

-RESEARCH ARTICLE-

RESOURCE GOVERNANCE USING A HYBRID INSTITUTION IN MOMBA DISTRICT TANZANIA: A PROCESS APPROACH

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—Abstract—

Natural resource governance fragmentation across scales can inhibit coordinated action and reduce innovation capacity. The presence of bridging actors who connect relevant stakeholder inside governance networks can aid in the resolution of this problem. In this regard, community organization is crucial for effective resource governance. Within the framework of community-based approaches, and using a case study, this study explores the use of a hybrid institution to organize resource governance in Mfuto village in

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Momba district, Tanzania. The authors use hierarchical and co-governance modes of interactive governance theory to guide the process of data analysis. By applying content and thematic analyses, our observation suggests that building the capacity of the institution and linking it to the wider range of stakeholders are essential steps towards the attainment of anticipated outcomes. Following this, the study highlights four salient steps of an inverted pyramid model (IPM) and are derived from the resource governance initiatives. The study's implications and limitations as well as future research directions are presented in the concluding section of the study.

Keywords: approach, resource governance, local community, horizontal interaction, vertical interaction, hybrid institution

1. INTRODUCTION

Natural resource management in Tanzania has historically been implemented using various approaches. Top-down or state-centric approaches are one of these approaches. The centralized natural resource management in Tanzania started developing during the German and British colonial government era (1885-1961) and have been adopted by the Tanzanian government following the country's independence in 1961. However, the mid-1980s saw the emergence of community-based or bottom-up natural resource management as well as collaborative natural resource management regimes (Dressler, 2021). According to Dale et al. (2020), in the era of participatory resource management, the government's role is reduced to the creation of a conducive environment, such as in terms of providing legal support and enabling access to markets.

The community-based natural resources management has been implemented in Tanzania since the 1980s in various sectors including water, forest, extractive, and land (Dale et al., 2020; Olawuyi, 2015; Pemberton, 2015). The adoption of community-based natural resource management implies recognition of roles of multiple actors and institutions in natural resources management, which can be seen as part of a paradigm shift from government to governance, signifying the involvement of multiple actors in the management regime. It also implies the recognition of multiple rights, roles, benefits and interests (Dale et al., 2020). Henceforth, the study refers to this management regime as natural resource governance.

The adoption of natural resources governance in Tanzania calls for building the capacity of pluralistic actors to enable them to undertake their roles more effectively. The literature on community-based natural resource management in Tanzania indicates, among the needs, the people's capacity building for promoting successful natural resource management (Balag'kutu, 2017; Dale et al., 2020; Olawuyi, 2015). Capacity building is required for, among others, enhancing awareness and knowledge and effectively implementing by-laws for effective natural resource management as well as the advancement of skills aimed at resolving potential conflicts in natural resource governance (Masifia, 2017). It also requires mobilization of resources (including human

and financial resources) in order to help build and improve the capacity of natural resource governance (Olawuyi, 2015), as well as mainstreaming the rights of individuals and communities in the process (Dale et al., 2020).

In response to the call for capacity building, researchers from Japan, using the skills and experiences they have gathered through implementing a rural development project in Mbinga, crafted a hybrid institution in the Mfuto village located in the 'Momba district. The objective of crafting this institution was to guide sustainable resource governance and, consequently, contribute to both, livelihood improvement and environmental conservation – that is – sustainable development. The Tanzania Environmental Management Act of 2004 in its Part III titled Administrative and Institutional Arrangement, and section (g) titled Local Government Authority introduces, among other committees, the environmental management committee, and outlines its mandate and functions. The committee's central role is to coordinate environmental management functions and activities at the village level and ensure that the Environmental Management Act is enforced. The Act thus requires every village to establish this committee.

In Mfuto village, although the environmental management committee has existed for many years, it unfortunately seems to be largely dormant because natural resources, including the environment, are being degraded without any pronounceable measures against the environmental abusers, redominately attributable to poor governance and lack of enforcement of rule of law.

Within the framework of bottom-up approaches, in this paper, we have been able to demonstrate how a process approach is used for organizing resource governance in Mfuto village, Momba district in Tanzania. This process entails four principal steps. The first step is crafting a farmers' hybrid institution. We call it a hybrid institution because it comprised multiple sectors. The second step is the empowerment of this hybrid institution and the third step is linking the farmers' hybrid institution to the state (formal) institution. The fourth and last step is the building a link between the farmers' hybrid institution and the wider range stakeholders for sustainable resource governance.

Sustainable resource governance considers the duality of the continued generation of human needs while concurrently ensuring the continuous supply of environmental services (Folke, 2017; Tabe-Ojong et al., 2020; Wijaya, 2017). It is a move beyond the conventional protectionist approaches, which considers two dimensions, environment and society, as independent entities. Social-ecological systems proponents (Brondizio et al., 2016; Cabral, 2019) view the two dimensions as inseparable, positing that one cannot exist without the other. As such, human population and the environment need to co-exist, and what urgently needed is devising mechanisms for enabling such co-existence. Such mechanisms include the creation of a hybrid institution.

The term *institution* has multiple interpretations. It can be defined as the rule of the game, or it can be defined as an organization or both, depending on the context of its use. The phrase concept *hybrid institution* is a rule, which is formed by combining other rules or an organizational structure (e.g. a farmer group) comprising different actors/sectors (Scott, 2019). By combining different characteristics, the hybrid institution has the potential of generating more utility (by creating points of synergy) than could be achieved through a non-hybrid institution. Sentient to the strengths and weakness of its diverse, individual components, the hybrid institution becomes more robust and locally adapted (Gunya, 2019). Due to the nature of social and ecological problems, which seem to be diverse, complex and dynamic, hybrid institutions become more appropriate for governing social actors in their process of facing the complex situation. The hybrid nature of the institutions implies that different stakeholders are involved in the management of the complex situation. This is what underlines the paradigm shift from government to governance.

The paper is organized as follows. In the next section, the theoretical framework governing this study is presented. Since resource governance is a multi-stakeholder task involving formal institutions (state, school, dispensary, environmental committee), informal institutions (traditional authority, religions, farmers, pastoralists), and hybrid institutions (farmer group, village assembly), the theory of choice is the interactive governance theory. After presenting the theoretical underpinnings of the research, we outline the research methodology used to collect the data. This is followed by a description and discussion about the study results/outcomes. At the end of the results section, we indicate an inverted pyramid model (approach) and describe it in relation to resource governance. Finally, in the last sections, the author provides conclusions and recommendations for the future.

2. Literature Review

2.1 Natural Resource Governance

According to the definition, natural resource governance entails "those rules and processes that control the allocation of rights to, and use of, natural resources such as forests and carbon dioxide, as well as wildlife and land," with the "distribution and exercise of power" being fundamental to how natural resource governance operates and the outcomes it produces (Perz et al., 2016). Natural resource governance, according to Richardson-Ngwenya et al. (2019), refers to as "the norms, institutions, and processes that determine how power and responsibilities over natural resources are exercised, how decisions are made, and how citizens – including women, men, youth, indigenous peoples, and local communities – secure access to, participate in, and are impacted by natural resource management." In order to impact access to and benefits from natural resources, governance models or approaches must consider who has authority and duty as well as how power and responsibility is distributed in order to achieve those goals.

Since the 1980s, three tendencies have emerged in the governance of renewable natural resources, each of which explains the engagement of a diverse range of players functioning at a variety of different levels of organisation. First, there has been an increase in the decentralisation of management functions from central government to lower-level authorities (Balag’kutu, 2017), which has been accompanied by the implementation of participatory or collaborative management approaches, such as community-based natural resource management and co-management (Balag’kutu, 2017).

Secondly, changes in public administration during the 1980s and 1990s resulted in the creation of specialised government organisations that separated themselves from more general bureaucracies, necessitating the development of new mechanisms to foster cooperation (Nunan, 2018). Peng et al. (2021) observe that the governance of the environment as well as use of natural resources in developing countries is frequently characterised by the existence of multiple ministries or public bodies with responsibility for the environment and natural resources, resulting in a fragmentation of governance.

Third, the adoption of certification schemes and the payment for ecosystem services has brought the private sector, civil society, and market-type instruments into governance arrangements (Sikor et al., 2017), thereby broadening the range and number of actors and interests represented in governance arrangements. In a broader sense, these three trends reflect the displacement of state power and control in three directions: upwards, downwards, and outwards. Power and control are being shifted upwards to international actors, organisations, and regions; downwards to regions, cities, and communities, and outwards to civil society and non-state actors (Nunan, 2018).

2.2 Interactive Governance Theory

In this study, we borrow from the interactive governance theory as proposed by R. Chuenpagdee, Degnbol, P., Bavinck, M., Jentoft, S., Johnson, D., Pullin, R., and Williams, S (2005). The term governance is an ambiguous concept. However, it has its genesis from the World Bank concept of “good governance” which requires states to streamline their governing systems to match certain standards of accountability, rule of law, adherence to ethical practices, transparency, and so forth (R. Chuenpagdee, Degnbol, P., Bavinck, M., Jentoft, S., Johnson, D., Pullin, R., and Williams, S, 2005; Indrayani, 2019). Research, nonetheless, shows that in order to address diverse, complex and dynamic societal problems, the state actors are forced to collaborate with non-state actors, such as private firms, non-governmental organizations, faith-based groups, and others (Jessa, 2019). Arguing from this lens, governance as a concept refers to the interaction between and among state and non-state actors in terms of decision making ideas, processes, and practices. In this paper, governance is defined as collaboration between state and non-state institutions in terms of resource management.

This study uses two modes of the interactive governance theory which, according to [R. Chuenpagdee, Degnbol, P., Bavinck, M., Jentoft, S., Johnson, D., Pullin, R., and Williams, S \(2005\)](#), are hierarchical governance, and co-governance. As such, we view the interactions occurring in the study area as a mix of the two modes, and this view enables us to capture a broader picture of resource governance in the study area. These modes are the proxies of the existence of horizontal and vertical interactions in resource governance. Hierarchical governance can be understood in terms of top-down interactions and decision making, whereby a state institution (a committee or agency) dominates in the interactions between the state, the community, and non-community actors. There has been a concern, nonetheless, that in contemporary (modern) society, the role of the government has been reduced from command-and-control to that of a regulator e.g. [Mol \(2020\)](#).

The top-down model has often reduced the community to a single entity (a homogenous community). Scholars e.g. [\(Honkalaskar, 2017; Rout, 2018\)](#) have, nonetheless, observed that the community is not a single entity but is rather comprised of diverse entities with different demands, needs, interests, structures, priorities, and ideologies. As such, there are horizontal layers for organizing, thus requiring the state to be accountable and responsive in order to design mechanisms for addressing and coordinating the complex situation. At the diverse horizontal layers within the community-government hierarchical continuum, there are horizontal interactions of actors positioned in the same layer of the governance framework. Since these horizontal interactions cannot be thoroughly understood using a hierarchical model, it calls for a second mode of the interactive governance theory i.e. the co-governance mode [\(Rout, 2018\)](#).

The central rationality of the co-governance mode is the existence of diverse actors interacting and influencing one another in a more or less horizontal arrangement. These actors retain some degree of autonomy in their roles while concurrently depending on one another. In other words, there are some sorts of horizontal interactions through external communication, networks as well formal and informal arrangements that are part of a dynamic and complex overall structure. The combination of the two modes of governance theory enables us to analyze both, the horizontal and vertical interactions that actually occur in sustainable resource governance and makes the analytical framework more robust [\(R. Chuenpagdee, 2018\)](#).

The authors recognize the importance of capacity building, political will, and innovation in improving the governance process. Capacity building can be enabled through external-based actors beyond the geographical boundaries of a particular governance system such as higher levels of decision making of the state, or a research-oriented entity, or non-governmental organizations, or a combination of the three. Political is understood as the extent to which the state is committed to putting its images (e.g. a vision, a goal) into management action using instruments such as policies, regulations, or guidelines. The process and practice of governance involves changes that occur to fill the gap in the

existing institutional arrangement. In this way, some institutional candidates are involved because their inclusion fills the capacity gap and enhances the robustness of the institutional arrangement. These insitutonal candidates may originate from informal realms of decision making, thus making the institutional arrangement characteristically hybrid, and consequently creating synergistic outcomes.

This framework enables us to analyze vertical interactions among the state actors (e.g. village government and its agencies/committees such as school, village environmental committee, and dispensaries). In other words, intra-formal institutional interactions. It also enables us to study the relationships between the state (including its agencies) and the religious institutions (e.g. traditional authority and churches), that is, formal versus informal institutions. Furthermore, the vertical-horizontal governance model allows us to study the interactions between and among informal institutions (e.g. between church and traditional authority, church/traditional authority and farmers/pastoralist groups). Likewise, the horizontal interactions occurring at each rung are investigated with the aid of the interactive governance theory.

3. METHODOLOGY

3.1 Research Design

A combination of methods was used to collect data for this study. These methods include focus group discussions with Jitume farmers group, Key Informant Interviews (KII), interactive training on collaborative governance, farmers' exchange visits to various regions away from Mbeya region, village stakeholders meeting, and village assembly meeting. Specifically, Focus Group Interviews (FGI) were used in this study to gain a better understanding of how hybrid institutions structure resource governance. One of the goals of the FGI is to generate data group interactions between groups of people (Rabiee, 2004). It is particularly helpful in investigating the ideas, feelings, and actions of participants regarding the topics under investigation when FGIs are used (Barbour, 2007; Rabiee, 2004). In addition, the FGI is more effective than one-on-one interviews at generating ideas created in a social context (Breen et al., 2001), and FGIs are also particularly useful for exploring complicated and unexplored areas of debate or research (Rana Muhammad Dilshad, 2013). During execution of these multiple methods, the researchers identified and documented issues relevant to collaborative governance. While some of these methods were guided by the cross-section research design, the data collection process and documentation occurred longitudinally since 2016.

3.2 Data Collection Procedure

Field trips were organized in 2016 and 2017 by researchers from Japan and Tanzania. Districts which were slected for the farmers' exchange visits were Mbinga district (Ruvuma region), Ludewa district (Njombe region) and Kilosa district (Morogoro

region). Among the villages which were included; Kitanda and Mkwaya villages (Mbinga district), and Mkiu, Mlangali, and Mavala villages (Ludewa district).

The stakeholder (roundtable) meeting was called on 14th November 2019. Various institutions in the village namely village government, village environmental committee, farmers groups, dispensary, school, churches, and traditional authorities, the village community and researchers from the Sokoine University of Agriculture and those from Japan International Cooperation Agency attended the stakeholders meeting. This was because in order to achieve sustainable resource governance, stakeholders, who are interdependent in one way or another, should be involved.

At different points of time in 2016 and 2017, the researchers conducted focus group discussions with the Jitume farmers group focusing on various issues concerning resource governance, challenges they encountered, and how they have addresses those challenges. Following a detailed explanation of the methods involved in the study and the receipt of informed consent, interviews with each participant were scheduled at a time that was convenient for them. For the purpose of maintaining participant confidentiality, pseudonyms were utilised. Immediately following the conclusion of the FGI, we sent all participants a thank-you message and gave them the option of receiving a transcript of their focus group for the purpose of commenting on or modifying their comments prior to the data analysis. In addition, the researchers' contact information was made available.

Through these focus group discussions, farmers' training needs were gauged. A training on governance issues was then organized and conducted before and after farmers' exchange visits/trips. While the training before the farmers' exchange visits aimed at identifying various issues the farmers could potentially learn from counterpart farmers during the planned farmers' exchange visits, the training conducted during post-farmers' exchange visits aimed at assessing how sharing of information occurred between farmers that were involved in the farmers' exchange visits and those that had not been involved. Afterwards, Key Informant Interviews were conducted involving village chairperson, teachers, and village executive officers. The objective of these interviews was to measure the level of awareness of the village leaders about environmental management by-laws and how these leaders ensured their enforcement.

3.3 Data Analyses Strategy

An audio recorder was used to collect the data during various data collection activities such as focus group interviews (FGIs), and a discussion with counterpart farmers during the farmers' exchange visits. A content analysis technique was used to analyze the data. The process involved transcription of the data that had been collected using the audio device. Following the transcription, data coding was conducted, which reduced the large chunks of qualitative information. Thematic analyses were then conducted by merging a group of specific codes in order to get the broader codes, which are referred to as

themes that were summarized and linked to provide meaningful information on interactive governance between and among different institutions and actors.

The main purpose of thematic analysis was to discover and report on the themes that emerged from the data collected. When it comes to analysis, this method gives considerable flexibility as well as provides extensive discussion (Terry, 2017). The transcripts were read multiple times by the researchers in order to become familiar with the information contained within them. The analysis was carried out using open coding (Vaismoradi, 2016). In order to code every single line that was relevant to this study issue, we employed line by line coding. Sentences were used as the units of analysis. Each contributor began by coding the data in his or her own way. After that, we spoke about them, compared them, and made changes to them. The codes that we generated were incorporated into broader themes that we developed. Finally, the authors reviewed the preliminary themes produced and identified in the preceding rounds and that were consistent with discussions among the researchers, revising and standardising them as needed. After this, a final refinement of the themes was finished (Terry, 2017).

4. RESULTS

4.1 Crafting of a Hybrid Institution At Mfuto Village

A Japanese researcher Juichi Itani who had been working in Mfuto village since 2001 established a group of farmers for conducting various activities integrating sustainable resource management and livelihoods. He mobilized farmers into a group known as Jitume (literally meaning work without being pushed) which operated through small sector-based committees namely agricultural committee, business committee, farmyard manure committee, electricity generation committee, and environmental committees. Each committee had a chairperson and a secretary. Under the committees, small-farmer groups were formed. What was learned through small groups was shared during meetings at the higher level of the Jitume group. The small groups acted as fund mobilization units, which enabled farmers to raise their income through cultivation of crops such as beans, cassava, banana, sunflowers, etc. Villagers participating in Jitume group activities started as small groups initially, which were operating independent of one another. The interaction between the committees occurred at the same level and therefore we term it as co-governance. The same applies to the small groups, which were at the same operational horizontal level where they interacted with one another.

Afterward, the small groups decided to unite to become one big group (Jitume) but did not result in the disbanding of the smaller groups which instead formed committees under the bigger group. They thus acted hierarchically as a multilevel structure, and horizontally as co-governance units. The aim of forming the big group (Jitume) was to mobilize efforts and financial resources so that at subsequent stages the group is able to mobilize a starter capital and qualify for a financial loan from a bank. The small groups

interacted through sharing of experiences on various activities and were useful for ensuring effective communication amongst the groups. Each small group had its chairperson and secretary who often communicated with the overall leaders at Jitume group level, following which, the leaders at the small group level provided feedback to their members. The overall operation of the Jitume group seemed to take a model of multi-level representative governance (Figure 1).

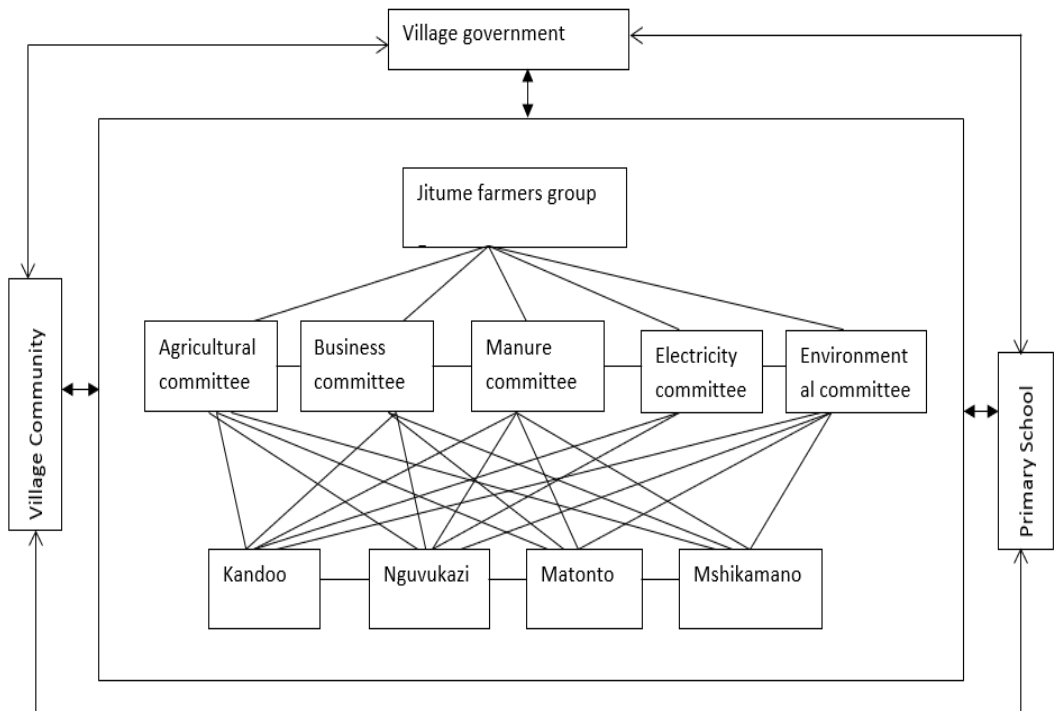


Figure 1: Jitume group, its committees, and sub-groups

Therefore, at the group level, both the co-governance mode of governance and hierarchical mode of governance existed. Both, the committees and the small groups interacted among themselves. On the other hand, there was vertical interaction between the committees and the small groups, and between both the committees and the small groups, on the one hand, and the big group, on the other hand. There was an overlap of membership whereby the members of the small groups and the committee spanned from one level to another. This arrangement enabled iterative learning through interacting with one another. In other words, it can be viewed as a cyclic learning process with iterative monitoring and feedback mechanisms.

After its crafting, the group Jitume hybrid group required support and collaboration from the rest of the institutions in the village, and especially from the village government. While the group had formulated its by-laws, these by-laws were only applicable within

the group premises. Beyond the boundary of the group, the wider village by-laws were required, i.e. when the violators of sustainable resource governance were not group members. In other words, the *Jitume* group by-laws were nested within the broader village by-laws. However, it was revealed through a focus group discussion, during its earlier stages, the collaboration between the village government and the *Jitume* group was not forthcoming. Livestock grazing on tree seedlings was seen as a critical problem in environmental conservation, but the village government did not provide any support to ensure that villagers followed the by-laws regarding sustainable grazing. Furthermore, there appeared to be low understanding of by-laws amongst village leaders, and on how to enforce them. There also appeared to be a lack of will amongst village leaders to support the functions of the group, though group leaders claimed to have reported to the village leaders, on various occasions, the destruction of tree seedlings by the livestock. There also existed units, which could create a synergy in their activities but such a synergy did not exist. For example, whereas the group had a committee responsible for environmental conservation, the village government also had a similar committee which seemed to be non-operational. Similarly, while the *Jitume* group provided tree seedlings to a primary school for it to conserve its environment, the tree seedlings were destroyed by livestock, which grazed freely. A school teacher who was also a member of *Jitume* group uncovered this challenge, exemplifying that the school pupils had planted 70 tree seedlings but all these seedlings were browsed by the livestock. Governance thus seemed to be an important aspect of ensuring effective collaboration between the government and its institutions and the farmer group.

Tree planting was one of the activities implemented by the *Jitume* Farmers group. Tree species planted included pines, eucalyptus, *cassia* spp, and *Acacia nilotica*. Because of the problem of livestock (goats and pigs, which were left to graze freely), browsing on the seedlings, farmers cut stakes from the miombo woodland and encircled around the seedlings to protect them. However, staking represented a threat to the environment because a number of trees/shrubs were cut from woodland forests so as to protect the seedlings, thereby destroying natural forest potential trees.

Based on challenges in terms of the weak collaborative governance, the external based actors (development facilitators) i.e. researchers from Japan (Kyoto University) and Tanzania (Sokoine University of Agriculture) organized farmers' exchange visits to other regions in Tanzania with a view to learn more about the way various stakeholders collaborate in resource governance. Specifically, the farmers from Mfuto village in Momba district, Mbeya region visited Mbinga district in Ruvuma region, Ludewa district in Njombe region, and Kilosa district in Morogoro region. However, because of the cost involved, it was difficult to organize transport for the large *Jitume* farmers' group to the mentioned districts. As such, representatives were selected to participate in the farmers' exchange visits and, upon return, these representatives were expected to

provide their feedback to the rest of the farmers and highlight the lessons learned during the farmers' exchange visits.

After the farmers' exchange visits, a training was designed on the collaborative governance making use of the experience learned from the farmers' exchange visits. The training was organized in such a way that farmers, who had participated in the farmers' exchange visits, were actively involved in providing feedback and sharing lessons with group members who had not participated during the farmers' exchange visits. The use of farmers in the training was preferred because it was the way of checking the readiness of farmers to share the lessons voluntarily and hence their willingness to change. As such, the facilitators of the training checked whether the farmers who were involved in the farmers' exchange visits had shared the lessons to the rest of the farmers. This was done by asking the farmers questions, which they were to answer in writing. The questioning session was part of the training. The next section provides a detailed account of the training on collaborative governance.

4.2 Training on Collaborative Governance

This section focuses on the training on collaborative resource governance. The training, among other things, assesses whether the lessons learned during the farmers' exchange visits had been shared between those who participated in the farmers' exchange visits (representatives) and those represented, and among the institutions (farmers groups, village government, village community and school) in Mfuto village. As described above, some villagers (three group members, and one village government leader) from Mfuto village of Momba district in Mbeya region were involved in the farmers' exchange visits to Mbinga and Kilosa districts. The aim was to learn about issues related to the enforcement of by-laws to promote sustainable environmental conservation, and to understand how various institutions (e.g. government and the community) collaborated in resource governance. Two farmers from Jitume group went to Kilosa district, whereas two leaders (Secretary of farmers' group and the village chairman of Mfuto village) went to Mbinga during these farmers' exchange visits. This training was attended by three village government leaders (village executive officer, village chairperson, and a member of the village environmental committee), and Jitume group members.

4.3 Assessment of the Feedback Provision (Sharing of Lessons Learned)

In order to assess collaborative governance in terms of sharing of information, questions were developed for each group involving a member that had participated in the farmers' exchange visits and a member who had not participated. Each of the respondents was provided with a piece of paper and was required to write his/her answer on this paper. The questions and answers are indicated in [Table 1](#).

Table 1: Questions Asked to And Answers Given by The Participants During The Training on Resource Governance at Mfuto Village

No.	Question	Answer
1.	What did you learn in Mbinga? (directed to those that visited Mbinga. These included the village chairperson and the Jitume farmers' group secretary)	<ul style="list-style-type: none"> • How our farmer counterparts manage VICOBA • Proper tree planting skills • Improved pig and poultry management • Electricity
2.	What did you learn in Kilosa? (directed to those that visited Kilosa)	<ul style="list-style-type: none"> • How to improve the environment, and control livestock from degrading the environment
3.	What did your farmer counterparts learn in Kilosa? (directed towards those who visited Mbinga, and farmer group members that did not travel)	<ul style="list-style-type: none"> • Exchanged views on how to conserve the environment
4.	What did your farmer counterparts learn in Mbinga (directed to those that visited Kilosa, and a farmer group member that did not travel)?	<ul style="list-style-type: none"> • How to exchange views (visited Kilosa) • Farmers group management and their success
5.	What are farmers groups doing in the village? (directed to village government)	<ul style="list-style-type: none"> • They are doing the work of educating us villagers of Mfuto
6.	What did those that visited Mbinga learn? (directed to the village government)	<ul style="list-style-type: none"> • I was not there (response from a member of village government)
7.	What did those that visited Kilosa learn? (directed to village government)	<ul style="list-style-type: none"> • I was not there (response from one member of a village government)

Based on [Table 1](#), at the farmer group level, it seems that farmers who participated in the farmers' exchange visits shared the lessons they had learned from the farmers' exchange visits to those farmers who had not participated. On the contrary, the representatives of the village government that participated in the farmers' exchange visits did not share the lessons with their counterparts who had not participated. The answer "*I was not there*" from the village government representative substantiates this argument. The findings suggest the importance of assessing information sharing amongst the local participants of any event, which applies a representative approach;

this exercise should not be taken for granted as such an assessment can be instrumental in planning the way forward to ensure the attainment of a planned target.

Following the question and answer session, two sets of diagrams were drawn with each comprising four cycles. The first set of four isolated cycles (see [Figure 2](#)) namely village government, school, farmers groups, and village community was used to indicate the lack of collaborative governance. The other set of four cycles was organized in a vein diagram carrying the same names to indicate the presence of collaborative governance. Then, the participants of the training who included a school representative, village government representatives, community representatives, and farmers' group representatives were asked for their interpretations of the two sets of diagrams. One of the participants interpreted the set of four isolated cycles ([Figure 2](#)) as indicating the institutions, which are far from one another, whereas the vein diagram was described as reflecting interconnectedness. Another participant remarked that [Figure 2](#) indicates lack of cooperation whereas [Figure 3](#) indicates the presence of collaboration.

Based on [Figures 2 and 3](#), the participants were asked to share which of the sets mirrors the state of Mfuto village with reference to the collaborative governance. There were a number of notable arguments amongst the participants. The village chairperson said the village is mirrored by [Figure 2](#). On the contrary, some Jitume group members perceived the village as mirrored by [Figure 3](#). On the other hand, a chairperson of the *Jitume* group perceived the village as mirrored by an intermediate diagram between [Figure 2](#) and [Figure 3](#). Then, a facilitator (researcher) moved from the general question to the specific one. Using the case of tree planting to conserve the environment thereby addressing a serious challenge i.e. the uncontrolled grazing of livestock, which browsed on the planted trees, the participants were asked to identify the Figure that better describes their village. In this regard, the participants generally perceived that [Figure 2](#) exemplifies their village. The participants were then asked for reasons for equating their village to [Figure 2](#). They responded that the institutions in their village are operating in isolation of one another; there is no support in terms of by-laws enforcement to ensure that the tree seedlings planted by Jitume farmers' group are protected from being browsed by the livestock.

It is also found that members of the village government had not been provided with the feedback on what the farmers' exchange visits participants had learned from the visits. This can be substantiated by the response from a member of the village environmental committee as indicated in [Table 1](#) for questions 6 and 7. The trainees collaboratively state that the village members who participated in the farmers' exchange visits and the village chairperson should organize a seminar. These seminar participants should be members of the village government. They further add that the seminar should be followed by visits to all sub-villages with a view to share the lessons learnt from the farmers' exchange visits. The essence of the seminar was to inform the villagers and the

village government about the insightful lessons learned during the farmers' exchange visits, and further deliberate on how to apply these lessons in Mfuto village.



Figure 2: Isolated cycles representing institutions that do not work together

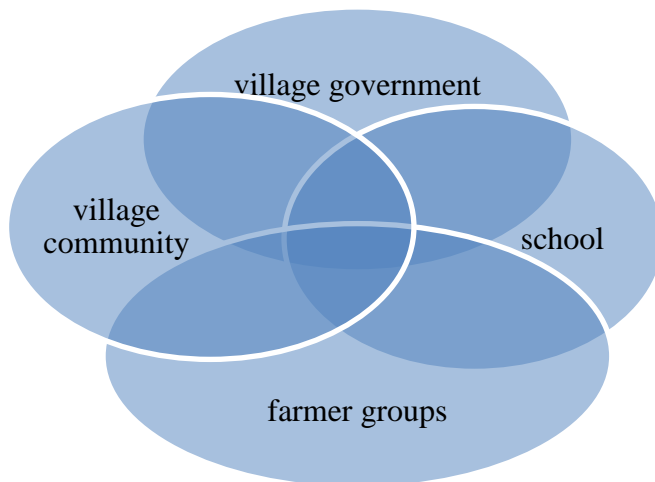


Figure 3: institutions that collaborate (work together interactively)

As such, the village chairperson was regarded as a bridge for linking the village community and the farmers' group because he was both, a member of Jitume group (which he had decided to join after returning from the farmers' exchange visits) and the village government leader (Figure 4).

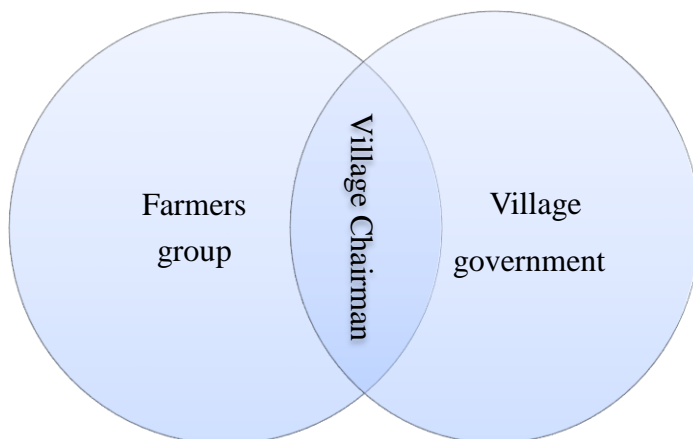


Figure 4: Village chairperson as a bridge between Jitume farmers’ group and village government

In order to help the farmers at Mfuto village with reference materials, during the training they were provided with two brochures, which provided a guide on farmers’ group management, and on collaborative resources governance.

However, the resolution reached during the training was implemented, especially on the part of the village government, which was responsible for enforcing the by-laws for sustainable resource governance. *Jitume* farmers group still experienced the challenge of uncontrolled grazing of pigs and livestock (cows and goats) that browsed the planted tree seedlings, and food crops, which were established by the group or through its sub-groups. As such, there was a need for calling a village stakeholders’ meeting to deliberate upon these challenge as well as the way forward. The researchers in collaboration with the *Jitume* farmers group organized this meeting.

On November 15th 2018, the stakeholders meeting was called. All institutions namely village government, village environmental committee, school, churches, traditional authority, dispensary, and farmers group were represented. Researchers from Sokoine University of Agriculture and Kyoto and Takasaki Universities in Japan facilitated this meeting. The next section sheds more light on what was deliberated thereon, with the meeting being appreciated as a roundtable discussion, and thus guided by the roundtable hybrid institution model.

4.4 Crafting of a Roundtable Mfuto Village Hybrid Institution

On 15th November 2018, a roundtable hybrid institution was crafted. This institution is termed as a hybrid because it comprised different institutions that have a stake in resource governance; they were both formal or informal and of mixed or diverse nature. For our purposes, the relevant institutions and actors involved included village

government (the state), environmental committee, school, dispensary, church, traditional authority, community representatives, and the *Jitume* group.

The roles of stakeholders in resource governance, in general, and environmental management in particular, as well as challenges vis-a-vis these management endeavors, were discussed during the stakeholders meeting. [Table 2](#) below illustrates these roles in more detail.

4.5 Stakeholders Meeting Resolution

After the stakeholders' roundtable discussion of their different roles in resource governance in Mfuto village, and the challenges encountered in terms of the implementation of these roles, the stakeholders were asked as to what should be done to ensure and activate successful resource governance. All stakeholders agreed that environmental by-laws should be enforced. They agreed that they would call for the village assembly and agree upon fines and penalties that would be charged to those who violated the environmental by-laws. The village government was required to firmly enforce the by-laws to ensure that compliance with them. Otherwise, if the government is unable not enforce the by-laws, it may assume the responsibility of violating the rule of law.

Following the roundtable stakeholders meeting, the village assembly meeting was called, a particularly important step towards integrating the community stakeholders in the efforts to ensure compliance with sustainable resource governance institutions. After this meeting, which marks the topmost rung of the inverted pyramid model, different stakeholders, including the state, started to comply with and operationalize sustainable resource governance. This has provided solution not only to the challenge of uncontrollable livestock grazing at the group level but also at the wider village social-ecological landscape.

4.6 Inverted Pyramid Approach for Resource Governance in Mfuto Village

In the crafting of a robust hybrid institution for sustainable resource governance in Mfuto village Tanzania, we have observed the approach depicted in [Figure 6](#). We term this approach the *Inverted Pyramid Approach (IPA)* for sustainable resource governance. Based on our analysis of the overall process to-date, we have observed an evolution of the process that entails the following steps: (1) crafting of a hybrid institution and its empowerment, (2) linking of the hybrid institution to the village (formal) authority (3) crafting a stakeholders' roundtable institution to inaugurate the hybrid institution and introduce its activities for the wider village support, and (4) employing the power of the overall decision making institution (in our case, the village assembly) to deliberate the way forward in out-scaling the best practices realized through the activities of the hybrid institution.

Table 2: Roles of Stakeholders in Environmental Management in Mfuto Village

Village government	Church	Traditional Authority	Dispensary	School	Community
<ul style="list-style-type: none"> • prohibit cutting down of trees from water sources • ensure cleaning of village surroundings • stop unplanned tree cutting and burning • stop environmental degradation • control unsustainable livestock grazing 	<ul style="list-style-type: none"> • plant trees in their surroundings • cleanness of toilets and surroundings • encourage households to plant trees • pray for peace of the country and villages • advise on sustainable livestock keeping 	<ul style="list-style-type: none"> • isolate an area in schools for planting trees • isolate areas for rituals, livestock not allowed to enter • washing unclean cooking utensil not allowed in some areas • during menstruation cycles, women should be discouraged from step into the river • ensure construction of traditional houses for rituals for rainfall • discourage haphazard cutting down of trees 	<ul style="list-style-type: none"> • Plant trees in dispensary surroundings but challenged by livestock 	<ul style="list-style-type: none"> • Plant trees in school surroundings but challenged by livestock 	<ul style="list-style-type: none"> • Like planting trees but always challenged by the livestock • observe sustainable livestock keeping

Diagrammatically, the village stakeholders' roundtable meeting is shown in [Figure 5](#).

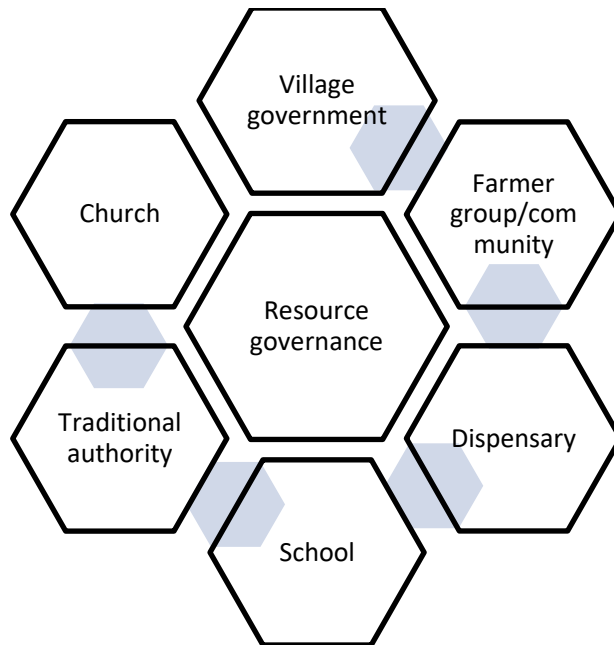


Figure 5: Roundtable stakeholders meeting for deliberating on sustainable resource governance

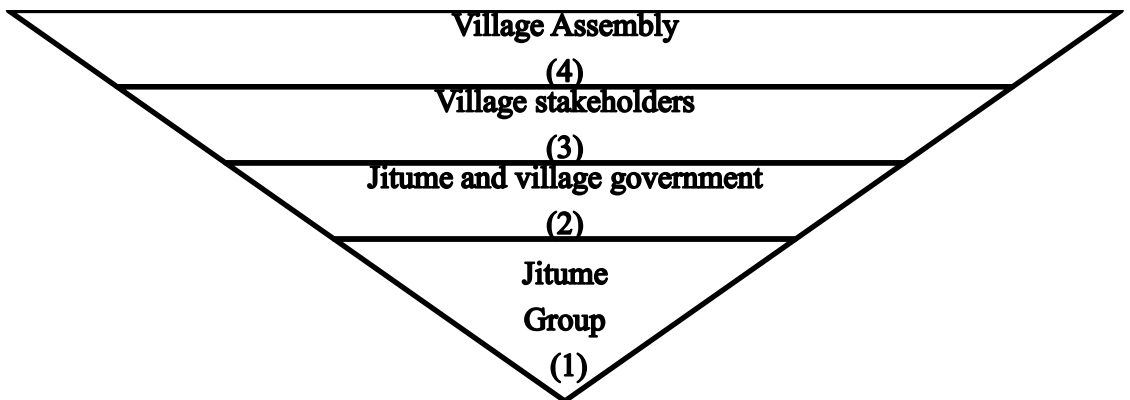


Figure 6: Inverted pyramid resource governance model for sustainable resource governance

The inverted pyramid model comprises both hierarchical and co-governance decision making structures that have evolved differentially along a spatial-temporal scale. It starts from the initial step of crafting a hybrid group-based institution to that of organizing roundtable platforms (stakeholder meetings, village assemblies etc.). This makes for an hierarchical and step-wise decision making structure along a temporal continuum that represents steps of interactive and mutual learning. For some steps, both horizontal and

vertical interactions occur. For example, a hybrid institution crafting level (Jitume group with its hierarchical organization) entails horizontal sub-committees and sub-groups which are upwardly accountable to the big Jitume group. It also bridges various vertically organized steps (e.g. from Jitume group level to village assembly level). The importance of linking formal and informal institutions and actors who have different mandates and often opposing values (e.g. a church and traditional authority). A case study shows that the informal structures seem to be nested within the broader formal structures (Figure 7), indicating only a few stakeholders at the entry-stage and step-wise and progressive inclusion of broader stakeholders along the temporal scale from thereon. It also comprises informal to formal structures that include the state, community traditions and knowledge systems. It is a form of micro- multi-level governance within the hybrid institutional premises, which is nested within the broader village institutional arrangement.

The inverted pyramid model partly confirms the interactive governance theory's hierarchical and co-governance modes (Chuenpagdee et al., 2005). Beyond the interactive governance theory, our model integrates an aspect of hybridity at the micro-community level and at the broader village level through the inclusion of diverse formal and informal governance arrangements. Our model also emphasizes the temporal dimension that differentiates its various steps (rungs). In our view, such a governance arrangement is a complicated process involving various steps whose interaction is narrower at the initial steps but broader in the latter steps or stages. How much time it takes from one step to another, depends on the nature and degree of capacity of a hybrid institution, and that of supporting institutions (including the political will and awareness of the supporting institutional actors).

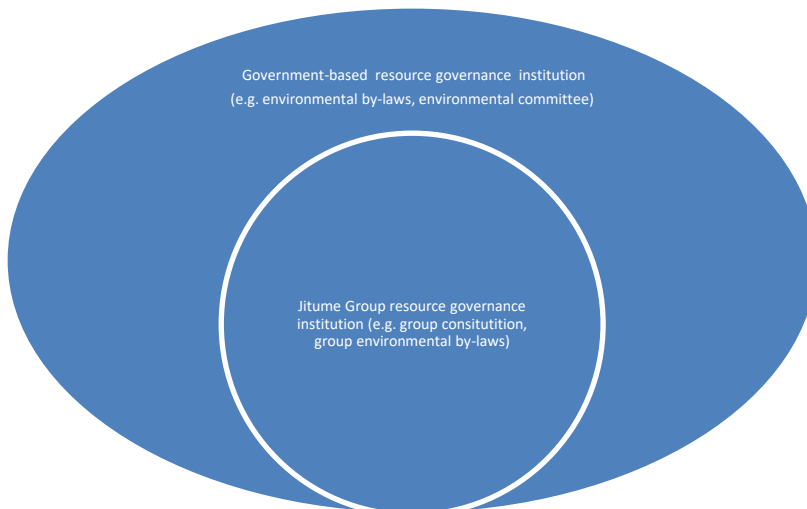


Figure 7: Informal group-based resource governance institution nested within the state-based institutional framework

The model is relevant for problem-solving due to the lack of support of the hybrid group institution by the state, whereby the state is not responsive in dealing with the problem of violation of sustainable resource governance practice. Conversely, for a situation wherein the state provides due support, and the community complies with the directions of resource governance institution; in other words, when both the state and the community are responsive, the upper rung of the inverted pyramid model will be used for sharing best practices rather than for problem-solving. Under such situation, the inverted pyramid governance model will have two main steps, one for determining ways of solving problem within the group operational boundary, and another for sharing the best practices beyond the group boundary through a roundtable platform. For the pyramid model, which combines problem solving, at the bottom rung of the model, and the best practices sharing, at the upper rung of the model, stakeholders are informed and urged to support the hybrid group institution not for problem-solving but rather for the broader dissemination of the best practices.

5. CONCLUSION

The collaboration between vertical and horizontal pathways of resource governance, and the role of a hybrid institution in coordinating and catalyzing these pathways is crucial for effective and sustainable resource governance. The focus should not only be limited to top-down interactions while ignoring bottom-up interactions or vice versa. The integration of the two modes (hierarchical and co-governance) makes resource governance more robust and creates a synergistic outcome. Emphasis should be placed on the inclusion of existing and potential stakeholders in the governance process. Such inclusion enhances the enforcement of by-laws, responsiveness, and accountability of various stakeholders in their entrusted mandates, roles and responsibilities.

6. RESEARCH IMPLICATIONS

First and foremost, there may be a multitude of players, policies, and management systems within the government, as well as a diverse array of individuals (directly or indirectly) involved in governance, which can make it difficult to effectively coordinate efforts. Various management practises and objectives might be associated with this, resulting in poor coordination and confusion among stakeholders, particularly at the local level where new institutions, such as user groups and committees, are developed that are aligned with a particular industry. Second, an important aspect of this paper is the identification of opportunities for, and constraints on interactions between actors. It has been noted that while many opportunities exist, interaction may be limited to activities funded by a project or be very formal, such as an invitation to a village chief to participate in a joint activity, or be based on social relations between participants of different villages. As a result, the current paper calls for the identification of mechanisms that encourage or facilitate interaction, as well as the identification of specific

opportunities and constraints to improve channels of interaction, coordination, and collaboration.

7. RESEARCH LIMITATIONS

The present study used the longitudinal research design. However, due to the nature of the research, the researchers were unable to present the partial findings for every year. Therefore, it is recommended that potential researchers conduct new and upcoming research in a systematic manner that allows for partial findings every year in order to gain more valuable insights for the future. Furthermore, the study encourages future researchers to retain focus on the performance of the emerging inverted model governance arrangement in order to learn more about its prospects in terms of sustainability as well as its dynamics on a temporal scale.

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