

Community Conserved Areas in India and Beyond: Histories, Threats, Legal Recognition and Future Directions

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Abstract

Community Conserved Areas (CCAs) represent one of the oldest forms of ecosystem governance, particularly among Indigenous Peoples and Local Communities (IPLCs). In India, CCAs are closely linked to the livelihoods, culture, and traditional practices of Scheduled Tribes (STs), yet remain under-recognized within formal conservation frameworks. This study examines the relationship between CCA extent and ecological, socio-economic, and governance outcomes using a mixed-methods approach that combines a literature review and district-level analysis from Nagaland and Maharashtra. The findings identify an “Efficiency Paradox”, where larger conservation areas do not necessarily translate into improved ecological or development outcomes. The study proposes policy directions, including hybrid governance models, strengthening of community rights under existing legal frameworks, and integration of livelihood-based conservation strategies. It argues that effective

conservation in India must be community-driven, context-specific, and rooted in indigenous knowledge systems.

Keywords: *Community conserved areas, Scheduled tribes, Efficiency paradox, Indigenous knowledge systems, Hybrid governance models*

1. Introduction

Community Conserved Areas (CCAs) are locally governed ecosystems managed by Indigenous Peoples and Local Communities through customary institutions and traditional practices. In India, these areas are particularly significant due to the close relationship between Scheduled Tribes (STs) and forest ecosystems, where livelihoods, culture, and conservation are deeply interconnected.

Community Conserved Areas (CCAs), internationally referred to as Indigenous Peoples' and Community Conserved Areas and Territories (ICCAs), are rooted in long-standing traditions of environmental stewardship that predate modern Protected Areas (PAs). Indigenous and local communities have historically managed ecosystems through customary laws, sustaining biodiversity alongside livelihoods and cultural practices. In India, this relationship is evident in institutions such as sacred groves and community-managed landscapes, and even early conservation models like the Vedanthangal Bird Sanctuary, which originated as a community-protected area.

While similar practices exist globally, ranging from sacred natural sites to multifunctional cultural landscapes, conservation in CCAs has traditionally been embedded within everyday life rather than pursued as an isolated ecological objective. Communities often integrate ecological, economic, and social goals, unlike modern conservation frameworks that tend to separate them. However, despite their historical significance, ICCAs received formal international recognition only in the early 2000s through processes led by the International Union for Conservation of Nature and the Convention on Biological Diversity.

In the Indian context, CCAs represent a spectrum of community–ecosystem relationships shaped by cultural values, customary governance, and collective rights. Their continued relevance demonstrates that conservation driven by local institutions and traditional practices can contribute to socio-ecological resilience, particularly in the face of biodiversity loss and climate change.

This study is especially relevant for India as it highlights the gap between formal

conservation policies and ground-level realities, where customary institutions, traditional ecological knowledge, and community-based management systems continue to play a crucial role. By focusing on states like Nagaland and Maharashtra, the paper contributes to understanding how decentralized governance, if aligned with legal and economic support, can enhance both conservation and development outcomes in India.

2. Review of Literature

CCAs provide crucial buffer zones that halt the further degradation of ecosystems and the rapid rate of biodiversity loss, often making a significant ecological contribution for relatively low cost when compared with top-down management (Kothari, 2006; Kothari et al., 2013). These initiatives provide critical ecosystem functions such as water security and gene pool maintenance and protect habitats and species (Kothari, 2006). For instance, in Nagaland, many tribal villages protect large areas of forest and wildlife, with over 100 villages, such as Khonoma, managing several thousand hectares of land and prohibiting hunting (Pathak, 2006; Pathak Broome & Taraporevala, 2010; Stevens et al., 2024). This village-based management conserves globally and regionally threatened species such as the Blyth's tragopan (*Tragopan blythii*), the Asiatic black bear (*Ursus thibetanus*), and the spotted linsang (*Prionodon pardicolor*) (Pathak, 2006; Pathak Broome, & Taraporevala, 2010). Likewise, in Assam, villages such as Shankar Ghola manage forests with the endemic, threatened golden langur (*Trachypithecus geei*), helping to stabilize populations (Pathak, 2006; Pathak Broome & Taraporevala, 2010). Coastal villages in states such as Orissa and Kerala oppose environmentally destructive sand mining and fishing to protect wildlife habitat, as fisherfolk protect sea turtle nesting beaches at Rushikulya and Kolavipaalam for the olive ridley turtle (*Lepidochelys olivacea*) (Pathak, 2006; Pathak Broome, & Taraporevala, 2010). Moreover, CCAs often occur in clusters or corridors, creating important ecological “stepping stones” between formal PAs, which are essential for facilitating animal and gene flow and complement landscape-level conservation strategies (Kothari, 2006; Pathak Broome, & Taraporevala, 2010; Vaz, 2013).

For communities in India, CCAs serve as vital security measures for cultural preservation, political mobilization, and socio-economic sustenance, helping prevent social and economic degradation, often worsened by resource depletion

and externalization (Kothari, 2006). CCAs ensure long-term access to basic resources (food, water, energy, and fodder) required for livelihoods (Kothari, 2006; Pathak Broome, & Taraporevala, 2010; Vaz, 2013). Conservation efforts often lead to poverty alleviation, income generation, and self-reliance, thereby embedding the motivation for future sustainable use within the community itself (Kothari, 2006; Pathak Broome, & Taraporevala, 2010). In Maharashtra, the Gond tribe of Mendha (Lekha) initiated the process of declaring and subsequently controlling 1,800 hectares of forest, which has ensured steady income for community members, created year-round employment, and enabled political empowerment through self-governance (Pathak Broome & Taraporevala, 2010; Pathak, 2006). In Uttarakhand, the ancient Van Panchayats (village councils for forests) also manage large, high-elevation forest and pasturelands. In contrast, villages such as Jardhargaon, through forest regeneration, re-established many crop species (Pathak Broome, & Taraporevala, 2010). CCAs also provide a sense of unity and community, in contrast to external factors which can cause alienation (Kothari, 2006). But this can be undermined by inequities within the community, where social injustices and existing hierarchies (e.g., gender, caste, land-ownership) may lead to power struggles and domination by a few over resource management, which may hinder conservation or result in inequitable distribution of benefits (Kothari, 2006; Sengupta et al., 2025; Pathak Broome & Taraporevala, 2010).

A defining feature of CCAs in India is their deep connection with the traditional practices and cultural systems of Scheduled Tribes (STs). Tribal communities have historically governed natural resources through customary laws, sacred beliefs, and collective decision-making systems. Practices such as sacred groves (Orans, Devrais), seasonal hunting bans, rotational farming (jhum cultivation), and protection of water sources reflect a strong conservation ethic embedded within cultural traditions.

For instance, in Nagaland, village councils regulate hunting and forest use through customary norms, while in central India, Gond and Baiga tribes follow spiritual restrictions on forest exploitation. These practices not only conserve biodiversity but also ensure intergenerational sustainability. However, modernization, market pressures, and the weakening of traditional institutions are eroding these systems. Recognizing and integrating ST knowledge systems into formal policy frameworks is therefore essential for the long-term

sustainability of CCAs in India.

While existing literature highlights the ecological and socio-cultural importance of CCAs, most studies remain descriptive or localized. Limited attention has been given to the relationship between conservation scale, governance efficiency, and socio-economic outcomes. This creates a gap in understanding whether larger conservation areas necessarily lead to better development and ecological results, particularly in the Indian context.

2.1 The Essential Role of Laws and Policies in Securing CCAs

The viability of CCAs, especially in the face of major external pressures such as resource grabbers and commercial interests, destructive development initiatives, and other threats, is ultimately determined by policy and law recognition (Kothari, 2006; Pathak Broome, & Taraporevala, 2010). India has numerous informal CCAs operating under customary law, but key national and state laws provide opportunities for formalization and recognition.

India's approach to conservation has historically been exclusionary, involving the demarcation of "Protected Areas" (PAs) under State control, based on colonial ideas of nature conservation (About Community Conserved Areas; Pathak, 2009). India is thought to have the largest number of CCAs in the region, but these largely informal initiatives are often ignored, unsupported, and even threatened within the formal system (Pathak, 2006; Kothari, 2006; Saigal, 2013). CCAs are typically based on customary law and practice and may lack statutory support in national laws and may even be opposed by "hostile" laws (Kothari, 2006; Pathak, 2006). While legal avenues for community conservation have been opened up since the early 2000s, they are limited by their design (Saigal, 2013):

- **Wildlife (Protection) Act, 1972 (WLPA):** Amendments created Community Reserves (CRs) and Conservation Reserves (Saigal, 2013). But CRs typically apply only to private land, leaving out most CCAs, which are on government land (Pathak, 2006; Pathak, 2009; Pathak Broome & Taraporevala, 2010). It also prescribes a one-size-fits-all management institution, which is at odds with the diversity of local governance (Pathak, 2006; Pathak, 2009). This "one size fits all" approach is viewed with suspicion by communities as it may

lead to greater government intervention (Kothari, 2006; Pathak, 2006; Pathak, 2009).

- **Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 (FRA):** This Act offers an important opportunity through the category of Community Forest Resource (CFR), which offers legal support for forested CCAs (Saigal, 2013; Pathak Broome & Taraporevala, 2010). The ambit of this category enables local communities to legally secure their forests (Pathak, 2009; Pathak Broome, & Taraporevala, 2010).

- **Biological Diversity Act, 2002 (BDA):** Although it creates categories such as Biodiversity Heritage Sites (BHS), recent amendments to Access and Benefit Sharing (ABS) appear to undermine community rights. Some organizations using codified traditional knowledge or medicinal plants cultivated are now exempt from the prior community consent and benefit-sharing requirements for commercial use (Joshi et al., 2025).

A major limitation is insecure tenure. Most reported CCAs are found on public lands (Pathak, 2009). Along with the absence of political support, this makes CCAs susceptible to threats from development, mining, or land grabbers (Kothari, 2006; Pathak, 2009; Pathak Broome & Taraporevala, 2010).

CCAs play a vital role in ecological and human security, as well as the Millennium Development Goals on poverty reduction and environmental sustainability (Kothari, 2006; Pathak, 2006). Climate-wise, CCAs ensure the provision of essential ecosystem services for adaptation (Kothari, 2006). For example, Nagaland has more than 700 known CCAs spanning more than 1,700 km² that are critical for carbon storage (Edake et al., 2015).

CCAs are extremely financially vulnerable (Saigal, 2013). Financing is generally small and intermittent, limiting management activities (Saigal, 2013; Cumming et al., 2021). The costs of management (time, labor, village guards, compensation for opportunity costs) are often internalized as part of livelihoods or cultural practices (Kothari, 2006; Pathak, 2009). The narrow funding base (government schemes, corporate donations (CSR), or multilateral projects) and vulnerability to global economic crises make CCAs vulnerable to disruptions (Saigal, 2013; Cumming et al., 2021). The absence of secure funding curbs sustainable community conservation efforts (Saigal, 2013; Cumming et al., 2021).

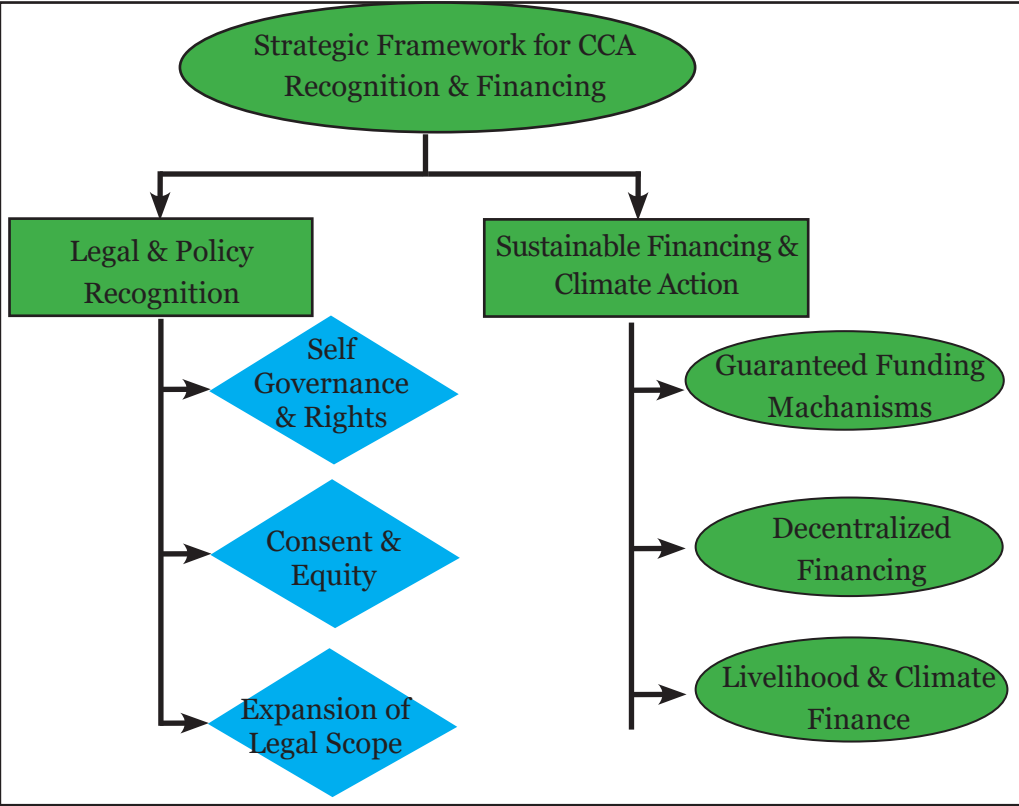
2.2 Proposal for Legal Recognition and Sustainable Financing

To harness CCAs for conservation and climate adaptation, a careful strategy that emphasizes legal certainty, community control, and long-term financial commitments is crucial (Saigal, 2013; Kothari, 2006).

Legal and Policy Recognition

Figure 1

Strategic Framework for CCA: Recognition & Financing



Policy reforms should focus on recognizing CCAs in accordance with custodians' desires and rights, ensuring a mutually beneficial partnership (Saigal, 2013; Stevens et al., 2024).

1. Recognizing Self-Governance and Rights: Legal frameworks must recognize IPs and LCs' rights to self-govern and manage their lands using their own institutions and practices (Stevens et al., 2024). This should involve embracing political and legal pluralism, rather than state-centered policies (Kothari, 2006).

2. Resolving Inequities and Consent: Policy should require Free-Prior-Informed Consent (FPIC) for the formalisation of self-declared CCAs (Saigal, 2013; Stevens et al., 2024). Recognition should preserve the institutional autonomy of CCAs (including the right to retain customary law) (Stevens et al., 2024).

3. Expanding Legal Options: Governments must address inconsistencies between conservation legislation and laws on rights and legally recognize existing (unofficial) CCAs and those that want to become formal (Saigal, 2013). This includes enabling the recognition of existing CCAs as PAs governed by IPs and LCs, if they are willing to do so, which may involve transferring or devolving governance (Stevens et al., 2024).

- **Sustainable Financing and Climate Action:** Long-term and secure funding is needed to cover the costs of conservation and build resilience (Cumming et al., 2021).

1. Secure Funding Mechanisms: Suitable financial mechanisms with government and other funding are needed for formal and informal CCAs (Saigal, 2013). This mechanism should include a full costing of conservation and management, and the opportunity costs to the community (Saigal, 2013).

2. Independent Financial Control: CCAs should be able to receive funds, which should be managed by the communities themselves, thus allowing them to receive support when needed (Pathak, 2009).

3. Livelihood and Climate Finance: Assistance should enable local enterprises that balance ecological and economic benefits, improving communities' socio-economic status (Saigal, 2013; Vaz, 2013). Also, CCAs should be connected to climate finance, with planning that includes India's 2030 targets under the Paris Agreement, furthermore CCAs should also be supported through fair distribution of economic benefits from PAs or other projects associated with CCAs (Stevens et al., 2024).

CCAs, which conserve biodiversity and hold carbon in perpetuity, can deliver vital social, economic, and cultural benefits through legal sanctity and secure financing, thereby bolstering their role in achieving national biodiversity conservation objectives and climate change adaptation (Saigal, 2013; Stevens et al., 2024).

2.3 CCA Case Studies: Lessons from the Indian and Global context to define an ideal CCA

Community Conserved Areas (CCAs) come in many forms, depending on who holds the rights to them and how they are conserved. In India and other parts of the World, conservation can take place through legal mechanisms, including Conservation Reserves, Community Reserves, Biodiversity Heritage Sites, and Community Forest Resource (CFR) areas. These examples demonstrate varying degrees of community participation, from consultative to ownership and control. In addition, many fields also adhere to informal systems of conservation based on heritage, culture, and communal regulations.

These systems are often effective CCAs because communities can protect nature without regulation, often more effectively than legal processes. With this knowledge of different forms of conservation organizations, we can understand the effectiveness of the three case studies of CCAs as good, practical examples of environmental and biological conservation and as effective means to address climate change.

Community Conserved Areas (CCAs) come in many forms around the World. Still, they all demonstrate a vital idea: when people who depend on nature are in charge of protecting it, conservation is strengthened. The set of examples draws on examples from Nagaland, Rajasthan, and Tanzania to demonstrate the effectiveness of CCAs in conserving and protecting natural resources. Cases were selected to illustrate how CCAs work across different settings, including coastal areas, hilly forests, and arid and savanna woodlands. These examples demonstrate that CCAs are effective because of both ecological approaches and cultural, historical governance, as well as community accountability. Organized around a basic structure of location, governance, conservation, results, and challenges to highlight the success of CCAs.

2.4 Global Perspectives on CCAs: Observing Ecological and Governance Approaches

Tanzania, which has community-based conservation areas in savanna and forest ecosystems, is home to wildlife such as elephants, zebras, and large predators. These areas are threatened by poaching, agricultural encroachment, and droughts caused by climate change. In Tanzania, CCAs are part of a formal governance structure that allows local communities to create Wildlife Management Areas (WMAs) and work with the government to manage them. Village assemblies set up committees to formulate land-use plans, establish grazing controls, and determine the locations of wildlife corridors and buffer areas. Critical conservation actions include anti-poaching patrols, grazing management, habitat protection, and collaboration with eco-tourism enterprises. These measures show promising results: wildlife populations remain stable or increase, communities receive income from tourism, and forests and grasslands are enhanced for carbon storage. WMAs reduce human-wildlife conflicts by zoning and providing buffer zones. However, Tanzania faces challenges such as inter-community land-related conflicts, limited funding, and disparities in benefits in some regions. Droughts are exacerbated by climate change, which causes water and pasture shortages.

The Tanzania example demonstrates that with rights, incentives, and support, conservation is successful in large, complex landscapes. Tanzania's Makame Savannah program in a Wildlife Management Area (WMA) protects 364,322 hectares of the woodlands, a home to the Masai people, and prevents ~ 130,000 tonnes of CO₂ emissions annually by preventing deforestation. The community has been grazing livestock in the Rift Valley for 2,000 years and still enjoys this traditional livelihood in wildlife-rich forests. The community depends on its livestock to survive in this unpredictable environment, whilst also providing habitat for wildlife. Engagement with the Masai will create community-level land management plans that will use seasonal pastures to raise their livestock.

2.5 Indian Perspectives on CCAs: Comparing Ecological and Governance Approaches

The hilly state of Nagaland, situated in the northeast of India, is blessed with dense forests, high rainfall, and rich biodiversity. The ecology of Nagaland includes tropical and subtropical forests that host a variety of flora, fauna,

and avifauna, as well as insects. The state is unique in that more than 90% of it is owned and managed by communities under customary law. Decisions on land use, forest and wildlife conservation, and hunting are made at the village council, clan, and tribal levels. Communities decide on which forests are “reserved” (forbidding cutting trees and hunting) and which are “managed” (allowing sustainable practices).

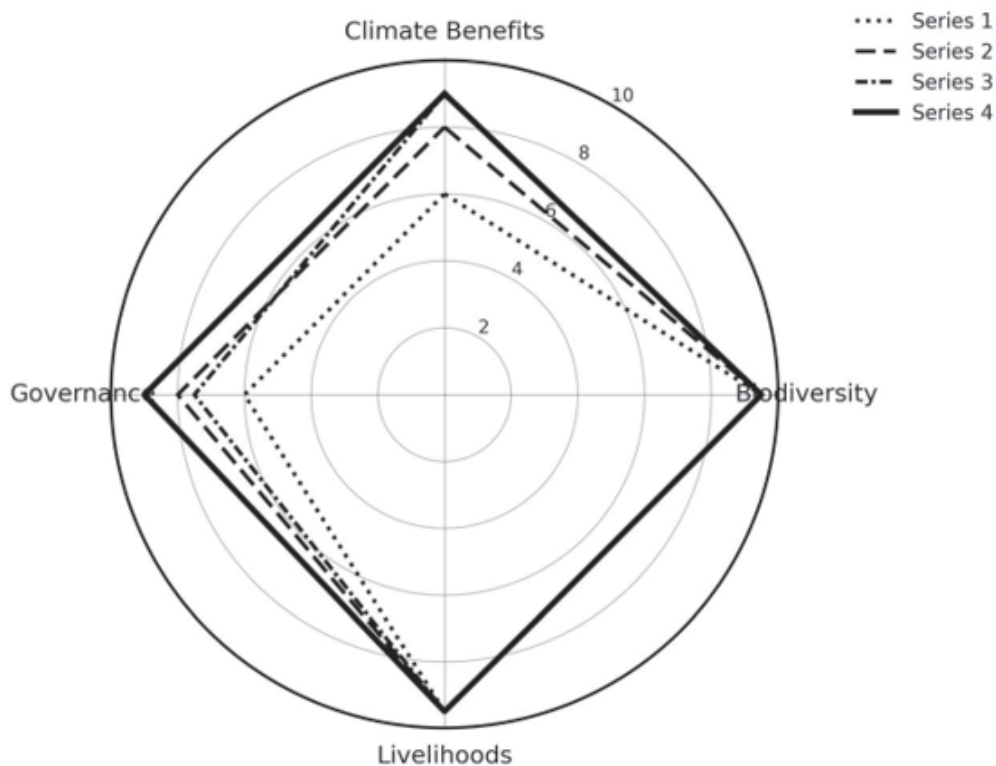
Key conservation measures include bans on hunting certain species, protection of forests that provide watershed services, local forest monitoring patrols, and restrictions on wood harvesting. These have led to strong signs of success, such as vast forest tracts remaining preserved, wildlife populations recovering from hunting bans, and springs and streams protected by maintaining forest canopy (TERI reports ~678,135 tonnes of carbon sequestered annually in 407 CCAs). The forests’ carbon sequester helps to mitigate climate change, and healthy watersheds support agriculture and water supply.

Nagaland has faced various challenges with development, road construction, and shifting political alliances. Young people sometimes stray from traditional practices, and external markets could impact wood harvesting. However, Nagaland is one of the most successful community-based conservation success stories, demonstrating that community ownership can enhance biodiversity and improve climate resilience. Rajasthan, where sacred groves, known as Orans or Devrais, play a key role in biodiversity conservation in a harsh arid environment. Rajasthan’s ecosystems include dry and semi-dry regions where life is sustained by scant rainfall, robust vegetation, and traditional water conservation. In such areas, sacred groves are maintained as cultural or religious spaces, often dedicated to local deities or ancestral deities. These areas are governed by informal rules, enforced by elders or temple committees. Even without specific regulations, it is usually forbidden to cut down trees, graze animals, and collect firewood in these groves. Conservation strategies include rigorous protection of mature trees, grasslands, and water bodies (ponds or springs) within the groves. As a result, sacred groves exhibit numerous indicators of success: they serve as biodiversity refuges in arid zones, sheltering birds, medicinal plants, and pollinators (Robinson & Makupa, 2015). They store carbon in old trees with considerable biomass and help prevent soil erosion in vulnerable areas. They protect water recharge zones, which are important for villages’ water supply. Among the challenges are encroachment, urbanization,

and changing cultural perceptions among the youth. Without legal recognition, many groves face threats from development projects. As the sacred groves of Rajasthan demonstrate, when coupled with community ownership, ecosystems can be preserved amid water scarcity and climate change.

Figure 2

Comparative Effectiveness of CCAs across four regions



3. An Analysis of Institutional, Legal, and Societal Failures in Community Conserved Areas

One of the key factors affecting CCA sustainability is the lack of tenure security over conservation lands (Pathak et al., 2009). Most reported CCAs in India

are located on government land; a product of colonial forest nationalisation policies that expropriated local forests and converted them into government property (Sundar, 2000; Kothari et al., 1996). Communities have de facto rights to manage their lands, based on customs and long-term occupation, but not de jure rights to own property or have constitutionally protected rights to access (Sarin, 2001). This legal-institutional set-up allows governments to allocate lands for development, commercial use, or other forms of conservation without community approval, compensation or consultation (Agarwal & Narain, 1989).

Ownership issues are exacerbated at community levels. Individual householders can own land within CCAs through personal or clan property rights; however, common property control vests with village councils or conservation committees (Bhatt et al., 2012). This creates problematic ownership scenarios leading to conflicts. Private landowners increasingly assert timber harvesting rights, pasture conversion, or cultivation for cash crops, and community institutions must either condone or sanction this behavior, thereby destroying interpersonal relations (Pathak, 2009). The demand that communities forego benefits from timber production that government agencies and private companies are allowed to harvest from nearby forests is increasingly felt as unfair by resource-dependent households (Kothari et al., 2000).

3.1 Internal Inequities and Socio-Economic Marginalization

CCA sustainability depends on overcoming socioeconomic disparities (Pathak et al., 2009). Power in decision-making is usually concentrated in elite social groups (men as household heads, landowners, upper castes, and long-term community residents). In contrast, women, landless households, scheduled castes, and new migrants are sidelined or excluded from management committees and decision-making (Borrini-Feyerabend et al., 2004). This hierarchical decision-making model is especially problematic for conservation sustainability because excluded groups have no stake in conservation efforts (Kasbekar et al., 2024).

Women, who are often deeply knowledgeable about medicinal plants, sustainable harvesting, and resource availability, are under-represented in management committees (Kothari et al., 1996). Conservation committees in Nagaland villages are exclusively or predominantly male, despite women's traditional

involvement in agriculture and resource management (Pathak et al., 2016)). Landless families, who depend on common property resources for subsistence, are unable to participate in decision-making regarding the creation of use restrictions and harvesting policies (Pathak, 2009). This leads to misalignments in conservation rules and those impacted by resource constraints.

Conservation rules have disproportionate opportunity costs for economically disadvantaged households (Bhatt et al., 2012). Poorer farmers can't afford to forego land conversion for forest cover; poorer pastoralists can't afford to lose income from livestock grazing; poorer households can't afford to lose hunting or logging income that other households can lose (Pathak et al., 2009). The opportunity costs of conservation - through time lost patrolling, establishing boundaries, resolving conflicts, and maintaining foregone use - are disproportionately borne by those with least disposable income (Agarwal & Narain, 1989). It leads to resentment, incentive to cheat, and social division, especially when state or other external actors benefit from conservation but do not bear equal costs (Kothari et al., 2000).

3.2 Deficiencies in Economic Sustainability and Livelihood Protection

A common shortcoming of CCAs in South Asia is a lack of integration between conservation and livelihoods (Pathak, 2009; Bhatt et al., 2012). For many resource-extracting communities, there are basic conflicts between conservation and livelihoods (Pathak et al., 2016). Without alternative livelihood opportunities that deliver a similar return on investment, enforcement of ban on hunting, timber harvesting, or fishing is economically unviable for people experiencing poverty (Kasbekar et al., 2024). Nagaland communities are aware of declining wildlife and deforestation but continue to overexploit them due to the lack of market mechanisms, alternative livelihoods, and government livelihood schemes (Pathak et al., 2016). Conservation cannot rely on ecological knowledge when subsistence livelihoods are restricted.

Nagaland's shrinking jhum (shifting cultivation) cycles are an example of livelihood-induced degradation that communities cannot avoid (Pathak et al., 2016). A sustainable jhum cycle with 15-20 years of fallow periods has given way to three-to-five years of fallow due to demographic pressures and land scarcity (Bhatt et al., 2012). Communities are aware of ecological impacts but

face unsolvable livelihood maths: longer fallows mean less cultivable land per household in set boundaries (Pathak et al., 2016). Conservation entailing ongoing livelihood deprivation becomes socially and economically unviable (Pathak et al., 2009). The majority of CCAs in South Asia lack sufficient livelihood options, rendering conservation rules ineffective and unsustainable (Bhatt et al., 2012).

3.3 Challenges in Oversight, Enforcement, and Execution

Many CCAs have insufficient resources for ecological monitoring and management (Kasbekar et al., 2024). Detailed biodiversity assessment, population trend analysis, and impact assessment require skills, resources, and regular data gathering, which may be unaffordable for poor communities (Fikret et al., 2000). Thus, CCAs often lack basic data on conservation effectiveness, restricting adaptive management and trust in the need for conservation among local communities (Pathak, 2009). Regulation enforcement is also difficult and demands ongoing organizational commitment, funding, and community harmony, which fade over time as initial excitement subsides and tensions arise (Bhatt et al., 2012).

4. Data and Research Methodology

The present research uses a mixed-methods approach to explore the relationship between the extent of community conserved area (CCA) and ecological, socio-economic, and governance indicators in some districts of Maharashtra and Nagaland. Original data on CCA area and numbers were obtained from the Community Conserved Areas Consortium (CCAC), an international network that maps areas conserved by Indigenous Peoples and local communities.

Ecological indicators, such as forest cover, were sourced from Global Forest Watch and the State of Forest Reports published by the Forest Survey of India. Socio-economic indicators, including poverty, were obtained from the Multidimensional Poverty Index (MPI) reports prepared by NITI Aayog and from Census of India data. Literacy indicators were also derived from Census data and district-level portals. Governance and social inclusion indicators were compiled from the Maharashtra District Good Governance Index, the Nagaland Vision 2030 policy document, and reports from government agencies, research institutions, and non-governmental organizations.

Data were sourced from official government portals, research institutions such

as Azim Premji University and the Indian Institute of Human Development, and civil society organizations such as Kalpavriksh. These data were standardized across the period 2011–2024 to ensure comparability.

The study employs descriptive statistics for district-level aggregation, time-series analysis for forest cover, poverty, and literacy indicators, and comparative qualitative analysis to assess governance efficiency. Triangulation and limited data interpolation techniques were used to address gaps in the dataset.

The states selected for this study are Nagaland and Maharashtra due to the presence of Community Conserved Areas (CCAs) and their contrasting governance and socio-economic contexts. The study is designed to compare districts with relatively high and low CCA area-to-number ratios, enabling a representative subset analysis across ecological, socio-economic, and governance parameters.

The districts selected for analysis include Peren and Gadchiroli (representing high CCA area contexts) and Dimapur and Sindhudurg (representing relatively lower CCA area contexts) in Nagaland and Maharashtra, respectively.

Table 1

Distribution of CCAs across districts in Maharashtra

District	Number of CCAs	Area (hectares)
Gadchiroli	32	45,000
Other districts	150	25,000
Ratnagiri	25	12,000
Pune	18	8,500
Satara	15	6,500
Sindhudurg	12	5,000
Total (Maharashtra)	252	102,000

Source: Community Conserved Areas (ICCA Consortium) and Kalpavriksh

Table 2

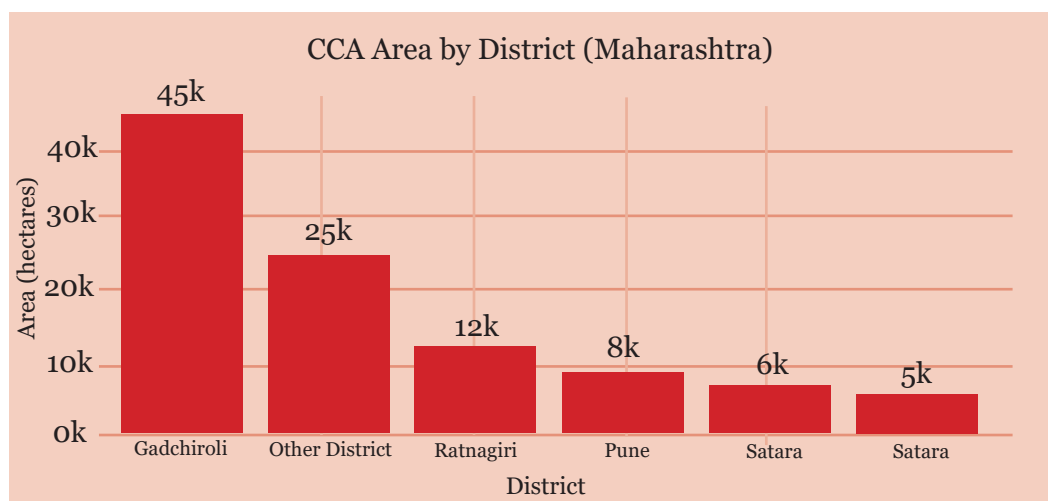
Distribution of CCAs across districts in Nagaland

District	Number of CCAs	Area (hectares)
Peren	74	25,000
Mon	69	22,000
Phek	66	18,500
Wokha	47	15,000
Zunheboto	40	12,000
Kohima	28	8,000
Tuensang	24	8,000
Mokokchung	20	7,000
Konyak/Longgleng	15	6,000
Dimapur	15	5,000
Other districts	10	5,500
Total (Nagaland)	408	132,000

Source: Community Conserved Areas (ICCA Consortium) and Kalpavriksh

Figure 3

CCA Area District-wise in Maharashtra and Nagaland



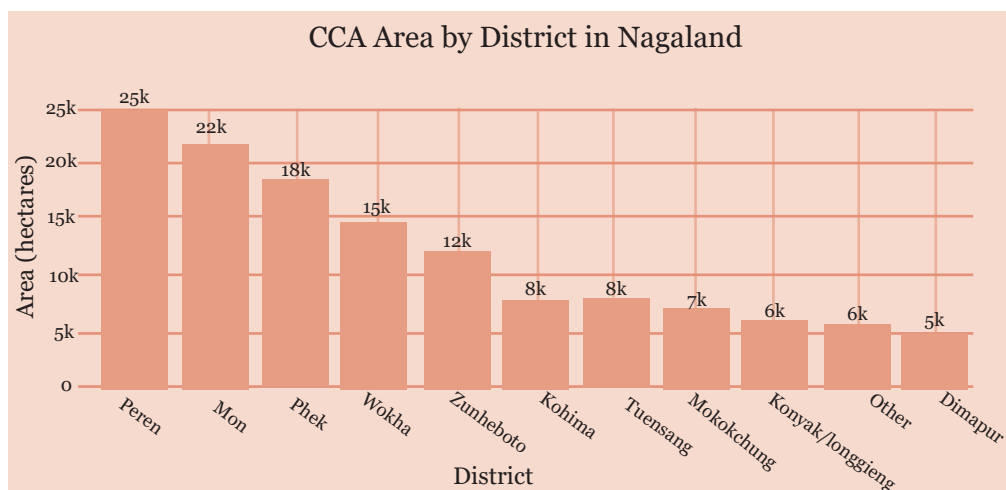
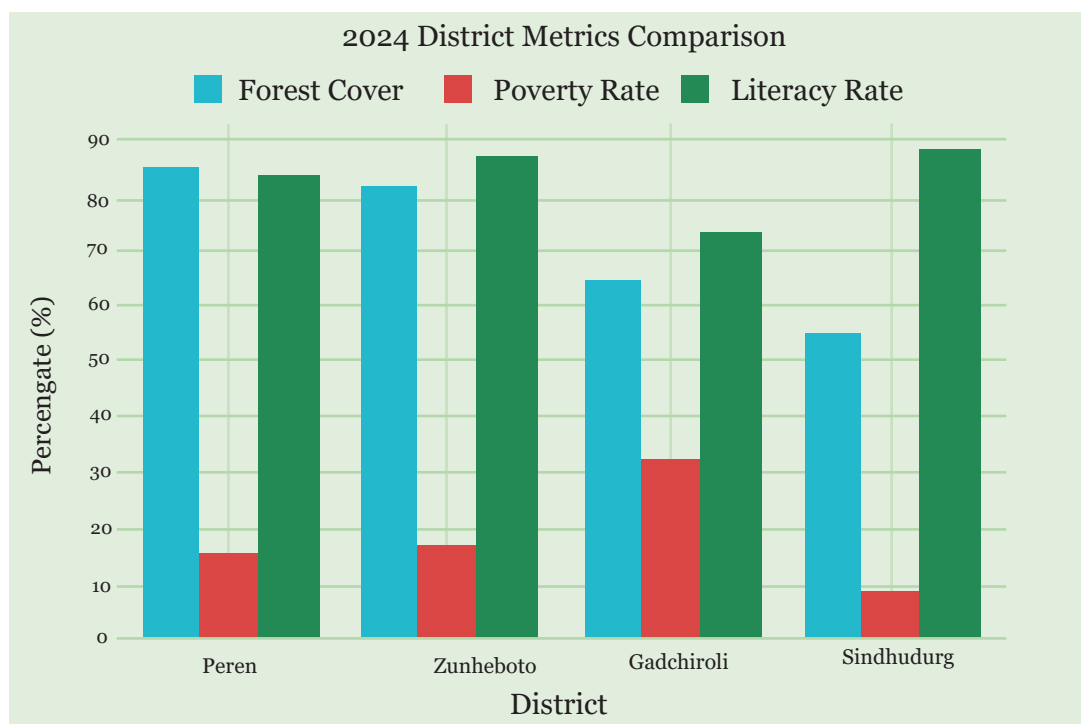


Figure 4

Metrics Comparison - Nagaland vs Maharashtra Districts (2024)



Findings

These patterns underscore that extensive CCA areas do not necessarily yield improved socio-economic and ecological outcomes unless supported by strong governance systems and diversified livelihood opportunities. Districts with better inclusion, education, and institutional capacity tend to perform better across indicators, as observed in Zunheboto and Sindhudurg.

Nagaland districts such as Peren and Zunheboto exhibit relatively higher forest cover and literacy levels, along with comparatively lower poverty rates over time. However, certain ecological pressures, such as declining forest cover in Zunheboto, remain a concern.

In contrast, Gadchiroli in Maharashtra, despite having a large CCA area, continues to experience high poverty levels and forest degradation. Sindhudurg, despite a smaller CCA extent, performs relatively better on literacy and socio-economic indicators, supported by diversified livelihoods and improving governance structures.

Table 3

Comparison of CCA under Nagaland and Maharashtra

Aspect	Nagaland High Area (Peren)	Nagaland Low Area (Zunheboto)	Maharashtra High Area (Gadchiroli)	Maharashtra Low Area (Sindhudurg)
Forest Conservation	Stable or slight gain in the forest, strong community control	High forest cover but under threat	Declining forest cover, encroach- ment issues	Mixed forest trends; coastal forest under some pressure
Socio- Economic Status	Moderate poverty, improving literacy	Slightly better literacy, ongoing social efforts	High poverty, low literacy, tribal distress	Moderate poverty, better literacy, livelihoods diversified

Governance & Inclusion	Village governance, progressing inclusion	Strong community governance needs more inclusive education	Governance challenges; poor scheme implementation	Improving governance, active NGO presence
CCA Area vs Metrics	Larger CCA area with effective community conservation, slower but steady socio-economic progress	Smaller area but higher literacy; social inclusion gaps	Largest area but with greater socio-economic and governance challenges	Smaller area with somewhat better socio-economic and governance indicators

The Efficiency Paradox:

The analysis indicates that CCA extent shows a weak or negative relationship with development outcomes per unit area. Governance quality has a stronger influence on conservation and development outcomes than the physical extent of CCAs. This study conceptualizes this as the “Efficiency Paradox,” where an increase in conservation area does not proportionately translate into improved ecological or socio-economic outcomes, thereby challenging conventional area-based conservation strategies.

Three CCA Patterns Recognized:

- **Subsistence–Security (Nagaland):** Traditional governance combined with moderate CCA extent supports relatively strong forest and poverty outcomes.
- **Rights–Recognition (Gadchiroli):** Formal rights combined with a large CCA extent produce limited outcomes in the absence of livelihood diversification.
- **Resilience–Integration (Sindhudurg):** Smaller CCAs combined

with diversified livelihoods and stronger governance produce relatively better outcomes.

Governance Diversity:

CCAs perform more effectively when institutional design is tailored to local contexts, including customary tribal governance systems, decentralized arrangements, and capacity-building interventions in vulnerable regions.

Development Integration:

CCAs in isolation are insufficient. Complementary investments in education, markets, and institutional capacity are essential for achieving sustainable conservation and socio-economic outcomes.

Theoretical Contribution:

The study challenges linear, area-based conservation approaches. It supports polycentric institutional frameworks, particularly those associated with Elinor Ostrom, emphasizing that CCAs are context-specific institutional arrangements embedded in local socio-economic systems.

5. Policy Suggestions

Based on the empirical findings and comparative analysis in this study, it is evident that the effectiveness of Community Conserved Areas (CCAs) in India depends less on their physical extent and more on governance quality, tenure security, and livelihood integration. Therefore, policy interventions must move beyond conventional conservation approaches and adopt a context-specific, community-centered framework.

First, there is a need to legally strengthen tenure security under the Forest Rights Act (FRA), 2006, particularly through the effective implementation of Community Forest Resource (CFR) rights. Without secure land tenure, communities lack the incentive to invest in long-term conservation.

Second, policy must promote hybrid governance models in which state institutions support rather than replace traditional systems. In regions like Nagaland, where customary institutions are strong, policies should formally recognize village councils and tribal governance structures as legitimate conservation authorities.

Third, conservation policies must integrate livelihood diversification strategies, especially in economically vulnerable regions such as Gadchiroli. This includes promoting non-timber forest produce (NTFP) value chains, eco-tourism, and small-scale forest-based enterprises. Conservation cannot succeed in isolation from economic realities.

Fourth, there is a need to institutionalize benefit-sharing mechanisms that ensure communities directly receive economic returns from conservation efforts, including through carbon markets, biodiversity credits, and ecosystem service payments.

Fifth, targeted capacity building for tribal youth should be prioritized. Training local communities as para-ecologists, forest monitors, and biodiversity data collectors can bridge the gap between traditional knowledge and scientific management.

Finally, policy must explicitly recognize and protect Scheduled Tribe (ST) cultural practices and traditional ecological knowledge systems as integral to conservation. Rather than viewing them as informal or outdated, these systems should be embedded within formal governance frameworks.

In conclusion, India's conservation future lies not in expanding protected areas alone, but in strengthening community-led conservation through rights-based, inclusive, and economically viable approaches.

5.1 Hybrid Governance and Co-Management Systems

Governance conflicts remain a major challenge across CCAs, particularly due to the disconnect between customary institutions and formal conservation laws. Evidence from multiple studies highlights recurring tensions between community practices and state regulations related to hunting, forest use, and development control.

These conflicts often hinder effective conservation by creating uncertainty, weakening community trust, and leading to inconsistent policy implementation. A viable solution lies in adopting hybrid governance models based on co-management, where state support complements community leadership.

International experiences demonstrate that co-management arrangements—where communities and state agencies jointly design management plans, zoning

systems, and monitoring frameworks—can improve ecological outcomes while preserving customary norms.

In the Indian context, this can be operationalized by strengthening implementation of the Forest Rights Act, integrating CCAs into biodiversity governance frameworks, and formalizing community-led management plans. Such approaches can reduce conflicts, enhance clarity in resource-use rules, and ensure that conservation responsibilities are shared between the state and communities.

Hybrid governance thus provides legal recognition and administrative support while preserving the autonomy and cultural integrity of CCAs.

5.2 Digital Tools for Mapping, Monitoring, and Recognition

A major limitation in the governance of CCAs is the lack of systematic documentation and mapping, which increases the risk of misrecognition and land-use change. Digital technologies offer significant potential to address these gaps.

Participatory GIS mapping enables communities to document boundaries, sacred groves, wildlife corridors, and seasonal resource-use areas, thereby strengthening tenure claims and improving spatial planning. Mobile-based biodiversity applications and community monitoring platforms can support real-time data collection and enhance local participation in conservation.

In addition, remote sensing technologies can assist in monitoring deforestation, encroachments, and forest degradation, enabling timely intervention. Integrating such data into national and global platforms, including ICCA registries, can enhance visibility, improve policy recognition, and strengthen community claims.

These tools help bridge traditional ecological knowledge with modern scientific approaches, enabling more adaptive, transparent, and evidence-based conservation practices.

6. Conclusion

This study demonstrates that, in the Indian context, Community Conserved Areas (CCAs) function not merely as ecological spaces but as socio-cultural systems embedded within the practices of Scheduled Tribes and local

communities. The findings challenge the conventional assumption that larger conservation areas necessarily produce better outcomes, instead identifying an “Efficiency Paradox” in which governance quality, institutional diversity, and livelihood integration play a more decisive role than spatial extent.

In a country like India, where forest-dependent populations are substantial, effective conservation requires a shift from centralized, top-down approaches to community-led, rights-based frameworks. Strengthening tenure security, recognizing traditional institutions, and aligning conservation with local economic realities are essential for sustaining both ecological and social outcomes.

CCAs thus offer a viable pathway for achieving biodiversity conservation, climate resilience, and inclusive development. However, their success depends on policy frameworks that are context-sensitive, institutionally inclusive, and grounded in indigenous knowledge systems. The future of conservation lies not in expanding protected areas alone, but in empowering the communities that have sustained these ecosystems over generations.

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Ethical Considerations

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