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Master's Programme in Innovation and Global Sustainable Development

The Role of Community-Based Organizations (CBOs) in the Transition to Circular Economy: The Case of Monteverde, Costa Rica

by

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Abstract:

This research investigates the role of Community-Based Organizations (CBOs) in the transition to a circular economy (CE) in the Monteverde region of Costa Rica. The study utilizes the Multi-Level Perspective (MLP) framework to identify the dynamic interactions between different levels (regime, landscape, and niche) in facilitating sustainability transitions from a linear economy to a circular economy. Through semi-structured interviews with relevant stakeholders, the study reveals the enablers that CBOs leverage to facilitate this transition, which include a strong sense of community, meeting public demand, and engagement with multiple stakeholders. Furthermore, the interactions between CBOs and the regime and landscape levels are elaborated. However, these CBOs face various challenges, including issues related to human and financial resources, institutional barriers, and the impact of overtourism on the region. The findings of this study provide valuable insights into the mechanisms through which CBOs can drive the adoption of CE practices.

Keywords: Community-based organizations, Circular Economy, Sustainability Transitions, Multi-level Perspective, Costa Rica

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List of Abbreviations

CBOs	Community based organizations
CE	Circular economy
EMF	Ellen MacArthur Foundation
ENEC	Estrategia Nacional de Economía Circular
EPR	Extended Producer Responsibility
LAC	Latin America and Caribbean
MINAE	Ministry of Environment and Energy
MLP	Multi-level perspective
NDC	Nationally Determined Contributions
NGO	Non-governmental organization
OECD	Organisation for Economic Co-operation and Development
UNEP	United Nations Environment Program

1 Introduction

The accelerated global consumption of goods and materials is currently at an alarming pace, leading to the excessive exploitation of the world's natural resources (Negrete-Cardoso et al., 2022). The traditional linear economic model, characterized by a take-make-dispose approach, is proving inadequate for meeting both current and future human needs due to its unsuitability in a world with limited resources and changing economic and demographic trends (Sariatli, 2017). In response to this pressing issue, the concept of the circular economy (CE), a systemic approach that prioritizes waste elimination and continuous resource utilization (EMF, 2013a), is gaining global recognition as a solution to environmental pressures.

The Ellen MacArthur Foundation (EMF) (2013) defines CE based on three core principles: eliminating waste and pollution, maintaining the circulation of products and materials at their highest value, and regenerating nature. Geissdoerfer et al. (2017) describe CE as aiming to create a regenerative system that slows down, closes, and narrows material and energy loops. The United Nations Environment Programme (UNEP) perceives CE as a means to ensure sustainable consumption and production patterns, offering a path to decouple economic growth from environmental degradation (UNEP, 2021). By making a circular approach, it presents numerous benefits across environmental, economic, and social dimensions. From having the potential to halve carbon dioxide emissions by 2030 in sectors such as mobility and food systems in the case of Europe to the possibility of advancing innovation and creating new business opportunities while reducing costs related to material use (EMF, 2013).

However, the current global economy is only 7.2% circular. The score has declined from previous years due to a rapid increase in global material extraction (Circle Economy, 2023a). With its abundant natural endowment, the Latin America and Caribbean (LAC) region plays a significant role in global material extraction, contributing over 11% of the world's raw materials (Circle Economy, 2023b). According to the same report by Circular Economy, the region's latest circularity metric is remarkably low, scoring below 1%. This implies that LAC mainly relies on unprocessed raw materials to meet the demands of its population, and when these materials are no longer usable, only a small amount is recycled for further use.

Transitioning to CE approaches could potentially benefit the LAC region as it aids in decarbonization and enhances long-term ecological resilience and economic stability. It can benefit in a way that CE has the potential to significantly impact the reduction of carbon emissions in LAC's economy (Circle Economy, 2023b). Nations like Chile, Colombia, and Costa Rica have already implemented such approaches (Circle Economy, 2023a). Among those three, Costa Rica, one of the first countries to commit to achieving zero net emissions of CO₂ by 2050 (UNFCCC, 2019), stands out as an interesting case study.

Following the commitment, the country published its first NDC (Nationally Determined Contributions) document in 2015, then updated it with a more extensive document in 2020 as their effort to fight climate change (MINAE, 2020). In the document, the country has touched upon the importance of integrating CE in the strategy. Then, in 2023, the country incorporated CE into its national development plan by launching a separate focused document discussing more about CE called ENEC (Estrategia Nacional de Economía Circular) or National Circular Economy Strategy, launched by the Ministry of Environment and Energy (MINAE). This strategy is designed to revamp the country's production model, boosting its economy, competitiveness, and social well-being (Times, 2023). Additionally, Costa Rica has set an ambitious target to establish a circular economy by 2050, focusing on minimizing natural resource extraction and maximizing the reuse of processed materials (CTCN, 2021).

Despite these initiatives, the country still faces obstacles in embedding CE practices in its day-to-day governance. For instance, the overall waste management scenario in Costa Rica remains complex and requires further improvement (Garg, 2023). Only a few municipalities have proper environmental waste management systems in place, forcing citizens without access to resort to other inappropriate waste management practices (HCH, 2021). The country also faces challenges in its waste management efforts, such as plastic pollution (LITTLE, 2017). Nevertheless, strides have been made in managing organic waste; a 2023 project assessed the feasibility of commercializing organic waste recovery, demonstrating progress in organic waste sorting and processing (CCAC Secretariat, 2023).

These obstacles show that in transitioning from a linear to a circular economy, Costa Rica confronts numerous challenges in the process. In order to ease these challenges, these transitions need catalysts, and community-driven approaches have been noted as essential tools to aid this process (Matarrita-Cascante et al., 2010; Wittmayer et al., 2014). Community-based organizations (CBOs), recognized as the third sector following public and private sectors, can engage deeply with local communities to deliver diverse social programs, including bolstering community sustainability (Hidayat & Stoecker, 2018). Moreover, according to Khanal et al. (2019), CBOs have a significant role in mitigating the adverse effects of climate change by encouraging the use of strategies that adjust to new climate realities. Relating to the CE context, (Wilson et al., 2006) highlight that the community approach is essential in implementing effective waste management strategies. However, the role of CBOs in a transition to CE is still in its infancy.

Considering the longstanding role of community involvement in shaping the development of the area, Monteverde in Costa Rica emerges as an ideal location for examining the impact of CBOs in advancing the adoption of CE practices. In order to analyze the dynamics of the sustainability transition in the Monteverde community, especially the move from a linear to a circular economy, the study uses the Multi-Level Perspective (MLP) framework. This framework, commonly used in research on sustainability transitions, facilitates a deeper exploration of CBOs' role in influencing the CE practices at the national level by examining the interactions between different levels of socio-technical structures.

1.1 Aim and Scope

This study aims to explore the role of the CBOs in influencing the implementation of the circular economy (CE) in Costa Rica. Several research questions will be addressed to achieve the aim of the study. The primary research question posed in this study is ***“How do Community-Based Organizations (CBOs) in Monteverde, Costa Rica, influence governmental regimes and the broader landscape to facilitate the adoption and diffusion of circular economy practices?”***

The study will then try to answer a second research question: ***“What are the challenges faced by CBOs in Monteverde in promoting and facilitating the adoption of circular economy practices?”*** This second research question is necessary in this study to help improve the proper strategy and implementation later on.

The findings of this study are expected to offer valuable insights for policymakers, environmental organizations, citizens, and other stakeholders in Costa Rica and similar contexts. Furthermore, these can also aid in formulating and implementing more effective CE strategies management rooted in community involvement.

1.2 Outline of the Thesis

The structure of this thesis is organized into five distinct parts: Introduction, Literature Review, Methodology, Analysis and Discussion, and Conclusion. The first chapter, introduction, provides a concise background on the Circular Economy (CE) concept and underscores its significance. It offers an overview of the current state of CE in Latin America and the Caribbean (LAC), with a specific focus on why Costa Rica, and particularly the Monteverde community, presents an interesting case for discussion. Additionally, this chapter introduces Community-Based Organizations (CBOs) to the study and outlines the aims and scope of the research.

In the next chapter, the literature review and theory lays the theoretical groundwork for the study. It begins with a discussion on sustainability transitions, incorporating the Multi-Level Perspective (MLP) framework as a tool for understanding these transitions. The chapter continues by exploring the role of the CE in sustainability transitions, including a detailed explanation of the 9R framework in CE used in the research. It concludes with an examination of CBOs' involvement in CE and sustainability transitions.

The third chapter describes the research design and methodology employed in the study. It details the selection of case studies, followed by the data collection and data analysis processes. The chapter concludes by addressing the limitations and ethical considerations of the study. Then, dedicated to the results and discussion, the fourth chapter, this section

analyzes the roles of CBOs in advancing CE and their interactions within the MLP framework and concludes by presenting the challenges faced by the CBOs. The final chapter serves as the conclusion of the thesis. It summarizes the key findings and offers recommendations for future research.

2 Literature and Theory

This section reviews the literature on sustainability transitions and introduces the theoretical framework for the study, the Multi-Level Perspective (MLP). It also explores the role of the circular economy within the context of sustainability transitions and discusses the involvement of community-based organizations (CBOs) in these processes.

2.1 Sustainability Transitions

In the last decades, the idea of sustainability transition has emerged as a critical pathway for achieving sustainable development. The concept of sustainability transition encompasses changes in the system from unsustainable methods of production, consumption, and lifestyle to more sustainable practices that involve multi-actor (Johnstone & Newell, 2017; Markard et al., 2020) to address complex challenges like environmental problems (Shove & Walker, 2007). Within this framework, the concept of transition signifies the evolution of socio-technical systems, transcending beyond mere technological advancements. The socio-technical system is often described as the system that is undergoing these changes, and it is necessary to transform it to have an effective transition system change (Wieczorek, 2018). It includes shifts in consumer behaviour, changes in the marketplace, adaptations in policy environments, evolutions in cultural perceptions, and transformations in governance frameworks, highlighting a comprehensive system innovation (Coenen et al., 2012; Geels & Schot, 2007).

Due to the comprehensiveness of the things included in the socio-technical systems, this notion has become fundamental in the sustainability transition and has garnered attention in decision-making bodies (Wieczorek, 2018). There are several models in the field that describe the process of these transitions and how to regulate them. One of the most important theoretical frameworks used in the literature to understand sustainability transitions through the socio-technical system lens is the MLP framework.

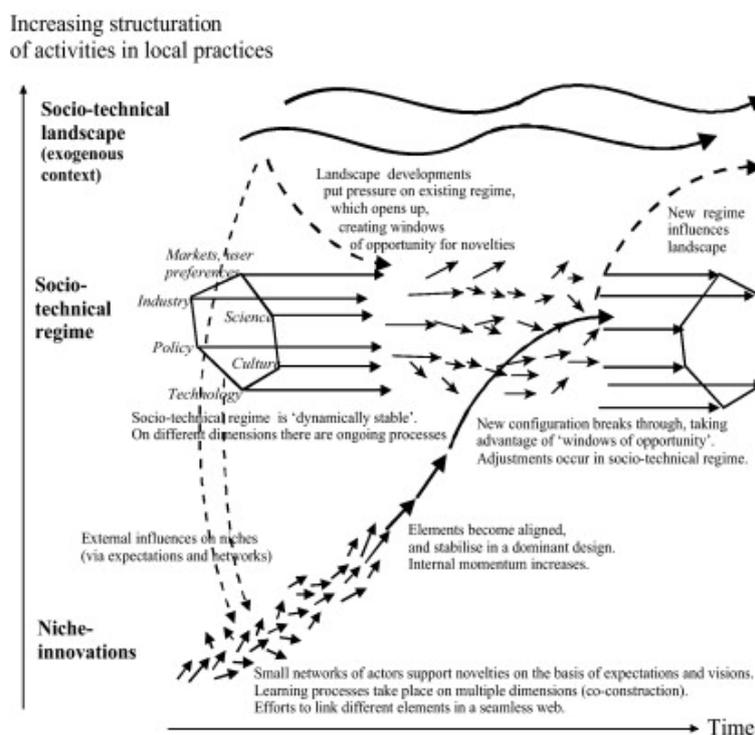
2.1.1 Multi-level Perspective Framework as a Tool to Understand Sustainability Transitions

The framework was developed in the late 1990s (Rip & Kemp, 1998) as part of an effort to better understand the dynamics of systemic change in societal systems. Geels (2002) then expanded upon the foundation of MLP in his paper; it built on earlier theories and research in

the sociology of technology and innovation studies, drawing on concepts such as technological paradigms and socio-technical regimes. The framework helps to explain the overarching patterns and tendencies in the shifts experienced by a society as it transitions from one socio-technological system to another, highlighting the reciprocal evolution of technology and society (Geels, 2011). Researchers utilizing the MLP examine the interplay between various elements to determine their role in either preserving the status quo or driving significant transformations, often referred to as 'transitions' (Whitmarsh, 2012).

The transitions explained by MLP happened because of the interactions among processes taking place at different levels (Grin et al., 2010). The framework distinguishes three levels: niches, where radical innovations are born; socio-technical regimes, which are entrenched and stabilized across multiple dimensions; and the external socio-technical landscape (Geels, 2010). Major changes typically arise within and between the regime and niche levels, which may either cooperate or conflict (Geels & Schot, 2007). Geels (2011) illustrated the dynamic interactions among the three levels when socio-technical transitions occurred (see Figure 1).

Figure 1 Multi-level perspective on transitions



Source: Geels (2011).

The concept of the socio-technical regime level is essential in understanding the existing institutions and practices that shape specific systems. This level includes regulations, governance structures, and norms, as Geels (2002) and Markard & Truffer (2008) identified. Changes within this regime level typically occur gradually, building upon prior developments

or paths without resorting to abrupt changes, as discussed by Geels (2002) and Smith et al. (2010).

Niche levels are characterized as "protective spaces" conducive to pioneering experimentation that may diverge from established regimes (Geels, 2002, 2011; Rip & Kemp, 1998). Niches are recognized for their critical role in spurring innovation and enhancing agency, as highlighted by Smith (2007) and Geels & Schot (2007). At this level, niche innovation might emerge that offers alternative solutions to the limitations or problems of current systems (Schot & Geels, 2013). Within the MLP framework, the landscape level represents the broader context in which changes typically unfold at a gradual pace. This level possesses the capacity to affect the interaction between regimes and niches, as noted by (Rip & Kemp, 1998) and Geels (2002). It also integrates demographic trends, political ideologies, societal norms, and overarching economic patterns, further elaborated by Geels (2011).

In response to environmental problems, Geels (2010) explained that MLP is a framework that offers a holistic view of the multi-faceted nature of changes within socio-technical systems that can be used to understand sustainability transition. It analyzes the interactions between industry, technology, markets, policy, culture, and civil society in low-carbon transitions (Geels, 2012). It is also a middle-range theory that intersects with certain ontologies and not with others, emphasizing transitions and environmental sustainability (Geels, 2010). Furthermore, Smith et al. (2010) argue that MLP's advantage is that it can offer a clear and organized method for analyzing complex, major structural changes in production and consumption that are required for achieving the goal of sustainable development.

MLP has been widely used to understand sustainability transitions in several different sectors and or cases in a wide range of locations. In the transportation sector, Nykvist & Whitmarsh (2008) analyzed mobility systems in the UK and Sweden. Still coming from the same sector, Köhler et al. (2009, 2010) utilized the framework for understanding the transition to hydrogen fuel cell technology in transportation, and Wu et al. (2021) used it to identify the transition from traditional (fossil fuel) vehicles to new energy vehicles (NEVs) in China. El Bilali (2019) reviewed the use of MLP for sustainability transitions in the agriculture sector, while Kaweesa et al. (2021) used it to analyze the transition of the same sector in the case of Uganda.

In the energy sector, many researchers applied MLP in analyzing the renewable energy transition in different countries. Energy transition in the EU area, Germany (Hölsgens et al., 2018; Moser et al., 2021), Greece (Nikas et al., 2020; Prados et al., 2022), Norway (Cheng, 2023; Cheung, 2020; Damman et al., 2021), and Netherlands (Verbong & Geels, 2007). In Asia, Marquardt (2016) analyzed Southeast Asia's energy transition by using MLP, Smits (2011) focused on Lao PDR or Laos, and several discussed Saudi Arabia as their focal point (Alrashoud & Alrashoud, 2020; Belaïd & Al-Sarihi, 2024). As for cases from Africa, Ockwell et al. (2018) utilized the framework to understand the diffusion of solar power in the continent. Then, Brunet et al. (2021) deep dived about the transition towards solar

photovoltaic in Rwanda, while Mori & Le (2017) focused their research on Kenya's energy transition.

Several researches utilizing MLP in understanding the sustainability transition in Latin America and Caribbean (LAC) have also been found. Quinteros-Condorety et al. (2020) applied the framework to research the support for sustainable mobility transition in Argentina, Bolivia, and Chile. Naranjo & Forero-Cantor (2023) demonstrated the usage of MLP for the transition in the agriculture sector, specifically in the palm oil industry in Colombia. While in Costa Rica, Anselmi & Vignola (2022) investigated the sustainability transition of the food system with the help of MLP as the conceptual framework.

Furthermore, MLP is also useful in comprehending the transition processes towards a CE model. Several studies have benefited from the framework in investigating the transition to CE and also its practices. Some discussed the transition to CE in the renewable energy sector (Finn et al., 2020; Mathur et al., 2022) from the MLP's lens, while Miemczyk et al. (2022) analyzed the transition to CE in the agri-food sector. Instead of focusing on a specific sector, Zhu et al. (2022) took a different approach and did their research on the role of small and medium-sized enterprises (SMEs) in the CE transition.

2.2 Circular Economy in Sustainability Transitions

The concept of shifting from linear economy to circular economy (CE) fits into the broader sustainability transition concept that scholars have widely discussed in recent years. According to Velenturf et al. (2019) CE contributes to sustainability transition by transitioning from a linear economy to a better organization of resources. Then, CE can also be seen as a transition to a novel and distinct business model characterized by reduced resource utilization alongside enhanced well-being (Kerschner, 2010; Ghisellini et al., 2016). Furthermore, CE can be considered as part of the sustainability transition, which emphasizes challenges and potential solutions of a system, from the production process, such as process redesign, to the consumption phase, followed by the stage of waste management, such as material cycling (Jurgilevich et al., 2016; Murray et al., 2017).

CE holds significant potential to drive sustainability transitions, largely due to the characteristics of CE practices themselves. Unlike the traditional linear system, transitioning to a CE approach can lead to more effective resource management (Velenturf et al., 2019). Furthermore, CE is crucial for sustainability transitions because it enables the measurement of environmental value retained through activities such as reuse, remanufacturing, repair, and recycling. This shifts the focus from just end-of-life to encompassing the entire lifecycle of products (Haupt & Hellweg, 2019).

Moreover, CE also represents a fundamental shift from the traditional linear economy, which is based on a take-make-dispose model. This distinct approach, being different from

the established regime, qualifies CE as a niche innovation within the MLP framework. In order to grow, these niche innovations are usually shielded from the full pressures of market competition and existing regulatory frameworks and usually supported by a dedicated group of actors who believe in their potential (Schot & Geels, 2007). Furthermore, for niche innovation to impact a broader system, or in this case, for CE to be mainstream, it must break out of its niche status and influence or replace the existing regime (Schot & Geels, 2007).

The transition from linear economy to CE have its own challenges. Murray et al. (2015) pointed out that CE faces challenges such as an absence of the social dimension, limited ethical dimensions, and unintended consequences. Korhonen et al. (2018) highlighted obstacles such as insufficient policy support, market inefficiencies, and deeply rooted behaviours and practices. When it involves businesses, the challenges present for them to shift to CE are from the business design itself, the operation, technology needed, and also scalability (Dey et al., 2020; Awan & Sroufe, 2022).

2.2.1 9R Framework: Enhancing Circular Economy Strategies

Various R frameworks serve as practical guides to transitioning from a linear economy to a circular economy (CE) (Kirchherr et al., 2017; de Melo et al., 2022), illustrating an evolution in thinking and application. Initially, the concept began with the 3R framework, emphasizing the basic principles of reduce, reuse, and recycle (Ghisellini et al., 2016; Yong, 2007). This foundational approach was expanded with the introduction of the 4R framework, which included the concept of recovery (Hu et al., 2011). Building on the 3R framework, the 5R framework added the concepts of rethink and repair (Wenbo, 2011). Following this, the 6R framework introduced the additional principle of remanufacturing (Ghisellini et al., 2016; Sihvonen & Ritola, 2015). Each of these frameworks added layers of complexity and depth to CE strategies. Then, Van Buren et al. (2016) and Potting et al. (2017) proposed the 9R framework. These frameworks include refuse, reduce, reuse, repair, refurbish, remanufacture, repurpose, recycle, and recover. While both versions of the 9R framework share common elements, Potting et al. (2017) distinguish their model with the inclusion of 'rethink'.

Although it's a relatively new development, the Framework 9R has become the most frequently utilized method for developing or analyzing CE policies (de Melo et al., 2022). Costa Rica's national circular economy strategy (Estrategia National Economia Circular or ENEC) also adopts a variation of the 9R framework, substituting 'repurpose' with 'redesign', demonstrating the adaptability of these frameworks to fit national contexts and objectives (MINAE, 2023). The following summary (see Table 1) will provide a detailed overview of the definitions and descriptions of the 9R framework from three different perspectives.

Table 1 9R Framework

R Behaviors	Source		
	van Buren et al. (2016)	Potting et al. (2017)	MINAE (2023)
R0	-	Refuse	-
R1	Refuse	Rethink	Refuse
R2	Reduce	Reduce	Reduce
R3	Reuse	Reuse	Reuse
R4	Repair	Repair	Repair
R5	Refurbish	Refurbish/ Restore	Restore
R6	Remanufacture	Remanufacture	Remanufacture
R7	Repurpose	Repurpose	Redesign
R8	Recycle	Recycle	Recycle
R9	Recover	Recover	Recover

The United Nations Environment Program (UNEP) has developed its own version of the 9R framework to advance the circularity approach. Unlike the conventional division into R1-R9 concepts, UNEP (2019) organizes these processes into four distinct categories, emphasizing their impact. The initial category, "reduce by design" and "from a user to user perspective," encompasses the actions to refuse, reduce, and reuse. Following this, the "user-to-business intermediary perspective" category includes repair, refurbish, and remanufacture. The final classification, "business-to-business," covers repurposing and recycling (UNEP, 2019). This structure offers a different view of circularity practices, highlighting the varied interactions and impacts across different levels of engagement.

This study will leverage the 9R framework outlined in the ENEC document by the Costa Rican MINAE, tailoring it effectively to the regional context. The document describes how the country formulated its national circular economy (CE) strategy utilizing the 9R framework to map objectives, targets, potential solutions, and implementation strategies (MINAE, 2023). The framework begins with The first R, "Refuse," which emphasizes avoiding unnecessary products or services to promote more mindful consumption practices (Potting et al., 2017; MINAE, 2023). "Reduce" involves decreasing consumption and promoting production efficiency (MINAE, 2023; Potting, 2017; Hunger, 2024). "Reuse" involves repurposing products or goods that are still in good condition but no longer utilized by the initial consumer (EU, 2008; MINAE, 2023).

The "Repair" aspect focuses on extending a product's lifespan by restoring damaged items, enabling their reuse (MINAE, 2023; Potting, 2017; Hunger, 2024). "Restore" refers to updating a product to modernize it (MINAE, 2023; Potting, 2017). The "Remanufacture" dimension involves creating new products by utilizing parts from old products that retain the same functionality (MINAE, 2023; Van Buren, 2016; Potting, 2017). "Redesign" is described as the act of creating designs with sustainability and eco design as core criteria (MINAE, 2023). "Recycle" is the process of repurposing materials to fabricate new products (MINAE, 2023; Van Buren, 2016; Potting, 2017). Finally, "Recover" is characterized as the incineration of residual flows with energy recovery (MINAE, 2023; Van Buren, 2016; Potting, 2017; Hunger, 2024).

Despite its widespread adoption for understanding CE practices, the 9R framework has sparked several discussions concerning its limitations. To date, CE researchers offer varied interpretations of CE, which may complicate the comparison of research findings (Hunger et al., 2024; Lüdeke-Freund et al., 2019). This issue extends to the 9R framework as well, as described in the previous section, where differing explanations of the framework exist. Schöggel et al. (2020) highlighted this variability in their study, underscoring the inherent limitations of the 9R framework (Hunger et al., 2024).

Furthermore, Hunger (2004) points out a significant gap in the 9R framework: it overlooks the consumer perspective, particularly since not all dimensions of the framework are relevant to consumers. However, the UNEP (2019) already anticipated it in addressing this by categorizing the CE groups based on stakeholder involvement. They specifically identified a loop focusing on the user-to-user process, which keeps products in proximity to the consumer and maintains their functionality.

Nevertheless, this research will employ the MLP as the primary framework to address the research question, thus not prioritizing the consumer's viewpoint. As a result, the limitations associated with the 9R framework are unlikely to pose significant drawbacks to this study. Therefore, employing this framework remains appropriate for the research at hand.

2.3 Community Based Organizations (CBOs) in Circular Economy and Sustainability Transitions

Community-based organizations (CBOs) are grassroots groups managed by and for their members (Datta, 2007; Hulme, 2013). These organizations provide an optimal means to bridge the gap between government and state environmental agencies and citizens, especially due to the solid relationships with local residents and their comprehensive grasp of the community's resources and requirements (Kellogg, 1999). Kellogg (1999) further elaborates that many CBOs are enhancing their ability to engage in addressing environmental challenges within their local areas. Additionally, CBOs prioritize social equity and economic

sustainability, championing inclusive and collaborative efforts towards sustainable community development. They make significant contributions to the advancement of a low-carbon society through voluntary, locally-driven initiatives that catalyze wider changes (Celata et al., 2019; Reames & Wright, 2021).

Given this context, CBOs are poised to contribute significantly to sustainability transitions. Research has demonstrated their effectiveness in driving such changes. For instance, in the United States, CBOs in Philadelphia (Stokes et al., 2014) and Wisconsin (Hidayat & Stoecker, 2018) successfully led the way in promoting sustainability goals into their governance structures by doing community development. Sustainability initiatives from CBOs have also made their impacts in the EU by actively taking part in the transition's process to low carbon society (Celata et al., 2019; Celata & Sanna, 2019). Moreover, in the United Kingdom, CBOs have been instrumental in nurturing engagement between regime actors and communities, thereby promoting sustainable energy transitions, as described by (Seyfang & Haxeltine, 2012). These examples underscore the critical role CBOs play in promoting sustainability initiatives and engaging communities in the transition towards more sustainable futures.

In the context of CE, community-level organizations play a significant role in implementing small-scale circular economies activities as they integrate environmental management with community development efforts, as seen with initiatives like waste or recycling entrepreneurs (Gutberlet et al., 2017). Additionally, CBOs exert a broader influence by successfully prompting behavioral shifts towards more sustainable CE practices. For example, Bradley and Perssons' analysis of a DIY and repair community in Sweden showed that CBOs not only focus on fixing items and reducing waste, but also fosters social connections and promotes non-consumerist citizenship, particularly empowering marginalized groups to succeed in a sustainable future (Bradley & Persson, 2022).

Despite the acknowledged and significant role that CBOs play in broader sustainability transitions, the specific role that they could play in transitioning to a CE is still under-researched. While existing studies highlight the effectiveness of CBOs in facilitating community engagement and also driving local sustainability transitions, there is a notable gap in the literature regarding their involvement in CE practices. This gap is particularly significant given the increasing global emphasis on the importance of CE. Hence, it is essential to understand how CBOs can utilize their unique position to promote CE initiatives, as this is vital for developing sustainable communities and achieving broader environmental goals. Thus, the following thesis aims to contribute to this gap by investigating the roles, mechanisms, and challenges of CBOs in the transition to a CE.

2.4 Circular Economy and Community Based Organizations in Costa Rica, Latin America and Caribbean Context

Circular Economy in Latin America and Caribbean

The Latin America and Caribbean (LAC) region, encompassing 33 countries, plays an important role in the global extraction and use of materials. This region is responsible for over 11% of the raw materials extracted worldwide, as reported by the Circularity Gap (Circle Economy, 2023a). Despite this significant contribution, the Circularity Gap report 2023 highlights that LAC's circularity index is less than 1%, substantially lower than the global average of 7.2% (Circle Economy, 2023a). Given the region's vital position, CE has gained prominence as a key strategy for sustainable development within LAC. The CE model has garnered considerable political interest, evidenced by over 80 public initiatives identified in LAC in 2019 (Schröder et al., 2020). This interest is not limited to government efforts; the academic community has also shown a growing engagement with CE, as demonstrated by the rising number of related publications, projected to exceed 2500 studies by 2026 (Ospina-Mateus et al., 2023). February 2021 marked a significant milestone in the region's CE journey, with LAC countries signing the Decision on Sustainable Consumption and Production and Circular Economy and launching the Circular Economy Coalition for Latin America and the Caribbean (Circular Economy Coalition, 2022).

To facilitate the transition to CE, most LAC countries have implemented various policy measures, ranging from waste management sector improvements to comprehensive national CE roadmaps and strategies. All LAC members have established waste management legislation (Schröder et al., 2020), and several, including Chile, Colombia, Mexico, and Peru, have developed their national CE strategies (UNEP, 2023). Leading up to COP26, eleven governments from LAC were actively seeking to incorporate circular economy principles into their Nationally Determined Contributions (NDCs). These countries included Argentina, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Mexico, Nicaragua, Panama, Paraguay, and the Dominican Republic (Circular Economy Coalition, 2022). According to Schröder et al. (2020) Chile, Colombia, and Uruguay are identified as leading the CE movement in LAC.

As of 2020, Chile leads in public initiatives dedicated to CE, having published its National Circular Economy Roadmap 2020–2040 and developing a national strategy on organic waste (Schröder et al., 2020). Chile also embraces grassroots initiatives to support the CE transition (UNEP, 2023). Colombia, recognized for adopting the first national CE strategy in LAC (UNEP, 2023), and also one of the countries in the region that has also incorporated Extended Producer Responsibility (EPR) (Schröder et al., 2020). Moreover, one of the central initiatives that worked to promote CE transition in the country was the public and private partnerships that resulted in environmental, social, and economic benefits (Circle Economy, 2023a). In Uruguay, the development of the national CE plan involved not just the

government but also the public and private sectors, fostering an open dialogue with the public (Schröder et al., 2020). Furthermore, according to the Circularity Gap report, Costa Rica is also making significant strides in the CE transition, alongside the previously mentioned countries (Circle Economy, 2023a).

Circular Economy in Costa Rica

UNEP (2023) considered Costa Rica as one of the regional leaders for its efforts to promote the CE, especially notable in its integration into the OECD and international climate treaties. The country had already integrated CE strategies into its Nationally Determined Contribution (NDC) for 2020 (de Costa Rica, 2020). Following that, in 2021, Costa Rica released the "*Guía Paso a Paso para Facilitar la Transición hacia una Economía Circular desde los Gobiernos Locales*" (Step-by-Step Guide to Facilitate the Transition to a Circular Economy from Local Governments). This guide serves as a support document for the CE initiatives mentioned in the NDC 2020, discussing both the enablers and challenges of implementing CE at the local government level, and also act as a guideline for them (Mercado & Rivera, 2021).

In 2023, Costa Rica unveiled its National Circular Economy Strategy (Estrategia Nacional de Economía Circular - ENEC), aiming to bolster economic strength, competitiveness, and societal well-being through the circular utilization of resources essential to productive sectors (MINAE, 2023). The development of this national strategy involved extensive stakeholder engagement, with over 360 participants from the public and private sectors, academia, civil society organizations (CSOs), and non-governmental organizations (NGOs) contributing through workshops, interviews, and consultations (CTCN, 2023). The ENEC operates on three core principles: the elimination of waste and pollution, ensuring the continuous use of products, components, and materials, and rejuvenating the natural systems that are fundamental to both the economy and life (MINAE, 2023).

Community Based Organizations in Costa Rica

Community-Based Organizations (CBOs) in Costa Rica have been crucial in supporting sustainable development across the nation. Numerous studies highlight the critical contribution of CBOs in areas such as water management, addressing environmental issues, and promoting sustainable tourism. Particularly in Costa Rica and other nations within Latin America and the Caribbean, CBOs have emerged as vital contributors to water management, ensuring the provision of adequate water supplies to communities (Carpio et al., 2020). These organizations take on responsibilities including the operation, monitoring, and sustainable management of water resources. Within the tourism sector, CBOs are acknowledged for their essential role in sustainable practices. Their initiatives significantly benefit local communities and help alleviate the negative impacts of tourism (Matarrita-Cascante et al., 2010). Additionally, community-based approaches are recognized as strategic elements for environmental assessment within the country (Sinclair et al., 2009). Consequently, considering the varied and impactful roles of CBOs under different circumstances, this study aims to explore their involvement in the transition to CE.

3 Methodology

This section provides an overview of the research design and methodology employed in this study. It details the selection and description of the case study used, and further elaborates on the processes of data collection and data analysis. Additionally, this section discusses the limitations encountered during the research.

3.1 Research Design

The focus of this research is to study the role of CBOs in driving the CE transition in Monteverde, Costa Rica, which can ultimately serve as building blocks for a national-level CE transition. It aims to explore the dynamics between various stakeholders involved in the CE transition process. Conducted in the Monteverde area from February to April 2024, the study involved three months of fieldwork to collect vital information addressing the research objective. The adoption of a qualitative approach was deemed particularly apt for this study, as it aids in understanding complex social phenomena within their natural contexts (Snape & Spencer, 2003). Ritchie & Lewis (2003) have described qualitative research as a methodology centered on exploring and interpreting the significance and meanings individuals attach to their actions, decisions, beliefs, values, and more, within their societal contexts. Moreover, qualitative research methods excel in capturing and explaining phenomena as experienced by participants.

The research design incorporated multiple approaches, with the exploration of the case study as the first step. According to Lewis (2003), early comprehension of the study's context is vital for selecting appropriate cases and understanding each case's unique composition, including identifying key stakeholders and how these may differ from other cases. Case studies may involve individuals, social groups, organizations, or institutions (Flick, 2009) and are instrumental in providing context that facilitates access to data capable of addressing the main research question.

Data collection proceeded through semi-structured interviews with key stakeholders, supplemented by document analysis. The use of semi-structured interviews is preferred due to their ability to encourage respondents to express their perspectives more freely than more rigid formats (Flick, 2009), while still allowing for meaningful comparisons through the use of consistent questions across interviews (Panke, 2018). Document analysis served to triangulate the data derived from interviews by offering additional context, evidence, or viewpoints. Flick (2009) emphasizes the value of document examination as a complementary approach, particularly in conjunction with semi-structured interviews. This strategy involves

analyzing existing documents to either comprehend their direct content or reveal deeper meanings (Ritchie, 2003).

3.2 Case Study Selection

Monteverde, a city in Costa Rica, presents a compelling case study for this research due to the consistent involvement of its community in development efforts. Nadkarni and Wheelwright (2000) describe the region as home to a small community dedicated to sustainability and the preservation of their unique ecosystem. The strong sense of community in Monteverde stems from the shared values of interrelatedness of all life and living simply in harmony with nature (Nadkarni & Wheelwright, 2000).

Evidence of local community engagement dates back to artifacts from around 600 BC. The arrival of the Quaker community from the United States in 1951 further contributed to the area's economic growth. A significant instance of community involvement occurred in October 1988 during the seminar known as Monteverde 2020. This event saw extensive local participation, resulting in the development of a vision and strategies to transform Monteverde into a sustainable community over the next three decades (Monteverde Municipality, n.d.). Monteverde 2020 achieved several successes, including raising awareness about the importance of long-term planning, initiating a garbage collection program, and improving local education (Nadkarni & Wheelwright, 2000). This demonstrated how community involvement has shaped and developed the area.

Within Costa Rica, Monteverde is also considered a pioneer in environmental culture. From the earliest settlers to current residents, Monteverde's inhabitants have shown a diverse range of approaches to natural resource use (Nadkarni & Wheelwright, 2000). Today, the city has multiple community-based initiatives related to the circular economy, making it an ideal location to investigate the role of CBOs in the transition from a linear to a circular economy. Thus, the Monteverde region is deemed suitable for this study.

3.3 Data Collection

3.3.1 Semi-structured Interview

During the fieldwork period, semi-structured interviews were carried out. Initially, purposive sampling was employed to select the respondents, with the selection criteria based on specific traits or characteristics believed to yield insights relevant to the research objectives (Ritchie et al., 2003). This was then complemented by snowball sampling, a technique that involves asking initial participants to suggest additional individuals who meet the research criteria

(Ritchie et al., 2003). Following purposive sampling with snowball sampling can further enrich the research (Naderifar et al., 2017).

Respondents in this study were categorized into three distinct levels according to the Multi-Level Perspective (MLP) framework: regime, landscape, and niches. The regime includes the dominant institutions within the governance structure, exemplified in this context by the Monteverde municipality. Traditionally, the regime level includes various elements such as market dynamics, policies, cultural norms, and networks of actors. However, in this study, the regime level is represented by the local municipality because municipalities often act as key intermediaries that can influence broader regime elements through localized governance, policy-making, and the implementation of sustainability initiatives (Bulkeley & Betsill, 2005). Hence, focusing on the municipality provides a contextually relevant perspective to analyze regime-level dynamics in Monteverde. The landscape level encompasses external organizations that may influence both the regime and the niches. For this study, the niches refer to CBOs engaged in CE practices within their operations.

Invitations for interviews were dispatched through various platforms, including email, LinkedIn, or WhatsApp, targeting potential respondents. The majority of interviews were conducted face-to-face, which facilitated adaptability, interaction, and productivity in the interviews, thus enabling an in-depth exploration of meaning and language (Legard et al., 2003). Nonetheless, some interviews were conducted via Zoom for the convenience of the interviewees. The interviews took place between March and April. Although the interviews were primarily conducted in English, some were conducted using a mix of English and Spanish. The interview topics were divided into five different sub-topics: profiling, the organizations’ activities, stakeholders’ interactions, challenges, and a discussion about their expectations (see Appendix A for detailed interview questions).

Among the interviewees, one represented the regime, one represented the landscape, and the remainder were from the niche level. For the regime level, the perspectives of this level were enriched by various secondary data sources, including available policy reports and government documents. These sources were utilized to enhance the understanding of the current state of CE as perceived by the central government of Costa Rica. The profiles of respondents from both the regime and landscape levels are detailed in Table 2.

Table 2 Regime and Landscape Level Respondents' Profile

Level	Code	Organization
Regime	R1	Monteverde Municipality
Landscape	L1	Monteverde Community Fund
Total Number of Interviews		2

As for the niches level, it consisted of CBOs in Monteverde. The selection of CBOs was guided by the 9R framework outlined in the ENEC document by MINAE, where participation in one of the R behaviors qualified the CBOs as study respondents. Table 3 provides information about the niche level respondents. More detailed information about the interviews for these three levels can be found in Appendix B.

Table 3 Niche level (CBOs) Respondents' Profile

Level	Codes	CBOs Activities	R behaviors
Niches	Food1	Improves and educate about food security in the region	Reuse, recycle, recover
	Green1	Promotes conscious green actions through social currency	Reduce, reuse
	Textile1	Bartering and upcycling center, mainly working with textile	Reuse, repair, redesign
	Green2	Efforts to lower emissions and adapt to climate change	Refuse, reduce, reuse, redesign, recycle, recover
	Waste1	Solid and water waste management	Recycle, recover
	Edu1	Educational organization that integrates academic programs, research, and community initiatives to sustainably manage tourism	Refuse, reduce, reuse, recycle
Total Number of Interviews			6

In total, there were 8 interviews conducted for the study with respondents from the regime, landscape, and niche levels within the MLP framework. The interviews were primarily conducted in person, except for one that was held online via Zoom. For more detailed information about these interviews, please see Appendix A. In terms of data management, all interviews were recorded, with consent obtained either orally or in writing through email or WhatsApp.

3.4 Data Analysis

After collecting the data, the next step is its analysis. First, the interviews were transcribed by using Microsoft Word's transcription tool accompanied by manual review and adjustment to make sure the transcriptions are aligned with the recording (Panke, 2018). During the

transcription process, some of the Spanish words used in the interviews were translated to English.

In order to conduct a comprehensive analysis that encompasses all levels of investigation in the qualitative method, an extra tool or aid is essential (Spencer et al., 2003). In this study, the research employed NVivo, a qualitative data analysis software, to aid in this process. NVivo assisted in organizing the data by facilitating coding (Saldaña, 2015). The choice of NVivo for this research was based on its capability to manage and streamline the analysis of extensive and complex data sets. All the transcribed interviews from the three different levels were imported into NVivo for coding.

The data interpretation process commenced with open coding and gradually transitioned to selective coding as the analysis progresses as described in Flick (2009). Initially, in open coding, the goal is to conceptualize the data, where the data are segmented into preliminary categories. Following this, the focus shifts to grouping these categories based on insights gained from open coding. The final phase, selective coding, involves expanding and integrating these concepts in relation to other groups. This stage is crucial for identifying potential core concepts or variables that can help in answering the research's objective.

Data triangulation was also conducted, specifically the triangulation of sources. The use of different sources such as pictures, fieldwork notes, policy reports, and government documents helped in triangulating the research findings later on (Lewis & Ritchie, 2003).

3.5 Limitations and Ethical Considerations

In conducting this research, it is essential to acknowledge certain considerations and limitations that could potentially compromise the validity of the findings. Qualitative research, especially when utilizing semi-structured interviews, comes with its own constraints. The first one is the bias in sample composition for the interview due to the utilization of snowball sampling techniques. It is an useful approach for a small area of research like the Monteverde community, participants are derived from the existing ones. However, there is an evident risk that the diversity of the sample frame might be compromised (Ritchie et al., 2003). To address this issue, the researcher has different categories of respondents based on their levels according to the MLP framework. Moreover, the researcher also started with multiple initial participants who are not closely related, in the hope to reduce the possibility of bias by tapping into different networks from the get go.

The second limitation is posed by language barriers. The majority of the interviews were conducted in English, however there are some that used the mix between English and Spanish. As the researcher is not fluent in Spanish, assistance from an interpreter or translator was sought when interviewees prefer to communicate in Spanish. This situation may lead to certain disadvantages, such as missing nuances in the participants' speech patterns or word choices, which can provide valuable insights, particularly regarding emotions (Legard et al.,

2003). In order to address this, during the transcription phase, researcher worked with a native Spanish speaker to verify the translation.

The next limitation concerns the potential for bias from the researcher or the participants' side. Researcher bias could influence various stages of the research, including data collection, coding, and analysis, mainly if pre-existing beliefs and interpretations affect the research process (Oleinik et al., 2013). On the participants' side, bias may arise due to factors like their ability to recall and articulate experiences, their willingness to provide candid responses, or their understanding of the researcher's questions (Creswell, 2014). Therefore, it is of utmost importance for the researcher to avoid making assumptions, prematurely summarizing, or completing participant responses during interviews (Legard et al., 2003). Additionally, implementing data triangulation is essential. This involves linking various qualitative methods used in the study to reduce bias and enhance the validity of the findings (Flick, 2009).

4 Results and Discussion

This chapter presents the findings of the research, analyzing the responses to the first and second research questions. It begins with an overview of CE practices in the Monteverde community, addressing how CBOs interact with regime and landscape levels to facilitate the transition to CE practices, utilizing the MLP framework. Subsequently, the chapter discusses the challenges these CBOs face in conducting their activities, which addresses the second research question.

4.1 Overview of the CE Practices in Monteverde

In Monteverde, CE practices have begun to spread throughout the area, largely initiated by the CBOs and further supported by various stakeholders. This section reviews the diversity of CE initiatives in Monteverde, emphasizing practices identified through interviews with key local actors.

Interviews with stakeholders in the area unveiled a diverse range of CE practices implemented across various industries, including food, fashion, water, and construction waste. These initiatives demonstrate a proactive approach to transitioning from a linear to a circular economy, with practices ranging from simple to more complex ones. For example, in food waste management, Food1 and Waste1 have established composting facilities available to the community, additionally Green2 also takes part in educating residents about the composting process itself.

In the fashion sector, Textile1 addresses textile waste by promoting clothing swaps and upcycling, enabling community members to prolong the life of their garments by exchanging or updating them in workshops, see Figure 2. With regards to water, Waste1 also is currently in the work for building a water resources management facility, to give treatment to the used water to make it usable again by the community.

Furthermore, other CBOs such as Food1, Green2, and Edu1 have utilized locally available materials to construct their facilities, showcasing resource utilization see Figure 3. In the picture it shows the utilization of used materials from the surrounding area, for example, leftover or used wood were used in making the plants bed in Food1. Meanwhile, Green1 has focused on encouraging and incentivizing residents to participate in activities that promote these CE practices, supporting a gradual change in community behavior. These examples provide a snapshot of the CE practices currently observed in the Monteverde community.



Figure 2 & 3 Textile1's Poster (left) Food1 (right)

4.2 Community Based Organizations (CBOs) Enablers in Driving Circular Economy

At the niche level, CBOs in Monteverde significantly contribute as incubators of innovation, particularly in driving the transition from a linear to a circular economy.

The research method used in this study has identified several factors that act as enablers from the perspective of these CBOs. Identifying these enablers helps to understand the role of CBOs in driving the transition to CE and their interactions with other stakeholders, including those at the regime and landscape levels, as outlined in the Multi-Level Perspective (MLP) framework. By pinpointing the factors that facilitate the activities of the CBOs, this analysis aids in understanding the possible mechanisms through which niche level influence and/or interact with the other two levels. Three key enablers identified in this research facilitate the CBOs' role in transitioning from a linear to a circular economy in Monteverde. These enablers are a sense of community, meeting public demand, and engagement with multiple stakeholders.

4.2.1 Sense of Community

The sense of community or community engagement serves as the main driving force in facilitating the growth of CE in the Monteverde area from the CBOs' perspective. For the first

factor, a sense of community aligns with the findings from Karanasios & Parker (2018), who explained that empowered communities are the preferred mechanism to establish positive interactions within the MLP framework. The findings of this study highlight the significant impact that community dynamics have on the development of these organizations. All CBOs participating in the study noted the substantial influence of the previously mentioned factor.

Firstly, Green2 and Edu1, the two largest CBOs in terms of personnel, asserted that a crucial factor in the success of their activities is their community-oriented approach in Monteverde. Due to its paramount importance, Green2 even stated, "Community is really the key part, and one of the criteria for all of our projects is how these initiatives can build the community?" Additionally, Edu1 mentioned that replicating their model would be challenging or even difficult elsewhere due to variations in community engagement, a sentiment echoed by Food1. Furthermore, Food1 emphasized that the closer and tighter a community is, the greater the impact these organizations can have.

However, according to Food1 and Green1, the current sense of community in Monteverde is not as strong as it once was. Food1 suggested that the main reason for this is the fluctuating nature of the population in the area especially with Monteverde as a big tourist destination, while Green1 attributed it to personal changes, noting that people have now become more individualistic.

4.2.2 Meeting Public Demand

When niche innovations effectively meet public demands, they are more likely to be scaled up and potentially integrated into the existing regime. This alignment between niche outputs and consumer expectations can facilitate the shift of regimes towards new technological paths or practices, thus accelerating socio-technical transitions (Seyfang & Haxeltine, 2012).

The success of these CBOs in the region can also be attributed to their initiatives that address the people's anxieties or meet their needs. Consequently, the response to these efforts was predominantly positive among the local population. For example, CBOs Food1, Green1, and Textile1 were established in response to the pandemic that occurred in 2020-2021.

During that period, many people lost their jobs and had no income, particularly since Monteverde relies heavily on its tourism industry. These three CBOs were initially formed to help ease the community's difficulties. Food1 contributed by providing areas for those interested in planting their own food and also supplied harvested produce to those in need. This access to additional food aid was welcomed by the community during the challenging times of the pandemic. Green1 was initially set up to provide people with daily necessities without the need for physical money. These necessities were collected through collaborative efforts within the community. If people had extra food, leftovers, or other items they no longer needed, they could extend their usefulness by donating them or offering them on the Green1 platform, allowing others to obtain them without monetary exchange. Thus, people could allocate their funds to more urgent needs.

4.2.3 Engagement with Multiple Stakeholders

Managing good relationships and establishing engagement with multiple stakeholders play a vital role in amplifying the impact of these CBOs in the area. Furthermore, the identification of engagement with multiple stakeholders as a key factor highlights the importance of networking and building relationships for niche development within the MLP framework (Schot & Geels, 2008).

First, partnerships with local or national government agencies help these organizations to develop further. Some of these CBOs benefited from a smoother bureaucratic process, as experienced by Food1 and Waste1. Others received tangible support from the local municipality, as acknowledged by Food1, Textile1, and Waste1. As for Green2, they worked more closely with the local municipality compared to other CBOs, especially in the efforts to adapt to climate change in the region.

Engagement with universities is also deemed beneficial for these CBOs. Food1 received assistance from students to extend their reach to a wider community and also helped in identifying the needs of the people in the area. On the other hand, Edu1 collaborated with university partners to conduct research, mostly about sustainable development in the area. They also undertook research on economy and resource management with one of their university partners.

Furthermore, establishing a network with other external organizations is necessary, mostly to seek more opportunities for grants or access to additional funding to ensure the sustainability of their organizations. Given the nature of their organization, it is crucial for them to secure funding for their daily operations, enabling them to expand their initiatives on a wider scale. CBOs Green1, Green2, Waste1, and Edu1 resonated with this remark.

4.3 Community Based Organizations' (CBOs) Role in Transitioning toward Circular Economy through The Lens of MLP

Integrating these enabling factors into the MLP framework provides a comprehensive understanding of how CBOs can interact with and transform larger socio-technical systems. The interactions between the niche level and the other two levels will be elaborated further next.

4.3.1 CBOs and Regime Interaction

According to Gerli et al. (2024), there are five types of interactions between the niche and regime levels in the MLP framework: inertia, indirect support, antagonism, direct support, and active collaboration. Out of these, two types of interaction were not present in this research case, based on data collected from the interviews. The absent interactions are inertia and antagonism. Inertia is described as the regime actors avoiding taking any stance, whether supportive or opposing. The other interaction that did not manifest in this case is antagonism, which they defined as actions initiated by regime actors to obstruct the progress of the niche level. The interactions between the regime and niche levels that did occur in this case, as identified by Gerli et al. (2024), are indirect support, direct support, and active collaboration. The elaboration of each of these interactions will be explained in the following section.

Indirect support

In the indirect support interactions, the regime creates socio-technical conditions that benefit the niche level, even without explicitly intending to support them (Gerli et al., 2024). This study demonstrates that at the regime level, specifically, Monteverde's municipality, there is indirect support for the CBOs in their transition from a linear to a circular economy.

The municipality is open to discussions and inputs from the CBOs regarding initiatives in CE practices. Both Food1 and Green1 resonated with this sentiment; they mentioned the ease of contacting someone within the municipality. For instance, Food1 remarked, "If we want to get in contact with the municipality, it's easy because we know them." Similarly, Green1 noted, "We had a talk together with the mayor; the local government knows about us, they know we exist, but that's that." Currently, the regime welcomes the CBOs, although there are still uncertainties regarding whether the government can effectively assist or follow up on their inputs. The municipality also acknowledged this challenge, primarily due to the limited number of human resources available. Municipality argued, "We have so many things to do and want to do a lot of things, but we have limited human resources, so we cannot do everything."

On the other hand, Edu1 had a different experience with the indirect support shown by the regime level. The municipality acted as a bridge between the CBOs and government bodies at the national level. Currently, the local municipality cannot provide any material or financial assistance to Edu1 in amplifying their initiatives. However, they connected this CBO with a government body that provided them with the latest technological equipment. This support aids the organization in developing their innovations to enhance their efforts not only in promoting CE practices but also in supporting general sustainability transition efforts.

Direct support

The other interactions between the niche and regime levels identified in this study include direct support. Gerli et al. (2024) explained that direct support can be observed through various deliberate actions undertaken by regime actors to actively promote the niche levels. These efforts include raising awareness, providing financial support, adopting grassroots innovations, and offering political support.

For example, CBOs Food1 and Textile1 were provided spaces by the local government to conduct their daily activities. Food1 was granted access to utilize an underutilized open area and transform it into a productive space that produces food, serves as a composting area, and acts as a gathering spot for the surrounding community. Meanwhile, Textile1 was lent an empty building owned by the municipality to establish their bartering station and upcycling workshop. As a result, the community has places to engage in and support CE practices.

As for Waste1, they received a different type of direct support from the regime: financial assistance. Waste1 is currently in the process of constructing a larger solid and water waste management facility to serve the Monteverde area and, therefore, required a larger area. To facilitate this, Waste1 collaborated with the local municipality and a regional enterprise. In this case, the Monteverde municipality contributed a significant amount of money to purchase part of the required land. Waste1 elaborated, "If we're all going to have to invest in infrastructure, we're going to buy land, develop plans, conduct all environmental impact studies, and so on. The municipality bought their portion of the land and we're now going to continue to the next process."

From the regime level's perspective, they perceived the money spent on purchasing the land as an investment for the future, benefiting the community and the environment. "We are currently making a base, and we are making this base very strong. This is necessary in order to have a sustainable environment and save the earth," explained by the Municipality. Therefore, with the municipality's financial support in purchasing the land, Waste1 now possesses the necessary area to continue the development of the solid and water waste management facility.

Active collaboration

The next identified interaction between these two levels in the study is active collaboration. This particular interaction occurs when the regime level engages actively in the various stages of niche development, going beyond merely providing external support (Gerli et al., 2024). The Monteverde municipality collaborates extensively with Green2 and Edu1. For instance, Green2 and the municipality hold regular meetings to discuss ongoing initiatives and plan future activities. In these meetings, they co-create potential initiatives deemed suitable for the community. Specifically, in terms of CE practices, the CBO Green2 and the local municipality have collaborated in constructing recycling and waste collection facilities around the Monteverde area and its surroundings.

As for Edu1, they have worked together with the regime to organize an event that brought together representatives from the municipality, the CBOs, other related stakeholders, and the community. The objective of the event was to identify current challenges, address people's anxieties, and explore possible solutions to the identified obstacles. The active collaboration from the regime also aids these CBOs in navigating the bureaucracy more smoothly. This benefit of partnership with the municipality was also echoed by Food1, who highlighted the advantages of such cooperation.

4.3.2 CBOs and Landscape Interaction

At the landscape level, broader external factors that are beyond the influence of actors at the niche and regime levels are considered. The influence of CBOs spans environmental, economic, and social dimensions, representing broader societal changes potentially driven by niche innovations (Geels, 2005). These organizations help shift societal perceptions and priorities, modifying norms and possibly influencing the landscape. Over time, these influences have the potential to transform societal norms and the overarching political-economic context, thus redefining the landscape.

For example, CBOs actively participate in educating and raising awareness about CE practices in the community. They facilitate this through workshops or community meetings, sharing knowledge about CE, which can gradually change community behaviors and attitudes toward sustainability. Food1 has conducted several classes with a nearby school on garden composting and is now working to make this a regular activity. "Before, like every week we go and give them classes, other times it's been once a month, other times it has stopped. We're hoping this year will start a little bit more, at least like we want to focus on composting for example. So we'll create a lesson plan and we'll try to give at least one workshop to every grade." Green1 also raises awareness but uses a different approach. They encourage people to adopt a more sustainable lifestyle by offering incentives. "People can bring second-hand stuff if you want to, to the market, which is part of the circular economy, and then they can get the social currency in exchange."

Green2 also provides several different resources, from posters to manuals and guidelines that can be easily accessed to educate the community. Regarding CE, they have placed manuals for home composting and information on waste disposal around the Monteverde and Santa Elena area. These initiatives demonstrate how CBOs are essential in driving sustainability transitions by influencing community engagement and education which then influence the broader landscape.

Drawing from the interactions of CBOs at every level within the Multi-Level Perspective framework, the table below summarizes the diverse roles these organizations play in facilitating the transition to CE practices. See Table 4 for a detailed overview.

Table 4 Summary of CBOs' Influence on Circular Economy Practices by MLP Scale and Type of Support

MLP Scale	Type of Interaction / Support	Description of Findings
Niche	Innovation and Community Involvement	CBOs have served as incubators for innovative approaches to circular economy practices that significantly depend on community involvement and are tailored to meet their specific needs.
Regime	Support and Partnership	CBOs have partnered with local municipalities to advance their missions, significantly enhancing their

		impact on the community through diverse support ranging from moral and monetary assistance to active collaboration.
Landscape	Cultural and Educational Impact	CBOs actively participated in education and awareness raising in CE practices, changing community attitudes towards sustainability.

4.4 Challenges Faced by Community Based Organizations (CBOs)

In facilitating the transition to CE, CBOs were faced with a unique set of challenges. Through the set of interviews, this study has uncovered several barriers that potentially hinder these organizations' ability to expand their operations effectively. These challenges include limitations in human resources, financial constraints, institutional barriers, and the impacts of overtourism. Each of these factors plays a significant role in shaping the operational capabilities of CBOs in transitioning to a CE within the community.

4.4.1 Human Resources

The research findings highlight that human resources are an important yet often scarce asset for Community-Based Organizations (CBOs). The interviews reveal that CBOs like Food1 and Green1 typically operate with minimal staff, heavily relying on volunteers to manage and run their initiatives. This reliance on volunteers presents significant challenges, as volunteer availability can be inconsistent—some days there are enough volunteers, while on others, none are available. This inconsistency poses a threat to the sustainability of these organizations.

For instance, a representative from Green1 expressed concerns about the future sustainability of their organization, noting the fluctuating nature of volunteers: "I'm not sure about the next few years or the future of this organization, I had volunteers, but they come and go. A lot of the time they cannot commit, like really commit to the project, so it's a challenge to make it into a sustainable project." Similarly, Food1 faces challenges in cultivating a committed volunteer group: "Since this work involves volunteers, like creating a group that is constant, it's very difficult to develop this project. I mean, everyone has their own lives. This garden is a space that, I mean, benefits them in many ways, but not necessarily like it's something that they need."

Moreover, the demanding nature of the work, combined with potentially inadequate compensation due to budget constraints, complicates the attraction of human capital. Green2 highlights these challenges: "Some of our staff even work on the weekend, and we have to make sure they do not get burned out. And how do we do that? We have to have a better

system to attract extra people and then have a better job distribution or transition from the current one to the new one."

The scarcity of human resources not only affects the operational capacity of CBOs but also their ability to innovate and adapt to changing environmental and economic conditions. The challenge of effectively managing and expanding projects restricts the scope and impact of their activities. As these organizations aim to facilitate a transition to circular economy practices, the strain on human resources needs strategic planning and innovative solutions to attract and maintain a dedicated workforce.

4.4.2 Monetary Resources

Monetary resources present a significant challenge for CBOs in Monteverde, as revealed by the interviews. Financial constraints significantly hinder both the initiation of new projects and the sustainability of ongoing ones. Textile1's representative underscored the impact of financial issues, stating, "One of the biggest challenges throughout the time I've been running this organization is money problems. If we have access to the money, it'd make things easier, especially for the women workers that are involved here." Green1 also shared the sentiment with the impact of financial matters towards the worker for the organization "When I first joined the organization, there was no money to support the organization, so I had to look for grants. When I got the grant, I put the money into which aspects that might help the project. I used to pay some extra money to help the organization at the beginning, but now I don't have the budget to do that."

Waste1 also emphasized the difficulty of scaling operations due to financial limitations, explaining, "Our weight that I get a lot is that, how do you leverage that a little bit amount of money to get larger investments for the scale that's really necessary, right? Especially for a big project, we have to be able to leverage the limited resources that we have to attract more investment for the future stage of the project."

The interviews indicate that the scarcity of funds restricts CBOs' ability to invest in crucial areas such as infrastructure, technology upgrades, and skilled personnel. These investments are essential for the development and maintenance of the organizations' sustainability over time. The financial challenges not only impact the immediate operational capabilities of these organizations but also their long-term viability and ability to effectively contribute to the transition to CE.

4.4.3 Institutional Barriers

CBOs in Monteverde face significant institutional barriers that challenge their ability to scale and sustain their operations. Green2 highlights a pivotal transition issue, noting the need to shift from donor-based funding to operating as social enterprises. They expressed, "One of the challenges that we currently have is to make this transition from being donor-based to being

social enterprises and that most of us are not business people and we need to learn the business skills, we need to learn more about social entrepreneurship." This indicates a crucial need for organizational transformation, emphasizing that sustainability requires not only external funding but also internal revenue generation. Moreover, transitioning from the current organizational model to a new type presents a considerable challenge, as it involves acquiring new skills and changing operational mindsets, which are substantial hurdles for them.

Waste1 also discussed limitations specific to community-based organizations, such as strict mandates and operational boundaries, stating, "The challenge is the natural jurisdictions we have as community-based organizations. We have to follow a certain mandate, and also have limitations in the area where we work." This underscores the regulatory and geographical constraints that limit their operational scope and influence where they can effectively engage in the value chain.

4.4.4 Overtourism and Its Impact

Overtourism poses a significant and unique challenge for CBOs in Monteverde, particularly due to the area's popularity as a tourist destination. Although tourism provides economic benefits, it also risks significant environmental degradation, complicating the implementation of sustainable practices in the region. A previous study in the early 2000s by Cavanagh (2005) already noticed the dangerous of overtourism, which can lead to the damage of the land and the safety of the wildlife, if the number of tourists can not be controlled. A representative from Green2 noted the disparity in waste management practices between residents and visitors: "I think that many local residents are really quite good about separating their waste and are really good at having water bottles and just not generating too much waste. And there are hotels or AirBnBs that don't know how to manage their clients and inform them. In the low season, it's not a problem. But during the high season, our waste disposal is just overflowing with garbage."

This sentiment was echoed by a representative from the Monteverde Institute, who highlighted difficulties in communicating sustainable practices to tourists: "For the people that live in the area, they already know how to do, let's say composting and separate their waste, but for tourists that come and go, it's hard to communicate with them." These statements underscore the challenges CBOs face in managing the environmental impacts of seasonal tourism.

In conclusion, these findings highlight the CBOs' mechanisms and roles in which they influence in the transition from linear economy to CE. Furthermore, the study also defined the different interactions between levels involved in the MLP framework. Additionally, the challenges these CBOs encountered were also elaborated in the study. The obstacles these CBOs face including regards of human resources, monetary resources, institutional barriers, and overtourism and its impact.

5 Conclusion

The aim of this research was to understand the role of CBOs in Monteverde, Costa Rica, in facilitating the transition from a linear to a circular economy. The study focused on the influence of CBOs on other stakeholders involved in this process by utilizing the MLP framework. This framework helps analyze the relationships between CBOs, the local government in Monteverde (the regime), and the broader market landscapes. The objectives of this research were twofold: first, to grasp the role of CBOs on the regime and landscape in the transition to CE; and second, to identify the challenges these CBOs face in facilitating the adoption of CE practices. To address the research questions, a qualitative research approach was employed, involving semi-structured interviews with relevant stakeholders in the Monteverde region.

The study revealed key enablers that are critical for CBOs in promoting CE practices. These enablers include a strong sense of community, the ability to meet local demands, and active engagement with multiple stakeholders. From the CBOs' perspectives, these factors help cultivate an environment that is suitable for introducing niche innovations, such as CE practices, to a broader audience. This influence extends beyond the niche level to impact both the regime and the landscape. Additionally, the study highlighted the interactions between CBOs and the regime level, which center around support and partnership. These interactions encompass various forms of support, including indirect support such as moral encouragement, direct support such as financial aid, and active collaboration. In terms of influence on the landscape, CBOs play a significant role in promoting education and raising awareness about CE practices in the region.

However, CBOs also face several challenges in this process. These challenges include limitations in human resources, financial difficulties, institutional barriers, and obstacles related to tourism and its impact on the Monteverde region. These challenges can hinder the ability of these organizations to effectively expand their operations. Therefore, it is crucial to identify and address these challenges to support the development of CBOs in facilitating the transition to a circular economy.

The findings of this study provide valuable insights into the mechanisms through which CBOs can drive the adoption of CE practices. By identifying key enablers, challenges, and also their interaction with the other stakeholders, this research offers an understanding that can inform policymakers, national or local level of government, and also other CBOs. The implications of this study can aid in the development of targeted strategies to support CBOs, enhance their effectiveness, and ultimately contribute to the transition to CE.

In conclusion, this research underscores the important role of CBOs in driving the transition to a circular economy in Monteverde, Costa Rica. By leveraging community engagement, meeting local demands, and nurturing multi-stakeholder partnerships, CBOs can significantly influence both the regime and the broader market landscape. However, addressing the identified challenges is essential for these organizations to maximize their impact.

While this study provides valuable insights into the role of CBOs in facilitating the transition to a CE in Monteverde, Costa Rica, several avenues for future research remain. These potential research directions can build on the findings of this thesis and further contribute to the understanding and advancement of CE practices. One key area for future research is the development of specific strategies to overcome the challenges identified in this study. Given the limitations in human resources, financial difficulties, institutional barriers, and the impact of tourism on the Monteverde region, future research could focus on formulating targeted interventions to address these issues. Investigating effective methods to overcome these hurdles could provide practical solutions to support the growth and effectiveness of these organizations.

This study could be improved by investigating all aspects included in the regime level. Due to the limitations of the current study, which only covered the perspective of the local municipality, a more comprehensive study that also examines markets, policies, various actors, and cultures would be highly beneficial. Such an approach would provide a more complete understanding of CBOs' roles in the transition to a circular economy.

Another promising direction for future research is to examine the role of policy and regulatory frameworks in promoting CE practices. Costa Rica has set ambitious targets for sustainable development, and understanding how these policies influence the operations of CBOs could offer critical insights. Future studies could analyze the effectiveness of existing policies, identify gaps, and propose enhancements that align with the country's sustainability goals. Additionally, future research could investigate the broader implications of CBO-driven CE initiatives on the community and the environment.

In conclusion, there are numerous opportunities for future research to build upon the findings of this study. By developing specific strategies to address challenges, investigating the role of policy frameworks, and or assessing long-term impacts, researchers can significantly advance the understanding and implementation of CE practices through CBOs.

References

- Alrashoud, K. A. & Alrashoud, K. A. (2020). Multi-Level Perspective of Technological Transitions: Analysis of the Residential Solar Photovoltaic Systems Policies in Hydrocarbon-Rich Saudi Arabia, *Managing technology transition in Saudi Arabia: Residential solar photovoltaic systems development*, pp.107–162
- Anselmi, S. & Vignola, R. (2022). Participatory Certifications for the Sustainability Transition of Food Systems in Costa Rica: Barriers and Opportunities for Scaling Out, *Agroecology and sustainable food systems*, vol. 46, no. 2, pp.273–293
- Awan, U. & Sroufe, R. (2022). Sustainability in the Circular Economy: Insights and Dynamics of Designing Circular Business Models, *Applied Sciences*
- Banioniene, J., Dagilene, L., Donadelli, M., Grüning, P., Jüppner, M., Kizyse, R. & Lessmann, K. (2021). The Quadrilemma of a Small Open Circular Economy Through a Prism of the 9R Strategies
- Belaïd, F. & Al-Sarihi, A. (2024). Saudi Arabia Energy Transition in a Post-Paris Agreement Era: An Analysis with a Multi-Level Perspective Approach, *Research in International Business and Finance*, vol. 67, p.102086
- Berkhout, F., Smith, A. & Stirling, A. (2004). Socio-Technological Regimes and Transition Contexts, *System innovation and the transition to sustainability: Theory, evidence and policy*, vol. 44, no. 106, pp.48–75
- Bradley, K. & Persson, O. (2022). Community Repair in the Circular Economy—Fixing More than Stuff, *Local Environment*, vol. 27, no. 10–11, pp.1321–1337
- Brunet, C., Savadogo, O., Baptiste, P., Bouchard, M. A., Cholez, C., Gendron, C. & Merveille, N. (2021). The Three Paradoxes of the Energy Transition-Assessing Sustainability of Large-Scale Solar Photovoltaic through Multi-Level and Multi-Scalar Perspective in Rwanda, *Journal of Cleaner Production*, vol. 288, p.125519
- Bulkeley, H. & Betsill, M. (2005). Rethinking Sustainable Cities: Multilevel Governance and the 'urban' politics of Climate Change, *Environmental politics*, vol. 14, no. 1, pp.42–63
- CCAC Secretariat. (2023). Waste Management Offers Social and Environmental Benefits in Costa Rica., Available Online: <https://www.circularinnovationlab.com/post/costa-rica-sustainability-efforts-towards-a-circular-economy-recent-developments>
- Celata, F., Dinnie, L. & Holsten, A. (2019). Sustainability Transitions to Low-Carbon Societies: Insights from European Community-Based Initiatives, *Regional Environmental Change*
- Celata, F. & Sanna, V. S. (2019). A Multi-Dimensional Assessment of the Environmental and Socioeconomic Performance of Community-Based Sustainability Initiatives in Europe, *Regional environmental change*, vol. 19, pp.939–952
- Chandrashekeran, S. (2016). Multidimensionality and the Multilevel Perspective: Territory, Scale, and Networks in a Failed Demand-Side Energy Transition in Australia, *Environment and Planning a*, vol. 48, no. 8, pp.1636–1656
- Cheng, C. S. W. (2023). Does Time Matter? A Multi-Level Assessment of Delayed Energy Transitions and Hydrogen Pathways in Norway, *Energy Research & Social Science*, vol. 100, p.103069
- Cheung, M. (2020). The Potential and Challenges of Solar Photovoltaic in Norway-A Multi-Level Perspective Study on the Transition of Electricity Production Market in Norway, Master's Thesis
- Circle Economy. (2023a). Circularity Gap Report Latin America and the Caribbean., Available Online: circularity-gap.world/lac
- Circle Economy. (2023b). The Circularity Gap Report 2023

- Circular Economy Coalition. (2022). Circular Economy in Latin America and the Caribbean: A Shared Vision
- Coenen, L., Benneworth, P. & Truffer, B. (2012). Toward a Spatial Perspective on Sustainability Transitions, *Research policy*, vol. 41, no. 6, pp.968–979
- Creswell, J. W. & Creswell, J. D. (2017). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, Sage publications
- CTCN. (2021). Supporting the Transition to a Circular Economy in Costa Rica | Climate Technology Centre & Network, Available Online: <https://www.ctc-n.org/technical-assistance/projects/supporting-transition-circular-economy-costa-rica>
- CTCN. (2023). Launching the National Circular Economy Strategy for Costa Rica, Available Online: <https://www.ctc-n.org/calendar/events/launching-national-circular-economy-strategy-costa-rica>
- Damman, S., Sandberg, E., Rosenberg, E., Piscicella, P. & Graabak, I. (2021). A Hybrid Perspective on Energy Transition Pathways: Is Hydrogen the Key for Norway?, *Energy Research & Social Science*, vol. 78, p.102116
- Datta, D. (2007). Sustainability of Community-Based Organizations of the Rural Poor: Learning from Concern's Rural Development Projects, Bangladesh, *Community Development Journal*, vol. 42, no. 1, pp.47–62
- de Costa Rica, G. (2020). Contribución Nacionalmente Determinada 2020
- De Keyser, E. & Mathijs, E. (2023). A Typology of Sustainable Circular Business Models with Applications in the Bioeconomy, *Frontiers in Sustainable Food Systems*, vol. 6, p.1028877
- de Melo, T. A., de Oliveira, M. A., de Sousa, S. R., Vieira, R. K. & Amaral, T. S. (2022). Circular Economy Public Policies: A Systematic Literature Review, *Procedia Computer Science*, vol. 204, pp.652–662
- Dey, P., Malesios, C., De, D., Budhwar, P., Chowdhury, S. & Cheffi, W. (2020). Circular Economy to Enhance Sustainability of Small and Medium-sized Enterprises, *Business Strategy and the Environment*
- Directive, E. & others. (2008). Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on Waste and Repealing Certain Directives, *Official Journal of the European Union L*, vol. 312, no. 3, p.22
- El Bilali, H. (2019). The Multi-Level Perspective in Research on Sustainability Transitions in Agriculture and Food Systems: A Systematic Review, *Agriculture*, vol. 9, no. 4, p.74
- EMF. (2013a). Towards the Circular Economy, *Journal of Industrial Ecology*, vol. 2, no. 1, pp.23–44
- EMF. (2013b). Towards the Circular Economy, *Journal of Industrial Ecology*, vol. 2, no. 1, pp.23–44
- Finn, J., Barrie, J., João, E. & Zawdie, G. (2020). A Multilevel Perspective of Transition to a Circular Economy with Particular Reference to a Community Renewable Energy Niche, *International Journal of technology management & sustainable development*, vol. 19, no. 2, pp.195–220
- Flick, U. (2009). An Introduction to Qualitative Research, 4th edn, London: Sage.
- Garg, A. (2023). 8 Tips For Effective Waste Management in Costa Rica. The Tico Times, Available Online: <https://ticotimes.net/2023/05/25/8-tips-for-effective-waste-management-in-costa-rica#:~:text=May%2025%2C%202023>
- Geels, F. (2012). A Socio-Technical Analysis of Low-Carbon Transitions: Introducing the Multi-Level Perspective into Transport Studies, *Journal of Transport Geography*, vol. 24, pp.471–482

- Geels, F. W. (2002). Technological Transitions as Evolutionary Reconfiguration Processes: A Multi-Level Perspective and a Case-Study, *Research policy*, vol. 31, no. 8–9, pp.1257–1274
- Geels, F. W. (2010). Ontologies, Socio-Technical Transitions (to Sustainability), and the Multi-Level Perspective, *Research policy*, vol. 39, no. 4, pp.495–510
- Geels, F. W. (2011). The Multi-Level Perspective on Sustainability Transitions: Responses to Seven Criticisms, *Environmental innovation and societal transitions*, vol. 1, no. 1, pp.24–40
- Geels, F. W. & Schot, J. (2007). Typology of Sociotechnical Transition Pathways, *Research policy*, vol. 36, no. 3, pp.399–417
- Geissdoerfer, M., Savaget, P., Bocken, N. & Hultink, E. (2017). The Circular Economy-A New Sustainability Paradigm? *Journal of Cleaner Production*
- Genus, A. & Coles, A.-M. (2008). Rethinking the Multi-Level Perspective of Technological Transitions, *Research policy*, vol. 37, no. 9, pp.1436–1445
- Gerli, P., Mora, L., Zhang, J. & Sancino, A. (2024). Friends or Enemies? Unraveling Niche-Regime Interactions in Grassroots Digital Innovations, *Technological Forecasting and Social Change*, vol. 202, p.123342
- Ghisellini, P., Cialani, C. & Ulgiati, S. (2016a). A Review on Circular Economy: The Expected Transition to a Balanced Interplay of Environmental and Economic Systems, *Journal of Cleaner production*, vol. 114, pp.11–32
- Ghisellini, P., Cialani, C. & Ulgiati, S. (2016b). A Review on Circular Economy: The Expected Transition to a Balanced Interplay of Environmental and Economic Systems, *Journal of Cleaner production*, vol. 114, pp.11–32
- Grin, J., Rotmans, J. & Schot, J. (2010). Transitions to Sustainable Development: New Directions in the Study of Long Term Transformative Change, Routledge
- Gutberlet, J., Carenzo, S., Kain, J.-H. & Mantovani Martiniano de Azevedo, A. (2017). Waste Picker Organizations and Their Contribution to the Circular Economy: Two Case Studies from a Global South Perspective, *Resources*, vol. 6, no. 4, p.52
- Haupt, M. & Hellweg, S. (2019). Measuring the Environmental Sustainability of a Circular Economy, *Environmental and Sustainability Indicators*
- HCH. (2021). Waste Management in the LATAM Region: Business Opportunities for the Netherlands in Waste/Circular Economy Sector in Eight Countries of Latin America.
- Hidayat, D. & Stoecker, R. (2018). Community-Based Organizations and Environmentalism: How Much Impact Can Small, Community-Based Organizations Working on Environmental Issues Have?, *Journal of Environmental Studies and Sciences*, vol. 8, no. 4, pp.395–406
- Hölsgens, R., Lübke, S. & Hasselkuß, M. (2018). Social Innovations in the German Energy Transition: An Attempt to Use the Heuristics of the Multi-Level Perspective of Transitions to Analyze the Diffusion Process of Social Innovations, *Energy, Sustainability and Society*, vol. 8, pp.1–13
- Holtz, G., Brugnach, M. & Pahl-Wostl, C. (2008). Specifying “Regime”—A Framework for Defining and Describing Regimes in Transition Research, *Technological forecasting and social change*, vol. 75, no. 5, pp.623–643
- Hu, J., Xiao, Z., Zhou, R., Deng, W., Wang, M. & Ma, S. (2011). Ecological Utilization of Leather Tannery Waste with Circular Economy Model, *Journal of Cleaner Production*, vol. 19, no. 2–3, pp.221–228
- Hulme, D. (2013). Making a Difference: NGO’s and Development in a Changing World, Routledge
- Hunger, T., Arnold, M. & Ulber, M. (2024). Circular Value Chain Blind Spot—A Scoping Review of the 9R Framework in Consumption, *Journal of Cleaner Production*, p.140853

- Johnstone, P. & Newell, P. (2017). Sustainability Transitions and the State, *Environmental Innovation and Societal Transitions*
- Jurgilevich, A., Birge, T., Kentala-Lehtonen, J., Korhonen-Kurki, K., Pietikäinen, J., Saikku, L. & Schösler, H. (2016). Transition towards Circular Economy in the Food System, *Sustainability*, vol. 8, no. 1, p.69
- Karanasios, K. & Parker, P. (2018). Tracking the Transition to Renewable Electricity in Remote Indigenous Communities in Canada, *Energy policy*, vol. 118, pp.169–181
- Kaweesa, S. H., Bilali, H. E. & Loiskandl, W. (2021). Analysing the Socio-Technical Transition to Conservation Agriculture in Uganda through the Lens of the Multi-Level Perspective, *Environment, Development and Sustainability*, vol. 23, no. 5, pp.7606–7626
- Kellogg, W. A. (1999). Community-Based Organizations and Neighbourhood Environmental Problem Solving: A Framework for Adoption of Information Technologies, *Journal of Environmental Planning and Management*, vol. 42, no. 4, pp.445–469
- Kemp, R., Schot, J. & Hoogma, R. (1998). Regime Shifts to Sustainability through Processes of Niche Formation: The Approach of Strategic Niche Management, *Technology analysis & strategic management*, vol. 10, no. 2, pp.175–198
- Kerschner, C. (2010). Economic De-Growth vs. Steady-State Economy, *Journal of cleaner production*, vol. 18, no. 6, pp.544–551
- Khanal, U., Wilson, C., Hoang, V.-N. & Lee, B. (2019). Impact of Community-Based Organizations on Climate Change Adaptation in Agriculture: Empirical Evidence from Nepal, *Environment, Development and Sustainability*, vol. 21, pp.621–635
- Khaw-ngern, K., Peuchthonglang, P., Klomkul, L. & Khaw-ngern, C. (2021). The 9Rs Strategies for the Circular Economy 3.0, *Psychol. Educ. J*, vol. 58, pp.1440–1446
- Kirchherr, J., Reike, D. & Hekkert, M. (2017). Conceptualizing the Circular Economy: An Analysis of 114 Definitions, *Resources, conservation and recycling*, vol. 127, pp.221–232
- Köhler, J., Whitmarsh, L., Nykvist, B., Schilperoord, M., Bergman, N. & Haxeltine, A. (2009). A Transitions Model for Sustainable Mobility, *Ecological economics*, vol. 68, no. 12, pp.2985–2995
- Köhler, J., Wietschel, M., Whitmarsh, L., Keles, D. & Schade, W. (2010). Infrastructure Investment for a Transition to Hydrogen Automobiles, *Technological Forecasting and Social Change*, vol. 77, no. 8, pp.1237–1248
- Korhonen, J., Honkasalo, A. & Seppälä, J. (2018). Circular Economy: The Concept and Its Limitations, *Ecological economics*, vol. 143, pp.37–46
- Legard, R., Keegan, J. & Ward, K. (2003). In-Depth Interviews, *Qualitative research practice: A guide for social science students and researchers*, vol. 6, no. 1, pp.138–169
- Lewis, J. (2003). Design Issues, in *QUALITATIVE RESEARCH PRACTICE A Guide for Social Science Students and Researchers*, SAGE Publications Ltd
- Lewis, J. & Ritchie, J. (2003). Generalising from Qualitative Research, in *QUALITATIVE RESEARCH PRACTICE A Guide for Social Science Students and Researchers*, SAGE Publications
- LITTLE, M. E. (2017). Innovative Recycling Solutions to Waste Management Challenges in Costa Rican Tourism Communities., *JETA: Journal of Environmental & Tourism Analyses*, vol. 5, no. 1
- Lüdeke-Freund, F., Gold, S. & Bocken, N. M. (2019). A Review and Typology of Circular Economy Business Model Patterns, *Journal of Industrial Ecology*, vol. 23, no. 1, pp.36–61
- Markard, J., Geels, F. & Raven, R. (2020). Challenges in the Acceleration of Sustainability Transitions, *Environmental Research Letters*, vol. 15

- Markard, J. & Truffer, B. (2008). Technological Innovation Systems and the Multi-Level Perspective: Towards an Integrated Framework, *Research Policy*, vol. 37, no. 4, pp.596–615
- Marquardt, J. (2016). How Power Shapes Energy Transitions in Southeast Asia: A Complex Governance Challenge, Routledge
- Matarrita-Cascante, D., Brennan, M. A. & Luloff, A. (2010). Community Agency and Sustainable Tourism Development: The Case of La Fortuna, Costa Rica, *Journal of sustainable tourism*, vol. 18, no. 6, pp.735–756
- Mathur, D., Gregory, R. & Imran, M. (2022). Transitioning towards a Circular Economy Solar Energy System in Northern Australia: Insights from a Multi-Level Perspective, *Australian Planner*, vol. 58, no. 3–4, pp.115–122
- Mercado, L. & Rivera, D. (2021). Guía Paso a Paso Para Facilitar La Transición Hacia Una Economía Circular Desde Los Gobiernos Locales: Caso de Costa Rica, *Serie Técnica. Manual Técnico*
- Miemczyk, J., Carbone, V. & Howard, M. (2022). Learning to Implement the Circular Economy in the Agri-Food Sector: A Multilevel Perspective, in *Circular Economy Supply Chains: From Chains to Systems*, Emerald Publishing Limited, pp.283–301
- MINAE. (2020). Contribución Nacionalmente Determinada de Costa Rica 2020
- MINAE. (2023). Estrategia Nacional de Economía Circular.
- Monteverde Municipality. (n.d.). Historia, Available Online: <https://monteverde.go.cr/index.php/mn-conozcanos/mi-distrito/mn-historiacanton.html>
- Mori, A. & Le, D. (2017). Multi-Level Analysis of Sustainable Energy Transition in Kenya: Role of Exogenous Actors, *International Journal of Energy Economics and Policy*, vol. 7, no. 5, pp.111–122
- Moser, R., Xia-Bauer, C., Thema, J. & Vondung, F. (2021). Solar Prosumers in the German Energy Transition: A Multi-Level Perspective Analysis of the German ‘Mieterstrom’ Model, *Energies*, vol. 14, no. 4, p.1188
- Murray, A., Skene, K. & Haynes, K. (2017). The Circular Economy: An Interdisciplinary Exploration of the Concept and Application in a Global Context, *Journal of business ethics*, vol. 140, pp.369–380
- Murray, A., Skene, K. R. & Haynes, K. (2015). The Circular Economy: An Interdisciplinary Exploration of the Concept and Application in a Global Context, *Journal of Business Ethics*, vol. 140, pp.369–380
- Naderifar, M., Goli, H. & Ghaljaei, F. (2017). Snowball Sampling: A Purposeful Method of Sampling in Qualitative Research, *Strides in Development of Medical Education*, vol. In Press
- Nadkarni, N. M. & Wheelwright, N. T. (2000). Monteverde: Ecology and Conservation of a Tropical Cloud Forest, Oxford University Press
- Naranjo, J. I. C. & Forero-Cantor, G. (2023). Socio-Technical Transition in the Palm Oil Sector: Analysis from a Multilevel Perspective in Colombia’s Municipality of Tibú, *Revista de Economía e Sociología Rural*, vol. 62, p.e271345
- Negrete-Cardoso, M., Rosano-Ortega, G., Álvarez-Aros, E. L., Tavera-Cortés, M. E., Vega-Lebrún, C. A. & Sánchez-Ruíz, F. J. (2022). Circular Economy Strategy and Waste Management: A Bibliometric Analysis in Its Contribution to Sustainable Development, toward a Post-COVID-19 Era, *Environmental Science and Pollution Research*, vol. 29, no. 41, pp.61729–61746
- Nikas, A., Neofytou, H., Karamaneas, A., Koasidis, K. & Psarras, J. (2020). Sustainable and Socially Just Transition to a Post-Lignite Era in Greece: A Multi-Level Perspective, *Energy Sources, Part B: Economics, Planning, and Policy*, vol. 15, no. 10–12, pp.513–544

- Nykvist, B. & Whitmarsh, L. (2008). A Multi-Level Analysis of Sustainable Mobility Transitions: Niche Development in the UK and Sweden, *Technological forecasting and social change*, vol. 75, no. 9, pp.1373–1387
- Ockwell, D., Byrne, R., Hansen, U. E., Haselip, J. & Nygaard, I. (2018). The Uptake and Diffusion of Solar Power in Africa: Socio-Cultural and Political Insights on a Rapidly Emerging Socio-Technical Transition, *Energy research & social science*, vol. 44, pp.122–129
- Oleinik, A., Popova, I., Kirdina, S. & Shatalova, T. (2014). On the Choice of Measures of Reliability and Validity in the Content-Analysis of Texts, *Quality & Quantity*, vol. 48, no. 5, pp.2703–2718
- Ospina-Mateus, H., Marrugo-Salas, L., Castilla, L. C., Castellón, L., Cantillo, A., Bolivar, L. M., Salas-Navarro, K. & Zamora-Musa, R. (2023). Analysis in Circular Economy Research in Latin America: A Bibliometric Review, *Heliyon*, p.e19999
- Panke, D. (2018). Research Design & Method Selection: Making Good Choices in the Social Sciences, *Research Design & Method Selection*, pp.1–368
- Potting, J., Hekkert, M. P., Worrell, E., Hanemaaijer, A., & others. (2017). Circular Economy: Measuring Innovation in the Product Chain, *Planbureau voor de Leefomgeving*, no. 2544
- Prados, M.-J., Iglesias-Pascual, R. & Barral, Á. (2022). Energy Transition and Community Participation in Portugal, Greece and Israel: Regional Differences from a Multi-Level Perspective, *Energy Research & Social Science*, vol. 87, p.102467
- Quinteros-Condorety, A. R., Albareda, L., Barbiellini, B. & Soyer, A. (2020). A Socio-Technical Transition of Sustainable Lithium Industry in Latin America, *Procedia manufacturing*, vol. 51, pp.1737–1747
- Ratikainen, K. W. (2017). Transitioning to Renewable Energy in Saudi Arabia-A Multi-Level Perspective Analysis of the Saudi Renewable Energy Policies, Master's Thesis
- Reames, T. G. & Wright, N. S. (2021). The Three E's Revisited: How Do Community-Based Organizations Define Sustainable Communities and Their Role in Pursuit Of?, *Sustainability*, vol. 13, no. 16, p.8825
- Rip, A. & Kemp, R. (1998). Technological Change, in *Human Choice and Climate Change: Vol. II, Resources and Technology*, Battelle Press, pp.327–399
- Ritchie, J. & Lewis, J. (2003). QUALITATIVE RESEARCH PRACTICE A Guide for Social Science Students and Researchers, SAGE Publications Ltd
- Ritchie, J., Lewis, J. & Elam, G. (2003). Designing and Selecting Samples, in *QUALITATIVE RESEARCH PRACTICE A Guide for Social Science Students and Researchers*
- Saldaña, J. (2021). The Coding Manual for Qualitative Researchers
- Sariatli, F. (2017). Linear Economy versus Circular Economy: A Comparative and Analyzer Study for Optimization of Economy for Sustainability, *Visegrad Journal on Bioeconomy and Sustainable Development*, vol. 6, no. 1, pp.31–34
- Schot, J., & Geels, F. W. (2008). Strategic niche management and sustainable innovation journeys: theory, findings, research agenda, and policy. *Technology analysis & strategic management*, 20(5), 537-554.
- Schöggel, J.-P., Stumpf, L. & Baumgartner, R. J. (2020). The Narrative of Sustainability and Circular Economy-A Longitudinal Review of Two Decades of Research, *Resources, Conservation and Recycling*, vol. 163, p.105073
- Schröder, P., Albaladejo, M., Ribas, P. A., MacEwen, M. & Tilkanen, J. (2020). The Circular Economy in Latin America and the Caribbean, *The Royal Institute of International Affairs, Chatham House: London, UK*
- Seyfang, G. & Haxeltine, A. (2012a). Growing Grassroots Innovations: Exploring the Role of Community-Based Initiatives in Governing Sustainable Energy Transitions, *Environment and Planning C: Government and Policy*

- Seyfang, G. & Haxeltine, A. (2012b). Growing Grassroots Innovations: Exploring the Role of Community-Based Initiatives in Governing Sustainable Energy Transitions, *Environment and Planning C: Government and Policy*
- Shove, E. & Walker, G. (2007). Caution! Transitions Ahead: Politics, Practice, and Sustainable Transition Management, *Environment and Planning A*, vol. 39, pp.763–770
- Sihvonen, S. & Ritola, T. (2015). Conceptualizing ReX for Aggregating End-of-Life Strategies in Product Development, *Procedia Cirp*, vol. 29, pp.639–644
- Smith, A. (2007). Translating Sustainabilities between Green Niches and Socio-Technical Regimes, *Technology analysis & strategic management*, vol. 19, no. 4, pp.427–450
- Smith, A., Voß, J.-P. & Grin, J. (2010). Innovation Studies and Sustainability Transitions: The Allure of the Multi-Level Perspective and Its Challenges, *Research policy*, vol. 39, no. 4, pp.435–448
- Smits, M. (2011). A Tale of Two Transitions: A Multi-Level Perspective on Energy Transitions in the Lao PDR and Its Challenges, in *Conference Paper for the Experiments, System Innovation and Sustainability Transitions in Asia, Kuala Lumpur, 2011*, pp.9–11
- Snape, D. & Spencer, L. (2003). The Foundations of Qualitative Research. In *QUALITATIVE RESEARCH PRACTICE A Guide for Social Science Students and Researchers*, SAGE Publications.
- Spencer, L., Ritchie, J. & O’connor, W. (2003). Analysis: Practices, Principles and Processes, in *QUALITATIVE RESEARCH PRACTICE A Guide for Social Science Students and Researchers*, SAGE Publications
- Stokes, R. J., Mandarano, L. & Dilworth, R. (2014). Community-Based Organisations in City Environmental Policy Regimes: Lessons from Philadelphia, *Local environment*, vol. 19, no. 4, pp.402–416
- Times. (2023). Costa Rica Launches National Circular Economy Strategy, Available Online: <https://ticotimes.net/2023/06/29/costa-rica-launches-national-circular-economy-strategy>
- UNEP. (2019). UNEP Circularity Approach, *UNEP Circularity Platform*, Available Online: www.unenvironment.org/circularity
- UNEP. (2021). GOAL 12: Sustainable Consumption and Production, *UNEP - UN Environment Programme.*, Available Online: <https://www.unep.org/explore-topics/sustainable-development-goals/why-do-sustainable-development-goals-matter/goal-12#:~:text=Resolution%201%20%28UNEP%2FEA>
- UNEP. (2023). Unlocking Circular Economy Finance in Latin America and the Caribbean: The Catalyst for a Positive Change— Findings and Recommendations for Policymakers and the Financial Sector. Nairobi.
- UNFCCC. (2019). Costa Rica Commits to Fully Decarbonize by 2050 | UNFCCC, Available Online: <https://unfccc.int/news/costa-rica-commits-to-fully-decarbonize-by-2050>
- Van Buren, N., Demmers, M., Van der Heijden, R. & Witlox, F. (2016). Towards a Circular Economy: The Role of Dutch Logistics Industries and Governments, *Sustainability*, vol. 8, no. 7, p.647
- Velenturf, A. P., Archer, S. A., Gomes, H. I., Christgen, B., Lag-Brotons, A. J. & Purnell, P. (2019). Circular Economy and the Matter of Integrated Resources, *Science of the Total Environment*, vol. 689, pp.963–969
- Verbong, G. & Geels, F. (2007). The Ongoing Energy Transition: Lessons from a Socio-Technical, Multi-Level Analysis of the Dutch Electricity System (1960–2004), *Energy policy*, vol. 35, no. 2, pp.1025–1037
- Wenbo, L. (2011). Comprehensive Evaluation Research on Circular Economic Performance of Eco-Industrial Parks, *Energy Procedia*, vol. 5, pp.1682–1688
- Whitmarsh, L. (2012). How Useful Is the Multi-Level Perspective for Transport and Sustainability Research?, *Journal of transport geography*, vol. 24, pp.483–487

- Wieczorek, A. J. (2018). Sustainability Transitions in Developing Countries: Major Insights and Their Implications for Research and Policy, *Environmental Science & Policy*, vol. 84, pp.204–216
- Wilson, D. C., Velis, C. & Cheeseman, C. (2006). Role of Informal Sector Recycling in Waste Management in Developing Countries, *Habitat international*, vol. 30, no. 4, pp.797–808
- Wittmayer, J. M., Schöpke, N., van Steenberg, F. & Omann, I. (2014). Making Sense of Sustainability Transitions Locally: How Action Research Contributes to Addressing Societal Challenges, *Critical policy studies*, vol. 8, no. 4, pp.465–485
- Wu, Z., Shao, Q., Su, Y. & Zhang, D. (2021). A Socio-Technical Transition Path for New Energy Vehicles in China: A Multi-Level Perspective, *Technological Forecasting and Social Change*, vol. 172, p.121007
- Yong, R. (2007). The Circular Economy in China, *Journal of material cycles and waste management*, vol. 9, pp.121–129
- Zhu, B., Nguyen, M., Siri, N. S. & Malik, A. (2022). Towards a Transformative Model of Circular Economy for SMEs, *Journal of Business Research*, vol. 144, pp.545–555
- Zhu, Q., Geng, Y. & Lai, K. (2010). Circular Economy Practices among Chinese Manufacturers Varying in Environmental-Oriented Supply Chain Cooperation and the Performance Implications, *Journal of environmental management*, vol. 91, no. 6, pp.1324–1331

Appendix A

Table 5 Interview questions

Level	Section	Guiding Questions	Purpose
Niche (Start-ups)	Profile	What is your role and what are the activities done by your organization?	To understand the background and motivation behind the establishment of the CBOs
		What are the ideas behind your organization? How did it start?	
	Organizations' practices and CE practices	How would you define a circular economy and why is it important for your organization?	To understand the CBOs' practices in general and also in CE context
		How would you describe what role your organization takes in the development and implementation of CE practices in Monteverde (Costa Rica)?	
		What are the organizations' key factors in facilitating the transition to CE?	
		What do you think about the role of community in Monteverde? How is the influence of community?	
		What are the organizations' key factors in promoting the transition to CE?	
	Stakeholders' interaction	How do you collaborate with other stakeholders, such as the citizens to promote the circular economy? How about the government/local municipality? Or are there any stakeholders involved?	To identify the interaction between each levels involved in MLP from CBOs' perspective

Level	Section	Guiding Questions	Purpose
		Are the CE initiatives you currently have mainly driven by the organization first or are there some influence from the government? Are there any initiatives from the government about CE that you know?	
	Challenges	Do you encounter difficulties in scaling-up your organization? What challenges have you faced in implementing circular economy principles in your organization?	To analyze the obstacles experienced by the niche level
		How are you addressing these challenges?	
	Expectation	How do you see the future of the circular economy in Costa Rica and how do you plan to contribute to its development?	To explore the niche level's expectations on the matter
		What policies or regulations do you think are necessary to support the growth of the circular economy in Costa Rica?	
Landscape (External organizations)	Profile	What is your role and what are the activities done by your organization?	To understand the background and motivation behind the organization
		What are the ideas behind your organization? How did it start?	
	Organizations' practices and CE practices	How would you define CE and why is it important for your organization?	To understand the landscape level's practices
How would you describe what role your organization takes in the development and implementation of CE practices in Monteverde (Costa Rica)?			
What are the organizations' key factors in successfully promoting CE?			

Level	Section	Guiding Questions	Purpose
		What do you think about the role of community in Monteverde? How is the influence of the community?	
	Stakeholders' interaction	How do you collaborate with other stakeholders, such as the citizens to promote the circular economy? How about the government/local municipality? Or are there any stakeholders involved?	To identify the interaction between each levels involved in MLP from landscape's perspective
	Challenges	Do you encounter difficulties in scaling-up your organization? What challenges have you faced in implementing circular economy principles in your organization?	To analyze the obstacles experienced by the landscape
	Expectation	How do you see the future of the circular economy in Costa Rica and how do you plan to contribute to its development?	To explore the external organizations' expectations on the matter
		What policies or regulations do you think are necessary to support the growth of the circular economy in Costa Rica?	
Regime	Profile	What is your role and what are the municipality's responsibility in terms of sustainable transition?	To understand the background and motivation behind the organization
	Organizations' practices and CE practices	How would you define CE and is it important for the municipality?	To understand the regime level's practices
Can you discuss any specific policies or programs that have been implemented to promote circular economy practices in Monteverde?			

Level	Section	Guiding Questions	Purpose
		How does the government evaluate the effectiveness of its policies and programs related to the circular economy?	
	Stakeholders' interaction	How does the government collaborate with CBOs to promote circular economy practices? Can you provide examples of successful collaborations?	To identify the interaction between each levels involved in MLP from regime's perspective
		How does the government engage other stakeholders (e.g., businesses, NGOs, the general public) and also the central government in promoting circular economy practices?	
	Challenges	What are the main challenges the government faces in implementing policies that promote circular economy practices?	To analyze the obstacles experienced by the regime
		What do you perceive as the biggest barriers to further adoption of circular economy practices in Monteverde?	
	Expectation	What are the future plans or strategies for enhancing circular economy practices in Monteverde?	To explore the regime's expectations on the matter
		What opportunities do you see for accelerating the transition to a circular economy?	

Appendix B

Table 6 Regime and landscape level respondent's detailed information

Level	Code	Organization	Interview Date	Interview Length
Regime	R1	Monteverde Municipality	21/03/2024	44 minutes
Landscape	L1	Monteverde Community Fund	18/03/2024	59 minutes

Table 7 Niche-level respondents' detailed information

Level	Codes	CBOs Activities	R behaviors	Interview Date	Interview Length
Niche	Food1	Improves and educate about food security in the region	Reuse, recycle, recover	14/03/2024	67 minutes
	Green1	Promotes conscious green actions through social currency	Reduce, reuse	16/03/2024	35 minutes
	Textile1	Bartering and upcycling center, mainly working with textile	Reuse, repair, redesign	19/03/2024	34 minutes
	Green2	Efforts to lower emissions and adapt to climate change	Refuse, reduce, reuse, redesign, recycle, recover	27/03/2024	80 minutes
	Waste1	Solid and water waste management	Recycle, recover	02/04/2024	68 minutes
	Edu1	Educational organization that integrates academic programs, research, and community initiatives to sustainably manage tourism	Refuse, reduce, reuse, recycle	22/04/2024	61 minutes