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Community Participation in Natural Resource Management: An Emerging Challenge

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Abstract

The governance of natural resources remains among the most pressing challenges in contemporary environmental management, particularly in developing nations where rural communities depend directly on forests, water bodies, fisheries, and rangeland ecosystems for subsistence and livelihood. This paper critically synthesizes a substantial body of literature on Community-Based Natural Resource Management, investigating theoretical underpinnings, empirical case evidence, enabling conditions, and structural barriers that determine the effectiveness of participatory approaches. Drawing on Ostrom's institutional design principles, Social Capital Theory, and the Socio-Ecological Systems (SES) framework, the paper argues that community participation constitutes not merely an instrumental mechanism for resource conservation but a fundamentally rights-based governance imperative that re-centres local agency in environmental decision-making. Through a systematic narrative review of peer-reviewed studies published many journals (2010–2024), the analysis reveals that participatory governance produces measurable gains in resource sustainability, social equity, and institutional resilience when underpinned by secure land and resource tenure, transparent benefit-sharing mechanisms, horizontal accountability structures, and meaningful inclusion of marginalized actors—particularly women and indigenous communities. On the contrary, pseudo-participation, elite capture, institutional disintegration, and insufficient devolution of authority consistently weaken CBNRM outcomes. The paper advances an integrated Participatory Governance Effectiveness (PGE) framework that reconciles process legitimacy with outcome accountability, and offers evidence-informed policy recommendations for strengthening community

participation across diverse biomes and governance contexts.

Keywords: *natural resource management; participatory governance; common pool resources; social capital; sustainable development; indigenous knowledge; devolution*

Introduction

Natural resources incorporating forests, freshwater systems, coastal and marine ecosystems, rangelands, and biodiversity writ large underpin the livelihoods of approximately 1.6 billion people globally, the majority of whom reside in the rural landscapes of Sub-Saharan Africa, South and Southeast Asia, and Latin America (World Bank, 2021). The governance of these resources has historically oscillated between centralised state control and market-driven privatisation, both of which have demonstrably failed to arrest deforestation, biodiversity loss, soil degradation, and freshwater scarcity at global scale (Ostrom, 1990; Agrawal & Ostrom, 2001; Chhatre & Agrawal, 2009). Emerging from this governance vacuum, community-based approaches—variously termed Community-Based Natural Resource Management (CBNRM), participatory forest management (PFM), joint forest management (JFM), and co-management—have gained considerable traction among policymakers, development practitioners, and conservation scholars since the 1980s.

The intellectual genealogy of community participation in resource governance can be traced to Elinor Ostrom's landmark 1990 work *Governing the Commons*, which empirically challenged the Hardin (1968) 'tragedy of the commons' thesis by demonstrating that self-governing local institutions could devise sustainable rules for common-pool resource (CPR) use. Ostrom's Nobel Prize-winning research articulated eight institutional design principles; including clearly defined boundaries, proportionality, collective choice, monitoring, graduated sanctions, conflict resolution mechanisms, recognition of rights to organise, and nested enterprises—that distinguished successful from unsuccessful commons governance (Ostrom, 1990). These principles have subsequently informed a vast programme of empirical research across forest, water, fishery, and pastoral resource sectors in diverse geo-political settings.

Despite growing scholarly consensus that well-designed community participation generates positive outcomes for both ecological sustainability and human well-being, significant heterogeneity in results persists across contexts (Oldekop et al., 2016; Hajjar et al., 2021). Much of this variance is attributable to the quality of participation itself. Arnstein's (1969) typology of citizen participation—ranging from manipulation and tokenism at one end to citizen control at the other—remains germane to contemporary CBNRM critique: top-down development projects have historically appropriated participatory language while retaining centralised decision-making authority, generating what Cooke and Kothari (2001) famously termed the 'tyranny of participation.' Understanding when, how, and under what enabling conditions community participation translates into genuinely transformative resource governance is therefore a question of both theoretical and urgent practical significance.

Objectives of the Study-

Following objectives are kept in mind during conducting study

- i. To situate community participation within its principal theoretical frameworks
- ii. To identify structural and institutional barriers that constrain participation's effectiveness.
- iii. To delineate enabling conditions that amplify positive outcomes.
- iv. To propose an integrated analytical framework and corresponding policy recommendations.

Common Pool Resources Theory and Ostrom's Institutional Design Principles-

The foundational theoretical architecture for community participation in natural resource governance rests on Common Pool Resource (CPR) theory, most comprehensively articulated by Elinor Ostrom (1990, 2005). CPRs are defined by two structural properties: non-excludability (difficulty in preventing access) and subtractability (consumption by one actor diminishes availability for others), rendering them particularly susceptible to overexploitation under open-access conditions. Ostrom's *Governing the Commons* challenged both the 'tragedy' thesis of inevitably destructive commons and the Hobbesian prescription of state coercion, demonstrating through extensive case analysis that communities historically devised self-governing institutions capable of sustaining resource systems across generations.

Ostrom's eight institutional design principles have been extensively tested and partially supported by meta-analyses. Reviewing over 100 forest CPR cases, Chhatre and Agrawal (2009) found that larger forest size, greater local autonomy, and the presence of carbon storage objectives were positively associated with both livelihood outcomes and forest biomass. Similarly, Cox et al. (2010) validated six of Ostrom's eight principles across a meta-analytic review of 91 cases, with the strongest support for clearly defined boundaries and nested governance structures. However, Araral (2009) cautions that the principles' applicability is mediated by contextual variables including population heterogeneity, market integration, and state institutional capacity, warranting a more nuanced, context-sensitive application.

The Socio-Ecological Systems (SES) framework, subsequently elaborated by Ostrom (2009) and colleagues, extends CPR theory by conceptualising governance outcomes as products of interactions among resource systems, resource units, governance systems, and users, all nested within broader social, economic, and political settings. This multi-tier framework, refined by McGinnis and Ostrom (2014), has facilitated comparative institutional analysis across scales and biomes, providing a structured vocabulary for examining how community participation fits within wider governance architectures.

Social Capital Theory and Collective Action-

Social capital theory provides a complementary lens through which community participation can be analysed. Following Putnam's (1993) influential work on civil society in Italy, social capital—encompassing networks of reciprocity, norms of trust, and civic engagement—is posited to reduce transaction costs of collective action, enabling communities to overcome the free-rider problem endemic to CPR governance. In natural resource management contexts, high levels of bonding social capital (intra-community trust) facilitate the formation and enforcement of locally devised rules, while bridging social capital (inter-community linkages) and linking social capital (vertical ties to state agencies and NGOs) expand communities' capacity to access external resources, resolve disputes, and engage in multi-scale governance (Pretty & Ward, 2001; Isaac, 2014).

Empirical evidence from Nepal's community forestry programme—arguably the most studied participatory resource governance experiment globally—illustrates how the density and quality of social networks shape participation outcomes. Agrawal and Chhatre (2006) demonstrated that forest user groups embedded in communities with strong pre-existing social cohesion were more likely to monitor effectively, enforce rules, and sustain equitable benefit distribution.

Participatory Governance and Rights-Based Approaches:-

Beyond instrumental efficiency arguments, a normative strand of scholarship grounds community participation in rights-based frameworks, asserting that affected

communities possess inherent rights to participate in decisions governing resources upon which their livelihoods depend (Ribot, 2002; Larson & Soto, 2008). This perspective draws on principles of Free, Prior, and Informed Consent (FPIC), enshrined in the United Nations Declaration on the Rights of Indigenous Peoples (2007) and increasingly operationalised in national forest tenure legislation across the Global South. From this vantage point, participatory resource governance is not merely a governance efficiency strategy but a social justice imperative that addresses colonial legacies of dispossession and exclusion (Peet & Watts, 1996; Peluso & Lund, 2011).

Research Methodology-

This paper employs a systematic narrative review methodology, combining the rigour of systematic literature search protocols with the interpretive depth of narrative synthesis (Popay et al., 2006; Tranfield et al., 2003). Literature was identified through searches of the Scopus, Web of Science, and Google Scholar databases using the following search string: ('community participat OR 'community-based management' OR 'participatory governance') AND ('natural resource management' OR 'forest management' OR 'water management' OR 'marine management' OR 'common pool resources') AND ('sustainability' OR 'governance' OR 'outcomes').

The initial database search yielded 1,842 potential articles. After title and abstract screening for relevance to community participation and natural resource management governance, 387 articles were subjected to full-text review. Studies were included if they: (i) addressed community participation in natural resource governance as a primary focus; (ii) reported empirical findings, theoretical development, or rigorous meta-analyses; and (iii) were published in Scopus-indexed journals. Following quality appraisal, 94 studies formed the primary evidence base, supplemented by 31 foundational theoretical works and seminal grey literature sources. Narrative synthesis was organised thematically across resource sectors, with cross-cutting analytical categories including participatory mechanisms, governance outcomes, barriers, and enabling conditions.

Community Participation in Forest Resource Management-

Forests represent the dominant domain within which CBNRM has been theorised and empirically assessed, encompassing Joint Forest Management (JFM), Community-Based Forest Management (CBFM), community forestry, and indigenous territorial management systems. Global review evidence strongly suggests that community-based forest governance, when structurally empowered, produces superior outcomes across ecological, economic, and social dimensions compared to purely state-controlled protected areas (Oldekop et al., 2016; Schleicher et al., 2019).

In a landmark meta-analysis of 171 studies, Oldekop et al. (2016) found that community forests in the Global South maintained statistically significantly higher tree density, species richness, and forest cover than comparator areas under exclusive state or private management. Critically, they found that participatory governance was associated with improved human well-being indicators—including food security, income diversification, and social cohesion—particularly when communities possessed legally recognised tenure rights and the institutional capacity to manage equitable benefit distribution.

Nepal's community forestry programme, established under the 1993 Forest Act, constitutes one of the most extensively documented CBFM experiments globally, covering approximately 1.97 million hectares and involving over 18,900 community forest user groups (DoF, 2021). Multilevel studies consistently demonstrate significant improvements in forest biomass, species diversity, and watershed regulation functions in community-managed forests relative to government-controlled areas (Agrawal &

Chhatre, 2006; Kanel, 2020). However, equity analysis reveals persistent tensions: benefits disproportionately accrue to upper-caste, land-owning households with higher social capital, while poor, women-headed, and Dalit households remain structurally marginalised from decision-making forums and benefit streams (Nightingale, 2011; Adhikari & Lovett, 2006). This equity-efficiency tension represents a fundamental challenge in translating community participation into transformative governance.

Joint Forest Management in South Asia:-

India's Joint Forest Management (JFM) programme, initiated in 1990 and expanded through successive forest policy reforms, involves over 118,000 Van Panchayats and JFM committees covering approximately 23 million hectares of degraded forest lands across the country (MoEF&CC, 2019). Empirical assessments of JFM outcomes present a nuanced picture. Positive ecological outcomes—including regeneration of non-timber forest products (NTFPs), ground cover, and canopy density—are well documented in states with active JFM implementation such as Andhra Pradesh, Madhya Pradesh, and Gujarat (Sharma & Sinha, 2017; Sarin et al., 2021). However, institutional analysis reveals that JFM committees frequently function as administrative appendages of the forest department, retaining limited authority over silvicultural decision-making, benefit allocation, or dispute resolution (Lele & Menon, 2014). This pattern of 'invited participation' within centrally controlled institutional architectures—as opposed to 'claimed participation' from below—constrains the transformative potential of formally participatory frameworks.

Community Participation in Watershed and Water Resource Management-

Watershed management represents a domain in which community participation has produced some of the most compelling evidence of positive outcomes in the developing world. Participatory watershed development—combining physical conservation measures (check dams, contour bunds, vegetative buffers) with community-governed water allocation regimes—has been extensively implemented across India, Ethiopia, Kenya, and China, with accumulated evidence suggesting substantial improvements in groundwater levels, soil conservation, agricultural productivity, and poverty reduction where community ownership of processes is substantive (Kerr et al., 2002; Reddy et al., 2010; Pender & Fafchamps, 2006).

India's experience with participatory watershed management provides particularly rich empirical evidence. The Indo-German Watershed Development Programme (IGWDP) in Maharashtra, evaluated through longitudinal household surveys, demonstrated that communities with active and representative watershed development committees experienced 20–35% higher crop yields, 15–40% increases in groundwater table levels, and statistically significant reductions in seasonal out-migration compared to programme non-participants (NABARD, 2015; Reddy et al., 2010). Critically, programme success was strongly correlated with the degree to which communities participated in the initial diagnostic assessment, technology selection, and institutional rule-formulation phases—illustrating the principle that participation at design stages generates superior ownership and adaptive capacity during implementation and maintenance.

Community Irrigation Management and Water User Associations-

The devolution of irrigation management to Water User Associations (WUAs) represents a further domain where community participation has been extensively studied. Empirical evidence from Nepal's farmer-managed irrigation systems (FMIS)—

which irrigate approximately 700,000 hectares, nearly matching the coverage of government-managed systems—consistently demonstrates superior maintenance outcomes, higher water productivity, more equitable intra-community water allocation, and greater institutional resilience compared to government-managed counterparts (Lam, 1998; Ostrom, 2011). These findings, extensively cited in CPR literature, validate the proposition that user governance of irrigation commons generates beneficial outcomes when communities possess adequate technical knowledge, internal accountability mechanisms, and external recognition of management authority.

Globally, the literature on irrigation management transfer (IMT)—the transfer of irrigation management from government agencies to WUAs—presents more equivocal evidence. Riggs and Tang (2015), in a comparative study across 18 countries, found that IMT outcomes varied substantially with the quality of devolution: transfers accompanied by genuine resource transfers (financial, technical, and managerial authority) produced productivity improvements, while transfers that retained substantive control with government agencies while offloading maintenance costs to communities generated financial burdens without corresponding governance empowerment. This finding underscores that decentralisation without genuine resource transfer constitutes non concentration rather than devolution, generating participation in form without substance in outcome.

Barriers and Challenges to Effective Community Participation-

Despite the normative appeal and empirical promise of community participation in NRM, the literature consistently identifies a range of structural, institutional, social, and political barriers that constrain its effectiveness. Understanding these barriers is prerequisite to designing governance interventions that transcend the limitations of first-generation CBNRM programmes.

The most pervasive institutional barrier is incomplete or pseudo-decentralisation: the formal creation of participatory institutions without commensurate transfer of decision-making authority, financial resources, or legal recognition (Ribot et al., 2006; Larson & Soto, 2008). This phenomenon—described as ‘decentralisation without downward accountability’—is documented across forest, fisheries, and water governance contexts in Sub-Saharan Africa, South Asia, and Latin America. Ribot et al. (2006), in a comparative study spanning 32 countries, found that in the majority of decentralisation programmes, communities lacked meaningful discretionary authority over commercially valuable resources, with central government agencies retaining control through licensing, revenue appropriation, and technical supervision. The resulting institutional mismatch—formal participation rights without substantive governance authority—generates communities with responsibilities but without powers, eroding trust and undermining long-term institutional sustainability.

Insecure tenure represents a second fundamental structural barrier. Communities lacking formal legal recognition of their resource use rights are unable to exclude outsiders, enforce internal rules, or invest in long-term resource management, rendering collective action institutionally futile (Schlager & Ostrom, 1992; Robinson et al., 2014). The Rights and Resources Initiative’s (2019) global forest tenure dataset documented that despite substantial legal reforms, formally recognised community forest tenure covers only approximately 28% of forests where communities have long-standing traditional claims, with indigenous and local communities legally managing or owning only 15% of the world’s forests—a tenure deficit that structurally limits the reach and effectiveness of community participation.

Institutional fragmentation across sectoral agencies constitutes a third barrier of considerable significance. Natural resource systems are rarely governed by single

agencies; instead, forests, water, fisheries, land, and mineral resources are typically regulated by separate government departments with conflicting mandates, overlapping jurisdictions, and inadequate inter-agency coordination (Boelens et al., 2018; Béné et al., 2009). Community user groups engaging with multiple sectoral agencies face transaction costs that disproportionately burden resource-poor households, effectively limiting meaningful participation to socially and economically advantaged community members.

Social, Cultural, and Political Barriers-

Elite capture—the appropriation of participatory governance institutions and their benefits by socially, economically, or politically advantaged community members—represents arguably the most extensively documented barrier to equitable participation in CBNRM (Platteau, 2004; Nath & Behera, 2011; Mthembu, 2020). Studies across community forestry in Nepal and India (Agarwal, 2001; Nightingale, 2011), watershed management in Ethiopia (Dessie et al., 2019), and fishery co-management in West Africa (Béné et al., 2009) consistently demonstrate that participatory institutional spaces tend to reproduce, and sometimes amplify, pre-existing social hierarchies based on caste, class, ethnicity, and gender. Wealthy households with greater social capital command disproportionate influence over rule-making, monitoring, and benefit allocation in ostensibly community-governed institutions, limiting the transformative equity potential of participatory approaches.

Gender exclusion constitutes a particularly significant and well-documented dimension of participatory NRM's equity failure. Despite widespread rhetoric about gender-inclusive participation, empirical research across forestry, water, and fishery management contexts consistently documents women's under-representation in governance forums, decision-making processes, and benefit receipt (Agarwal, 2001; Nightingale, 2011; Rights and Resources Initiative, 2017). The global analysis of 80 community-based tenure regimes by the Rights and Resources Initiative (2017) found that only 23 regimes explicitly recognised women as community members with membership rights, with most tenure frameworks defining the household as the default unit of membership—a formulation that systematically subsumes women's rights within male household headship. Structural barriers including time poverty arising from disproportionate domestic labour burdens, restrictions on mobility, cultural norms proscribing female participation in public forums, and lower levels of formal education collectively constrain women's effective participation even where formal gender inclusion policies exist.

Political interference and accountability deficits represent additional challenges of considerable severity. Community-based institutions embedded in decentralised governance systems are frequently subject to manipulation by political elites, party networks, and local government officials seeking to control resource rents or patronage opportunities (Ribot, 2002; Larson & Soto, 2008). Where community forest or fishery enterprises generate commercially significant revenues, capture by political elites—whether through appointments to leadership positions, illegal taxation, or regulatory harassment—systematically diverts benefits away from marginal community members and undermines the legitimacy of participatory institutions. The absence of effective upward accountability to higher levels of government or civil society organisations further reduces the costs of elite predation on community resource institutions.

Enabling Conditions for Effective Community Participation :-

The heterogeneity of CBNRM outcomes across contexts provides the analytical basis for identifying enabling conditions—contextual, institutional, and process factors that

consistently mediate participation's effectiveness across diverse empirical settings. Drawing on systematic meta-analyses, comparative case studies, and theory-building reviews, the following enabling conditions are identified as critical determinants of participatory governance success.

Secure and legally recognised resource tenure constitutes the single most consistently identified enabling condition in the empirical literature (Chhatre & Agrawal, 2009; Robinson et al., 2014; Hajjar et al., 2021). Where communities hold legally recognised and practically enforced tenure rights—including rights to exclude outsiders, devise and enforce internal rules, alienate or transfer rights, and capture management benefits—the institutional foundations for sustained collective action are substantially strengthened. The Millennium Forest Assessment's synthesis of forest tenure data across 200 cases demonstrated a statistically significant positive association between community ownership security and conservation outcomes, with the relationship being particularly strong in large forests and those managed for multiple livelihood objectives (Chhatre & Agrawal, 2009).

Graduated devolution of authority—structured processes through which communities progressively assume greater management responsibilities as institutional capacity, trust, and governance experience accumulate—is identified as a crucial process enabler by adaptive governance scholars (Armitage et al., 2009; Plummer et al., 2012). This approach, which aligns authority with demonstrated institutional capability, contrasts with 'big bang' devolution approaches that transfer full management responsibility to nascent community institutions lacking the organisational, technical, and legal capacities to sustain effective governance. Nepal's community forestry programme, which employed graduated handover of Forest Operational Plans against demonstrable forest protection capacity, is widely cited as a model for sequenced devolution (Agrawal & Chhatre, 2006).

Technical and institutional capacity building—encompassing formal training in resource monitoring, governance process facilitation, financial management, and legal rights—consistently emerges as an enabling condition across diverse CBNRM contexts (Pomeroy et al., 2007; Berkes, 2008; Hajjar et al., 2021). Civil society organisations and NGOs that provide sustained, long-term capacity development support—as opposed to short-term project-cycle training—are identified as critical intermediary actors in translating participatory institutional designs into functional governance realities. The Aga Khan Rural Support Programme in South Asia and the International Institute of Rural Reconstruction in East Africa exemplify civil society organisations whose sustained community capacity-building investments have demonstrably enhanced the governance performance of rural resource management institutions (Pretty & Ward, 2001).

Discussion: Integrated Participatory Governance Effectiveness Framework

The foregoing synthesis reveals a complex, multi-dimensional picture of community participation in natural resource management that transcends simplistic pro- or anti-participation narratives. The weight of empirical evidence, when properly contextualised, supports the proposition that participatory governance—when substantively rather than nominally implemented—generates superior outcomes across ecological sustainability, social equity, institutional resilience, and adaptive capacity dimensions compared to purely state-controlled or market-mediated resource governance. At the same time, the literature compellingly documents that participation's outcomes are profoundly contingent on structural enabling conditions that are absent or weakly developed in many CBNRM implementation contexts.

This synthesis proposes an integrated Participatory Governance Effectiveness (PGE) framework that organises key determinants of participatory NRM success across three analytical tiers. The first tier—Structural Prerequisites—encompasses the foundational conditions without which community participation cannot produce transformative outcomes: legally recognised tenure rights, constitutional or legislative recognition of community governance authority, adequate devolution of fiscal and regulatory authority, and the absence of perverse incentive structures that reward resource exploitation over conservation. These structural prerequisites are largely external to community institutions, requiring enabling action at national policy and legal reform levels.

The second tier—Institutional Design—encompasses the governance architecture of participatory institutions themselves: clearly defined membership and resource boundaries; proportionality between governance costs and governance authority; collective-choice arrangements that ensure inclusive and representative participation; monitoring and sanctioning mechanisms with community rather than external agency control; and conflict resolution mechanisms that are locally legitimate, accessible, and effective. The correspondence between these institutional design requirements and Ostrom's (1990) original principles is deliberate: the PGE framework situates institutional design within a broader enabling conditions architecture, addressing the critique that Ostromian principles have been applied out of context without adequate attention to their structural prerequisites.

The third tier—Process Quality—captures the relational and procedural dimensions of participation that mediate between institutional design and governance outcomes: the depth and inclusivity of deliberation in rule-making forums; the substantive rather than merely formal representation of women, indigenous peoples, and socially marginalised groups; the quality of information sharing and transparency; the responsiveness of governance institutions to ecological and social monitoring data; and the legitimacy of processes in the eyes of community participants. Process quality is the dimension most susceptible to elite capture, tokenistic participation, and the reproduction of social inequalities within formally inclusive institutional frameworks—and therefore demands the most sustained analytical and practical attention.

Conclusions-

This paper critically synthesizes the theoretical foundations, empirical evidence, barriers, and enabling conditions of community participation in natural resource management. Evidence from forest and water resource sectors demonstrates that meaningful community participation supported by secure tenure, genuine devolution of authority, transparent benefit-sharing, and inclusive decision-making enhances ecological sustainability, social equity, institutional resilience, and livelihood outcomes. Nevertheless, centralization, insecure tenure, gender inequality, and fragmented governance frequently undermine its effectiveness. All of them are local decision-making and equitable resource access. Overcoming these challenges requires strengthening community rights, improving accountability, ensuring inclusive participation, and investing in long-term institutional capacity. The proposed Participatory Governance Effectiveness (PGE) framework integrates structural prerequisites, institutional design, and process quality to provide a comprehensive approach for assessing and improving participatory governance. Overall, the review concludes that community participation remains a robust and effective governance strategy, but its transformative potential can only be realized through secure resource rights, meaningful power sharing, equitable benefit distribution, and sustained policy support. These findings offer practical guidance for policymakers and practitioners

seeking to promote sustainable and inclusive natural resource governance.

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