| RESEARCH ARTICLE

Governing the Commons through Rule Hybridity: Interactions Between Formal Institutions and Informal Norms in CPR Management

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| ABSTRACT

This article discusses the relationship between formal institutions and informal norms in the governance of common-pool resources (CPRs). Moving beyond the separation of legal and customary rule systems, the article conceptualizes governance as a hybrid process that is shaped by overlapping norms, actor behavior, and institutional layering. This article draws on three comparative case studies in community forestry in Nepal, canal irrigation in South India, and coastal fisheries in Ghana to explore synergies, substitutions, and conflicts between dual rule systems at the operational, collective-choice, and constitutional levels. Findings show that governance outcomes such as compliance, sustainability, and legitimacy are not determined by whether rules are formal or informal, but by the degree of congruence between local values and power structures. The article advances institutional theory by extending the Institutional Analysis and Development (IAD) framework to account for institutional hybridity and legal pluralism. It shows that legitimacy and effectiveness in CPR management are a result of mutual recognition, negotiated authority, and norm alignment rather than solely top-down enforcement. Recommendations emphasize the need to incorporate culturally embedded norms into formal governance systems, support inclusive decision-making, and build adaptive rule structures that respond to socio-ecological feedback. This research has practical implications for environmental policymakers, development practitioners, and scholars in designing more context-sensitive approaches to CPR governance.

| KEYWORDS

Common-property resources, institutional analysis, IAD framework, formal institutions, informal norms, rule configurations, collective actions, governance structures, hybrid institutions, participatory resource management, institutional pluralism, resource governance, Elinor Ostrom, sustainable commons, community-based management.

| ARTICLE INFORMATION

1. Introduction

The governance of common resource domains constitutes one of the oldest problems in institutional economics, development studies, and environmental policymaking. These resources—such as community forests, inland fisheries, communal pastures, and shared irrigation systems—find utility from groups that can and will tend to be over-exploited in the absence of definitions of ownership rights and enforcement regimes. The issue of CPR Governance is further compounded since, in practice, it often involves multiple actors, overlapping jurisdictions, and pluralistic legal systems. The nature of the interface between formal and informal institutions adds to those layers of complexity since both influence, in many respects, access, governance, and conservation behavior.

The classical account of common property dilemmas revolves around Hardin's (1968) assertion of the tragedy of the commons, which infers that, by rational individual self-interest, shared resources will tend to be depleted. Although Hardin's approach introduced an awareness and research into CPR matters, it has been criticized for being too simplistic and for disregarding governance at the local level. By contrast, in 1990, Elinor Ostrom revolutionized the discussion around self-governed institutions

to manage CPRs, eventually arriving at the conclusion that communities can govern resources successfully when they fashion their own rules, systems for monitoring, and ways to sanction. Her work laid the foundation for the Institutional Analysis and Development framework, which conceptualizes the institutional arrangements around the governance of resources.

Though Ostrom and others laid a good foundation for understanding local governing arrangements, much remains about how formal and informal institutions interact on the ground: these two systems may cooperate side-by-side or clash. Many CPRs are housed in environments where state policies and customary norms both regulate behavior, but not, however, always harmoniously. For example, a legal regime that issues land titles to private individuals may work against decades-old practices of communal resource sharing. On the other hand, informal social sanctions might be able to enforce sustainability while the law cannot. Knowledge of the first normative system with regard to the second is fundamental to ensure sustainable and inclusive governance of CPRs.

1.1 Problem Statement
Despite extensive research regarding CPR governance, many policy frameworks and academic analyses have continued to treat formal and informal institutions as separate or mutually exclusive systems. In reality, these systems tend to intersect with each other, overlap, or sometimes counteract with each other. Considerably, it is an issue when the intervention of policy measures based on formal institutions such as environmental regulations or land reforms ignore the deep-seated set of informal norms that local communities exist with as a mechanism for resource access and dispute resolution. Therefore, excessive dependence on informal norms without a legal basis could, perhaps, obstruct scaling up and applying such informal systems into a formal governance framework. Hence, in most instances of institutional mismatch, we may observe issues of compliance, disputes, and unsustainable controversies (Cleaver, 2012; Meinzen-Dick et al., 2004).

1.2 Study Objectives
The article investigates the synergies and conflicts existing between formal and informal norms in managing common property. Under the auspices of the IAD theoretical framework, the article analyzes the ways in which institutional rules, formal and informal, shape actor interactions, resource use, and governance outcomes in CPR settings.

The key objectives of this study are;
· Analyze the interaction between formal institutions and informal norms in CPR governance;
· Apply the IAD framework to map the structure and functioning of mixed institutional environments;
· Study and assess outcomes of different configurations of rules across selected CPR cases;
· Propose policy recommendations for adaptive and integrated governance approaches.

1.3 Significance of the Study
Understanding the institutional pluralism existent in CPR governance is increasingly relevant for development practitioners, environmental policymakers, and land users at the local level. Yet, conventional top-down approaches find limits in situations where formal laws lack social legitimacy or where weak state enforcement does not pursue their application. In quite a few cases, informal systems can work well, locally, but somehow lack the ability to withstand external pressures such as commercialization or political interference. This study presents a refined approach to looking at how institutional interactions affect collective action, compliance, and sustainability in CPR settings.

1.4 Theoretical Framework: The IAD Model
The Institutional Analysis and Development framework provides a systematic way to analyze how institutions affect decisions and outcomes in shared-resource environments (Ostrom 2005). A central concept within IAD is the "action arena," which refers to the array of interactions among actors, characteristics of the resource, and rules-in-use that produce an outcome. These rules-in-use are further bifurcated into three levels:

· Operational rules: Generally those rules under which day-to-day decisions are made (e.g., who can harvest, when to harvest, and how much can be harvested)
· Collective-choice rules: Rules concerning the making or changing of operational rules
· Constitutional rules: Define who submits to the collective-choice rules; in other words, they determine who can participate in decision-making processes

In any case, most informal norms govern operational-level decisions, while most of the formal institutions govern constitutional arrangements. A mapping exercise to determine how these levels exist in relation to one another will, thus, assist in identifying possible institutional complementarities and/or conflicts.
Table 1. Types of Rules in the IAD Framework

Rule Level	Description	Typical Examples
Operational Rules	Day-to-day resource use decisions	Harvest timing, rotation rules, communal sharing norms
Collective Rules	Rules that modify operational rules	Village council resolutions, seasonal bans, forest committees
Constitutional Rules	Who can make/change rules and how	National laws, land titling policies, legal recognition of user groups

Source: Adapted from Ostrom (2005) and Crawford & Ostrom (1995)

1.5 Conceptualizing Formal and Informal Norms

This study is based on the distinction between formal and informal institutions. Formal rules are codified, legally enacted, and enforced by bureaucratic or legal authorities. These comprise land laws, environmental laws, or water-use licensing systems. Informal norms are unwritten rules, coming from cultural traditions, kinship systems, religious beliefs, or general consensus of the community. In the absence of a legal binding, the norms remain largely enforced through social means: shame, ostracism, or social shame could be worth the price.

Which type of norm should be prioritized in CPR governance?

Formal Institutions

Provides legal enforcement and structured rules, ensuring compliance and stability.

Informal Norms

Offers high local legitimacy and flexibility, adapting to community needs and practices.

Source: Helmke & Levitsky (2004); Cleaver (2012); Ostrom (1990)

1.6 Case Contexts: Pluralistic Institutional Environments

This study looks into how institutional dynamics work in practice by drawing upon three empirical caseloads spanning continents and CPR types:

Community forestry in Nepal-where local user groups exist alongside the state forest department

Canal irrigation systems in South India-characterized by government water distribution schemes alongside farmer-defined norms;

Coastal fisheries in Ghana-where formal fisheries policies come into conflict with traditional marine taboos and chief-led governance.

These cases will allow us to investigate the different variations actor interaction, rule configurations, and governance outcomes exhibit under varying institutional pressures. Thus, by applying the IAD model in these settings, we offer an analytic platform for developing further both theory and policy.

1.7 Structure of the Article
Section 2 of the article reviews the existing literature in the field of CPR governance, formal and informal institutions, and the IAD framework. Section 3 draws up the conceptual model and explains the research methodology. Section 4 gives an in-depth description of the case analyses. Section 5 considers the consequences of institutional interactions for governance outcomes. Section 6 wraps things up by offering recommendations for policy and appreciation for theory.

2. Literature Review
2.1. Common Property Resources and Governance Challenges
The CPR concept has been at the heart of numerous debates in environmental governance, political economy, and development studies over the past few decades. Feeny et al. (1990) distinguished CPRs by their two characteristics-one is rivalry (the use of resource by one person removes the resource from another) and two being non-excludable (pressing difficulty is faced to prevent others from using the resource). These two features endanger the CPR under scenarios of over-use and degradation, especially without clear institutional arrangements.

The early CPRs writing was deeply influenced by Garrett Hardin's (1968) interpretation of the "tragedy of the commons" where he stated that in absence of interference, individuals acting in rational self-interest end up depleting shared resources. Hence, on his thesis, Hardin propagated either privatization or a strong central control as the only solution. However, the thesis that was highly deterministic was later refuted by Elinor Ostrom (1990), whose fieldwork findings have shown that local-level communities are able to self-organize the formulation of workable rules for managing their resources sustainably.
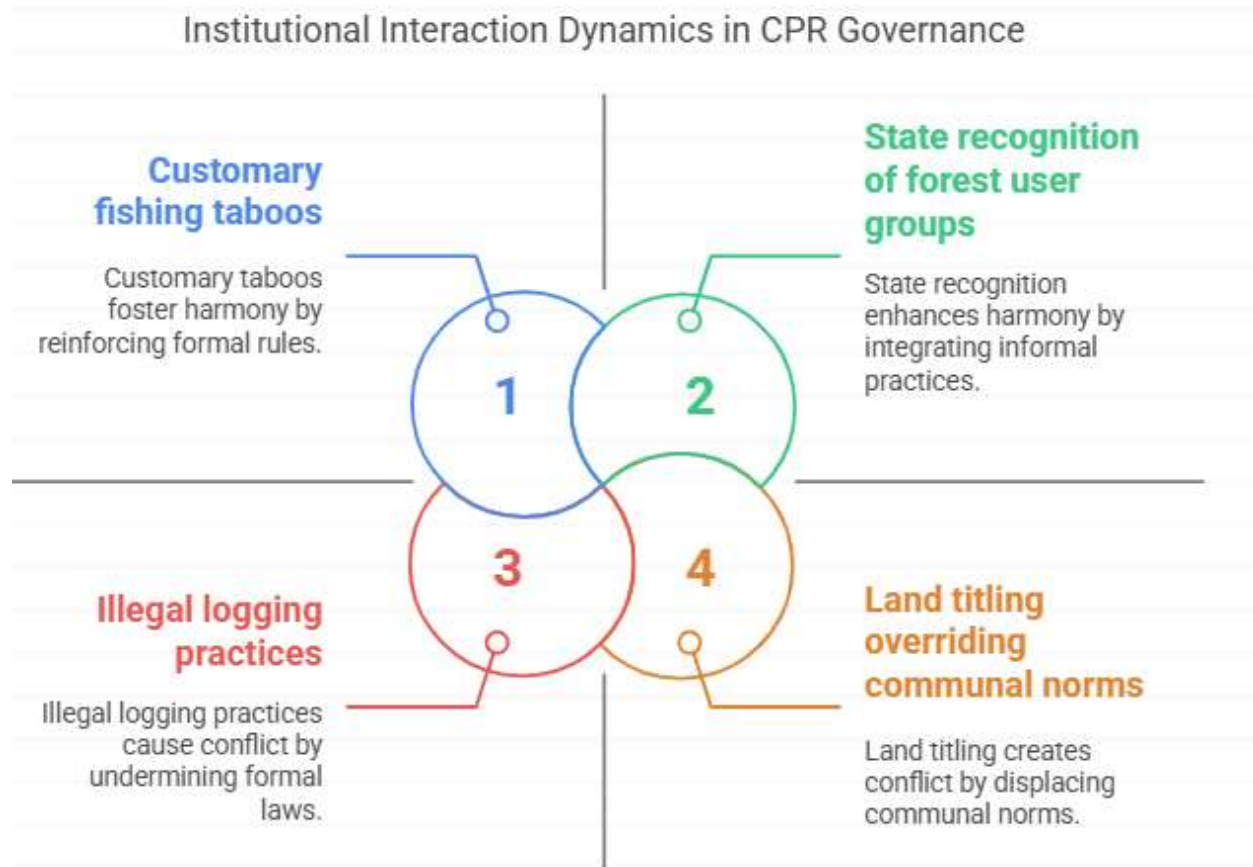
Ostrom reframed the governance of CPRs as an institutional design problem and stressed that multiple systems of rules could evolve spontaneously from within communities to regulate access and use. This gave rise to Institutional Analysis and Development (IAD) framework, which has since become one of the most well-known methodological approaches in the study of CPRs and institutional dynamics (Ostrom, 2005).

2.2. Formal and Informal Institutions: Definitions and Interactions
According to North (1990), institutions are the "rules of the game" that guide human interaction. Institutions can differ depending on whether they are considered formal or informal (laws, norms, regulations, social customs, traditions, taboos, values). An institution that is formal is one set up by conscious design, laid down in laws or regulations. Formal institutions are designed once and left set, whereas informal ones are subject to cultural or social change and hence keep mutating with the evolutionary process.

Helmke and Levitsky (2004) argue that the interaction between formal and informal institutions is considerably more complicated than one might expect. Rather than being substitutes or entirely independent of formal institutions, informal institutions coexist with formal institutions, contest them from time to time, or complement formal institutions in shaping political outcomes. For instance, in CPR cases, legal property rights might be superimposed upon areas already governed by informal arrangements in ways that might cause conflict or compliance problems or might spur innovation in terms of new forms of rule-making.

Research by Cleaver (2012) takes this notion further by describing "institutional bricolage" as communities working with hybrid governance systems consisting of components derived from both formal and informal sources. This adaptive mingling tends to resonate more deeply in terms of local priorities, values, and power relationships. Notwithstanding, much of the policy literature is still largely addressed to formal or informal institutions separately, ignoring the hybrid existence of CPR governance.

Institutional Interaction Dynamics in CPR Governance

Customary fishing taboos

Customary taboos foster harmony by reinforcing formal rules.

State recognition of forest user groups

State recognition enhances harmony by integrating informal practices.

1   **2**

3   **4**

Illegal logging practices

Illegal logging practices cause conflict by undermining formal laws.

Land titling overriding communal norms

Land titling creates conflict by displacing communal norms.

Source: Adapted from Helmke & Levitsky (2004); Cleaver (2012); Andersson & Ostrom (2008)

2.3. The Institutional Analysis and Development (IAD) Framework

The IAD framework arises from the work of Ostrom and associates to allow for a unified language and an analytical structure for discussing institutional arrangements (Ostrom, 2005). At the center is the so-called action arena, wherein actors interact amid a set of physical, cultural, and institutional constraints. The rule systems guiding these interactions are called rules-in-use by Ostrom and fall into three categories:

Operational rules relate to making decisions in daily life (e.g., when to harvest and how much to harvest);

Collective-choice rules address how one set of operational rules can be created, changed, or altered by another set of operational rules, possibly through a motion passed by a local committee;

Constitutional rules govern who has the source of authority to take collective decisions (e.g., state agencies, or traditional leaders).

By nature, the IAD framework is thus suitable for analyzing CPRs because it can include many layers of governance and show ways in which changes in rules at one level cascade across other levels. It can also allow an assessment of the institutional setting with respect to certain criteria, such as efficiency, equity, accountability, and sustainability (Ostrom, 2005; McGinnis, 2011).

2.4. Empirical Applications of the IAD Model

Various scholars have conducted empirical studies applying the IAD framework to analyze various CPR settings, ranging from forest management in Nepal (Agrawal & Chhatre, 2006) to water governance in Mexico (Meinzen-Dick, 2007) and fisheries in the Philippines (Pollnac et al., 2010). Within these studies is evidence of the IAD's ability to constrain the flow of actor-centered situations, the varying characteristics of resources, and the dynamics of institutional rules.

However, a pronouncedly handicapping constraint stands in the majority of IAD applications under these theories as downplaying the informal norm. As noted by Clement (2010), the IAD allows for informal practices but, for the most part, operates with the assumption for these to be systems alongside formal ones rather than interdependent systems. Such a limitation is rather deleterious in a context where legal pluralism is the norm, such as postcolonial states or customary tenure regimes.

To fill this gap, Andersson and Ostrom (2008) and Scott (2013) argue that a major integrative approach should be taken where informal institutions are not treated as a residual or secondary, but co-constitutive of governance systems. For doing so, one needs to revisit some of the assumptions under the IAD and perhaps extend its categories to better capture institutional hybridity.

2.5. Case-Based Institutional Complexity
When different forms of institutional interface are compared, the comparative case studies have produced several insights. For example, the forest user groups are recognized by law in the Nepalese community forestry program and they operate under a system of rules which are part state-principled and part local custom (Chhetri, 2001). Hence, such a system can lead to both harmony or friction when it is imposed across ethnolinguistic or administrative boundaries.

In the canal irrigation system of South India, formal water allocation schedules are generally disregarded in favor of local water distribution norms which are negotiated directly by the parties concerned in accordance with seasonal needs and imbalances of power (Mosse, 2003). Likewise, in Coastal Ghana, traditional fishing taboos by the village elders are usually more potent than national fisheries regulations when the latter are seen as corrupt or imposed from outside (Nunan, 2006).

Thus, these cases illustrate the need for institutional models that accommodate dynamic rule-making, legitimacy, and enforcement mechanisms at different scales. Therefore, these cases show that CPR governance is often less dependent upon whether or not the rules are formally good and more dependent on whether or not the rules are socially acceptable and flexible.

2.6. Research Gaps
Despite the growing literature on institutional interaction and CPRs governance, several gaps remain:

·   Limited integration of analyses of formal rules and informal rules into CPR models;
·   Poor utilization of the IAD framework for carrying out mapping of hybrid institutional landscapes;
·   Lack of comparative studies analyzing institutional pluralism across different resource types and cultural settings;
·   Enough concentration has not been given to issues of power, especially how legal reform may disempower customary users and vice versa.

This study fills these gaps by applying the IAD framework to analyze the interface between formal and informal norms across three CPR settings (forests, irrigation, fisheries) in Nepal, India, and Ghana, thus extending the IAD model with an explicit focus on mapping rule interactions, actor strategies, and governance outcomes in hybrid institutional settings.

Table 2. Review of IAD-Based Studies on CPR Governance

Study / Author(s)	CPR Focus	Region	Integration of Informal Norms	Key Contribution
Ostrom (1990)	Irrigation, Forestry	Global	Moderate	Introduced IAD framework, self-governance
Agrawal & Chhatre (2006)	Community Forestry	Nepal	High	Interactions between local and state institutions
Meinzen-Dick (2007)	Water Resources	Mexico	Moderate	Role of nested institutions in water governance
Pollnac et al. (2010)	Marine Fisheries	Philippines	Low	Emphasized role of formal enforcement

Source: Compiled by author from cited literature
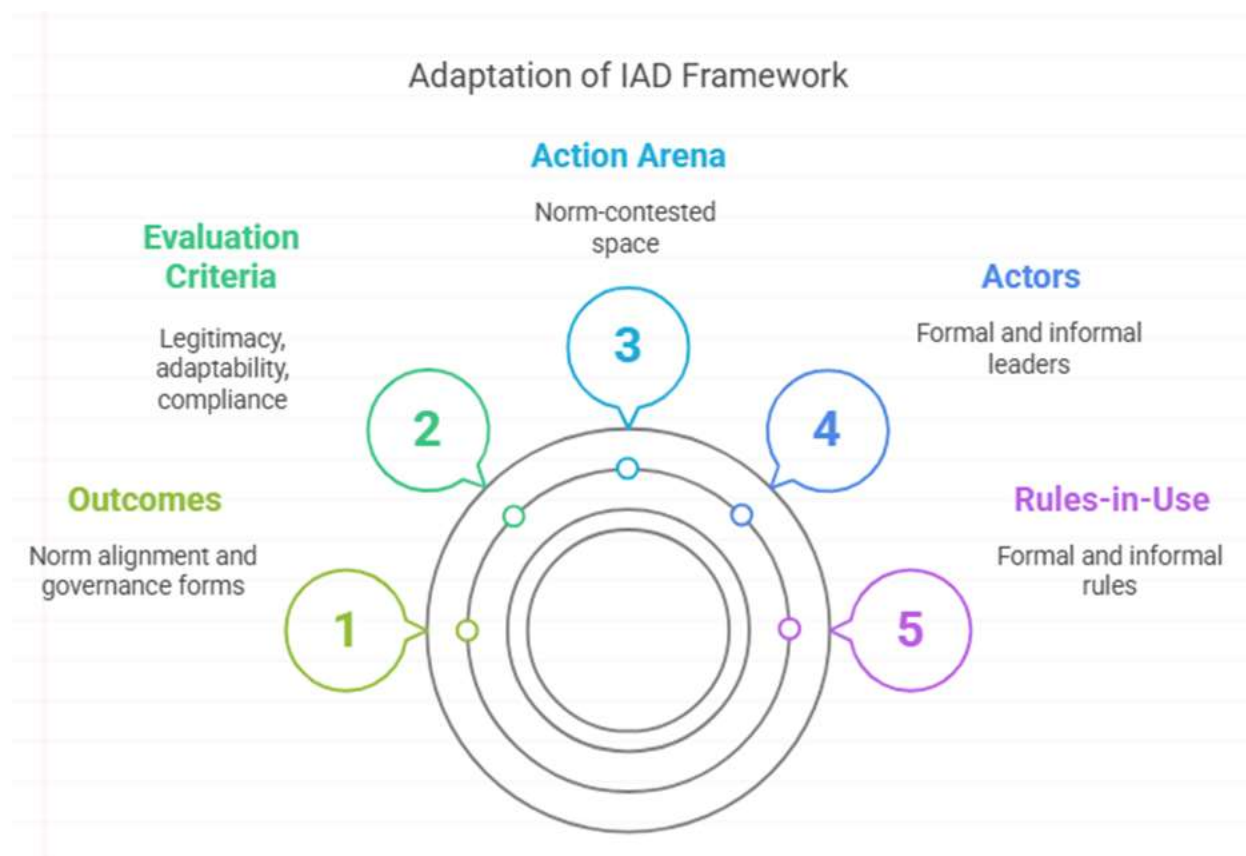
3. Conceptual Framework and Methodology

3.1. Institutional Analysis and Development Framework

Designed for understanding social arrangements in nature and settings, the Institutional Analysis and Development Framework is a most generic-level examination tool applied especially to the governance of respective common property resources (CPRs) (Ostrom, 2005). The strength of the framework lies in bringing into analysis the very complex interactions among actors, institutional rules, biophysical conditions, and governance outcome. The idea is centered around the concept of an "action arena"—the social space where individuals interact with one another under certain sets of rules within some specific resource and community settings.

The IAD framework identifies three types of rules-in-use:

·   Operational rules: Daily functioning of activities taking place (who can use resources, when is it done, under what conditions).
·   Collective-choice rules: Responsible for modification of operational rules and define who may do it (committee, village council).
·   Constitutional rules: Determine who gets to participate in collective-choice processes, typically through formal law or constitutional arrangements.

Yet these are formal/informal, and they coexist and interact at all three levels in many real-life CPR situations-especially those in the Global South. The problem is that, while the original IAD framework modeled the rule levels independently, the original framework does not really show two systems of downward rules operating simultaneously. This research thus proposes an adaptation of the IAD model that explicitly deals with the interactions, frictions, and synergies between formal and informal norms at each of the three rule levels.

Adaptation of IAD Framework

Action Arena
Norm-contested space

Evaluation Criteria
Legitimacy, adaptability, compliance

Actors
Formal and informal leaders

Outcomes
Norm alignment and governance forms

Rules-in-Use
Formal and informal rules

2   3   4
1   5

Source: Adapted from Ostrom (2005), McGinnis (2011), and author's model

3.2. Analytical Interest: Action Arena and Norm Interaction
The study considers an action arena as a unit of analysis, whereby formal actors (such as government officials, legal bodies, NGOs) as well as informal actors (such as customary leaders, local committees, elders) make their decisions under shared or contested rules. The study explicitly examines behavioral patterns, collective choice, and compliance resulting from the conflict or complementarity of rules.

To map dual rule systems at each rule level and thus analyze patterns of rule interactions (interactions of alignment, substitution, conflict, etc.) and their impacts on governance outcomes, a visual scheme is proposed (see Figure 1 placeholder).

3.3. Methodology
The present study is a qualitative comparative case study design. Three cases were selected from different geographical and cultural settings to mirror variation in CPR type, institutional structure, and actor configuration:

· Community Forests Management in Nepal
· Canal Irrigation Governance in South India
· Coastal Fisheries Management in Ghana

These cases are chosen not for statistical generalization but for analytical generalization in order to cast light on the varied configuration of institutional pluralism.

3.4. Data Sources and Collection
Data for the study were collected following a multi-source strategy:

· Secondary literature: Peer-reviewed journal articles, policy reports, ethnographic monographs
· Legal documents: Government acts, policy briefs, forest charters, water bylaws
· NGO documentation: Project evaluations, community charters, development agency reports
· Semi-structured interviews (from secondary data): Community members, policy actors and field officers

Table 3. Case Overview and Key Institutional Characteristics

Case Study	Resource Type	Formal Institutional Actors	Informal Institutional Actors	Key Norm Conflict / Synergy
Nepal Community Forestry	Forest	Forest Department, DFO	Forest User Groups, elders	Synergy in rule enforcement
South India Irrigation	Surface water	Irrigation engineers, PWD	Water turn takers, tank managers	Conflict over water allocation
Ghana Coastal Fisheries	Marine fisheries	Fisheries Commission	Canoe Council, traditional chiefs	Tension over seasonal closures

Source: Compiled from Agrawal & Chhatre (2006); Mosse (2003); Nunan (2006)

3.5. Analytical Approach
The steps used for the analysis of each case from the adapted IAD framework are as follows:

· Recognize the action arena: Define the bounds and actors involved in the CPR setting.
· Mapping rules-in-use: On the operational, collective, and constitutional levels-formal and informal.
· Analyze the processes of interaction: Use typologies and subtypes of interactions from Table 1 (Section 2), according to the norm interactions considered.

Outcomes: Legitimized; against sustainability; against compliance; and against institutional stability.

3.6. Validity and Limitations
The comparative methods increase the external validity while the investigation of recurring patterns of the institution is made in varying contexts. They are, however, subject to limitations; the choice of existing literature and related documentation does not guarantee that informal rule dynamism or power-structure shifts are fully captured. Moreover, although the IAD framework comes into situational expression, it must be interpreted to fit the informal complexity.

4. Case Study Analysis/Findings
In an attempt to illustrate how formal and informal institutional rules coexist and shape the governance of common property in a variety of settings, this study applies the adapted IAD framework to three different CPR contexts, which provide each case with a different set of experiences (from synergy and complementarity up to direct conflict) across the operational, collective, and constitutional levels of rule specification.

4.1 Nepal: Community Forest User Groups
Nepal's community forestry program is often considered among those few cases in the world in decentralized forest governance that have really worked. Legally speaking, Community Forest User Groups (CFUGs) are recognized under the Forest Act of 1993, and this act allows them to develop operational rules for harvesting, protection, benefit sharing, etc.

Informally, however, CFUGs still depend on the village elders for enforcing compliance, along with oral agreements, caste conventions, and seasonal taboos. In many areas of Nepal, forest use rules predated state recognition, and over the years, these rules have been formalized. Hence, this contains an example of a complementary institutional arrangement in which processes derived from legal legitimacy and those fostered from within the local community acceptance reinforce each other.

4.2 South India: Tank Irrigation Governance
Canal irrigation tanks are managed in Tamil Nadu through a formal system of control exercised by the Public Works Department (PWD) engineers on water allocation schedules. Nevertheless, often these formal systems do not take into account the realities at the ground level: such as seasonal variations in monsoons, or variations depending on crop type.
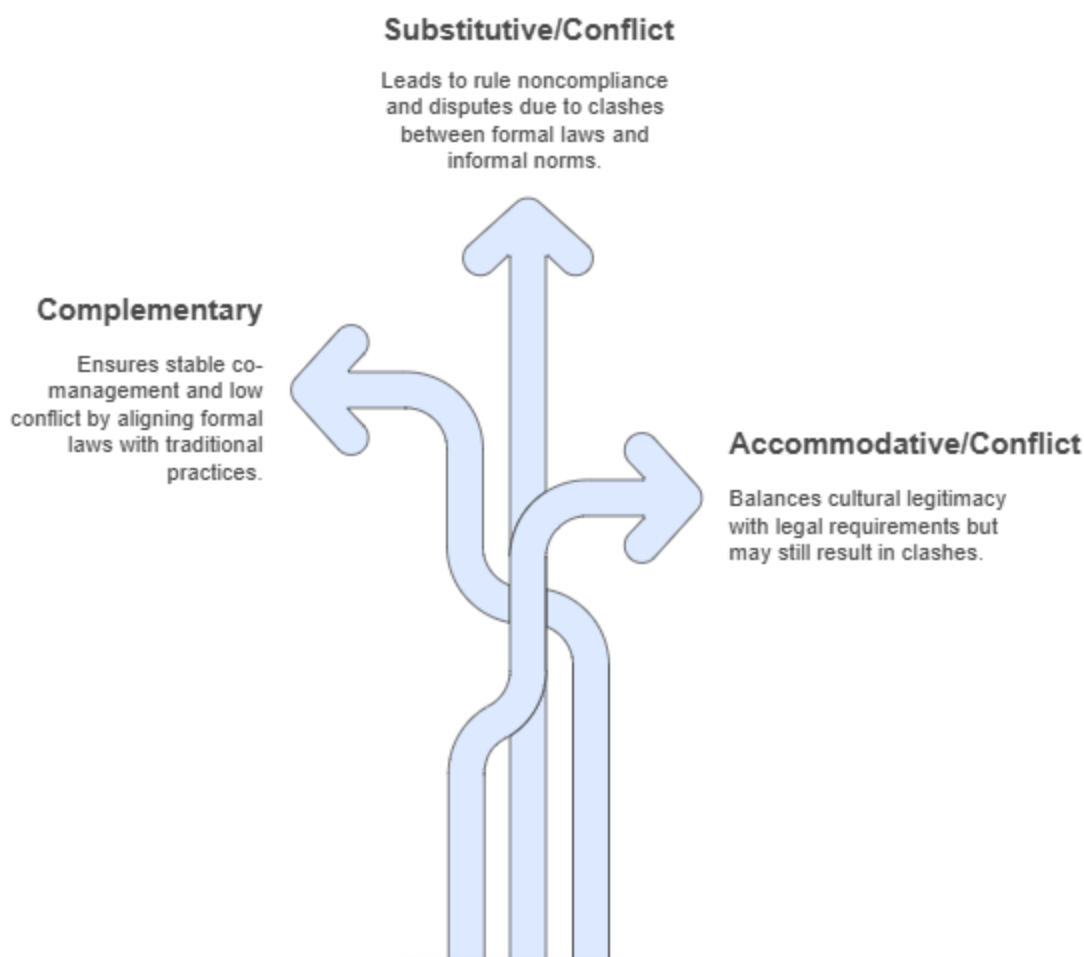
Local farmers, instead, prefer informal schedules negotiated through 'turn-takers' or tank-level water managers who adapt water flows on the bases of social equity, seniority, or mutual comprehension of the contracting parties. These informal rules often stand either in for or in opposition to the formal allocations in dry years, heightening the level of conflict between users and the irrigation bureaucracy.

4.3 Ghana: Coastal Fisheries Management

Along the Ghanaian coastline, the state puts down regulations under the Fisheries Act, including seasonal closures and gear restrictions. However, fishers more often respect their traditional marine taboos enforced by Canoe Councils and the chief fishermen who have moral as well as spiritual authority.

Informal rules, such as "no fishing on sacred days" and gendered space norms, are backed by community sanctions. Institutional friction results when state policies conflict with these norms, for instance when they enforce closures during festivals. In recent times, however, some NGOs have been fostering the integration of customary systems with formal marine protected areas, hinting at a possible accommodation between the two rule systems.

How should formal rules and informal norms interact in resource management?

Substitutive/Conflict

Leads to rule noncompliance and disputes due to clashes between formal laws and informal norms.

Complementary

Ensures stable co-management and low conflict by aligning formal laws with traditional practices.

Accommodative/Conflict

Balances cultural legitimacy with legal requirements but may still result in clashes.

Source: Field-synthesized from Agrawal & Chhatre (2006); Mosse (2003); Nunan (2006)

This section applies the adapted IAD framework to three diverse CPR contexts—forests in Nepal, irrigation systems in South India, and coastal fisheries in Ghana—to examine the interactive dynamics of formal-informal institutions in action. Results exhibit a range of institutional relationships: complementarity in Nepal's community forestry; substitution and conflict in irrigation governance in India; and accommodation and friction in the fisheries of Ghana. These cases demonstrate how hybrid environments of rules affect actor behavior and ultimately compliance and governance outcomes. The comparative analysis

underscores the reality that effectiveness often depends less on whether a rule is formal or informal and more on issues of alignment, legitimacy, and adaptability issues in and across normative systems.
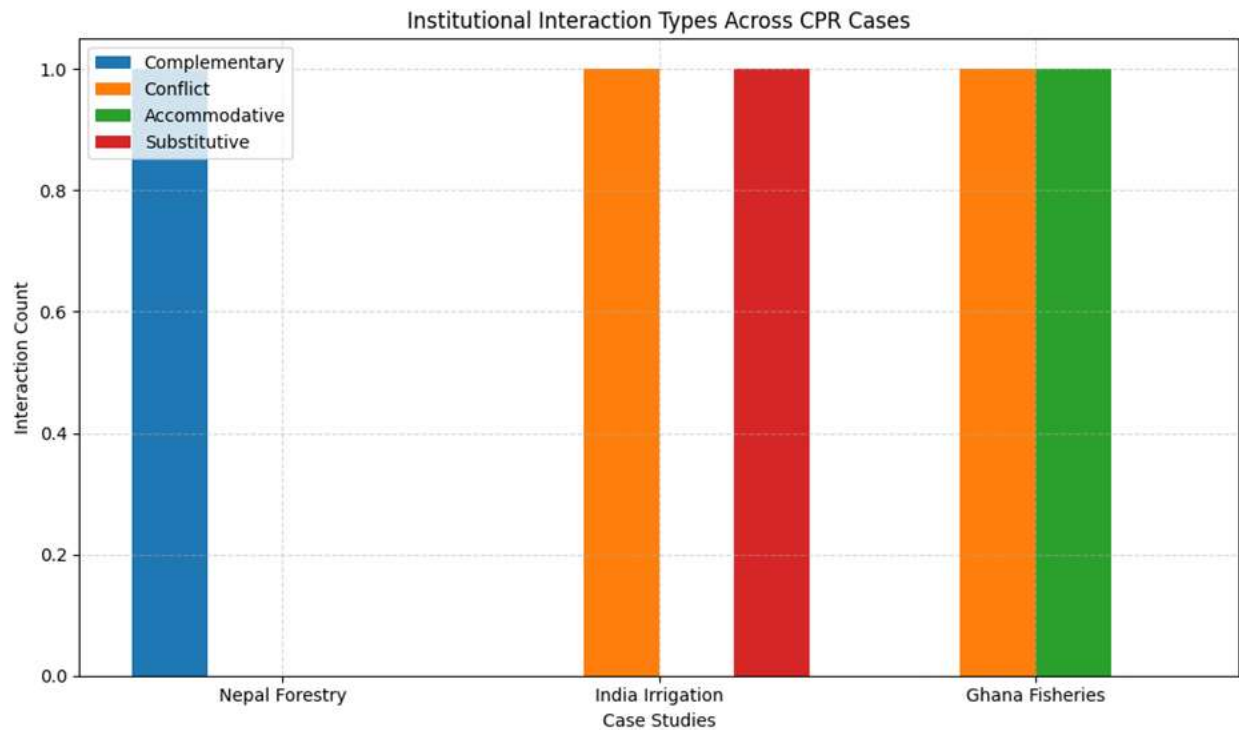
5. Discussion

Nepal, India, and Ghana are three strong examples to show that institutional pluralism is rife in CPR governance and it is frequently necessary to do so in order to effectively manage them contextually. Having formal rules and informal norms side by side does not necessarily entail them being at loggerheads with each other. It is the nature of their relationship with each other, that is, complementing, substituting, accommodating, or competing with each other, that makes the difference in their governance outcomes of legitimacy, compliance, and sustainability.

All these cases further strengthen the point made in Ostrom's work that there is no such institutional design that will work for all. It is the fit between the rule system and the socio-ecological context in which they are being embedded that counts (Ostrom, 2005). Legitimacy becomes a critical yardstick in the hybrid settings. Rules imposed by law will have little chance of being enforced when they are out of sync with cultural resonance, while norms built on shared values can resist erosion even when they are out of sync with formal sanction.

5.1 Theoretical implications for the IAD framework

The original IAD conceptualizes the action arena as a structured setting shaped by rules-in-use. However, this view tends to marginalize the notion of simultaneous legal pluralism and complex norms. The findings in this study thus urge one to reconfigure the arena concept into one of normative negotiation, where legitimacy itself is continually redefined through social learning, conflict, and adaptation.

Hence, a revised take on the rule levels within the IAD framework is proposed:

· Operational level: Informal norms predominate, yet formal institutions intervene to monitor various transgressions
· Collective-choice level: Negotiations between institutional actors run on this level
· Constitutional level: Increasingly open to grassroots pressure and participatory reform, but anchored from above in formal terms

Such an amended understanding may allow for inroads into the realities of CPR governance in situated postcolonial, decentralized, or resource-constrained contexts, whereby institutional layering becomes unavoidable (Scott, 2013; Cleaver, 2012).
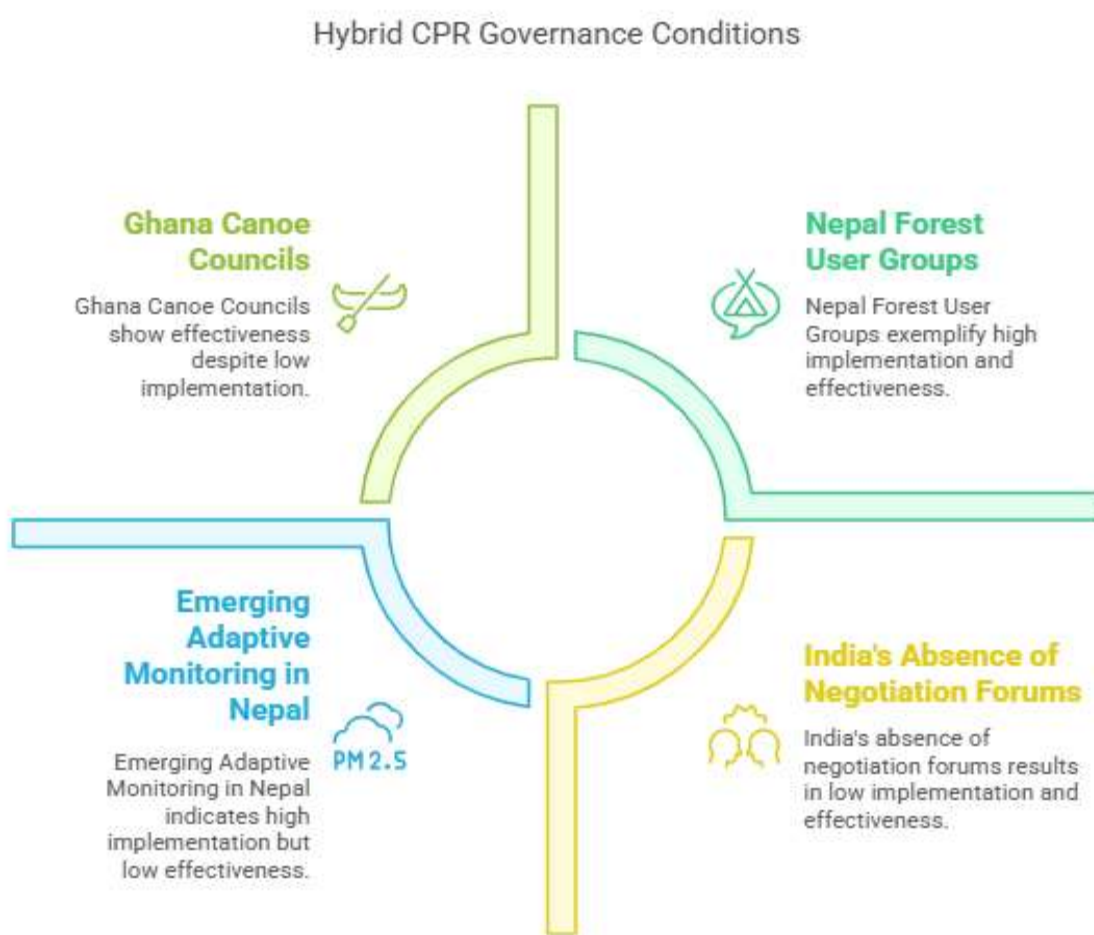
5.2 Hybrid Governance Models

More generally, the cases show that hybrid institutional arrangements-strategic arrangements of state-rule authority in combination with local customs-legitimately offered as potential avenues for sustainable management of CPRs. Such models are based on rule alignment as opposed to rule annulling; thereby, the formal and customary rule systems complement each other rather than compete.

For instance:

In Nepal, user groups build up statutory rights along with traditional authority to apply a top-down mandate with a bottom-up accountability system. In Ghana, NGOs mediate to shift traditional taboos into legally enforceable regulations.

In India, the failure to harmonize top-down and bottom-up rules leads to competition among rules, and both are weakened.

These contrasts suggest that hybrid governance is more than co-existence, and that coordination, recognition, and trust-building are part of the picture.

Hybrid CPR Governance Conditions

Ghana Canoe Councils

Ghana Canoe Councils show effectiveness despite low implementation.

Nepal Forest User Groups

Nepal Forest User Groups exemplify high implementation and effectiveness.

Emerging Adaptive Monitoring in Nepal

PM 2.5

Emerging Adaptive Monitoring in Nepal indicates high implementation but low effectiveness.

India's Absence of Negotiation Forums

India's absence of negotiation forums results in low implementation and effectiveness.

Source: Synthesized by author from case findings

5.3 Policy Implications

The study provides useful insights for policymakers, NGOs, and development agencies involved in CPR governance:

Formalization efforts must not erase informality. Policies must identify and preserve norms that work at the local level as they embed these norms into structures that can be scaled.

The legitimacy of policymaking—that is, the inclusion of customary actors and institutions in the decision-making processes—can serve to increase compliance and lessen enforcement costs.

Donor-funded interventions should not force rigid templates of institutional arrangements on the ground but rather assist platforms for adaptive learning that change in line with local realities.

5.4 Limitations and Future Directions
The study overall provides some valuable insights from the comparative-case analysis, but its lack of primary fieldwork or longitudinal data from primary sources limits its potential. Further research could expand its findings by conducting ethnographic studies, network analysis, or institutional ethnography to map the emerging rule systems. The intersectionality of power, gender, and authority within formal and informal systems needs to be studied as well. Not all informal norms are fair; some act to perpetuate exclusion. Critical institutional analysis is needed in the hybrid governance framework.

5.5 Reframing Institutional Legitimacy
Legitimacy emerges as a central theme in the relationship among normative systems. While formal institutions may lay claim to legal-rational authority, at least in theory, they are deemed ineffective when they fail to conform to local realities. On the other hand, informal norms may lack any statutory force but are often held with greater moral-practical authority by their community. This dichotomy is what Cleaver, (2012) calls the "institutional interface" - a grade of interaction where the processes of compliance are negotiated not only through fear of sanction but through collective identity, moral obligation, and shared histories.

For example, in Ghana, the Canoe Councils derive their respect not because they have legal enforcement, but from a lineage of customary stewardship, spiritual belief, and communal consensus. Similarly, in Nepal, the fairness perceived in the community forest rules ensures a high degree of compliance among local people, despite the very dissuasive level of formal penalties. These examples seem to challenge the view that implementation can best be secured through statute and punishment; rather, the suggestions underline arguments of social legitimacy and moral economy.

5.6 Negotiating Power and Representation
They cannot resolve contradictions from within. Informal norms may safeguard extant inequities by excluding certain voices (e.g., women, migrants, lower castes) and often stand in opposition to necessary reforms. Hence, the aspects of power in informal institutions must, in the same way, be analyzed and questioned as those in formal ones (Ribot & Peluso, 2003).

Thus, effective hybrid governance must institute mechanisms to ensure inclusive participation and accountability at many levels. In the irrigation systems of India, for instance, informal scheduling generally benefits the dominant contractors and landholders, which creates inequities in water allocation and leads to social tensions. Lacking legal barriers or forums to address grievances could allow these arrangements to cement elite control further instead of democratizing access to resources.

The tension, therefore, suggests that hybrid governance should retain an unequal valorization of norm systems; that is, one in which local values get an entry point into formal frameworks but will not preclude rights-based protection and social justice.

5.7 Institutional Resilience Through Norm Synergy
The collaborative functioning of formal and informal norms may foster—or diminish—institutional resilience. Rules that contradict and conflict with one another result in fragile governance, which is prone to contestations. Where such institutions draw from their mutual strengths to be complementary, they stand to subsidize additional adaptive capacity in conditions of environmental variability or socio-political change.

Resilient hybrid systems would have:

· Polycentric authority structures that sidestep over-reliance on one institutional center;
· Lay-down layers of enforcement that combine legal authority with social accountability;
· Normative coherence such that actors identify consistency alongside fairness within rules.

In Nepal, some degree of this may be observed in how forest user groups and government forest departments co-function. The success there, therefore, lies less in institutional design per se than in conscious efforts to create trust, iterated rule-making, and joint monitoring.

5.8 Suggestions on Institutional Design
Informed by the empirical record and theoretical reflections, a number of suggestions are proposed for policymakers, donors, and practitioners in the governance of CPRs:

Engage with informal systems early and meaningfully during program design. Avoid tokenistic "consultations" which treat local institutions as secondary.

Formalize what works: Where customary rules have worked well and are inferred to be equitable, they deserve consideration for legal recognition—provided they do not contravene constitutional rights.

Create interfaces-tennis boards, co-management boards, or some deliberative forum-where actors representing diverse rule systems can interact transparently.

Support capacity-building for actors of both formal and informal persuasions, particularly negotiation, monitoring, and inclusive means of governance.

Be reflexive: institutional consideration should be based on periodic reviews designed to make changes to rules as appropriate to social or ecological feedback, rather than being locked into fixed modes.

5.9 A Broader Theoretical Contribution
This study contributed to institutional theory by expending the IAD framework to more realistically reflect rule hybridity, norm plurality, and contested authority. It argues that informal norms, rather than being treated as background variables or residual customs, must be accepted as active and constitutive components of institutional arrangements.

Moreover, the research proposes that the IAD evaluation criteria-efficient, equitable, sustainable-should be embedded in legitimacy frameworks. What is "efficient" differs between communities, especially when measured against norms of reciprocity, justice, and relational harmony.

6. Conclusion
In the study of formal and informal institutions in CPR governance, the IAD framework was employed as a guiding lens. Using case studies from Nepal, India, and Ghana, it was determined that the best possible solution was a combination of coexisting formal and informal institutions that were legitimate, capable, and malleable. Instead of competing as two camps against each other, hybrid governance emerges as a more effective alternative when the two worlds of formal and informal norms are brought together. However, the challenge lies in an effort to achieve this goal of inclusivity and transparency, as well as making sure that all institutional actors recognize each other. By becoming more accommodating of normative pluralism, the study also contributes to the realm of theory and practice in a way that sustainable governance of CPRs can only be effective if it is handled by those with both the legal authority of the state and the cultural authority of the community.

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