2011 and 2016. As outlined by Martel et al. (2022), these community-based champions contributed to achieving river rehabilitation goals and enhancing collaboration between local communities and government agencies. Similarly, in the context of the upper UWC, ecochamps play a key role in promoting collaboration between local communities and UCP stakeholders due to their unique position as facilitators in sustainability initiatives. By strengthening this collaboration among stakeholders, ecochamps are assumed to encourage joint decision-making, knowledge integration and community empowerment, facilitating co-management processes.

This research aims to explore the perspectives of key stakeholder groups, including local communities and UCP representatives, on the role of ecochamps in facilitating co-management processes in the upper UWC. This first chapter begins by explaining the concept of youth agency and then sequentially delves into the concept of co-management. The problem statement and research objective are outlined. After presenting the main research question, the knowledge gap in the current literature, as well as the scientific and social relevance of the research, are explained. The chapter concludes with a depiction of the research framework.

1.1 Youth agency

As mentioned, evidence around the world has shown the great role youth play in sustainability initiatives. Their actions have contributed to addressing key environmental challenges, enhancing societal well-being, and achieving the Sustainable Development Goals of Agenda 2030 (Head, 2011; Ingaruca et al., 2022; Davis et al., 2014). For instance, in agroforestry and flood mitigation initiatives, youth demonstrate their ability to address key environmental issues and improve community livelihoods (O'Meara, 2018; UNDP, 2013). In Ghana and the Philippines, youth participation in sustainability initiatives makes significant contributions to achieving government goals (Amponsem et al., 2019; Morrissey et al., 2015). Furthermore, Chan et al. (2021) highlight that youth participation in sustainability activities can harness their passion and promote sustainability initiatives at the local level.

Nevertheless, the participation of this marginalized group in decision-making remains limited. Governments in the Global South are taking actions to create enabling environments to empower youth in decision-making processes (Arslan et al., 2021a; Trivelli & Morel, 2021;

Palmy-David & Buchanan, 2020). In a recent report, the United Nations Development Programme (UNDP) emphasizes that "youth participation is a human right," outlining that young people have the right to engage in decision-making that affects their lives and futures (Ingaruca et al., 2022, p. 9). However, government agencies often refer to young people as a target group rather than essential participants in decision-making (Organization for Economic Cooperation and Development [OECD], 2017; Vargas-Lundius & Suttie, 2014). Policymakers often neglect the role of youth in decision-making, overlooking their ability to contribute to governance approaches, especially for rural young people in the Global South (Arslan et al., 2021a; Trivelli & Morel, 2021; Palmy-David & Buchanan, 2020). Contrary to the traditional concept of "youth as a problem," youth agency refers to the capacity of young people to take actions and make choices that influence their future and contribute to societal well-being (Head, 2011; Kudva & Driskell, 2009; Trivelli & Morel, 2021). Scholars outline that this shift in perspective increases the likelihood of youth participation in decision-making, ensuring that governance approaches are more inclusive, reflect community needs, and address key sustainability challenges (Osborne et al., 2017; Palmy-David & Buchanan, 2020; Trivelli & Morel, 2021; Akinyetun, 2021).

According to Shier (2001), young people should be considered capable individuals with competent skills and responsibilities to serve their communities. For instance, in Tanzania, Ngowi et al. (2018) show that youth play a crucial role in water resource management at the local level, highlighting the importance of integrating youth in governance approaches to enhance the management of these resources. Despite the increasing recognition of youth agency, there remains a need to explore the role of youth in natural resources management (Zurba & Trimble, 2014). Evidence from around the world highlights the substantial agency individuals possess in facilitating governance approaches, such as co-management (e.g., Sattler et al., 2015). Therefore, exploring the role of youth agency in co-management is crucial, as their participation can lead to more inclusive and successful governance approaches, addressing environmental and societal challenges.

1.2 Co-management

As Berkes (2009) points out, the management of many natural resources is a complex task that cannot be handled by a single agency, such as government agencies. Many authors have identified co-management as a decentralized approach to enhance the management of natural resources through a set of arrangements that facilitate the sharing of power, authority, and responsibility among multiple stakeholders (Armitage et al., 2009; Berkes, 2007; Folke et al., 2002; Jentoft, 2005; Lebel et al., 2006; Mikalsen et al., 2007). The concept of co-management, a decentralized approach, has originated from discussions that emphasize the need to include local communities in decision-making, which contributes to policy legitimacy and improves accountability (Chambers, 1994). This approach also advocates the importance of empowering local communities in decision-making processes, which it sees as a critical component in tackling key societal and environmental challenges in rural areas (Sen, 1982).

In the literature, collaboration is a key characteristic of co-management (Plummer & FitzGibbon, 2004). Co-management and collaborative processes are intertwined. Collaboration is defined as a process in which multiple stakeholders work together to collect information, make decisions, and execute projects aimed at addressing complex societal and environmental challenges (Ansell & Gash, 2008). Similarly, authors outline that co-management is a

collaborative process between government agencies and local communities, in which these stakeholders negotiate and agree on a set of arrangements to enhance the management of natural resources (Berkes, 2009; Carlsson & Berkes, 2005; Parsons et al., 2021). On the one hand, scholars outline that collaboration among multiple stakeholders can lead to co-management initiatives. For instance, in the Waipā River in New Zealand, the collaboration between indigenous people and settler states has led to the design and implementation of a successful co-management initiative to manage water resources (Parsons et al., 2021). Both integration and recognition of indigenous people's rights are critical elements in this context, leading to a process of negotiation and agreement fostered by inclusive decision-making (Parsons et al., 2021). Similarly, in Brazil, the collaboration between local leaders and state authorities has encouraged the creation of co-management arrangements (Sattler et al., 2015). On the other hand, co-management contributes to collaboration among stakeholders to improve the management of natural resources by sharing power, responsibilities, and authorities (Alves-Pinto et al., 2017; Roth & de Loë, 2017; Thomas, 2017). In some rural areas of South Africa, co-management is a key factor in improving collaboration between government agencies and local communities, sharing responsibility and authority, and improving water management (Wickrama, 2020). Therefore, co-management and collaboration are intertwined because of their synergetic functions. Co-management arrangements encourage collaboration among stakeholders by creating a platform where power, authority, and responsibility are shared. Collaboration is a key factor in co-management as it enables multiple stakeholders to work together, fostering inclusive participation, integrating diverse knowledge, and empowering local communities in decision-making.

This research builds on the current state-of-the-art concept that developing co-management arrangements is often a long and challenging process, with many overlooked factors influencing its success or failure (Berkes, 2009; Carlsson & Berkes, 2005). Carlsson & Berkes (2005) outline the dynamic nature of co-management, explaining that co-management is an evolving process. The authors emphasize that instead of focusing on the formal structure of co-management to share power, this should be considered an outcome rather than a starting point. Berkes (2009) points out that co-management should be explored as a problem-solving process, involving joint negotiations and knowledge integration. Furthermore, Carlsson & Berkes (2005) highlight that providing communities with the knowledge and capacity to address their own challenges fosters the confidence and capability needed to interact with different government agencies, encouraging their participation in decision-making processes. The study by Parsons et al. (2021) emphasizes the relevance of community empowerment in co-management arrangements because it increases Indigenous communities' participation and influence in the decision-making process of water resource management.

Therefore, joint decision-making, knowledge integration, and community empowerment are outlined as the key factors driving co-management processes. This research emphasizes that by strengthening collaboration between UCP stakeholders and local communities, through joint decision-making, knowledge integration, and community empowerment, co-management can be initiated. Therefore, co-management should be viewed as the progress of collaboration efforts that encourage joint decision-making, knowledge integration, and community empowerment. Before presenting the research objective, the next paragraph will provide further details of the ecochamp program in the upper UWC.

1.3 The ecochamp program

The Umzimvubu Water Catchment presents a complex historical and socio-economic background, marked by the legacy of apartheid, which has long hindered inclusive and collaborative water resource management (Kemerink et al., 2011; Förster et al., 2017). In this context, multiple stakeholders have tried to work and collaborate together to conserve the ecosystem services[5] of the catchment. For instance, six traditional authorities in the Municipality of Matatiele have fostered watershed conservation in the upper catchment thanks to the support of NGOs and other stakeholders (Snorek et al., 2022). Since 2013, The UCP - an informal partnership of stakeholders including government agencies, private sectors, NGOs, community-based organization and research institutions – has worked with communities to improve the management of the catchment and promote rural development. Hence the UCP aims to conserve the entire Umzimvubu Water Catchment through long-term restoration and preservation initiatives at different levels, promoting rural development and building capacity for local users, and improving the flow of ecosystem services.

Guided by a Memorandum of Understanding (MoU), the UCP was initially founded by the Critical Ecosystem Partnership Fund (CEPF), and supported by Environmental and Rural Solutions (ERS), Conversation South Africa (CSA), as well as the Eastern Cape Department of Economic Development, Environmental Affairs, and Tourism (DEDEAT) and the Department of Water and Sanitation. In 2017, when the CEPF financing finished, CSA and ERS, supported by the World Wild Fund (WWF), South African National Biodiversity Institute (SANBI), the Water Research Commission, and the Department of Science and Innovation, decided to work on the consolidation of the partnership as a forum for sharing information and promoting initiatives in local communities. Main activities promoted by the collaboration among these stakeholders are the eradication of invasive species, especially black wattles trees, rangeland management, livestock auctions, and spring water protections. Among UCP partners, the ERS stands out for establishing the ecochamp program in the upper UWC. The ecochamps are young people from rural areas who received expert training and were recruited by the ERS. These ecochamps are considered highly capable individuals that encourage sustainability initiatives at the local level, through collaboration with UCP stakeholders (Greenberg et al., 2022). For instance, the project co-developed by ERS and LIMA has led to the protection and restoration of water resources, while promoting environmental awareness within the community through the participation of ecochamps. In the upper UWC, ecochamps showcase the significant role that young people can play in addressing complex environmental challenges and promoting solutions at local level (The Dutch Research Council, 2021). The next paragraph will provide an overview of problem statements and research objectives

1.4 Problem statements & Research objectives

In the last two decades, collaboration and inclusive participation have been tenets in watershed management. Scholars outline that co-management fosters collaboration among multiple stakeholders through a set of arrangements to regulate the management of natural resources by sharing power, authority, and responsibility (Berkes, 2009; Carlsson & Berkes, 2005; Parsons et al., 2021). However, co-management is not a panacea (Zulu, 2013; Bown et al., 2013).

[5] According to Costanza et al. (1997), ecosystem services are a set of goods and services provided by environmental process that are essential and beneficial for life on earth and human activities.

In some cases, co-management reinforces power dynamics, mirroring the centralized structure of governance that typically fails to tackle key challenges in the management of natural resources (Chinangwa et al., 2016; Cundill et al., 2013; Dressler et al., 2010; Cronkleton et al., 2012). Hence, scholars argue that co-management should be examined as a problem-solving process where power-sharing is an outcome rather than a starting point (Berkes, 2009; Carlsson & Berkes, 2005). By conceptualizing co-management as a problem-solving process, questions remain unanswered, including how this process should progress, what factors influence a positive outcome, and how the process should begin to ensure its implementation will fulfill its promises.

Co-management initiatives demonstrate that collaboration among stakeholders is a crucial component to promote the negotiation and implementation of resource management arrangements. In these collaborative processes, individuals are identified as key drivers, leading to enhanced management of natural resources and empowering local communities. For instance, in Brazil, local leaders who actively participate in decision-making processes encourage the establishment of co-management arrangements through collaboration with state authorities. This leads to empowering local communities in decision-making and strengthening their authority over natural resources (Sattler et al., 2015). In New Zealand, indigenous groups advocate for recognition of their authority and knowledge in river management through co-management initiatives (Parsons et al., 2021). In Bangladesh, women are highlighted as crucial individuals for engaging local communities in co-management processes (Siddique et al., 2024). These examples highlight the importance of individuals in co-management processes, demonstrating their capacity to exercise agency in governance approaches.

When young people are recognized as capable individuals with competent skills and responsibilities, their participation in decision-making makes governance approaches more inclusive and ensures that community needs are addressed (Osborne et al., 2017; Palmy-David & Buchanan, 2020; Trivelli & Morel, 2021; Akinyetun, 2021). However, especially in rural areas of the Global South, youth participation is often overlooked in decision-making, hindering their ability to contribute to governance approaches (Arslan et al., 2021a; Arslan et al., 2021b; Trivelli & Morel, 2021). The concept of community-based champions is introduced in the Palmiet Catchment in Durban between 2011 and 2016. These individuals contribute to achieving river rehabilitation goals and enhancing collaboration between local communities and government agencies (Martel et al., 2022). Furthermore, Cockburn et al. (2019) outline that capable individuals who hold significant agency function as catalysts in collaborative processes. In the context of the upper UWC, ecochamps are assumed to act as catalysts by bridging the gap between UCP stakeholders and local communities, encouraging collaboration in UCP initiatives. By strengthening collaboration efforts through joint decision-making, knowledge integration, and community empowerment, ecochamps play an essential role in facilitating co-management. Thereby, joint decision-making, knowledge integration, and community empowerment are envisioned as the key factors driving co-management processes. This research presents a unique study that seeks to explore the role of rural youth in facilitating co-management processes in the upper UWC in the South Africa. The main research question guiding this research is:

What role can ecochamps, acting as catalysts, have in facilitating co-management processes in the upper Umzimvubu Water Catchment?

To answer this main research question, the following sub-questions are employed:

SQ1. From the perspective of the local community to what extent do ecochamps facilitate the key factors of co-management processes?

SQ2. From the perspective of UCP stakeholders to what extent do ecochamps facilitate the key factors of co-management processes?

SQ3. What challenges and opportunities do ecochamps face and provide in the upper UWC?

1.5 Knowledge gap and relevance

The primary knowledge gap identified in this research is the lack of youth involvement in decision-making processes in rural settings, especially in the Global South (Palmy-David & Buchanan, 2020; Trivelli & Morel, 2021; Arshad et al., 2013; Asare-Nuamah & Mandaza, 2020). Although previous study has emphasized the significant role of individuals in co-management initiatives, the contributions of rural youth remain largely unexplored in the literature. Marginalized groups, including youth, often remain trapped within their socio-economic and environmental challenges without opportunities to change their status quo (Arslan et al., 2021a). This research is significantly relevant because it points out the critical need for more inclusive and representative approaches in natural resource management. By focusing on the role of youth in co-management, the study intends to uncover their capacity to act as catalysts in collaborative processes that can initiate co-management processes.

Scholars emphasize the importance of viewing co-management as a problem-solving process, However, critical questions about its progression and enabling factors remain unresolved. From a scientific perspective, this research seeks to contribute to the understanding of the conditions that facilitate the introduction of co-management initiatives in water catchments. By investigating the role of rural youth in facilitating co-management, the research intends to shed light on the importance of recognizing rural youth agency in governance approaches. From a societal perspective, the findings of this research can inform policymakers and practitioners about the benefits of involving youth in co-management. By exploring the role of rural youth agency in governance approaches, this research contributes to highlighting the importance of inclusive and representative forms of governance, while empowering youth to take initiative in decision-making processes. Governance is often shaped by those who hold power and have a stake in the decisions being made, frequently leaving marginalized groups without agency (Cleaver & Hamada, 2010). By advocating for more inclusive and participatory approaches, this research aims to contribute to achieving the Just Transition framework goal recently announced by the South African government, which seeks to include marginalized groups, including youth and women, at the center of decision-making processes to address historical inequalities and create new socio-economic opportunities while addressing environmental issues (Presidential Climate Commission, 2022).

Finally, this research seeks to provide insights and valuable feedback drawn from the perceptions of community members and stakeholders about the role of ecochamps in the upper Umzimvubu River Catchment. By gathering and analyzing these perceptions, the research aims to offer practical recommendations and strategies for encouraging the involvement of youth in co-management processes, ensuring they can fully contribute to future governance approaches. Additionally, even though ecochamps have proven to be key individuals in addressing complex environmental challenges and encouraging sustainability initiatives, their participation in decision-making within UCP meetings is limited. Therefore, by exploring the role of ecochamps

in facilitating co-management, this research aims to contribute to the emerging literature that highlights the importance of including youth in decision-making. The next paragraph will present the research framework employed to guide the research.

1.6 Research Framework

This research employed a mixed-methods approach to explore the role of ecochamps in the upper UWC. The upper UWC in which ecochamps operate serves as a study area. Given that the concept of rural young people remains relatively new and unexplored, this research conducted explorative research to understand the role of ecochamps in facilitating co-management processes. Explorative research design seeks to explore and investigate a phenomenon where limited or no previous research exists (Rahi, 2017). The main objective of this approach is to acquire knowledge and understanding of a subject in order to provide new insights that can contribute to the broader literature (Rahi, 2017). Figure 1 illustrates the key steps in conducting the research. The first step was an extensive literature review to understand the concept and theory of youth agency, co-management, and collaborative management. This literature facilitated the development of a theoretical framework, which was then used to develop thematic themes, then these were used to analyze the data gathered from the field. The second step was to collect data from the field activities and, in the aftermath, conduct online semi-structured interviews with UCP stakeholders. The data were collected from October 2023 to April 2024. This included both qualitative and quantitative data retrieved from semi-structured interviews with partners of the UCP, focus group discussions with local communities, traditional leaders, ecochamps, and household surveys. This mixed-method approach provided a holistic view to explore the role of ecochamps in the upper UWC, enabling me to address the research objectives. The findings were then merged together in order to address the main research question. This final step was essential to drawing insights and recommendations.

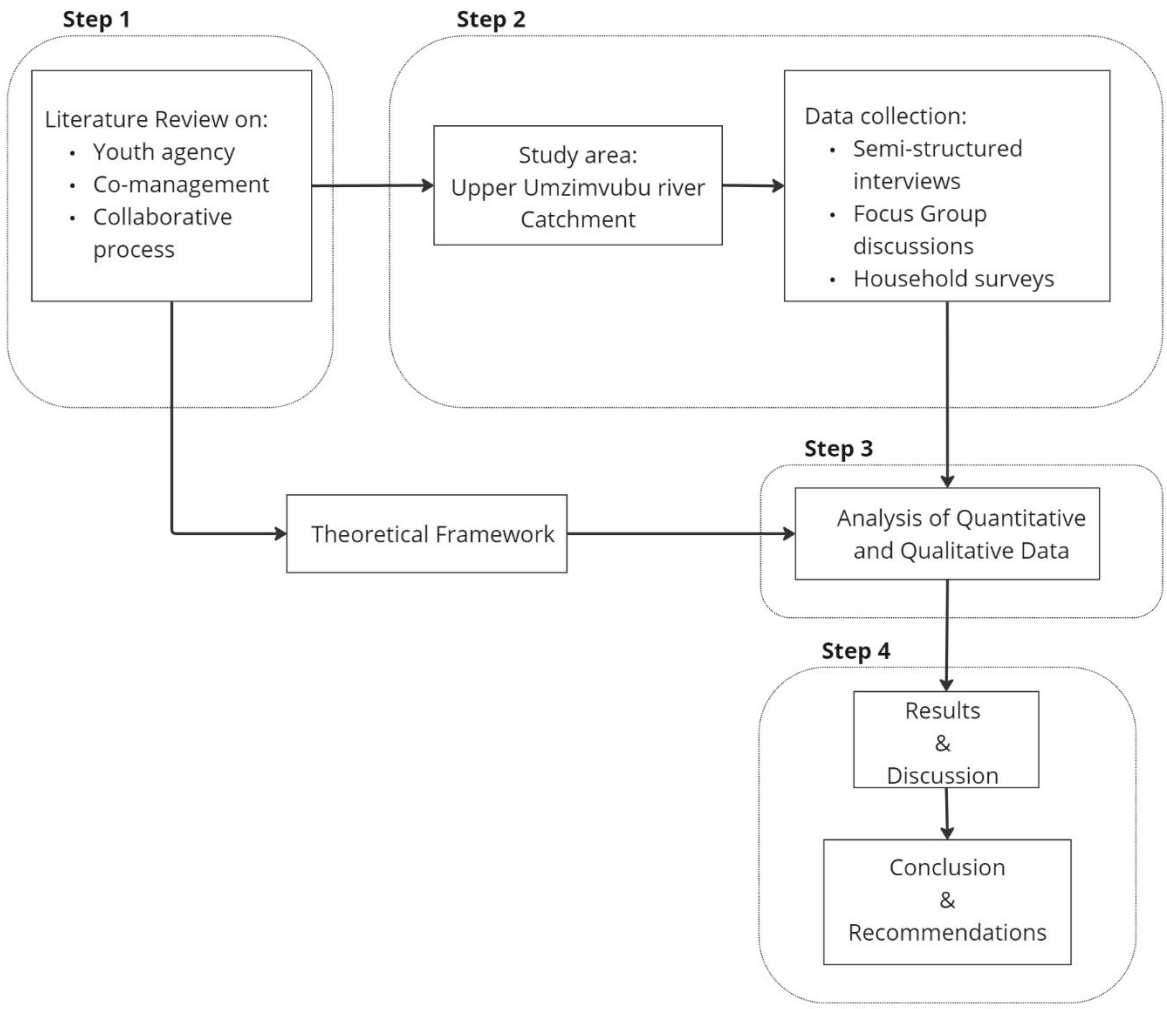

Figure 1 ***Research framework***

Notes: Steps undertaken during the research are as follows: Step 1 literature review; Step 2 field work and data collection; Step 3 data analysis; Step 4 results, discussion, conclusion, and recommendations.

2. Theoretical Background

This chapter provides an overview of the key concepts and theories utilized in this research. It begins by providing an understanding of youth agency through concepts of youth participation, leadership, and environmental stewardship. Subsequentially, co-management theory is introduced, exploring its different facets and emphasizing its interpretation as an evolving process. Building on these concepts, the theoretical framework is then presented to clarify how youth agency integrates into co-management processes. Finally, the chapter concludes by outlining the conceptual framework that guides this research.

2.1 Youth agency

In general, agency refers to an individual's ability to make decisions and act on those choices in ways that produce different outcomes (Martin, 2004). Individual agency literature draws interest because it outlined the ability of individuals to start actions and shape governance approaches (Low & Randhir, 2005; Pagdee et al., 2006; Fabricius et al., 2007; Pfueller, 2008). For instance, individuals have shown their ability to contribute to the collaborative process of managing natural resources in complex landscapes, facilitating the creation of partnerships and communication among stakeholders (Ansell & Gash, 2008; Patterson, 2017). Additionally, research has shown that individuals have contributed to shifting from top-down approaches to more flexible ones, enhancing integrated governance, and empowering local communities (Westley et al., 2013). In Brazil, actions undertaken by local leaders and state authorities have enhanced collaborative processes, encouraging the establishment of co-management arrangements (Sattler et al., 2015). However, identifying actors best positioned to take action and influence governance approaches is a complex task (Westley et al., 2013). According to scholars, including young people in decision-making processes can lead to a paradigm shift that challenges traditional governance structures, promotes rural transformation, and drives systematic change to address key sustainability challenges (Trivelli & Morel, 2021; Arslan et al., 2021b). Recognizing young people as key actors in decision-making increases their likelihood of contributing to the development and well-being of their communities (Trivelli & Morel, 2021; Arslan et al., 2021b). Therefore, youth participation in governance approaches ensures that outcomes are more inclusive, equitable, and reflective of the needs of society and future generations (Palmy-David & Buchanan, 2020; Trivelli & Morel, 2021; Arshad et al., 2013; Asare-Nuamah & Mandaza, 2020).

Moving away from the structuralist conceptualization of youth as passive actors, youth agency refers to the capacity of young people to take and make actions that influence their future and contribute to society's well-being (Head, 2011; Kudva & Driskell, 2009; Trivelli & Morel, 2021). Recognizing youth as active actors fosters their sense of responsibility, civic skills, knowledge, and leadership (Chawla, 2002; Percy-Smith & Burns, 2013; Head, 2011; Kudva & Driskell, 2009; Trivelli & Morel, 2021). The literature delineates various facets of youth agency. Hence, three dimension of youth agency are presented in order to provide a more detailed explanation of this concept.

- **Youth participation**

Youth participation encompasses a wide range of mechanisms through which young individuals engage in activities that influence policy content, political dynamics, and the structures and norms of governmental institutions (Ingaruca et al., 2022). This participation can take place at different levels and across several phases, including the design, implementation, monitoring, and accountability of policies and programs (Ingaruca et al., 2022). Scholars refer to youth participation as a broad spectrum of actions that empower youth to contribute to decision-making processes that shape governance approaches (Head, 2011; Kozar et al., 2014; Asare-Nuamah & Mandaza, 2020). Scholars recognize youth participation as a fundamental human right, asserting that young people should actively participate in decision-making processes as citizens (Ingaruca et al., 2022). Despite constituting over half of Africa's population, youth are excluded from decision-making processes. Scholars outline that youth typically lack a voice in public policy forums due to their limited power, position, and authority within the stakeholder groups sitting at the table (Youniss et al., 2002). Frank (2006) identifies several historical barriers to youth participation. These barriers contribute to the perception that youth lack the capacity to actively participate in decision-making processes and contribute to the overall well-being of society. Nevertheless, over time, scholars have developed several frameworks aimed at demonstrating that youth have the ability to participate in decision-making processes, and their participation can lead to great benefits. For instance, Hart's (1992) ladder of participation framework highlights the necessary steps to ensure civic participation, while Wong et al.'s (2010) pyramid framework emphasizes that pluralistic settings based on youth-adult partnerships empower youth. These frameworks outline that youth participation in decision-making fosters a sense of empowerment. Evidence from around the world has shown that youth participation can lead to forms of governance that are more inclusive, reflect community needs, and address key sustainability challenges (Osborne et al., 2017; Palmy-David & Buchanan, 2020; Trivelli & Morel, 2021; Akinyetun, 2021). For instance, in Peru, a youth organization has played a crucial role in influencing the Peruvian Climate Law by advocating for integrated form of governance and youth participation in national climate policies (Ingaruca et al., 2022). Youth participation in decision-making processes empowers young people, supports their agency, and ensures their inclusion in governance.

- **Youth Leadership**

Youth leadership encompasses several features and developmental processes. Youth leadership can be defined in different ways. In general, it refers to the process of developing social skills and being able to promote activities at the local level (Puxley & Chapin, 2021). Head (2011) outlines the importance of promoting youth leadership as a fundamental right and a chance for personal growth. In fact, when young people are given the opportunity to become leaders, these experiences provide opportunities for positive youth development, enabling young people to explore their capacity, improve confidence and self-esteem, build connections, and become pioneers of sustainability initiatives (Zeldin et al., 2013; Curran & Wexler, 2017; Ingaruca et al., 2022). Youth leadership can be seen from several perspectives. As a dimension of youth agency, youth leadership highlights how youth agency fosters a sense of leadership among young people. More than ever, young people are at the forefront of addressing key sustainability challenges such as climate change, social justice, and poverty (Ingaruca et al., 2022; Chan et al., 2021). In the Agenda 2030 of the Sustainable Development Goals, youth are recognized as key actors who

should be valued and considered when designing and implementing sustainability initiatives (Ingaruca et al., 2022; Chan et al., 2021). In Asia and the Pacific, projects co-led by UNDP and the Citi Foundation are enabling youth to become leaders of sustainability initiatives at the local level. These young leaders contribute to the achievement of Agenda 2030 by becoming experts in renewable energy and masters of ancestral farming practices (Ingaruca et al., 2022). Young people, in their capacity as youth leaders, can make use of their agency to promote innovative change, whether in the context of community initiatives or governance systems. Leadership skills are essential to trigger a radical change in governance structures and transform people's lives (Hornyak et al., 2022; Ingaruca et al., 2022). Participatory processes and programs are growing to encourage youth to become leaders in community initiatives (Ingaruca et al., 2022). Youth can fully express their agency when given the opportunity to demonstrate their capabilities and commitment to addressing key sustainability challenges (Palmy-David & Buchanan, 2020; Trivelli & Morel, 2021; Arshad et al., 2013; Asare-Nuamah & Mandaza, 2020).

- **Youth environmental stewardship**

Stewardship is a crucial concept in environmental governance that is becoming increasingly relevant as it relates to the necessity of protecting and conserving the environment. The concept of environmental stewardship refers to the aim of taking steps to safeguard natural resources, through a variety of activities to minimize harmful human activities and maximize conservation practices (Couceiro et al., 2023). In general, stewardship actions can be taken at different levels, from local to national. According to Bennett et al. (2018), local environmental stewardship refers to the actions taken by individuals, or a group of actors with varying motivations and levels of capacity to protect and conserve natural resources while pursuing social and environmental benefits. A study conducted by Hood et al. (2011) showed that youth have a strong attachment to their natural environment and express concern for the management of these resources. However, the feeling of being powerless to contribute to the conservation of their environment due to a lack of opportunity for involvement in environmental stewardship activities limits their ability (Hood et al., 2011). Couceiro et al. (2023) conducted a study on the role of youth in environmental stewardship in Colombia. The research outlines the importance of recognizing youth agency in local environmental activities. Factors such as institutional support, a strong sense of belonging, and confidence often limit the ability of youth to become drivers of change in community activities. Stewardship of the environment is an area in which young people have the opportunity to physically exercise their agency by advocating for environmentally responsible practices and participating in conservation efforts.

According to these three dimensions, the recognition of youth agency is essential in governance approaches. Stakeholders can benefit from their unique perspectives and passion. Hence, their participation in governance approaches is seen as essential, as it can lead to successful governance outcomes (Palmy-David & Buchanan, 2020; Trivelli & Morel, 2021; Arshad et al., 2013; Asare-Nuamah & Mandaza, 2020). Through the participation of young people, governance approaches can become more inclusive, addressing the diverse range of socio-economic challenges, and fostering sustainability initiatives at the local level. Additionally, when young people are given the opportunity to participate in decision-making processes, they can develop leadership skills that not only provide them the capacity to deal with challenging decisions, but also give them the ability to promote local activities that support the well-being of their communities. This can lead to foster a sense of responsibility and environmental stewardship,

which in turn to contribute to achieving goals in natural resource management. Therefore, the three dimensions of youth agency—participation, leadership, and environmental stewardship—are interlinked and, when taken as a whole, strengthen the capacity of young people to act as catalysts of positive change.

2.2 Co-management as a process

Co-management is an evolving governance approach implemented worldwide across different contexts, including forest management in India, wildlife management in Canada, watershed management in Europe and the US, and protected areas in Australia (Pinkerton, 2003; Jentoft & McCay, 1995; Agrawal, 2005). Despite its widespread implementation, the term does not have a single accepted definition (Armitage et al., 2009; Berkes, 2009). Pinkerton (1992) defines co-management as the shared power in resource management between government agencies and community organizations. Borrini-Feyerabend et al. (2004) expanded this definition, viewing co-management as a process of collective understanding and action where human communities and other social actors collaboratively manage natural resources, leveraging each party's unique strengths, perspectives, and capacities. However, early literature often regarded co-management as relatively simple partnership arrangements for natural resource management (Berkes, 2009; Carlsson & Berkes, 2005). Co-management typically arises when there is a need to establish a set of arrangements between local communities and government agencies to solve conflicts over sharing common resources, including water, land, and other natural resources (Borrini-Feyerabend et al., 2004). Stakeholders can benefit from each other's unique perspectives and capacities. Hence, their participation in co-management is seen as essential, as it can lead to successful governance outcomes. As mentioned, these arrangements can take many forms and are often complex to establish due to several factors and the inherent complexity of managing power, responsibilities, and authority over natural resources (Berkes, 2009; Carlsson & Berkes, 2005). For instance, co-management has the potential to bring about a certain degree of power sharing, but it cannot completely eradicate the existing power structure (Carlsson & Berkes, 2005). Based on a wide range of experience and evidence, authors identify different facets of co-management (see Table 1). Based on these definitions, co-management is framed as a decentralized approach in which multiple stakeholders – local communities, government agencies, NGOs, and the private sector – collaborate to enhance the management of natural resources through a set of arrangements that help share power, authority, and responsibility.

Table 1 ***Facets of co-management***

Facets	Definitions	References
Co-management as power sharing	Co-management requires power sharing. This involves the distribution of decision-making authority and responsibility among multiple stakeholders to achieve an equitable management of natural resources.	Borrini-Feyerabend et al., (2004); Berkes, (2009)
Co-management as institution building	Co-management requires collaboration between government and non-government entities. The interplay between these entities is essential when partnership has to be built in order to facilitate co-management.	Armitage et al., (2009); Berkes, (2009)
Co-management as process	Co-management is a continuous process involving institution building, trust development, and power sharing through negotiations. It focuses on developing and maintain evolving partnership among stakeholders. In this process relationship among stakeholders is built.	Berkes, (2009); Pinkerton, (1992)
Co-management as governance	Co-management involves multiple stakeholders from both public and private sectors, interacting across different levels and domains. This interaction promotes legitimacy and compliance with management choices by creating inclusive, participatory, and accountable governance structures.	Kooiman, (2003); Folke et al., (2005)
Co-management as trust and social capital	Co-management relies on trust and social capital among stakeholders. Building trust is crucial for conflict resolution and effective negotiation.	Carlsson & Berkes (2005); Berkes, (2009)
Co-management as knowledge generation	Co-management facilitate knowledge generation by combines several source of knowledge. The integration of multiple knowledge systems, from scientific knowledge to traditional knowledge, improve decision-making process and grounds management strategies.	Hahn et al., (2006); Reid et al., (2006); Davidson-Hunt & O'Flaherty (2007)

Therefore, co-management can serve to address several problems, including trust, solve conflicts, and balance power dynamics, among others (Armitage et al., 2009; Berkes, 2007; Folke et al., 2002; Jentoft, 2005; Lebel et al., 2006; Mikalsen et al., 2007). In general, co-management may operate at both large and small scales and across multiple institutions (Berkes, 2009; Carlsson & Berkes, 2005). Successful cases of co-management around the world highlight its potential to enhance natural resource management by widening processes of decision-making, promoting knowledge integration, and empowering local communities. For instance, in New Zealand, the indigenous community has advocated for a more equitable process of sharing decision-making responsibilities. This includes not only considering different management plans and regulations but also implementing on-the-ground activities to facilitate water resource management between

settler-state and indigenous communities (Parsons et al., 2021). In Brazil, collaboration between local leaders and state authorities facilitates co-management, empowering communities by recognizing their authority over resources while achieving conservation goals in protected areas (Sattler et al., 2015). In the Arctic, the integration of local and scientific knowledge in co-management arrangements promotes adaptation strategies to environmental threats in local communities (Armitage et al., 2011). In rural areas in South Africa, co-management has enhanced collaboration between government agencies and local communities, leading to shared authority and improved water resource management (Wickrama, 2020). In Pakistan, the forest department has promoted landscape co-management initiatives through the participation of the local communities to facilitate afforestation projects and improve community livelihoods (Ullah et al., 2022). Despite these successes, co-management is complicated to design and implement. Early involvement and engagement between government agencies, local communities, NGOs, and the private sector is essential to promoting long-term initiatives and reducing the risks of power imbalance, conflicts, and a lack of commitments (Gregory & Grant-Smith, 2023). For example, in Africa co-management initiatives are typically hindered by distrust among stakeholders (Ebel, 2020; Murunga et al., 2021). Other cases in Africa have shown that governments and external organizations may not fully devolve responsibilities or equitably share natural resources, leading to conflicts due to a lack of fulfilling the promises made (Ogoma et al., 2020). Several authors argue that devolution of power and joint decision-making should be key factors to be included when it comes to designing and implementing co-management initiatives, yet these factors are often overlooked (Garza-Gil et al., 2020; Linke & Bruckmeier, 2015; Trimble & Berkes, 2013; Chinangwa et al., 2016). Scholars have also outlined that marginalized communities may choose not to comply with resource arrangements due to perceived inequalities and a lack of participation in decision-making and benefit sharing (Domínguez & Luoma, 2020; Snyman & Bricker, 2021).

2.3 Theoretical framework

Authors describe co-management as a long process, with many overlooked factors that can enable or hinder the design and implementation of this approach (Berkes, 2009; Carlsson & Berkes, 2005). Carlsson & Berkes (2005) present a clear overview of some of these factors. First and foremost, many government agencies find it challenging to collaborate due to different levels of governance structure, power, and administration. This complexity is evident in water management, where partnerships and agreements connecting a heterogeneous group of stakeholders are essential. Secondly, communities present a wide range of interests based on socio-economic necessity, background, ethnicity, and environmental challenges, which can hinder the implementation of co-management initiatives. Additionally, community participation and commitment to co-management initiatives vary based on numerous conditions. In some circumstances, communities band together on a problem and react in a unifying way, yet in others, there is a lack of cohesion in addressing common problems. Thirdly, the dynamic and iterative nature of ecosystem services necessitates adaptive strategies that require continuous adjustments. Fourthly, the success of co-management often depends on external factors, such as the recognition of legitimacy and authority among stakeholders, secure resource tenure, financial support, and technical support to facilitate implementation at the local level. Furthermore, most natural resource management approaches are rooted in various institutional arrangements that vary depending on the context. These arrangements of resource management are structured into three different layers of rules: constitutional, collective choice, and operational. Constitutional rules define governance

structures, allocating rights in decision-making processes. Collective choice establishes who is involved in decisions being made, while operational rules focus on day-to-day activities (Ostrom & Schlager, 1996). Co-management operates primarily under collective choice rules but is influenced by constitutional rules, which establish the overarching decision-making framework. The distinction between operational and collective choice rights highlights the difference between exercising established rights and participating in defining future rights. Finally, the complexity of the government structure involved in co-management initiatives can limit the ability of stakeholders to address problems effectively.

Carlsson & Berkes (2005) explain that the co-management should be seen as an evolving process. The authors outline that instead of focusing on the formal structure of co-management arrangements to share power, one should view power sharing as the outcome of a process rather than the starting point. Furthermore, Berkes (2009) point out that co-management should be explored as a problem solving process. By examining co-management as a problem-solving process, authors reflect on the importance of including joint negotiation, knowledge integration, and community empowerment (Carlsson & Berkes, 2005; Berkes, 2009; Parsons et al., 2021). In light of these insights, this research refers to joint decision-making, knowledge integration, and community empowerment as key driving factors of co-management processes. These factors are further explain as follows:

- **Joint decision-making:**

Joint decision-making in co-management relies on collaborative and inclusive processes where multiple stakeholders actively participate in making decisions that shape resource management strategies. In co-management, joint decision-making is achieved through inclusive participation, which ensures that several inputs and interests are included in the design and implementation of activities. It also includes interactive and dynamic engagement, in which stakeholders engage in ongoing discourse, provide feedback, and collaborate to refine decisions Berkes, 2009; Haddaway et al., (2017); Kusters et al., (2020);

- **Knowledge integration:**

Knowledge integration in co-management refers to the process of connecting different knowledge system, including traditional and scientific knowledge, into decision-making processes. This helps to actively involving multiple stakeholders to ensure that the management of natural resources reflects a broad range of insights and experiences. By incorporating different forms of knowledge, co-management can address complex challenges, balance competing interests, and create adaptive, resilient management practices that are more widely accepted and sustainable in the long term. In co-management, knowledge integration is achieved through knowledge being shared among different stakeholders, and learning processes to ensure a comprehensive understanding comprehensive understanding to enhance decision-making processes (Kusters et al., 2020; Berkes, 2009; Armitage et al., 2011; Ansell & Gash, 2008).

- **Community empowerment:**

Community empowerment in co-management initiatives is defined as the process of increasing communities' social awareness, authority, and a sense of self-determination. This helps to establish a balance in power dynamics within the community, allowing all members to participate in processes of managing shared resources. In co-management, empowerment is

achieved through education and training that contribute to building knowledge and awareness of those that can influence and are affected by co-management processes (Pomeroy et al., 2001; Hauck & Sowman 2003).

Table 2 displays the theoretical framework developed from the literature on co-management, collaborative natural resource management processes, and youth agency. This framework served as a guide for analyzing the gathered data and integrating the different methods used.

Table 2 ***Key driving factors of co-management***

Notes: Each factor is break down into elements that represent the factors itself. A description and key questions used to narrow down the characteristics of the elements used.

Factor	**Joint decision-making**		
Elements	**Descriptions**	**Key questions**	**References**
Inclusive participation	The process of making decisions is inclusive. This leads to including different inputs and interests in the process of designing and implementing activities	To what extent does inclusivity lead to including different inputs and interests in the process of designing and implementing activities?	Plummer & Fitzgibbon, (2005); Haddaway et al., (2017); Kusters et al., (2020); Favretto et al., (2021); Ansell & Gash (2008)
Interactive participation	The process of making decisions is interactive and dynamic. This leads to participants actively participating in in the process of designing and implementing activities	To what extent does interactivity lead to participants actively participating in the process of designing and implementing activities?	Parsons et al., (2021); Haddaway et al., (2017); Kusters et al., (2020); Favretto et al., (2021)
Communication	Dialogue provides a fundamental basis for clear and transparent communication about decisions being made. This leads to identifying opportunities for mutual gain in the process of designing and implementing activities	To what extent do clear and transparent communication lead identifying opportunities for mutual gain in the process of designing and implementing activities?	Ansell & Gash (2008); Carlsson & Berkes, (2005)
Factor	**Knowledge integration**		
Elements	**Description**	**Key questions**	**References**
Knowledge shared	Knowledge and expertise are shared. This leads to a shared understanding and builds common knowledge	To what extent do shared knowledge and expertise facilitate mutual understanding and contribute to building common knowledge?	Favretto et al., (2021); Berkes, (2009); Emerson et al., (2012); Kusters et al., 2020

Support learning process	Changes in perspectives and behaviors are encouraged. This leads to the implementation of better practices	To what extent do encouraged changes in perspectives and behaviors lead to the implementation of better practices?	Carlsson & Berkes, (2005); Armitage et al., (2011)
Factor	**Community empowerment**		
Elements	**Description**	**Key questions**	**References**
Capacity building	Skills and knowledge are developed within the community. This leads to enhance community ability to cope with different circumstances and support sustainable community development	To what extent do developed skills and knowledge facilitate communities' ability to cope with different circumstances and support sustainable community development?	Kusters et al., (2020); Favretto et al., (2021); Parsons et al., (2019)
Social cohesion	Trust, relationships, and a sense of unity are developed within the community. This leads to cooperation and inclusive participation in community activities to encourage collective action	To what extent do developed trust, relationships, and a sense of unity facilitate collective action?	Kusters et al., 2020; Pomeroy et al., (2001); Hauck & Sowman (2003)

2.4 Conceptual framework

Figure 2 illustrates the conceptual framework that visualizes a feedback loop based on an exploration of co-management processes in the Upper Umzimvubu Catchment. Since co-management is described as a problem solving process, the loop aims to depict the iterative nature of this process. However, the research specifically focuses on the liner flow of the interplay between stakeholders and ecochamps, rather than the whole feedback loop. To explore the role ecochamps, acting as catalysts, have in facilitating co-management and the perceptions of local communities and UCP stakeholders in *SQ1* (From the perspective of the local community to what extent do ecochamps facilitate the key factors of co-management processes?) and *SQ2* (From the perspective of UCP stakeholders to what extent do ecochamps facilitate the key factors of co-management processes?), This analysis aims to understand how ecochamps contribute to joint decision-making, knowledge integration, and community empowerment. Whereas, the *SQ3* (What challenges and opportunities do ecochamps face and provide in the upper UWC?) can provide meaningful insights on challenges and opportunities in facilitating co-management through the participation of ecochamps. The positive outcome of the interplay between ecochamps and stakeholders can ultimately lead to co-management arrangements fostered by joint decision-making, knowledge integration, and community empowerment. This process of co-management is envisioned to have a positive feedback loop in watershed management, thereby enhancing the management of both material and non-material resources. Material resources include tangible and physical elements of the watershed, such as water, soil, and vegetation. These resources are directly involved in natural processes such as the water and carbon cycles and are relatively easy to quantify (Fagerholm et al., 2012; Batey & Kim, 2021). In contrast, non-material resources are intangible, encompassing knowledge, cultural values, and social capital. Although more

challenging to quantify, these non-material resources are equally crucial for effective watershed management (Fagerholm et al., 2012; Batey & Kim, 2021).

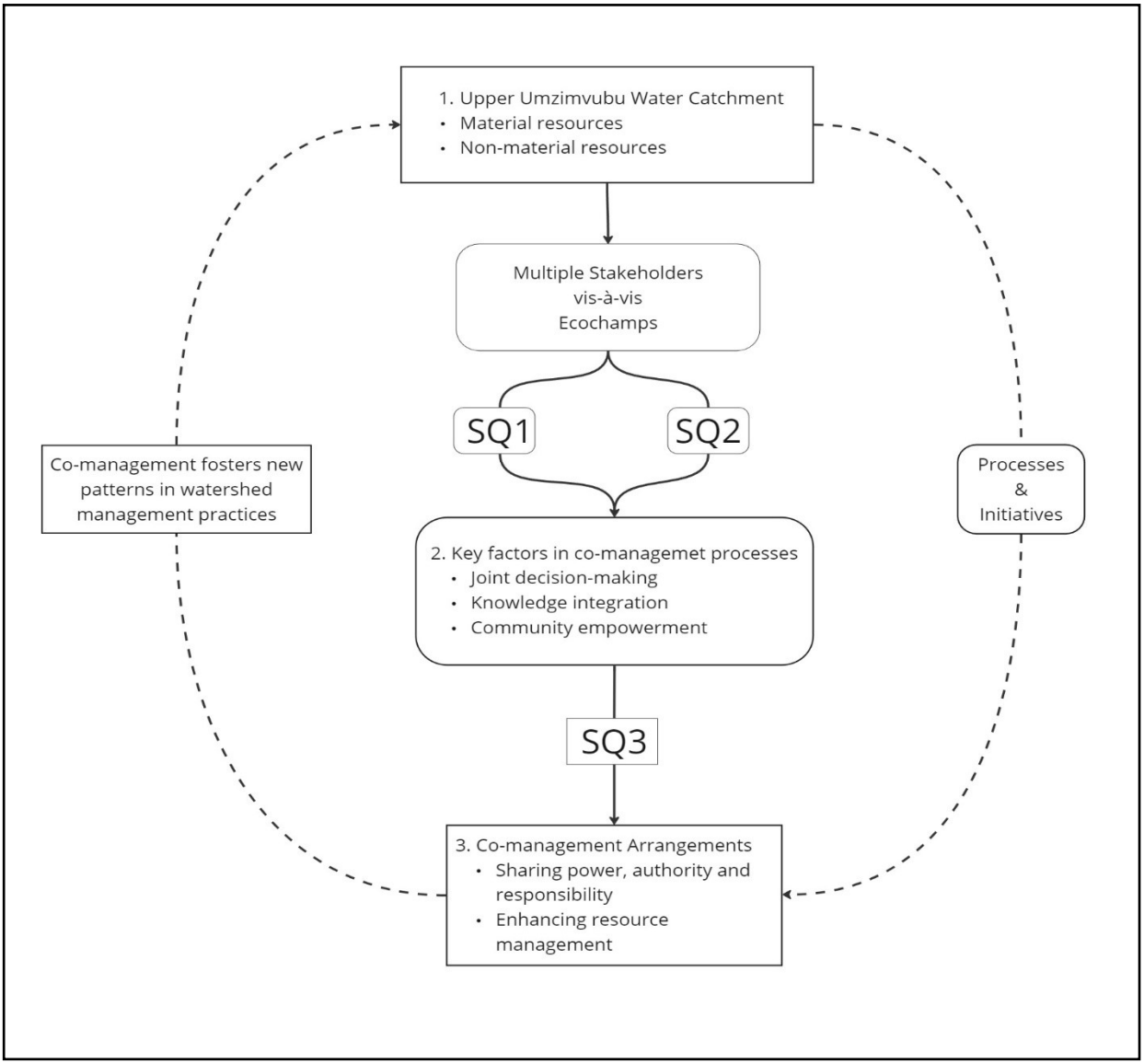

Figure 2 ***Conceptual framework***

Notes: Squircles shapes represent key aspects within the research objectives, such as the interplay between stakeholders and ecochamps. Square shapes represent background concepts mentioned in the research but not analyzed. Dashed arrows represent the feedback loop, highlighting the iterative nature of co-management, while solid arrows represent the direct connections between key aspects. Adapted from Ngowi et al., (2018)

3. Technical Research Design

This chapter illustrates the study area, the implemented strategies, and data collection methods used. Additionally, validity and reliability of data collection methods, and ethical consideration are presented.

3.1 The study area

The Umzimvubu Water Catchment is located at the base of the Drakensberg Mountain range in the province of the Eastern Cape, South Africa. The watershed covers an area of 435,000 hectares, including grasslands, mistbelt woods, and wetlands (see Figure 3). The watershed area sustains a population of around 250,000 people living in informal settlements and communal lands, as well as more than 70 plant and animal species that are at risk of harm or extinction (Nel et al., 2011). The primary economic activity of the local population is cattle rearing, supplemented by a diverse range of income sources, including social grants, formal and informal jobs, and small-scale agricultural activities (Muller & Shackleton, 2014; Shackleton & Luckert, 2015).

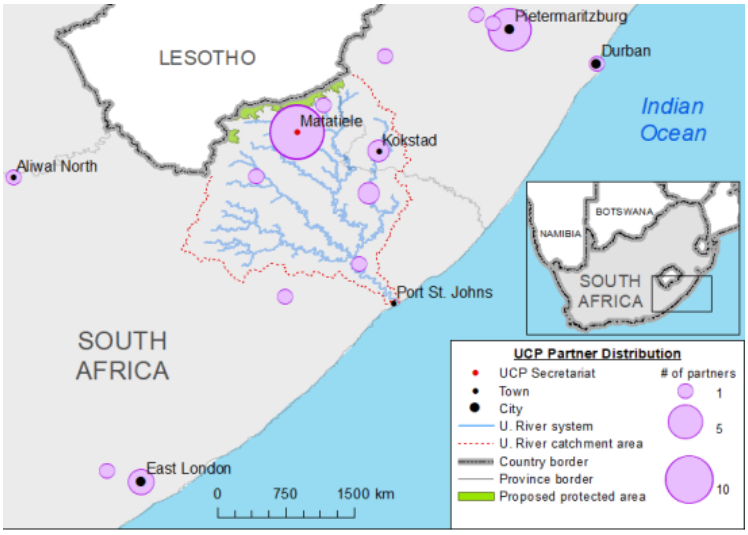

Figure 3 ***Umzimvubu Water Catchment***.

Notes: Image retrieved from Snorek et al., (2022)

In South Africa, the governance of water resources is influenced by inequitable societal structures that have endured since the apartheid period from 1948 to 1994 (Ntsebeza, 2004; Chitonge & Ntsebeza, 2012; Förster et al., 2017). During this time, Black South Africans were relocated from fertile lands to communal lands, while regulations protected White farmers (du Toit, 2004). After the end of apartheid, the South African government initiated several democratic political actions and reforms to address crucial socio-economic inequalities and improve the well-being of its citizens (Schreiner, 2013). However, the country continued to grapple with significant poverty, income inequality, and unemployment (Johnson & Jacobs, 2012). People living in the former homelands and rural provinces, such as the Eastern Cape, Limpopo, and KwaZulu-Natal, are most affected by poverty and unemployment (Tshishonga & Matsiliza, 2021). Recent research by Ngumbela et al. (2020) specifically points out that the Eastern Cape remains trapped in

structural poverty even after years of democracy. This socio-economic crisis is exacerbated by South Africa's high regional weather variability (Quinn et al., 2011). Changes in weather patterns have resulted in an increase in land degradation and water scarcity, further amplified by constant population growth (Quinn et al., 2011; du Plessis, 2019). Despite the post-apartheid government's efforts to address socio-economic inequalities and promote collaborative watershed governance through the implementation of the National Water Act 36 of 1998, the government has failed in its attempts (Schreiner, 2013). Consequently, water resource management has remained predominantly top-down, with limited local stakeholder involvement in the decision-making process (Förster et al., 2017). Furthermore, infrastructure investment is still regarded as racialized, and distrust undermines the government's ability to change course and ensure collaborative watershed governance (Goldin, 2010). The case presents an intricate interplay between historical social injustice and the socio-economic and environmental challenges that rural communities face. Despite democratic reforms and political initiatives aimed at addressing social inequalities and promoting collaborative water governance, the region continues to face significant obstacles such as unemployment, poverty, and environmental degradation. The persistent top-down approach to water resource management has limited local communities' involvement, fostered distrust, and hindered collaborative processes for managing water resources (Peer et al., 2022; Xaba & Onwubu, 2022).

3.2 Research strategy

The research consisted of conducting an exploratory mixed-method approach, employing both quantitative and qualitative methods. In the field of social research, many researchers are calling for the use of a mixed-method approach to incorporate a variety of qualitative and quantitative methods to obtain reliable and valid findings (Yin, 2006; Barker & Pistrang, 2005). According to Verschuren & Doorewaard (2010), a combination of sources is often used to gain valuable and meaningful insights. Qualitative methods aim to attain comprehensive knowledge, whereas quantitative methods aim to reach a wide-ranging understanding (Patton, 2002). The qualitative method encompasses several types of data, including semi-structured interviews, among others. In general, qualitative methods are frequently employed to gain insights into programs or policies based on interviewees' perspectives (Goodrick & Rogers, 2015). In contrast, quantitative methods allow measurement of specific variables through the collection and analysis of numerical data (Rana et al., 2021). This can include a series of so-called closed questions, in which a limited number of options are used in a survey, for instance (Verschuren & Doorewaard, 2010). The upper UWC was chosen as a study area. This area was selected for two main reasons. Firstly, it was pre-selected by the WEF project's coordinators due to its complex landscape management, which involves a wide range of actors and institutions (see Appendix A). Secondly, since ecochamps operate in the upper UWC, it was essential to consider the local communities and stakeholders working in this area to gain insights into their interactions and perspectives on ecochamps. Prior to fieldwork, the methods developed for the WEF project to collect data in Matatiele, including stakeholder questionnaires and household surveys, were reviewed for three main reasons. First, to develop a set of potential questions for a mix of semi-structured interviews, including closed and open-ended questions, and focus group discussions. Second, to add extra questions that could address the objectives of this research. Third, to ensure that the objectives of the semi-structured interviews and focus group discussions aligned with those of the WEF project, thereby integrating insights from previously conducted questionnaire with stakeholders and

surveys. Additionally, the intention was to incorporate insights from the semi-structured interviews and focus group discussions into the outcomes of the WEF project. For the purpose of this research, individuals' perspectives were used as the unit of analysis to explore the role of ecochamps in facilitating co-management processes at UWC. This approach is highly valuable as it enables the identification of common themes, patterns, and variations in how people perception (Kumar, 2018).

Quantitative methods were used to analyze prior stakeholder questionnaires, semi-structured interviews (closed questions based on questionnaire previously conducted) and household surveys. Whereas qualitative methods were used to analyze semi-structured interviews (open questions) with stakeholders and focus group discussions with local communities, traditional authorities, and ecochamps. Overall, the data were collected from October 2023 to April 2024. In total, 325 household surveys were conducted in traditional authority areas such as Nkosana, Makhoba, and Mzongwana, where ecochamps are active. The surveys were conducted during the first week of the field work in October upon arrival with the support of a research team, including researchers from the WEF project, local people, and ERS employees. These surveys were supplemented with 4 focus group discussions with local community members who have participated in ecochamps activities. These focus group discussions were held whenever possible during ecochamps activities in different areas of Matatiele between the first and second weeks. However, participation from community members was not always possible due to members' needs and time constraints.

The semi-structured interviews with stakeholders who are partners of the UCP were arranged in Matatiele, and partially remotely after the fieldwork. In total, 9 interviews were conducted for this research. Prior to these, researchers from the WEF project conducted 17 UCP stakeholder questionnaires. In order to use these questionnaires, a mix of open and closed-ended questions was used for the semi-structured interviews. In the end, a total of 26 interviews were analyzed. Additionally, traditional leaders (chiefs from the unities) and ecochamps were engaged in focus group discussions to understand whether the information converged or not. Due to time constraints, only 1 focus group discussion was conducted with each group (traditional authorities and ecochamps). These focus group discussions were conducted during the Water-Energy-Food symposium organized by the University of Fort Hare, the University of Utrecht, and North-West University in Pretoria during the last days of my journey. In total, 6 focus group discussions were conducted (see Appendix B for questions developed).

To analyze the complexity of the data collected, the theoretical framework contributed to the development of a set of themes drawn from the literature. These deductive themes provided a structured lens for analyzing data gathered from both focus group discussions and semi-structured interviews, ensuring that the analysis was grounded in established theories. Additionally, this structure helped to standardize questions across all data collection methods, facilitating the convergence of outcomes from both qualitative and quantitative analyses. For the analysis of qualitative data, inductive themes were integrated in the pre-selected themes to include emerging insights from participants' perspective. This flexible approach is recommended in qualitative analysis in order to incorporate new insights from participants, ensuring that previously unidentified themes can be included (Ortega et al., 2023). The findings from prior questionnaires, closed-ended semi-structured interviews, and household surveys were then utilized to support and validate the qualitative insights. By combining qualitative data with quantitative data, this

approach provided a robust structure for integrating the findings, enhancing the reliability and validity of the analysis (Anderson, 2016).

3.2.1 Household surveys

Researchers widely use surveys to gather information from diverse samples, including citizens, stakeholders, employees, and others. Surveys provide a numeric description of the sample under analysis (Newcomer & Triplett, 2015). This method often supports in-depth interviews and focus group discussions, providing substantial data collected within a specific period (Newcomer & Triplett, 2015). The survey had a cross-sectional design, including both open-ended and closed-ended questions, using continuous and categorical variables (see Appendix C). The cross-sectional design is frequently used to combine quantitative surveys and qualitative interviews to collect a diverse variety of data within a limited time period (Bryman, 2006). The cross-sectional design, in contrast to the longitudinal design, offers insights into a given instant in time rather than tracking changes over a period (Markovits et al., 2012).

Open-ended questions enable respondents to articulate their opinions in their own terms, while closed-ended questions require them to select from a predetermined list of alternatives (Newcomer & Triplett, 2015). This blended approach aims to capture both quantifiable data and diverse perspectives, providing comprehensive insights into household perceptions about the role of ecochamps. As previously mentioned, the questionnaire was previously developed by researchers from the WEF project.

The household survey was conducted on-site during the first week of fieldwork. Areas of interest were chosen based on preliminary meetings with managers of the ERS. Sites within the upper UWC were selected for their relevance to the ecochamps' interface with local communities and traditional authorities, allowing focused and pertinent data gathering. Since the study did not have access to the records of the number of households that ecochamps interact with, purposive sampling was employed. This sampling method is typically employed when random sampling is not feasible due to an unknown population size (Tongco, 2007). Based on the research objectives, this purposive sampling enables researchers to focus on a particular subgroup of population that is very likely to provide valuable information (Tongco, 2007). This method was used to support the findings from the focus group discussions.

To estimate the size of the sampling Yamane (1967) equations were used (Eq. 1-3):

$$n = \frac{N}{1+N(e)^2} \quad (1)$$

$$n = \frac{56868}{1+56868(0.05)^2} \quad (2)$$

$$n = 400 \quad (3)$$

From a population of 56,868 households (N), with a desired 95% confidence level (e), the required sample size (n) was determined to be 400. However, due to resource constraints, a sample size of 325 households was actually obtained. Out of 325 participants, 146 were male and 179

were female. In terms of ethnicity, the sample consisted of 179 Xhosa, 14 Zulu, and 132 Sotho individuals. The location of the households visited is shown in Figure 4.

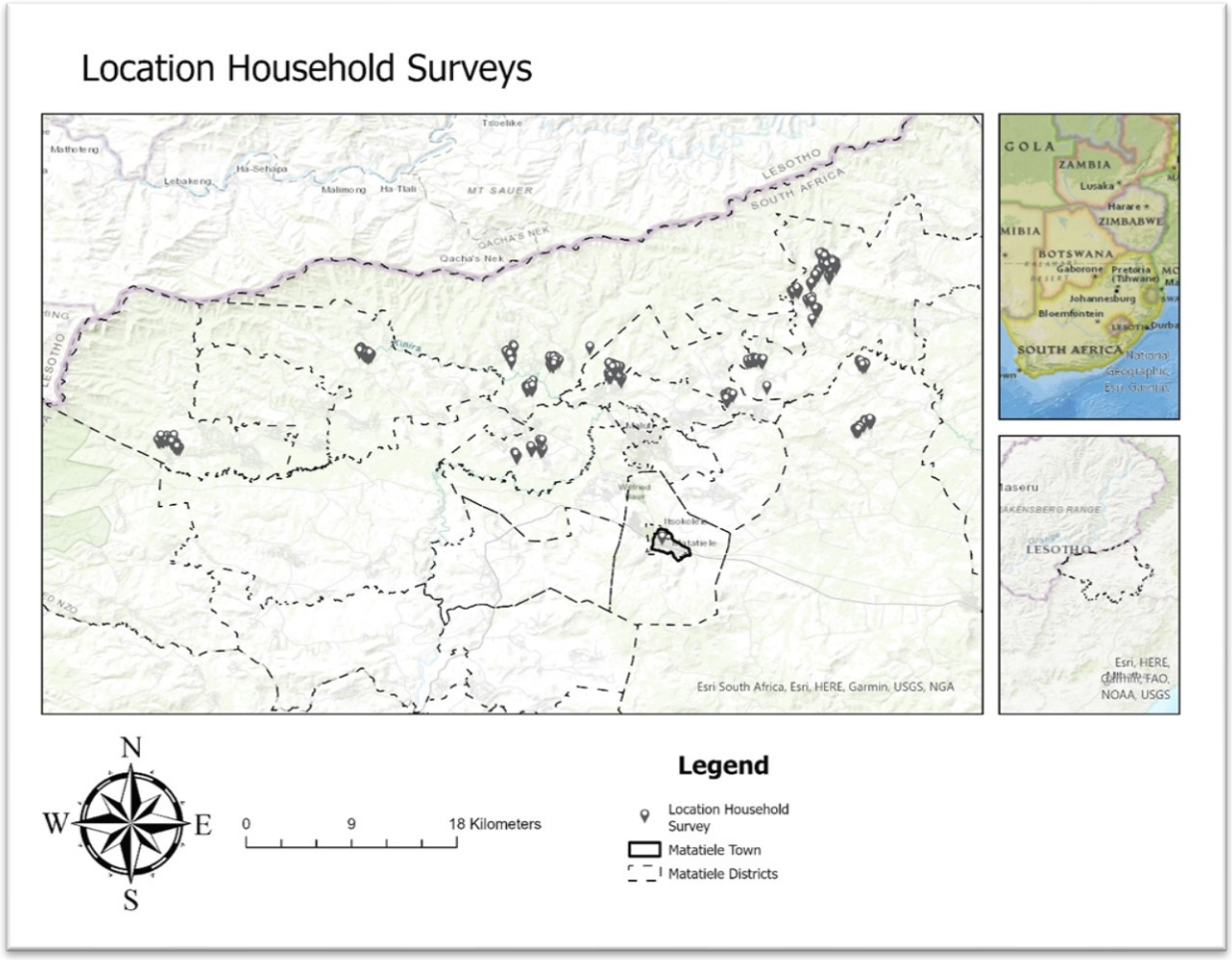

Figure 4 ***Location household surveys.***

Notes: Own depiction using Geographical Information System (GIS) software

Due to time and budget constraints, the collection of household responses was planned to be efficiently conducted within five days. A team of fifteen young local research assistants, including ERS employees and local people, was assembled to facilitate engagement with local community members and traditional leaders. Given the rural expanse and dispersion of households, the team was organized into small groups that visited homes to conduct face-to-face surveys. In each area visited, engagement with traditional leaders was necessary to obtain permission to conduct the household survey. In this phase, research assistants played a crucial role in bridging cultural and linguistic gaps and avoiding misunderstandings with traditional leaders and community members. Before conducting the survey, an informal dialogue was initiated to engage with the household and ask for their permission. However, in some cases, households were not interested in participating, or nobody was found at home. All data were collected digitally using tablets with a freely available questionnaire app called KoboCollect which fed real time data in the KoboTool cloud, which streamlined the process and ensured the accuracy and security of the data. This

technology allowed for real-time data entry and storage, significantly reducing potential errors associated with manual data. Throughout the household survey, daily debriefings were held to review progress and address any challenges faced, ensuring the procedures remained flexible and responsive to field scenarios. When engaging with households, the purpose of this research was explained.

3.2.2 Focus group discussions

A focus group discussion is an interactive session with a group of around six to eight people, aimed at creating an environment where participants feel comfortable sharing their perspectives on a topic addressed by the researcher (Kruger & Casey, 2015). Compared to in-depth interviews, focus group discussions can reveal subtle nuances emerging from multiple participants, uncovering key study issues (Kruger & Casey, 2015). This method not only allowed for deeper exploration of information retrieved from household surveys but also facilitated the examination of patterns and trends across different discussions. It is generally recommended to hold three or four sessions with each type of participant and compare the outcomes (Kruger & Casey, 2015).

The focus group discussions were conducted into two sets. In total 6 focus groups discussion were conducted, including 4 with local members, and 2 with each group traditional leaders and ecochamps (see Table 3). When engaging with the participants, an explanation of the research objective was provided. The first set of focus group discussions was held with local communities during the first two weeks in Matatiele (see Figure 5). Participants were selected based on ecochamps activities, as it was not feasible to reach these rural locations independently from Matatiele. Therefore, focus group discussions were held whenever possible during ecochamps activities. A variety of community members were interviewed, including farmers, young people, and both women and men.

Table 3 ***Overview of focus group discussions***

Focus group discussion	**Number of participants**	**Respondent prefix**	**Area**
Local members	6-8	CM1	Ngwenwane
Local members	6-8	CM2	Black Diamond
Local members	6-8	CM3	Makomereng
Local members	6-8	CM4	Makoba
Traditional leaders	9	TL1	George Moshoeshoe, Sibi, Makoba, Nkosana, Mzongwana
Ecochamps	9	ECO1	George Moshoeshoe, Sibi, Makoba, Nkosana, Mzongwana

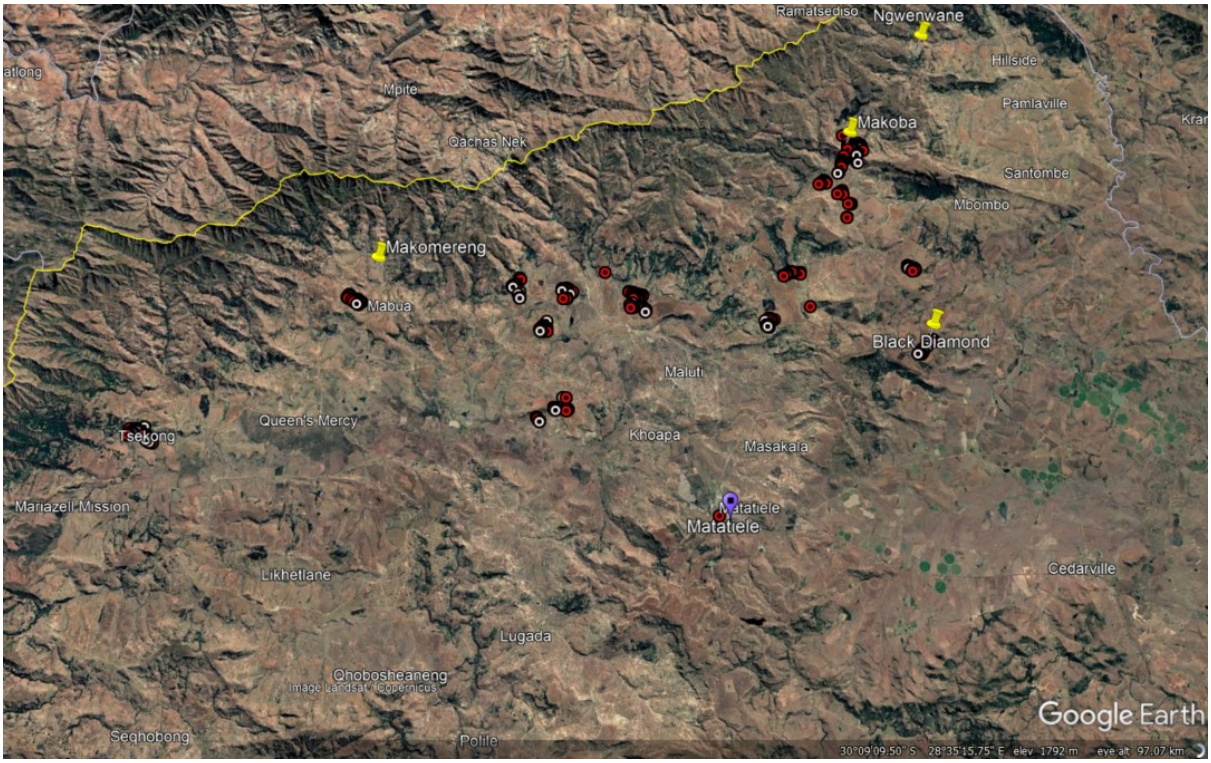

Figure 5 ***Overview of sites of focus group discussion***

Notes: The yellow pins are the sites visited for focus group discussions, while the red and white dots are the sites visited during household surveys. Image retrieved from Google Earth

When conducting these discussions, it was assumed that participants were aware of ecochamps activities and roles within the communities. Since local communities in rural areas predominantly speak native languages such as Xhosa and Sotho, an interpreter led the focus group discussions. The interpreter was often an employee of ERS who also participated in ecochamps activities. Occasionally, due to a lack of available assistants, ecochamps themselves acted as interpreters. As the interpreter changed almost every time, a debriefing session was arranged beforehand to explain the purpose of the questions and the intentions of the focus group discussion. This step was essential to agree upon procedures and rules for conducting the discussions, address any potential concerns about the questions, and build rapport with the interpreter. After the focus group discussions were completed, participants were engaged in informal conversations to provide opportunities to ask any further questions about the study and for the participants to reflect on what was shared. In most of the focus group discussions conducted, a post-session reflection was initiated by participants, who acknowledged the importance of the activities and programs offered and supported by ecochamps. The second set of focus group discussions was held with traditional leaders and ecochamps during the Water-Energy-Food Symposium in Pretoria during the last days of my fieldwork. Traditional leaders and ecochamps were engaged in focus group discussions to understand whether the information retrieved from the discussions with local communities converged or not. Due to time constraints, only one focus group discussion was conducted with each group (traditional authorities and ecochamps).

3.2.3 Stakeholder interviews

In the field of political and social science research, qualitative interviews are the central method mostly used to analyze and evaluate projects based on interviewees' perspectives (Adams, 2015). Compared to quantitative methods, this format takes the form of a conversation, with discussion and follow-up questions to acquire insights into complex subjects, rather than a question and answer with no discussion (Oslen, 2012; Newing et al., 2011). The collection of both quantitative and qualitative data was carried out in two stages, the first on the field by conducting on-site semi-structured interviews; and the second after the field work by conducting online semi-structured interviews. As mentioned, a total, 26 interviews were analyzed, including 17 previously conducted questionnaires and 9 new interviews. To increase the number of previously conducted interviews, it was necessary to align the objectives of the questions and use a mix of closed-ended and open-ended questions in the semi-structured interviews. Therefore, 24 interviews were used for the quantitative analysis and 9 interviews were used for the qualitative analysis. Table 4 presents an overview of the interviews that were conducted prior to this research, and from October 2023 to April 2024. While the interview guide is presented in the (see Appendix). As suggested by Rampheri et al. (2022), in semi-structured interviews, closed-ended questions can be used for quantitative analysis, allowing for the comparison of participants' responses, whereas open-ended questions can be used for qualitative analysis, allowing for a deeper understanding of the participants' reflections and perspectives.

Table 4 ***Overview of semi-structured interviews and questionnaires conducted***

Stakeholder groups	Number of interviews	Type	Respondent prefix	Conducted
Meat naturally	1	Closed-ended questions	N/A	Fieldwork in October 2023
Department of Economic Development, Environmental Affairs and Tourism	1	Questionnaire	N/A	Prior to this study in June 2023
South African National Biodiversity Institute	2	Questionnaire	N/A	Prior to this study in June 2023
World Wide Fund - SA	4	Questionnaire	N/A	Prior to this study in June 2023
		Mix questions	SUCP1	Fieldwork in October 2023
		Open-ended questions	SUCP2	Online in April 2024
Government	1	Questionnaire	N/A	Prior to this study in June 2023

Environmental Rural Solution	3	Questionnaire	N/A	Prior to this study in June 2023
		Mix questions	SUCP3	Fieldwork in October 2023
		Mix questions	SUCP4	Fieldwork in October 2023
SaveAct	1	Questionnaire	N/A	Prior to this study in June 2023
UKZN Sarchi-Chair	1	Questionnaire	N/A	Prior to this study in June 2023
Matatiele Local Municipality	1	Questionnaire	N/A	Prior to this study in June 2023
Inquilo-Ecotourism	1	Questionnaire	N/A	Prior to this study in June 2023
Department of Fisheries, Forestry and Environment	1	Mix questions	SUCP5	Online in January 2024
Conservation South Africa	1	Mix questions	SUCP6	Online in February 2024
Lima Rural Development Foundation	1	Mix questions	SUCP7	Fieldwork in October 2023
Rhodes University	1	Mix questions	SUCP8	Online in March 2024
University of KwaZulu-Natal	1	Mix questions	SUCP9	Online in October 2024
Other organizations	4	Questionnaire	N/A	Prior to this study in June 2023

During on-site fieldwork, conversations with UCP stakeholders took place while attending ecochamps activities and in Matatiele, where many stakeholders have offices. To gain a deeper understanding of stakeholders' perceptions of ecochamps, follow-up questions were used to extend the conversation and gather more detailed information. This approach contributed to developing an interview guideline based on the follow-up questions used. When conducting these interviews, the knowledge gained from the field and informal conversations with ecochamps and ERS employees served as a backbone to narrow down follow-up questions and deepen the conversations. As suggested by Galletta & Cross (2013), as information started building up from the interaction with stakeholders and observations from the field, adjustments were made to

develop an interview guideline in order to follow a rigorous structure of probing questions. Based on this interview guideline, semi-structured interviews were prepared. This method is extremely useful in qualitative research for delving into the participants' perspectives, particularly using probing questions such as "how" and "why" inquiries (Adams, 2015). Additionally, in exploratory research, semi-structured interviews yield comprehensive and meaningful information from a diverse range of perspectives (Adams, 2015). Therefore, in the aftermath, more stakeholders were reached via email with an informal invitation for an online interview (see Appendix D). These online interviews were conducted via Microsoft Teams. Attached to the email, a brief explanation of the research's objective and interview questions were shared to make participants aware of the research aim and comply with the principles of informed consent (see Appendix E). The insights from this early stage were crucial to redesigning the questions for more in-depth interviews in order to better probe the issues that emerged during conversations.

3.3 Data Processing

To analyze the complexity of the data collected, the researcher employed an analytical framework (see Table 5). Data collection methods included focus group discussions, household surveys, semi-structured interviews. For the qualitative data a thematic analysis was used to analyze data from focus groups and semi-structured interviews. The thematic analysis, which included both deductive and inductive themes, served to uncover both local communities' and stakeholders' perspectives of the role of ecochamps in local sustainability initiatives. For the quantitative data both inferential and descriptive statistics were used, including cross-tabulation, chi-square tests, and independent sample t-tests (see Appendix E). By combining quantitative and qualitative methods, the researcher aimed to provide a nuanced understanding of the role of ecochamps in facilitating co-management, drawing on the perspectives of different stakeholder groups who have engaged with and benefited from ecochamps' activities.

Table 5 ***Analytical framework***

Notes: Approach used to address three key sub-questions (SQs) regarding the role of ecochamps in co-management processes from the perspectives of local communities and stakeholders. The framework shows data analysis methods used to analyze both qualitative and quantitative data to comprehensively assess these perspectives. Own development

SQ1	**From the perspective of the local community to what extent do ecochamps facilitate the key factors of co-management processes?**			
Collection method	**Examples type of data collected**	**Data analysis method**	**Type of analysis**	**Description of analysis**
Focus group discussions	To what extent does the engagement with ecochamps help you to get in contact with other stakeholders of the UCP? For instance, MNP WWF CSA or others	Thematic analysis	Inductive and deductive themes	Use to reveal subtle nuances emerging from multiple participants, uncovering key study issues (Kruger & Casey, 2015). This analysis contributed to understanding local communities' perspectives on ecochamps
Household survey	To what extent are community involved in developing measures to address environmental issues?	Inferential statistic	Cross-tabulations	Use to analyze the relationship between two categorical variables (Newcomer & Conger, 2015). This analysis contributed to comparing different categorical variables in order to understand households' perspectives on ecochamps. For instance, the extent of participation and whether people benefited from ecochamps activities. Furthermore, the outcomes of this analysis served to support emerging insights from focus group discussions

			Chi-square	Use to determine if there is a significant association between two categorical variables (Newcomer & Conger, 2015). This is often used in conjunction with the cross-tabulation analysis to assess the significance of the relationships observed between variables (Newcomer & Conger, 2015). This analysis contributed to complementing the cross-tabulation analysis
	How does the presence of eco-champions influence the overall sense of environmental responsibility and stewardship within a community?	Descriptive statistic	Likert scale	Used to assess attitudes, opinions, or beliefs through a scale of values (Sullivan & Artino, 2013). This analysis showed households' perspectives on ecochamps using graphs. The outcomes of this analysis served to support emerging insights from focus group discussions
SQ2	**From the perspective of UCP stakeholders to what extent do ecochamps facilitate the key factors of co-management processes?**			
Data collection method	**Examples type of data collected**	**Data analysis**	**Type of analysis**	**Description analysis**
Semi-structured interviews	Have you observed or experienced ecochamps acting as a bridge between stakeholders and local communities?	Thematic analysis	Inductive and deductive themes	This analysis contributed to gaining meaningful and valuable insights from UCP stakeholders' perspectives
Semi-structured interviews & Prior questionnaires	Would you foresee future collaboration with the ecochamps in community initiatives? If yes, what are the challenges and opportunities to engage with them?	Descriptive statistics	Likert scale	This analysis showed UCP stakeholders' perspectives on ecochamps using graphs and pie charts. Furthermore, the outcomes served to support insights from the thematic analysis
SQ3	**What challenges and opportunities do ecochamps face and provide in the upper UWC?**			
Data collection method	**Examples type of data collected**	**Data analysis**	**Type of analysis**	**Description analysis**
Focus group discussions	Do ecochamps improve the livelihood of the community? Do you see any limitation and/ or opportunity with scaling up this program?	Thematic analysis	Inductive and deductive themes	This analysis contributed to understanding the challenges and opportunities of facilitating co-management through ecochamps by understanding local communities' perspectives

Household survey	To what extent can ecochamps decide about which community problems to focus on and how to implement solutions?	Inferential statistic	Cross-tabulations Chi-square	This analysis showed local communities' perspectives on challenges and opportunities by using comparative analysis. The outcomes of this analysis served to support emerging insights from focus group discussions
	What are the challenges associated with scaling up the influence of eco-champions in the community?	Descriptive statistic	Likert scale	This analysis showed local communities' perspectives on challenges and opportunities by using graphs. The outcomes of this analysis served to support emerging insights from focus group discussions
Semi-structured interviews	In your view, how crucial is the role of eco-champs in the co-management of the Umzimvubu Catchment Partnership?	Thematic analysis	Inductive and deductive themes	This analysis contributed to understanding the challenges and opportunities of facilitating co-management through ecochamps by understanding UCP stakeholders' perspectives
Semi-structured interviews & Prior questionnaires	To what extent is the engagement with ecochamps beneficial in political influence to effect change?	Descriptive statistic	Likert scale	This analysis showed UPC stakeholders' perspective on challenges and opportunities by using graphs. The outcomes contributed to support emerging insights from the thematic analysis

The analytical framework illustrates that different analyses were employed for each data collection method. Specifically, the data were processed using the following analyses:

- **Household survey**

This method was used to collect a large amount of quantitative data and information on household and stakeholder perceptions of eco-champs and their activities. For the analysis of the quantitative data, several statistical techniques were used to provide a complete analysis. For the purpose of providing a valid and comprehensive analysis, a blend of descriptive and inferential analysis was used. The descriptive analysis helps to visually present frequency tables, pie charts, and bar charts (see Appendix for more information). The descriptive analysis was mainly used for the structured interviews because a large sample of participants was not collected (see Appendix for more information).

- **Focus group discussion**

As mentioned, the iterative nature of the focus group discussion was intended to allow participants to question each other's statement, expand on emerging insights, and provide a better comprehension of the ecochamps perceptions and activities. All focus group meetings were audio recorded to capture the entire discourse, including nonverbal clues and exchanges amongst participants. These recordings were then transcribed to provide a complete written record of the discussions. The transcripts were read several times to ensure a comprehensive understanding of the conversation. During the familiarization phase, basic patterns and themes were discovered.

Line-by-line coding was used to categorize key remarks and phrases from the discussions (Chenail, 2012). However, the codes were designed to correspond with the themes that emerged from the semi-structured interviews, formal interviews, and household surveys. This alignment was essential to ensure uniformity and facilitate the analysis across all data sources. The codes were then organized into bigger themes, which were evaluated and improved to maintain consistency and distinction.

- **Stakeholder interviews**

For the analysis of the semi-structured interviews, both descriptive and thematic analyses were employed. Since the sample size of prior questionnaires and semi-structured interviews was insufficient (twenty-six out of thirty) for conducting inferential statistics, only descriptive statistics were used. The findings from the descriptive analysis were presented through frequency tables, pie charts, and bar charts, which were intended to complement the information emerging from the semi-structured interviews. For the descriptive statistics, SPSS (Statistical Package for the Social Sciences) was used to generate frequency tables, while Microsoft Excel from the Microsoft 365 package was utilized to create tables, pie charts, and bar charts. For the analysis of the semi-structured interviews, qualitative analysis was employed to build an in-depth description and interpretation of the information that emerged from the conversations. After transcribing the recordings using the transcribe option in the Microsoft Word document toolbox, the data were analyzed using the Nvivo software. A thematic analysis was conducted to understand stakeholders' perspectives on ecochamps, including the benefits, collaboration, and engagement in UCP initiatives. The use of Nvivo facilitated the coding and organization of the data. The information was coded based on deductive themes derived from the literature, whereas additional codes were created to include emerging information. This inductive process was essential for including emerging information relevant to addressing the objectives of the thesis. According to Brodsky et al. (2016), an iterative process during coding is crucial for refining data based on emerging information, thereby extending the set of codes and supporting the hypothesis.

3.4 Data validity & reliability

Generally, when conducting research, the validity and reliability of the methods used are a necessary step to keep in mind before and after collecting the data (Yin, 1994; Merriam, 1998). Therefore, during different phases of this research, the conditions for assessing design quality were considered. These conditions encompass internal validity, external validity, and reliability (Yin, 1994; Merriam, 1998). Validity ensures that the research accurately assesses what it seeks to measure (Yin, 1994; Merriam, 1998). Internal validity is concerned with the consistency of research findings with reality and the extent to which the researcher assesses what is intended (Yin, 1994; Merriam, 1998). To strengthen internal validity, multiple data collection methods were employed, including stakeholder interviews, focus group discussions, and household surveys, as recommended by Merriam (1998). The integration of these diverse data sources through the theoretical framework allowed for a comprehensive analysis, providing a nuanced understanding of the role of ecochamps in facilitating co-management. Additionally, the findings of quantitative analysis supported insights that emerged from the qualitative analysis. External validity considers the applicability of the findings in other settings (Burns, 1999). Nunan (1999) highlights the importance of applying a research design to a broader population instead of focusing on a specific study. By including a wide range of participants, the findings reflect a broad spectrum of

experiences and perspectives, making them applicable to rural areas. This analysis builds on key factors that are also relevant to various governance approaches, providing a framework for studying youth participation and contribution in different settings.

Reliability is crucial for the consistency, dependability, and replicability of research findings (Nunan, 1999). In contrast to quantitative findings, in which results are expressed in numerical form, qualitative findings are complicated to replicate because of the subjective nature of the data. For qualitative analysis, the questions used in semi-structured interviews and focus group discussions were standardized based on deductive themes, with emerging themes included. The consistency of these findings is supported by the quantitative research outcomes. Various statistical techniques facilitated the consistency and replicability of the quantitative analysis. Overall, the use of rigorous validity and reliability strategies in this research ensured that the findings were robust, credible, and relevant to real-life situations, providing valuable insights into the role of ecochamps in facilitating co-management.

3.5 Ethical considerations and positionality

Ethical considerations and positionality are critical to ensuring the reliability and legitimacy of the research approach (Mirza et al., 2023). Ethical considerations encompass the norms and principles that guide the processes of data gathering, analysis, and the dissemination of research findings (Gedutis et al., 2022). The WEF project underwent an ethical assessment before any research or data collection began. This assessment required outlining the study's objectives and demonstrating compliance with ethical principles. Ethical approval (reference NWU-01216-A3) was obtained from North-West University following the Law Research Ethics Committee's approval on August 12th, 2022. Since this research is considered part of the larger WEF project, this ethical approval ensured that the research approach adhered to all necessary ethical norms and principles.

Conducting research in the Global South presents significant challenges due to socio-economic and cultural differences, as well as social inequalities, adding layers of complexity to ethical considerations (Lunn, 2014). Throughout the fieldwork, ethical considerations were carefully acknowledged at various stages. For instance, when engaging with local communities, I often sensed that I was perceived as "another white researcher conducting a study on our land without providing any benefits to our community." To build rapport and trust, I frequently shared personal information about myself, such as my background, age, and where I live. I recall a particular home visit during the household surveys where two young fathers were curious about the Italian countryside. Before each visit, interview, and focus group discussion, all participants were informed about the research's purpose and procedures to comply with the principles of informed consent (Bryman, 2006). Informed consent, based on Utrecht University guidelines, was obtained to explain how the information would be used (see Appendix D). The support of local ecochamps and ERS employees was essential in facilitating communication and ensuring trust and transparency. Additionally, traditional leaders were consulted to gain their approval before data collection began in their communities. This experience was quite confronting and prompted me to reflect on my positionality from multiple perspectives. According to Savin-Baden & Major (2013), positionality refers to the stance a researcher takes when conducting research. Reflecting on my background, I recognized the challenges of being an outsider, particularly a white-privileged individual, as well as my concerns about language barriers and local perceptions. These challenges

were combined by my limited understanding of South African history and social dynamics in rural contexts. Additionally, by being my first fieldwork in my student career, this experience raised my awareness of how my positionality influenced my interactions with participants and, in turn, affected the research process and result.

4. Result

This chapter presents the findings derived from the analysis of qualitative and quantitative data collected regarding both local communities' stakeholders' perspectives of the role of ecochamps in facilitating co-management in the UWC. These perspectives are presented based on the three leading factors of co-management – joint decision-making, knowledge integration, community empowerment- in order to the two sub-questions (*SQ1*. From the perspective of the local community to what extent do ecochamps contribute to the leading factors of co-management? *SQ2.* From the perspective of the stakeholder in the UCP to what extent do ecochamps contribute to the leading factors of co-management?). Furthermore, the analysis of these findings, along with questions asked directly to the participants, contributes to answering the third sub-question (*SQ3*. What challenges and opportunities do ecochamps face and provide in the upper UWC?). Before delving into the result chapter is important to outline that the research aims to explore what role ecochamps can have in facilitating co-management.

The extent to which ecochamps can contribute to the create joint decision-making, knowledge integration and community empowerment by strengthening collaboration efforts. So the findings present participants' perceptions of the extent to which ecochamps can contribute to these three leading factors, and not actually measuring the factors itself. The chapter is divided into fourth paragraphs as follows: 4.1 Joint decision-making; 4.2 Knowledge integration; 4.3 Community empowerment; 4.4 Challenges and opportunities.

4.1 Joint decision-making

Based on the elements of joint decision-making illustrated in Table 1 (see paragraph 2.2), this paragraph provides an overview of the main findings from the analysis of both qualitative and quantitative data. First the findings from local communities and then from UCP stakeholders' perspective are presented. The qualitative insights are supported by quantitative findings.

4.1.1 Local communities' perspectives

From the perspective of local communities, Ecochamps played a notable role in improving communication between communities and UCP stakeholders, though significant limitations remained regarding whether communities' perspectives were genuinely considered in decision-making processes. As previously mentioned, the embeddedness of Ecochamps within local communities and their participation in UCP activities, especially those related to water spring protection, rangeland management, wattle clearing, and livestock management practices, generally position them to facilitate interactions between local communities and UCP stakeholders.

> "*Thanks to Ecochamps, UCP stakeholders came to us and asked about our plans, so there was communication between us, and we had a say in the UCP project.*" (CM2 - Young man from Black Diamond)

This suggests that Ecochamps helped establish a two-way communication channel, where community inputs were taken into account during project development.

> "*Sometimes organizations brought suggestions to see if the community would accept them. They didn't always impose things, […] they also considered our knowledge and*

traditions when planning activities like rotational land use." (CM2 – Young man from Black Diamond)

ERS employee engaging with farmers in livestock husbandry in Makoba

However, while Ecochamps appeared to facilitate these interactions, the extent to which they promoted genuine joint decision-making seemed limited and highly context-specific, depending on the project. Projects often originated from pre-designed plans by UCP stakeholders, with minimal community input integrated into the project design. It was also difficult to determine when these decisions were made and who was actually involved. This dynamic indicates that, although Ecochamps helped ensure community voices were heard, their ability to influence the early stages of decision-making remains unclear.

Quantitative analysis from household surveys further supported this observation. Across all four stages of participation identifying community problems, implementing solutions, tailoring activities to community needs, and considering community recommendations in Ecochamp-led activities, there was consistently low community engagement. As illustrated in Figure 6 (obtained by the cross-tabulation analysis), the highest percentage of respondents indicated that they were "Not at all" involved in identifying problems related to wattle clearing (58.2%) and water management (62.4%) with the assistance of Ecochamps. This suggests that, in these areas, not all community members participated in identifying problems, highlighting a gap between the intended inclusive participation and the actual level of engagement. However, in activities related to both land use and waste management, there was an increase in community participation, indicating that a small portion of participants did engage in the process.

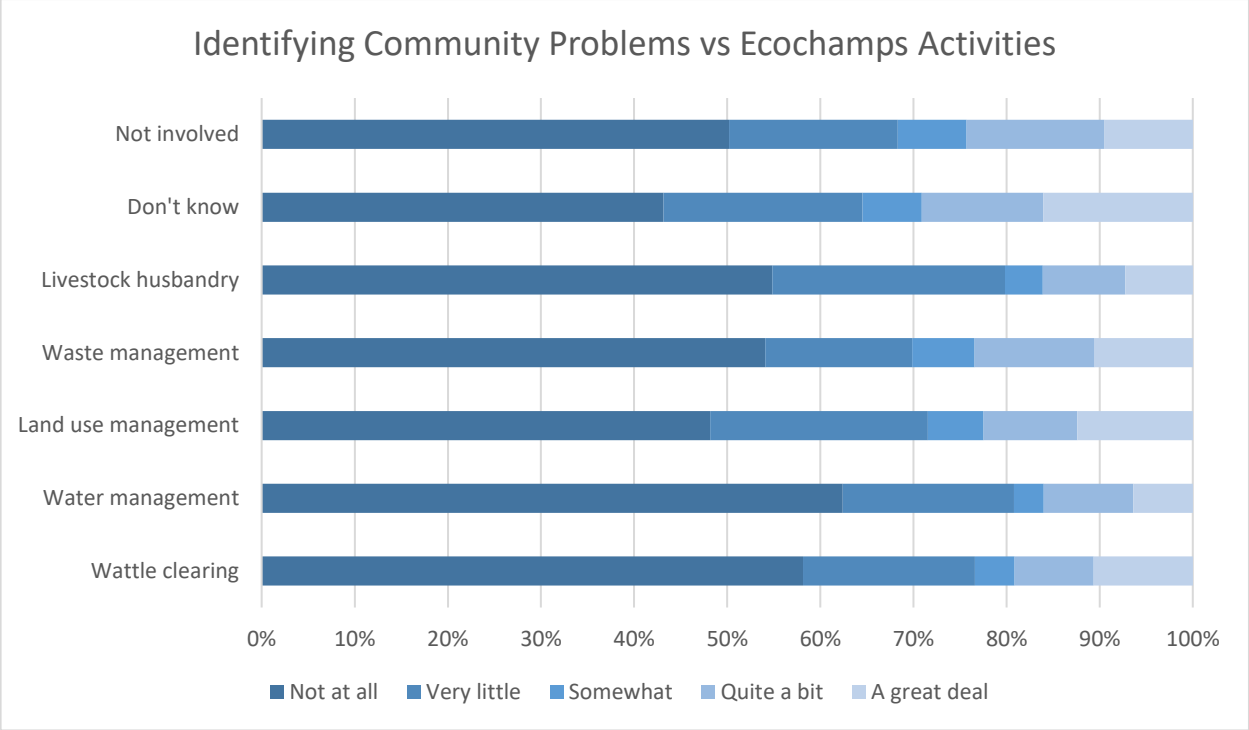

Figure 6 ***Identifying community problems vs Ecochamps activities***

Note: The extent to which community members participated in identifying community problems (horizontal stacked bar) is compared with ecochamps-led activities (vertical axis). Derived from inferential statistic

The level of community participation facilitated by Ecochamps varied according to the type of interaction between UCP stakeholders and communities.

> "*The Ecochamp was very helpful in the community, […] for instance, when we interacted with organizations, the Ecochamp translated into the native language so we could understand and ask questions.*" (CM3 – Woman from Makomereng)

Whether this suggested that Ecochamps facilitated communication and understanding, the degree to which communities could influence decisions remained unclear, and appeared to be context-dependent. However, these dynamics were not always clear, making it difficult to assess the full extent of interactive participation. As illustrated in Figure 7, obtained from the descriptive statistic, the level of interaction with and participation in ecochamps activities tended to be minimal.

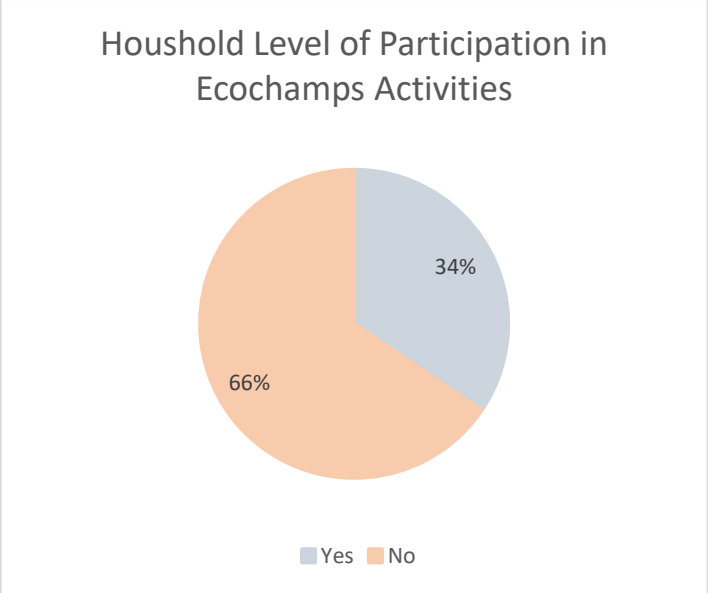

Figure 7 ***Houshold Level of Participation in Ecochamps Activities***

Note: Households level of participation in ecochamps activities. Derived from descriptive statistic.

Ecochamps facilitated interactions that in some cases allowed communities to connect with specific UCP stakeholders.

> *"We were able to contact CSA for livestock vaccination through an Ecochamp."* (CM3 – Members perspectives from Makomereng)

However, this interaction often seemed to rely more on the existing connection with ERS than directly through Ecochamps.

> "*We took decisions together for important matters, […] so then they referred back to ERS.*" (TL1 – Man traditional leader)

While Ecochamps facilitated these interactions, ERS often mediated the relationship, potentially limiting direct engagement with other UCP stakeholders. Therefore, it makes sense to believe that the sharing of community perspectives in UCP meetings required passing through multiple layers. Nonetheless, Ecochamps helped to some extent connect and convey community perspectives through a complex network of interactions.

> "*Thanks to ERS, we could get in contact with the Land Affairs and share what our needs were.*" (TL1 – Man traditional leader)

This illustrated that while the level of inclusivity and active participation in decision-making processes might have appeared superficial at times, the role of Ecochamps in connecting communities with various UCP stakeholders opened up new opportunities for more inclusive and interactive participation. In terms of communication, Ecochamps were instrumental in facilitating dialogue between local communities and UCP stakeholders. Although ERS assisted Ecochamps in establishing contact with UCP stakeholders, Ecochamps also played a role in creating an interactive and transparent communication channel between ERS and the communities.

"*Thanks to ERS efforts, we could get in contact with the local municipality. For instance, we had a harvesting day of farmers where the municipality could join this activity and see the work we had done. Because ERS invited us to some of the UCP meetings, we as Ecochamps could present our work and talk to stakeholders.*" (ECO1 – Young man ecochamp)

This two-way interaction benefited both ERS, by improving project design, and the communities, by aligning projects with their interests.

"*The chairperson of the rangeland association could gather information from different smallholders and talk to the Ecochamps who then referred to ERS.*" (CM1 – Man farmer from Ngwenwane)

However, not all communication between the community and UCP stakeholders directly involved ERS. For instance, an Ecochamp explained that they sometimes made decisions through direct conversations, drawing on their knowledge and understanding of community needs.

"*When we were in the field with WWF for mapping out the area for rotational grazing, I talked to them and said that wattle clearing and seeding were going to be part of the incentives.*" (ECO1 – Young man ecochamp)

Ecochamps and farmers engaging with WWF employee in rangeland management in Makomereng

This indicated that while ERS played a significant role in facilitating communication and influencing decisions, Ecochamps also had some capacity to directly influence decisions based on the communities' interests, particularly when they had direct interactions with stakeholders.

4.1.2 UCP stakeholders' perspective

From the perspective of UCP stakeholders, Ecochamps served as a crucial link between local communities and UCP stakeholders. Several interviewees described Ecochamps as key intermediaries who helped bridge the communication gap between local communities and UCP stakeholders.

"*The two-way voice between local communities and the organization that was trying to work with these communities*." (SUCP2 – WWF)

By playing this role, Ecochamps ensured that the concerns and interests of local communities were shared during UCP meetings and/or with stakeholders individually through face-to-face conversations. However, the extent to which community input shaped the decisions being made was often limited by existing dynamics inherently rooted in UCP structures, as well as by donors' requests and targets.

"*Ecochamps can advise us about what project is promoted in the community.*" (SUCP3 – ERS)

This indicated that while community perspectives were considered, they might not always have been central to the decision-making process.

"*The middleman between community members and the partners of the UCP*." (SUCP6 – CSA)

This reinforced the idea that Ecochamps primarily played an intermediary role focused on communication rather than significantly influencing decisions made in UCP activities. While a level of inclusive participation was facilitated by Ecochamps, their ability to include these voices in joint decision-making processes appeared limited. As presented in Figure 8, derived from the descriptive statistics of stakeholder interviews, although Ecochamps were considered nominal participants of the UCP, their participation did not necessarily extend beyond being present, with limited ability to influence decision-making. The graph shows that even though Ecochamps might have been involved in discussions, their ability to influence decision-making (consultative) remained moderate, as did their ability to take initiatives and express opinions (active). However, when Ecochamps had the opportunity to actively participate, they could contribute to the design and implementation of projects (interactive).

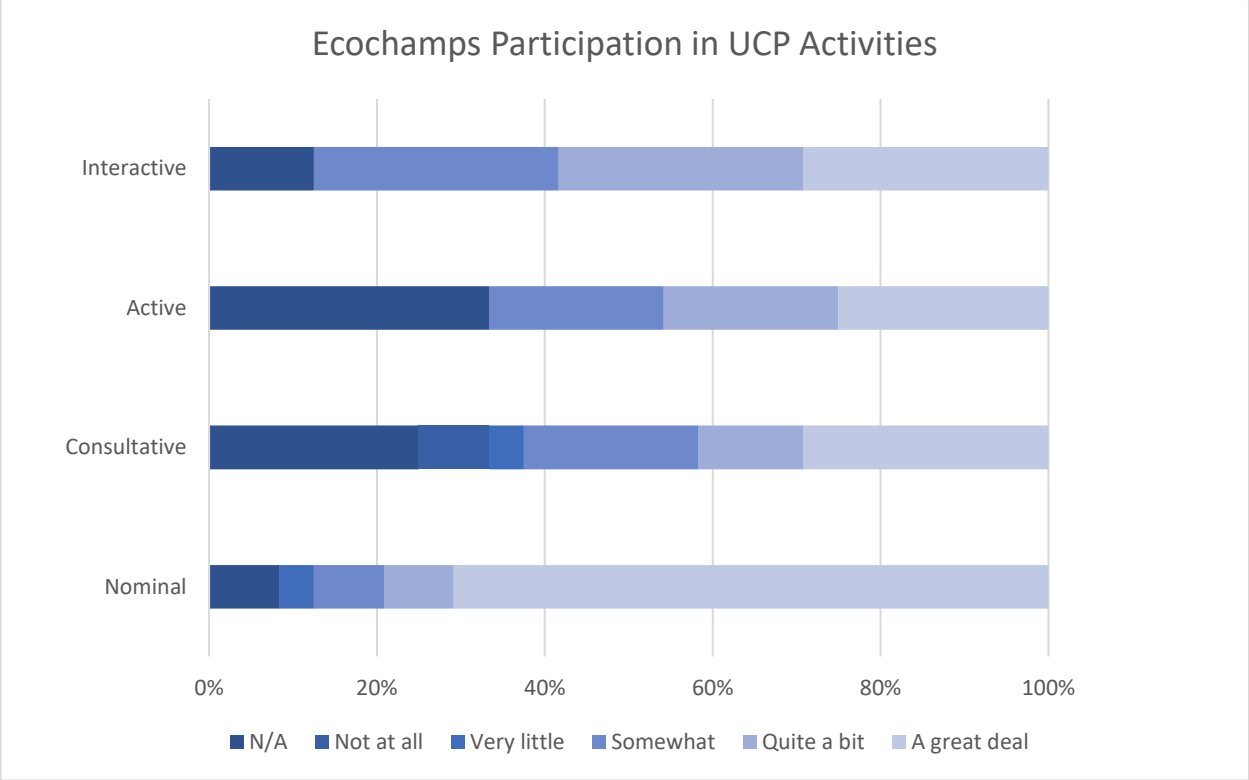

Figure 8 ***Ecochamps Participation in UCP Activities***

Note: Ecochamps participation in UCP activities based on UCP stakeholders' perspectives. Derived from descriptive statistic.

In terms of interactive participation, Ecochamps contributed by actively engaging with both local communities and UCP stakeholders, enabling a flow of two-way feedback that could influence project implementation and open up new opportunities for rethinking strategy implementation. Stakeholders appreciated the practical benefits of this engagement, particularly in tailoring projects to better meet community needs.

> *"It is better when we do have Ecochamps than when we didn't have them, because of the insights that we got, so we were able to bring solutions that were more suitable for the community."* (SUCP1 – ERS)

This statement reflected the value of Ecochamps in participating in decision-making processes by sharing community concerns and interests. Hence, although the level of influence that community inputs had on final decisions varied, the presence of Ecochamps introduced some level of consideration that might otherwise have been overlooked in UCP decision-making processes.

> *"In terms of decision-making, I wouldn't say that they [Ecochamps] had that responsibility. They might have influenced or shaped the decision-making process, but they didn't have the power to make decisions on behalf of the partnership."* (SUCP5 – DFFE)

This reflected a broader pattern where Ecochamps facilitated a two-way feedback process and influenced decision-making to a certain extent, but they did not appear to hold authority or

power in this process. Moreover, stakeholders recognized that Ecochamps played a significant role in conflict resolution, which was an important aspect of joint decision-making.

> "*We could intervene when there were conflicts and challenges that had been experienced in the partnership, particularly when there were problems that had been directly or indirectly caused by us.*" (SUCP5 – CSA)

This illustrated that while Ecochamps might not have had formal authority or power in integrating communities' perspectives into decision-making, their involvement was crucial in addressing and resolving conflicts. In terms of communication, Ecochamps appeared instrumental in facilitating dialogue between local communities and UCP stakeholders. Stakeholders emphasized that Ecochamps contributed to building trust through transparent communication by ensuring that community perspectives were conveyed to UCP partners.

> *"Thanks to the Ecochamps, if we were saying that we wanted to do a project in an area from where the Ecochamp came from, the community knew that the Ecochamp worked with ERS, and that helped us build trust."* (SUCP3 - ERS)

However, although the perception and information provided by Ecochamps were considered valuable, some stakeholders cautioned against relying on this information as the sole representation of community views.

> *"You would not say that you engaged the community just because you had a conversation or listened to the opinion of an Ecochamp. You can't take it as the community's opinion because it could be biased."* (SUCP4 – WWF)

This highlighted that while the information shared by Ecochamps was valuable, it might not fully represent the whole community's views. Nevertheless, the information was essential for identifying opportunities for mutual gain and transparency. Additionally, the interaction between stakeholders and Ecochamps often occurred through the involvement of ERS, which had established relationships with various UCP partners. In some cases, as employees of ERS, Ecochamps were able to leverage these connections to facilitate communication and project implementation with other UCP stakeholders.

> *"I could say that most of the people that came into the landscape came via ERS, or Conservation South Africa. […] I could definitely say that they closed the gap between the community and ERS, but I don't know how much they could play the same role with a stakeholder that came from outside of the landscape.*" (SUCP8 – Rhodes University)

Another example highlighted the collaboration between ERS and other organizations, such as CSA, where Ecochamps played a key role in organizing community meetings for fire awareness and waste management. This indicated that while Ecochamps were central to communication efforts, their role was often tied to the broader networks and relationships established by ERS.

4.1.3 Shared perspectives on joint decision-making

Overall, both communities and UCP stakeholders acknowledged that Ecochamps were instrumental in ensuring that community voices were represented in discussions and meetings, thereby laying the groundwork for co-management. Both communities and stakeholders agreed that Ecochamps were critical for bridging communication gaps. Because of their closed relationships to local communities, they could successfully gather, translate, and communicate

community concerns and interests to UCP stakeholders. The role was critical in establishing collaborative processes required for co-management because Ecochamps had the capacity to facilitate discourse, trust-building, and dispute resolution. Both communities and stakeholders acknowledged that Ecochamps were instrumental in ensuring that community voices were represented in discussions and meetings, thereby laying the groundwork for co-management.

However, the analysis also indicated some discrepancies in the perceived capacity of ecochamps facilitating joint decision-making. While Ecochamps improve communication, it appears that their influence on decision-making processes is minimal. Stakeholders generally considered Ecochamps as participants who provided important insights, but there were concerns about the representativeness and depth of the community perspectives they presented. Some stakeholders pointed out that relaying on ecochamps might lead to biased interpretations of community needs, thus questioning whether these inputs could be consider genuinely reflective of broader community interests and needs. The interface between communities and stakeholders appeared more consultative than interactive, where community inputs were acknowledged but not fully integrated into the design and implementation of UCP activities.

4.2 Knowledge integration

Based on the elements of knowledge integration illustrated in Table 1 (see paragraph 2.2), this paragraph provides an overview of the main findings from the analysis of both qualitative and quantitative data. First the findings from local communities and then from UCP stakeholders perspective are presented. The qualitative insights are supported by quantitative findings.

4.2.1 Local communities' perspectives

From the perspective of communities, the role ecochamps contributed to some extent to the integration of different types of knowledge, creating a flow of sharing knowledge where both traditional and scientific knowledge were shared through different layers and phased of ecochamps activities. This process appeared to foster a comprehensive understanding of different perspectives.

Community members highlighted the value of the knowledge that Ecochamps brought back into the landscape. For example, the reintroduction of rotational grazing—a practice that had diminished over generations—illustrates the revival of traditional methods.

> *"They taught us about rotational grazing. The village knew about it in the past, but the recent generation didn't focus on it. […] Since Ecochamps are active in our community, we started practicing rotational grazing again"* (CM2 – Members perspectives from Black Diamond)

This outlined that since ecochamps are embedded within communities they are able to share the knowledge shared in UCP activities and share it with the rest of the community. As well as ecochamps had access to different types of knowledge resources because they received training from ERS and participated to a variety of activities and learning experiences.

> *"I have attended UCP meetings to give feedback to stakeholders about the activities we have done, especially after we went on a learning exchange in Limpopo"* (ECO1 – Young man ecochamp)

> *"Ecochamps brought training and knowledge into the community. The combination of scientific and traditional knowledge has been beneficial in several ways. For instance, in the winter, people used to burn the grass because they thought this would contribute to growing new grass. But Ecochamps explained that it is not necessary, and it doesn't help to preserve the environment."* (CM1 – Members perspectives from Ngwenwane)

> *"We learned the importance of rested areas in grazing, and how the livestock can benefit from it because then there will be enough grass for grazing. So then we can sell the livestock to higher price because of the weight."* (CM4 – Members perspectives from Makoba)

Therefore, as outlined the capacity ecochamps are building through training and learning experiences can benefit community development, supporting their livelihoods and economic activities. For instance, several benefits and learning experiences were shared by several community members across the all the area covered with the focus group discussion. In Ngwenwane, farmers learned the importance of resting grazing areas, which allows grass to recover and ensures sufficient forage for livestock. This practice not only improves livestock

health but also increases their market value due to better weight. Additionally, members who attended firefighting training learned how to use fire tools, set up fire breaks, and prevent fires from damaging forested areas. In the community in Black Diamond, eco-Champs helped the community understand the significance of clean water and how to manage water sources to ensure availability and sustainability. Furthermore, through environmental campaign ecochamps introduced washable nappies to prevent water pollution and support spring protection activities. Through training and awareness programs, Ecochamps have improved the community's understanding of environmental management, livestock care, and economic opportunities such as sheep shearing. This knowledge transfer has empowered the community to better manage their resources.

The insights from the focus group discussion were further supported by the quantitative analysis from household surveys. As illustrated in Figures 9 and 10, the majority of households (58%) reported that they were influenced by ecochamps activities with waster prevention practices (29%), and environmental conservation practices (22%) being the highest.

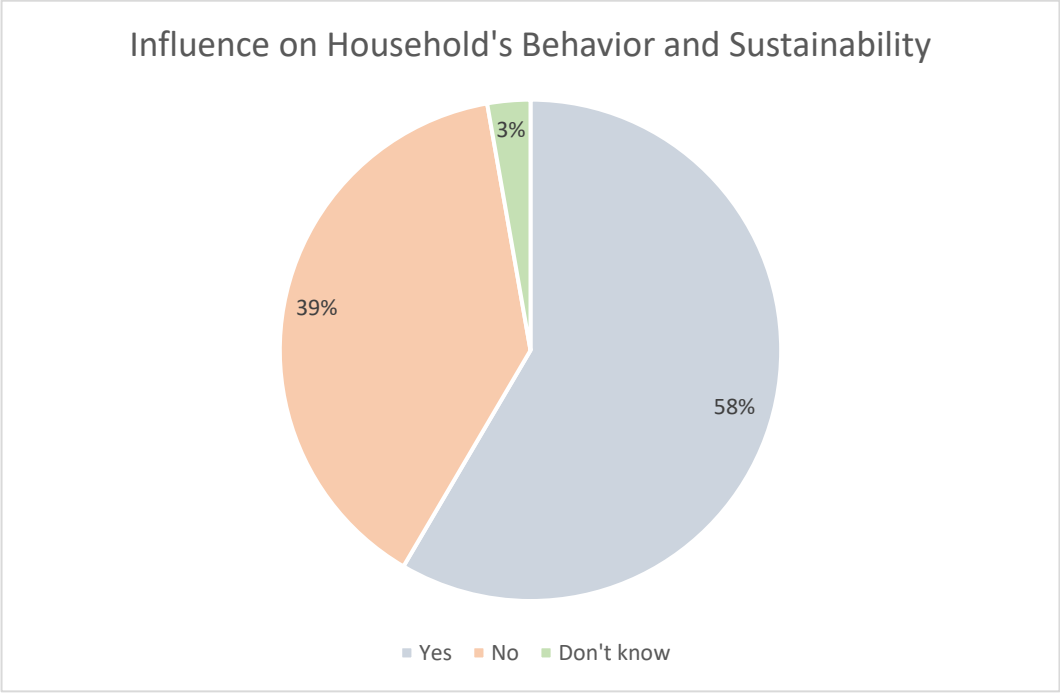

Figure 9 Influence on Household's Behavior and Sustainability

Note: The extent to which ecochamps influenced household behavior regarding sustainability practices. Derived from descriptive statistic

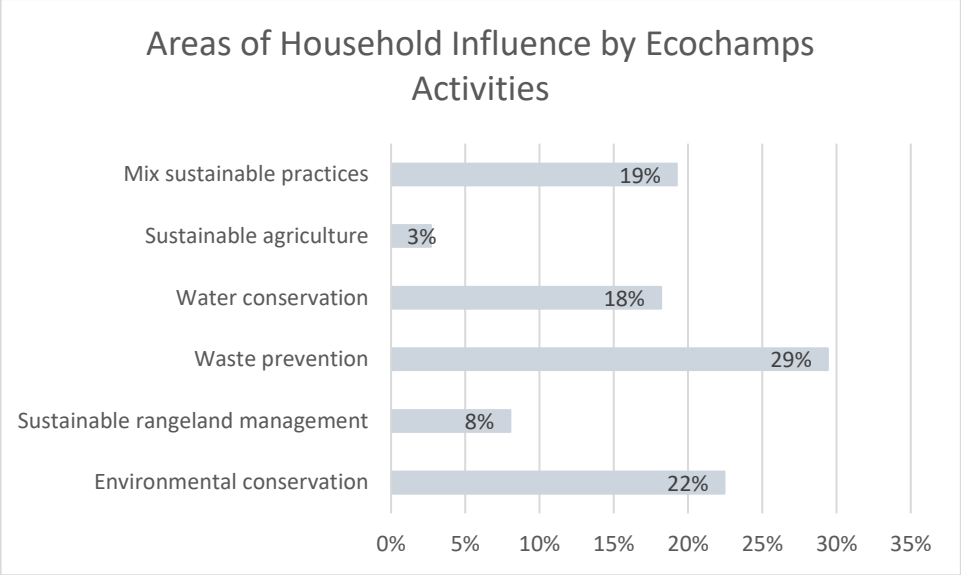

Figure 10 ***Areas of Household Influence by Ecochamps Activities***

Note: Specific areas where household reported being influenced by ecochamps activities. Derived from descriptive statistic

"For example, something we have learned from them is sheep shearing, before we didn't know about the economic opportunities from sheep shearing. And also they improve our knowledge on how to take care of the cattle." (TL1 – Woman traditional leader)

"It's all about taking care of the environment and protecting it. That's the major lesson we've learned from them—how to care for our environment and resources, including animals, and even in our daily lives. For example, we didn't have clean water before, but now, thanks to them, we understand the importance of it." (CM2 – Young woman from Black Diamond)

"The more they come here and raise awareness about the environment, the better the community becomes. When there is progress in the community, it attracts more stakeholders. So more stakeholders will come to the community and promote different projects" (CM2 – Young man from Black Diamond)

"But they also bring us unity to tackle challenges together, and collaborate with each other. We also learn about how to take care of rangeland." TL1 – Woman traditional leader

Therefore, local communities appeared to benefit from ecochamps engagement, not only based on material resources and practices, but also on non-material resources, including collaboration and social cohesion. By integrating different sources knowledge, ecochamps are not simply contributing to changing perspectives and behaviors, but also building capacity, empowering communities, and bringing new opportunities. Nevertheless the extent to which traditional knowledge was integrated in UCP activities remain answered.

"We interact mostly with CSA because they fund us. We provide feedback to them every month, and sometimes we work together in the field during sheep vaccination or other activities." (ECO1 – Young woman ecochamp)

However, as suggested ecochamps had the capacity to integrate traditional knowledge through feedback and interaction with stakeholders, leading to more comprehensive understanding and better practices. In terms of learning processes, it can be said that the present of ecochamps within the communities led to improve behaviors and practices that support the rural development and livelihood from different angles. The knowledge that Ecochamps introduced not only revives forgotten practices but also introduced approaches and techniques, helping communities adapt to changing environmental and economic conditions.

4.2.2 UCP stakeholders' perspectives

From the perspective of UCP stakeholders, Ecochamps had the potential to integrate traditional knowledge, improving the design and implementation of the projects. Since ecochamps collaborated with UCP stakeholders and access to UCP meetings, they facilitated process in which traditional knowledge, as well as experience from the community itself can be integrated providing a comprehensive understanding of the landscape and community interests an concerns. This process aimed to contribute to building common knowledge.

"I think that there is also a space that has been created to ensure that there is co-learning." (SUCP5 – DFFE)

"So that these two parties do not see each other as enemies, but as potential collaborators. There's something that scientists can learn from communities, and communities can also learn from scientists" (SUCP5 - DFFE).

This outlined that UCP offered a space in which knowledge can be built and shared through stakeholders interactions and engagement. As mentioned, before ecochamps had the ability to convey community voices in decision-making processes to some extent, this gave them the opportunity to share perspectives, as well as critical feedbacks.

"*I interacted with ecochamps, where CSA is not working to generate like a catchment database that everyone can have access to.*" (SUCP6 – CSA)

"They exactly know where is the dumping areas of illegal dumping, whereas for me I have to drive around until I can spot a dumping a dump site, […] they quantify and then they would actually make a plan to collect waste. So it's improved my ability to work on analyzing the data." (SUCP6 – CSA)

Based on these insights, the knowledge shared through ecochamps appeared to be both practical and context-specific, outlining the importance of integrating different source of knowledge. In this case, ecochamps play a key role in gathering, and disseminating this information to ensure that relevant hotspot of pollutions were included in the database, thus community could benefit from future interventions. For instance, as mentioned the information shared by ecochamps contributed to creating a catchment databased accessible to all UCP partners, as well as facilitating the work of stakeholders.

For instance to facilitate water interventions and projects at the local level. But the ecochamps have become one of the key actor facilitating the interface with the custodians of the land. So ecochamps carry out the activities that need to be done to protect and conserve the environment, and the same time they carry back the feedback from the communities. There is always two interactions now.

> *"You need to first engage quite deeply with the communities to understand where are the springs, which ones are the priorities, which ones have the best flow, which ones are being most used. [...] So the ecochamps were the ones that went out and gathered that information for us."* (SUCP2 – WWF)

> *"So ecochamps carry out the activities that need to be done to protect and conserve the environment, and the same time they carry back the feedback from the communities. There is always two interactions now."* (SUCP2 – WWF)

> *"They reach out to us and provide essential information and valuable feedback on how people perceive these conservation agreements. [...] Now because of ecochamps, young farmers are also participating in meetings"* (UCP3 – ERS)

WWF employee engaging with farmers and the ecochamp in rangeland management in Makomereng

Hence, through ecochamps engagement and collaboration, UCP stakeholders got access to key information relevant for the implementation of the projects. This information was then supplemented with scientific data, such as water quality measurements, soil health indicators, and biodiversity assessments, to provide key information about which spring water was necessary to address. In general, ecochamps provided key feedback to UCP stakeholders based on communities' knowledge and interests. For instance, through conservation agreements farmers could get a wide range of incentives, from vaccination to fire management tools. The feedback provided by ecochamps was essential in adjusting these conservation agreements thus first meeting farmer needs and second encouraging more farmers to join these conservation agreements.

"Ecochamps try to match indigenous knowledge with scientific knowledge, so their approach is not designed elsewhere but is tailored at the local level" (SUCP5 - DFFE)

"*For instance in terms of gathering data, gathering information, are the mouthpiece of the community."* (SUCP2 – WWF)

The capacity of streamlining traditional knowledge with scientific knowledge outlines the important role that ecochamps can play in integrating different sources of knowledge.

"Now people know that during winter the land must rest so nutrients have time to restore. This builds community capacity and knowledge, preventing overgrazing and creating new knowledge that had been lost. […] They've learned things they didn't know before, like how to manage grazing areas sustainably." (SUCP7 - Lima)

"The concept of Ecochamps has been very helpful in inspiring us to think about other ways of building capacity or recruiting young people to give them fellow opportunities." (SUCP5 - DFFE)

"Yeah, I think the role is very important in terms of bringing capacity into the partnership and in terms of bringing expertise, and it also opens up an opportunity to mentor and grow youth." (SUCP5 – DFFE)

The knowledge and experience ecochamps brought to communities and stakeholders contribute to developing a new sound of expertise that was not present before. For instance, thank to ecochamps contribution new knowledge has developed, and knowledge was recovered within local communities. Whereas, ecochamps inspired new ways of building capacity through which stakeholders can act to support conservation activities in the landscape. This outlined that ecochamps brought a certain level of learning process in the landscape.

"Now, communities know they don't have to overgraze the land." (SUCP7 - Lima).

When we attend UCP meetings, it's not just ERS, Lima, or CSA. Government departments are also involved. The information shared during these meetings is disseminated to everyone, allowing them to take responsibility and act accordingly" (SUCP7 - Lima)

I worked on a similar project in Maclear near Cape Town. When I visited the Upper UWC and interacted with Ecochamps, it was like sharing information and challenges that are usually similar across regions" (SUCP8 - University of KwaZulu-Natal)

Furthermore, the knowledge held by ecochamps is transferable and can be applied in various contexts, enabling them to contribute to a shared learning process across different regions beyond the UWC.

4.2.3 Shared perspectives on knowledge integration

Overall, both communities and UCP stakeholders recognized the value brought by Ecochamps in facilitating knowledge integration across different contexts. The extent to which ecochamps are able to bridge traditional and scientific knowledge is somewhat clear. They contributed to communities' understanding of support provided, while also while also providing

UCP stakeholders with key local community knowledge and perspectives of the landscape. Ecochamps were significantly valued for their capacity to gather, translate, and communicate knowledge in ways that bridged the gap between local communities and UCP stakeholders. This integration was critical for developing shared knowledge and information that helped to target sustainability challenges. For instance, local communities outlined that the knowledge shared by Ecochamps led to the revival of old traditional practices no more used, such as rotational grazing. Similarly, UCP stakeholders emphasized the importance of knowledge sharing to enhance the design of sustainability projects, such as spring water protection activities.

However, while UCP stakeholders recognized the value of Ecochamps' role in gathering and sharing key information, the translation of this knowledge into practical actions was often inconsistent. For example, while the catchment database compiled critical insights, the integration of this data into the broader UCP knowledge system or management strategies for the catchment was unclear. The knowledge seemed to be more directly useful for addressing specific community challenges or meeting stakeholder objectives, rather than feeding into a wide knowledge system. What appears to be relevant is that while ecochamps can facilitate knowledge integration, the extent to which this knowledge is utilized remains a blind spot.

4.3 Community empowerment

Based on the elements of community empowerment illustrated in Table 1 (see paragraph 2.2), this paragraph provides an overview of the main findings from the analysis of both qualitative and quantitative data. First the findings from local communities and then from UCP stakeholders' perspective are presented. The qualitative insights are supported by quantitative findings.

4.3.1 Local communities' perspectives

From the perspective of communities, Ecochamps appeared to play a key role in empowering community members by enhancing their skills, knowledge, and fostering a sense of social cohesion. Through Ecochamps, community members increased their ability to address key sustainability challenges and improve rural livelihoods through collective action.

> *"They taught us about rotational grazing. The village knew about it in the past, but the recent generation didn't focus on it. […] Since Ecochamps are active in our community, we started practicing rotational grazing again."* (CM2 – Members perspectives from Black Diamond).

This highlighted how, by reintroducing rotational grazing, Ecochamps contributed to encouraging communities to apply traditional practices that had been forgotten over time. Additionally, Ecochamps played a role in shifting perspectives about land use practices that had a negative impact on the environment.

> *"Before the interactions with Ecochamps, livestock owners believed that frequent burning stimulated green grass growth for their livestock. […] They now understand that frequent burning has negative impacts."* (CM3 – Woman from Makomereng)

This shift in beliefs demonstrated how Ecochamps contributed to building the community's capacity to adopt more sustainable land management practices. By encouraging these practices, Ecochamps promoted a more resilient environment that, in turn, supported sustainable community development.

The quantitative data from household surveys further supported these emerging insights. As illustrated in Figure 11 a significant portion of respondents (24%) reported that the presence of ecochamps raised environmental awareness and contributed to conservation activities (see environmental conservation). Although 18% of respondents indicated "None," the presence of Ecochamps still appeared to have a positive impact on encouraging environmentally responsible behavior among a large portion of households.

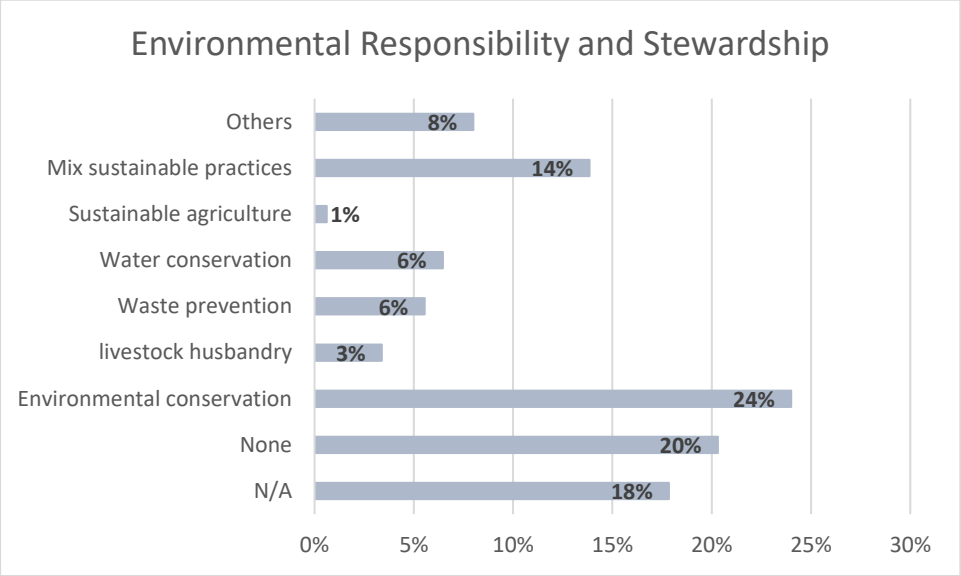

Figure 11 ***Environmental Responsibility and Stewardship***

Note: Categories in which the presence of ecochamps influenced the overall sense of environmental responsibility and stewardship within the community. For instance “Mix of sustainable practices” refers to a combination of water conservation, waste prevention and environmental conservation practices that ecochamps brought into the community. While “Others” refers to general positive responses from participants, such ecochamps were very influential. Derived from Descriptive statistic.

Furthermore, households described that ecochamps activities tailored made had a moderate effect on social cohesion, biodiversity protection, and food security. These findings further supported that ecochamps activities contributed to strengthening social cohesion because tailored to community needs (see Figure 12).

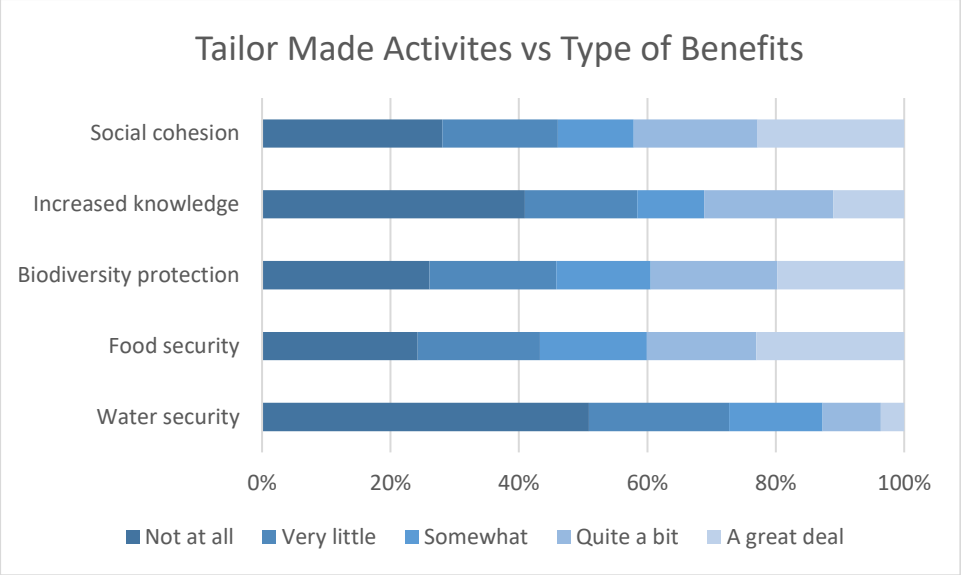

Figure 12 ***Tailor Made Activities vs Type of Benefits***

Note: The extent to which ecochamps activities were tailor made for community's needs (the horizontal stacked bar) is compared the type of benefits realized by ecochamps-led activities (vertical axis). Derived from inferential statistic.

Ecochamps also contributed to youth development through training programs focused on sustainable agriculture and resource management.

> *"Youth in the area have been capacitated through paramedic training, livestock handling, or animal handling."* (CM3 – Members perspectives from Makomereng).

These initiatives provided young people with opportunities to develop essential skills and knowledge that contributed to their growth and improved the socio-economic status of their families. Furthermore, ecochamps' efforts in capacity building also resulted in tangible economic benefits for the community.

> *"The cattle can benefit from rotational land practices, so we can sell the livestock at higher prices because the weight of the animals is higher when we have fresh grass."* (CM4 – Farmer from Makoba)

> *"For example, one man told me that his cattle were in better condition, and he got a higher price at the auction."* (ECO1 – Young man ecochamps)

These examples illustrated how Ecochamps contributed to improving livelihoods by promoting practices that led to better livestock quality and, consequently, higher income for community members. While it was not always clear to what extent Ecochamps contributed to building trust, relationships, and a sense of unity, some insights were key in understanding layers of social cohesion among members.

> *"Ecochamps are a driver of change in the community because help to deal with so many challenges, that we couldn't deal without them."* (TL1 – Man traditional leader)

"But they also bring us unity to tackle challenges together, and collaborate with each other. We also learn about how to take care of rangeland." (TL1 – Woman traditional leader)

"The relationship with the local community started formally, but over time, we built trust. Now, they come to me for advice on livestock issues, which shows that they trust me." (ECO1 – Young man ecochamps)

This outlined that, over time, ecochamps evolved from being young members into trusted and relevant members who played a key role in supporting community livelihoods and building unity.

4.3.2 UCP stakeholders' perspectives

From the perspectives of UCP stakeholders, Ecochamps played a key role in facilitating community empowerment. For instance stakeholders emphasized the importance of having skilled communities capable of addressing key sustainability challenges.

"The better skilled and well-equipped the community is, the better the chances that they'll be able to find their own solutions that work best for them." (SUCP8 – Rhodes University)

"Young people have a fresh mind and try to make the community understand why a certain practice or approach can benefit the community." (SUCP8 – Rhodes University)

This outlined that skilled and well-equipped communities could improve the ability of communities to find their own solution that match their interests and needs. Additionally, thanks to their fresh capabilities ecochamps were seen as catalysts encouraging a new sound of understanding. The importance of investing in locally embedded individuals rather than external experts was also emphasized.

"Yes indeed, versus selecting someone from Johannesburg to come to this area, even if they know how to speak Sesotho. It's better to have someone based locally rather than someone who, after five years, leaves and goes back to Johannesburg, taking that capacity with them." (SUCP1 - WWF).

This perspective highlighted how ecochamps, being embedded within their communities, were better positioned to engage with local people and address daily challenges more effectively than outsiders. Additionally, ecochamps were seen as key drivers in promoting a shift in environmental awareness among community members, helping them understand key environmental challenges and identify solutions by raising awareness.

"People began to understand that 20 years ago there were fewer wattle trees, and there was more water available. They are changing their perspective on how to view things and find solutions to address these problems by drawing these linkages and helping people understand the negative impact of human activities and protect the environment." (SUCP2 - WWF)

"The role of the Ecochamps is to work with communities. […] They are within the community and willing to learn about the environmental challenges and deal with them internally while working alongside the community." (SUCP8 – Rhodes University)

Through their willingness to learn, Ecochamps applied the knowledge gained from UCP stakeholders to address practical daily challenges. This led to the development of a sense of cohesion among community members in managing their own challenges. However, the extent to which this contributed to broader resource management and decision-making processes within the community appeared to be limited and largely confined to general observations. The presence of ecochamps in the community helped to build trust and social cohesion.

"For the community members, it's easier because if they don't understand something, they can always go to the Ecochamp and ask for an explanation or clarification. They know that the Ecochamp is from there and won't disappear." (SUCP3 - ERS)

This perspective outlined how ecochamps became reliable individual within the community, fostering a sense of trust that contributed to social cohesion and collective action.

"They create social cohesion in the community thanks to the information they share, but this information is not for the traditional authorities only; it is for everyone. For example, in the wash awareness program, they engaged mothers who were responsible for disposing nappies in the rivers. By involving the women who were causing the problem, they directly addressed the issue at its source." (SUCP7 - Lima)

This further outlined how ecochamps addressed specific environmental challenges by targeting relevant community groups, such as mothers. This example illustrated how Ecochamps broke down community hierarchies by engaging directly with those both causing and affected by environmental issues, thus promoting more inclusive participation.

4.3.3 Shared perspectives on community empowerment

Overall, both communities and UCP stakeholders recognized the important role that ecochamps had in promoting community empowerment, particularly outlining different facets of capacity building and social cohesion. For instance, ecochamps were valued to for their ability to develop relevant skills and knowledge within the community, while fostering a common sense of trust and unity among community members. This contributed to better address sustainability challenges and manage share resources.

From the communities' perspective, ecochamps facilitated the revival of traditional practices, such as rotation grazing, and contributed to shift perspectives on unsustainable land use practices, such as frequent burning for restoring the land. These contributions were seen as critical in empowering communities to develop sustainable land use practices, leading to more resilient environmental conditions and improved livelihoods. Additionally, ecochamps contributed to build capacity within communities, offering support and training to young members of communities. The economic benefits derived from Ecochamps-led initiatives, such as improved livestock quality, further illustrated their role in building community capacity. UCP stakeholders also acknowledge the importance of having locally embedded individuals, in this context ecochamps, to address community challenges and raise environmental awareness. Stakeholders emphasized that ecochamps were better positioned than external experts to engage and collaborate with

communities. By being present within their communities, ecochamps developed trust and reliability, which turned in a strong social cohesion. Their ability to engage diverse community members, such as mothers and youth, outlined that ecochamps had the capacity to targeting marginalized groups within the community.

However, while the contributions of Ecochamps to capacity building and social cohesion were recognized from both stakeholder groups, the extent of their contributions to empower communities remained somewhat limited. This was largely due to the fact ecochamps generally focused on practical skills and daily challenges rather than extending to broader shared resource management and decision-making processes within communities.

4.4 Challenges & Opportunities

Based on the findings from the collected data, this paragraph presents the challenges and opportunities that Ecochamps faced and provided in the upper UWC. Instead of presenting each perspective separately, the challenges and opportunities shared by local communities and stakeholders are intertwined, creating a sort of two-way dialogue.

4.4.1 Challenges faced

One of the key challenged emerged from the analysis was that community members expressed that ecochamps were limited in bridging local communities with UCP stakeholders beyond ERS. Despite ecochamps had a key role in facilitating collaboration, they were often associated and confined to working closely with ERS.

> *"For instance, Lima doesn't even come to the village. Before, they had an agreement with Lima to support an agricultural initiative that was supposed to last for five years, and in the end, lasted only one year because Lima wasn't active. […] What we have is a conservation agreement with ERS thanks to Ecochamps."* (CM1 – farmers perspectives from Ngwenwane)

This outlined that communities did not perceive the benefits of extending their network, which could eventually lead to additional benefits for communities.

This perspective was also shared by UCP stakeholders, outlining that ecochamps' affiliation with ERS appeared to affect their perceived legitimacy in decision-making processes.

> *"I have to say that Ecochamps are members as employees of ERS (the host company). So not as individuals but as representatives of the host company."* (SUCP1 - WWF)

> *"Few of them are able to actively participate and explain their point of view or the work they do in the field. However, they can participate and ask questions, but most of the time they just attend and they sit and listen."* (SUCP4 – ERS)

This limited participation in decision-making process highlighted a structural barrier that restricts ecochamps taking actions and influencing decision-making processes.

> *"In my opinion, Ecochamps have a little role in the decision-making process for these conservation agreements, as do farmers."* (SUCP6 - CSA)

This limited involvement restricted Ecochamps from fully exercising their agency, despite their valuable on-the-ground insights and contributions. One of the primary challenges that stakeholders identified was the siloed nature of the UCP. While Ecochamps were recognized as valuable facilitators within ERS activities, their engagement with other UCP partners was often restricted due to differing project targets and geographical areas of focus. This lack of integration hindered Ecochamps' ability to act as catalysts in strengthening collaboration among various stakeholder groups and, limiting their role in facilitating collaboration between UCP stakeholders and local communities.

> *"But since we work in different projects and elsewhere compared to ERS, we don't use Ecochamps."* (SUCP7 – Lima)

> *"The ability of Ecochamps to get in contact with other stakeholders is limited because they come via ERS."* (SUCP8 – Rhodes University)

This perspective echoed the lack of ecochamps in connecting with other UCP stakeholders. This was further emphasized by a traditional leader who acknowledged that ecochamps made a great contribution to the community but also mentioned that they were limited in their engagement with government departments and other stakeholders.

> *"We need to strengthen our collaboration with stakeholders active in the area. But I don't see Ecochamps helping with us getting in contact with government departments. I think it goes beyond their ability."* (TL1 – Man traditional leader)

> *"For instance thanks to the ERS we can get in contact with the Land affair and share what our needs."* (TL1 – Man traditional leader)

This further reinforced what UCP stakeholders mentioned, outlining that ERS contributed to creating a network that allowed communities to get access to several opportunities and benefits. Nevertheless, ecochamps was seen to some extent as linking points to strengthen collaboration with UCP members.

> *"We need to strengthen our collaboration with stakeholders active in the areas."* (TL1 – Man traditional leader)

> *"Yes, I would say that because we don't work with ecochamps we have less opportunities to get in contact with partners of the UCP."* (TL1 – Man traditional leader)

Another significant challenge identified by community members was the lack of awareness regarding who the UCP stakeholders are, what they offer, and how communities can access their support.

> *"We don't know much about the stakeholders, what they can offer, or what they need from us. We lack the knowledge of where they are and how to reach them. So we might have some plans, but we don't know what to do and where to go with these plans."* (CM2 – Young man from Black Diamond)

Therefore the ability of ecochamps to effectively support communities well-being appeared to be limited to ERS efforts to provide opportunities and benefits to communities that were connected with ecochamps. While ecochamps were essential in fostering some degree of unity and

cohesion, communities continued to perceive significant barriers to collection action and social cohesion.

> *"The lack of social cohesion within the community is a big problem. The resistance to change among community members continues to be a problem for development."* (CM3 – Men from Makomereng)

> *"The biggest challenge is the lack of social cohesion in the community. Because people are not well-educated, whenever you bring development for the community, these members will perceive it as something else."* (CM4 – Farmer from Makoba)

Additionally, a key challenge identified by community members and traditional leaders was the inadequate allocation of funds and resources to support ecochamps activities, limiting their performance and potential impact.

> *"We would like to see more funding and resources allocated to the Ecochamps. The main challenge is the financial limitation."* (TL1 – Woman traditional leader)

These insights pointed out the deep-rooted issues that limit the ability Ecochamps alone to contribute effectively to the community well-being and development. Community divisions and lack of financial support were identified as key challenges hindering ecochamps activities. Stakeholders also pointed out that financial constraints poses a significant challenge to Ecochamps' contribution to UCP activities.

> *"Lack of financial resources is seen as the number one reason for Ecochamps' limited participation in UCP activities"* (SUCP6 - CSA)

> *"Over time, they build passion, so they participate more because they want to contribute to the UCP vision or mission."* (SUCP6 - DFFE)

> *"For me, it was interesting to work with ERS because they protect nature. I was willing to take the opportunity to help change my community's life and protect the environment."* (ECO1 – Young woman ecochamp)

Despite these financial limitations, some Ecochamps developed a strong commitment and passion for the work, driven by a sense of purpose rather than financial incentives.

4.4.2 Opportunities provided

Despite the challenges faced by ecochamps, both community members and UCP stakeholders identified several opportunities that could contribute to enhance the management of natural resources, and promote collaboration in the upper UWC. These opportunities laid the foundation for promoting joint decision-making, knowledge integration and community empowerment.

From the community's perspective, one of the most significant opportunities brought by Ecochamps was the increase in environmental awareness and the potential to attract additional stakeholders to the region. As Ecochamps consistently engaged communities on issues like water management and sustainable land use, they created opportunities for further development and collaboration.

"The more they came here and raised awareness about the environment, the better the community became. When there's progress in the community, it attracted more stakeholders. So more stakeholders came to the community and promoted different projects." (CM2 – Young man from Black Diamond)

"I would say that because we don't work with ecochamps we have less opportunities to get in contact with partners of the UCP." (TL1- Man traditional leader)

Ecochamps appeared to have the potential to attract more stakeholders, and create new opportunities to get in contact with UCP stakeholders in order to support communities development. For instance, communities outlined that ecochamps facilitated the introduction of new economic, by promoting rangeland management practices such as rotational grazing.

"The cattle benefited from rotational land practices, so we sold the livestock at higher prices because the weight of the animals was higher when we had fresh grass." (CM4 – Farmer from Makoba)

"For example, understanding that wattle clearing helps with more water availability and vegetation recovery. […] With the decrease of wattle trees comes the water availability." (CM2 – Young man from Black Diamond)

Ecochamp engaging with young members in wattle clearing in Black Diamond

The interaction with ecochamps provide not only economic benefit, but also environmental awareness that could translate into tangible improvements in rural livelihoods. Whereas Stakeholders recognized that the knowledge and insights provided by Ecochamps created opportunities for more tailored interventions that aligned with local needs.

"It was better when we had Ecochamps than when we didn't. Because of the insights that we got, we were able to bring solutions that were more suitable for the community." (SUCP1 – WWF)

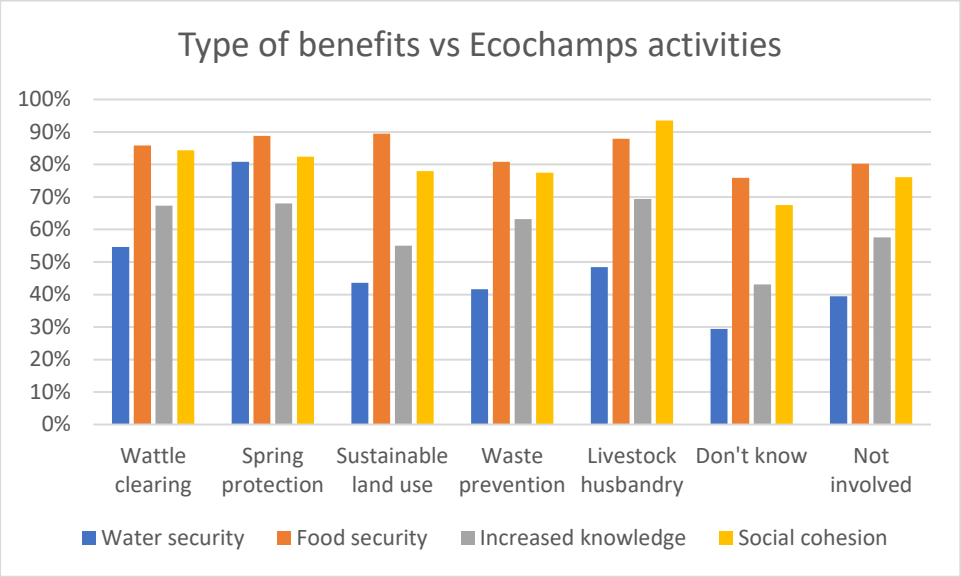

Figure 13 ***Type of benefits vs Ecochamps activities***

As illustrated in Figure 13, household participants identified that Ecochamps activities offered a wide range of benefits, particularly in specific areas such as spring protection and livestock husbandry. For example, in spring protection, households reported that food security was a significant benefit gained from these activities. Similarly, livestock husbandry activities were recognized for fostering social cohesion, with many households experiencing positive outcomes in this area.

Another critical opportunity identified by both communities and stakeholders was the role of Ecochamps in empowering rural youth and building local capacity. Through their active participation in environmental initiatives, Ecochamps developed skills that not only benefited their communities but also set the foundation for future youth development. This empowerment was seen as key driving factor for long-term change and rural development.

> *"Young people had a fresh mind and tried to make the community understand why a certain practice or approach could benefit the community."* (SUCP8 – Rhodes University)

> *"Youth in the area have been capacitated through paramedic training, livestock handling or animal handling. And other members of the association were trained in firefighting."* (CM3 - Members perspectives from Makomereng)

Therefore, ecochamps engagement with communities led to empowering communities under different aspects, including environmental awareness, and youth development.

The role of Ecochamps within the upper UWC presented a complex interplay of both opportunities and challenges, highlighting the extent to which these individuals could strengthen collaboration efforts between local communities and stakeholders through joint decision-making,

knowledge integration, and community empowerment, thereby facilitating co-management processes. On the one hand, Ecochamps were recognized as intermediaries between local communities and UCP stakeholders, aligning community needs with UCP targets while supporting overall project implementation in various ways. In their interface with communities, Ecochamps were key in building environmental awareness, promoting sustainable practices, and facilitating rural development. Their efforts in capacity building and youth empowerment also created new opportunities for community development. To some extent, communities acknowledged that Ecochamps played a significant role in connecting them with UCP stakeholders. On the other hand, challenges emerged regarding the limited scope of Ecochamps' participation in decision-making processes. Both community members and stakeholders outlined that Ecochamps were largely confined to ERS activities, which restricted their ability to significantly contribute to community development. This limitation was seen as a missed opportunity for extending networks and accessing potential benefits. Additionally, community members expressed a lack of awareness regarding who the UCP stakeholders were, what they offered, and how they could access these resources, which further hindered effective collaboration.

UCP stakeholders also emphasized that while Ecochamps had a key role in project implementation and knowledge sharing, their participation in decision-making processes was often restricted to passive observation rather than active contribution. This structural constraint limited their ability to exercise agency and influence decisions despite their valuable on-the-ground insights. The siloed nature of operations within the UCP further exacerbated this issue, as differing project targets and geographical areas of focus reduced opportunities for collaboration.

5. Discussion

The key assumption guiding this research is that co-management is an evolving process influenced by multiple, often overlooked factors that determine its success or failure (Berkes, 2009; Carlsson & Berkes, 2005). Scholars argue that instead of focusing solely on the formal structures of co-management for power-sharing, it should be approached as a problem-solving process involving joint negotiations, knowledge integration, and community empowerment (Berkes, 2009; Carlsson & Berkes, 2005; Parsons et al., 2019). Co-management is defined as a decentralized approach in which multiple stakeholders collaborate to enhance natural resource management through a set of arrangements that facilitate the sharing of power, authority, and responsibility (Berkes, 2009; Carlsson & Berkes, 2005; Parsons et al., 2019). This research emphasizes that co-management should be viewed as a continuous process of collaboration that promotes joint decision-making, knowledge integration, and community empowerment.

Successful co-management initiatives have shown that collaboration among stakeholders is crucial for negotiating and implementing resource management strategies (Wickrama, 2020; Parsons et al., 2021; Sattler et al., 2015). Emerging literature identifies individuals as key drivers in strengthening collaborative processes, enhancing natural resource management, and empowering local communities (Parsons et al., 2021; Cockburn et al., 2019; Sattler et al., 2015). For example, in Tanzania, Ngowi et al. (2018) highlight the vital role youth play in local water resource management, underscoring the importance of integrating youth into governance approaches to improve resource management.

However, scholars point to a significant gap in youth involvement in decision-making processes, particularly in rural settings across the Global South (Palmy-David & Buchanan, 2020;

Trivelli & Morel, 2021; Arshad et al., 2013; Asare-Nuamah & Mandaza, 2020). This lack of inclusion limits youth participation in shaping governance approaches, thereby hindering the development of successful strategies to address sustainability challenges (Kozar et al., 2014; Asare-Nuamah & Mandaza, 2020; Palmy-David & Buchanan, 2020; Trivelli & Morel, 2021; Arshad et al., 2013).

This research took up the challenge of exploring the role that ecochamps can play in facilitating co-management processes by strengthening collaboration through joint decision-making, knowledge integration, and community empowerment. These three elements—joint decision-making, knowledge integration, and community empowerment—were identified as the key drivers of co-management processes. However, the complexity posed by each of these factors made addressing the research objectives particularly challenging. To assess the extent of ecochamps' contribution to these factors, perspectives from both local communities and stakeholders were examined. Additionally, the opportunities and challenges that ecochamps faced and provided in the upper UWC were explored to offer a more comprehensive understanding. The research outcomes offer significant and complex insights into the role of ecochamps in facilitating co-management processes, through joint decision-making, knowledge integration and community empowerment in collaboration efforts. Because each of these factors offers unique insights into the process of co-management, they are intertwined. The relationship between joint decision-making, knowledge integration and community empowerment revels that the extent to which ecochamps can actually facilitate co-management process is limited. In this context, Ecochamps are a unique manifestation of youth agency, providing vital insights into how young people might facilitate co-management processes.

The outcomes from joint decision-making emphasize that ecochamps play a crucial role in ensuring that community voice and views are represented in UCP meetings. Their strong relationships to local communities enable them to bridge the gap between local communities and UCP stakeholders and facilitate communication that lays the groundwork for co-management. This is consistent with the wider idea that joint decision-making is required to ensure that resource management processes are not just inclusive, but also appropriate to the socio-cultural and ecological realities of the communities concerned. This is especially relevant in the context of South Africa where top-down governance has frequently failed to address key sustainability challenges. This align with the broader understanding that youth participation in governance approaches can lead to more inclusive decision-making by incorporating diverse perspectives and fresh insights (Palmy-David & Buchanan, 2020; Trivelli & Morel, 2021). However, the research also reveals that while Ecochamps participate in discussions, their influence on actual decision-making is limited. Stakeholders often perceive their contributions as consultative rather than decisive, which than raise concerns about the extent to which ecochamps can represent community perspectives in UCP meetings.

This aligns with the idea that when young people are given leadership roles in governance approaches, they can develop skills that not only enhance their capacity to address complex challenges but also promote local initiatives that support community well-being (Arshad et al., 2013; Asare-Nuamah & Mandaza, 2020). Despite these contributions, the translation of integrated knowledge into practical actions remains inconsistent. While Ecochamps are adept at addressing localized challenges, the knowledge they facilitate often remains isolated and fails to feed into broader UCP management strategies.

Ecochamps efforts in capacity building, promoting traditional practices, and fostering social cohesion led to community developing a sense of responsibility and environmental stewardship. By engaging diverse community members, including marginalized groups, Ecochamps play a crucial role in fostering inclusivity and promoting sustainable land-use practices. These actions are essential for building resilient communities capable of managing shared resources effectively. However, the research also highlights that the empowerment facilitated by Ecochamps is largely confined to addressing immediate practical challenges, rather than extending to broader governance structures within the community.

6. Conclusion

This study explores the critical role that ecochamps, young capable individuals from rural areas, can play in facilitating co-management processes in the UWC. In rural contexts of the South Africa, where livelihoods are intricately linked to the environment, the integration of local communities in watershed management is lacking. By exploring the role ecochamps, acting as catalysts in bridging the gap between local communities and UCP stakeholders, this research shed light on the extent to which induvial agency can contribute to co-management processes. To unpack the complexity of co-management as a problem-solving processes, key driving factors-joint decision-making, knowledge integration and community empowerment are examined to understand the role of ecochamps in facilitating co-management.

The findings highlight that, while ecochamps have made substantial contributions to bridging communication barriers and representing community voices, their influence in real decision-making is limited. This constraint highlights a larger issue in co-management: the existence of power disparities that prevent community inputs from being properly integrated into strategic choices. Addressing this gap requires strengthening the role of youth agency in governance, notably through improved leadership and decision-making capacity.

Knowledge integration emerged as another critical area in which ecochamps can effectively combine traditional and scientific knowledge systems. However, the inconsistent use of this integrated information within broader management strategies demonstrates that the process is still fragmented. For co-management to be fully effective, ecochamps' knowledge must be integrated into decision-making. Recognizing and equipping young leaders to play a more active role is crucial to ensuring that governance approaches are both locally relevant and environmentally sustainable.

Community empowerment is the third driving factor to co-management processes. The study demonstrates how ecochamps help to create capacity, promote social cohesion, and engage marginalized populations in communities. However, this empowerment is primarily concerned with immediate, practical concerns rather than larger governmental tasks. To truly empower communities, they must have the tools, resources, and authority to actively shape long-term management strategies. This necessitates a broader awareness of youth agency, not just as participants, but also as critical decision-makers and stewards.

Co-management, as a decentralized approach, provides a way to more flexible and equitable outcomes, but its success is contingent on addressing existing power-sharing imbalances. By investing in young people's leadership, participation, and environmental stewardship, governance

approaches can become more inclusive, robust, and capable of addressing key sustainability challenge. Moving forward, co-management must be seen as an evolving process with many layers in which individuals, including capable youth can contribute if their agency is recognized.

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Jacopo

Appendix

Appendix A. Table of UCP partners

Organizations present in the UCP. Retrieved from Snoreck et al., (2022)

Type	Acronym	Organization' name
Local community organization	GA	Grazing Association Georg Mosh
Local community organization	KBT	KwaBhaca Trust
Local community organization	MCTT	Mehloding Community Tourism Trust
Local community organization	MT	Makhoba Tribal
Local community organization	RBT	Royal Bakoena Trust
Local community organization	TCT	Tshikululu Community Trust
Local community organization	IZ	Indukuzamahlubi
Government	MLM	Matatiele Local Municipality
Government	DEDEAT	Department of Economic Development, Environment Affairs and Tourism
Government	ANDM	Alfred Nzo District Municipality
Government	DEA	Department of Environmental Affairs
Government	DRDLR	Department of Rural Development and Land Reform
Government	JGDM	Joe Gqabi District Municipality
Government	CONTRALESA	Council of Traditional Leaders of South Africa
Government	DWS	Department of water and sanitation
Government	COGTA	Cooperative governance and Traditional Affairs
Government	DAFF	Department of Agriculture, Forestry, and Fisheries
NGO	WESSA	Wildlife and Environment Society of South Africa
NGO	WWF	World Wildlife Fund
NGO	CSA	Conservation South Africa
NGO	ERS	Environmental and Rural Solution

NGO	LIMA	LIMA Rural Development Foundation
Private	MNP	Meat Naturally Program

Appendix B. Data collection

B1. *Semi-structured interview with stakeholders*

Section 1. General questions about the eco-champs

1. Are you familiar with the term "eco-champs" within the context of the Umzimvubu Catchment Partnership?
   If yes, how would you describe their role in the partnership? Can you tell me how do you perceive them during your interaction with them?
2. Would you say that you share same goals as the eco-champs which it comes to UCP activities?
   If yes, can you explain in what ways? If not, where do you see the differences?

Section 2. Interaction between stakeholders and community

3. Have you observed or experienced eco-champs acting as a bridge between stakeholders and local communities?
   Can you provide specific examples of this bridging role, or what was the outcome of this bridging role?
4. For how along have you been engaging with eco-champs in UCP activities related to community management? Have you perceived any benefits from this interaction?
   If yes, can you explain in what ways? And Which benefits did you get?
5. Are there aspects of your activities that have changed after the interaction with the eco-champs? Do you think they can provide valuable feedback, in term of reaching the target of your organization and meet the needs of rural communities?
   If so, could you provide an example of such an adaptation?

Section 3. Challenges and opportunities:

6. Would you foresee future collaboration with the eco-champs in community initiatives? If yes, what are the challenges and opportunities to engage with them?
7. In your view, how crucial is the role of eco-champs in the co-management of the Umzimvubu Catchment Partnership?

B2. *Stakeholders survey*

The following questions are envisioned to be close-ended questions, where the participants will have to rate his or her answer from not at all to a great deal

Section 1. First round of questions:

1. Which stakeholder of the UCP do you think has more synergistic relationship with eco-champs in the UCP?

2. Which non-UCP stakeholder do you think can benefit from engaging with eco-champs?

Section 2. Let's talk about the level of participation eco-champs have in UCP activities:

3. Nominal: Do you think the eco-champs is a mere member in the UCP
4. Passive: Do you think eco-champs are informed about the decision, but they are listening without speaking?
5. Active: do you think eco-champs are expressing their opinions whether or not solicitated or taking any other initiatives of other sorts?
6. Consultive: Do you ask eco-champs on options in specific matters without guaranteeing that their opinion will influence the decision you will take?
7. Activity specific: Do the eco-champs ask to volunteer undertake tasks?
8. Interactive: Do you think eco-champs have a voice an influence in the group's discussion?

Section 3. Let's analyse the co-management approach of the UCP

1. Preconditions:
   - Do you believe your organization shares the same goals as the eco-champs?
   - Are you willing to collaborate with eco-champs?
2. Characteristics:
   - What kind of activities are you engaged with eco-champs?
   - Do eco-champs hold decision-making agency when interacting with your organization?
   - Do you capacitate eco-champs?
   - To what extent are eco-champs representative of the community?
   - Do you foresee future engagement with eco-champs?
   - How long have you been engaged with eco-champs?
3. Outcomes:
   - Do the eco-champs assist in reaching the aims of your organization/project?
   - I trust eco-champs as partners central in the UCP
   - The engagement we have with eco-champs is beneficial in improving welfare
   - The engagement we have with eco-champs is beneficial to environmental sustainability activities
   - The engagement we have with eco-champs is beneficial in cost effectiveness
   - The engagement we have with eco-champs is beneficial in promoting social cohesion
   - The engagement we have with eco-champs is beneficial in optimal utilization of scarce resources
   - The engagement we have with eco-champs is beneficial in political influence to effect change

B3. *Eco-champs focus group discussions*

Section 1: Motivation & Inception

1. What motivated you to join the eco-champs initiative?
   - Follow-up: Was it primarily out of concern for the environment, the potential job opportunities, or other reasons?
2. When you first joined, what were your initial expectations or perceptions of the role you'd play in the Umzimvubu Catchment Partnership (UCP)?
   - Follow up: Did you see it as a great opportunity to growth your personal skills, learn more about the environment, help community? Can you explain your answer?

Section 2: Relationship & interactions with local communities and stakeholders

3. How would you describe your relationship with the local community, especially the chief and other key members?
   - Follow-up: how do you think community members and chiefs perceive your role in the community?
4. Can you discuss your interactions with other stakeholders within the UCP? How would you describe your relationship with these stakeholders?
   - Follow-up: Are there specific stakeholders you interact with more frequently? Can you tell what type of activities do you conduct together with them? What have you built so far? Trust, collaboration,

Section 3: Decision Making & Inclusivity

5. When a new initiative is being discussed or proposed, who do you typically consult or contact first? How does this process of consultation work? Are you able to explain the needs of the community?
   - Follow up are these decision taken in a collaborative process? Can you describe a recent decision-making experience?
   - Follow-up: how do you report the decisions that have been made to the community or chief?
6. Have you ever attended any UCP meetings? Would you like to share your experience during this quaternary meetings?

Section 4: Challenges & Opportunities

7. What challenges do you face when working with local communities and other UCP stakeholders?
   - Follow-up: Are there any specific instances where these challenges were particularly evident? Like a particular event where you struggle to explain yourself, or that stakeholders/ communities did not want to collaborate?
8. What opportunities have arisen from your role and interactions within the UCP? Personally and for community, for instance from the incentive you have got
   - Follow-up: Are there any initiatives or projects that you are particularly proud of or that showcased these opportunities?

Section 5: Reflection & Forward-Looking

9. Reflecting on your journey as an eco-champ, what are the most significant lessons or takeaways you've gained?
10. Looking forward, how do you envision the future of eco-champs within the UCP? Are there specific areas or initiatives you'd like to see prioritized?
    - Follow-up: What resources or support would be most beneficial for the eco-champs to achieve these future goals?

B4. *Community members focus group discussions*

1. Can you tell me about how you perceive the eco-champs?
2. Can you explain how you benefit from the interaction with the eco-champs?
   What have you learned from these interaction? Can you describe your main takeaways?
3. Apart from the daily activities (deworming, sheep shearing, vaccination), have you been involved in any other activities with the eco-champs? If yes, can you name them and how often have you participated?
4. How does the engagement with the eco-champs influence your behaviour and perceptions of the environment and the resources you have available in this landscape?
5. When it comes to take a decision about the type of incentives you want to get from the conservation agreement, have you been involved in the decision-making process? Or were you able to express your opinion about the type of the incentives?
6. To what extent does the engagement with eco-champs help you to get in contact with other stakeholders of the UCP? For instance, MNP WWF CSA or others
7. How do you think you can benefit from this network? For example does this interaction with the eco-champs can give you the opportunity to get access to resources and incentives that other actors of the UCP have? For instance, vaccine from MNP?
8. What are the challenges and opportunities to get in contact with other stakeholders?

B5. *Traditional leaders focus group discussions*

First of all, I would like to know which traditional authority do you represent? And how long have been involved in this eco-champ's project?

1. Can you tell me about how you perceive the eco-champs in your community?
   - Follow up question, do you consider them as a key element in community activities? If yes, can you provide some examples?
2. Can you explain how you (chief) benefit from the interaction with the eco-champs?
   What have you learned from these interaction? Can you describe your main takeaways?
3. When it comes to environmental conservation or other activities that need be done at the community level, do you consult eco-champs?

- Follow up question, how often is your decision influenced by the eco-champs? Do you consider eco-champs as a source of information that can be improve the livelihood of the community?

4. When eco-champs have a new initiative to promote for the community are you involved in this process of decision-making?
   - Follow up question, how often do eco-champs take into account your perceptions and concerns about the initiative they want to start? Can you provide an example?
   - Follow up question, do you think eco-champs integrate traditional knowledge/ your community knowledge in their initiative?
5. To what extent do you consider that eco-champs have increased the level of awareness of environmental issues? For example, influenced the behaviour and perceptions of the environment and the resources the community members have available in your landscape?
   - Follow up question, can you give me an example? How did this level of awareness help you to conserve the resource you have available?
6. To what extent does the engagement with eco-champs help you to get in contact with other stakeholders of the UCP? For instance, MNP WWF CSA or others
   - Follow up question, How do you think you can benefit from this network? For example does this interaction with the eco-champs can give you the opportunity to get access to resources and incentives that other actors of the UCP have? For instance, vaccine from MNP?
7. What are the challenges and opportunities to get in contact with other stakeholders?
8. Final question, how would you like to improve the activities that eco-champs provide to the community? What are the opportunities and challenges associated with scaling up eco-champs initiatives in your village?
   - Follow up question, do you think eco-champs improve the livelihood of the community? If yes, do you see any limitation? And what are the opportunity?

B6. *Households survey*

The following questions are envisioned to be a mix of close- and open-ended questions, where the participants will have to rate his or her answer from not at all to a great deal

Section 1. Eco-champs and community interface

- Are you aware of the eco-champs and their operations/role in the community?
- Have you worked before or are you currently working as an eco-champ?
- Which activities are eco-champs involved with in the community?
- Are there any other activities that eco-champs are involved with in your community?
- Have you interacted with or participated in any activity organized by eco-champs?

If yes, please describe the nature of your interaction or participation

- Have you benefited from this interaction or participation?

If yes, please explain

- Have the eco-champs influenced you or your household's behaviour regarding environmental conservation or sustainability?

If yes, provide examples of how your behaviour has changed

- In your own experience, what is the most important benefit that you and your community received from working with eco-champs?
- How effective are eco-champs in their community activities?
- In you own experience, who do you think is the most influential partner that has worked with eco-champs?
- To what extent have you been involved in identifying community problems with the assistance of eco-champs?
- To what extent have you been involved in implementing community solution with the assistance of eco-champs?

Section 2. Co-creation:

- To what extent have eco-champs been involved in community resource provision
- To what extent can eco champs decide about which community problems to focus on and how to implement solutions?
- To what extent are eco-champ activities tailor-made to your community needs?
- To what extent are eco-champ activities integrated with other community activity?
- To what extent have eco-champs taken your recommendations on board of their activities?
- Please rate the relationship that you have with eco-champs
- What role do eco-champions play in bridging the gap between local government, businesses, civil society, research institutions and residents to drive collective sustainability efforts?
- What innovative technologies, tools and resources can be harnessed to support and enhance the efforts/activities of eco-champions in the community ?
- How does the presence of eco-champions influence the overall sense of environmental responsibility and stewardship within a community?
- What are the challenges associated with scaling up the influence of eco-champions in the community?
- What are the opportunities associated with scaling up the influence of eco-champions in the community?
- Are eco-champs involved in group and stakeholder learning?

Appendix C. Description of the household survey variables

Variable	*Type*	*Category*	*Description*
Gender	Categorical	Nominal	Gender of the household head (Male, Female, Other)
Employment status of household head	Categorical	Nominal	Employment status of household head
Main source of income	Categorical	Nominal	Source of household income
Number of female household members	Continuous	Ratio	Count of male members in the household
Total monthly household income	Continuous	Ratio	Total household income in Rand
Interaction with ecochamps	Categorical	Nominal	Whether the respondent has interacted with or participated in ecochamp activities
Behavioral influence by ecochamps	Categorical	Nominal	Whether ecochamps have influenced the respondent's behavior regarding environmental conservation

Note Categorical variables are variables that assign or classify the data into distinct groups or categories. These categories can be arranged in either a specific order (ordinal) or no specific order (nominal). Continuous variables are quantitative variables that are capable of assuming any value within a specified range.

Appendix E. Table explaining the statistical techniques used

Statistical techniques	Description
Descriptive analysis	Descriptive statistics assist to summarize information on a single variable (univariate statistics), and those intended to represent the relationship between two variables (bivariate statistics). This analysis served to represent some of the main socio-economic characteristic of the participants and the open-ended questions.
Inferential analysis	Inferential analysis is often used when using a sample of data to draw conclusion on a population. This analysis is performed by the process of hypothesis testing, which involves stating a hypothesis about a relationship between two variables in the sample of the population and then using sample data to test the hypothesis. The process of testing the hypothesis is based on formulating a null hypothesis and setting up experiment to test it and observed if there is a pattern between the variable under objective. When applying an inferential analysis to test a set of data the null hypothesis is tested regardless whether or not an explicit null hypothesis is set up. This test indicates the numerical probability that the actual results obtained are valuable and reasonable or not. The numerical probability refers is sometimes referred to as the p-value test. If the p-value is significantly low the null-hypothesis can be rejected, hence the actual results are statistically significant, which means that the sample is likely to reflect the characteristics of the population. The significance level of the test is often showed by the symbol alpha. If the calculated probability, or the p-value, is less than the chosen alpha, the there is a significant result. The methods used in this research are the following: 1. Cross-tabs Cross-tabs is a method used to analyze the relationship between two categorical variables, including ordinal variables. It involves creating a contingency table that displays the frequency distribution of the variables, allowing for the examination of the interaction between them. This test was used to compare different categorical variables 2. Chi-square The chi-square test is used to determine if there is a significant association between two categorical variables. It tests the null hypothesis that the variables are independent. The test is used to for testing the statistical significance of relationship between variables. The chi-square in conjunction with the cross-tabs test This test is often used in conjunction with cross-tabulation to assess the significance of the relationships observed in the contingency table. 3. Independent sample t-test The Independent Samples t Test is a statistical test that compares the means of two independent groups (in this case nominal variables) to

	determine whether there is statistical evidence that the associated population means are substantially different. This test was used to assess significant differences in variables such as duration of stay, household size, and income levels. Since the test of normality was violated, the non-parametric Mann-Whitney U test was used as an alternative to the t-test. This test compared the ranks of the two groups to determine if there were significant differences. In addition, the effect size was calculated for the variables under analysis to determine the magnitude of the difference observed.

Appendix D. Email semi-structure interviews

Dear,

I'm a master's student from Utrecht University, Netherlands. I'm emailing you because I'm conducting a research master on the role of the UCP in natural resources management in the Matatiele area.
I would like to ask if you are willing to participate in the project. If yes, I would send you an invitation for an online interview of 30mins max.
I want to clarify that research aims to evaluate what role ecochamps play in closing the gap between UCP partners and rural communities within the resource management framework established by the UCP. The ecochamps' project is an initiative promoted by Environmental Rural Solution.
I would like to know if you are interested in participating in this project, your contribution would be greatly appreciated.

Regards,
Jaco

Appendix E. Informed consent form based on the Utrecht University guide

The research aims to explore what role ecochamps play in closing the gap between UCP partners and rural communities within the resource management framework established by the UCP. The ecochamps' project is an initiative promoted by Environmental Rural Solution.

The interview is expected to last approximately take half an hour. During the interview, we will ensure confidentiality if requested. Researcher from the WEF project may be included in the conversation. The notes will be treated as secret and securely saved on a computer that is protected by a password. Selected portions of the interview may be incorporated into a conclusive report and dissertation, as well as subsequently examined by peers for potential publication. If biographical data were relevant to a future publication, you would get a separate release form. If biographical data were relevant to a future publication, you would get a separate release form.

However, before sharing data with other researchers, any personal information that has the potential to identify you will be either erased or altered. The lead investigator will retain a connection that links you with your encoded data. However, this connection will be securely stored and accessible exclusively to the lead investigator or specifically chosen members of the study team. The retention term for this information will span the duration of the research, as well as an additional set period of 10 years. Following that period, the data will either be destroyed or rendered anonymous. Your personal identifying information will be kept secret. Subsequent requests for access to de-identified data may be made by other legitimate researchers in the future. Access will only be allowed if they consent to uphold the confidentiality of the information as specified in this form. Approval from the original research team is necessary for them to gain access. Should you choose to withdraw from the study, there is no requirement for you to provide a reason. Kindly notify the researcher of your decision. All data acquired up to that point will be utilized for both present and future research purposes.

I prefer to be treated:

- Anonymously (stakeholder group/sector only)
- Name of organization/company
- By name

I confirm that:

- I am satisfied with the received information about the research
- I have no further questions about the research at this moment
- I had the opportunity to think carefully about participating in the study
- I will give an honest answer to the questions asked

I agree that:

- The data to be collected will be obtained and stored for scientific purposes.
- The collected, completely anonymous, research data can be shared and re-used by scientists to answer other research questions;
- The interview will be audio taped for transcription purposes

I understand that:

- I have the right to see the research report afterwards.

Do you agree to participate? ☐ Yes ☐ No

_____ Name of Interviewee

_____ Signature _____ Date