Renegotiating Institutions

Institutional Bricolage in the Zambian Woodfuel Sector

Author: Alice Castensson

Supervisor: Yahia Mahmoud

Abstract

Governing multifunctional resource landscapes in ways that protect ecosystems without aggravating poverty is a critical task for development efforts. This thesis adopts an institutional bricolage approach to scrutinise institutional interplay in the Zambian woodfuel sector. Through a qualitative case study design, the study analyses how smallholder land users renegotiate formal and informal institutions to create new institutional arrangements. Moreover, it examines how such arrangements balance conflicting outcomes in the woodfuel sector.

The study concludes that smallholder land users in Zambia occasionally integrate, alter or reject institutions, resulting in new arrangements steering their choices and behaviours. Contextual factors, including structure and agency, determine these processes. The study also suggests that institutional interplay has the potential to balance socioeconomic and environmental outcomes. The perceived interdependence of socioeconomic-environmental aspects and efforts to secure land access appear to have driven this process, where actors renegotiate institutions into new arrangements that balance conflicting outcomes. The conclusions imply that institutional interplay may be essential to consider when analysing and implementing sustainable resource governance – also in a multifunctional landscape.

Keywords: natural resource governance, critical institutionalism, institutional bricolage, woodfuel, institutions, multifunctional landscapes

Word count: 14 351

Acknowledgements

Table of contents

Figures and tables

1. Introduction

Forests landscapes are highly multifunctional, characterised by diverse land usage, complex structure and multiple stakeholder interests (Hölting et al., 2020). They are vital for healthy ecosystems and serve critical roles for forest-dependent communities, tying into debates on energy, climate change, health, food security as well as urban and rural livelihoods. Because of its many functions, the forest also offers an arena to achieve multiple sustainability goals integrating livelihood needs with ecological functions (O'Farrell & Anderson, 2010).

In reality, however, there is a risk that environmental and socioeconomic aspirations will be competing: strategies for complete environmental protection deprives people's livelihoods while the continued use of forest resources threatens whole ecosystems. In Zambia, like in many other countries globally, the woodfuel sector is at the centre of this dilemma. Unsustainable woodfuel production is one of the main drivers of the rapid deforestation and environmental degradation in Zambia (Gumbo et al., 2013). Efforts to regulate charcoal production for environmental protection nevertheless negatively affect the millions of people depending on woodfuel for their livelihoods. For many, charcoal is the most affordable and only reliable energy source (Ziba & Grouwels, 2017). In Zambia, it is estimated that around 90 % of households depend on woodfuel for their cooking energy needs. In addition, the woodfuel sector offers employment and contributes to the Zambian local and national economies (Sola et al., 2019; Ziba & Grouwels, 2017). In order to promote environmental sustainability without aggravating poverty, finding a balance between environmental and socioeconomic outcomes remains a major challenge for sustainable woodfuel governance.

Previous research on natural resources has extensively studied what determines outcomes of resource governance. For many decades, centralised governance systems were regarded as the best strategy to avoid degradation of natural resources. However, these strategies led to worsened conditions for both ecosystems and people, including excessive extraction, mismanagement and further vulnerability of forest-dependent communities (Gumbo et al., 2013; Osei-Tutu et al., 2015). Subsequent debates have instead argued that it is possible to predict sustainable outcomes of resource governance by designing "correct" institutional arrangements (Ostrom, 1990). However, expected outcomes are not always assured and studies at times overlook the complexity in local contexts (Cleaver, 2012). As a response to this critique, research has begun to question how much we can plan sustainable resource governance (De Koning & Cleaver, 2012). More attention is now given to the notion that sustainable outcomes of resource governance largely depend on the

conscious and unconscious *interaction* between formal and informal institutions. Critical institutionalism has emerged as a school of thought, arguing that neither formal legislative nor informally embedded practices can explain governance outcomes separately. In contrast, individuals renegotiate the interface between different types of institutions to produce new "rules of the game", steering practices – and ultimately outcomes – of resource governance (Faggin & Behagel, 2018; Osei-Tutu et al., 2015). Institutions are not static nor designed but continuously renegotiated by actors in a process referred to as institutional bricolage (De Koning, 2011).

Institutional bricolage has offered a nuanced explanation to outcomes of resource governance when applied empirically. Understanding institutions as "a set of formal or informal rules, norms, and cultural beliefs that guide actors' choices and shape actors' behaviour" (Faggin & Behagel, 2018:278), the interactive processes between formal and informal institutions will serve as the starting point of this study. This thesis seeks to further understand institutional interplay by investigating how it can reveal aspects of competing outcomes in multifunctional landscapes.

1.1 Aim and research question

This study aims to scrutinise the interaction between formal and informal institutions in the Zambian woodfuel sector. Specifically, it will focus on how institutional interplay balances socioeconomic outcomes on the one hand and environmental outcomes on the other hand. Socioeconomic outcomes refer to both social and economic factors related to people's livelihoods and well-being (AEDA, 2013). Environmental outcomes refer to the conservation of ecosystems and resource landscapes (Hajjar et al., 2021). The study adopts an institutional bricolage approach, seeking to answer the following questions:

1. How do smallholder land users in the Zambian woodfuel sector renegotiate the interaction between formal and informal institutions?
2. In which ways do the interactions balance socioeconomic and environmental outcomes?

This study situates itself in the discussion in the resource governance literature and engages specifically in the overall discussion on institutional interplay. Theoretically, it adds empirical evidence to the theory on how formal and informal institutions interact. In addition, it contributes to theoretical advancement by focusing on institutional interplay from a multifunctional perspective. For development practice and policy, this study sheds light on how to possibly tackle

challenges related to conflicting outcomes in the Zambian woodfuel sector in particular and multifunctional landscapes in general.

This thesis proceeds by accounting for existing research on resource governance and its outcomes in chapter two, situating this thesis in the research gap. Chapter three presents the woodfuel sector and how it relates to sustainable development globally and in Zambia. Chapter four presents the theory, delving into critical institutionalism as a school of thought and institutional bricolage as a theoretical approach. The methodology is presented in chapter five, including opportunities and limitations with the chosen research design. Thereafter, chapter six presents the study's findings on institutional interplay and their outcomes in the Zambian woodfuel sector, embedded in an analysis and discussion. The discussion ties back to the research questions, implications of the results and further research suggestions in the concluding chapter.

2. Previous research

This thesis relates to the field of natural resource governance. The following literature review guides the theoretical development and scope of this thesis. First, this chapter outlines the theoretical advancements for understanding what determines outcomes of resource governance. Mainstream institutionalism has for a long time been the dominant approach in resource governance. More recent research takes a critical approach and suggests considering the interaction between formal and informal institutions instead. Previous empirical findings related to this argument are thereafter presented, revealing the role of formal and informal institutions in resource governance. The overall discussion ends in situating this thesis in a theoretical and empirical gap.

2.1 Theoretical advancements: Mainstream institutionalism and its critique

The role of institutions in resource governance is widely discussed, commonly to explain – or sometimes predict – outcomes of different resource management strategies (Cleaver, 2002; De Koning, 2011; Nunan et al., 2015). In 1968, Garrett Hardin coined the phrase "tragedy of the commons" when studying the governance of common property resources[1]. He argued that

---

[1] Common property resources are defined as "natural resources owned and managed collectively by a community or society rather than by individuals" (OECD, 2001).

resources are best governed through state regulations or private ownership. While influential, Hardin's theories have since been criticised (Arts et al., 2013), most notably by Elinor Ostrom (1990) in her book *Governing the Commons*. With a more positive outlook on governing common properties, Ostrom looks at the potential of institutional arrangements in sustainable common-pool resource management (Hall et al., 2014). Through numerous case studies, she has explored so-called institutional "design principles" that characterise robust institutions for sustainable common-pool resource management (Ostrom, 1990). According to this theory, a key function of institutions is that they may be crafted to meet desired outcomes (De Koning & Benneker, 2013; Ostrom, 1990). This idea has resulted in a strong notion that correctly designed institutions can guide people's behaviour to ultimately "solve" problems experienced in resource management (Arts et al., 2013:6).

2.2 A different perspective: formal and informal interplay

Despite its prominent role in international policy (Cleaver, 2012), the empirical evidence on outcomes of "correct" institutions is inconclusive (Armitage, 2005). According to Cleaver (2002), mainstream institutionalism relies unrealistically on the ability of formal regulatory institutions to lead to expected outcomes. Since "institutional change is not simply a technical exercise" (Wong, 2016:91), policymakers cannot design institutions for leading to specific outcomes. Responding to this, scholars have looked elsewhere to explain what influence governance outcomes. An emerging idea is that institutions are outcomes of complex dynamics and structures in the resource landscape (Nunan et al., 2015). This view has fostered new approaches favouring a more holistic perspective on institutions in resource governance.

These new approaches reject the functionalist view on institutions and instead highlight the complexities within and between institutions in both formal and informal spheres (Chinsinga, 2011). Literature within this way of thinking suggests that expected goals will most likely fail if formal institutions do not consider informal aspects in the local context (Faggin & Behagel, 2018). Nevertheless, as Yeborah-Assiamah et al. (2017) assert, it is not the presence of formal and informal institutions in themselves that impact resource governance but the *interactions* between formal and informal institutional domains. The interplay, they argue, "…provides a far reaching consequence on natural resource governance" (Yeborah-Assiamah et al., 2017:10) as well as on its outcomes (Lambini & Nguyen, 2014).

An empirical review of these processes directs the focus and provides theoretical sampling relevant for this thesis (Silverman, 2017). Previous case studies confirm that the interaction between informal and formal institutions provides additional insights to explain governance outcomes (see, e.g., De Koning, 2011; Faggin & Behagel, 2018; Gebara, 2019; Karambiri et al., 2020; Osei-Tutu et al., 2015; Pacheco et al., 2008). These studies show that local actors draw on socially embedded institutions such as traditions, beliefs, norms, and relations to shape formally introduced institutions to better fit their social-ecological context. Ultimately, the reshaping of institutions impacts outcomes of governance strategies. In many cases, the interplay leads to more sustainable outcomes for the environment and people's livelihoods (Faggin & Behagel, 2018; Gebara, 2019; Pellowe & Leslie, 2020; Yuliani et al., 2018). Other studies observe that the interaction of formal institutions with informal ones can also reinforce unequal norms and structures (Nunan et al., 2015; Wong, 2016). Nevertheless, disregarding interactive dynamics in the analysis underestimates potential explanatory factors to governance outcomes (Faggin & Behagel, 2018).

2.3 Institutional arrangements in the woodfuel sector

Most research on the woodfuel sector from a development perspective examines the scope and impact of the utilisation, production and trade of woodfuel. This includes practical and technical solutions to minimise woodfuel use (Felix, 2015) and production efficiency (Arevalo, 2016). Only a few studies adopt an institutional approach to understand how woodfuel governance influence outcomes. In this pool of literature, decentralisation, community-based management, and formalisation are identified as possible entry points to promote more sustainable outcomes in the woodfuel sector (Arevalo, 2016; Schure et al., 2013). Studies responding to the call to include other dimensions find that informal domains may positively affect people's access to woodfuel value chains (Schure et al., 2015). Informal factors, such as power and social capital, are positively correlated with livelihood outcomes (Shively et al., 2010) and value chain participation (Ihalainen et al., 2020). In processes of reshaping formal and informal woodfuel institutions, Friman (2020) and Karambiri et al. (2020) find that social relations, including gendered aspects and power dynamics, influence expected outcomes of formal institutional arrangements.

2.4 Filling the gap

Two conclusions derive from the literature review and direct the focus of this study. First, existing literature on natural resource and woodfuel governance indicates that it is worth considering how formal and informal institutions interact to investigate resource governance outcomes. Second, the review reveals that some questions remain unanswered. Of previous studies investigating

institutional interplay, some set out to explore how institutions interact (De Koning, 2011; Osei-Tutu et al., 2015) and how institutions influence resource use and practices in general (Pacheco et al., 2008; Pellowe & Leslie, 2020). Other studies explore what drives institutional change (Karambiri et al., 2020) and the social and ecological impacts of different management regulations (Faggin & Behagel, 2018; Gebara, 2019; Yuliani et al., 2018). While most studies acknowledge the multiple social and ecological roles of resource landscapes, no studies explicitly set out to focus on outcomes of institutional interaction from a multifunctional perspective.

This study situates itself in this gap. It investigates not only how formal and informal institutions interact in relation to isolated social and ecological aspects but how the interaction balances conflicting outcomes. The Zambian woodfuel sector provides an excellent opportunity to investigate this. Many of the forest's multiple functions are directly related to the woodfuel sector, placing woodfuel at the centre of the apparent dilemma between socioeconomic and environmental outcomes in forest landscapes. This dilemma will be presented in detail in the next chapter.

3. Contextualisation and case

The woodfuel sector relates to many economic, social and environmental development issues, not least due to its central part of forests' multiple functions. This chapter first presents an overview of woodfuel consumption and production in the world. It outlines challenges and opportunities associated with woodfuel governance, situating its relevance for sustainable development. Secondly, it provides an overview of the woodfuel sector in Zambia, focusing on past, present and future management and governance strategies as well as their outcomes.

3.1 Woodfuel and development

Woodfuel is energy derived from wood biomass. This thesis focuses on solid woodfuel, which is the main form of woodfuel used in low and lower-middle-income countries (FAO, 2021). Solid woodfuel entails both firewood (the unprocessed wood such as stems and branches cut from trees) and charcoal (wood processed through carbonisation) (Schure et al., 2014).

The woodfuel sector is tightly related to broader issues such as energy and food security, employment, urban and rural development, health and the environment. It provides income to rural populations, a source of energy when electricity is insufficient and the possibility to prepare safe food and water (Schure et al., 2014). According to the Food and Agriculture Organization of

the United Nations (FAO, 2021), more than 2 billion people worldwide use woodfuel as their primary energy source for cooking and heating on a household level. In Sub-Saharan Africa, over 60 % of households depend on woodfuel for cooking needs (CIFOR, 2020). In addition, preparing food with wood has a social and cultural value in many communities (Kabisa et al., 2019).

However, while woodfuel offers many opportunities for sustainable development, it is also related to adverse outcomes for the environment and livelihoods. Woodfuel is one of the primary drivers of environmental degradation, including deforestation and carbon emissions (Schure et al., 2014). Burning biomass is also associated with serious health risks (WHO, 2018). These consequences are unequally distributed. Smallholder producers and women often have little negotiating power and only gain a small share of the total value in the production chains. This marginalisation makes them particularly vulnerable in the woodfuel value chain (Ihalainen et al., 2020; Neufeldt et al., 2015; Ziba & Grouwels, 2017).

Issues related to woodfuel production and consumption are expected to be development concerns also in the future. The International Energy Agency expects the number of people relying on the woodfuel sector to increase to approximately 12 million people by 2030, compared to 7 million in 2015 (Neufeldt et al., 2015). Simultaneously, an estimated 600 million people in Africa today lack access to electricity (IEA, 2020). Despite global and national efforts to make the sector more sustainable, numerous obstacles remain, including poor governance, corruption, market deficiencies and weak capacity (Neufeldt et al., 2015). Sustainable woodfuel governance, which considers both socioeconomic and environmental aspects of the sector, can be considered essential for sustainable development – especially in countries heavily dependent on woodfuel for their energy supply, such as Zambia.

3.2 Woodfuel production and consumption in Zambia

Approximately 90 % of households in Zambia use woodfuel as their main source of energy for cooking (Ziba & Grouwels, 2017). In total, the woodfuel industry in Zambia is worth 2.3 % of the GDP (Ziba & Grouwels, 2017) and offers employment to half a million people along its value chain (Sola et al., 2019). At the same time, forest degradation in Zambia is alarmingly rapid. Evaluations identify woodfuel production as one of the main drivers of forest degradation, together with agricultural expansion, infrastructure development and forest fires (Day et al., 2014).

The production and consumption of woodfuel is also related to underlying drivers of unsustainable forest use, including environmental, legal, institutional, demographic and socioeconomic issues (Day et al., 2014). For many, woodfuel is the only affordable and reliable option. Zambia transitioned into a lower middle income in 2011 after more than a decade of economic progress. It has a population of 18 million people. With a median age of 17.6 years, it is one of the youngest countries in the world. In 2015, 54.4 % of the population lived below the national poverty line (World Bank, n.d.). Fifty-six per cent of the population lives in rural areas (World Bank, 2018). In terms of energy supply and demand, Zambia faces serious issues. Reliance on hydroelectric power makes the sector vulnerable to natural disasters such as drought. Climate change, rapid population growth, high urbanisation rate and slow electrification progress are factors expected to drive the demand for woodfuel also in the future (Gumbo et al., 2013; Ziba & Grouwels, 2017).

Zambian authorities have recognised the importance of tackling woodfuel production and consumption issues in particular (Sola et al., 2019). The government and national organisations have both consequently made efforts to make the sector more sustainable. The woodfuel sector is highly centralised. The Forestry Department of the Ministry of Lands and Natural Resources is responsible for managing the forest and monitoring resource use, including charcoal production (Ziba & Grouwels, 2017). Today, national policies, legal regulations, and broader development plans guide forest management strategies (Gumbo et al., 2013; Kabisa et al., 2019). Forty per cent of the total land area is protected areas, including forest reserves, national parks and game management areas. While some of these protected areas are for both production and protection, 26 % of forest reserves are for protection only (World Bank, 2019). A permit is required to utilise forest resources on both customary and state-owned land (Ministry of Tourism, Environment and Natural Resources, 2009). However, weak implementations of regulations, lack of capacity, complex bureaucracy and limited financial means are endemic within the forestry sector. Management and control over forest resources are challenging, and little effort is made to monitor the sector to discourage charcoal from unsustainable sources (Kabisa et al., 2019). As a result, the sector is highly informal and fragmented (Gumbo et al., 2013; Sola et al., 2019; Ziba & Grouwels, 2017), with significant capacity gaps in achieving sustainable forest management and governance (Day et al., 2014). Addressing issues related to woodfuel governance may offer opportunities to address the current challenges in the sector and beyond.

4. Theory and conceptual framework

As concluded in the literature review, the criticism of mainstream institutionalist approaches has fostered new ways of understanding the role of institutions in resource governance. Critical institutionalism has emerged as the dominant school of thought within this critique. The theoretical concepts and assumptions related to critical institutionalism will provide the theoretical grounding for the forthcoming analysis. Moreover, institutional bricolage offers an approach to study institutional interplay empirically. This chapter first defines formal and informal institutions. Thereafter, the chapter introduces the theory, including critical institutionalism and institutional bricolage. A final section presents the conceptual framework, illustrating how key concepts of institutional bricolage will guide the analysis.

4.1 Defining institutions

Institutions will hereafter be understood as the rules of the game guiding and shaping actors' choices and behaviour (Faggin & Behagel, 2018). Institutions can be both formal or informal (Jütting & De Soysa, 2007). Formal institutions are the rules embedded in formal units enforced by official entities, including the government and external organisations (De Koning, 2011; Jütting & De Soysa, 2007). In short, formal institutions are bureaucratic institutions (Cleaver, 2002). Formal institutions are surrounded by formalised arrangements and based on structures, legal rights and contracts. In addition, they are introduced externally by governments or organisations (De Koning, 2011). This thesis will understand formal institutions as laws and regulations related to the woodfuel sector and structured forest management practices introduced by external actors, including the government and organisations.

In contrast, informal institutions are socially embedded in the culture, social context and daily life (De Koning, 2011). Informal institutions encompass behavioural norms, including "attitudes, customs, taboos, conventions and traditions" (Jütting & De Soysa, 2007:31), as well as identity and beliefs (De Koning, 2011). Furthermore, they are self-enforced by individuals through processes of obligation and group incentives (Jütting & De Soysa, 2007). Often, informal institutions are not new but have been present in their local context for some time (De Koning, 2011). This thesis will understand informal institutions as the norms, beliefs and identities related to woodfuel embedded in the local context.

Most literature in the field of critical institutionalism shares these definitions of formal and informal institutions. However, it is not the intention to categorise institutions into dichotomous definitions. It is neither the intention to create a hierarchy nor polarisation between the two. In fact, this would neglect the purpose of critical institutionalist studies, which fundamentally regards institutions as changeable and embedded (De Koning, 2011). Bureaucratic institutions may be, or become, socially embedded, while socially embedded institutions may be formalised into more bureaucratic arrangements (Cleaver, 2002). This is acknowledged throughout the analysis, although the definitions will guide the identification of institutions and their interactions.

4.2 Critical institutionalism

Critical institutionalism is a body of thought mainly developed by Frances Cleaver. It started as a critique of the rational and linear thinking of previous institutional approaches studying common pool resources and has now evolved into a separate school of thinking. Critical institutionalism explores how institutions mediate the relationships between nature, society and people in a dynamic manner. It also challenges the explanatory power of so-called purposeful institutions (De Koning, 2011; Hall et al., 2014). In contrast to mainstream institutionalism, critical institutionalism does not focus on understanding how institutions are best designed to lead to specific outcomes. Instead, it argues that institutions are – consciously or not – dynamic and shaped in relation to the external and internal social, political and cultural context (De Koning & Cleaver, 2012). In this sense, it uses aspects such as context, history and social relations to analyse the outcomes of institutional processes (Cleaver & De Koning, 2015).

Arts et al. (2014) choose to exemplify the difference between mainstream and critical institutionalism using the metaphor of a game and a performance. They liken mainstream institutionalism to a game – such as football – in the sense that participants are constrained by certain rules. These rules may not completely steer the actors but rather incentivise them to act in certain ways. Individuals may act contrary to the "rules of the game", although it would result in sanctions from other participants. In the metaphor of a football game, for example, a player breaking the rules risk disqualification. According to this model, change is induced by altering the rules of the game. Critical institutionalism, on the other hand, is likened by Arts et al. to a theatre performance. Here, individuals in any given social context are directed by a script. Nonetheless, participants may interpret the script in different ways and on different occasions throughout the performance. A theatre performance may, for instance, be slightly different from one day to the next depending on the audience, ensemble or daily circumstances. For instance, actors on the stage

may improvise – or adapt to the reactions from the audience to improve the final outcome. In a performance, as for critical institutionalists, outcomes are unpredictable since they depend on the situation. Change is difficult to steer – both because the script may not be entirely changed overnight, but also because it will not be possible to control human improvisation (Arts et al., 2014).

To sum up the discussion so far, critical institutionalism claims that various institutions are shaped – patched together – through conscious and unconscious actions decided by the specific context. Consequently, new institutional arrangements are formed. Applying this theory to an empirical case, these interactive processes are most interesting. But how then do interactive processes occur?

4.3 Theoretical approach: Institutional bricolage

In order to explain the interactions between institutions in practice, Frances Cleaver has developed the theoretical approach institutional bricolage, referring to the French word for crafting (Cleaver, 2012). Institutional bricolage reveals the processes of crafting new institutional arrangements from formal and informal institutions (Cleaver & Whaley, 2018; De Koning & Cleaver, 2012).

Two aspects are central to institutional bricolage: bricoleurs and bricolage processes. First, the institutional bricolage approach argues that individual actors – "bricoleurs" – piece together socially embedded institutions and bureaucratic institutions to better fit their needs in the context (Cleaver & Whaley, 2018; De Koning & Cleaver, 2012). Second, institutional components are renegotiated by bricoleurs through bricolage processes to perform new functions. *Renegotiation* occurs as a result of continuous interactions over time. As such, institutional interactions should not be understood as static (De Koning, 2011). Bricolage processes are the central unit of analysis. As put by Karambiri et al. (2020:527), "the critical institutionalist's task is to investigate how the actors in their dealing with daily challenges reinvent the introduced forest institutions and induce changes." Departing from Cleaver's understanding of institutional bricolage, de Koning (2011) describes in detail three specific bricolage processes at a community level: aggregation, alteration and articulation. These represent the ways in which actors respond to introduced institutions and how actors renegotiate institutions and their trajectories (De Koning & Cleaver, 2012). As a result of bricolage processes, new institutional arrangements are formed, which ultimately guide actors' choices and steer their behaviour.

Aggregation

The process of aggregation refers to the *recombination* or *integration* of institutional elements (De Koning & Cleaver, 2012). Bureaucratic and socially embedded institutions are both mediated and combined to fit multiple or additional purposes in the social and cultural context (De Koning, 2011). Bricoleurs give newly introduced institutions new purposes and meanings, where both formal and informal institutions are represented and socially accepted (De Koning & Cleaver, 2012).

Alteration

Alteration refers to the *adaption* of institutional elements, such as changing or reinterpreting them to various extents. The purpose of such processes could be to change, twerk or even ignore institutions to better fit the social or cultural context (De Koning, 2011; De Koning & Cleaver, 2012). The extent to which this is happening may vary from slight alterations to complete modifications of both bureaucratic and socially embedded institutions (De Koning & Cleaver, 2012).

Articulation

In articulation processes, actors *reject* bureaucratic institutions by *emphasising* socially embedded institutions (De Koning, 2011). People call upon their tradition, culture and identity to claim their rights in managing their resources. This process typically happens when bureaucratic institutions are in direct conflict with aspects in the local context. While articulation can be associated with revolt, de Koning and Cleaver (2012) have previously observed that it can also be expressed through calm resistance.

In this thesis, the three bricolage processes will be used to identify how actors renegotiate interactions between formal and informal institutions. Table 1 below provides an overview of the three bricolage processes and how they are understood in the forthcoming analysis of institutional interplay. Defining institutional interactions as bricolage processes based on operational measures established in previous studies in the field strengthens the validity of the study (Yin, 2014).

Table 1. Bricolage processes. Adapted from De Koning (2011).

Bricolage processes	Descriptions
Aggregation	Integration of formal and informal institutions
	Recombination of institutional elements
	Mediation between rules, norms and beliefs
	Creation of multipurpose institutions
Alteration	Adaption of informal institutions
	Adaption of formal institutions
	Bending or ignoring bureaucratic rules
Articulation	Accentuation of socially embedded norms and practices
	Active rejection of formal institutions

While these processes describe how actors renegotiate institutions to form new arrangements, Cleaver and de Koning (2015) note that this can only occur within certain limits in their contexts. They echo Battilana in that "it is necessary to explain under what conditions actors are enabled to act as institutional entrepreneurs" (Battilana, 2006:643). This caveat directs the theoretical discussion to bricolage determinants.

4.3.1 Bricolage determinants

In line with the basic assumptions of critical institutionalism, institutions are unpredictable and "embedded in networks of relations; shaped by routine and practices; and bounded by social norms, values, and institutional constraints" (De Koning, 2011:31). Understanding institutions through the concept of bricolage "challenge[s] the view of actors as powerless victims of institutional change" (Gebara, 2019:638). Critical institutionalism also challenges the concept of a homogenous "community" in community-based resource management (Armitage, 2005:705). Instead, it focuses on smallholder stakeholders as heterogeneous agents of change with capabilities to influence institutional interventions (Gebara, 2019). Still, Cleaver (2012) argues that it is not simply an individual's choice to engage in bricolage processes and seeks to explain how the "room for manoeuvre" for bricolage processes is constructed. Karambiri et al. (2020) refer to the factors

that mediate this space as bricolage determinants. Bricolage determinants influence actors' ability to engage in bricolage processes and change their trajectories. Adding this dynamic to the analysis of bricolage processes provides further nuances of how institutions interact. Two factors dominate the theoretical discussions on what shapes the space for bricolage processes, namely *agency* and *structure* (Cleaver, 2012). In this thesis, these two are understood as bricolage determinants.

Agency is understood as the capacity of individuals to act as bricoleurs. Agency thus determines the constraints and opportunities available for people to act (Karambiri et al., 2020). Additionally, institutional formation is not neutral, and agency is closely interrelated to power (Cleaver & Whaley, 2018). According to institutional bricolage, power animates institutional change to happen (Mahoney & Thelen, 2009) while also determining who benefits from institutional outcomes (Cleaver, 2012). People in a position of less power may find their room for manoeuvre to be smaller. They may find it more challenging to engage in institutional interplay, negotiate its terms and shape its outcomes. In addition, the costs and benefits associated with challenging present institutions may result in different outcomes compared to more powerful people (Cleaver & De Koning, 2015).

Furthermore, societal structure also mediates the space for bricolage processes. It is at the same time closely interlinked with agency. As argued by Cleaver (2012:44), "[s]tructure impedes agency, shaping it in a number of ways." Agency is (consciously or not) determined by the context, including social relations, historical contexts, phycological preferences and economic resources (Cleaver, 2012; Cleaver & Whaley, 2018). Determinants such as able-bodiedness, language and culture may also be factors influencing the ability to exercise agency, especially in an impoverished setting (Cleaver, 2002).

4.4 Conceptual framework

The conceptual framework visualised in Figure 1 below illustrates the key theoretical concepts and how they are related. Each part of the framework is important for analysing bricolage processes to understand how interactive processes between formal and informal institutions occur and how the interactions create new arrangements balancing socioeconomic and environmental outcomes. It is argued that formal and informal institutions governing woodfuel are either present or introduced in the Zambian woodfuel sector. Driven by various motivations in the context, smallholder land users will renegotiate these institutions through bricolage processes and into new institutional arrangements. Agency and structure determine the room for these processes to occur. Depending

on how these new arrangements consider both socioeconomic and environmental aspects, it is argued that new arrangements guide choices and steer land users' behaviour to possibly balance socioeconomic and environmental outcomes. A balance indicates the potential to minimise the extent to which one goal is fulfilled at the expense of another.
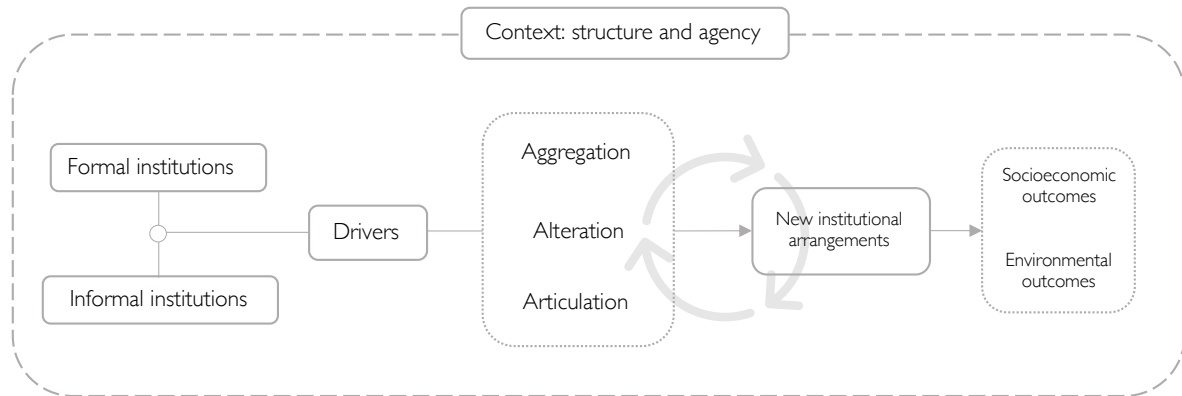
Figure 1. *Conceptual framework illustrating the theoretical trajectory of bricolage processes.*

The operationalisation of bricolage processes as aggregation, alteration and articulation will guide the coding of the material. The framework will thereafter inform the analysis. Note that as institutional interactions are nestled between actors, institutions and the unique context, the trajectory of bricolage processes should not be regarded as a linear flow. In line with central arguments of critical institutionalism, bricolage processes are not fixed, and the concepts in the figure above may be continuously renegotiated. However, for the sake of analysing interactions, the analysis will focus on interactions at a specific point in time even though they may be renegotiated *again* in the future.

4.5 Summary of theoretical framework

Critical institutionalism argues that previous approaches in the resource governance literature largely overlook essential aspects of explaining outcomes. Instead, scholars within this school of thought present a more nuanced understanding of how institutions shape governance outcomes. Rather than being designed for predictable outcomes, formal and informal institutions are dynamic in relation to the present context. This thesis adopts theoretical arguments from institutional bricolage to argue that individuals are agents of change, acting as bricoleurs to (un)consciously renegotiate both formal and informal institutions through three bricolage processes: aggregation,

alteration and articulation. Structure and agency determine people's room for manoeuvre to engage in these processes. Ultimately, renegotiated institutions form new institutional arrangements which guide and steer choices and behaviour. The conceptual framework illustrates how this will be understood and analysed in the selected case.

5. Methodology

This study employs a qualitative case study design using semi-structured interviews as the primary data collection method. This chapter critically discusses the choice of design, research site and respondent sampling, arguing for the usefulness and limitations of the chosen research strategy. A final section discusses ethical considerations and reflects upon the researcher's positionality.

5.1 Research design

Seeking an in-depth understanding of institutional interplay among smallholder land users in the Zambian woodfuel sector while investigating the "how" of this phenomenon, a case study approach is deemed most suitable for this thesis (Yin, 2014). Thus, the Zambian woodfuel sector serves as an instrumental case, thought to provide a fertile ground for gaining an in-depth understanding of the specific phenomenon of interest (Creswell & Poth, 2017).

A limitation with case study designs concerns generalisability. However, case studies "are generalisable to theoretical propositions and not to populations or universes" (Yin, 2014:21). In line with this, the results derived in this thesis do not aim to represent the population outside of the case. In contrast, this thesis seeks analytical generalisation by shedding light on empirical data about the theoretical concepts of critical institutionalism to be applied to new similar situations (Yin, 2014).

5.2 Site selection

With its vast and changing forestry landscape, dependence on woodfuel as well as governance structures, Zambia is a highly relevant site for the purpose of studying institutional interplay in the woodfuel sector. Still, the rationale for choosing Zambia was foremostly based on convenience: the researcher being based in Zambia prior to and during the writing of this thesis enabled access to data (Creswell & Poth, 2017). Moreover, being based in the country of study for a more extended period of time offered several benefits such as being aware of the context, being connected to gatekeepers and having access to specific resources.

The research site selection was driven by theoretical prepositions and pragmatic concerns (Silverman, 2017). In line with the purpose and theory, the site needed to illustrate both formal and informal institutions governing the woodfuel sector. Two districts were shortlisted after discussions with the Center for International Forestry Research (CIFOR), which has a long presence and knowledge of the country. A forest reserve[2] in the Copperbelt Province was finally selected. The chosen forest reserve is a Local Forest, and the Zambian state owns the land. It is governed by national laws requiring permits to use and extract forest resources, including charcoal production. Nevertheless, consumption and production of woodfuel are ongoing in the area, providing sources of livelihood for the hundreds of people informally settled in the reserve. This situation creates an evident conflict between socioeconomic and environmental aspects.

5.3 Respondent selection

Respondents were selected purposefully among the people settling in the reserve. After being introduced to the first respondent meeting the criteria, a snowball sampling method was used, where the respondents suggested and introduced the researcher to the next potential participant (Creswell & Poth, 2017). This sampling method continued until theoretical saturation was achieved. Maximum variation was sought to allow for variation in views and experiences (Seidman, 2006), whereby quotas for gender and age steered the selection process to the extent possible (Creswell & Poth, 2017). A list of respondents is found in Appendix B.

CIFOR allowed for initial conversations and introduction to the community (Leslie & Storey, 2003). Thus, people from the forest community who have had previous contact with CIFOR served as gatekeepers. They granted access to potential respondents and facilitated local approval of the research. In addition, they proved to be valuable sources of contextual knowledge throughout data collection in order to foster cultural sensitivity, introduce the research team, and establish trust. It is nevertheless acknowledged that the selection method and gatekeepers may have created a bias in the selection process. Scheyvens et al. (2003) note the risk of gatekeepers steering the selection process in their favour or only introducing the researcher to participants with particular views. Data has been triangulated with notes from CIFOR's previous observations, informal conversations and official documents to avoid such risks.

---

[2] The true name of the site is concealed. Read more about this in chapter 5.6.

Moreover, respondents' previous collaboration with CIFOR may have created a bias in the data. Although the researcher's independence was stressed during data collection, the risk of this is recognised throughout the analysis and carefully considered in the interpretation of responses. Still, as will be shown in the analysis, the affiliation with CIFOR added additional aspects to the material because respondents often brought up CIFOR's previous work in their responses. Without the affiliation with CIFOR, such aspects may not have been mentioned.

5.4 Methods and material
Data collection aimed to capture people's understanding of institutional arrangements and how such arrangements shape their management and forest use. For this purpose, it was critical to gain an understanding of both informal and formal institutions, as well as a thorough understanding of the context.

Semi-structures interviews
Qualitative semi-structured interviews were conducted to learn from individual perspectives and encourage respondents to express their experiences in their own words (Brounéus, 2011; Cohen & Crabtree, 2006). Fourteen semi-structured interviews were conducted; 13 respondent interviews were done with respondents from the forest reserve community, one informant interview was done with a representative from the forest department's district office. The interviews used open-ended questions as stated in a predesigned interview guide (Appendix A). The interview guide covers specific themes related to the conceptual framework. Still, each interview evolved differently depending on participants' individual answers and probes. The author carried out eight interviews in English, while the other seven were conducted in Bemba and translated and summarised in English by a researcher from CIFOR. Not gaining first-hand data from these seven interviews created some difficulties in terms of interpretation and translation (Leslie & Storey, 2003). This limitation is acknowledged when analysing the material. Nevertheless, letting respondents speak in their mother tongue may have created a more comfortable situation and more in-depth responses.

Informal conversations
Bricolage processes can be both conscious and unconscious. In order to identify such nuanced or "hidden" dynamics of institutional interplay, informal conversations were also held with community members, CIFOR research staff and governmental authorities. These additional data collection methods also increased the overall understanding of the case and context.

Triangulation

In addition, notes from previous observations and large-number surveys composed by CIFOR triangulated data and contextualised some of the findings. Furthermore, secondary sources such as policy documents, laws and regulative frameworks from the government informed data on formal institutions.

5.5 Data analysis

Thirteen interviews were recorded, and complementary notes were taken to capture non-verbal data. One interview relied solely on notetaking. The recorded interviews were manually transcribed verbatim, including verbal cues and extraneous words (Creswell & Poth, 2017). The analysis started already at this stage, with transcripts being read repeatedly to get a general feeling of the material. NVivo 12 was used to manually code the interviews, following both inductive and deductive strategies.

First, bricolage processes were systematically coded using thematic content analysis. Significant statements in the material were assigned one or more codes corresponding to the predefined theoretical categories aggregation, alteration and articulation. Theoretical prepositions and variables stated in the conceptual framework therefore steered most of the analysis (Patton, 2015). When applicable, material not corresponding to the predefined categories was also coded. Second, emerging patterns, especially related to the second research question, were categorised through an inductive strategy (Yin, 2014). This means that meaningful patterns are allowed to emerge in the material without previously having established what those might be (Patton, 2015). The data analysis resulted in a list of references from the material coded into categories. The list of codes is found in Appendix C.

5.6 Positionality, reflexivity and ethical considerations

A social constructivist paradigm has guided this study. The social construct of reality is central to this worldview, meaning that knowledge informing the research questions will rely on the participants' views and experiences (Baxter & Jack, 2008:545). Since actors in their role as bricoleurs are central to the institutional bricolage approach, capturing people's own constructs on reality is needed to answer the questions sufficiently.

A social constructivist paradigm also recognises the researcher's own background, beliefs and experiences, and how this influence interpretation of theory, material and findings (Creswell & Poth, 2017). Positionality may be particularly important to reflect upon with regards to the topic of this thesis. As Venot (2011) puts it: "In common with many 'wicked problems', resource management issues and the fairness of institutional arrangements depends on the viewpoint of the person perceiving them" (cited in De Koning & Cleaver (2015:7-8)).

It has been essential during all stages of the research process to reflect upon my own positionality in relation to the participants. Especially during the data collection, in order to ensure well-informed and nuanced analyses throughout (Scheyvens & Storey, 2003). Conducting research in a – to me – new context, positionality also entails power gradients, posing ethical questions concerning cultural, political and institutional sensitivity (Sultana, 2007). This concerns the identity that I bring to Zambia, but also how my identity is constructed by the people I engage with (Sultana, 2007). In the first place, I am a Swedish female student. In addition, my position as a researcher was also affiliated with CIFOR throughout the research process. It is recognised that how the identity as a young female foreigner and as a CIFOR affiliated researcher is constructed by others may have influenced the participants' answers.

With positionality in mind, I have also attempted to actively choose an approach whereby this cross-cultural research will add value to future research and practice. The established debates within resource governance favour blueprint solutions to sustainable natural resources, often based on Western ideals and worldviews. Exploring individual perceptions of institutions and unwrapping nuanced dynamics of resource governance, this research hopes to counter established universalistic views and contribute with additional perspectives to the debate (Scheyvens & Storey, 2003).

Due to the qualitative case study design, ethical considerations in line with LUMID guidelines were discussed and acted upon. With its presence and knowledge of the Zambian context, regular ethical consultations were also being held with CIFOR representatives before and throughout the data collection period. This included aspects of practicalities, local and official approval of the study and restrictions to ensure the security and safety of participants. The study was from the beginning planned accordingly to these aspects. Moreover, the study abides by the four ethical principles of information, consent, confidentiality, and utilisation presented by the Swedish Research Council (Vetenskapsrådet, 2002). First, prior to data collection, all prospective participants were informed of the study's aim and the implications of their participation. This information was also presented to local authorities in the district to obtain approval and permission for the study. After the

interviews, the respondents also had the opportunity to ask questions to the researcher. Second, participation was done on an entirely voluntary basis with informed consent. Everyone had the possibility to discard their participation at any time before the study was published, including during and after the interviews. Consent was also requested before recording conversations or taking notes. Third, all respondents and informants were kept anonymous throughout the data analysis process and anonymised using numbers (respondents 1-13 or informant 1). Although local authorities are aware of and collaborated with the people settling in the forest reserve, personal experiences of forest use and practices in the context are potentially sensitive. Because of this, data (both written text and recordings) is kept offline and confidentially by the researcher. Raw data is and will not be shared with anyone else. The real name of the forest reserve is also concealed throughout the presentation of findings and analysis. Lastly, the data will not be used for any aim other than stated in this thesis. Moreover, to ensure transparency and reciprocity towards participants in the study, the researcher will share the results and analysis with everyone who participated through CIFOR and local gatekeepers.

5.7 Delimitations

This study is limited to institutional interplay in only one part of the Zambian woodfuel sector, that is, from the perspective of smallholder land users. As such, the analysis focus on formal and informal institutions directly related to this group in the sector. Other woodfuel value chain actors' perceptions of renegotiating institutions on a community level, such as traders and consumers, are outside of the scope of this study.

6. Analysis and discussion

This chapter first presents the context of the studied forest reserve with relevant indicators derived from the material in section 6.1. It thereafter sets out to present and discuss findings, analysis and discussion of the research questions in section 6.2 and 6.3, respectively.

6.1 Contextualisation

6.1.1 Demography and livelihoods

People have settled in the studied forest reserve over the past 20-30 years. Most people arrived around ten years ago, while a few people have settled recently. Places of origin vary among the households in the community. Most have arrived from other parts of the Copperbelt Province, while others have come from neighbouring provinces across Zambia. Because of this, community identity in the reserve is not based along tribal or cultural lines. Today, approximately 300

permanent, semi-permanent or non-permanent households stay in the area. All respondents interviewed depend on either or both charcoal production and farming (respondents 1-13). While most practice subsistence farming, surplus production is at times sold to neighbours, nearby cities and villages. Charcoal, though, is produced in traditional kilns for trade. Although the community in the forest reserve is not officially a village, there is infrastructure such as roads, a school and churches in the area.

6.1.2 Functions of the forest

The interviews reveal that the forest reserve serves many functions other than being a woodfuel production site. Other resources derived from the forest include wood for timber and shelter, wild fruits, honey, mushrooms and natural medicines (respondents 1-13). From an environmental perspective, the forest reserve sustains healthy ecosystems, promotes biodiversity and mitigates climate change. All these aspects of the forest form important parts of people's livelihoods. The forest reserve's multiple functions illustrate the conflict between socioeconomic and environmental outcomes: complete ecological protection would deprive people's livelihoods. At the same time, the continued use of forest resources for livelihood needs continues to degrade the forest landscape.

6.1.3 Formal institutions

There are both formal and informal institutions guiding people's forest use and management. Formal institutions are surrounded by formalised arrangements and based on structures, legal rights and contracts (Jütting & De Soysa, 2007). Woodfuel policy and legislation in Zambia stretches over several ministries (Sola et al., 2019). However, studying institutional arrangements in a forest reserve, policies and legislation related to forest landscapes are most relevant. The overall objective of the Zambian forestry sector is to sustainably manage forest resources to both preserve its ecological value and maximise benefits for the nation in general and forest-dependent communities in particular (Ministry of Tourism, Environment and Natural Resources, 2009).

The studied forest reserve is a state-owned Local Forest managed by the Forestry Department district office. Local forest officers control and monitor activity in the reserve (informant 1). Formal institutions include the national laws regulating forest use, aiming to protect the forest reserve and promote environmental conservation. While many of these regulations are broadly implemented in the whole forest sector, there are also particular laws on woodfuel production. Policy and law documents used for the scope of this thesis include the Forests Act No. 4 of 2015,

which regulates the charcoal sector to protect forests, as well as the National Forest Policy (Ministry of Tourism, Environment and Natural Resources, 2009), which provides a framework for sustainable forest management.

The Forests Act No. 4 of 2015 states that Local Forests shall protect ecosystems and meet the local community's social, cultural and economic needs. The cutting, felling and using of trees or squatting on land in the forest require a permit obtained from the Forestry Department. The Forest Act No. 4 also provides for formulation and implementation of community-based management and joint forest management to control forest use. However, because the forest reserve in this study is state-owned land, the district forestry office claims that joint management between the state and the settled community is not an option there (informant 1). The National Forest Policy includes objectives to "ensure the establishment and sustainable management of forest resources for wood fuel production" (Ministry of Tourism, Environment and Natural Resources, 2009:20). The policy recognises both the importance of woodfuel for livelihoods and its major impact on forest degradation. Consequently, it aims to develop and implement sustainable methods for charcoal production (Ministry of Tourism, Environment and Natural Resources, 2009).

The district office at the Forestry Department is responsible for managing and monitoring activities in the forest reserve. However, forest officers are heavily constrained by limited financial means and a lack of political will (informant 1). According to community members, the local government only occasionally monitors activities in the reserve. When asked directly how the forest is managed, a common response was that the forest is not managed at all (respondents 1; 4; 7). In addition, weak regulations and expensive licence fees are mentioned as reasons why charcoal is extensively produced without permits (informant 1).

With the presence of non-governmental organisations (NGOs) in the area, formal institutions also include the norms, projects and structures promoted and implemented by external groups. These groups implement work in the area under the formulation about community-based forest management strategies in the Forests Act No. 4 of 2015. For instance, CIFOR has been collaborating with the community in the reserve to set up community-based structures promoting sustainable forest management in the area. The Forestry Department has at times also been present during the implementation of such structures. These institutions are perceived as formal because they are not embedded in the local context but instead imposed by external actors.

6.1.4 Informal institutions

Informal institutions include structures related to woodfuel that are embedded within the community. What differentiates these institutions from formal ones is that socially embedded institutions are not imposed from outside of the community. Instead, they are self-enforced identities, norms and beliefs embedded in the culture, social context and daily life (Jütting & De Soysa, 2007). Observed informal institutions include norms on a desirable livelihood as farmers and charcoal producers, the community identity, norms on land and forest management, traditional forest practices and social networks that all guide people's behaviour and actions. Some of them are individual beliefs on how the forest is to be managed, while some institutions have evolved as common belief in the community. Table 2 presents the formal and informal institutions related to woodfuel identified in the forest reserve.

Table 2. *Identified formal and informal institutions in the case.*

Formal institutions	Informal institutions
Permit for charcoal production	Norms on a desirable livelihood
Land access regulations	Community identity as forest users
Regulations on community-based management	Zambian identity and rights
NGO norms and practices on forest management	Norms on land and forest management
	Traditional forest practices
	Beliefs on land use

6.2 The interaction between formal and informal institutions

This section presents and discusses how formal and informal institutions interact in the Zambian woodfuel sector. The analysis draws on the key theoretical concepts, investigating how smallholder land users in the forest reserve renegotiate the interaction between formal and informal institutions through the bricolage processes aggregation, alteration and articulation. The discussion also addresses how structure and agency determine these processes.

All three bricolage processes presented in the analytical framework are identified in the forest reserve. In these processes, formal institutions including forest laws, charcoal regulations and external management ideas interact with informal institutions on forest management, including

identities, norms and beliefs about forest practices and use. The material further suggests that the interactions form new institutional arrangements. The bricolage processes will be discussed separately below.

6.2.1 Aggregation

Aggregation processes refer to the integration of formal and informal institutions. In the Zambian woodfuel sector, there are instances where formal institutions are not rejected but rather integrated with socially embedded forest practices. Driven by both livelihood needs and a desire to conserve the forest, people in the reserve recombine laws on forest use with norms on charcoal production. This process happens through initiating a new reforestation project and establishing a committee.

First, formal institutions in the area include the implementation of sustainable forest management strategies. At the same time, socially embedded norms of a desirable livelihood uphold the practice of cutting trees for charcoal production. Responding to both of these institutions, people in the reserve integrate these through a community-initiated reforestation project. Instead of discarding leftover logs from charcoal burning and construction work, land users collect and replant these logs. One respondent who leads the project describes the idea behind the project:

> It was our idea to put back the trees we have cut for charcoal…They can just grow from the pieces. So if I cut a tree to build a shelter, that tree I will not use the whole of it. The remaining part I put back to the soil, and it will again add value to the nature (respondent 12).

He explains that some community members got the idea after CIFOR introduced reforestation plans in the area. The project represents a new arrangement, where actors combine newly introduced ideas on sustainable forest management with traditional norms of producing charcoal.

In another aggregation process, formal regulations to control forest use are combined with socially embedded norms on how the forest may be used. Integrating these two institutions, a committee has been formed to control forest practices and use. Based on the available data of this study, the formality of the committee is somewhat contested. One person in the community claims the local government first initiated the committee as a way to govern the area through someone else's "eyes" (respondent 3). Others claim that the local government has nothing to do with the committee (respondents 1; 10). Government authorities interviewed claim that they do not officially recognise the committee (informant 1). Despite the mixed responses, the committee nevertheless represents an arrangement where formal and formal institutions are integrated. The committee's main purpose

is to protect the forest by sensitising people to not cut the trees (respondent 2). While this is in line with formal regulations, the committee does not forbid charcoal production completely. Instead, it rather controls how the forest resources are used (respondents 10; 12; 13). Smallholder land users thus renegotiate formal legislation on restricted resource use by integrating it with socially embedded norms that allow charcoal production.

Structure and agency, as presented in the conceptual framework, appear to drive the identified aggregation processes. For instance, the reforestation project requires land but also a long-term commitment to stay in the area. The formation of the committee requires resources to organise people and agency to establish political structures. People with fewer resources to plan for a longer term, or non-permanent settlers, might not engage in these processes to the same extent.

A summary of identified institutions and how they are found to interact through aggregation is found in Figure 2 below.
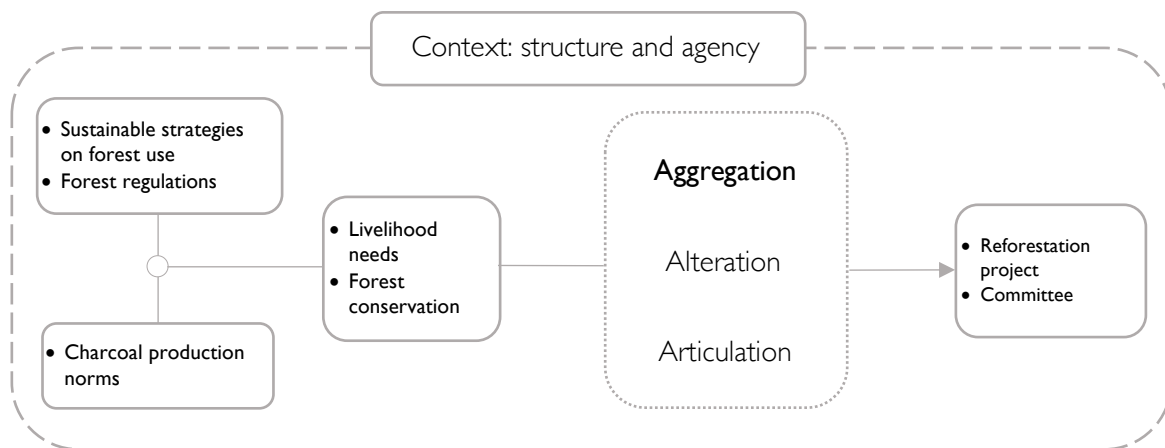
Figure 2. *Identified aggregation processes in the Zambian woodfuel sector.*

6.2.2 Alteration

Alteration processes refer to the separate processes of modifying or adapting both formal and informal institutions. Like processes of aggregation, alteration is also identified in the studied forest reserve. Livelihood needs, the need to protect the forest for future use, as well as the desire to secure land access drive the alteration processes. Through alteration processes, people in the reserve on the one hand re-interpret traditional practices and norms on forest use. On the other

hand, they are found to consciously bend or ignore formal regulations. These processes result in new arrangements of altered forest practices and land access structures.

First, formal laws implemented by NGOs and the government all refer to promoting sustainable forest management by introducing more sustainable forest practices. Informal institutions include traditional norms and embedded practices of extracting resources from the forests and beliefs on land rights. The material reveals that land users affected by these institutions alter socially embedded forest practices and replace them with the forest practices introduced by external actors. New arrangements are formed governing people's behaviour.

For example, during a forest management meeting organised by CIFOR, participants outlined action plans for sustainable forest management. Here, community members themselves presented actions to minimise charcoal burning (CIFOR observation, 2020). In another example, informal institutions are altered to better respond to formal institutions. Regulations introduced to minimise charcoal cutting have for instance been interpreted and adapted for other purposes (De Koning, 2011). One respondent recalls how some community members have changed their practices of cutting trees when collecting caterpillars:

> Some time back we [people in the community] went to catch caterpillars. Instead of finding ways to removing those from the tree, they just cut the trees for them to fall down, and it [the tree] dies. If that system continues, trees will finish. When we find such people, we try to discourage them and find ways to just trap the caterpillars (respondent 2).

After being introduced to new external ideas on forest practices, people have thought of new ways to catch caterpillars without cutting down trees. Consequently, previously accepted norms are rejected and replaced by arrangements influenced by formal institutions.

People have also altered other socially embedded practices. Community members in the forest reserve have changed previous practices after gaining new knowledge from CIFOR:

> Those are just other ways in which we are trying to manage because as we have been taught by CIFOR, like by preventing burning, that is late burning. It destroys a lot of things. Even the young trees that are coming up. We were encouraged if you are burning, we burn it April-May because that fire won't be that harmful (respondent 12).

Altering previous socially embedded practices by adopting formally introduced ideas has resulted in new practices, such as fireguards, windbreaks and crop rotation (respondent 3), and early burning (respondent 12). Furthermore, the "room for manoeuvre" to alter embedded practices is shown to be determined by the respondents' resources and agency. For example, one respondent explained that his agricultural education and long experience have helped him find new ways to alter his previous practices, such as introducing crop rotation on his plot (respondent 2). A person with fewer resources might not be able to take the risk, or know how to, alter his or her practices.

A second process of alteration involves ignoring formal structures on land access. All thirteen interviews reveal that people settling in the reserve are well aware of the laws restricting access to the forest. Some refer to themselves as "squatters" (respondent 12) and use words like "illegal" (respondent 2), knowing that they are not permanent and may face eviction at any time (respondent 3). Despite regulations, people need to access land to sustain livelihoods. Thus, people have resorted to ignore land regulations and replace them with two new arrangements that better respond to socially embedded beliefs on land rights: the committee described in the aggregation section above and social networks.

First, most of the respondents who have arrived within the past 15 years emphasise that they accessed the land through the committee's chairperson. In fact, one of the main purposes of the committee has over time also changed to include the allocation of land (respondent 10). Ultimately, this new arrangement replaces the formal institutions governing land access. Secondly, people ignore formal regulations on land access and replace them with arrangements governed by social networks. A few respondents share that they accessed the land through relatives, by knowing someone in the area, or approaching the previous settler (respondent 6; respondent 10). As explained by one respondent who stays in the forest land seasonally:

> When I got this place here the owner[3] showed me where the boundaries are. I've been doing the same I've been maintaining the boundaries since that time. If somebody comes into the area we have to sit down, and I call the owner who had given the land and we have to revisit again (respondent 6).

---

[3] This person did not officially own the plot. However, "owner" is the term used by this respondent.

He continues:

> Of course, legally we don't own this land that is still under government but even if you don't have a document, you know where the borders are, and you maintain those boundaries…Of course if you abide by the agreement that you make. Even verbal or written, that's an agreement (respondent 6).

Several other respondents also recall that they negotiated access to land with the previous owner[4] of the plot when they first arrived (respondents 3; 2; 13; 12). Some claim that they acquired land through kinship (respondents 5; 7). These examples indicate that formal institutions on land access have been ignored and replaced by new arrangements governing people's new behaviour on accessing land.

A summary of identified institutions and how they are found to interact through aggregation processes is found in Figure 3 below.
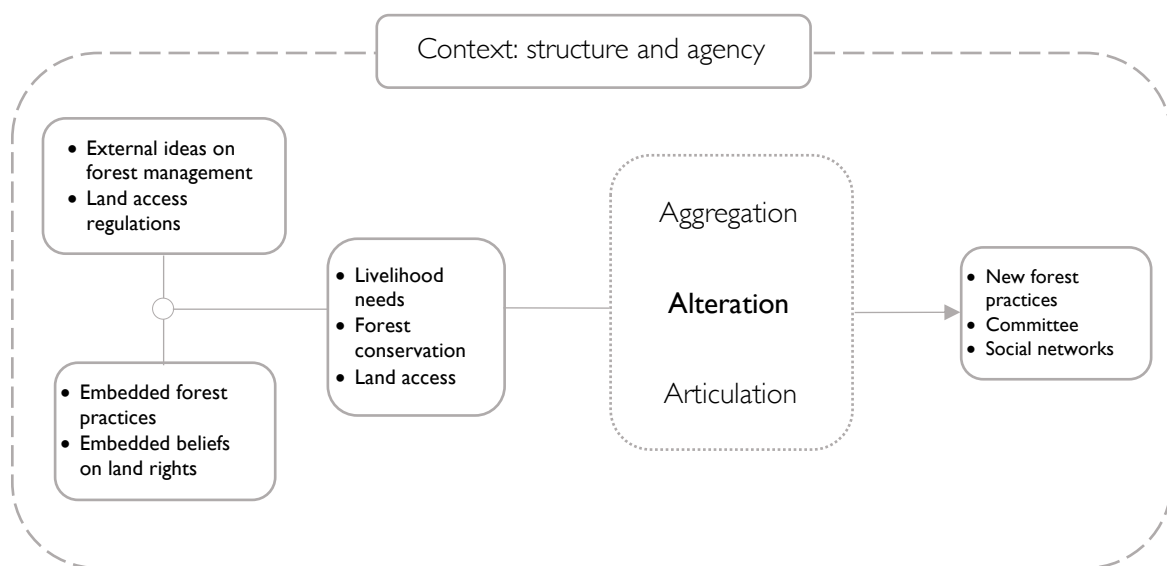
Figure 3. *Identified alteration processes in the Zambian woodfuel sector.*

6.2.3 Articulation

Through articulation processes, people reject formal institutions by emphasising socially embedded institutions. In contrast to alteration, articulation involves actors perceiving that their embedded

Context: structure and agency

---

[4] This person did not officially own the plot. However, "owner" is the term used by several respondents.

practices truly are the right way of doing things. People draw upon traditional norms and practices to proclaim how "things have always been done" (De Koning, 2011:33). As a result, formal institutions are usually rejected. Driven by the need to secure land for livelihood needs, the community occasionally rejects land access regulations in the forest reserve. People justify the rejection by articulating claims on identity as both a community and as Zambian nationals.

For example, one respondent justifies his stay in the reserve by emphasising his right as a Zambian national:

> My stay here is not legal, it's illegal…But due to that we knew that it was state land, and we are all citizens of Zambia I thought could use the land for my livelihood (respondent 12).

He believes that as a citizen of Zambia, he should have access to state-owned land. According to this respondent, laws in the reserve restricts this belief and undermines his rights. As a result, he actively rejects the law.

Articulation processes are not only observed when people accessed land in the first place. In other instances, those who have been in the reserve for decades still reject formal regulations. In doing this, they articulate their identity as forest users. Speaking on their own role in managing the forest, some respondents admit that their previous and current practices in fact are the main cause of the forest degradation in the reserve (respondent 1). However, other respondents are quick to stress that other groups of people are doing more harm. A narrative of "us and them" emerges in the respondents' testimonies. "Us" represents the people settling in the forest reserve, while "them" are people who use the land in the reserve without permanently being settled there. Us and them also represent a dichotomy between the "sustainable forest users" (us) and the "unsustainable forest users" (them). Through this narrative, people in the forest reserve appear to draw upon their own group's sustainable management routines and forest practices to justify their continued use of the forest.

The narrative is exemplified in the material through the perceived difference in forest use between the community members in the reserve and companies entering the reserve to explore mining opportunities. One respondent expresses the community's sustainable managing strategies in relation to what the mining company is doing:

I'm seeing even the miners have started coming. So my worry is I don't know even if we should continue managing it [the forest] …We try to bring back the forest. What about those miners. Are they not coming to chase us out? (respondent 3).

Similarly, other respondents distinguish their own management practices from the practices of those occasionally entering the reserve. Two respondents believe it is people from other places that produce charcoal in an unsustainable manner:

Interviewer: Why do you think the forest has been degraded? Respondent 2: Because of charcoal burning…The people that destroyed this land came as far as K[5] just to follow the trees here and when they finished cutting the trees they went back. So, we decided to now utilise the land for farming.

Respondent 10: Ah, these stranger ones that's coming from M and N[6]…It is not us but those people that are coming, they are cutting most trees…They are using sawing machine. We are using axe. Now those are coming with these machines. They are not permanent. They cut and they go.

These two extracts illustrate that these respondents believe other groups are the ones degrading the forest. In contrast, they seem to believe that they themselves practice more sustainable forest practices. Similar narratives emerge in other interviews as well. One person explains that people who "don't even live here [in the reserve]" (respondent 12) cut down as many trees as they can in a few days, only to leave and go to the next area after. "They [people from outside of the reserve] don't care" (respondent 1), another respondent concludes. In contrast, people argue that their own management practices are part of the solution by saying that "the government cannot do it [protect the forest] without us" (respondent 12). To further distinguish themselves from other groups, the community within the reserve has continued with more sustainable practices, including using traditional equipment such as axes, and some have turned to farming instead of charcoal production. Processes of articulation can therefore be argued to have resulted in a new identity of being sustainable forest users.

---

[5] Neighboring city in the Copperbelt Province.

[6] Neighboring cities in the Copperbelt Province.

Articulation processes in this case imply that people articulate their own identity and norms to resist formal regulations that prohibit forest use. The claim to the land is further justified by the dichotomous narrative separating the community from other groups. A new, internal institutional arrangement is shaped, where people draw on identities to steer their forest management practices.

A summary of identified institutions and how they are found to interact through aggregation is found in Figure 4 below.
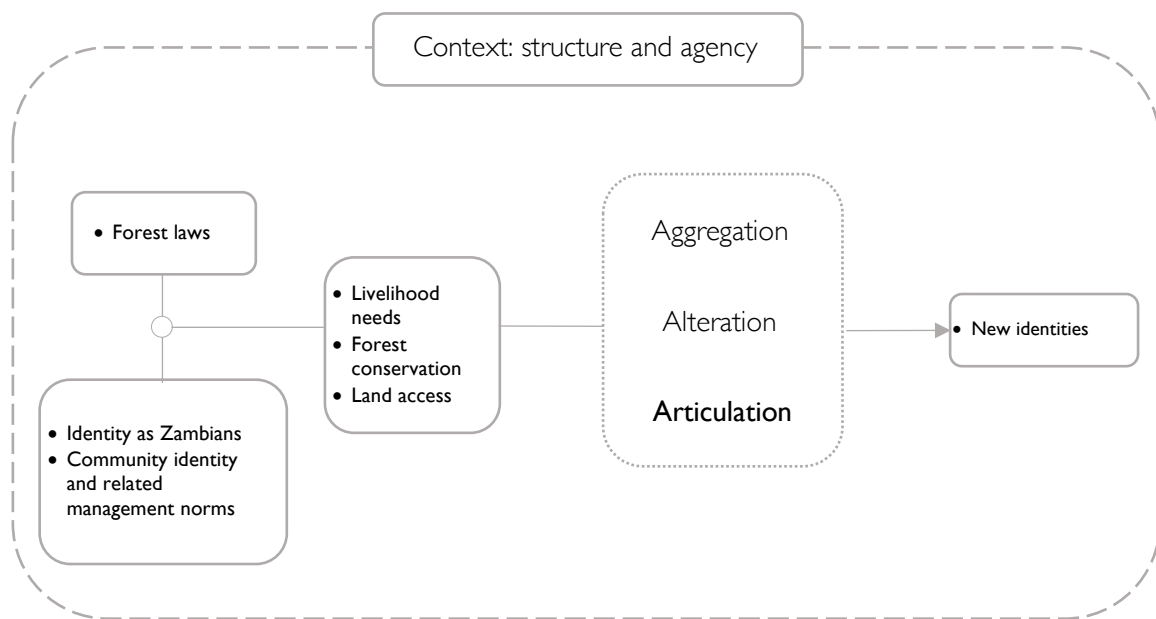
Figure 4. Identified articulation processes in the Zambian woodfuel sector.

6.2.4 Discussing bricolage processes

The above findings indicate that all three bricolage processes are prevalent in line with the theoretical expectations. This suggests that smallholder land users indeed renegotiate interactions between formal and informal institutions into new institutional arrangements. However, some results warrant further reflection.

First, the bricolage determinants structure and agency, which were introduced in the analytical framework, seem to have shaped the room for manoeuvre for people to renegotiate formal and informal institutions. In this context, this includes political agency, social networks and available resources. These findings echo the theoretical arguments of institutional bricolage, suggesting that institutional interplay does not happen in a void but is influenced by contextual factors (Cleaver & De Koning, 2015; De Koning, 2011). In particular, the findings resonate with the study by

Karambiri et al. (2020), who found that bricolage determinants influence trajectories of institutional change. However, in contrast to previous studies, such as Karambiri et al. (2020), the material does not support claims on the importance of *power relations* in determining the room for manoeuvre. For instance, gender relations are not found to influence the renegotiation of institutions in the forest reserve. The data at hand indicates that women and men face similar opportunities in renegotiation institutions. Although the collected data does not support the notion of gender relations having a significant impact, it should be noted that the majority of the respondents were male, and that interviewing a higher number of women could have revealed other patterns. Another factor that departed from the theoretical expectations was hierarchical power relations, which was not found to determine bricolage processes significantly. Since the community in the reserve are settlers from across Zambia, traditional power structures do not exist in the same sense as in a traditional Zambian village. Instead of being headed by a village chief, the politically elected chairperson lead people in the reserve. Again, this finding might in part be a result of the case selection process, as a community characterized by traditional power structures might have revealed other determining aspects related to power.

Second, the identified bricolage processes illustrate the role of formal institutions introduced by external non-governmental actors. With CIFOR's long presence in the area through collaborations with the community, relationships and trust seem to have become established. Formal institutions implemented by CIFOR are for example both integrated and adopted in aggregation and alteration processes. In contrast, governmental institutions are more often subject to rejection in articulation processes. This finding illustrates the potential importance of formal institutions introduced by external non-governmental actors, building on previous research. De Koning (2011) concludes, for example, that the influence of institutions introduced by NGOs is, in fact, more significant than that of governmental ones. NGOs are often more trusted because of their established presence in the local area, their lack of sanctions towards the communities, and them offering alternatives to unsustainable practices.

A final reflection on the interplay between formal and informal institutions is that of weak regulations and monitoring. Local forestry authorities recognise the lack of resources to effectively monitor and enforce regulations on charcoal production (informant 1). Consequently, renegotiating formal restrictions on forest use usually do not come with any sanctions. Weak governance enables respondents to reject formal institutions, as they are aware that the government does not have the capacity to manage the forest (respondents 1; 5; 7). This finding emphasises the

importance of context in institutional interplay. It corroborates the results of other studies, for example De Koning, who finds that weak regulations "makes the impact of bureaucratic institutions on practices much more complex as it involves not only processes of institutional bricolage but also a lack of state capacity" (De Koning, 2011:208). In a country like Zambia, with weak implementation of forest regulations, this is particularly relevant.

6.3 Balancing conflicting outcomes

The discussion so far has focused on how smallholder land users renegotiate the interaction between formal and informal institutions. The material has reaffirmed the previously established notion that the interactions between formal and informal institutions are a "key focal point" (Pacheco et al., 2008:67) for understanding resource management behaviour. Nevertheless, analysing how these interactions *balance* socioeconomic and environmental outcomes will add a new perspective to the field. The forthcoming analysis will discuss how these newly formed arrangements balance socioeconomic and environmental outcomes.

Recall that balancing socioeconomic and environmental outcomes is understood as a situation where newly formed arrangements, which steer choices and behaviour, consider both environmental and socioeconomic aspects. Two factors are found in the material, suggested to be related to how new arrangements balance conflicting outcomes: the perceived interdependence between socioeconomic – environmental aspects, and secured land access.

6.3.1 Interdependent socioeconomic – environmental outcomes

It appears that social and environmental outcomes in the forest reserve are perceived as interdependent. This perceived interdependence has driven bricolage processes to form new arrangements that not only respond to socioeconomic but also environmental aspects. People settling in the reserve depend on the forest for their livelihoods, income and well-being (respondents 10; 12; 13), and charcoal production has been central in this regard. However, as the forest began degrading, people have noticed changes in weather patterns (respondents 1; 10) and biodiversity (respondent 3). These changes have had severe consequences for the livelihoods of people settling in the area. Food products in the forest have diminished, crops have failed, and people have become more vulnerable to harsh weather (respondents 10; 2). All respondents explain that a sustainable forest landscape is not only valuable as an end in itself, but as a means to sustain livelihoods: A healthy forest provides good and services (respondent 1) such as food products, flora and fauna, and attracts tourists (respondent 3) to sustain livelihoods today as well as in the future (respondent 13). "If it is not well managed, in the end, we won't have any other place where

we can go to" (respondent 12). The desire to sustain their livelihoods also in the future therefore creates an incentive to adopt some regulations to protect the environment. However, it is argued that environmental conservation practices cannot be *fully* accepted as this would ultimately deprive the community's livelihoods. People thus renegotiate institutions into new arrangements seen in chapter 6.2 in ways that seem to balance environmental and socioeconomic outcomes.

Through the aggregation of formal and informal institutions, for instance, the reforestation project promotes conservation practices while also responding to necessary livelihood needs. Similarly, the formation of the committee has integrated formal and informal institutions to regulate forest use while still allowing for charcoal production. In alteration processes, adopting new ideas on forest management by changing socially embedded norms on excessive woodcutting also appears to have resulted in positive outcomes for the environment. At the same time, these new practices have, in the end, also favoured socioeconomic outcomes by for example providing windbreaks for agricultural lands that enhance crop production (respondent 2). Respondent 2 also acknowledges that both the environment and they themselves have already benefitted from these changes:

> Because we have educated them, our colleagues have minimised discriminatory cutting of trees…Now when I come here, I discover that instead of me concentrating on charcoal burning, let me utilise the land to grow more food (respondent 2).

Seeing environmental and social outcomes as interdependent, the material proposes that community members have created a balance between outcomes through renegotiating institutions into new arrangements. In this way, institutional interplay can have the potential to minimise the extent to which one goal is fulfilled at the expense of another.

6.3.2 Secured land access to ensure sustained livelihoods and sustainable forest management
Another way in which the data suggests that institutional arrangements balance socioeconomic and environmental outcomes relates to secured land access. New arrangements aiming to secure land access seemingly balance both socioeconomic and environmental outcomes. Formal access to land strengthens settlers' opportunities to sustain their livelihoods also in the future – when possessing land, people can produce charcoal, grow crops, and keep livestock. However, as formal institutions restrict formal access to land, people have resorted to ignore or reject these institutions. Instead, new arrangements are formed to fulfil land access needs. These include the formation of the committee and the reliance on social networks through alteration processes, and articulating a new group identity as sustainable forest users, all described in chapter 6.2.

Previous scholars, for example Faggin and Behagel (2018), argue that when formal institutions do not consider the many socio-ecological roles of the forest, actors reject formal institutions. As a result, strategies for sustainable resource governance are not reaching their full potential. At first sight, the situation in the Zambian woodfuel sector proposedly confirms this. One respondent claims that the new arrangements to allocate land have led to a situation where all land in the reserve is occupied by someone (respondent 8). The occupation leaves no room for protected areas. Instead, the occupation has turned the forest reserve into an agricultural site without any trees. Putting it frankly, it is no longer a forest, one respondent said (respondent 4). In this case, new arrangements aiming to secure land have sustained livelihoods at the expense of a healthy forest landscape. However, exploring these arrangements further reveals that they may also promote environmental outcomes. Although increased land occupation does not achieve the full potential of environmental strategies, this study suggests that the rejection or alteration of institutions may actually balance both environmental and socioeconomic outcomes. This is similar to the findings on the perceived interdependence of socioeconomic-environmental outcomes.

First, through articulation processes, people use their identity as sustainable forest users to legitimise their right to stay in the area. By emphasising the identity as sustainable forest users in articulation processes, people have continued more sustainable practices such as using traditional tools and abandoning charcoal production. This new arrangement therefore unconsciously incorporates both socioeconomic and environmental outcomes, arguably balancing the two. This finding is quite surprising. Since articulation means that formal rules are rejected (De Koning, 2011), one could think that environmental outcomes would be entirely excluded. Yet, this study indicates the opposite.

Second, alteration processes forming a committee and social networks to allocate land has for some respondents incentivised long-term investments to prevent land degradation (respondents 6; 13). "If we were allowed to say this is our permanent land, we would even perform better" because investments in infrastructural development and management methods would not go to waste, one respondent explains (respondent 2). "If it [the land] is yours, you make sure you develop that area" (respondent 13) another respondent adds. This argument is in line with Gebara (2019), who argues that investments for long-term visions are critical for changing production systems. Where immediate survival needs often constrain smallholder land users to invest necessary resources in the land, long-term goals could incentivise change. The narratives describing a group of non-

permanent "unsustainable forest users" found in the material further support the importance of long-term incentives to prevent degradation. Non-permanent groups do not appear to have any long-term incentives to manage the forest sustainably. Instead, they use harmful cutting practices, which is an indication of the importance of time horizons in understanding how the institutional interplay balance between socioeconomic and environmental outcomes. A respondent selection with non-settling forest users could have shed further light on this matter.

In sum, these findings suggest that institutional interplay may result in arrangements that increasingly allocate land to settlers in the reserve. At first, this appears to promote livelihood needs at the expense of environmental protection. However, accessing land through these arrangements instead seem to incentivise people to also engage in sustainable forest practices, both because of the need to uphold an identity and the desire to invest for long-term goals.

7. Conclusion

How to sustainably govern natural resources has puzzled researchers and development practitioners for many decades. Institutions – both formal and informal – have been central in this debate. More lately, empirical evidence has directed the attention towards how formal and informal institutions interact to influence outcomes of resource governance. Employing an institutional bricolage approach, this study scrutinises how such interactions happen in the Zambian woodfuel sector. Although woodfuel production is identified as one of the main drivers of deforestation, it serves many critical roles for people's livelihoods. In such a multifunctional landscape, it is essential to find a strategy where safeguarding environmental protection does not happen at the expense of forest-dependent communities' livelihoods – and vice versa.

Two research questions guided the analysis: first, how smallholder land users renegotiate the interaction between formal and informal institutions, and second, in which ways the interactions balance socioeconomic and environmental outcomes. In response to the first research question, this study illustrates that actors in the forest reserve renegotiate formal and informal institutions through all bricolage processes suggested by the theory and conceptual framework, namely aggregation, alteration and articulation. The results show that institutions are renegotiated into new arrangements that steer people's choices and behaviour. The findings also suggest that several aspects in the local context determine the nature and extent of bricolage processes, including resources, the presence of NGOs and weak state capacity.

The findings related to the first research question are broadly consistent with previous studies on bricolage processes, adding further empirical evidence to the notion that local actors consciously and unconsciously renegotiate formal and informal institutions. The findings also confirm that contextual factors seem critical in determining bricolage trajectories. Nevertheless, by investigating institutional interplay in the Zambian woodfuel sector, this study contributes to further insights on institutional interplay from a multifunctional perspective. In response to the second question, this study concludes that the interactions between formal and informal institutions also have the potential to form new arrangements that *balance* competing socioeconomic and environmental outcomes. The evidence suggests that there exists a certain space to leverage outcomes in one area without it happening at the expense of another. First, the perceived interdependence between socioeconomic-environmental outcomes incentivises the renegotiation of institutions into new arrangements that consider both socioeconomic and environmental outcomes. Second, arrangements to secure land access first appears to promote livelihood needs at the expense of environmental protection. However, the findings propose that these new arrangements also consider environmental outcomes in the longer term, balancing the two in the end.

Considering the single case study design, this thesis does not aim to generalise the findings to the broader population. The conclusions nevertheless contribute to analytical generalisation for institutional bricolage to be further applied in research. The conclusions thus have implications for both research and practice. For research on natural resource governance, this study further shows the applicability of institutional bricolage and the value of studying institutional interplay to understand governance outcomes fully. It also develops the theoretical applicability by suggesting that interactions in particular can influence the balance of outcomes in a multifunctional landscape. For development practice, this understanding may inform strategies to promote multiple functions of a resource landscape for future environmental and socioeconomic sustainability.

Although the findings of this study might strengthen the evidence base for institutional interactions in multifunctional landscapes, there exist several areas for future research. Further studies may advantageously set out to pinpoint causality between interactions and outcomes. For example, comparing permanent and non-permanent communities in the forest reserve could more confidently establish how interactions balance outcomes. Also, as this study only focused on a small part of the Zambian woodfuel sector, it could be of interest for future studies to explore bricolage processes in other parts along the value chain, including traders and consumers.

Nonetheless, by having further established the role of institutional interplay in resource governance and suggesting its relation to outcomes in a multifunctional landscape, this study provides an exciting starting point for further investigations in this field.

8. List of references

AEDA (2013). Socioeconomic development. [online]. Agricultural and Environmental Data Archive. *Freshwater Biological Association.* Available at: <http://www.environmentdata.org/archive/vocabpref:20313> [accessed 2021-05-01].

Arevalo, J. (2016). Improving Woodfuel Governance in Burkina Faso: The Experts′ Assessment. *Renewable and Sustainable Energy Reviews*, 57, pp. 1398–1408.

Armitage, D. 2005. Adaptive Capacity and Community-Based Natural Resource Management. *Environmental Management*, 35(6), pp. 703–715.

Arts, B., Behagel, J., Turnhout, E., de Koning, J. and van Bommel, S. (2014). A Practice Based Approach To Forest Governance. *Forest Policy and Economics*, 49, pp. 4–11.

Arts, B., Behagel, J., van Bommel, S., De Koning, J., Turnhout, E. (2013). Prelude to Practice: Introducing a Practice Based Approach to Forest and Nature Governance. In Arts, B., Behagel, J., van Bommel, S., De Koning, J. and Turnhout, E. (eds.) *Forest and Nature Governance: A Practice Based Approach.* Dordrecht: Springer, pp. 3–22.

Battilana, J. (2006). Agency and Institutions: The Enabling Role of Individuals' Social Position. *Organization*, 13(5), pp. 653–676.

Baxter, P. and Jack, S. (2008). Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers. *The Qualitative Report*, 13, pp. 544–559.

Brounéus, K. (2011). In-depth Interviewing. In: Höglund, K., Öberg, M. (eds.), *Understanding Peace Research*, London: Routledge Ltd.

Chinsinga, B. (2011). The Politics of Land Reforms In Malawi: The Case Of The Community Based Rural Land Development Programme (CBRLDP). *Journal of International Development*, 23, pp. 380–393.

CIFOR, (2020). Developing options for more sustainable woodfuel value chains in Sub-Saharan Africa. 332 Flyer, *Center for International Forestry Research (CIFOR).* Available at: <https://www.cifor.org/knowledge/publication/7782> [accessed 2020-11-20].

Cleaver, F. (2012). *Development Through Bricolage: Rethinking Institutions for Natural Resource Management.* Oxon: Routledge.

Cleaver, F. (2002). Reinventing Institutions: Bricolage and the Social Embeddedness of Natural Resource Management. *The European Journal of Development Research*, 14, pp. 11–30.

Cleaver, F. and De Koning, J. (2015). Furthering Critical Institutionalism. *International Journal of the Commons*, 9(1), pp. 1–18.

Cleaver, F. and Whaley, L. (2018). Understanding Process, Power, And Meaning in Adaptive Governance: A Critical Institutional Reading. *Ecology and Society*, 23(2):49.

Cohen, D. and Crabtree, B. (2006). RWJF - Qualitative Research Guidelines Project|Semi-structured Interviews|Semi-structured Interviews [online], Available at: <http://www.qualres.org/HomeSemi- 3629.html> [accessed 2020-11-17].

Creswell, J.W. and Poth, C.N. (2017). *Qualitative Inquiry & Research Design: Choosing Among Five Approaches*, 4th ed. Los Angeles: SAGE Publications.

Day, M., Gumbo, D., Moombe, K., Wijaya, A. and Sunderland, T. (2014). Zambia country profile: Monitoring, reporting and verification for REDD+. *Occasional Paper 113*. Bogor: Center for International Forestry Research.

De Koning, J. (2011). Reshaping Institutions: Bricolage Processes in Smallholder Forestry in The Amazon. Dissertation. Forest and Nature Conservation Policy, Wageningen University and Research.

De Koning, J. and Benneker, C. (2013). Bricolage Practices in Local Forestry. In Arts, B., Behagel, J., van Bommel, S., De Koning, J. and Turnhout, E. (eds.) *Forest and Nature Governance: A Practice Based Approach*. Dordrecht: Springer, pp. 49–68.

De Koning, J. and Cleaver, F. (2012). Institutional Bricolage in Community Forestry: An Agenda for Future Research. In Arts, B., van Bommel, S., Ros-Tonen, M. and Verschoor, G. (eds.) *Forest-People Interfaces*. The Netherlands: Wageningen Academic Publishers, pp. 277–290.

Faggin, J.M. and Behagel, J.H. (2018). Institutional Bricolage of Sustainable Forest Management Implementation in Rural Settlements in Caatinga Biome, Brazil. *International Journal of the Commons*, 12(2), pp. 275–299.

FAO (2021). Wood Energy [online]. *Food and Agriculture Organization of the United Nations*. Available at: <http://www.fao.org/forestry/energy/en/> [accessed 2021-03-24].

Felix, M. (2015). Future Prospect and Sustainability of Wood Fuel Resources in Tanzania. *Renewable and Sustainable Energy Reviews*, 51, pp. 856–862.

Forests Act No. 4 of 2015. Government of the Republic of Zambia.

Friman, J. (2020). Gendered Woodcutting Practices and Institutional Bricolage Processes – The Case of Woodcutting Permits in Burkina Faso. *Forest Policy and Economics,* 111, 102045, pp. 1–8.

Gebara, M.F. (2019). Understanding Institutional Bricolage: What Drives Behavior Change Towards Sustainable Land Use in The Eastern Amazon? *International Journal of the Commons*, 13(1), pp. 637–659.

Gumbo, D., Moombe, K., Kandulu, M., Kabwe, G., Ojanen, M., Ndhlovu, E. and Sunderland, T. (2013). Dynamics of The Charcoal and Indigenous Timber Trade in Zambia: A Scoping

Study in Eastern, Northern and Northwestern Provinces. Occasional Paper No. 86, *Center for International Forestry Research*, Bogor, Indonesia.

Hajjar, R, Oldekop, JA, Cronkleton, P, Newton, P, Russell, AJM and Zhou, W. (2021). A Global Analysis of the Social and Environmental Outcomes of Community Forests, *Nature Sustainability*, 4(3), pp. 216–224

Hall, K., Cleaver, F., Franks, T. and Maganga, F. (2014). Capturing Critical Institutionalism: A Synthesis of Key Themes and Debates. *European Journal of Development Research,* 26, pp. 71–86.

Hölting, L., Felipe-Lucia, M.R. and Cord, A.F. (2020). Multifunctional Landscapes in *Encyclopedia of the World's Biomes.* Available at: < https://doi.org/10.1016/B978-0-12-409548-9.12098-6> [accessed 2021-04-21].

IEA (2020). World Energy Outlook 2020. [online]. International Energy Agency. Available at: <https://www.iea.org/reports/world-energy-outlook-2020> [accessed 2021-01-23].

Ihalainen, M., Schure, J. and Sola, P. (2020). Where Are the Women? A Review and Conceptual Framework for Addressing Gender Equity in Charcoal Value Chains in Sub-Saharan Africa. *Energy for Sustainable Development,* 55, pp. 1–12.

Jütting, J. and De Soysa, I. (2007). Informal Institutions and Development: How They Matter and What Makes Them Change. In: Jütting, J., Drechsler, D., Bartsch, S. and de Soysa, I. (eds.) *Informal Institutions: How Social Norms Help or Hinder Development.* OECD Publications Centre.

Kabisa, M., Mulenga, B.P., Ngoma, H. and Kandulu, M.M. (2019). The Role Of Policy And Institutions In Greening The Charcoal Value Chain In Zambia. Research Paper 167. Michigan State University and IAPRI.

Karambiri, M., Brockhaus, M., Sehring, J. and Degrande, A. (2020). 'We Are Not Bad People'-Bricolage and the Rise of Community Forest Institutions in Burkina Faso. *International Journal of the Commons* 14(1), pp. 525–538.

Lambini, C. and Nguyen, T. (2014). A Comparative Analysis Of The Effects Of Institutional Property Rights On Forest Livelihoods And Forest Conditions: Evidence From Ghana And Vietnam. *Forest Policy and Economics*, 38, pp. 178–190.

Leslie, H. and Storey, D. (2003). Entering the Field. In: Scheyvens, R. *Development Fieldwork: A Practical Guide.* London: SAGE Publications, pp. 119–138.

Mahoney, J. and Thelen, K. (2009). *Explaining Institutional Change: Ambiguity, Agency, and Power.* Cambridge: Cambridge University Press.

Ministry of Tourism, Environment and Natural Resources (2009). *National Forestry Policy 2009.* Government of the Republic of Zambia.

Neufeldt, H., Langford, K., Fuller, J., Iiyama, M. and Phil, D. (2015). From Transition Fuel to Viable Energy Source: Improving Sustainability in The Sub-Saharan Charcoal Sector. *World Agroforestry Centre (ICRAF).* Available at: <https://doi.org/10.5716/WP15011.PDF> [accessed 2020-10-03].

Nunan, F., Hara, M. and Onyango, P. (2015). Institutions and Co-Management in East African Inland and Malawi Fisheries: A Critical Perspective. *World Development,* 70, pp. 203–214.

OECD, 2001. Common property resources (environmental) Definition [online]. *The Organisation for Economic Co-operation and Development (OECD) Glossary of Statistical Terms.* Available at: <https://stats.oecd.org/glossary/detail.asp?ID=391> [accessed 2021-04-12]

O'Farrell, P.J. and Anderson, P.M. (2010). Sustainable Multifunctional Landscapes: A Review to Implementation. *Current Opinion in Environmental Sustainability*, 2, pp. 59–65.

Osei-Tutu, P., Pregernig, M. and Pokorny, B. (2015). Interactions Between Formal and Informal Institutions in Community, Private and State Forest Contexts in Ghana. *Forest Policy and Economics,* 54, pp. 26–35.

Ostrom, E. (1990). *Governing the Commons: The Evolution of Institutions for Collective Action.* Cambridge University Press.

Pacheco, P., Barry, D., Cronkleton, P. and Larson, A. (2008). The Role of Informal Institutions in the Use of Forest Resources in Latin America. *Forests and Governance Programme No. 15/2008*, Bogor: Center for International Forestry Research.

Patton, M.Q. (2015). *Qualitative Research & Evaluation Methods: Integrating Theory and Practice*, 4th ed. SAGE Publications, Inc.

Pellowe, K.E. and Leslie, H.M. (2020). The Interplay Between Formal and Informal Institutions and the Potential for Co-Management in a Mexican Small-Scale Fishery. *Marine Policy*, 121, 104179, pp. 1–8.

Scheyvens, R., Nowak, B. and Henry Scheyvens (2003). Ethical Issues. In: Scheyvens, R. *Development Fieldwork: A Practical Guide.* London: SAGE Publications, pp. 139–166.

Scheyvens, R. and Storey, D. (2003). Introduction. In: Scheyvens, R. *Development Fieldwork: A Practical Guide.* London: SAGE Publications, pp. 1–16.

Schure, J., Dkamela, G.P., van der Goes, A. and McNally, R. (2014). An Approach to Promote REDD+ Compatible Wood-fuel Value Chains. *SNV Netherlands Development Organisation.* Available at: <https://www.cleancookingalliance.org/resources_files/approach-to-promote-redd-wood-fuel.pdf> [accessed 2020-12-09].

Schure, J., Ingram, V., Arts, B., Levang, P. and Mvula-Mampasi, E. (2015). Institutions and Access to Woodfuel Commerce in the Democratic Republic of Congo. *Forest Policy and Economics*, 50, pp. 53–61.

Schure, J., Ingram, V., Sakho-Jimbira, M.S., Levang, P. and Wiersum, K.F. (2013). Formalisation of Charcoal Value Chains and Livelihood Outcomes in Central- And West Africa. *Energy for Sustainable Development*, 17, pp. 95–105.

Seidman, I. (2006). *Interviewing as Qualitative Research*, 3rd ed. Teachers New York: College Press.

Shively, G., Jagger, P., Sserunkuuma, D., Arinaitwe, A. and Chibwana, C. (2010). Profits and Margins Along Uganda's Charcoal Value Chain. *The International Forestry Review*, 12, pp. 270–283.

Silverman, D. (2017). *Doing qualitative research*. 5th ed. Los Angeles: SAGE Publications.

Sola, P., Schure, J., Atyi, R.E., Gumbo, D. and Okeyo, I. (2019). Woodfuel Policies and Practices in Selected Countries in Sub-Saharan Africa – A Critical Review. *Bois et Forêts des Tropiques* 340, pp. 27–41.

Sultana, F. (2007). Reflexivity, Positionality and Participatory Ethics: Negotiating Fieldwork Dilemmas in International Research. *ACME: An International E-Journal for Critical Geographies*, 6 (3), pp. 374-385.

Vetenskapsrådet (2002). *Forskningsetiska principer inom humanistisk-samhällsvetenskaplig forskning*. Elanders Gotab. pp. 1–17.

WHO (2018). Household Air Pollution and Health. [online]. *World Health Organization*. Available at: <https://www.who.int/news-room/fact-sheets/detail/household-air-pollution-and-health> [accessed 2020-11-22].

Wong, S. (2016). A Post-Critical Perspective to Community Participation in Trans-Boundary Water Governance – A Case Study of The Volta River Basin in West Africa. *Geoforum*, 77, pp. 83–92.

World Bank (2019). Country Forest Note: Zambia - Towards a Sustainable Way of Managing Forests. *World Bank Group*. Available at: < http://documents1.worldbank.org/curated/en/571651580133910005/pdf/Zambia-Country-Forest-Note-Towards-a-Sustainable-Way-of-Managing-Forest.pdf> [accessed 2020-10-29].

World Bank (2018). Rural population (% of total population) - Zambia | Data [online]. Available at: <https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS?locations=ZM> [accessed 2021-03-24].

World Bank (no date). Zambia, Data. [online] Available at: <https://data.worldbank.org/country/ZM> [accessed 2021-01-14].

Yin, R.K. (2014). *Case Study Research: Design and Methods*, 5th ed. London: SAGE Publications.

Yeboah-Assiamah, E., Muller, K. and Ameyaw Domfeh, K. (2017). Institutional Assessment in Natural Resource Governance: A Conceptual Overview. *Forest Policy and Economics*, 74, pp. 1–12.

Yuliani, E.L., Adnan, H., Achdiawan, R., Bakara, D., Heri, V., Sammy, J., Salim, M.A. and Sunderland, T. (2018). The Roles of Traditional Knowledge Systems in Orang-Utan *Pongo* spp. and Forest Conservation: A Case Study of Danau Sentarum, West Kalimantan, Indonesia. *Oryx,* 52(1), pp. 156–165.

Ziba, V. and Grouwels, S. (2017). Greening Zambia's Charcoal Business for Improved Livelihoods and Forest Management Through Strong Producer Groups. FFF Country Case. Rome: Food and Agriculture Organization of the United Nations.

Appendices

A1 – Interview guide, respondents

Warm-up questions	Probes
1. Name, age?	
2. Who makes up your family/household?	• How many, age?
3. What is your main livelihood activity/source of income?	
4. How long have you been living in this area?	• Were you born here? • Where did you come from originally? • When did you come to this area? • Why did you come here?
5. Tell me about the place you were living before	• What did you do? • Transferred rules, norms, beliefs

Forest use	Probes
6. How do you use the forest resources? Which resources do you use most?	• How long have you been doing this? • Is this your main livelihood activity?
7. Who has access to the forest?	• Procedure (how), why, who decides? • User rights • Gendered perspectives, power, decision-making
8. Which opportunities or barriers are you faced with when accessing the forest?	• How do you overcome potential obstacles?
9. Have you noticed any changes to the forests? (since coming to the reserve)	• Management • Resource quality and quantity • What is causing the changes?

Forest management (informal/formal)	Probes
10. Thinking of the forest as a whole: How is the forest in this area is managed (or looked after)?	*Be aware if answers indicate formal management practices (rules, legislation from official sources) or informal (norms, beliefs, networks)*
11. What contribution do you make to the management of this forest?/ In which ways does the community manage the forest?	

12. In your opinion, why is forest management important or not important?	• Motivations

Closing questions	Probes
13. How do you think that the forest in this area should be managed today and in the future?	
14. Do you have anything you want to add, or do you have any questions for me?	

A2 – Interview guide, informant

Questions	Follow-ups
1. Name, role at FD?	
2. How long have you been at the FD?	
3. Tell me about the Zambian legislations on forest use?	• Cutting for charcoal in particular • Sanctions if rules are not followed
4. How is the forest here managed?	
5. According to the FD, what are the motivations for managing the forest reserve?	• End goals • Impact
6. What challenges are there in managing forests in this area?	
7. In the last couple of decades, have you noticed any changes to the forests?	• Management • Resource quality and quantity • What is causing the changes?
8. Do you have anything you want to add, or do you have any questions for me?	

B – List of respondents

	Gender	Age	Current main livelihood activity	Time in the forest reserve	Comment
1	Male	49	Farmer, charcoal producer	20 years	
2	Male	57	Farmer	23 years	
3	Female	50	Farmer	12 years	
4	Male	37	Farmer	10 years	
5	Female	45	Farmer	14 years	
6	Male	68	Farmer	11 years	Not permanent
7	Male	32	Farmer	27 years	
8	Female	51	Farmer	10 years	
9	Male	60	Farmer	10 years	
10	Male	54	Farmer, charcoal producer	20 years	Chairman
11	Male	68	Farmer, charcoal producer	11 years	
12	Male		Farmer	15,5 years	
13	Male	35	Farmer	15 years	
14	Male		Forest officer	-	FD

C – Categorisation of patterns as presented in NVivo

Codes in NVivo12	# of references
Aggregation	36
Integration of formal and informal institutions	
Recombination of institutional elements	
Mediation between rules, norms and beliefs	
Creation of multipurpose institutions	
Alteration	45
Adaption of informal institutions	
Adaption of formal institutions	
Bending or ignoring bureaucratic rules	
Articulation	10
Accentuation of socially embedded norms and practices	
Active rejection of formal institutions	
Structure and agency	43
Background	18
Reasons to come	
Resource use	
Formal institutions	29
Informal institutions	49
Outcomes of bricolage processes	71
Balance	
Conflict	
Status quo	
Drivers - motivations	65