

DESIGNING CO-GOVERNANCE AT THE FOREST COMMONS

Insights from Greece and the
Democratic Republic of Congo

Abstract

Firms meet community forest institutions at varied frontiers, from Greek sacred groves embedded in natural protection regimes to Congolese community concessions, and their roles range from co-governors to enclosers. This study develops a Relational–Polycentric Commons framework linking four levers that shape those roles: ontological anchoring (sacred vs. protected), guardianship-in-practice (standing, mandate, resources), venue quality (bindingness and information symmetry, stabilized by transparency and representation depth), and consent/benefit architectures. Using semi-structured interviews across Epirus/Pindus (Greece) and three DRC strata, it is shown that recognition of sacred custodianship, small operating budgets for guardians, and binding, information-rich venues systematically shift firms toward co-governance; generic consultation, paper committees, and exclusive concessions tilt toward substitution/enclosure. The contribution is an actionable design logic (recognition clauses, guardianship budgets, venue upgrades, and role-aligned benefit sharing) that translates relational legitimacy into enforceable rules-in-use within business–commons interfaces.

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1. Introduction

Across the world's forested landscapes, firms increasingly operate at the edge of community institutions that long governed access, care, and sanctioning. In many places these institutions are relationally anchored, forests are treated as kin or sacred sites, and taboos and custodianship work as compliance technologies (West et al. 2020; Chan et al. 2016; Pascual et al. 2021). In Europe, Greece's sacred natural sites, village groves and veteran trees linked to chapel, illustrate how religious calendars and custodians sustain durable rules-in-use and measurable ecological value (Stara et al. 2015; Avtzi et al. 2018; Marini Govigli et al. 2024). These often sit within or beside protected-area regimes (e.g., Natura 2000), producing hybrid rule systems whose legitimacy hinges on how statutory procedures recognize custodial authority (Zhang et al. 2023). In Africa, the Democratic Republic of Congo (DRC) has formalized community forestry through CFCLs (Concessions Forestières des Communautés Locales), alongside Indigenous rights legislation, an architecture that invites communities, customary leaders, and firms to negotiate management, benefit-sharing, and safeguards for sacred sites (Lescuyer et al. 2019; Majambu et al. 2021; Awazi 2025).

Yet similar "business interfaces" (tourism, value chains, carbon finance) yield divergent outcomes: at times firms complement or co-govern with communities; at others they become de facto rule-setters (substitution) or temporarily enclose access and voice (Jaramillo and Carmona 2022; Dawson et al. 2024). Polycentric governance helps explain this variation by emphasizing multiple

decision centers and bridging arenas (Carlisle and Gruby 2019; Weible 2020; Langridge and Ansell 2024), but business scholarship still lacks actionable specificity about which institutional features most reliably shift firm behavior.

This research gap is addressed with a comparative study of community forest management in Greece (Epirus/Pindus) and the DRC. A mid-range framework is advanced, the Relational–Polycentric Commons (RPC), that links: (i) ontological anchoring (sacred vs. protected); (ii) guardianship-in-practice (standing, mandate, resources); (iii) venue quality (bindingness, information symmetry, transparency, representation depth); and (iv) consent/benefit architectures as proximate levers of justice and stability (Larsen and Chanthavisouk 2024; Kengoum et al. 2024). The guiding question is: how do these configurations shape firms' roles (complement, co-govern, substitute, or enclose) in community forests?

The research finally contributes by (1) endogenizing ontology as a governance device rather than background culture; (2) specifying guardianship as authority-in-practice (standing + mandate + resources); and (3) identifying two first-order venue axes, bindingness and information symmetry, that most quickly move firms toward co-governance. For managers and policymakers, these are finally translated into design levers (recognition clauses, modest guardianship budgets, venue upgrades, and role-aligned benefit sharing) that render the commons managerially legible without flattening its relational core, an agenda squarely within remit to design institutions where firms, communities, and

states can share governance without reproducing enclosure (Emerson and Nabatchi 2015; Dawson et al. 2024).

2. Literature review

2.1. Ontological and legal foundations of forest commons

In many community forest settings, governance is anchored in relational ontologies in which forests are treated as kin, moral subjects, or loci of spiritual agency; taboos and ritual authority operate as “compliance technologies,” shaping who may enter, harvest, or speak for the forest (West et al. 2020; Epstein et al. 2021; Kenney-Lazar et al. 2023). In Greece, for example, sacred natural sites (groves and veteran trees adjacent to chapels or above villages) have historically been conserved through religious prohibitions and community custodianship rather than formal policing (Stara et al. 2025; Stara et al. 2015). Recent work shows these groves function as biocultural hotspots with measurable ecological value and long temporal resilience, supporting the idea that sacredness can embed durable rules-in-use (Avtzis et al. 2018; Marini Govigli et al. 2024; Tatay and Merino 2023). In such systems, “membership” and boundary rules are articulated through parish, lineage, or village ties; sanctions are reputational and cosmological (fear of divine punishment), yet empirically effective at limiting extraction (Stara et al. 2025; Avtzis et al. 2018). These relations align with polycentric commons theory by locating community institutions as one of several rule centers, but with a distinct ontological grounding that standard resource

economics often brackets (Weible 2020; Langridge and Ansell 2024).

By contrast, protected-area ontologies construct forests as legally bounded conservation spaces (e.g., IUCN/Natura 2000), privileging scientific monitoring, zoning, and statutory sanctions. Comparative reviews indicate that conservation effectiveness varies across governance types, with areas managed or co-managed by Indigenous peoples and local communities often matching or exceeding state-managed protected areas, implicating design choices about authority, participation, and knowledge (Zhang et al. 2023; Dawson et al. 2021). In Greek cases, protected-area overlays frequently sit atop older customary arrangements (e.g., sacred groves near national parks), producing hybrid rule systems that can either complement or displace local custodianship depending on how representation and enforcement are configured (Marini Govigli et al. 2024; Tatay and Merino 2023). A polycentric perspective helps explain these hybrids as assemblages of semi-autonomous centers, parish councils or monasteries, municipal bodies, park agencies, NGOs, whose interactions determine boundary clarity, sanctioning, and the legitimacy of conservation rules (Weible 2020; Langridge and Ansell 2024).

In Africa, the DRC has, since 2014, formalized CFCLs, legally recognizing community tenure and management. Decree 14/018 (2014) laid out attribution procedures; the implementing Arrêté 025 (2016) specified governance bodies, simple management plans, and oversight; the regime authorizes community concessions up to 50,000 ha, a regional outlier intended to scale community

forestry (Atyi 2022; Lescuyer et al. 2019; Majambu et al. 2021). In parallel, Law 22/030 (2022) on the rights of Indigenous Pygmy peoples (in force 2023) strengthens recognition and procedural protections relevant to forest governance and benefit claims (Awazi 2025; Mochire 2024). Together, CFCLs and Indigenous rights law institutionalize legal pluralism: customary authorities, elected CFCL bodies, and state agencies co-define boundaries and enforcement, opening new venues for representation but also new sites of contestation over who qualifies as “community” (local vs. specific Indigenous groups) and how customary sacred sites are respected within statutory plans. Early assessments celebrate the potential of CFCLs but warn that large concession sizes, weak capacity, and legal knowledge asymmetries can invite elite capture or “shadow” logging if safeguards are thin (Majambu et al. 2024; Lucungu et al. 2022).

A fast-moving development in Europe reframes representation via Rights-of-Nature (RoN). Spain’s Law 19/2022 granted legal personhood to the Mar Menor lagoon, with a guardianship architecture empowered to defend the lagoon’s rights (Rehnström 2025; Cano-Pecharromán and O’Donnell 2024). Comparative RoN research distinguishes public guardianship (state/collective) from appointed guardians (often community-linked) and maps the institutional tasks, standing, monitoring, and remedy, that guardians perform (Kahui et al. 2024). Although Mar Menor concerns water rather than forests, it provides a concrete European template: a legal subject with plural guardians authorized to act, potentially translatable to forest contexts where sacredness already

underwrites community claims. For settings like DRC CFCLs or Greek sacred groves embedded in protected areas, RoN-style guardianship could clarify who can litigate, negotiate with firms, or veto encroachments, thus altering power within polycentric systems (Rehnström 2025; Kahui et al. 2024).

Across both contexts, ontological anchoring conditions the micro-rules that constitute commons governance. In sacred-site systems, membership and access are often relationally defined (parish/clan/village), and no-go zones or ritual calendars are enforced through custodianship and emotion work; empirical studies from Greece document centuries-long rule durability and post-disturbance ecological recovery consistent with these norms (Marini Govigli et al. 2021, 2024; Avtzis et al. 2018). In protected-area systems, by contrast, boundary definitions are legal-bureaucratic; compliance relies on surveillance, fines, and formal co-management, with legitimacy hinging on how well statutory rules recognize customary entitlements (Zhang et al. 2023). Legal pluralism (CFCL statutes and Indigenous rights in DRC; heritage/protected-area overlays in Greece) intensifies the salience of recognition justice: who counts as community for Free, Prior, and Informed Consent (FPIC) and benefit shares; how sacred knowledge is protected in planning; and who has standing to challenge enclosure (Awazi 2025; Rehnström 2025).

2.2. Governance-market interfaces and justice

Forest-commons governance rarely rests with a single center; instead, communities, municipalities, park agencies, NGOs, and firms co-produce rules across scales. Recent

work sharpens how polycentric arrangements actually emerge and operate: conflict around resources seeds multiple decision centers, and their subsequent coordination determines system performance (Langridge and Ansell 2024; Bruns 2021). Contributions in environmental politics and public administration argue that polycentricity increases adaptive capacity if there are arenas that connect actors (e.g., co-management boards, producer associations, guardianship committees) and if asymmetries in information and authority are managed (Kellner et al. 2024; Behnke 2024). A complementary line brings power to the foreground, showing how agenda-setting, technical expertise, and funding shape whose knowledge counts within these forums (McIlwain et al. 2024). For the comparative Greece-DRC focus, this literature directs attention to the “in-between” infrastructures, protected area management bodies, monastery or parish councils, CFCL committees, and NGO convenings, that can translate sacred/protected ontologies into workable rules, or conversely, marginalize them (Langridge and Ansell 2024; McIlwain et al. 2024).

Across forest settings, firms enter commons through multiple pathways. On the complementary end, enterprises can align with community rules, e.g., ecotourism models that channel visitor fees, jobs, or pilgrim services through community institutions or municipal enterprises. Greek protected areas and Natura 2000 sites provide a European context where such arrangements are increasingly mainstreamed through sustainable tourism agendas (Hovardas and Poirazidis 2006; Dimitrakopoulos et al. 2010). Moving along the spectrum, firms may co-govern via formal

agreements (e.g., co-management contracts, stewardship accords). But business involvement can substitute (CSR projects bypassing community bodies) or enclose, especially under extractive or carbon-market pressures, through strategies such as “temporal enclosures,” where companies narrow the set of imaginable futures during licensing or offset negotiations (Jaramillo and Carmona 2022). A large systematic review of Indigenous and local community roles in conservation shows that outcomes hinge on who holds authority in design and enforcement, not merely on the presence of conservation or market finance per se (Dawson et al. 2024). These insights caution that in both Europe and Africa (e.g., Greece and DRC), the same “business interface” (tourism, carbon, value chains) can yield divergent results depending on the surrounding governance scaffold (Hovardas and Poirazidis 2006; Dawson et al. 2024).

Participation standards matter most where plural communities, wider local residents and specific Indigenous groups, share landscapes. The FPIC norm has consolidated in conservation and development policy, but implementation quality varies widely (Larsen and Chanthavisouk 2024). Legal scholarship and policy analyses across Africa identify recurring frictions: unclear community representation, compression of timelines (“prior” → consult-and-go), and translation gaps that dilute “informed” (Mathiba 2023; Bellamy 2023). Emerging guidance under the Convention on Biological Diversity also highlights Indigenous data governance (CARE principles) as part of consent and monitoring architectures, salient when sacred knowledge is implicated (Pillay et al. 2024). Regional practice shows that where officials

and donors view FPIC as box-ticking rather than deliberative decision-making, conflicts rise, particularly around minerals or strict-protection expansions (Akpa-Inyang and Chima 2021). This literature perspective finally suggests testing whether consent processes are tailored to sacred-site protocols (e.g., gendered participation, elders' authority, taboos) in DRC CFCLs and whether Greek protected-area consultations adequately recognize parish/monastic custodianship (Larsen and Chanthavisouk 2024; Bellamy 2023).

Whether business involvement complements or encloses often hinges on who gets what, how, and when. In carbon and conservation finance, benefit-sharing mechanisms (BSMs) specify eligible recipients (households, Indigenous groups, local governments), payment triggers, and oversight. An assessment of the DRC finds BSMs remain in active reform: national legal frameworks exist but roles and payment pathways are still being clarified; risks include elite capture at provincial levels and weak transparency (Kengoum et al. 2024). Broader African analyses converge on design principles, transparency, co-design with legitimate community bodies, gender-responsive distribution, and grievance channels, to increase perceived fairness and compliance (Shah et al. 2024; Chandrasekharan Behr et al. 2012). For sacred-site contexts, therefore, literature flags the need to align revenues with ritual calendars and custodianship functions (e.g., guardianship committees), while in protected-area contexts, earmarking for local public goods (fire-prevention, trails, cultural education) can bolster legitimacy (Kengoum et al. 2024; Shah et al. 2024).

Recent conservation science re-centers justice, procedural (voice/FPIC quality), distributive (who benefits/bears costs), and recognitional (respect for identities and ontologies), as a condition for durable biodiversity gains (Montgomery et al. 2024). Analyses of conservation commitments similarly warn that expansions of protected areas without tenure recognition can reproduce historical dispossession (Ford-Learner et al. 2024). In particular, analysis in DRC underscores persistent governance gaps, illegal logging despite moratoria, inconsistent permit reviews, creating openings where private or NGO actors can dominate agenda-setting and revenue flows (Lucungu et al. 2021; Majambu et al. 2021). In such contexts, even well-intended corporate or NGO projects risk substitution or enclosure outcomes unless power asymmetries are addressed through enforceable rights, transparent BSMs, and meaningful guardianship seats for community institutions (Montgomery et al. 2024; Ford-Learner et al. 2024).

3. Theoretical framework

To explain how community forest governance in Greece (sacred/natural-protected overlays) and the DRC (sacred sites plus CFCL statutes) produces different roles for firms and different justice outcomes, a mid-range framework is advanced, the Relational–Polycentric Commons (RPC). RPC integrates: (i) ontological anchoring (sacred vs. protected), (ii) legal authority/guardianship (who can legitimately speak and act for the forest), (iii) polycentric interfaces across community–state–NGO–business arenas, and (iv) benefit-sharing/FPIC architectures as proximate levers of justice and compliance. It

responds to a direct necessity to bridge community, business, and government while engaging relational approaches and enclosure, resistance dynamics (Ostrom 2010; West et al. 2020; Carlisle and Gruby 2019; Weible 2020).

3.1. Core constructs

C1. Ontological anchoring (sacred ↔ protected)

In this study, RPC treats the meaning of forest, sacred being/custodian object vs. legally zoned habitat, as a first-order driver of rules-in-use and compliance rationales. “Sacred” anchoring organizes boundary rules through taboo, ritual authority, and custodianship; “protected” anchoring organizes them through statutory designation, surveillance, and sanctions (Stara et al. 2015; Marini Govigli et al. 2024; Zhang et al. 2023). This construct specifies the mechanistic implication: what people believe the forest is changes how they think they ought to govern it (West et al. 2020).

C2. Legal authority and guardianship (Who has standing?)

Authority is operationalized as standing plus mandate plus resources to represent the forest in decision, negotiation, and litigation. In the DRC, CFCL laws constitute elected community bodies alongside customary leaders (Lescuyer et al. 2019). In Europe, rights-of-nature (RoN) experiments design guardianship committees with procedural standing (Cano-Pecharromán and O'Donnell 2024; Rehnström 2025). RPC uses this construct to capture voice allocation inside polycentric arenas.

C3. Polycentric interfaces (Where rules are made)

Following polycentric governance, forests are governed through multiple semi-autonomous centers and connective venues, co-management boards, municipal/park bodies, parish/monastic councils, CFCL committees, NGO forums, where power asymmetries in expertise, finance, and legal knowledge shape outcomes (Ostrom 2010; Carlisle and Gruby 2019; Langridge and Ansell 2024; McIlwain et al. 2024). Businesses appear in these venues as potential complements, co-governors, substitutes (CSR stand-ins), or enclosers (Jaramillo and Carmona 2022; Dawson et al. 2024).

C4. Benefit-sharing and consent architectures (How value and voice flow)

Benefit-sharing formulas (cash, jobs, services, access), FPIC procedures, grievance channels, and safeguards for sacred knowledge operationalize justice and often determine stability of rules (Larsen and Chanthavisouk 2024; Chandrasekharan Behr et al. 2012; Kengoum et al. 2024). RPC treats procedural, distributive, and recognitional justice as mediators between governance design and ecological performance (Montgomery et al. 2024).

3.2. Causal mechanisms

M1. Ontology → Compliance and rule form

Sacred anchoring generates thick internal compliance (via custodianship, emotion work, reputational sanctions); protected anchoring generates external compliance (via monitoring and fines). In hybrid Greek settings,

compliance hinges on whether protected-area procedures recognize custodial authority (Stara et al. 2015; Marini Govigli et al. 2024). In the DRC, sacred norms intersect with CFCL-mandated plans; concordance between ritual calendars/taboos and management prescriptions predicts fewer infractions (Lescuyer et al. 2019).

M2. Guardianship → Representation power

Where CFCL organs or RoN guardianship possess clear mandates, legal standing, and budgets, communities' bargaining power with firms and agencies increases, affecting contract terms, monitoring, and remedies (Rehnström 2025). Weak or ambiguous guardianship invites elite capture or agenda substitution by outside actors.

M3. Polycentric venue quality → Firm role (complement ↔ enclosure)

Venue quality is defined by inclusiveness, transparency, information symmetry, and binding authority. High-quality venues nudge firms toward complement/co-govern roles; low-quality or symbolic venues, especially where knowledge/finance concentrate off-community, bias toward substitution/enclosure (Langridge and Ansell 2024; McIlwain et al. 2024).

M4. Consent and benefits → Legitimacy and stability

Transparent, co-designed benefit-sharing and culturally appropriate FPIC (including guardianship of sacred knowledge and gendered participation where required) bolster perceived fairness, reduce grievances, and stabilize rules. Misaligned formulas (e.g.,

household-only cash in sacred contexts) trigger contestation and non-compliance (Larsen and Chanthavisouk 2024; Kengoum et al. 2024).

3.3. Propositions

From the literature perspectives and the theoretical framework, the following propositions can finally be derived as theory-driven expectations to guide the study's comparative analysis:

- P1 (Ontological anchoring → compliance mode). Forests anchored as sacred will exhibit higher internal compliance and lower external enforcement cost than forests anchored as protected; in overlays, compliance rises with formal recognition of custodianship (Stara et al. 2015; Marini Govigli et al. 2024; Zhang et al. 2023).
- P2 (Guardianship strength → bargaining and enforcement). Stronger guardianship (CFCL bodies or RoN committees with standing and budgets) increases communities' bargaining power and enforcement capacity, improving co-governance quality (Lescuyer et al. 2019; Rehnström 2025).
- P3 (Venue quality → firm role). Where polycentric venues are inclusive, transparent, and binding, firms are more likely to play complementary/co-governance roles; where venues are symbolic/exclusive, substitution/enclosure becomes more probable (Langridge and Ansell 2024; McIlwain et al. 2024).
- P4 (Consent + benefit formula → legitimacy). High-quality FPIC and benefit-sharing that acknowledge both wider local and specific Indigenous constituencies yield higher

legitimacy and lower conflict (Larsen and Chanthavisouk 2024; Kengoum et al. 2024).

3.4. Scope conditions and comparative leverage

RPC is designed for legally plural settings where sacred and protected ontologies co-exist and where multiple actor types co-govern. It travels best when: (a) communities have some recognized tenure (e.g., CFCLs or de facto custodianship), (b) firms interface through tourism, value-chains, conservation or carbon finance, and (c) venues exist (or can be created) to host co-design and monitoring (Ostrom 2010; Carlisle and Gruby 2019). Greece offers high likelihood of sacred–protected overlays with tourism-facing firms and relatively capable park/municipal bodies, an ideal test bed for P1–P3. The DRC offers formal guardianship backbones (CFCL) under resource pressure, critical for P2 and P4 (Lescuyer et al. 2019).

Therefore, the advancement of RPC in this study makes three contributions tailored to the “commons at a new frontier” agenda. First, it endogenizes ontology, treating sacred/protected meanings as levers that re-configure boundary rules and compliance, rather than as background culture (West et al. 2020; Stara et al. 2015). Second, it formalizes guardianship as a measurable allocation of voice (standing, mandate, resources) that changes firms’ bargaining calculus (Cano-Pecharromán and O’Donnell 2024; Rehnström 2025; Lescuyer et al. 2019). Third, it locates firms inside polycentric arenas, specifying how venue quality and benefit/consent architectures tilt outcomes toward complement or enclosure (Langridge and Ansell 2024; Dawson et al. 2024).

4. Methodology

4.1. Research design

This is a comparative multi-case qualitative study focused on community forest governance under two ontological–legal configurations: (a) sacred/nature-protected overlays in Greece and (b) sacred sites and CFCL statutes in the DRC. A multiple-case design enables analytic generalization to the RPC framework rather than statistical inference (Yin 2013; Eisenhardt and Graebner 2007). Semi-structured, online interviews were combined with document analysis and limited non-participant observation to generate process data suitable for mechanism testing (Gioia et al. 2013; Langley 1999). The sampling frame and interview guide are explicitly mapped to RPC constructs (ontological anchoring, guardianship/authority, polycentric venues, FPIC/benefit-sharing), ensuring theory-data alignment and comparability across contexts.

Interviews guided through local collaborators ran from September 2024 to June 2025 that maximize variance on the constructs while holding constant the “community forest” focus. In Greece, research was conducted in Pindus-Epirus (north-west), focusing on sacred, natural groves and village-adjacent forest patches linked to Orthodox chapels in the Zagori area (with interviews in villages such as Vovoussa and Greveniti) and on the interface with nearby protected-area governance where relevant. This site choice leverages a robust literature showing that Epirus sacred forests constitute biocultural hotspots with long rule durability and measurable ecological resilience, and that they often coexist with Natura 2000/protected-

area instruments, ideal for studying sacred–protected overlays in a European setting (Marini Govigli et al. 2024; Stara et al. 2025; Hovardas and Poirazidis 2006).

In the DRC, research was developed in two CFCL clusters and one sacred-site/protected-area interface to capture statutory guardianship alongside sacred governance. First, in Équateur Province (Bikoro Territory), where community concessions and participatory land-use planning have been scaled with NGO and program support; here CFCLs anchor community tenure and provide formal governance bodies for negotiation and monitoring. Second, in Mai-Ndombe Province (Inongo-area CFCLs), where REDD+ and value-chain pressures make benefit-sharing and venue quality especially salient. Third, interviews were conducted around the Ituri Forest near the Okapi Wildlife Reserve (Epulu area), where sacred-site governance of the Mbuti/Efe intersects with state conservation, an ideal interface for testing how sacred anchoring and protected-area rules combine. For safety and confidentiality, exact community names are anonymized in reporting, while locations are documented in field notes. These DRC choices reflect the legal parameters of CFCLs (up to 50,000 ha, held in perpetuity) and on-the-ground programs demonstrating both

promise and governance challenges (Chandrasekharan Behr et al. 2012; Kengoum et al. 2024).

Sampling was purposive then snowball, targeting nodes across the polycentric system to ensure contrasting perspectives on authority, rules, and benefits (Miles et al. 2014). In Greece, the focus of interviews was on sacred/naute-grove custodians, parish/monastic administrators, municipal and protected-area officials, local NGOs, and tourism/value-chain actors. In the DRC, the research included customary and Indigenous leaders, elected CFCL committee members (presidents/secretaries), territorial administrators, protected-area staff where interfaces exist, national and provincial NGOs (including legal-aid and Indigenous organizations), and project-linked firms (timber/carbon/ecotourism depending on site). A set of $N \approx 60$ interviews overall (≈ 30 per country) is conducted to reach code saturation within roles and meaning saturation across cases (Guest et al. 2006; Hennink et al. 2017). These profiles (Table 1) reflect empirical guidance that basic thematic saturation often occurs by 12–20 interviews within relatively homogeneous groups, with additional interviews required for cross-case depth and subgroup heterogeneity.

Table 1. Interviewee profile and quotas (by role and type).

Group (role)	Illustrative examples	Greece (n)	DRC (n)	Access pathway	Group-RPC link
Community custodians	Sacred-grove caretakers, village elders, women's associations	5	6	Parish/village councils; local NGOs	C1 Ontology; boundary rules; sanctioning
Indigenous/customary leaders	Clan/chiefdom leaders; ritual authorities	—	6	CFCL committees; customary authorities	C1/C2 Ontology + guardianship

Group (role)	Illustrative examples	Greece (n)	DRC (n)	Access pathway	Group-RPC link
Parish/monastic admins (GR) / CFCL committee members (DRC)	Monastery forest officers; CFCL presidents/secretaries	5	5	Church/monastic offices; CFCL secretariats	C2/C3 Guardianship; venue quality
Protected-area staff	Rangers, managers, science officers	5	3	Park authorities	C3 Polycentric interfaces; monitoring
Municipal/local officials	Forestry, tourism, culture	3	3	Municipalities/territoires	C3/C4 Co-design; benefit flows
NGOs/CSOs	Conservation, legal aid, Indigenous orgs	3	4	National/locals NGOs	C2/C3 Representation; FPIC practice
Firms/value-chain actors	Ecotourism operators, guides; timber/carbon project reps	4	4	Chambers, park lists, project registries	C3/C4 Complement vs enclosure; BSMs
National policy actors	Forestry/environment ministries	2	2	Ministry contacts	C2 Legal design, oversight

4.2. Data collection

All interviews were conducted online (remote), using voice/video tools depending on bandwidth, with audio recorded when permitted and detailed field memos kept in parallel. A two-step workflow was adopted: (1) local collaborators secured introductions and scheduled sessions; (2) interviews were held with the researcher plus a collaborator present (as facilitator or silent observer, per consent) to support translation and cultural protocol checks. Remote interviewing is now well-established for qualitative research, with evidence on rapport-building, data richness, and practical affordances (Archibald et al. 2019; Lobe et al. 2020; Howlett 2022). To mitigate loss of place-based immersion, participants were asked to show or describe relevant documents/artefacts on camera, and they were triangulated with site documents and observation notes from collaborators.

Cross-language quality controls included professional interpretation on the call and a translation/ independent back-read of transcripts to protect meaning equivalence, a recommended practice in cross-language qualitative research (van Nes et al. 2010; Squires 2009). Data sources included interview transcripts, CFCL constitutive documents and management plans (where shareable), parish/monastic and municipal records, protected-area plans, NGO legal briefs, and program reports. Triangulation across these sources supports pattern matching and mechanism tests in the subsequent analytic stage, consistent with multi-method case research standards (Eisenhardt and Graebner 2007; Yin 2018).

This research opted for a community-partnered, remote design to maximize ethical access, trust, and coverage across dispersed sites (Epirus/Zagori; Équateur-Bikoro; Maï-

Ndombe; Ituri–Okapi) while minimizing travel risks and costs. In line with community-based participatory research (CBPR) principles, collaborating organizations and trusted local facilitators acted as knowledge brokers and gatekeepers, helping us identify the most relevant informants (e.g., women custodians, youth, seasonal workers, CFCL monitors) and verify representation (Israel et al. 1998; Wallerstein and Duran 2010). Their embeddedness improved sampling validity (reducing elite bias), consent quality (clarifying risks/benefits in local languages), and cultural safety (observing sacred-site protocols and gendered participation norms). Practically, remote sessions enabled flexible scheduling around agricultural seasons and religious calendars, and reduced participant burden, consistent with best-practice guidance on remote qualitative methods (Lobe et al. 2020; Howlett 2022).

The semi-structured interview guide is explicitly mapped to the RPC constructs and structured to elicit episodes that can be process-traced across actors and documents (Beach and Pedersen 2016). Module (1) “Meaning and membership” captures C1 by probing sacred/protected cues, membership definitions (wider local vs. specific Indigenous), boundary rules, and sanctioning rationales; Module (2) “Authority and voice” targets C2 (who represents the forest; what standing/mandate/resources they hold; recent disputes and their resolution); Module (3) “Venues and power” addresses C3 by mapping co-management boards, parish/monastic councils, CFCL committees, and NGO forums, with probes on inclusion, information symmetry, data access, and veto rights; Module (4) “Consent and benefits” operationalizes C4 by detailing FPIC steps,

benefit eligibility/formulas, grievance channels, recognitional safeguards for sacred knowledge, and perceptions of fairness. Probes in each module request concrete episodes (e.g., a conflict, a negotiation, a sanctioning moment) and the documents/minutes associated with them to support within- and cross-case pattern matching. The guide’s structure follows best practice for mechanism-focused qualitative research and for rigor in inductive coding/aggregation during analysis (Beach and Pedersen 2016; Gioia et al. 2013).

Participation is voluntary, with informed consent procedures adapted to local practice (verbal consent allowed where literacy or cultural protocols require); culturally appropriate FPIC will guide work in the DRC’s Indigenous settings (Larsen and Chanthavisouk 2024), with clear statements about recording, storage, and the right to pause or withdraw. An additional set of gender-sensitive recruitment was also used (women-only or youth-only sub-groups when appropriate) to protect sacred knowledge (participant-controlled redaction of sensitive content) and apply pseudonymization throughout. For interviews implicating Indigenous knowledge in the DRC, collaborators verified representation and timing to respect FPIC (adequate time, translation, decision-making by legitimate authorities). The interview guide avoided sensitive topics in shared household spaces and offered audio-only options to increase privacy. Files were stored on encrypted drives; identifiers were replaced with pseudonyms; and all metadata were scrubbed before analysis. Files were stored on encrypted drives, while identifiers were replaced with pseudonyms, and all metadata were scrubbed

before analysis. These measures align with recent guidance on FPIC and equitable conservation engagement, and with best practice for process tracing in sensitive governance contexts (Howlett 2022; Beach and Pedersen 2016; Lobe et al. 2020).

5. Findings

5.1. M1: Ontological anchoring → rule form and compliance

Across sites, what the forest is to people, sacred site versus protected area, reliably

Table 2. Boundary rules and sanctioning across sites.

Site/Stratum	Membership definition (operative)	Boundary device(s)	Primary first response	External escalation	Compliance pattern	Notable modifier
Epirus/Zagori	Parish/village residence & lineage	Chapel/grove edge; feast-day calendars	Custodian/elder admonition; social sanction	Park/municipal procedure only if repeated	High, sustained when custodianship recognized; low external monitoring need	1-page custodial protocol synchronized with PA work windows
Équateur-Bikoro CFCLs	Registered households under customary leaders	Zoning + appended sacred clauses	Elder warning + small in-kind fines	CFCL committee monitors and records; escalate if commercial	Stable when sacred rules are explicitly codified; clear escalation	Annexed site-specific sacred rules
Maï-Ndombe/Inongo CFCLs	As above, plus seasonal in-migrants	As above; more fluid edges near markets	Custodian confrontation; mixed monitor response under project timelines	Committee escalation uneven when calendars compressed	Holds when project calendars align; drifts when throughput prioritized	REDD+ activity calendars; patrol stipend continuity
Ituri-Okapi interface	Kin/clan + camp-based ties	Named ritual sites; reserve map	Custodian intervention at sacred sites	Ranger intervention at mapped infractions	High where micro-overlays exist; gray zones otherwise	Agreed “closed zones” inside reserve maps; rerouted trails

configured who belongs, how boundaries are drawn, how infractions are sanctioned, and how much external enforcement is needed.

Compliance was highest where sacred custodianship was recognized inside statutory procedures; it weakened where protected or project codification failed to translate locally salient distinctions (e.g., ritual calendars, gendered access), creating gray zones that users learned to exploit (Table 2).

In Epirus villages, membership was articulated relationally (parish/village ties), with boundaries marked by chapels, grove edges,

veteran trees, and feast-day calendars. Sanctioning began with custodial admonition and reputational costs; only repeat or

commercial breaches escalated. Where protected-area operators recognized custodianship, e.g., co-signed pruning calendars, “no-go” days aligned to liturgical periods, voluntary monitoring held strong and ranger patrols became occasional backstops rather than primary enforcement. As one elder put it:

“When the park put our feast days on their calendar, the arguments stopped; now we call them if a branch needs cutting, not the other way around” (Custodian, Greveniti).

Recognition as term refers to light-touch procedural devices (named contacts, annexed sacred clauses, shared signage) that make custodians audible inside statutory processes. Where recognition lagged (e.g., municipal fuel-break works scheduled during feast/ritual periods when activity is restricted), people complied without legitimacy, then withdrew cooperation, fewer voluntary reports, softer social sanctioning, until a short custodial protocol (named contacts, taboo days, alternative work windows) restored alignment. The interaction is tight: sacred anchoring generates thick internal compliance; protected overlays amplify it if and only if custodianship is visible in procedures.

In Bikoro CFCLs, membership was defined by concession registers under customary leaders, but everyday legitimacy still hinged on sacred prohibitions for specific groves and streams. Where simple management plans copied sacred rules into zoning and seasonal clauses, first responses were routine: elders issued warnings or in-kind fines; monitors logged incidents and escalated only repeat or commercial violations.

“Before we added the sacred streams to the plan, I hesitated to write a fine; now the rule is the same for me and for the elder” (CFCL Monitor, Bikoro).

Where codification stayed generic (“buffer 50 m from water”), custodians applied thicker sacred rules informally while monitors stuck to the text, producing a dual system: slower escalation, greater resentment, and inconsistent deterrence. Appending site-specific sacred clauses closed the gap; sanctioning sped up and aligned across actors.

In Inongo-area CFCLs, the baseline hybrid resembled Bikoro’s, but persistent external pressure (REDD+ pilot cycles, itinerant labor, timber buyers) revealed how ontology interacts with capacity and incentives. When REDD+ calendars respected sacred no-go periods and patrol stipends complemented custodial oversight, people shifted extraction to permitted zones and monitors/custodians cross-checked logs, compliance held. When donor schedules compressed time or stipends lapsed, monitors drifted toward project timetables while custodians held to sacred calendars; in-migrants learned the looser rule first, leaving custodians to confront without visible committee backing. The moving variable is compliance, toggled by whether external programming reinforces or erodes the translation of sacred practice into written rules.

At the reserve edge, protected-area anchoring is cartographic and patrolled; sacred anchoring among Mbuti/Efe prescribes place- and kin-based prohibitions. The boundary problem is spatial misfit: map lines rarely coincide with sacred “no-go” areas. Where liaison meetings produced micro-overlays

(naming ritual sites as “closed zones” within reserve maps; rerouting a tourist path), both sides reported cleaner compliance:

“When they marked the grove on their map, our boys stopped guiding through there, no more explanations in the forest” (Mbuti custodian, Epulu).

5.2. M2: Guardianship strength → representation power and bargaining

Differences in guardianship strength, defined here as the bundle of standing, mandate, and resources (budget, monitoring capacity), reconfigured who could speak and decide for the forest, what got written into contracts and plans, and how disputes were resolved. Strong guardianship converted the high internal compliance documented before into leverage: seats at decision tables, enforceable clauses, and credible remedies. Weak or purely symbolic guardianship left custodians doing social enforcement while outsiders set agendas and rules.

Where parish/monastic custodianship was formally seated, e.g., named as a signatory in work permits, with a small earmark from visitor revenues, bargaining outcomes changed in visible ways. Maintenance and tourism contracts included veto windows around feast days, trail realignments to avoid taboo trees, and ring-fenced funds for custodial tasks (ritual upkeep, signage, fuel breaks). Disputes moved to documented procedures: a custodian filed an objection; the park office paused works; a joint inspection followed within a week. As one parish representative put it:

“Before, we were told after the chainsaws started. Now our name is on the paper, if the day is wrong, we stop it with a call” (Parish administrator, Zagori).

By contrast, in villages where custodians were consulted but not authorized, outcomes looked different despite similar community norms. Municipal contracts sent generic crews with fixed schedules; revenue flowed to general budgets without custodial earmarks; and when a sacred tree was nicked during brush clearance, redress depended on personal relationships rather than rules. Compliance remained relatively high, but bargaining power was thin: custodians could scold and mobilize social sanction; they could not amend timelines or attach conditions. Over time, this produced a familiar drift, formal actors treated custodianship as cultural etiquette rather than as an institution with voice.

In Bikoro, CFCL committees that paired legal standing (co-signing authority on local agreements) with modest resources (levies to fund fuel, data bundles, and two community monitors) negotiated tighter clauses with outside actors. One sawyer’s permit, initially drafted with a 30-m buffer, was re-issued at 50 m with a grievance pathway (committee desk → elders → territorial office) and a fixed community labor rate for any rehabilitation works.

“They used to pay the chief’s nephew today and nobody tomorrow. Now it’s in the clause, and if they skip, we stop the work” (CFCL president, Bikoro).

Enforcement also changed: with airtime and fuel budgeted, monitors verified compliance

weekly; minor breaches triggered on-the-spot warnings backed by the committee; escalation to the territory administrator happened only for repeat or commercial violations. The net effect was predictability, not merely stricter rules but clearer who does what when rules bend.

In Inongo, several committees held paper standing (stamps, titles) but no operating budget. External NGOs or provincial officials chaired negotiations; firms tended to side-letter with individual chiefs for speed; monitoring depended on volunteers. The result was substitution: social authority handled day-to-day compliance (elders, custodians), while formal agreements reflected outside timelines and templates. A legal-aid worker described it bluntly:

“Our committee has a stamp but no boots. When there’s a breach, they call us; we call the province; by then the truck is gone” (NGO legal advisor, Inongo).

In this configuration, even good sacred-protected overlays failed to travel into bargaining: custodians still policed behavior, but could not translate that legitimacy into contractual leverage or budgeted oversight.

At the reserve edge, guardianship is structurally split: the protected area holds statutory powers, while Mbuti/Efe custodians hold sacred authority. Where a co-signed protocol created a liaison seat and a simple ID badge for named custodians, representation changed in practice. Trail decisions and guiding rules came through a table where custodians could propose closures of ritual sites and co-approve route changes; rangers

gained a way to verify claims and co-enforce without undermining sacred authority.

“Since they sit with us, we don’t argue in the forest, we argue on the map”
(Ranger, Epulu).

Without such protocols, interactions reverted to edge-of-forest confrontations; rangers enforced the map; custodians enforced the sacred; both claimed legitimacy, and visitors learned to play one off the other.

5.3. M3: Polycentric venue quality → firm role (complement ↔ co-govern ↔ substitute/enclose)

In both settings, but most clearly in Epirus/Pindus, the quality of decision venues (inclusiveness, information symmetry, transparency, and bindingness) sorted firms into distinct roles. Where venues made community rules actionable (co-signature, live calendars, earmarked shares, enforceable grievance ladders), firms behaved as co-governors and even co-monitors. Where venues were consultative or exclusive, firms slid into substitution (operating as de facto rule-setters) and, at the extreme, enclosure (temporarily privatizing access and voice).

In one Zagori cluster (GR-A1 case), a standing board seated parish custodians, municipal officers, park staff, and licensed operators. Three devices changed operator calculus: (i) binding calendars, feast days/taboo periods embedded in permits with automatic veto windows; (ii) co-signed route and capacity rules, group-size caps, quiet hours, guide accreditation tied to a short local curriculum; (iii) a transparent ledger, a fixed share of ticket income earmarked and posted

quarterly for custodial tasks (ritual upkeep, signage, firebreaks). Operators then internalized community rules as operating constraints. Guides pre-emptively rescheduled when parish alerts flagged ritual days; self-reporting of minor breaches increased because the grievance ladder was proportionate and predictable. Park staff logged fewer confrontations and faster breach-to-remedy cycles. The firm role landed in co-govern/complement: operators co-implemented rules, contributed to monitoring (trail condition reports), and co-financed upkeep.

A neighboring set of villages (GR-A2 case) relied on intermittent “consultations” attached to procurement. Custodians spoke but did not co-sign; minutes and calendars circulated irregularly. Permits referenced generic conservation clauses, not local calendars; signage contracts specified delivery dates, not content co-approval. Operators optimized around buses and social-media peaks, setting schedules and capacities unilaterally while avoiding only the most visible taboos. At the grove edge, visitors received mixed signals, “open” in booking apps, “closed” by the caretaker, producing awkward standoffs. Without an earmarked custodial share, revenue flows read as extraction; custodians reduced on-call cooperation (fewer last-minute unlocks, less proactive alerts). The result was substitution: firms filled the governance vacuum with their own operating logic.

Short exclusive concessions (sponsored runs, promotional shoots) were contracted between a municipal unit and companies/foundations with “community informed” but not represented (GR-A3 case). The day-of effects

were material enclosure (closed paths, staging near chapels, security enforcing ticket-holder zones) and institutional enclosure (zero community say in siting, time windows, or content). After two such events, volunteer firebreak participation dipped; off-trail shortcuts proliferated; informal boycotts targeted sponsors. Subsequent enforcement costs rose (more staff to police closures; more post-event repairs). Here the firm role tipped into enclosure, not permanent privatization but repeated, high-salience exclusions that eroded legitimacy and future cooperation.

Finally, decision venues proved malleable, since small procedural tweaks can quickly change how firms behave. Two Greek municipalities piloted small reforms, co-signature pages with named custodians; a shared WhatsApp calendar; a 10% earmark for custodial functions. Within one season, operator rescheduling became routine, complaint volumes fell, and custodial cooperation rebounded (e.g., caretakers resumed opening side gates to ease group reroutes). Moving from consultation to co-signature thus shifted firms back toward co-governance without new statutes, only institutional tweaks.

Now, in DRC, a bridging forum, committee desk hours, open minutes, and co-signed local permits, pushed firms toward co-governance (DRC-B1 case). Practical clauses widened riparian buffers, listed closed sacred sites, and specified grievance windows. With a modest budget (airtime, fuel), community monitors verified compliance weekly.

Firms complied because deviation triggered predictable stoppages and reputational costs in a small market. Committees possessed stamps but not operating budgets; agendas

were set by provincial offices or external implementers (DRC-B2 case). Firms side-lettered with individual chiefs for speed; monitoring was ad hoc. Community authority handled everyday compliance, but formal rules reflected outside timelines. The firm role settled in substitution: projects treated committees as symbolic sign-offs, not decision centers.

Where liaison protocols created a custodian seat and map-level “closed zones” for ritual sites, tourism operators aligned routes and guiding scripts, approaching co-governance (DRC-B3 case). Absent those overlays, operators followed the reserve’s generic map and hired guides for convenience, not legitimacy; conflicts rose and access felt de facto enclosed to custodians on ritual days.

Across these cases, four hinge features repeatedly separated co-govern/complement from substitution/enclosure (Table 3): i) bindingness (co-signature, veto windows, and route/closure clauses converted voice into enforceable constraints), ii) information symmetry (a live, shared calendar and single alert channel prevented “surprise” breaches; firms could adapt cheaply), iii) transparency (simple public ledgers for revenue used in custodial tasks neutralized extraction narratives; operators could point to visible contributions), iv) representation depth (stable seats with named alternates and modest stipend preserved institutional memory; rotating or symbolic seats forced annual re-litigation and emboldened firms to default to municipal or provincial counterparts).

Table 3. Polycentric venue quality – Index Dimensions.

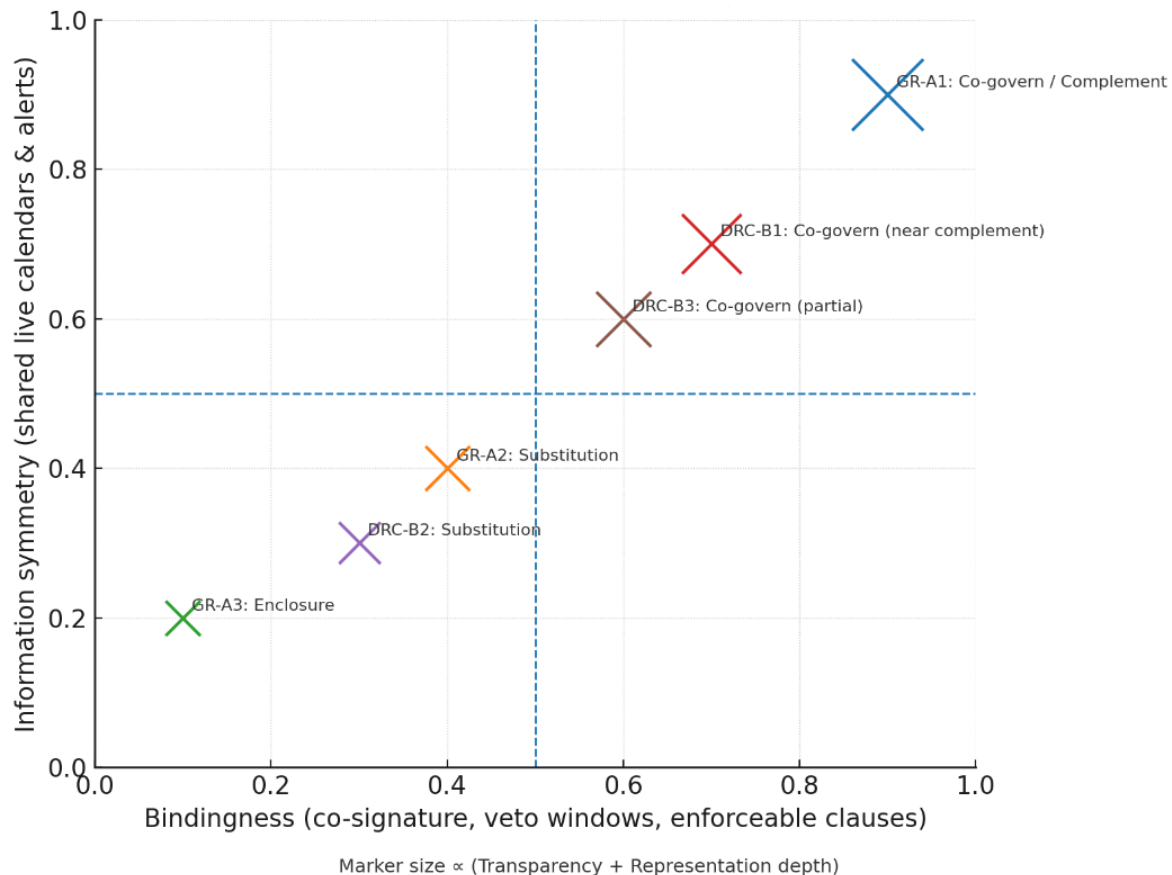
Dimension	0.00	~0.25	~0.50	~0.75	1.00
Bindingness	Advisory only; no signatures	Minutes only; no clauses	Some clauses but no veto	Co-signature; limited veto windows	Co-signature + explicit veto windows + enforceable clauses
Information symmetry	No calendar; ad hoc calls	Static calendar; no alerts	Calendar shared; irregular alerts	Live calendar + single alert channel	Live calendar + single alert + timely minutes for all
Transparency	No public info	Occasional notices	Minutes posted	Minutes + public ledger	Minutes + ledger + grievance log with response times
Representation depth	No seat	Invite-only seat	Rotating seat	Stable seat + named alternate	Stable seat + alternate + small stipend/training

Where all four were present (A1, parts of B1 cases), firms behaved like co-governors, internalizing community rules and co-funding enforcement. With two or fewer present (A2; B2), firms substituted their schedules and scripts for community rules. Under exclusive contracts with no representation (A3), firms enclosed space and voice, with measurable

spillovers into reduced volunteerism and higher public enforcement costs. The Greek cases demonstrate how small institutional moves, not new laws, reliably shift firm roles, while the DRC strata confirm the pattern and highlight the fragility of venue quality where budgets are thin and alternative counterparts (provincial offices, project implementers) are

more convenient for firms. Figure 1 maps these venues by bindingness (x-axis) and information symmetry (y-axis), with transparency and representation depth as marker size/color (more information in Appendix). Greek cases cluster top-right (co-

Figure 1. Venue quality compass and observed firm roles (metrics for selected cases).



5.4. M4: Consent and benefit-sharing → legitimacy, justice, stability

The quality of consent (who speaks, when, with what information) and the architecture of benefit-sharing (eligible recipients, triggers, oversight) determined whether governance felt legitimate and stable, or extractive and brittle. Outcomes hinged on three interactions: (1) whether FPIC/consultation

government/complement) when all four features are present; Greek consultation cases sit mid-field (substitution); Greek exclusive concessions and DRC no-budget committees fall bottom-left (enclosure/substitution).

recognized sacred custodianship as a distinct constituency alongside the wider local community; (2) whether benefits matched custodial functions and local public goods rather than undifferentiated cash; and (3) whether grievance channels were accessible and proportionate. Where these aligned, disputes de-escalated early and voluntary monitoring rose; where they did not, compliance slid from quiet cooperation to active resistance.

In the integrated-board sites in Greece, consent was front-loaded and practical. Calendars, route caps, and content rules were negotiated before operators opened bookings; custodians had a named veto window; and a small stipend covered their time to attend. The benefit formula earmarked a visible share of revenues for custodial tasks (ritual upkeep, signage, firebreaks) and a second share for local public goods (trail repairs, a first-aid kit, a water tap at the plaza). The effect was twofold. First, custodians treated enforcement as part of “their” work, alerting rangers about wind-falls, discouraging off-trail selfies, and calling operators when feast-day overlaps loomed. Second, non-custodial residents saw tangible returns without competing with custodians, lowering zero-sum perceptions. As one caretaker put it:

“When the ticket pays for the broom and the hose, no one asks why I lock the gate on the fasting day.”

By contrast, in consultation-only sites, consent was procedural but thin: a town-hall meeting with slides, a sign-in sheet, and a promise to “work together.” The benefit promise was framed as “supporting the community,” which in practice meant transfers to a general municipal account. Two dynamics followed. First, custodians felt obliged but unsupported, they still enforced taboos, but resented absorbing the reputational costs when visitors showed up on taboo days scheduled by the operator’s app. Second, households expected direct cash or discounts and questioned why custodial work received any earmark at all. Disputes then migrated into distributional arguments the venue could not resolve (“why them, not us?”). A municipal officer captured the bind:

“We paid for benches and people asked where the money went; we paid nothing to custodians and they stopped answering the phone.”

Legitimacy did not collapse overnight, but it thinned, complaints rose, and informal boycotts surfaced against the “Saturday overload.”

Short exclusive concessions produced a sharper pattern. Consent was after-the-fact (“we notified the community”); benefit was a one-off donation; closures blocked locals from paths. The distribution signal was unambiguous: someone else’s event had crowded out local use and voice. Even generous donations could not neutralize the loss of recognitional justice. The month after one large shoot, participation in a volunteer firebreak dropped; caretakers described a “closed book” posture toward the sponsor. An operator reflected:

“We thought one fat cheque equals goodwill; it turned out people wanted a say, not a selfie.”

In Bikoro CFCLs, committee-verified FPIC (representation checks, translated scripts, multi-day pauses for internal discussion) slowed the start but sped the middle. Negotiations produced clear eligibility lists (households, women’s group, custodianship, monitors) and trigger-based payments (after buffer demarcation; after two clean audits). A simple grievance ladder, committee desk → elders → territory office—handled most issues without escalation. The recognitional piece mattered: custodianship had a role-based share (small but guaranteed) explicitly linked to guarding closed sites and educating in-migrants. This avoided the recurrent fight

over whether custodians were “taking from the community” or “doing community work.” A monitor summarized the shift:

“If the guardian is paid to guard, I can write the warning; before, I was the bad guy and he was the uncle.”

In Inongo, FPIC was compressed and paperwork-heavy. Templates were read aloud once; representation was assumed; and promises of “community projects” substituted for specifics. Benefit flows were opaque and lumpy, a sporadic delivery of materials, per diems for distant workshops, and late cash tranches. Predictably, grievance took the path of least resistance: to the loudest chief or the nearest NGO. Custodians bore the brunt when itinerant workers followed the laxer project schedule; households blamed committees for “eating,” and committees blamed the province for delays. Here, FPIC quality set the tone, and benefit mechanics kept the frustration alive.

At the Ituri–Okapi interface, where liaison protocols named custodians and listed closed ritual zones, tourism benefits were split three ways: a modest guardian stipend, a guide-rotation fund, and camp-level items (tarps, salt). Consent included sacred-knowledge safeguards: certain rituals were off-limits for filming or scripting. This recognitional clause defused the most volatile category of dispute, misrepresentation. Absent those clauses, small cash distributions felt like hush money against enduring disrespect.

“We stopped arguing in the forest once the map showed our grove and the script removed the song,” a custodian noted.

In metrics visible in field logs, sites with recognitional FPIC and role-aligned benefit formulas showed shorter breach-to-remedy times, fewer repeat incidents, and higher voluntary reporting. Where either element was missing, complaints accumulated and voluntary monitoring ebbed. In the worst Greek cases (exclusive closures), and the weakest DRC cases (compressed FPIC, opaque flows), legitimacy deficits persisted into the next season, visible in lower volunteerism, thinner participation at meetings, and operators struggling to recruit local guides. The mechanism is straightforward: voice first, value next. Get the right people in the room with time to decide; pay the work that keeps rules alive; make problem-solving easy. Everything else, tourism quality, patrol efficiency, even biodiversity proxies, rides on that foundation.

6. Discussion

6.1. Cross-case synthesis: testing and refining propositions

These comparative findings show that firm behavior in community forests is best explained not by the mere presence of “participation,” but by configurations that join ontological anchoring with authority-in-practice and venue quality. Where sacred meanings were formally recognized, guardians possessed actionable authority, and decision venues were both binding and information-rich, firms reliably shifted into co-governance/complement roles. Where any of those switches was missing, firms drifted toward substitution (operating as de facto rule-setters) or, at the extreme, enclosure

(temporary privatization of access and voice). This configuration logic extends polycentric governance arguments by specifying which levers move behavior first and why (Carlisle and Gruby 2019; Weible 2020; Langridge and Ansell 2024), and it advances the relational turn by showing how what a forest is to people becomes a causal input into rule formation and compliance (West et al. 2020).

P1 (Ontology → compliance mode) gains precision. Sacred anchoring produces “thick” internal compliance—boundary rules and sanctions grounded in taboo, ritual authority, and custodianship. The Greece–DRC comparison shows that this compliance remains high under protected or CFCL overlays when custodianship is procedurally recognized (named representatives, taboo calendars annexed to permits). In Epirus, such recognition lowered external enforcement costs; in DRC CFCLs, codifying site-specific sacred rules prevented the dual-rule drift that emerges when generic conservation language overwrites lived norms. The refinement is therefore P1': sacred anchoring increases internal compliance; formal recognition of custodianship in protected/CFCL procedures is the moderator that converts that compliance into system efficiency (Marini Govigli et al. 2024; Stara et al. 2015; Zhang et al. 2023; West et al. 2020).

P2 (Guardianship strength → bargaining/enforcement) becomes authority-in-practice. Authority travels on three legs—standing, mandate, and resources. Across CFCL sites, committees with co-signature powers but no operating budget (fuel/airtime/stipends for monitors) struggled to verify, escalate, or remedy breaches; firms defaulted to faster counterparts (provincial

offices, side-letters with individual leaders). Conversely, small recurring budgets turned paper standing into negotiation leverage (wider buffers, closed-site clauses, grievance windows) and remedy capacity (regular checks, credible stoppages). In European debates on guardianship (e.g., Rights-of-Nature models), this translates to a design lesson: authority without resources is consultation by another name (Lescuyer et al. 2019; Kahui et al. 2024; Rehnström 2025). Thus P2': guardianship predicts bargaining and enforcement only with operating resources.

P3 (Venue quality → firm role) identifies two first-order axes. Polycentric governance emphasizes multiple centers and bridging arenas; the data indicate that firms pivot first on bindingness (co-signature, enforceable clauses, veto windows) and information symmetry (shared live calendars and alert channels). When both are high, as in integrated boards in Epirus and in Bikoro's co-signed forums, operators internalize local rules, self-report, and reschedule proactively: co-govern/complement becomes the rational strategy. When either axis is weak (ad-hoc consultations; “paper” CFCL committees), firms substitute their own operating logic; when both are weak (exclusive concessions with no representation), firms enclose. Transparency (public ledgers/minutes) and representation depth (stable seats, alternates, stipends) then stabilize co-governance over seasons. This creates P3': firm roles pivot first on bindingness and information symmetry; transparency and representation depth consolidate gains (Carlisle and Gruby 2019; Langridge and Ansell 2024; Weible 2020).

P4 (Consent + benefits → legitimacy) reframes consent as recognition and functional. FPIC/consultation generated legitimacy when custodianship was named as a constituency and when benefits financed the work that sustains rules (caretaking, signage, patrol airtime) alongside visible local public goods. In both Epirus and Bikoro, role-aligned benefits converted suspicion into cooperation and kept grievances proportionate and local; in Inongo and under exclusive Greek concessions, compressed or generic consent plus opaque or one-off benefits seeded lingering disputes. Thus, P4' is proposed: FPIC raises legitimacy when custodianship is explicitly recognized and benefit-sharing funds custodial/public-good functions; otherwise, distributional conflict crowds out consent (Larsen and Chanthavisouk 2024; Kengoum et al. 2024; Montgomery et al. 2024).

In addition, concentrations of legal knowledge, finance, and monitoring capacity outside the community correlated with substitution/enclosure, consistent with critiques of market-led conservation and temporal enclosure (Jaramillo and Carmona 2022; Dawson et al. 2024). These cases add that calendar compression-donor or permit timelines that ignore sacred/seasonal rhythms, can neutralize otherwise strong guardianship and venues, pushing systems toward substitution despite good paper rules. The implication is that temporal governance belongs alongside authority and venue design in models of business-commons interaction.

Taken together, these refinements consolidate the RPC architecture. They show how ontology becomes institution (through recognition), how authority becomes power

(through resources), and how venues become behavior (through bindingness and information symmetry). They also translate directly into design levers that scholars and practitioners can act on, recognition clauses, guardianship budgets, venue upgrades, and role-aligned benefits, thereby answering calls to make commons governance both theoretically rigorous and managerially legible (Carlisle and Gruby 2019; Langridge and Ansell 2024; Weible 2020).

6.2. Contributions to theory and business design implications

This study advances a RPC account that links what forests are to people with how power and coordination actually work when firms enter community-managed landscapes. Rather than treating “culture,” “participation,” and “collaboration” as parallel conversations, the framework shows how ontological anchoring, guardianship-in-practice, and venue quality combine to move firms toward co-governance or, alternatively, toward substitution and enclosure. In business terms, the contribution is to convert diffuse calls for “stakeholder inclusion” into a small set of designable switches that shift behavior quickly and predictably (Carlisle and Gruby 2019; Weible 2020; Langridge and Ansell 2024).

First, RPC endogenizes ontology as governance technology. Work on the “relational turn” and relational values argues that human–nature relations shape what counts as a good outcome (West et al. 2020; Chan et al. 2016; Pascual et al. 2021), yet these insights often remain at the level of values or ethics. These findings specify an institutional pathway: meaning → rules-in-use → compliance mode. “Sacred” anchoring

generates thick internal compliance and durable boundary rules; that compliance is converted into system efficiency only when recognition mechanisms embed custodianship within protected/CFCL procedures (named representatives, taboo calendars annexed to permits). This refinement (P1') connects the relational turn to the Ostromian insight that rules are effective when locally legitimate and legible to officials, turning culture from context into infrastructure (Ostrom 2010; Poteete et al. 2010; West et al. 2020).

Second, RPC translates authority into guardianship-in-practice. Legal and policy debates often assume that conferring standing or creating a committee is sufficient (O'Donnell and Talbot-Jones 2018). This comparative evidence shows authority moves on three legs (standing, mandate, and operating resources) and that the resource leg is constitutive, not ancillary. Co-signature without a fuel/airtime budget leaves verification and escalation to chance; small, recurring resources transform paper authority into bargaining power and remedy capacity, including enforceable clauses and credible stoppages. This sharpens Rights-of-Nature and community forestry discussions by insisting that budgets are part of the institution, not an implementation afterthought (Lescuyer et al. 2019; Kahui et al. 2024; Rehnström 2025). In proposition terms (P2'), guardianship predicts bargaining and enforcement only when paired with the means to act.

Third, RPC specifies which features of collaborative venues matter first, turning polycentric governance into a practical blueprint. Polycentric theory highlights the advantages of multiple decision centers and

bridging arenas (Weible 2020; Langridge and Ansell 2024), but it rarely distinguishes the levers that most quickly alter firm calculus. These cases identify bindingness (co-signature, veto windows, enforceable clauses) and information symmetry (live shared calendars, single alert channels) as the primary axes that shift operators from opportunistic scheduling to co-governance behaviors like rescheduling and self-reporting. Transparency (public ledgers/minutes) and representation depth (stable seats, alternates, modest stipends) then consolidate those gains across seasons. This is the newest P3': firm roles pivot first on bindingness and information symmetry; transparency and representation depth keep the system from sliding back. The implication for B&S is that "collaboration" is not a generic good; it is a bundle with a sequence, get the two first-order axes right, then add the stabilizers (Ansell and Gash 2008; Emerson and Nabatchi 2015; Greenwood et al. 2021).

Fourth, RPC reframes consent and benefits as recognitional and functional institutions. FPIC or consultation generated legitimacy when the process named custodianship as a constituency with standing, and when benefits funded the work that sustains rules (caretaking, signage, patrol airtime) alongside visible local public goods. Where custodianship was dissolved into an undifferentiated "community," or where benefits were purely cash/one-off donations, distributional grievances crowded out consent and eroded cooperation. This is the P4': consent elevates legitimacy when role-aligned benefits and recognitional representation are present; otherwise, it performs like a checkbox (Schreckenberg et al. 2016; Zafra-Calvo et al. 2017; Dawson et al. 2018).

Finally, RPC situates power asymmetries and time as enclosure drivers. Prior work documents how market instruments can produce “temporal enclosures” and sideline local institutions when capital, legal knowledge, and monitoring capacity sit off-community (Jaramillo and Carmona 2022; Dawson et al. 2024). This addition is that calendar compression, donor or permit timelines that ignore ritual/seasonal rhythms, can neutralize otherwise strong guardianship and venues, pushing systems toward substitution even with good paper rules. This adds the dimension of temporal governance as a moderator future scholars should model explicitly.

The practical implications for business design emerge directly from these findings. Recognition clauses that annex sacred calendars and closed sites, naming custodians as co-signatories with veto windows, convert relational norms into enforceable rules-in-use (Marini Govigli et al. 2024; Stara et al. 2015). Guardianship budgets, small, recurring funds for verification and escalation, are not a luxury; they are the mechanism that turns standing into power (Lescuyer et al. 2019). Venue upgrades should prioritize bindingness and information symmetry first; transparency and representation depth then lock in co-governance (Carlisle and Gruby 2019; Emerson and Nabatchi 2015). Role-aligned benefit-sharing should fund custodial functions and local public goods before undifferentiated cash, aligning procedural, distributive, and recognition justice in a single architecture (Larsen and Chanthavisouk 2024; Montgomery et al. 2024).

7. Conclusion

This study explains why firms sometimes co-govern community forests and at other times substitute or enclose them. The answer lies in configurations, not slogans: when sacred meanings are formally recognized, guardianship has standing, mandate, and resources, and decision venues are binding and information-rich, firms rationally align with community rules. Where any of these switches is missing, operator logic tilts toward substitution, and, under exclusive deals, toward enclosure.

Comparing Greece with DRC strata made the mechanism visible. Sacred anchoring generated thick internal compliance; recognition translated that into low enforcement costs. Small, recurring resources converted paper authority into bargaining power and remedy capacity. Venue quality, especially binding co-signature/veto and live information symmetry, shifted operator behavior within a single season. Consent that named custodianship, coupled with benefits that fund custodial work and local public goods, stabilized cooperation; generic consultation and opaque or one-off benefits did not.

For business scholarship, the contribution is an actionable RPC framework and a set of levers managers and policymakers can actually pull: annex sacred calendars and closed sites; name and fund guardians; upgrade venues for bindingness and information symmetry; design role-aligned benefit sharing. These moves turn cultural legitimacy into enforceable rules-in-use and make collaboration the best strategy for firms, not a charitable add-on. In short, when meaning,

authority, and venues are designed together, business–commons relations shift from friction to shared governance, and from fragile compliance to durable stewardship.

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