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Community Participation Strategies and Sustainable Development in Lualaba's Cobalt Mining Regions – Democratic Republic of Congo

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Abstract: *Cobalt mining in Lualaba Province, Democratic Republic of Congo (DRC), is central to the global renewable energy and electric vehicle supply chain. However, mining activities have been associated with environmental degradation, social unrest, and economic exclusion of local communities. This study examined the impact of community participation strategies on sustainable development outcomes in Lualaba's cobalt mining regions. Anchored on Stakeholder Theory and Social Capital Theory, a convergent parallel mixed-methods design was applied, involving 330 participants drawn from community members, mining representatives, NGOs, and government officials. Quantitative findings revealed weak and statistically insignificant correlations between participation and sustainability outcomes (r = -0.057, p = 0.299), yet qualitative evidence indicated that projects with deeper community involvement particularly in planning, monitoring, and decision-making were more durable, inclusive, and environmentally responsible. The study concludes that tokenistic consultation is inadequate; genuine co-decision-making and inclusive engagement are vital for achieving sustainable mining. It recommends institutionalizing participation through legal frameworks, building community capacities for participatory governance, and establishing accountability mechanisms through participatory monitoring systems.*

Keywords: *Community Participation, Sustainable Development, Cobalt Mining, Lualaba Province*

1.1 Introduction

Cobalt mining has increased rapidly in recent years due to increasing global demand. Cobalt minerals are crucial for making electric vehicle batteries, electronics, and various renewable energy technologies (Sovacool, 2020). As a result, cobalt minerals have become important minerals for industries in the United States, Canada, Europe, and Asia. However, concerns about the environmental and social impacts of cobalt extraction have shifted attention to responsible mining practices (Zeng et al., 2022). Cobalt mining has become a cornerstone of global supply chains, particularly for the production of batteries

powering electric vehicles and renewable energy storage systems.

In Europe, the European Union has been very at the vanguard of advocating for the sustainable supply of various materials, of the critical raw materials list, cobalt inclusive. The EU Conflict Minerals Regulation 2017 also highlights corporate accountability in sourcing mineral such as cobalt in way that promotes the welfare of those residing in the host country especially the developing countries (Xiao & Zhang, 2020). European corporations are incorporating Company Social Responsibility (CSR) policies to make sure that they bring positive impact on the local citizens by fixing schools, hospitals, roads and many more social amenities. Sourcing responsibility and ethical practices related to cobalt mining is one of the widely discussed and practiced agenda through community engagement (Wang et al., 2017).

As a mining powerhouse, South Africa also extinguishes laws to protect native communities harmed by mining (Sovacool, 2020). South African Mining Charter also requires the mining right holder to clearly outline various benefits to be offered to the communities in the form employment, education, skills development, provision of social infrastructure etc. In addition, there is always social obligation to source the benefits of mining from firms and distribute it to the local people especially the historically disadvantaged groups (Sovacool, 2020). This approach has immensely proved helpful in enhancing the development of sustainable mining areas of concern despite the various vices like; corruption and inequality persist in various areas.

Tin, tantalum and tungsten producing country of Rwanda has significantly advanced in mainstreaming of the community within the mining sector. National mining laws require that indigenous people must participate on any decisions that relate to implementation of benefits and conservation measures (Zembe & Barnes, 2023). The governance of mining in Rwanda has enlisted local people where they sit and discuss issues pertaining to mining and utilization of extracted resources, the land and food production among other issues. The current approach of engaging interested parties in the management of mining is targeted at recognizing and preventing clashes as well as embrace mining in the achievement of sustainable development goals (Guo, 2019).

The Democratic Republic of Congo (DRC), and particularly Lualaba Province, supplies over 70% of global cobalt demand. Despite this economic importance, local communities remain marginalized, facing environmental degradation, social conflict, and limited access to development benefits. Unlike countries such as South Africa and Ghana, where legal frameworks institutionalize community development agreements, Lualaba's engagement frameworks remain weak, consultative at best, and inconsistent in practice. This study addresses the central research question: How do community participation strategies influence sustainable development in Lualaba's cobalt mining regions?

1.2 Statement of the Problem

Despite the significant contribution of cobalt mining to the DRC's economy, communities in Lualaba Province continue to face social and environmental challenges including displacement, poor infrastructure, and limited access to decision-making processes. Although mining companies conduct community engagement activities, these are often consultative and lack mechanisms for shared decision-

making. This weakens trust and limits the potential of mining projects to contribute to long-term sustainable development. Existing literature has not adequately examined how participation strategies in the cobalt sector influence sustainability outcomes in this unique socio-political context, hence the need for this study.

1.3 Purpose of the Study

The purpose of this study was to examine the influence of community participation strategies on sustainable project development in cobalt mining in Lualaba Province, Democratic Republic of Congo.

1.4 Theoretical Framework

This study draws on two complementary theories. Stakeholder Theory (Freeman, 1984) emphasizes inclusive decision-making and accountability, arguing that projects succeed when all affected stakeholders are meaningfully engaged. Social Capital Theory (Putnam, 1993) highlights trust, networks, and collective action as critical drivers of sustainability. Together, these frameworks suggest that participation fosters ownership, empowerment, and long-term sustainability of mining projects.

1.5 Literature Review

Globally, structured participation has improved mining outcomes by aligning projects with community priorities. Canada and South Africa provide examples where legal frameworks require companies to engage communities in project planning, monitoring, and benefit-sharing. In the DRC, however, participation remains limited to information-sharing or consultation, rarely extending to decision-making. Prior studies (e.g., Sovacool, 2020; Nazuk et al., 2022) underscore that projects without genuine community ownership often fail to achieve sustainability. This research responds to that gap by empirically testing the link between participation strategies and sustainable development in Lualaba.

The involvement of the community is a core variable in the expression of inclusive and responsive decision-making process in the local governance. This thesis explores the extent to which the community actively participates in a handful of areas, including local committees, decision making processes, community-based initiatives, and feedback mechanisms. Past literature indicates that local governance cannot be organized in a way that actively invites community participation. The traditional idea of community participation has focused mainly on informing and consulting with communities. However, real community participation is more interactive and involves negotiation. Stakeholders collaborate to develop policies that fit their agreed-upon differences (Nnunduma & Nnunduma, 2023).

Involving communities in processes of decision-making in policy has been shown to increase the chances that resulting policies will reflect local needs and priorities, resulting in better outcomes (Perrone et al., 2023). In addition, meaningful participation can also strengthen transparency and accountability among the members of local governance structures thereby reducing the probability of corruption and poor or mismanagement of public resources. As for marginalized groups such as women, youth and others disadvantaged populations will promote representation in the local committees and witness their voices on the local governance (Hussein, 2021).

Furthermore, the issue of stronger decision-making processes is critical to the success of community led initiatives. Communities where they have a real claim to projects' development and deployment are more likely to exercise ownership and participate in the realization of the project (Stanley & Lukman, 2020). Despite this, one barrier to effective community participation also includes shortage of capacity in local government, deficiency of knowledge about community participation advantages, reluctance to share power (Osore et al., 2022). In response to these issues, some municipalities have started structured feedback methods. They hold frequent public assemblies, including town halls, and engage in participatory budgeting. These actions keep avenues for communication open and show accountability (Nazuk et al., 2022). To achieve this, the research adopts a mixed-method approach that uses qualitative and quantitative data to provide a clearer perspective on community participation in local government (Nazuk et al., 2022). This research contributes to the growing body of literature on community participation. It offers real-world advice to local governments and community groups interested in improving the effectiveness and inclusivity of their decision-making (Nazuk et al., 2022).

A new tool, community-based initiatives, has become a potent force for local empowerment and development. These initiatives leverage local knowledge and resources to provide solutions suitable for the unique needs of the community (Matarrita-Cascante et al., 2020). They not only establish the feeling of belonging among community members; they also educate the community on how to co-operate in solving problems. Effective feedback mechanisms help communities maintain ongoing dialogues with local governments and other actors, leading to better practices of governance (Lo & Janta, 2020). The level at which communities engage in local governance is thus a measure of the responsiveness and inclusiveness of decision-making processes. By improving participation, local governments can promote the effectiveness of their policies, foster social cohesion, empower the marginalised, and ultimately promote more equitable and sustainable development results (Jonga, 2022). In line with research on community participation at South African local government, stakeholder negotiation should be institutionalised as a process that continues and not as an event in isolation (Petunia & Selepe, 2020). Likewise, a piece of research on the Integrated Development Planning of South Africa's Limpopo province recommends strengthening community participation so that it results in efficient public service delivery (Zwane & Matsiliza, 2022). In order to further promote the level of participation by the community, local governments should promote the establishment of voluntary community associations; functional ward committees; and participation of marginalised and disadvantaged groups in development. Developing a habitat that ensures effective and sustainable participation by the community relies on the creation of the capacity to construct and ownership. Through this, local communities can participate and gain (Trocan et al., 2022).

However, there are mechanisms needed to enable communities to provide feedback. They ought to be able to express their views and share their experiences in development projects (Ngo et al., 2019). Such loops help communities hold accountable decision makers and learn how to adjust their programs. Effective feedback mechanisms improve communication between mining companies and communities. It helps in the reduction of concerns regarding the environmental and social effects. Strengthening these feedback mechanisms has the potential to generate community trust and a more responsive government that can deliver improved socioeconomic performance (Trocan et al., 2022). Finally, the importance of the extent to which people participate in local government is finally established. Local governments, however, can make their policies transparent, accountable and responsive to a plural community’s needs

through their provision of active participation in decision-making, representation in local committees and people-oriented programs.

1.6 Methodology

The study employed a convergent parallel mixed-methods design, combining quantitative surveys and qualitative interviews and focus group discussions. A sample of 330 participants was drawn from six groups: community members, mining company representatives, NGOs, traditional leaders, youth and women groups, and government officials. Quantitative data were analyzed using correlation and regression tests, while qualitative data underwent thematic analysis. Validity was ensured through piloting, while reliability was tested using Cronbach's Alpha, with coefficients above 0.7 deemed acceptable.

1.7 Findings

Quantitative results indicated that community participation had no statistically significant effect on sustainable development outcomes ($r = -0.057$, $p = 0.299$). However, qualitative insights revealed that deeper participation enhanced project ownership, transparency, and conflict reduction. Communities engaged in monitoring committees reported improved social services and accountability, while those excluded expressed mistrust and resistance. These findings highlight a divergence between numerical associations and lived experiences, reinforcing the importance of qualitative evidence in evaluating participation outcomes.

Table 1: Community Participation

	1	2	3	4	5	Mean	Std. Deviation
Local community participation in mining activities has played a key role in promoting sustainable development.	65(20.9)	59(18.9)	65(20.9)	60(19.2)	65(20.8)	3.009	1.432
Decision-making processes related to mining activities consider the opinions and contributions of local community members.	55(17.6)	61(19.6)	71(22.8)	64(20.5)	60(19.2)	3.045	1.373
Concerns raised by the community are frequently ignored or dismissed by mining operators.	60(19.2)	72(23.1)	56(17.9)	60(19.2)	63(20.2)	2.982	1.421
Feedback provided by the community is effectively addressed by mining companies in a timely manner.	62(19.9)	62(19.9)	55(17.6)	71(22.8)	68(21.8)	3.021	1.422
Local community members are often excluded from decision-making processes regarding mining operations.	57(18.3)	55(17.6)	65(20.8)	64(20.5)	71(22.8)	3.121	1.418

	1	2	3	4	5	Mean	Std. Deviation
Community participation in mining activities has had minimal impact on sustainable development efforts in the region.	54(17.3)	64(20.5)	70(22.4)	63(20.2)	60(19.2)	3.039	1.371
Mining operators actively support community-led initiatives that contribute to long-term development.	56(17.9)	54(17.3)	77(24.7)	70(22.4)	55(17.6)	3.045	1.349
Mining companies rarely consult or involve local communities in the planning of their activities.	58(18.6)	62(19.9)	57(18.3)	67(21.5)	68(21.8)	3.082	1.424
Mining companies consistently involve local communities during the planning stages of their operations.	62(19.9)	65(20.8)	66(21.2)	64(20.5)	54(17.3)	2.942	1.381
Mining operators show little to no interest in promoting or supporting community-led initiatives.	72(23.1)	61(19.6)	67(21.5)	53(17.0)	59(18.9)	2.888	1.426
Composite Mean and Standard Deviation						**3.019**	**1.401**

Source: ***Field data, 2025***

Table 1 summarizes these findings, showing a mixed picture: while some respondents agreed that participation contributed to development, many reported exclusions from decision-making and limited company engagement. The composite mean score of 3.019 (SD = 1.401) indicates a generally neutral perception, suggesting that participation efforts remain largely consultative rather than transformative.

After establishing participation levels, the study examined the relationship between community participation and sustainable development outcomes.

Correlation Between Community Participation and Sustainable Development in Cobalt Mining

The study accounted for the relationship between Community Participation and Cobalt Mining Sustainable Development. It examined the significance and direction of this relationship. Results presented in Table 2 indicate that there was no significant negative association between Community Participation and Cobalt Mining Sustainable Development ($r = -0.057$, $p = 0.299$). The relationship was not statistically significant ($p > 0.05$), suggesting no real relationship between these factors.

Table 2 Correlation Between Community Participation and Sustainable Development

Correlations

		Community Participation	Sustainable Development in Cobalt Mining
Community Participation	Pearson Correlation	1	-.057
	Sig. (2-tailed)		.299
	N	330	330

Sustainable Development in Cobalt Mining	Pearson Correlation	-.057	1
	Sig. (2-tailed)	.299	
	N	330	330

Source: *Field data, 2025*

The results show a very weak, negative, and statistically non-significant relationship (r = -0.057, p = 0.299). This implies that participation, in its current form, does not predict sustainable development outcomes in Lualaba Province.

To test predictive power, a regression model was applied. Table 5.3 shows that community participation accounts for only 0.3% ($R^2 = 0.003$) of the variance in sustainable development outcomes, indicating very low explanatory power.

Table 3: Model Summary for Community Participation and Sustainable Development

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.057[a]	.003	.000	.48121

a. Predictors: (Constant), Community Participation

Table 4: ANOVA for Linear Regression between Community Participation and Sustainable Development

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.250	1	.250	1.080	.299[b]
	Residual	75.952	328	.232		
	Total	76.202	329			

a. Dependent Variable: Sustainable Development in Cobalt Mining

b. Predictors: (Constant), Community Participation

Table 4 confirms that the overall model is not statistically significant (F = 1.080, p = 0.299).

Table 5: Regression Coefficients for Community Participation and Sustainable Development

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.238	.180		17.984	.000
	Community Participation	-.061	.059	-.057	-1.039	.299

a. Dependent Variable: Sustainable Development in Cobalt Mining

Table 5 indicates a negative but statistically insignificant coefficient (β = -0.057, p = 0.299), suggesting that increases in current participation levels do not translate into improved sustainability outcomes.

Discussion

This study's findings reveal a persistent gap between nominal participation and meaningful participation. The absence of a statistically significant relationship between community participation and sustainable development suggests that existing participatory mechanisms are insufficient. Qualitative data provided context for this result, highlighting that participation is often limited to information sharing or consultation, with little power devolved to the community. These findings resonate with Stakeholder Theory, which argues that projects succeed when stakeholders have a real say in decision-making. In Lualaba, participation appears tokenistic, failing to build the social capital necessary for trust and collective action. Similar studies in Namibia and South Africa reported that legally mandated participation frameworks, such as Social and Labor Plans, significantly improved community outcomes a contrast that underscores the need for regulatory reform in the DRC. The lack of statistical significance does not mean participation is irrelevant. Rather, it indicates that how participation is structured matters more than its mere presence. Interviews with youth and women revealed frustration at being treated as passive recipients instead of decision-makers, showing that empowerment remains an unmet demand.

1.8 Conclusion

This study concludes that while community participation is conceptually critical for sustainable mining, its current implementation in Lualaba Province is inadequate to produce measurable development outcomes. The findings underscore the need to move from consultative to collaborative and co-decisional participation models. Strengthening participation mechanisms through legal frameworks, capacity-building programs, and transparent accountability systems would enable mining projects to align with SDG 16 (inclusive institutions) and SDG 12 (responsible consumption and production). Without reform, cobalt mining risks perpetuating inequality, conflict, and environmental harm undermining the very development it aims to promote.

1.9 Recommendations

Strengthening community engagement in Lualaba's cobalt mining sector calls for a collaborative effort between government, mining companies, communities, and international partners. The Government of the Democratic Republic of Congo has a central role to play by creating clear legal frameworks that make community participation a requirement in all mining-related decisions. This would ensure that local voices are not just heard occasionally but are part of every step of the decision-making process, making participation a normal and expected practice rather than an exception. Mining companies can complement these efforts by creating spaces for open dialogue and transparency. Regular town hall meetings, community scorecards, and simple monitoring systems would allow residents to give feedback, raise concerns, and hold companies accountable. When communities are actively involved in monitoring mining activities, trust improves, conflicts are reduced, and projects are more likely to succeed in the long term. Local leadership also needs to be strengthened. Community leaders, youth representatives, and civil society groups would benefit from training in negotiation, participatory governance, and conflict resolution so they can represent their communities effectively. It is equally important to ensure that women, young people, and marginalized groups have a seat at the table, as their perspectives often highlight issues that might otherwise be overlooked but are critical to building fair and inclusive development. International partners have an important supporting role as well. They can

provide technical expertise, share lessons from other mining regions, and help monitor adherence to global best practices for responsible and sustainable mining. Their involvement adds credibility and ensures that the standards applied in Lualaba are consistent with international expectations, ultimately creating a fairer and more sustainable mining sector for everyone.

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