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Governance Quality and REDD+ Readiness in Community Forest Management: Evidence from Zambia

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Research Article

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Abstract

Forests have been identified as a key part of climate change mitigation solutions, and reducing emissions from deforestation and forest degradation (REDD+) has become a primary approach to address forest-based climate mitigation. Certainly, financial incentives and technical approaches are necessary, but whether REDD+ is successful will in large part depend on the institutional context within which projects are developed and implemented. This paper explores the link between community forest governance and household perceptions of REDD+ readiness using analysis of data from household surveys conducted with 385 households in communities engaged in community forest governance institutions in Nyimba District, Zambia. Governance quality and perceptions of REDD+ benefits and readiness indices were constructed based on these surveys. Ordinary Least Squares regression models with heteroskedasticity-robust standard errors were then used to analyze what aspects of governance quality, participation in community forest governance meetings, and community group tenure were linked to perceived REDD+ readiness. Governance quality is found to have a strong and positive relationship to perceived REDD+ readiness, and community group tenure has a significantly positive impact on REDD+ readiness. Participation in meetings does not independently influence REDD+ readiness once an index of governance quality is considered. These results suggest areas for policy investment in successful implementation of forest-based climate mitigation projects.

3. JEL Classification Codes

JEL Codes: **Q23, Q28, Q54, O13**

- **Q23** – Forestry
- **Q28** – Government policy
- **Q54** – Climate mitigation
- **O13** – Natural resources and development

1. Introduction

In the face of the threat posed by climate change, efforts to curb emissions are fast becoming synonymous with nature-based solutions aimed at both reducing emissions from deforestation and forest degradation, and at enabling more sustainable livelihoods for rural people. In this context, a wealth of solutions are emerging, but among the most high profile is the global policy instrument known as the Reducing Emissions from Deforestation and Forest Degradation (REDD+), which has sought to mainstream forest conservation into the climate carbon markets (Angelsen, 2009; Angelsen et al 2018).

Nonetheless, successes of REDD+ have been highly inequitable across different countries and broad forest landscapes. A number of studies point out that the individual, institutional and broader governance contexts in which REDD+ operates are also crucial factors influencing the performance and impacts of REDD+ (Corbera & Schroeder, 2011; Larson et al., 2013). Of particular concern is the influence

of the local governance arrangements, which oversee forest access, rules enforcement and benefit sharing, on local community perceptions of REDD+.

In most African countries such as Zambia, REDD+ operates under the community-based natural resource management (CBNRM) systems. These approaches have been introduced to de-concentrate forest governance, to involve community institutions such as Community Forest Management Groups (CFMGs) and Community Resource Boards (CRBs) by entrusting them with powers and responsibilities for forest resource management and for conservation and livelihood improvements. Effective government structures of these community institutions on the other hand are crucial to the success of CBNRM arrangements.

There has been some literature on REDD+ governance issues, such as lack of institutional capacity, enforcement of rule, skewed participation in decision-making processes (Agrawal et al., 2011; Ribot et al., 2006). However, few empirical studies have been conducted to examine how community forest governance quality at local level can affect household perceptions of readiness and benefits of REDD+ implementation in Southern Africa.

This paper explores linkages between community forest governance and community perceptions on REDD+ readiness among households who are members of community forest governance institutions (namely Community Forest Management Groups) in Nyimba district in Zambia‘s Eastern Province. The data used in the analysis were obtained from a cross-section of household surveys conducted in October 2023, on the members of CFMGs within the community forest areas in the district. The indices of governance and perceived benefits of REDD+ have been constructed and their relationship investigated.

This paper makes three contributions to the literature. First, it empirically tests the connection between local governance quality and the perceived effectiveness of climate mitigation at the household level. Second, it makes a conceptual distinction between participation in local governance processes and the quality of local governance institutions as a whole, providing clarification on the roles of local institutions in REDD+ implementation. Third, this study makes policy recommendations for the design of stronger local community governance institutions in the context of climate mitigation.

2. Conceptual Framework and Literature Review

The governance of forest resources has remained a fundamental factor for improving livelihood outcomes and sustaining environment in community-based conservation systems (Chhatre and Agrawal, 2009). Institutional theoretical and empirical insights from institutional economics and political ecology reveal the success of decentralized resource management to be contingent on the design and legitimacy of institutions of local governance and their capacity to enforce rules (Ostrom,1990; Agrawal & Ribot, 1999).

Increasing empirical evidence points to the relevance of governance institutions in determining REDD+ effectiveness. Increasingly, it is accepted that although REDD + has been promoted as a global mechanism to address emissions from forest degradation and deforestation, its success ultimately depends on governance mechanisms of its implementation, at the community level. Research increasingly shows that institutional quality, stakeholders' participation mechanisms and the political economy of forest governance affect why and how local people accept and support REDD+ initiatives (Larson et al., 2013; Sunderlin et al., 2014).

Number of studies also illustrates that weak governance system can not make international forest initiative like REDD+ work or benefit local economy and livelihoods (Phelps et al., 2010). According to Johnson (2021), a case study on REDD+ implementation in Ghana found that, despite formal commitments to international principles of environmental justice, the principle were often "depoliticized" during mobilization on the ground, due to centralized state control of forest resources and decreased capacity of local actors to participate in decision-making processes. The second example is based on a study by Gautam et al (2021) on REDD+ pilot initiatives in Nepal. The authors concluded that, while decentralization reforms were initiated to empower local communities, decision-making process remains largely dominated by external actors and it is challenged by the fact of insufficient participation and lack of institutional capacity at the local level.

By contrast, other literature demonstrates REDD+ opportunities to enhance governance through multi-governance institutional arrangements. Osei (2024) investigates the Ghana Cocoa Forest REDD+ Programme and concludes that successful implementation relies on acknowledging stakeholders' interdependence in forest governance. Joining knowledge, collective efforts and cross sectoral governance are proven to promote the efficiency of REDD+ programs. Morgan et al. (2023) explore REDD+ implementation processes in the Democratic Republic of Congo and finds that capacity-building projects and community participations, as well as long-term institutional cooperation, are substantial elements for the optimized governance performance. These studies indicate that multi-governance settings can effectively resolve institutional deficiencies and political mistrust towards forest governance, further contributing to the legitimacy of REDD+.

The importance of participation for governance outcomes is a common thread through much of the literature. Participatory forms of management, including village meetings and local- level decision-making, are often debated as a core element of CBNRM; yet empirical evidence indicates that participation does not always lead to improved governance performance. Poudel et al. (2015) observe social equity results in Nepal's community forestry programs and find that although REDD+ interventions led to specific provision of resources to certain groups, the basic structural inequalities remained. Likewise, Satyal et al. (2020) show that while some groups benefit from REDD+ programs, others continue to be politically and socially marginalized within the governance institutions. This difference points to the importance of participatory participation in the context of governance, which may or may not translate into actual power and influence.

Apart from the participation element, a series of institutional attributes, such as governance capacity, adaptive management, is also relevant to REDD+ performance. Scheba(2018) investigates the internal governance processes in Tanzania's participatory forest management system, arguing that tensions exist between local political realities and adoption of functional governance arrangements, thus high level of rigidity in governance structure might limit community's capacity to adapt forest management practices to the local needs. Similarly, Corbera et al (2020) investigate the implementation of REDD + in participatory forest management, indicating that although there existed some positive income changes in the study site, the improvements could not be correlated with increased forestry income, as governance reforms are not enough to improve local welfare conditions.

More generally, reviews of REDD+ governance underscore the complicated relationships with global climate policy as well as local institutional arrangements. Hajjar et al. (2021) in a comprehensive review of REDD + and community forest governance systems concludes that while REDD+ interventions tend to reinforce cross-scale institutional linkages and levels and offer more opportunities for community participation, game-changing external rules and monitoring platforms could create new constraints on local adaptive management and curtail local community governance institutions; these findings call for new governance mechanisms that cater to both accountability and institutional learning.

Gathered as a whole, there is less emphasis on participatory approaches and financial flows and more on the importance of the strength and legitimacy of local institutions of governance in establishing REDD+ programs. While many REDD+ policy proposals point toward participatory approaches, the empirical evidence reveals that governance quality, the decentralization of power, and the capacity of local institutions have a stronger influence on community perceptions and involvement in climate mitigation programs than the institutional factors proposed by REDD+ literature. Given this, their influence on REDD+ readiness needs to be better understood to develop governance arrangements that accommodate environmental and socio-economic priorities of forest jurisdictions.

REDD+'s preparedness can also be associated to the Institutional experiences. Households who have been engaged with governance institutions for a long period of time may be more experienced in the functioning of the institutions, and have a bigger network of contacts within governance institutions, leading to higher trust in the local leadership.

Based on the literature of community forest governance and REDD+ readiness, this study investigates the impacts of institutions of community forest governance systems on household perceptions of REDD+ readiness. Specifically, this paper analyzes three institutional aspects, governance quality, participation in governance, and institutional tenure under community forest management groups. The hypothesized relationships re summarized in the conceptual framework in Fig. 1.

3. Methods

3.1 Study Area

The study site was Nyimba District, in the Eastern Province of Zambia. The district is a heavily forested area with increasing human pressure due to expanding agricultural practices and charcoal production. Forest ecosystems supply local economies with timber, fuel wood, non timber Forest Products and contribution to ecosystem services.

The REDD+ pilot implementation activities; sustainable forest management and emission reduction and community participation in Forest management has, in recent years, taken place in Nyimba district. This was using a framework of community-based forest governace system that was introduced in the Country was through CFMGs. This is the framework that encompasses the managing of forests, and co-ordinating participation by the local community.

Data used in the empirical analysis was the Cross-sectional households' survey data, which was collected on October 2023 from 385 households members belong to Community Forest Management Groups based in community forest areas of Nyimba District.

3.2 Data Collection

The data for this research were derived from a household survey, which is a comprehensive questionnaire filled out by people within community forest management institutions. Information gathered included household participation in governance, REDD+ benefits, governance at the community institution level, and time-period of participating in the community institution.

The survey comprised several Likert-scale questions to assess the perceptions of governance processes and REDD+ results. Such questions touched upon subjects as the rule enforcement, transparency and leadership accountability, the coordination of institutions and the perceived improvements in people's livelihoods that REDD + was expected to generate.

The number of household responses was 385 after data validation and cleaning process.

Field data collection was carried out as part of the doctoral work carried out by the author at the Pan African University Institute for Governance, Humanities and Social Sciences.

3.3 Construction of Governance and REDD+ Indices

Two composite indices were constructed from the survey data.

REDD+ Readiness Index

The REDD+ readiness index was constructed by averaging responses to twelve survey items capturing household perceptions of REDD+ outcomes, including:

• improvements in natural resource management

• knowledge and skills development

• community leadership and institutional coordination

• livelihood benefits and asset accumulation

Each item was measured on a Likert scale ranging from 1 to 5. The internal consistency of the REDD+ readiness indicators was assessed using Cronbach's alpha to ensure the reliability of the composite index. The composite index represents the average score across all REDD+ perception indicators.

$$REDDReadiness_i = \frac{1}{12}\sum_{j=1}^{12} R_{ij}$$

where R_{ij}represents the response of household *i* to indicator *j* measured on a five-point Likert scale.

Governance Quality Index

The governance quality index was constructed from six survey items capturing key dimensions of community forest governance, including:

• adherence to governance procedures

• transparency in decision-making

• maintenance of membership records

• rule enforcement

• leadership accountability

• regularity of governance meetings

The internal consistency of the governance quality indicators was also evaluated using Cronbach's alpha to assess the reliability of the governance index. These items were similarly measured on a Likert scale and averaged to construct the governance quality index.

$$GovernanceQuality_i = \frac{1}{6}\sum_{k=1}^{6} G_{ik}$$

where:

• G_{ik}represents household *i*'s response to governance indicator *k*

• governance indicators are measured on a Likert scale from 1 to 5

Index	Number of Items	Cronbach's Alpha
REDD+ Readiness Index	12	0.87
Governance Quality Index	6	0.79

3.4 Empirical Model

To examine the relationship between governance and REDD+ readiness, the following regression model was estimated:

$$REDDReadiness_i = \beta_0 + \beta_1 GovernanceQuality_i + \beta_2 Participation_i + \beta_3 Tenure_i + \epsilon_i$$

where:

• $REDDReadiness_i$represents the REDD+ readiness index for household i

• $GovernanceQuality_i$represents the governance quality index

• $Participation_i$indicates whether the household participated in governance activities

• $Tenure_i$captures the length of membership in community forest governance institutions

Heteroskedasticity-robust standard errors (HC3) were applied to estimate OLS.

This survey data was compiled as part of a doctoral study of community forest governance and rural livelihoods in Nyimba District in Zambia. The survey itself was voluntary and all respondents gave their prior informed consent before being interviewed.

4. Results

4.1 Descriptive Patterns in Governance and REDD+ Readiness

Descriptive statistics for the variables utilized in the analysis are displayed in Table 1. The mean of the REDD+ readiness index is 4.00 (SD = 0.87), suggesting that most respondents display positive attitudes toward REDD+ outcomes. The mean of the governance quality index is 4.35 (SD = 0.50), indicating that most respondents display positive attitudes toward community forest governance institutions. The mean participation rate is approximately 86 percent, and the mean tenure in community forest institutions is 2.34, suggesting that most respondents have significant institutional experience.

Table 1
descriptive statistics

Variable	mean	std	min	max	N
REDD_Readiness_Index	4.000433	0.874276	1	5	385
Governance_Quality_Index	4.354113	0.497536	2.333333	5	385
Participation	0.857143	0.350382	0	1	385
CFMG_Tenure	2.335065	0.906827	1	6	385

Panel (b) shows a comparison of household REDD+ readiness scores between households that reported participating in governance activities and households that did not. Those that reported participating in governance activities have a marginally higher median level of readiness, although the spread of household scores by participation are largely overlapping, indicating that participation in governance activities may not be enough to promote perceptions of increased REDD+ effectiveness.

In general, the descriptive evidence suggests that although involvement in governance processes can help foster positive reactions to REDD+, it is the wider institution of the governance system that will matter more.

4.2 Regression Results

Table 2
presents the results from the ordinary least squares (OLS) regression models examining the relationship between governance variables and REDD+ readiness. Robust standard errors (HC3) are used to account for potential heteroskedasticity.

Variable	Coefficient	Robust SE	p-value
Governance Quality	0.839	0.112	< 0.001*
Participation	0.082	0.15	0.587
CFMG Tenure	0.211	0.047	< 0.001*
Constant	-0.216	0.516	0.676

Model Statistics	
Observations	385
R^2	0.327
Adjusted R^2	0.321
F-statistic	61.7***

The full model explains approximately 32.7% of the variation in the REDD+ readiness index ($R^2 = 0.327$), indicating that governance factors and tenure in community forest institutions account for a meaningful share of observed differences across households.

Governance Quality

Governance quality is positively significantly correlated with REDD+ readiness ($\beta = 0.839$, $p < 0.01$), indicating the integrated impacts: households located in better governance contexts, with more effective rule enforcement, transparency, and accountability of leadership, perceive far greater benefits and institution readiness.

Substantively, a unit increase in the governance quality index is associated with an increase of roughly 0.84 units in the REDD+ readiness index. This underscores the significance of institutional quality in determining community attitudes toward climate mitigation programs.

Participation in Governance Activities

Inclusion of governance quality and tenure in the model diminishes any impact of participation in governance meetings or activities on REDD+ readiness ($\beta = 0.082$, $p > 0.05$). Though the descriptive statistics indicated a modest difference (participants preparing for marginally higher perceived outcomes), the regression results demonstrate that participation fails to account for variation in REDD+ readiness when contextualized in more comprehensive governance conditions.

This indicates that the effectiveness of the institution itself is perhaps more relevant than participation frequency.

Tenure in Community Forest Institutions

Duration of membership in community forest management groups (CFMGs) is significantly correlated with REDD+ readiness ($\beta = 0.211$, $p < 0.01$). The means of tenure was significantly related to the households' perceptions of forest integrity, capacity, participation and benefits.

The link may represent greater familiarity with forest governance procedures, better trust in local institutions, and higher exposure to capacity building and livelihood programs associated with REDD+ activities.

4.3 Implications

Overall, the findings illustrate the variable effect of institutional quality and ongoing governance experiences in influencing community perceptions of REDD+. While the level of attendance to community meetings and debates are often cited as a defining characteristic of community-based natural resource management, these results show that ongoing governance structures and investing over time are the significant predictors of REDD+ readiness.

These findings also add to a growing body of evidence demonstrating that the effectiveness of forest-based climate mitigation projects hinges on not just community support but, also, on the strength, legitimacy and accountability of the local institutional context.

5. Discussion

These findings contribute empirical evidence on the role of community-level governance institutions in shaping perceptions of REDD+ readiness within community forest management systems in Zambia. The results highlight three key insights: the central importance of governance quality, the limited independent role of participation alone, and the influence of institutional experience on perceptions of climate mitigation initiatives.

First, the strong positive relationship between governance quality and REDD+ readiness underscores the importance of effective local governance institutions in determining climate mitigation outcomes. Households embedded within governance systems characterized by rule enforcement, transparency, and accountable leadership reported significantly higher perceptions of REDD+ benefits and institutional preparedness. These findings are consistent with previous research emphasizing the importance of institutional quality in community-based natural resource management systems. For example, Scheba (2018) demonstrates that governance structures significantly shape the effectiveness of participatory forest management arrangements in Tanzania. Similarly, Morgan et al. (2023) highlight how collaborative governance frameworks and capacity-building initiatives can improve REDD+ implementation in the Democratic Republic of Congo. More broadly, Hajjar et al. (2021) argue that REDD+ interventions often reshape local governance systems by strengthening cross-scale institutional linkages between communities and national climate policy frameworks. Together, these studies reinforce the argument that strong and legitimate local institutions are essential for translating global climate mitigation initiatives into effective local governance outcomes.

Second, the analysis shows that participation alone does not significantly influence REDD+ readiness once broader governance quality is taken into account. Although households participating in governance meetings reported slightly higher readiness levels in descriptive analyses, this effect disappears in the multivariate regression model. This finding reflects an important distinction between procedural participation and substantive governance quality. Participation mechanisms are frequently emphasized in community-based conservation and climate policy frameworks; however, empirical research suggests that participation alone may not lead to improved governance outcomes. Studies by Poudel et al. (2015) and Satyal et al. (2020) demonstrate that participatory structures within community forestry systems can coexist with persistent social and institutional inequalities that limit meaningful influence over decision-making processes. Similarly, Gautam et al. (2021) show that despite decentralization reforms in Nepal's REDD+ initiatives, decision-making power often remains concentrated among external actors. These findings suggest that the effectiveness of participation mechanisms depends heavily on the broader institutional environment within which they operate.

Third, the positive association between institutional tenure and REDD+ readiness indicates that experience within community forest governance institutions plays an important role in shaping community perceptions of climate mitigation initiatives. Households with longer tenure in Community Forest Management Groups reported higher perceived levels of REDD+ benefits and institutional readiness. This relationship may reflect processes of institutional learning and trust-building that occur through sustained engagement in governance systems. Over time, community members may develop greater familiarity with governance procedures, stronger social networks within local institutions, and increased confidence in leadership structures. Such processes can enhance information flows, strengthen institutional trust, and improve community engagement with conservation programs.

Taken together, these findings reinforce the argument that institutional quality is a critical determinant of effective climate governance at the local level. REDD+ initiatives typically operate through multi-level governance arrangements that connect global climate finance mechanisms with local forest-dependent communities. When local governance institutions lack legitimacy, transparency, or enforcement capacity, these arrangements may struggle to generate tangible benefits or sustain community support. Conversely, effective governance institutions can strengthen accountability, facilitate knowledge sharing, and promote equitable benefit distribution.

6. Conclusion

This study explored how community forest governance is linked to Communities' perceptions of REDD+ readiness and benefits among rural households based in Community Forest Management institutions of Nyimba District, eastern part of Zambia. Using household survey data and regression model we found the quality of local governing institutions is one of the central factors in influencing community's perceptions of climate mitigations.

The results also indicate that mere attendance at forums or consultations, ordinary mechanisms of participation, has no significant effects on REDD+ readiness when other factors, such as governance quality, are controlled for. This points to an interesting difference between participatory bodies and governance structures. The existence and accessibility of participation in community-based NRM is a necessary precondition for legitimacy, but outcome depends more on the quality of institutions and institutional integrity.

Institutional experience seems to be another critical factor. Better REDD+ readiness is associated with longer experience in community forest governance institutions. Households with more institutional experience in the community forest governance system might have greater trust in community, more used to governance institutions, and as a result more engaged in climate mitigation program.

Overall, these results serve as a part of the expanding literature highlighting governance aspects of REDD+ implementation. They point to the importance of local governance institutions for the success of climate mitigation programs in forest settings, beyond the availability of financial rewards or technical solutions.

From a policy perspective, the results indicate that strengthening the institutional capacity of community forest governance structures should be a central priority for REDD+ implementation strategies in Zambia and similar contexts across sub-Saharan Africa. Investments in leadership accountability, transparent decision-making, and effective rule enforcement may enhance community trust and improve the long-term sustainability of climate mitigation initiatives. In contrast, approaches that focus primarily on increasing participation without addressing underlying governance quality may have limited impact.

Future research could further explore how different governance arrangements influence the distribution of REDD+ benefits within communities, as well as how institutional reforms at national and regional levels shape the effectiveness of community-based climate mitigation strategies. Understanding these dynamics will be critical as countries continue to expand nature-based climate solutions within increasingly complex governance landscapes.

Declarations

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Competing Interests

The author declares that there are no financial or non-financial competing interests relevant to this study.

Ethics Approval

The study was conducted in accordance with ethical research standards for social science research.

Informed Consent

Informed consent was obtained from all participants prior to the administration of the household survey.

Data Availability

The dataset used in this study was collected as part of doctoral field research on community forest governance and rural livelihoods in Nyimba District, Zambia. Due to the inclusion of household-level survey responses, the data are not publicly available but may be made available from the author upon reasonable request.

Author Contributions

The author was responsible for the conception and design of the study, data collection, data analysis, and preparation of the manuscript.

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Figures

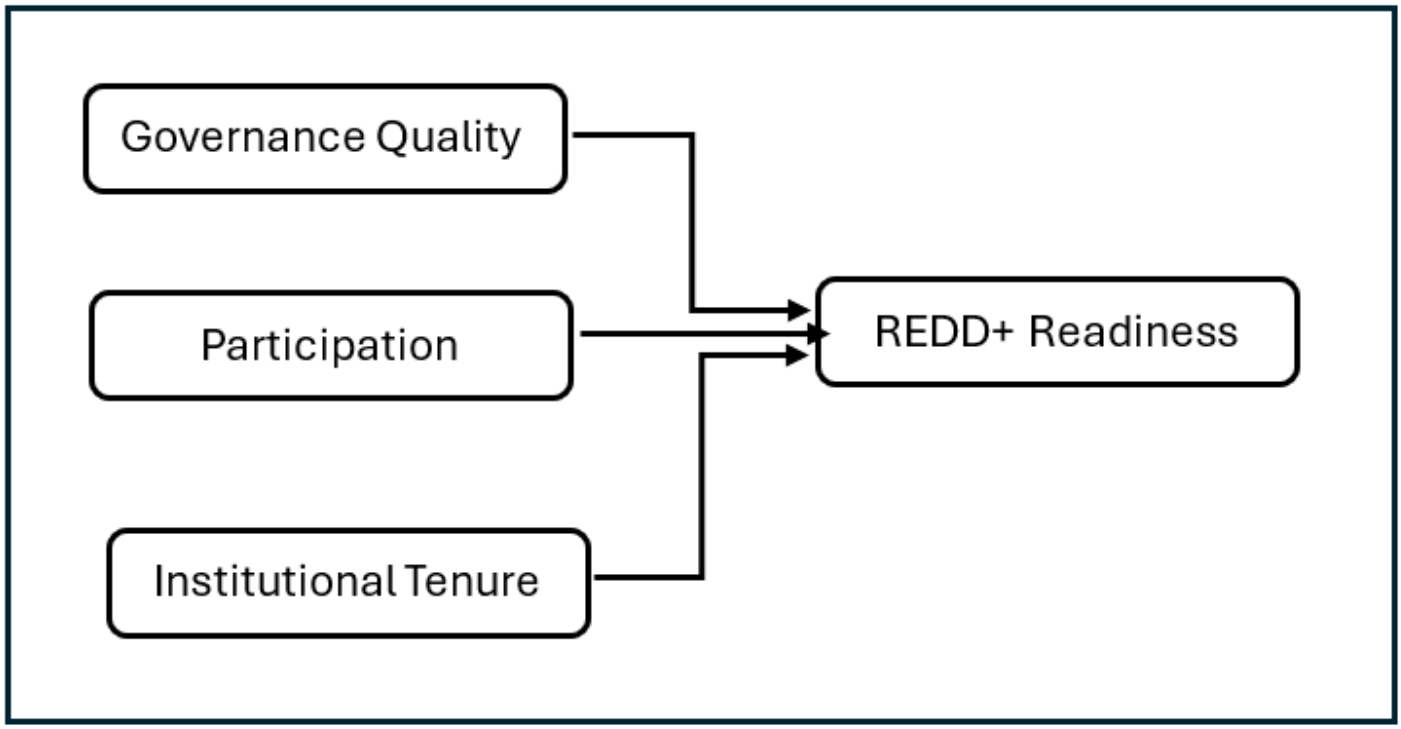


Figure 1

Conceptual framework

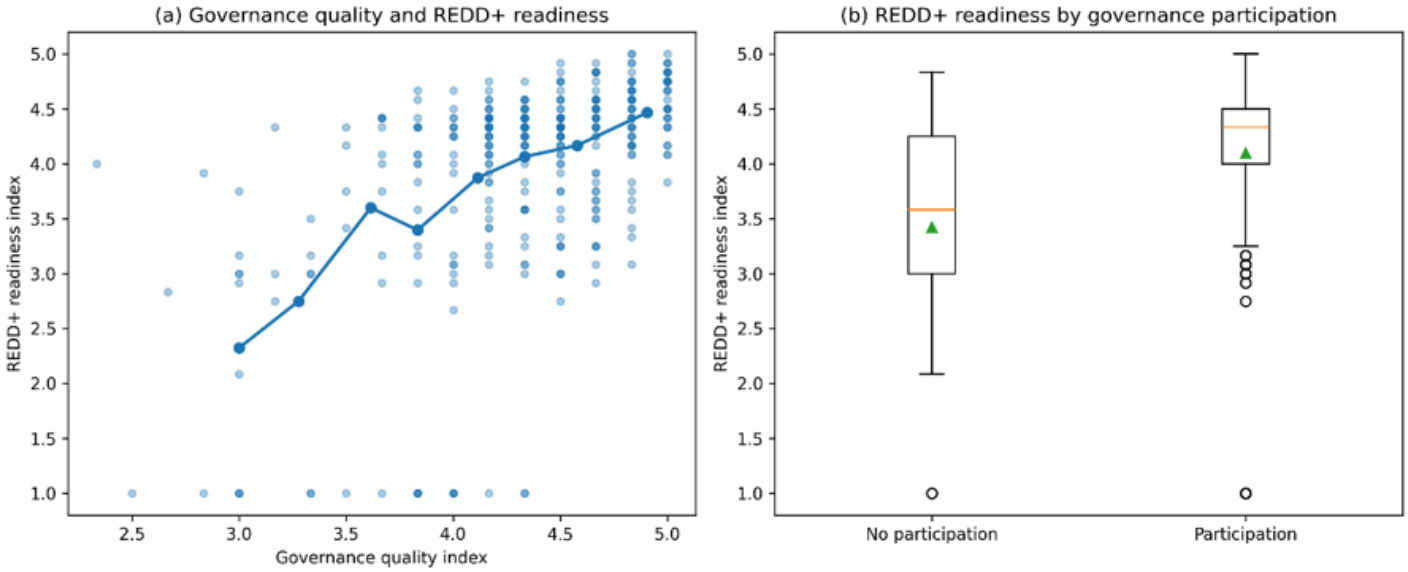


Figure 2

Legend not included with this version.