

## EVIDENCE ON BIODIVERSITY CONSERVATION IMPACTS



Assessing Theories, Approaches, and Outcomes from Community Engagement and Tenure

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## A. Abstract

Community engagement is widely assumed to facilitate and enhance the environmental and human outcomes of conservation interventions. However, while community engagement is broadly applied, empirical evidence of their impact remains unclear. We sought to examine the connections between the dimensions of engagement, governance/land tenure, and outcomes via a systematic assessment of peer-reviewed literature. Our study illustrated that the current evidence base is insufficient to carry out such an analysis and uncovered clear deficiencies in research on this topic. Community engagement approaches are not coherently defined to allow comparison and evaluation, research efforts generally focus on a few regions and lack longevity and robustness, and there is an overall trend towards surface-level community participation and continued state control of land. Our results suggest that increased cross-sector and historical learning is required in order to test rigorously test current assumed pathways to impact.

**Key Words:** Biodiversity conservation, community engagement, land tenure, systematic map

## B. Introduction

Global initiatives increasingly emphasize the importance of community engagement in nature-based conservation for achieving both natural and human well-being objectives (e.g., Sustainable Development Goals 2014). Involving people in conservation through more inclusive, participatory approaches was in part a response to decades of failed interventions (Berkes, 2004; Ghimire and Pimbert, 1997). Motivations for engaging communities in conservation range from moral (e.g. equity, democracy, development) to pragmatic (e.g., knowledge and efficiency). Rights-based and development arguments for community engagement emphasize equity and empowerment objectives — for example, formalizing and strengthening customary rights to land and resources (Robinson et al., 2018), providing pathways out of poverty (Shyamsundar et al., 2018), and building and securing power to participate in decision-making (Agrawal and Chhatre, 2006). Engaging communities in conservation also has practical arguments, such as that participation by a broader body of stakeholders (including communities) leads to a greater likelihood of adoption of practices and program compliance, especially around natural resource use (Berkes, 2007). Increasingly, culture and local knowledge of communities are regarded as critical components for designing effective conservation programs (Poe et al., 2013).

In response, a wide range of participatory approaches for engaging communities in conservation have emerged over the years (Mace, 2014), predominantly aimed at achieving positive outcomes for both natural ecosystems and poverty reduction (Reed, 2008; Roe et al., 2013). Community engagement approaches span the range in terms of stakeholder involvement, from stakeholders as passive beneficiaries to stakeholders as key players in the design, implementation, and management of conservation programs (Sterling et al., 2017). While it is broadly assumed that community engagement will enhance biodiversity outcomes, reduce poverty, and empower local communities (Adams & Hutton, 2007; Berkes, 2007; Mace, 2014; Decker et al., 2016), recent criticisms have emerged, citing community engagement approaches' failure to deliver (e.g., Robinson and Redford, 2001). In particular, more often than not, the responsibilities given to local stakeholders as part of the engagement process are unrealistic, as they lack commensurate authority or appropriate systems of financial or human capital to provide structures that would support these strategies' long-term success (Reed, 2008). In this sense, understanding the governance context is key to determining who has the rights and abilities to participate and exercise power in the decision-making process regarding natural resources.

Governance is a critical concept in multiple fields of inquiry, including political discourse, policymaking, and human development (Smith et al., 2003; Grindle, 2004; Robinson et al., 2018). However, given its multidisciplinary nature, governance is often vaguely defined. Here, we define governance as the formal and informal institutions through which authority and power are organized and exercised (Larson and Soto, 2008). Governance encompasses rules and structures as well as norms and processes whereby access, use, and decision-making authority around natural resources are determined. As it causally links community engagement in conservation to natural and human well-being outcomes, governance is an important enabling condition to consider when identifying mechanisms for change. However, despite decades of implementation and research, there remains a significant lack of clarity regarding whether and which community engagement approaches lead to greater achievement of desired objectives. Thus, understanding how the dynamics between different governance and community engagement approaches affect conservation and poverty reduction outcomes is critical to effective program design.

### B1. The importance of context and governance

For conservation practitioners, a wide diversity of community engagement approaches has evolved since the early days of primarily exclusionary methods (Mace, 2014). While emergent approaches, such as integrated conservation and development projects (Brown & Wyckoff-Baird, 1992), payments for ecosystem services (Gaworecki, 2017), REDD+ (Brown, 2013), carbon finance (Ravikumar et al., 2017), and ecotourism (Brandon, 1996), share common goals (mitigating threats to nature, Kappel, 2005; TNC, 2003), their characteristics and implementation vary from case to case, resulting in significant inter- and intra-approach variation. Within these approaches, conservation can lead to improvements in human well-being both directly and indirectly. Direct pathways tend to emphasize improvements to local conditions, neutralizing or removing drivers for unsustainable resource use and environmental degradation (Brown &

Wyckoff-Baird, 1992). Indirect pathways tend to prioritize improvements in natural resources and environmental conditions that when achieved will provide sustained benefits for local communities (e.g., through ecosystem services and financial/material capital) (Atkins et al., 2011; Gaworecki, 2017). Approaches to securing community participation and cooperation tend to fall into two broad categories: (1) provision of employment and monetary incentives in conservation programs (Kiss, 2004; Pattanayak, 2010; DeCaro & Stokes, 2013) and (2) participation in planning, implementation, and monitoring of interventions (DeCaro & Stokes, 2013; Oldekop et al., 2016). Practically, the second type of incentive is thought to secure local buy-in (thus ensuring long-term sustainability) and result in more effective designs that incorporate cultural context, foster local ownership, and build awareness and capacity (Danielsen et al., 2009).

For community engagement to be effective, proper governance structures must be in place, as they determine who can participate, engage, and make decisions in a conservation program. Good governance (e.g., reduced corruption, sustainable resource use, increased representation and prioritization of marginalized people) is widely seen as a critical driver for improved human well-being. For example, representation of impoverished populations in decision-making processes can lead to poverty reduction (Grindle, 2004) and improved conservation outcomes (Armitage et al., 2012; Decker et al., 2016). Furthermore, improved tenure security of local people (establishing, enforcing, and adjudicating rights to use and access natural resources) typically improves human well-being (Lawry et al., 2016).

Insecure tenure and weak governance are a major problem in many developing countries around the world, often regions of prime conservation concern (Bruce et al., 2010). Legacies of conflict and colonialism have resulted in complex, and often inequitable, systems of property rights and representation that can impede conservation and development goals (Kelly and Peluso, 2015). More recently, efforts to secure tenure have focused on decentralization and devolution of rights to customary structures and local communities (Sunderlin, 2011). However, devolution of rights can also exacerbate local inequities if not accompanied by broader cultural changes, widening the gap in existing power structures that often reflect ethnic, socioeconomic, and gender discrimination (Craig & Porter, 2003; Platteau, 2004).

While early conservation operated under the assumptions of Hardin's Tragedy of the Commons (1968), implementing state and private tenure over natural resources, modern practice recognizes the potential of stable communal governance of shared resources (Ostrom, 1999) for effective conservation (Cox et al., 2010). Increasingly, community-based ("bottom-up") strategies are being implemented to build local capacities and secure rights while accomplishing sustainable resource management (Roe, 2015; Biggs et al., 2016; Berkes, 2007). While the importance of a secure tenure and governance context is well understood within conservation, how tenure and governance lead to improvements to social-ecological systems as a whole remains unclear (Robinson et al., 2017; Sunderlin et al., 2014). For example, while there is strong evidence that improving and securing local communities' tenure over natural resources can improve natural resource quality (Gautam et al., 2006), it can also provide incentives to invest in agricultural intensification (Brasselle et al., 2002) or fail to prevent overexploitation (Cinner, 2005). The social-ecological systems within which poverty, land use, and biodiversity conservation are linked are complex and adaptive, making the understanding of key contextual features, in this case governance, essential to informed application of community engagement to conservation.

Several recent reviews have examined linkages between land governance (e.g., bundle of rights) and environmental outcomes (Ojanen et al., 2017); the impact of community-based conservation on ecological, economic, attitudinal, and behavioral outcomes (Brooks et al., 2013); and linkages between stakeholder engagement and biodiversity conservation outcomes (Sterling et al., 2017). While these reviews are encouraging, they remain limited in scope, examining narrow dimensions of interventions and/or outcomes. Additionally, these reviews highlight the lack of clarity regarding how community-engagement approaches are designed. Moreover, despite increasing attention from both the conservation practice and research arenas, it is unclear how specific community engagement approaches are best suited for different contexts. This is particularly worrisome given widespread concerns that current conservation and development practices are inadequate in the face of declining biodiversity and rising global poverty. This suggests a disconnect between theory and real-world outcomes. Thus, to understand how best to achieve win-win outcomes for conservation and poverty through natural resource

management, we need greater clarity regarding how community-engagement approaches are designed and how they interact with different governance/resource contexts.

## B2. Objective

This paper's objective is to use systematic synthesis methods to assess the state of the peer-reviewed evidence base on community engagement interventions linked to terrestrial conservation projects. Specifically, we aim to examine the relationships between different engagement approaches and land tenure/governance structures. Systematic synthesis methods are a powerful approach for assessing the state of current knowledge and identify critical knowledge gaps within a policy-relevant framework (Pullin et al., 2004; Stewart et al., 2005). These methods are considered a "gold standard" for reviews, as they employ a reproducible and transparent method that aims to minimize bias (Pullin & Knight, 2001).

## C. Methods

We conducted a scoping review that employs a systematic strategy for searching for and mapping the evidence base (Dicks et al., 2017) to explore characteristics of community engagement approaches and understand their relationship to governance structures. This review was undertaken as part of a joint initiative, the Conservation Solutions Lab, between Arizona State University and Chemonics International Inc., which seeks to build knowledge and evidence-based approaches for more effective community engagement in conservation. As the intention of this review is primarily exploratory, it is not meant to be exhaustive, but rather a representative assessment of the body of knowledge concerning community engagement in conservation.

### C1. Search strategy and comprehensiveness

We searched multiple online publication databases to capture a comprehensive sample of the literature. In total, we used two academic search engines (Scopus and CAB Abstracts) and one bibliography of a systematic review (Sterling et al., 2017) in 2018. Given the diversity of disciplines around community engagement research, substantial variation in terminology is likely. Thus, to be as comprehensive as possible, the search string was iteratively designed and tested in Scopus, examining search results for relevance (Appendix 1).

### C2. Article screening and study eligibility criteria

After compiling results from the search strategy, recovered articles were screened according to an a priori set of eligibility criteria:

- a) The article must address a biodiversity conservation intervention
- b) The article must discuss community engagement of some kind in conjunction with the conservation intervention (e.g., community led initiatives, co-management, streaming of monetary benefits to local people/communities)
- c) The article must include studied outcomes of the community engagement as a component of biodiversity conservation (further details in Exhibit 1)

### Exhibit 1. Eligibility by study subjects, interventions, outcomes, and study types

Eligible subjects	Biodiversity conservation interventions (according to the IUCN Conservation Measures Partnership typology of Conservation Direct Actions, Salafsky et al., 2008).
Eligible interventions	Community-engagement approaches carried out in conjunction with conservation intervention (community-led initiatives, co-management, flow of monetary benefits to local people, etc.). Approaches can either be parallel to or embedded within the conservation intervention.
Eligible outcomes	Measures of change to ecosystems (habitats, landscapes, species); human well-being (encompassing multidimensional poverty); and behavioral change.
Eligible study types	All study types were considered.



All articles were screened in Colandr (Cheng et al., 2018). An initial set of titles and abstracts (n=2186) were screened by two reviewers (AR, SC) to ensure consistency in screening. All remaining titles and abstracts were screened by one reviewer.

### C3. Data coding strategy

For the purposes of this study, we distinguished between articles (an individual paper) and studies (an individual case). An article could report on multiple case studies. Each study was coded with a standardizing coding tool and codebook to extract relevant data. The coding tool was piloted on a set of initial studies by two reviewers (AR, SC) to ensure consistency. Initial results were reviewed, and the coding tool refined with a group of interdisciplinary researchers from the Conservation Solutions Lab. Remaining articles were coded by one reviewer. The coding tool was deployed in Microsoft Excel.

The following categories of data were extracted from included studies:

- Biographical information
- Study attributes
- Characteristics of the conservation intervention
- Human well-being outcomes
- Theories of change utilized in the design of projects
- Tenure and related governance actions
- Characteristics of the community engagement

### C4. Analysis

Information on community engagement approaches was coded for each study along with a set of key dimensions based on participation, motivation, incentives, and rights to create a cross-comparative classification scheme (Exhibit 2). This framework draws from established trans-disciplinary literature on engagement including ladder of participation based on the stage of involvement, motivation/incentives, and scale of participation (Arnstein, 1969; Mostert, 2003; Reed, 2008). We used a hierarchical clustering approach to heuristically identify likely types of engagement approaches based on these six categorical variables. We calculated a dissimilarity matrix using Gower's distance using the package "cluster" (Maechler et al., 2018) in R (R Core Team, 2018). Likely clusters were identified using agglomerative clustering ("stats," "dendextend" packages) (Galili 2018). Distribution of characteristics over each cluster were mapped as percent of overall studies within a single cluster.

#### Exhibit 2. Key community engagement dimensions coded for during data extraction

Community Engagement Dimensions	Characteristics
Motivations for involving the community	Biodiversity benefits, community benefits, both
Scale	Local, sub-national, national, regional, international
Project leadership	<ul style="list-style-type: none"> <li>• External vs. internal</li> <li>• Selection process</li> </ul>
Community definition and focus	<ul style="list-style-type: none"> <li>• General vs. specific</li> <li>• Were particular interventions for particular subgroups of people?</li> </ul>
Incentives for involvement	<ul style="list-style-type: none"> <li>• Yes/no</li> <li>• Types of incentives</li> <li>• How were incentives selected?</li> <li>• How often were incentives provided, and how many?</li> </ul>
Level of involvement of the community	<ul style="list-style-type: none"> <li>• When was engagement initiated in the project timeline?</li> <li>• How did the community participate in the project at different stages?</li> </ul>



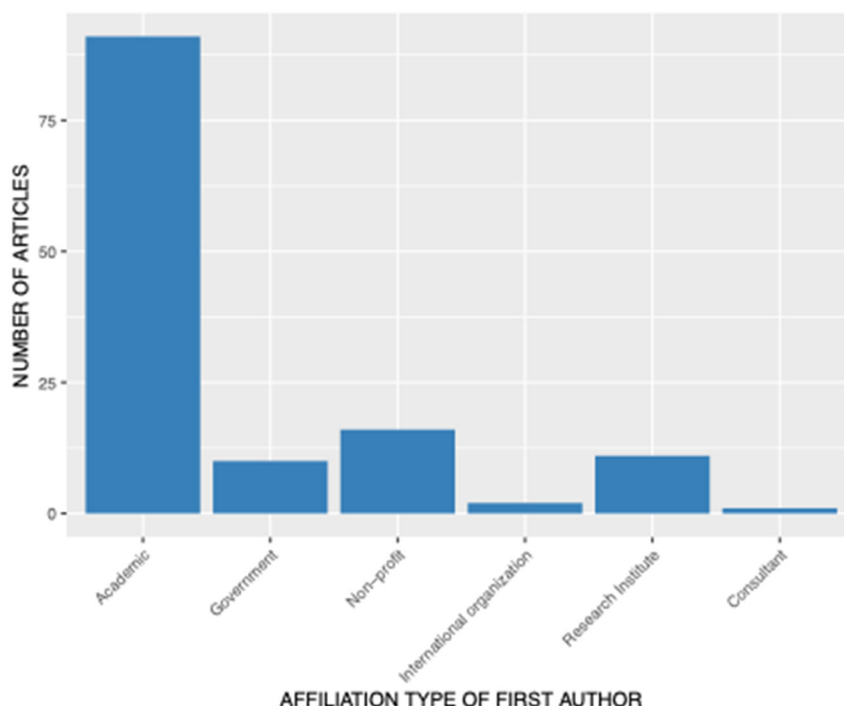
For this analysis, we interpret governance as the rules and institutions that determine access and management of natural resources. We considered four primary types of governance: (1) state-owned lands and resources, the rights to which primarily belong to and are controlled by the government; (2) private lands whose legal ownership belongs to a single user, family, company, etc.; (3) communal lands which may be administered by traditional authorities as common property of the community; (4) mixed, within which there may be a mosaic of land types or shared control of resources. Governance actions were also identified during the coding process as emergent themes (Creswell, 2012), and include (1) devolved to local control, (2) legal ownership, (3) de facto/status quo control by the community, (4) co-management/evolving negotiation, (5) state control, and (6) mixed.

## D. Results

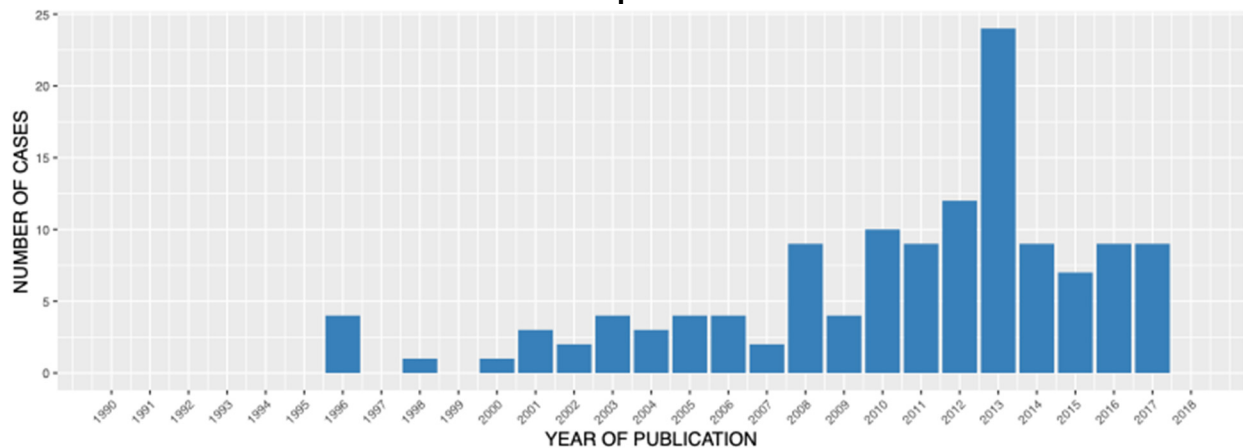
The initial dataset comprises 252 studies (204 articles). The following analysis focuses on a subset of 168 studies (137 articles) that focus on terrestrial ecosystems (including forests, grasslands, deserts, wetlands, and urban environments).

### D1. Characteristics of the peer-reviewed evidence base (terrestrial focus)

**Exhibit 3. Frequency of first author affiliation types**

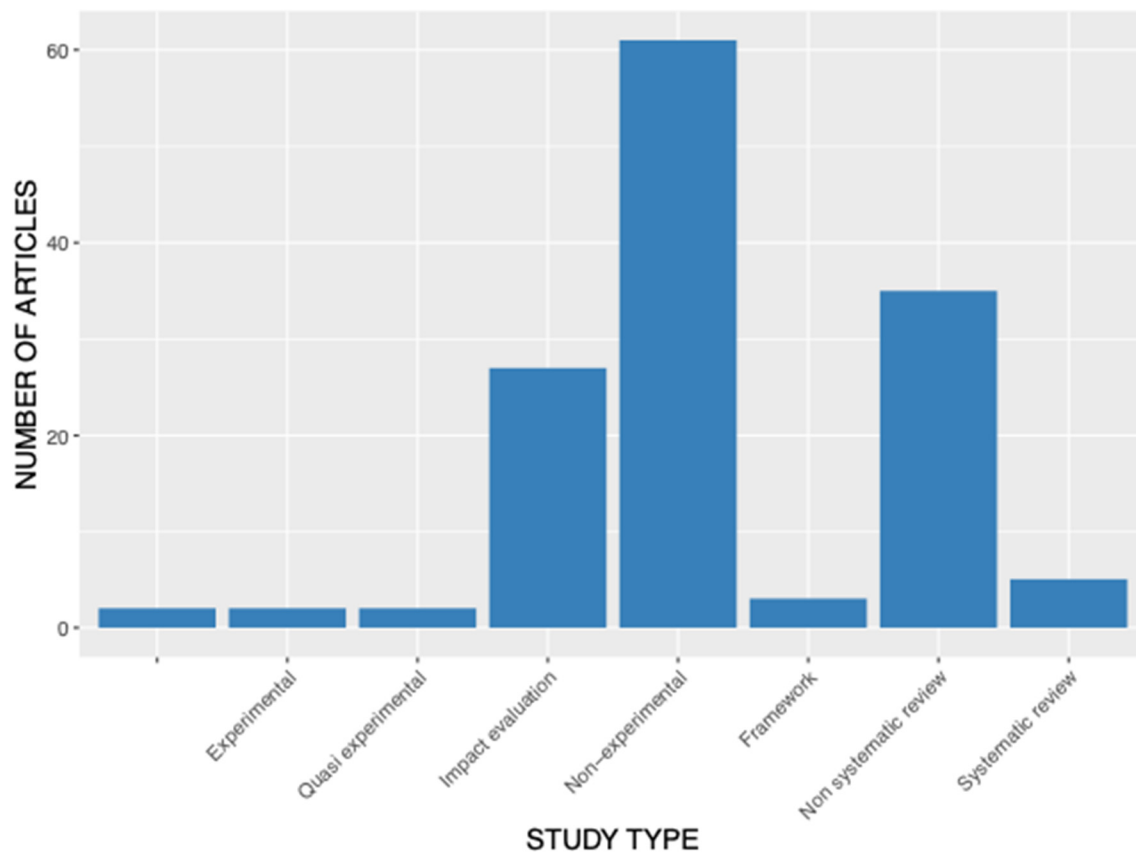


**Exhibit 4. Growth of publications over time**

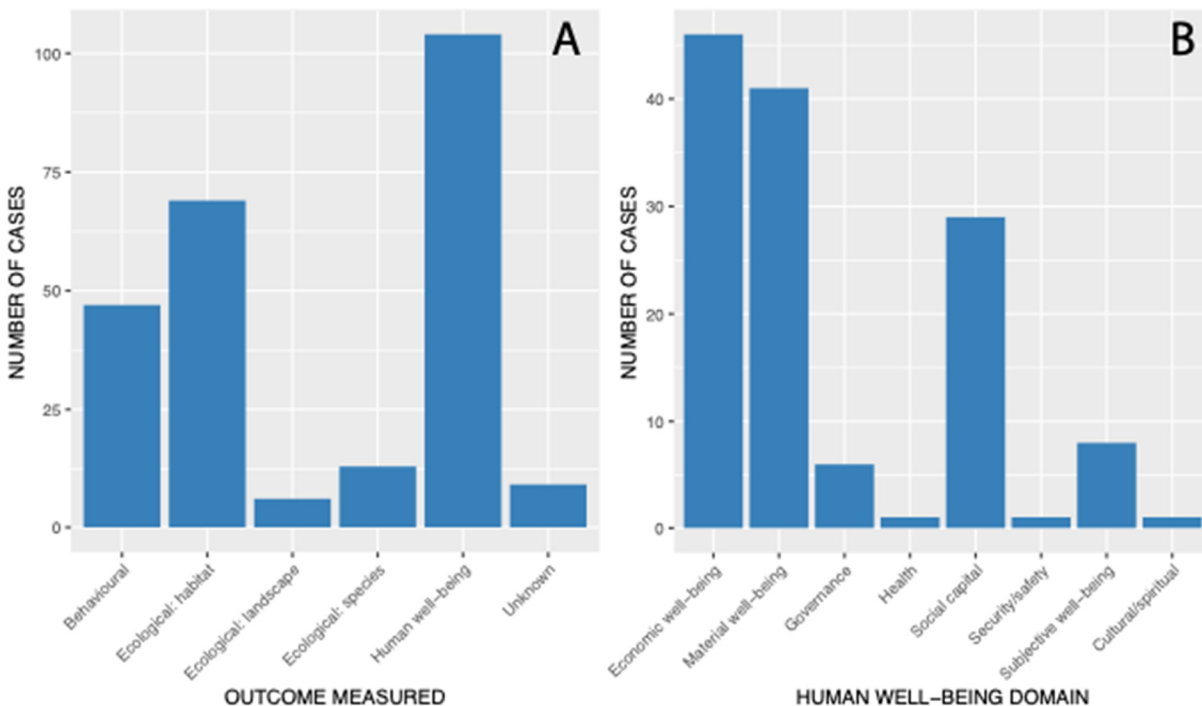


Most articles were led by authors at academic institutions (66 percent, Exhibit 3). Among these authors, 23 percent (n=31) were working directly with/in the organization implementing the community engagement and biodiversity conservation intervention. The number of articles published increased over time, with the most appearing in 2013 (Exhibit 4).

**Exhibit 5. Frequency of study design type (unlabeled column includes studies lacking information)**



**Exhibit 6. Frequency of (a) ecological, behavioral, and human well-being outcomes examined in the evidence base and (b) frequency of domains of human well-being**



Most articles used a non-experimental study design (Exhibit 5) to examine the impacts of community engagement approaches on ecological, behavioral, and human well-being outcomes. Overall, a majority of cases examined effects on human well-being (Exhibit 6A), focusing specifically on economic (n=46 cases) and material well-being (n=41 cases). Several also examined impacts on social capital, such as change in conflict, community cohesion, and trust (n=29 cases). Comparatively, other elements of human well-being, such as cultural and spiritual values, health, safety and security, and rights and participation, were under-examined (Exhibit 6B). A considerable number of cases examined habitat-level impacts (e.g., forest/habitat cover) as well as changes in individual behavior (e.g., change in harvest practices, or attitudes towards conservation). Many articles that claimed to measure ecological and human well-being outcomes in fact measured some type of behavioral change, such as in management practice or perceptions of conservation. While these are not true measures of either change in ecosystems or well-being, they could represent intermediate outputs required to achieve those outcomes.

D2. Geography of cases examined

Exhibit 7. Geographic distribution of study locations

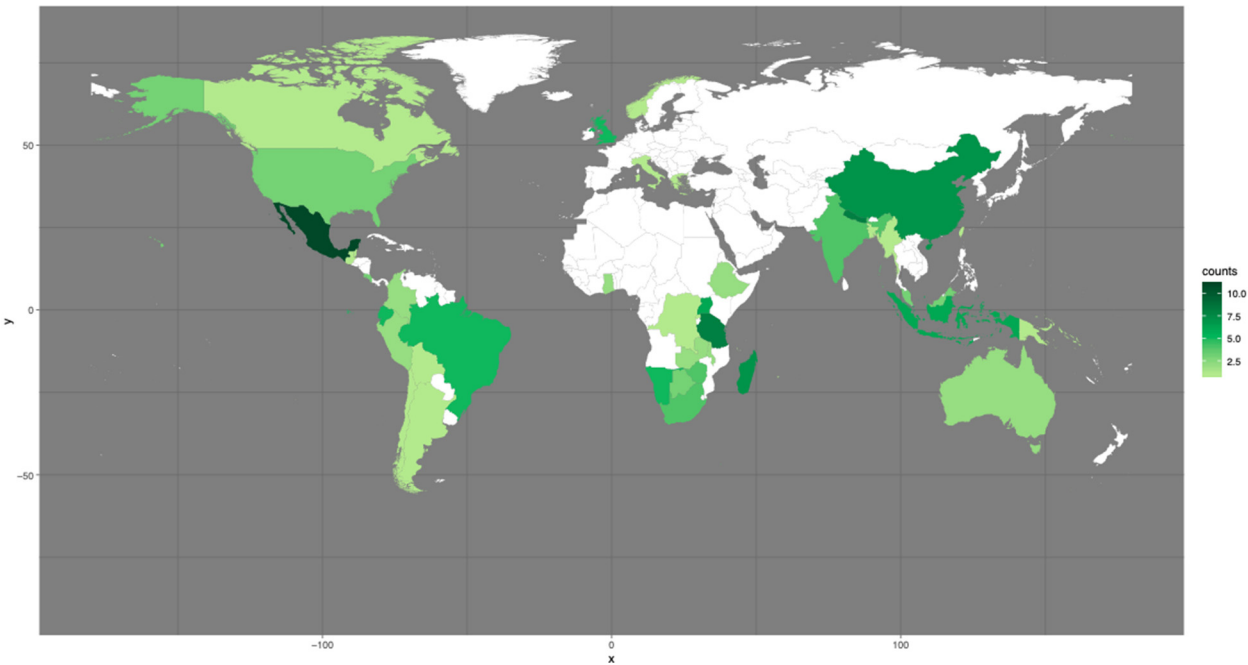
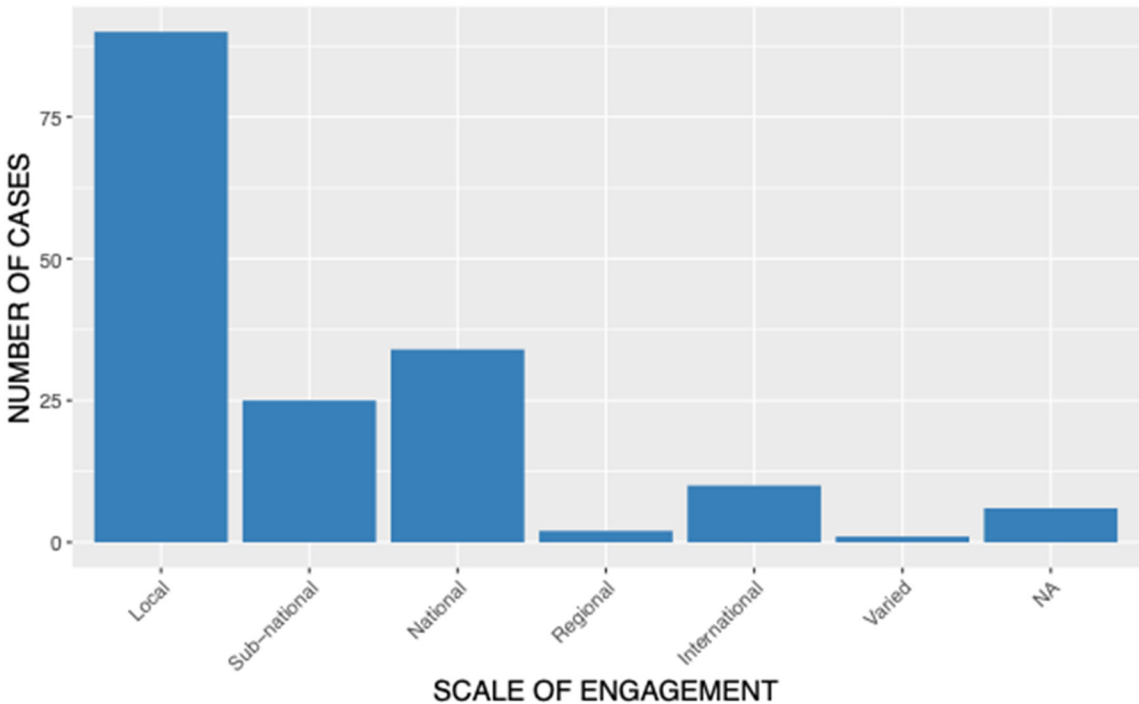


Exhibit 8. Frequency of scale at which community engagement was examined within the evidence base

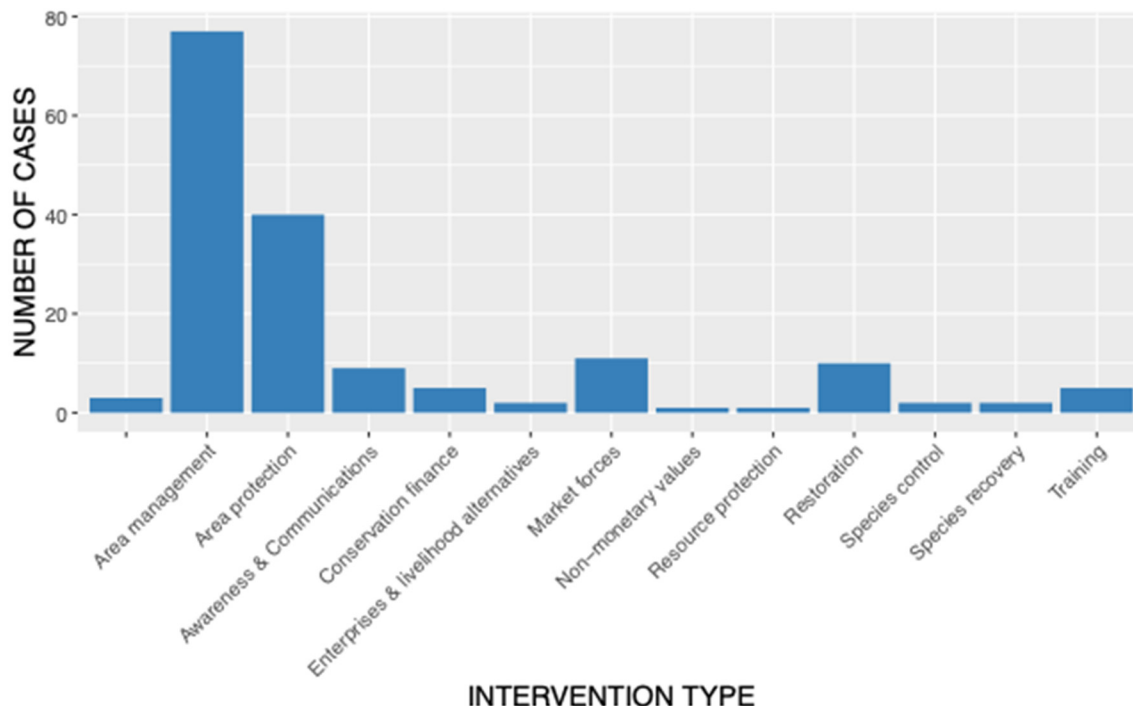


Cases spanned a wide geographic range, with a higher concentration of study effort in Latin America; eastern and southern Africa; and East, South, and Southeast Asia, and relatively less in northern Africa,

Europe, and western Asia (Exhibit 7). A majority of studies occurred in forests (n=113, 67 percent) or grasslands (n=15, 9 percent). Most cases examined the impacts of local-scale engagement (Exhibit 8).

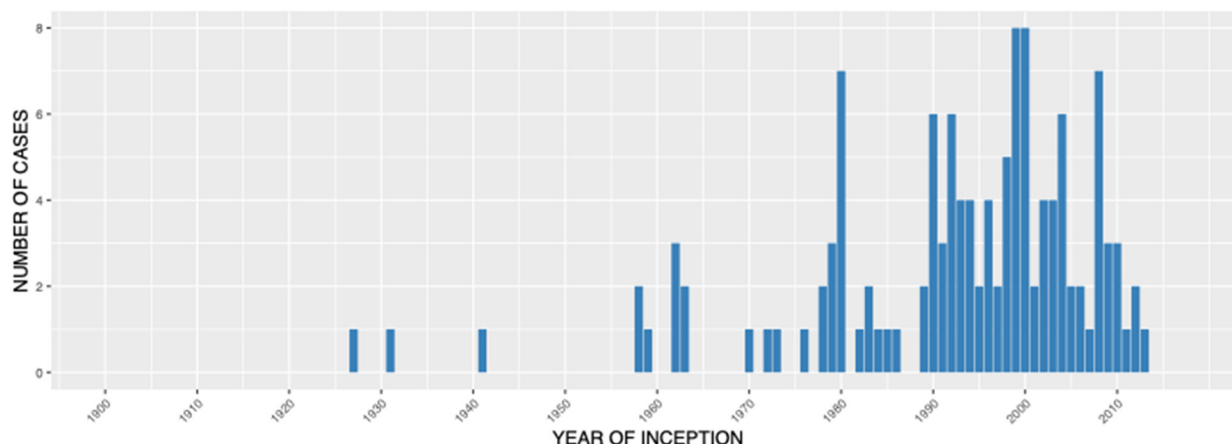
### D3. Characteristics of conservation interventions studied

**Exhibit 9. Frequency of examined conservation intervention types, identified by the primary actions taken; unlabeled column includes those studies lacking this information**



The majority of studies examined community engagement within area protection and area management interventions. Fewer studies examined interventions that proposed alternative natural resource protection methods, raising awareness and communication, harnessing market forces, and habitat restoration (Exhibit 9).

**Exhibit 10. Frequency of the start dates for conservation interventions**



Most conservation interventions were first implemented after 1980, with the highest peaks in the late 1990s (Exhibit 10). Not shown are three very long-term interventions, one a sacred forest protected since the fourth century, and the other two traditional indigenous interventions that lacked an inception date.

#### D4. Dimensions of community engagement strategies

**Exhibit 11. Emergent types of community engagement approaches/clusters**

Type	1	2	3	4	5	6	7
# cases (overall)	23	79	38	37	30	22	23
Goals (what are the motivations for the program: biodiversity, community benefits, or both?)	Primarily biodiversity (some shared)	Shared (primarily biodiversity)	Shared (but more community-focused)	Primarily biodiversity (some shared)	Shared (split)	Shared	Shared
Scale (what scale was the approach applied to?)	Local	Primarily local (with a few sub-national to international)	Primarily local (with a few sub-national & national)	Primarily local (with a few sub-national)	National	Local & Sub-national	Primarily local (with a few sub-national & national)
Leadership (is the leadership for the approach internal to the community?)	Shared	External	Internal	Mostly shared (some external)	Shared	Shared	Shared
Community focus (are specific groups targeted by the approach?)	General	Mostly general	Varies	General	General	Varies	Specific demographics
Incentives (are explicit incentives offered for engagement?)	Yes	Primarily yes	Varies	No	Yes	Varies	Yes
Involvement (when are communities first involved in the conservation program?)	Implementation	Mostly implementation or as recipients of outcomes	Scoping	Design or implementation	Design	Scoping	Design

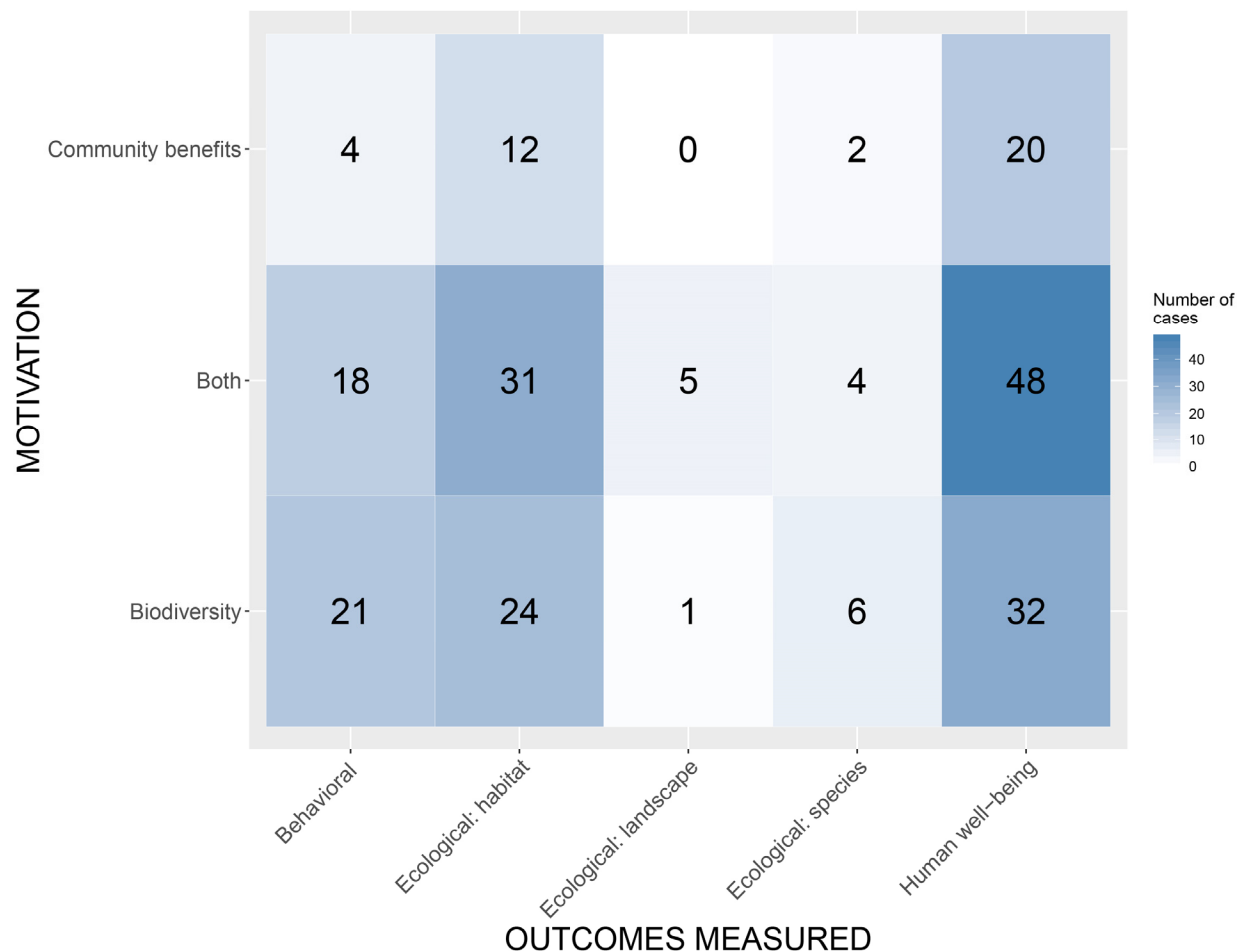
The terms used to describe community engagement strategies were highly varied, including in definitions and usage. When using a hierarchical clustering approach to identify emergent types of community engagement approaches based on defining characteristics, agglomerative (via Ward's method) and divisive clustering both identified seven likely clusters based on minimizing within clusters and maximizing distance between them (optimizing for maximum cluster distinctness). Agglomerative clustering resulted in more balanced (even-sized) clusters, and was thus used to assign studies to cluster types.

Exhibit 11 describes the seven emergent types across six characteristics. Most approaches focused on communities at large (Clusters 1, 2, and 4) while others emphasized approaches for both a broad population and targeted demographic groups (Clusters 3 and 6). Meanwhile, Cluster 7 focused on specific groups (e.g., women, indigenous peoples, and youth). Motivations for community engagement were mixed, ranging from biodiversity-focused programs to ones with dual goals for nature and human communities. Cluster 1 comprises 9 percent (n=23) of cases, defined by local-scale approaches, jointly led by internal and external actors, that use explicit incentives to engage communities. Communities were typically first engaged in programs' implementation phase. Examples of approaches in this cluster include ecotourism, community-based forestry, and payments for ecosystem services. Cluster 2 is the largest,

comprising 31 percent (n=79) of cases. In contrast to all others, these approaches are externally led and occur at all scales (though primarily locally). Communities are generally offered explicit incentives for involvement and are typically first involved at programs' implementation or recipient stage. Examples of approaches in this cluster vary considerably, including community-based management, integrated conservation and development, payments for ecosystem services, ecotourism, carbon swaps, and REDD+. Cluster 3, comprising 15 percent (n=38) of cases, are primarily local approaches led by communities with joint objectives for both biodiversity and people. These approaches were targeted to overall communities as well as targeted groups. In contrast to Clusters 1 and 2, communities are typically first engaged in programs' scoping phase.

Cluster 4 comprises 15 percent (n=37) of cases, primarily local-scale approaches with shared leadership (internal and external) of programs. Programs tend to be targeted to the general community and do not employ explicit incentives for participation or compliance. The point of initial community involvement varies, with most engaging during the design or implementation phases. In contrast, Cluster 5 (12 percent, n=30) cases are primarily national-scale approaches with shared leadership. These approaches target the general population and generally offer an incentive for involvement. Communities are typically first involved during the design phase. Cluster 6 (9 percent, n=22) approaches are primarily local efforts with shared leadership that target both general and specific portions of the population. Use of incentives is mixed, and communities are first involved in the scoping phase. Last, Cluster 7 (9 percent, n=23) cases are primarily local-scale approaches with shared leadership that target specific demographic groups using explicit incentives for involvement. Communities are typically involved during the design phase.

**Exhibit 12. Counts of stated motivation types driving inclusion of communities in the intervention grouped by outcomes types studied**

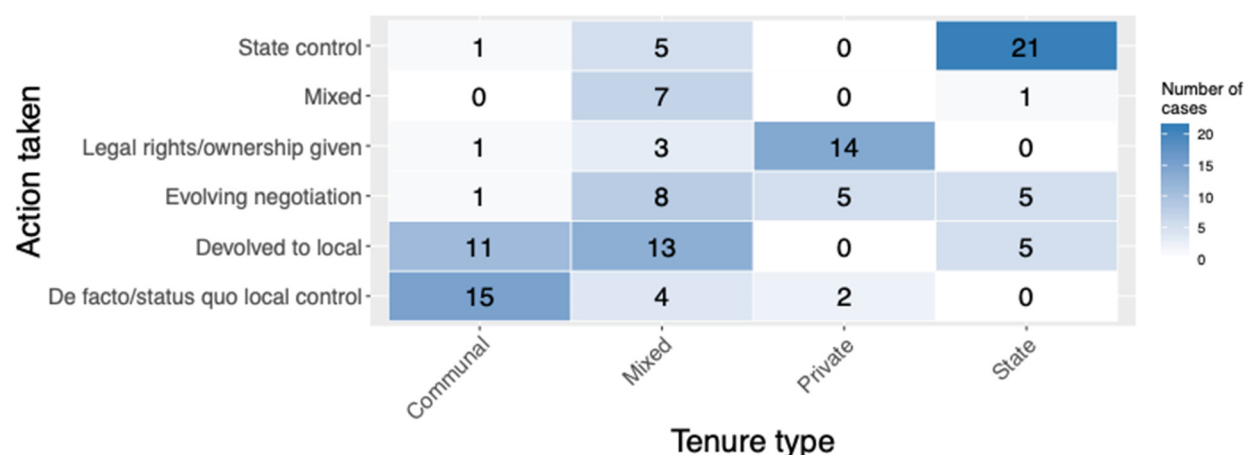




When comparing the stated motivation of implementing community engagement in biodiversity conservation interventions to outcomes measured in the evidence base, there is an emphasis on human well-being outcomes for all three motivation types. The secondary emphasis in research efforts has been on ecological outcomes at a habitat level. Behavioral changes in residents were also examined with relative regularity, particularly for interventions motivated by biodiversity outcomes and a combination of community benefits and biodiversity benefits. Landscape- and species-level ecological impacts had the least amount of research effort across motivation types (Exhibit 12).

## D5. Occurrence of governance types

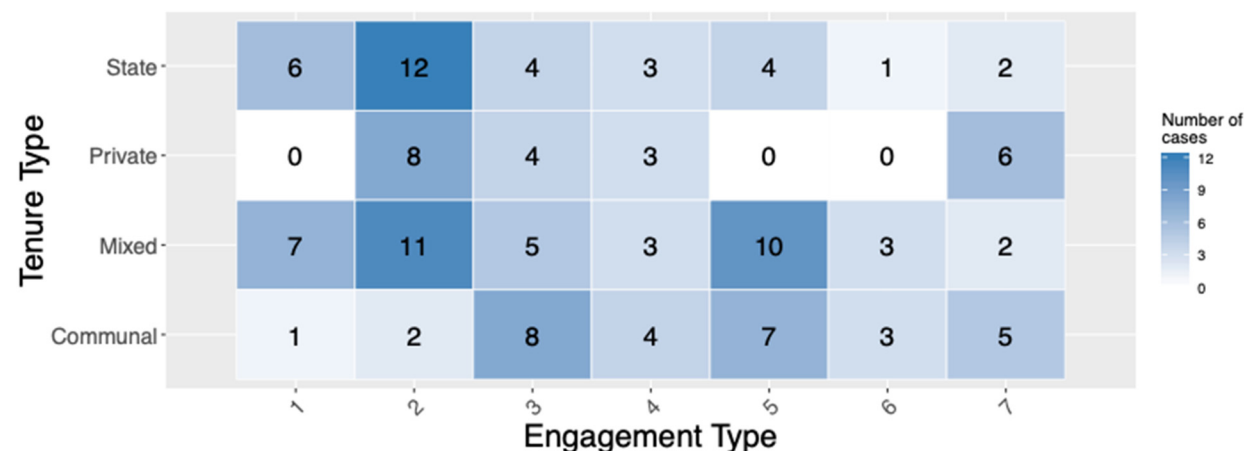
**Exhibit 13. Counts of governance types as defined by land tenure types and leadership actions taken**



The majority of cases examined concerned lands owned and controlled by the state, followed by communal lands (under continuous local management) and, lastly, private ownership. In the cases examined, control was most often devolved to the local level in communal lands and in mosaics of mixed tenure types (Exhibit 13).

## D6. Examination of linkages between community engagement strategies and governance types

**Exhibit 14. Land tenure types grouped by community engagement approach clusters**



Several patterns emerged between linking different engagement types within different land tenure contexts (Exhibit 14). Community engagement Cluster 2 has the most representation in the evidence

base, but here it is evident that this type of engagement is not commonly applied in the context of communal tenure. Cluster 5 approaches are also mostly used in communal and mixed-tenure contexts. State tenure sees a wide application of types, but there has been a notable emphasis in the application of Cluster 2 engagement types. Mixed tenure has seen a wide variety of engagement types and the most varied applications. Overall, the most common combinations are state tenure and Cluster 2 engagement types, mixed tenure and Cluster 2, and mixed tenure and Cluster 5.

For Cluster 2 engagement within state-tenured lands, the motivation for involving communities in the conservation intervention was either biodiversity benefits or a mix of community and environmental benefits; in only one case was engagement motivated by community benefits alone. The scale of these projects was either local or subnational, and all cases were externally led. These external actors include national government officials (primarily from protected area authorities), conservation NGOs, and tourism operators. These community engagement interventions involve communities defined spatially by distance from the protected area of interest; in no case was the community itself involved in defining itself. Explicit incentives were provided in all but two cases, and these used tourism as an alternative livelihood to link residents with monetary benefits from conservation activities. Monetary incentives are heavily emphasized in these engagement types, often coupled with local infrastructure projects (funding the building of schools, roads, etc.). Empowerment was not described as a benefit/incentive in these cases. In all studies but one, communities were not involved in the intervention until the implementation phase or as recipients of outcomes. The data shows that in some cases communities did not even have the option not to participate; participation was assumed, particularly in the case of tourism (Wunder, 2000; Charnley, 2005). In the single Cluster 2/state tenure study that involved the community at the planning/design phase, the implementing NGO undertook a consulting process and emphasized residents' consent to participate in the intervention. However, no capacity building was reported in this study, so it is unclear whether informed participation in planning actually took place.

The two second-largest groups both arose in mixed-tenure contexts, involving Cluster 2 and 5 engagement strategies. Similar to the state tenure/Cluster 2 group, the mixed tenure/Cluster 2 group is most often motivated by biodiversity to engage with local people, and has been implemented at all scales. Leadership in these cases is always external, and mostly from NGOs and nonprofits, although three cases had national-government leadership and one was led by private landowners. The community was only defined spatially or not at all in these cases, and only one study considered an intervention with a specific focus within the community, as farmers were the only targets of the project. All studies in this group but one had explicit incentives for involvement; these incentives varied more than in the state tenure/Cluster 2 group. While alternative livelihoods and direct payments were common, more than half of the studied interventions also implemented capacity building via training, one empowered members of the community to act as leaders, and several supported infrastructure development besides direct payments. Despite the entirely external leadership in this group, four of the cases included the community at the design/planning stage of the project; only two within this group involved residents exclusively as recipients of outcomes.

In the Cluster 5/mixed tenure group, two of the cases listed community benefits as the primary motivation for engaging with the community. None of these study interventions occur at the local level, and all but a single case with internal leadership features a partnership, potentially stemming from the complex tenure situation in those cases. These partnerships are between local communities (sometimes organized into conservancies and committees) and the national government. All engagement cases here are general, but the community was never defined. All studies involved explicit incentives for engagement; three cases involved tourism (e.g., trophy hunting) as an alternative livelihood mechanism, and several involved training and capacity building. Direct payments, infrastructural development, and community empowerment via the partnerships described above were also used as incentives throughout these cases, varying these strategies. Three of these studies did not describe what community involvement in the intervention looked like; however, all but one of the remaining cases involved the community at the design phase. Residents' involvement continued into the implementation phase as the coupled leadership structure necessitated community participation in ongoing decision-making.

**Exhibit 15. Leadership actions grouped by community engagement approach clusters**

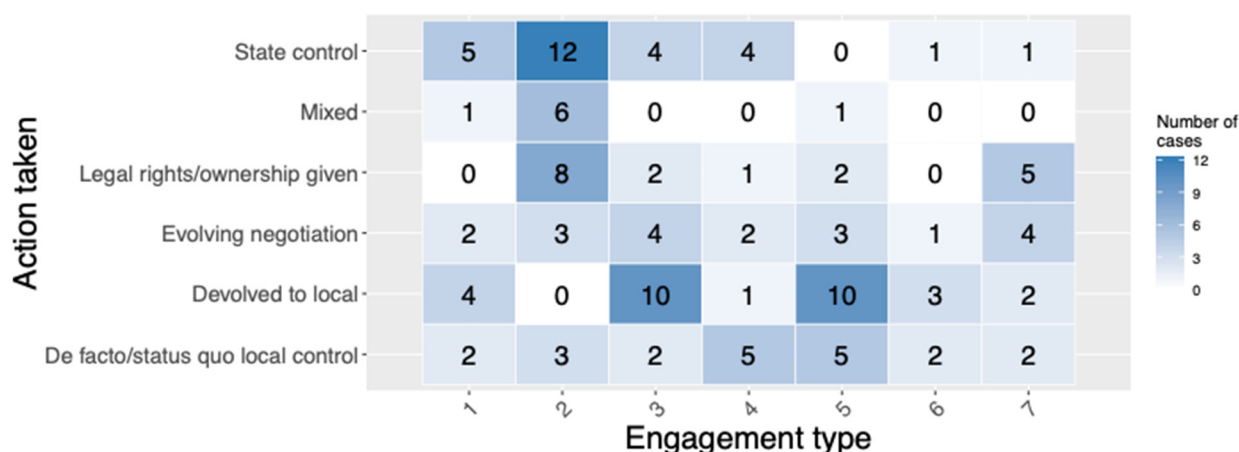


Exhibit 15 shows how many cases coupled various government actions with various engagement types. Cluster 2 approaches are most commonly applied in conjunction with continued state control; legal rights and mixed actions also accompanied this engagement type in relatively high numbers. Among cases that involved continued state control, all types of engagement approach were represented except for Cluster 5; Cluster 2 approaches were most common, followed by Clusters 1, 3, and 4. Mixed actions are particularly clustered around Cluster 2 engagements, with very few applications of other engagement types. There is a notable even spread of engagement types applied in cases of de facto/status quo local control of land resources. For example, Cluster 2 approaches were primarily run under state-led control of resource tenure. In contrast, Cluster 3 and 5 approaches predominantly involved devolution of tenure rights to local actors and actions to maintain existing local control.

Among the largest group, Cluster 2 with state control, 10 of the 12 cases involved state ownership and management of land. Biodiversity benefits are underscored as an incentive for engaging with local communities. In this case, the scale of engagement ranged from local to national, but all cases were led by the national government, NGOs, or tourism operators, and communities were spatially defined. Explicit monetary incentives and tourism development were the most common ways to encourage public participation.

In contrast, the two second-largest groups among actions taken involve devolution of power to the local level. For Cluster 3 and devolution of power, there is a notable change in motivation emphasis from the state control group described above, with most cases being either motivated by community benefits, or a mix of biodiversity and community benefits, with only a single case having biodiversity benefits as a primary motivation for involving local people. All these cases occur at either local or national scales (e.g., national movements to devolve natural resource rights and management responsibilities to local communities). All leadership is internal and consists of either small local governments or committees formed by the community to manage a specific area or resource. Communities were not explicitly defined among these cases, but the case with a definition appears to be fitting: “Such a regime or unit should comprise a defined group collectively managing and exploiting common property resources within a defined jurisdiction” (Taylor, 2009). All cases have explicit incentives for involvement but three, and these are more varied than the state control group, due to the coupling of increased empowerment with monetary and development incentives. For these cases, communities were also involved at the scoping stage in half the cases, and otherwise in the design phase. Often, community planning was supported by NGOs, the government, or tourism companies.

For Cluster 5 approaches with devolution to local control, there was a wide variety of motivations for involving the community, as well as three cases in which the motivation was unclear. All these projects were carried out at a national level; most featured a partnership between internal and external leadership. In this case, power is devolved to the community primarily through defined government means — for

example, in which a community must register a conservancy committee with the government in order to manage the resource. For the most part, communities were not defined among this group; however, the one case of explicit definition used the government's legal definition, which fits with the above note about devolution of power via defined, legal means. All these cases but one had explicit incentives for involvement in the intervention; tourism plays a role in three cases as a form of alternative livelihood, cash payouts from the conservancies were present in five cases, and two cases included payments for community development projects. Unsurprisingly, community empowerment was described as a benefit in most cases here as well. In comparison to the above Cluster 3 group, it is noteworthy that there is a smaller proportion of cases in which the community was involved at the scoping phase of the project (two cases), but most were involved in the planning/design phase. This may indicate that the government has identified a need for more of this group, and then reaches out to the community for planning once the local committees have been formed and approved.

## E. Discussion

### E1. Primary findings

There are significant gaps in understanding of the mechanisms by which tenure and engagement interact to improve human well-being. Overall, the evidence base was dominated by non-experimental studies, focusing primarily on human well-being and habitat outcomes. In general, we found several gaps in understanding of community engagement, including clarity and detail regarding who communities are and how they are engaged. Our work shows that communities are almost never involved in biodiversity conservation interventions until the implementation phase or as recipients of outcomes, with participation either assumed or forced. This presents several challenges to better understanding of how different engagement approaches succeed under different governance/land tenure regimes. With little consideration of how engagement is elicited, there is understandably limited evidence that accounting for tenure concerns is a priority either.

The evidence base is characterized by considerable gaps, which limit the extent to which we can generalize these findings to other contexts. Geographically, there is little to no information on northern Africa, the Middle East, Europe, and parts of Asia, while a few countries, like Mexico, Tanzania, and Nepal, have seen unmatched levels of research effort. Most of the community engagement interventions were not implemented until the 1990s or later, making long-term monitoring and evaluation of a good proportion of these studies impossible. This is reflected in the short-term, non-experimental research projects that comprise the majority of the evidence base; long-term, more robust examinations are needed, as are systematic reviews. This will help address the dearth of information on the larger-scale environmental impacts of these interventions.

Overall, articles rarely provided explicit definitions and details for the communities involved. Lack of detail on the identity and composition of communities in question limit our ability to understand the heterogeneity of impacts of conservation, much less intuit underlying cultural and contextual factors that may be in play. Spatial definitions are the most common ways for outsiders to delineate who is included in "communities," and this can have implications for intervention design, implementation, and outcomes. This method may entrench power disparities or create increased tensions and conflicts when it clashes with local understandings of community composition (Berkes, 2007; Jones, 2008).

It is clear from our analysis that there are only a few dominant types of community engagement strategies, despite the plethora of named "approaches" that exist. To evaluate and analyze approaches, the conservation community must have a more transparent and shared language to describe community engagement strategies. Our findings also show that despite assumptions that involving stakeholders in decision-making can enhance conservation outcomes, the most commonly applied approach has external leadership and only a minority of approaches emphasize community empowerment. Cases in which local stakeholders have scoped and led implementation is even rarer, and only three studies out of the 203 in our review examined traditional natural resource management schemes with beneficial conservation outcomes (e.g., protected sacred forests). This indicates that local stakeholders are not engaged as often as modern conservation rhetoric or even "bottom-up development" practitioners suggest (Ferse et al., 2010; Joshi & Rao, 2017).

The current state of the evidence base fails to provide the robust data needed to understand the dynamics of the relationship between tenure and intervention outcomes. To identify which community engagement approaches are most appropriate where, and to scale up successful strategies, will require research to fill the knowledge gaps that we have found in evidence assessment. More rigorous study designs and more detailed reporting are critical, as without clear articulation of the theories of change that are in play (i.e., how and why community engagement is thought to lead to impacts), detailed consideration of the influence of contextual factors, such as tenure, will not be feasible.

## **E2. Limitations**

This study is not meant to be a comprehensive, but rather a representative, assessment of the evidence base on links between community engagement and governance in conservation. In particular, a potential bias of this study is that the primary source of data is derived from peer-reviewed literature, and substantial relevant knowledge likely is contained in unpublished grey literature sources (Haddaway and Bayliss, 2015). However, insight from peer-reviewed literature highlights key gaps in academic research priorities. The occurrence of gaps also highlights areas that academic discourse has neglected, despite its prevalence in practice.

## **E3. Implications for policy and management**

In the field, when community engagement is included in conservation interventions, it tends only to involve communities in the implementation stage, limiting the ability of local stakeholders to meaningfully engage and make decisions in programs that often intimately affect their day-to-day lives (Brown, 2011). De jure rights to land resources widely remain in the jurisdiction of the state throughout much of the developing world, especially where it concerns rights over protected areas. Despite increasing constitutional recognition of customary rights in many countries, the majority of forests are still controlled by states, which rarely acknowledge the rights of indigenous peoples (Rights and Resources Initiative, 2015). And while there has been some growth in devolution of management responsibilities to local control and acknowledgement of communal rights, overlapping claims of prerogatives, with states overwhelmingly having the means to impose how lands will be used, arguably remain the norm. Thus, while secure tenure is considered essential to increase community buy-in for the protection of land resources, tenure security is often ambiguous, particularly in areas where biodiversity is rich and effective community level power is limited (ibid.). Tenure insecurity also affects longer-term participation, which is key to conservation success (Robinson et al., 2017). While there are fears that local participation could lead to reduced emphasis on biodiversity conservation, or less effective strategies (Büscher & Whande, 2007), stronger partnerships with communities have the potential to enhance conservation outcomes by developing interventions that better fit the context and local realities while potentially addressing land and tenure insecurity linkages that exacerbate poverty (Miller et al., 2013; Robinson et al., 2018).

## F. Conclusions

We set out to analyze the outcomes of community engagement in biodiversity conservation interventions as it relates to governance and tenure by systematically assessing the state of peer-reviewed literature on the subject. Our analysis revealed that the current evidence base is lacking the robust data needed to uncover the links between governance context, strategic interventions, and outcomes. This assessment does show, however, a significant lack of coherence in the characterization of community engagement approaches, which impedes robust evaluation of utility and impact. We conclude that although there is a widely held assumption within the biodiversity conservation field that engaging communities in interventions can improve environmental outcomes and human well-being, our analysis shows that there is insufficient data to show when and how this might be effectively applied. Overall, community participation has been limited, and tenure is marginally considered, with consultation and benefit sharing being the most common methods of increasing community support for conservation efforts.

Community engagement is poorly defined in biodiversity conservation practice. This leads to the conclusion that the way in which we currently engage communities is generally not well informed by evidence nor theory, but potentially on supposition, conservation fads, and conventional wisdom. We argue that this is not sufficient to address the highly complex situations practitioners must face along with other key stakeholders.

Security of tenure is one factor that is frequently poorly understood and dealt with, in terms of how conservation practitioners engage with communities, as Robinson et al.'s recent overview (2018) of issues and recommendations clearly attests. In 2002, 21 percent of forests in developing countries were owned or designated for use by indigenous peoples and communities; today, approximately 31 percent of the forests in developing countries are. Nonetheless, very little is known about the mechanisms used by states at the national level to recognize and allocate tenure rights to indigenous peoples and communities, especially in developing countries (Rights and Resources Initiative, 2015). This means that more often than not in developing country contexts, ambiguity over rights, and lack of clarity over which stakeholders hold prerogatives where there are overlaps in claims, clearly affects communities' willingness and ability to engage in conservation, though evidence to validate or invalidate this contention is scarce. Understanding how rights are recognized and materialized is a key next step for conservation and sustainable development practitioners.

As global biodiversity losses continue to mount, and while impoverished local communities dependent on forest resources to support their livelihoods remain marginalized in planning and decision-making, new approaches to community engagement are desperately needed that consider tenure as a starting point. Here, explicit theories must be tested in different contexts and the evaluation of outcomes should be more transparent and holistic than what our analysis has shown (e.g., Qiu et al. 2018). For conservation to effectively address global sustainable development challenges, widespread and cohesive learning must occur across sectors and become a basis for planning and implementation. Security of tenure as applied to community engagement will need to become a key indicator and object of learning in years to come.

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## H. Appendix 1. Boolean Search Query

### **Biodiversity Conservation Intervention Terms**

("Biodiversity conservation" OR "conservation finance" OR "conservation payments" OR "easements" OR "ecosystem restoration" OR "ecosystem services" OR "ex-situ conservation" OR "habitat protection" OR "habitat restoration" OR "invasive species control" OR "market-based incentives" OR "protected area" OR "resource protection" OR "species management" OR "species reintroduction" OR "species recovery" OR "species stewardship" OR "species translocation" OR "water use zoning")

### **Community Member Terms**

("Community" OR "stakeholder" OR "residents")

### **Community Engagement Approach Terms**

("Engagement" OR "adaptive co-management" OR "agri-environmental scheme" OR "alternative livelihood" OR "biocultural conservation" OR "biodiversity offsets" OR "biosphere reserves" OR "citizen science" OR "COAIT" OR "collective action" OR "common pool resources" OR "common property" OR "community based conservation" OR "community markets for conservation" OR "community based resource management" OR "conservation concessions" OR "conservation tender program" OR "cooperative network" OR "ecosystem services" OR "ecotourism" OR "enterprise based conservation" OR "environmental education" OR "incentive payments" OR "integrated conservation development project" OR "integrated landscape management" OR "local ecological knowledge" OR "participatory decision making" OR "participatory government" OR "participatory modelling" OR "participatory scenario planning" OR "payments for ecosystem services" OR "pro-poor conservation" OR "REDD+" OR "social capital" OR "social marketing" OR "stakeholder decision making" OR "stakeholder planning" OR "traditional ecological knowledge" OR "public participation")

### **Outcome Measurement Terms**

("Outcome" OR "success" OR "failure" OR "impact" OR "progress")

## I. Appendix 2. Comparison of Engagement Clusters

