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ISSUE BRIEF: ACHIEVING MULTIPLE OUTCOMES FROM COMMUNITY FOREST MANAGEMENT

Lessons from a Global Research Synthesis

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ISSUE BRIEF: ACHIEVING MULTIPLE OUTCOMES FROM COMMUNITY FOREST MANAGEMENT

LESSONS FROM A GLOBAL RESEARCH SYNTHESIS

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Cover photo: Maromizaha protected area in Madagascar.
Credit: Olaf Zerbock, USAID.

CONTENTS

ACRONYMS

CBFE	Community-Based Forestry Enterprise
CF	Community Forestry
CFM	Community Forest Management
FAO	Food and Agricultural Organization (United Nations)
Ha	Hectares
JFM	Joint Forest Management
MSI	Management Systems International
NTFP	Non-Timber Forest Product
PFM	Participatory Forest Management
TOC	Theory of Change
USAID	United States Agency for International Development

EXECUTIVE SUMMARY

PURPOSE OF THIS BRIEF

Community forest management (CFM) is an approach to forest management and use that prioritizes the local population's role. This brief provides United States Agency for International Development (USAID) staff who design and work on CFM activities with an accessible summary of Hajjar et al. (2020), a recent global synthesis of 697 cases in the CFM literature, including recommendations relevant to Agency programming. It highlights findings related to associations between CFM context factors and the achievement of positive CFM outcomes across multiple dimensions, while drawing attention to current knowledge on tradeoffs between CFM outcomes and the contexts in which such forests are often embedded. The brief outlines potential complementarities and divergences in Hajjar et al.'s findings with USAID CFM documentation including the *Sourcebook for Community-Based Forestry Enterprise Programming*, which synthesizes lessons learned from activities focused on community forestry-related private enterprises.[1] In doing so, the brief points to opportunities for USAID to improve future activity designs and contribute to more effective CFM activity design and programming.

OVERVIEW OF CFM

Over the past decade, USAID has funded CFM activities around the globe to empower local communities, improve livelihoods, and protect the environment. Government- and donor-led programming in USAID partner countries to help communities address deforestation has changed over the past 40 years. While efforts previously focused on involving communities in state activities, programming now tends to support devolved management and use rights.

Research has highlighted several general drivers of CFM success, but there are still many questions about the specific impacts and drivers of observed change. In addition to forest outcomes, related governance and livelihoods outcomes including equity outcomes, for communities involved in CFM, are still open questions in the literature. While individual studies may address conservation or socioeconomic impacts, there has been limited analysis of the tradeoffs between different outcomes.

HIGHLIGHTS FROM HAJJAR ET AL.

Hajjar et al. includes the following key findings from the global literature on CFM:

- **Environmental and income benefits often appear to be achieved together**. Most cases that reported on both income and environmental outcomes found positive change in both dimensions. It was less common for cases to document tradeoffs between these two sustainability dimensions (i.e., a decline in incomes but an increase in environmental outcomes, or vice versa). However, income distribution within communities can be problematic. About half of the cases examined reported that benefit sharing had become less equitable or mostly inequitable following

[1] See: https://www.land-links.org/research-publication/a-sourcebook-for-community-based-forestry-enterprise-programming/.

CFM. Other studies provide many examples of wide disparities in who benefits from CFM within communities.

- **Declining forest resource rights and distributional asymmetries within communities are common**. While information on forest resources rights was less commonly reported (39 percent of cases), most cases reported a decrease in forest resource rights for all or some community members (where this information was available). In some cases, those losing access rights were compensated with other livelihood benefits. In other cases, those who had their resource access rights curtailed were less likely to benefit from alternative livelihood strategies or new, formal forest-based community businesses. Distributional asymmetries within communities were prevalent among the cases.
- **The cases Hajjar et al. examined reflect a heavy reporting bias in the literature toward cases from South Asia (54 percent of 697 cases)**. About a third of the cases are of joint forest management, a type of CFM policy prevalent in India. There is an apparent under-representation in the literature of CFM in Latin America and East and Southeast Asia. However, the above outcome patterns hold even when India and Nepal (the second most common country in the sample) are excluded. Two-thirds of the forests in the sample were smaller than 500 ha.

KEY CONCLUSIONS AND RECOMMENDATIONS FOR USAID

The key messages this brief highlights for improved effectiveness of USAID's CFM programming include:

- The nature of community *de facto* and *de jure* rights prior to CFM interventions, and the changes to them as a result of a given intervention, are highly important in achieving CFM's diverse goals.
- CFM interventions should further consider who in local communities benefits from collective rights, who is left out of the creation of new community-based institutions, and who is negatively affected by changes to individual rights under CFM.
- Many contextual factors can influence the likelihood for a CFM intervention to achieve its stated goals. CFM program designers should take into consideration several context factors when thinking about where interventions might be located, the nature of programming provided, and expectations for outcomes. Hajjar et al. highlights key factors such as:
    - Type of CFM;
    - Time since policy change;
    - Type of forest;
    - Degree to which a community adheres to forest rules;
    - Nature of community *de facto* and *de jure* rights to forests;
    - Population size of management community; and
    - Migration.

INTRODUCTION

Community forest management (CFM) is an approach to forest management and use that prioritizes the local population's role. Over the past decade, the United States Agency for International Development (USAID) has funded CFM activities around the globe to empower local communities, improve livelihoods, and protect the environment. For example, a USAID-funded activity in Liberia used a mobile land tenure application to promote CFM.[2] In Guatemala, the Agency supported the maintenance of almost 500,000 hectares (ha) of CFM concessions.[3]

Government- and donor-led programming in USAID partner countries to help communities address deforestation has changed over the past 40 years. While efforts previously focused on involving communities in state activities, programming now tends to support devolved management and use rights. Research has highlighted several general drivers of CFM success, such as property rights and community use of the forest, but there are still many questions about the specific impacts and drivers of observed change. In addition to forest outcomes, related governance and livelihoods outcomes including equity outcomes, for communities involved in CFM, are still open questions in the literature. While individual studies may address conservation or socioeconomic impacts, there has been limited analysis of the tradeoffs between different outcomes.

USAID/Washington's Land and Resource Governance Division commissioned this issue brief to draw on findings from recent academic literature to support program effectiveness and inform the design, implementation, and evaluation of CFM activities. The core of this issue brief summarizes key results from a 2020 *Nature Sustainability* article by Reem Hajjar and several co-authors ("Hajjar et al." henceforth)[4] for a USAID audience, and provides recommendations to USAID for planning, managing, and evaluating CFM activities.

Hajjar et al. analyzed data from a large body of research – 643 CFM cases across 51 countries – to examine tradeoffs among 3 dimensions of outcomes that CFM aims to achieve: environmental, income, and natural resource rights. The paper then identified key factors that are linked to positive outcomes across at least two dimensions, such as joint environmental and income outcomes. The authors aimed to provide useful information for CFM planners and related programming to consider how CFM interventions could be designed to capitalize on underlying context conditions that may foster positive CFM outcomes across these dimensions of interest.

In considering CFM's ability to produce positive outcomes across the three dimensions of interest, Hajjar et al. also drew attention to evidence that few cases appeared to have positive outcomes across all three dimensions. Instead, the study found that environmental- and income-related outcomes were often positive for CFM cases, while jointly positive outcomes related to forest access and resource rights were much less frequent.

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[2] See https://www.land-links.org/project/land-rights-and-community-forest-program-liberia/#project-content.
[3] See https://www.usaid.gov/guatemala/programs/climate-nature-communities.
[4] Hajjar, Reem, Johan A. Oldekop, Peter Cronkleton, Peter Newton, Aaron JM Russell, and Wen Zhou. "A global analysis of the social and environmental outcomes of community forests." *Nature Sustainability* (2020): 1-9.

This brief proceeds with an overview of CFM concepts to summarize the general theory and goals of most CFM activities. It then provides an overview on the current state of CFM research, followed by a summary of Hajjar et al.'s key findings and contributions. The next sections provide deep dives into two aspects of Hajjar et al.: outcome tradeoffs and the contextual factors that predict positive outcomes. The penultimate section briefly compares Hajjar et al. and USAID's community-based forest enterprises sourcebook. The final section identifies conclusions and recommendations for USAID to consider when designing and managing CFM activities.

SETTING THE STAGE: CFM CONCEPTS, THEORY, GOALS, AND APPROACHES

Community forestry (CF) is a broad term that has been used to refer to any type of forest management situation that allows local people to have a role in making decisions about the forest. CF and CFM are often used interchangeably. This brief uses CFM throughout to refer to a range of community-based and collaborative management arrangements across forest types that can be under a range of land tenure categories (including communally and customarily owned forests and those on public or private lands) and administered by a range of government and community stakeholders.[5]

Definitions of CFM

The United Nations' Food and Agricultural Organization (FAO) provided an early definition of community forestry in 1978: "*any situation which intimately involves local people in a forestry activity. It embraces a spectrum of situations ranging from woodlots in areas which are short of wood and other forest products for local needs, through the growing of trees at the farm level to provide cash crops and the processing of forest products at the household, artisan or small industry level to generate income, to the activities of forest dwelling communities.*"

A recent encompassing definition describes CFM as: "*the use, management and conservation of forests by communities. Communities can have full, partial, or no ownership of such forests, and their management is often practiced in various degrees of collaboration with state forest agencies, donor organizations, knowledge institutions and/or companies. At one end of the spectrum, forest management is fully community-based and the forests are 100% owned by the community. Whereas at the other communities just participate in some of the state forest management practices in public lands.*" (Art and de Konig 2017)

CFM has a particular focus on how communities are involved in managing forests and the nature of those institutional arrangements. This includes by law (*de jure,* or those that the government formally recognizes*)* and as exercised informally or in practice (*de facto)*, and whether established via informal customary norms or explicit statutory rights conferred through a national land or forest policy.

[5] For the FAO definition see Food and Agricultural Organization of the United Nations, FAO. 1978. Forestry for local community development. Forestry Paper 7. Rome.

Many other commonly used terms fall under the CFM umbrella, including social forestry (less commonly used today), community-based forest management, collaborative forest management, participatory forest management, joint forest management, decentralized forest management, and co-management. Although CFM can have many stated objectives and there is substantial variation in how it is implemented in each local or country context, CFM focuses on community rights, equity issues, resource governance, poverty reduction, and livelihoods improvement, as well as traditional forest management aims related to conservation and sustainable use of trees and other forest resources. "Biophysical and socioeconomic" outcomes are a common shorthand way to broadly characterize CFM's diverse objectives. Ultimately, CFM frameworks seek to use community participation and more direct state-recognized control over forest resources to improve livelihoods and resource governance for forest-dependent communities as much as to achieve more effective ways to reduce deforestation, improve biodiversity conservation, and have more sustainable forest use and protection.[6]

The area of forests now under some form of formalized CFM has grown substantially in recent decades. While there is no definitive accounting of the land area under CFM, several estimates convey its global breadth. In 2016, the FAO estimated that nearly a third of forest area globally is under some form of community-based management.[7] Using a more conservative definition of legally recognized community-based forest ownership and management, the Rights and Resources Initiative recently estimated that around 15 percent of the world's forest area is under such arrangements.[8]

Many of USAID's CFM efforts followed major national forest policy reforms in countries that introduced new tenure categories for forestlands or provided legal recognition of existing customary forest tenure, together with provisions for community rights and responsibilities in managing forests.[9] These changes enabled local communities to have much greater ownership of forest resources and participation in forest management[10] than before. Recent examples of major USAID investments in CFM programs and support of CFM policies include those in Cambodia, Democratic Republic of the Congo, Guatemala, Liberia, Nepal, Peru, Vietnam, and Zambia.

Theories related to CFM's effectiveness draw from a range of fields including institutional economics, development economics, sociology, anthropology, conservation biology, forestry, and political science. CFM approaches often transfer at least some aspects of forest property rights (including management and decision-making rights), accountability, governance responsibilities, and costs to local communities. Many CFM theories thus seek to explain how such transfers of rights and responsibilities incentivize behavior change within communities regarding forest resources and land use, and in their forest

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[6] Art and de Konig 2017.
[7] Gilmour, D. 2016. *FAO Forestry Paper 176: Forty years of community-based forestry: A review of its extent and effectiveness* (PDF). FAO. ISBN 978-92-5-109095-4.
[8] Rights and Resources Initiative. 2018. At a Crossroads: Trends in Recognition of Community-Based Forest Tenure from 2002-2017. Washington, DC.
[9] For example, see Duguma et al. 2018.; Alden Wily, L. 2003. Participatory forest management in Africa: An overview of progress and issues.
[10] "Local communities" refers to Indigenous people, ethnic minorities, individuals, and communities who have geographic, economic, social and cultural relationships with local forest areas. For more see, RECOFTC, "What is Community Forestry", archived website, https://archive.recoftc.org/basic-page/what-community-forestry#:~:text=When%20we%20say%20local%20people,relationships%20with%20local%20forest%20areas.&text=The%20objectives%20of%20community%20forestry,household%20use%2C%20or%20commercial%20production.

decision-making, management, and governance activities. In turn, such behavior and governance changes are often conceptualized to improve community and external (where applicable) use and regulation of forest resources in ways that are more sustainable over the long term. These improvements can lead to greater livelihoods benefits and more equitable distribution of benefits from forest resources within communities, improved forest conditions, and an array of mutually reinforcing social outcomes such as stronger community institutions, cohesion, and capacity to continue investing in sustainable forest management to meet multiple objectives, among other possible outcomes. Many inputs and assumptions go into broad theories of CFM, and there is no definitive or single theory of change that encompasses this broad umbrella of interventions.[11] A key assumption inherent to most CFM interventions is that communities are better placed (or at least better incentivized) to work out complicated tradeoffs across different forest management objectives and potentially identify ways to achieve several of these objectives together. This brief next discusses under what conditions that might be more likely, and what inputs and facilitating factors can help.

RESEARCH ON CFM: APPROACHES, KNOWLEDGE BASE, AND LEARNING GAPS ON EFFECTIVENESS

As the area of forests under CFM has grown, so too have the number of studies and approaches used to determine whether, why, and under what conditions CFM is more likely to achieve its diverse objectives.[12] This has included efforts to reach a consensus on what factors are important to measure, in what ways, and through what methodological approaches. The approach to filling knowledge gaps on CFM effectiveness has also evolved considerably in recent years. Initially, such research focused on individual case studies and in-depth qualitative research, followed more recently by comparative large sample quantitative studies.[13] Although difficult to accomplish credibly, larger-scale studies that adopt counterfactual approaches and employ remote sensing-derived measures of forest outcomes have also gained prominence and the focus has turned toward quantifying and understanding CFM's causal impacts on various outcomes.[14]

This growing body of research has highlighted a range of relevant factors that appear to affect the success of CFM activities in different contexts. These factors are too numerous to list here and cover many categories, including contextual and governance features such as property rights and the types of benefits that flow to community members;[15] characteristics of the forests that are being managed; characteristics of the households and communities that use and manage forest resources; markets and broader economic factors; governance and institutional features of the CFM arrangement such as the

[11] See Gynch et al. 2020 for a simplified example in the context of CF enterprises.
[12] Gilmour 2016.
[13] Examples include Jagger et al. 2014; Persha et al. 2011.
[14] Examples include Blackman et al. 2021; Oldekop et al. 2019; Rasolofson et al. 2017. Also see Schleicher, J., Eklund, J., D. Barnes, M., Geldmann, J., Oldekop, J. A., & Jones, J. P. (2019). Statistical matching for conservation science. *Conservation Biology*.
[15] For example see Baynes, J., Herbohn, J., Smith, C., Fisher, R., & Bray, D. (2015). Key factors which influence the success of community forestry in developing countries. *Global Environmental Change*, 35, 226-238.

presence and nature of monitoring or enforcement mechanisms and external oversight processes; and even country-levels factors such as household consumption, migration, and timber substitution.[16]

As noted above, while individual studies often address conservation or socioeconomic impacts, there has been limited analysis of the tradeoffs between different outcomes or what factors, when combined, might contribute toward achieving certain outcomes.

Many data and knowledge gaps remain about the key elements that can help development programs and policy stakeholders design programs to achieve more effective CFM.[17] Hajjar et al. contributed to this need by using a large quantitative dataset and employing innovative methods to synthesize evidence across studies and identify key factors that are linked to positive, multidimensional CFM outcomes.

[16] For example see Sims, K. R. (2010). Conservation and development: Evidence from Thai protected areas. *Journal of environmental economics and management*, 60(2), 94-114. And Gelo, D., & Koch, S. F. (2014). The impact of common property right forestry: evidence from Ethiopian villages. World Development, 64, 395-406.
[17] See Gilmour 2016 for more discussion on the data and research needs to better understand drivers of CFM effectiveness.

Types of CFM as Defined in Hajjar et al.

Community forestry: Used interchangeably with CFM in Hajjar et al., CF is forest use and governance arrangements under which the rights, responsibilities, and authority for forest management rest, at least in part, with local communities. This includes many different types of institutions in which forest users have been acknowledged to have some role in determining how local forests are to be managed, including co-management, joint forest management, participatory forest management, and endogenous CFM.

Co-management: Hajjar et al. refers to cases as co-management when specifically described as such by case paper authors. Co-management broadly denotes a more equitable sharing of power and responsibility between governments and local user groups (Berkes et al. 1991)

Joint forest management (JFM): JFM are specific CFM programs and institutional arrangements. A form of co-management, JFM programs in India often have a narrower set of objectives, such as a focus on number of trees planted and hectares reforested, and often include a heavier hand of forestry department decision-making (Nayak and Berkes 2008). In Tanzania, JFM enables communities to collaborate with government and other forest owners over the management of reserved forests (Khatun et al. 2015).

Participatory forest management (PFM): A form of CFM prevalent in Africa that often includes versions of JFM and community-based forest management

Endogenous CFM: This is some form of communal management of forest resources that is home grown, not brought about by outside institutions. This term is used when explicitly mentioned by the case paper authors.

*Note: In Hajjar et al., case categorization followed terminology used by the case paper authors for JFM, PFM, and co-management.

KEY CONTRIBUTIONS, FINDINGS, AND CASE DETAILS OF HAJJAR ET AL.

Overview of Key Findings from Hajjar et al.

- **Environmental and income benefits often appear to be achieved together.** Most cases that reported on both income and environmental outcomes found positive change in both dimensions. It was less common for cases to document tradeoffs between these two sustainability dimensions (i.e., a decline in incomes but an increase in environmental outcomes, or vice versa). However, income distribution within communities can be problematic. About half of the cases reported that benefit sharing had become less equitable or mostly inequitable following CFM. Other studies provide many examples of wide disparities in who benefits from CFM within communities.
- **Declining forest resource rights and distributional asymmetries within communities are common**. While information on forest resource rights was less commonly reported (39 percent of cases), most cases reported a decrease in forest resource rights for all or some community members (where this information was available). In some cases, those losing access rights were compensated with other livelihood benefits. In other cases, those who had their resource access rights curtailed were less likely to benefit from alternative livelihood strategies or new, formal forest-based community businesses. Distributional asymmetries within communities were prevalent among the cases.
- **The cases reflect a heavy reporting bias in the literature toward cases from South Asia (54 percent of 697 cases).** About a third of the cases are of JFM, a type of CFM policy prevalent in India. There is an apparent under-representation in the literature of CFM in Latin America and East and Southeast Asia. However, the above outcome patterns hold even when India and Nepal (the second most common country in the sample) are excluded. Two-thirds of the forests in the sample were smaller than 500 ha.

CFM CASE DETAILS

Hajjar et al. is a comprehensive global analysis of environmental, livelihood, and natural resource rights outcomes of CFM. It used data on 697 CFM cases in 51 countries, collated from 267 peer-reviewed studies (from an initial pool of 15,879 studies), that resulted from a systematic review of the literature.[18] Annex 3 provides further details on the study's methodology. This section summarizes the types of CFM cases and interventions in the study's sample.

GEOGRAPHIC DISTRIBUTION

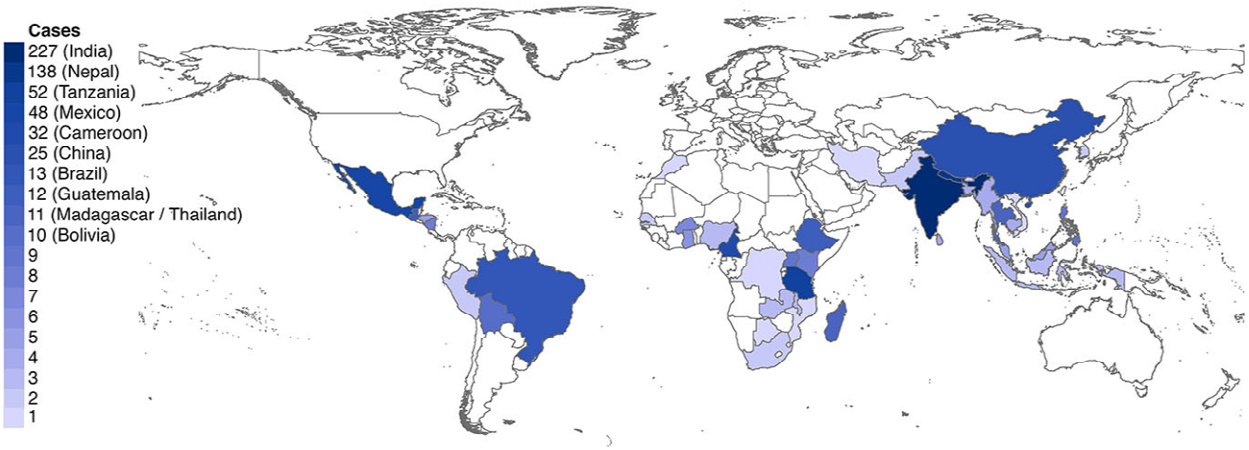
Community-managed forests in India and Nepal accounted for 33 percent and 20 percent (n=697) of all cases, respectively (Figure 1). In Latin America and the Caribbean (15 percent of all cases), Mexico

[18] Annex 3 describes the systematic review protocol and it is also detailed in Newton et al. (2015). Hajjar et al. (2016) describes the sample and data extracted from the studies.

dominated with 7 percent of all cases in the sample. Cases from Africa represented 22 percent of the sample, with Tanzania (8 percent) and Cameroon (5 percent) accounting for the most cases from that region. The fewest number of cases came from East and Southeast Asia (9 percent).

As the majority of cases were from South Asia, their sample reflects the literature's heavy reporting bias on CFM in this region relative to others (Hajjar et al. 2016). This bias may be driven at least in part by how much longer some counties in that region, such as Nepal and India, have had national CFM policies. As a result, the sample is not geographically representative of CFM initiatives worldwide. While there is no comprehensive CFM global dataset, published stocktaking (for example, Rights and Resources Initiative 2018) has shown that CF tenure in Latin America and the Caribbean (e.g., Mexico, several Amazonian countries) and Southeast Asia (e.g., Cambodia, Vietnam) is substantial, although based on the Hajjar et al. systematic review both regions are relatively underrepresented in the literature.

FIGURE 1: GLOBAL MAP OF SAMPLED CFM CASES BY COUNTRY

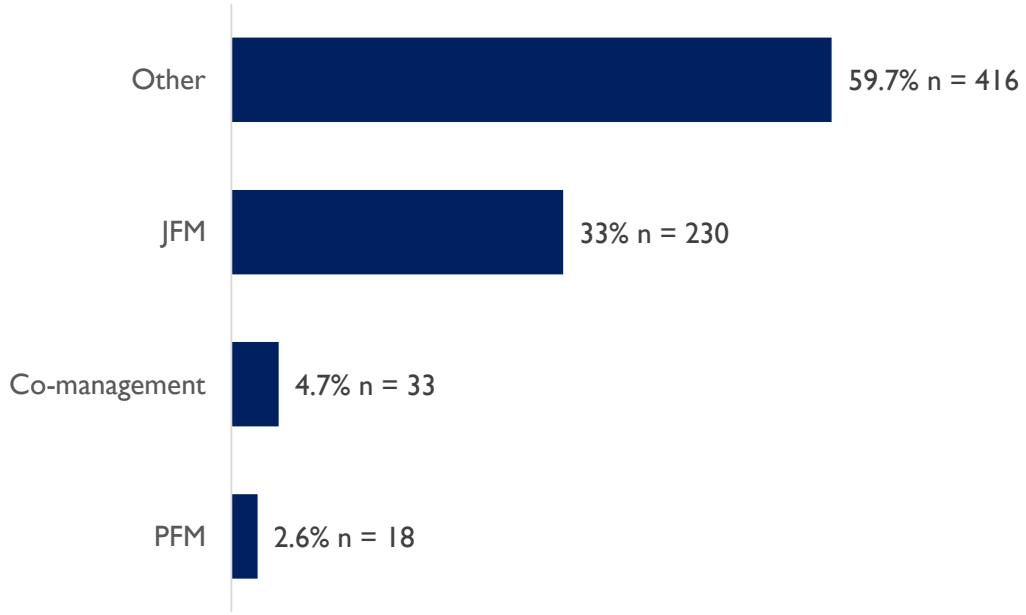


Source: Hajjar et al. 2016

INTERVENTION TYPE AND BROAD POLICY AIMS

In terms of types of CFM policy interventions, cases in the sample comprised JFM, PFM, co-management, and all other arrangements that case paper authors did not label as any of these three (Figure 2). This "other" category encompassed a variety of institutional arrangements such as *ejido*-owned forests in Mexico, community concessions in Guatemala, Indigenous forest management in Bolivia, community resource management areas in Ghana, and legally recognized community rights over forest management in Vietnam.

FIGURE 2: DISTRIBUTION OF 697 CFM POLICIES IN HAJJAR ET AL.

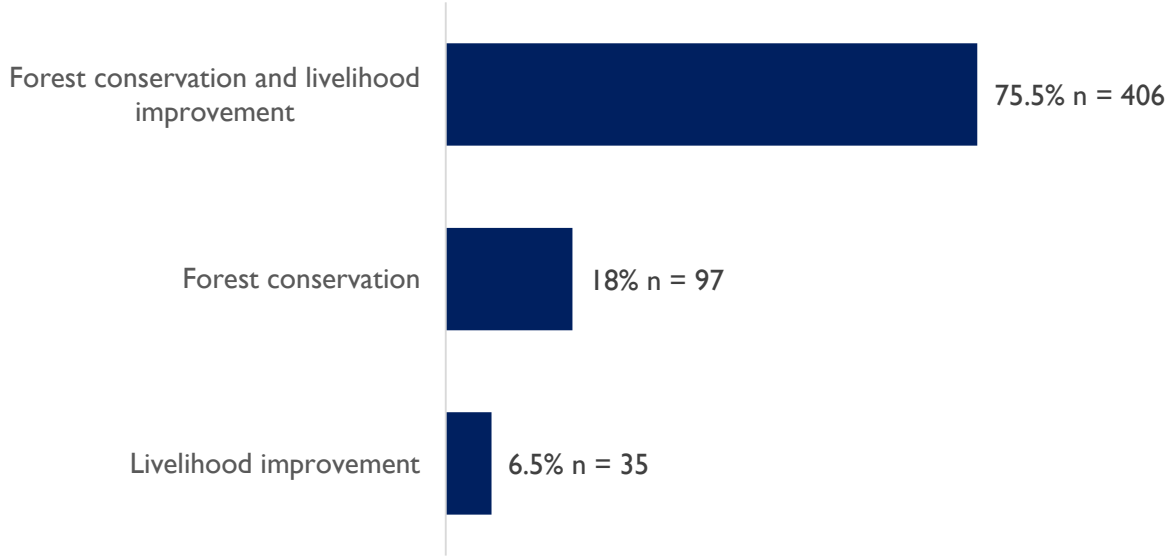


The high percentage of JFM cases (one-third of all cases) reflects the high number of case studies from India (only 11 percent of cases there were not labeled as JFM).

Many cases had been under some form of communally-led forest management before they came under the purview of a national CFM policy. Thirty-five percent of cases reported the presence of such endogenous CFM prior to the policy intervention that was the focus of the study analyzed in Hajjar et al. This means that in many cases, communities had several years of experience with their own internal forms of forest governance and management before the national policy intervention began.

The most common principal objective of CFM policy interventions in the cases examined was forest conservation and livelihood improvement (Figure 3). Ninety percent of reporting cases (n=643) described a policy change related to CFM (i.e., decentralization processes, tenure changes, or policies supporting CFM) as having taken place. Of that 90 percent (577 cases), 42 percent also described a specific, localized intervention related to CFM (e.g., a nongovernmental organization helping a community implement its forest management rights; promoting alternative livelihood projects). The other 10 percent referred only to an activity, with no mention of policy change. Of the cases that reported policy changes, the majority occurred more than 10 years prior to the study, or between 5 and 10 years prior to the study. Fifty-six percent of reporting cases also indicated that a localized intervention had occurred, with most having taken place more than five years prior to the study (Annex 1, Tables A2 and A3).

FIGURE 3: CFM POLICY INTERVENTION'S STATED PRINCIPAL AIM (PERCENT OF CASES REPORTING)

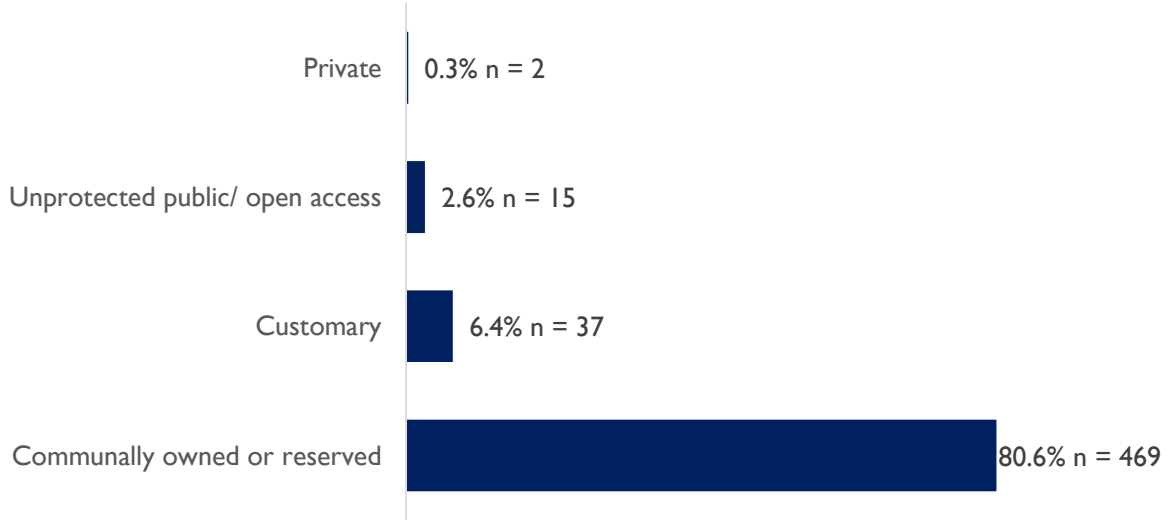


FOREST OWNERSHIP AND *DE FACTO* AND *DE JURE* TENURE RIGHTS

Most cases were forests that were communally owned, reserved for community use, or leased to communities for exclusive use (81 percent of 582 reporting cases; Figure 4), with 10 percent occurring on protected public lands. The heavy proportion of communally owned forests was reflected across each of the four regions present in the sample (see Annex 1, Table A4).

Figure 4 shows the categories of ownership drawn from Robinson et al. (2014). Communally owned is land that is owned or specifically reserved for community use, or leased only to the community. Customary ownership refers to cases where authors referred to *customary* rather than statutory *community* ownership or exclusive use. In many of these cases the land's statutory ownership is public but there is explicit recognition by the state of customary ownership; this might not confer exclusive use in the same way as community ownership and use. Protected public land can include protected areas or management reserves that the government owns in which communities are involved in a co-management arrangement. Example are JFM cases in Tanzania, where communities have co-management rights with the government to protected forest reserves. Unprotected public/open access indicates that while the land is owned by the government, its *de facto* management status is that it is not actively managed in any formal way nor is it recognized as customary land. The least frequently cited category, private, refers to ownership by an individual, household, or firm.

FIGURE 4: STATUTORY OWNERSHIP OF COMMUNITY FOREST, AS REPORTED IN CASE PAPERS



In addition to statutory ownership designations, it is important to consider how statutory (*de jure)* and "in practice" (*de facto)* property rights to the forests on the part of communities were distributed across the cases. This is because much prior research has shown how differences in such property rights held by communities can affect the likelihood of achieving desired outcomes under CFM. Of 496 reporting cases, 45 percent indicated that communities had *de jure* management rights to the forest and 35 percent had additional exclusion rights. A much smaller proportion only had access or partial withdrawal rights (rights to harvest forest resources, without having any say over management or exclusion – 15 percent) or alienation rights (rights to transfer forest rights to others – 5 percent). Forty-one percent and 40 percent of 466 reporting cases had *de facto* management and exclusion rights, respectively, and the majority of these rights were also upheld in law (See Annex 1, Tables A5 and A6).

Information on tenure security for communities as a whole was not explicitly available for about half of the sample, but for reporting cases insecure tenure was common, accounting for 18 to 47 percent of cases by region (See Annex 1, Table A7), although all regions contained more cases with secure forest tenure than with insecure tenure using Hajjar et. al.'s coding approach. Cases where authors indicated that the community's bundle of rights was being challenged by outsiders or governments, or if community leases were short term (i.e., less than 10 years) or needed frequent active government renewal, were considered to have insecure tenure. However, it is important to note that such situations not being reported in the case paper does not necessarily mean that community members were secure in their forest tenure rights (in other words, the absence of a mention of tenure insecurity by case paper authors does not necessarily mean that communities were tenure secure). Hajjar et al.'s analysis does not track variation in tenure security across different sub-groups within communities, such as women, Indigenous populations, poorer community members, non-elites, or other more marginalized groups that previous literature has shown often experience greater tenure insecurity as associated marginalization in forest-based management and benefits.

FOREST SIZE AND MANAGEMENT ACTIVITIES

As shown in Figure 5, two-thirds of forests in the sample (n=323 reporting cases) were smaller than 500 ha and 88 percent were under 5,000 ha, meaning that the vast majority of cases were examples of communities managing fairly small forested areas.

Most cases reported that non-timber forest product (NTFP) extraction and conservation were the primary management activities (Figure 6), while 28 percent focused solely on timber extraction.

FIGURE 5: FOREST SIZE DISTRIBUTION AMONG CASES

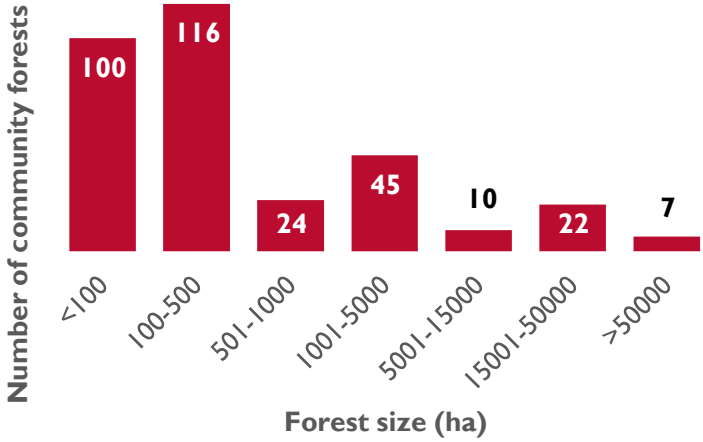
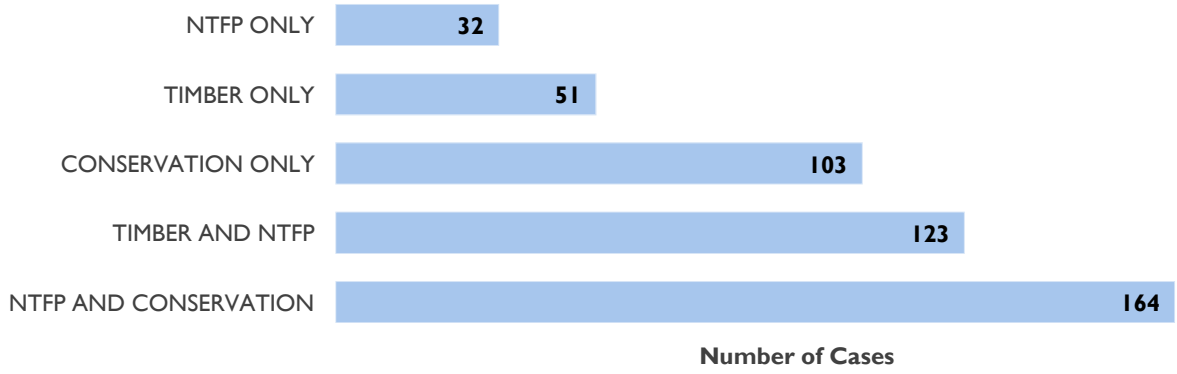


FIGURE 6: MANAGEMENT ACTIVITIES AS PRIMARY FOCUS OF CFM INITIATIVE



SUMMARY OF OUTCOMES

Based on the 697 cases outlined above, Hajjar et. al. extracted data on a series of environmental, economic, and resource rights indicators. For each case, the authors used information in the case paper to code the outcome for each indicator into one of three categories: decrease, no change, or increase. The authors then conducted an analysis to look at patterns across the sample in terms of direction of change on different indicators and broader categories, and by region and other characteristics.

Key patterns that emerged were:[19]

[19] See Annex 1 for additional detail.

- **Environment indicators**: about half of cases where the information was reported for these indicators saw increases in biodiversity (46 percent; n=317), forest cover (46 percent; n=247), and forest condition (51 percent; n=470).
- **Economic indicators**: around two thirds of reporting cases saw increases in individual income (61 percent; n=244), community income (69 percent; n=246), and employment (65 percent; n=107).
- **Resource rights indicators**: more than half of reporting cases saw decreases in resource access rights for commercial purposes (58 percent; n=211) and for subsistence purposes (52 percent; n=252).
- **Benefit sharing**: 51 percent of 275 reporting cases stated that benefit sharing had become less equitable or mostly inequitable following a CFM intervention.

Hajjar et al. also created composite environment, income, and resource rights indicators by combining the individual indicators into single environmental, income, and resource rights outcome variables. Figure 7 presents results for 643 cases[20] and shows that environmental indicators were most commonly reported (524 of 643 cases, or 82 percent of the sample), followed by income indicators (316 of 643 cases, or 49 percent). Resource rights indicators were less commonly mentioned (249 of 643 cases, or 39 percent). As with the individual indicators, the composite indicators showed:

- More increases than decreases in environment (of 524 cases, 56 percent showed increases, 32 percent decreases, and 12 percent little or no change).
- More increases than decreases in incomes (of 316 cases, 68 percent showed increases, 6 percent decreases, and 26 percent little or no change).
- More decreases than increases in access rights (of 249 cases, 54 percent showed decreases, 34 percent increases, and 12 percent little or no change).

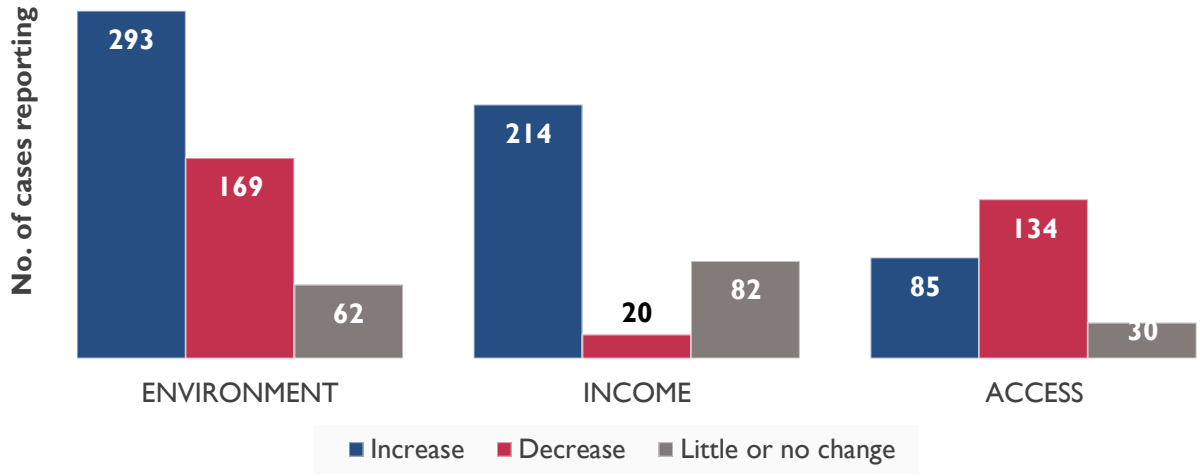
If India is excluded from the sample (33 percent of all cases, the majority of which involve JFM – a type of co-management in which state agencies tend to have a heavy hand in decision-making and is known for forest restrictions), similar patterns are found:

- **Environmental outcomes**: 53 percent increases, 33 percent decreases (n=343).
- **Income outcomes**: 74 percent increases, 4 percent decreases (n=201).
- **Access outcomes**: 38 percent increases, 47 percent decreases (n=176).

Similar patterns also hold when excluding Nepal, which is another 30 percent of the sample. Figure 7 shows the distribution of outcomes by each category. In this analysis, environment indicators include biodiversity, forest cover, and forest condition; access indicators include commercial access and subsistence access; and income indicators include community income and individual income variables.

[20] For simplicity, the 54 cases in which individual indicators within the composite variable were contradictory (e.g., increases in forest condition and decreases in biodiversity) were excluded from the subsequent sample for the statistical analysis, reducing the total number of cases to 643.

FIGURE 7: NUMBER OF CASES REPORTED BY OUTCOME CATEGORIES AND CHANGE IN OUTCOMES



There were also some key regional differences in trends observed:[21]

- East and Southeast Asia and South Asia performed proportionally better in environmental outcomes (70 percent of 46 cases and 62 percent of 290 cases saw increases in environmental outcomes, respectively).
- While all regions reported a higher percentage of increases than decreases in incomes, Latin America and the Caribbean and East and Southeast Asia had proportionally more cases reporting increases than other regions (83 percent of 42 cases and 80 percent of 25 cases, respectively).
- South Asia and Africa reported proportionally higher cases of decreases in resource rights (65 percent of 117 cases and 56 percent of 75 cases, respectively).
- Latin America and the Caribbean reported the fewest decreases in resource rights (16 percent of 32 cases), but also reported the smallest percent of increases in environmental indicators (29 percent of 85 cases).

[21] See Annex 1 for more detail. A breakdown of outcomes for the four predominant countries in the sample (India, Nepal, Mexico, Tanzania) is presented in Annex 1.

DEEPER DIVE I: CASES OF OUTCOME TRADEOFFS

This section presents results from Hajjar et. al. on patterns of outcomes across different combinations of the three dimensions examined – termed "joint outcomes." This was done to better understand what the cases suggest about how various forms of CFM across different countries and contexts have contributed to achieving the multiple and diverse types of outcomes that CFM policies typically aim to achieve.

As shown in Table 1, this analysis looked at four different joint outcomes across the three main categories.

TABLE 1: JOINT OUTCOMES MATRIX

Environmental Outcomes	Income Outcomes	Resource Outcomes
✓	✓	
✓		✓
	✓	✓
✓	✓	✓

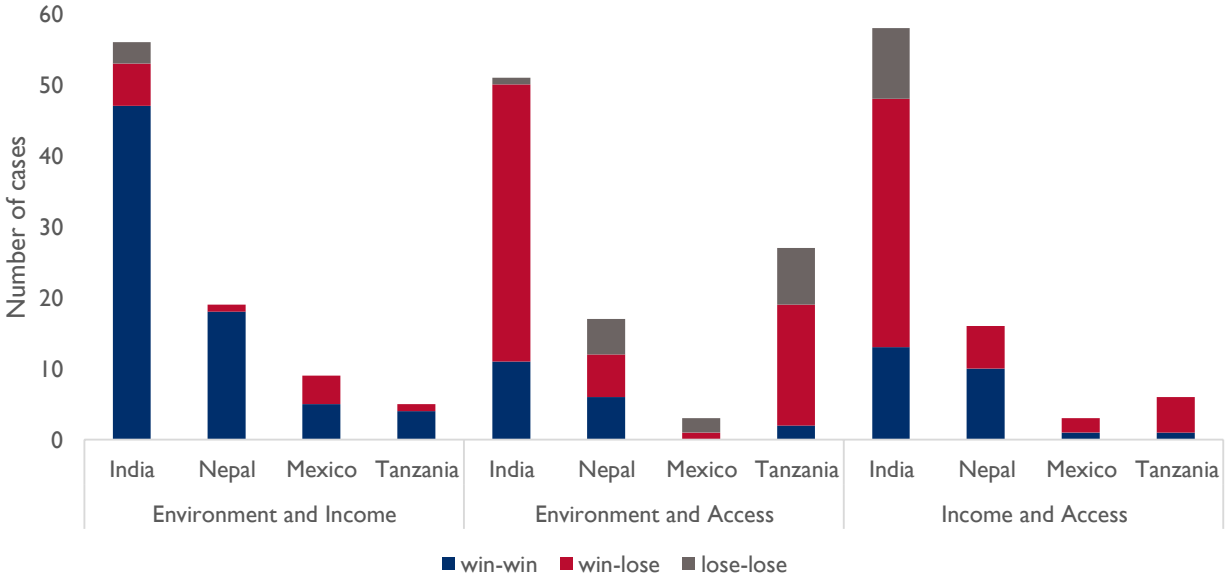
Hajjar et al. looked to identify cases in which CFM has produced win-win outcomes across these combinations, and others in which competing objectives may have led to tradeoffs across these dimensions.

The study found few cases of "triple-positive" outcomes in which a given case achieved positive change across environment, income, and access indicators. Only 18 percent of the 122 studies where it was possible to look at such three-way outcomes reported increases across all these dimensions. These were located in India (n=8), Nepal (n=5), Cameroon (n=4), Bolivia (n=2), Burkina Faso (n=1), the Philippines (n=1), and Saint Lucia (n=1).[22]

[22] There are two important caveats here. First, the income indicator used in this study is only a coarse indicator of livelihoods. When additional livelihood measures are taken into consideration, results may not be as positive as they seem. For example, one case in Cameroon saw increased community rights over local forests, improved forest condition, and generation of community income from the sale of timber. However, there were no noticeable improvements in living conditions and other measures of wellbeing beyond increased income (Oyono et al. 2012). Second, several cases presented as only a double positive

An analysis of joint outcomes across two of the three dimensions tells a more revealing story about which outcomes tend to be compromised, which have been most often achieved, and where tradeoffs may be occurring. A key finding was that many of the tradeoffs across different dimensions (win-lose outcomes) were driven by two countries in the sample (Figure 8): India and Tanzania, although tradeoffs were found across the globe. India had many examples in which environment or income outcomes improved while resource rights ("access") declined, while the tradeoff examples from Tanzania primarily related to environment improvements while resource rights declined.[23]

FIGURE 8: JOINT OUTCOMES BY PRINCIPAL COUNTRIES



JOINT INCOME AND ENVIRONMENTAL OUTCOMES

Of the 223 cases examining income and forest environmental condition outcomes, 46 percent found increases in both outcomes (See Annex 1, Figure A20). The vast majority of cases in South Asia that reported any change across those two dimensions reported joint positive outcomes in these two dimensions[24] (see Annex 1, Figure A4). For example, cases in India reported that community management and livelihood diversification activities improved key indicators of forest environmental condition and income from both forest-based and non-forest-based income streams. In one case in

outcome, with no change in the third dimension. But a closer examination of some of these cases indicated that "no change" is in fact a desirable outcome. For example, three cases from Mexico reported increases in incomes and forest condition and no change in rights, but those communities already had substantial subsistence and commercial rights to the forest for decades before the particular intervention. As such, the limited number of triple-positive outcome cases might be an underestimate of the total number of cases with at least desirable outcomes.

[23] For simplicity, joint outcomes in which one or both dimensions saw "little to no change" are excluded from this and subsequent figures in this section.

[24] Cases that saw little to no change in one or both outcomes, or cases only reporting on one dimension, were not included in these tallies.

West Bengal, JFM-protected forests saw large increases in tree densities, basal areas, and biomass, particularly of fast-growing *Shorea robusta*, while the increases in shrub woody biomass contributed substantially to local incomes through the sale of NTFPs such as sal leaves and resin, mushrooms, and medicinal plants (Mishra et al. 2006).

Similarly, the majority of cases in East and Southeast Asia reporting on these joint outcomes showed win-wins (Annex 1, Figures A6 - A8). In cases in northern Vietnam, for example, forest resources were enhanced with enrichment planting and new plantations in previously degraded forests, while a community development fund contributed to livelihoods. The fund, initially funded by the intervention promoter but eventually growing through interest, was set up to support protection and development of the community forest, and eventually also gave low-interest loans to households for agricultural crop cultivation. Household incomes were also expected to increase as forest resources matured (Pinyopusarerk et al. 2013).

In Africa, 14 of 27 cases saw win-lose outcomes, all of which entailed decreases in environmental outcomes and increases in incomes. One example comes from Burkina Faso, where four forest management units funder PFM were assessed (Coulibaly-Lingani et al. 2014). While there was inter-unit variation, households saw increased incomes from fuelwood harvest and sales, particularly those located close to principal roads. Increased fuelwood sales allowed community members to start up small-scale businesses, particularly immigrants, who had little agricultural land available to them. However, forest conservation performance was perceived as low, likely due to low levels of participation in forest conservation activities (forest regeneration and monitoring against illegal cutting) that were not renumerated.

The five win-lose cases in which environmental outcomes improved while incomes decreased (most win-lose cases saw increases in incomes and decreases in environment) came from one study of Rajasthan, India (Aggarwal et al. 2006). Even in this case, results were mixed. Poorer communities dependent on selling charcoal and fuelwood had their livelihoods negatively impacted by the strict forest protection under JFM, while in other communities non-forest-based livelihood activities were being promoted, with some bringing economic gains to the community. The forests recovered well in both cases.

The extremely limited number of cases reporting environmental increases from forest protection that also lead to income decreases – a direct tradeoff where restrictions limited livelihood activities and affected forest-based incomes – was a surprising finding. But in almost all the cases, some additional income came to the community following CFM – either at the community level through community development funds or at the household level through forest management activities or alternative livelihood projects. Whichever the mechanism, Hajjar et al. did not find a substantial number of cases showing a tradeoff between protecting the environment and decreasing incomes, and only 25 of 223 cases saw decreasing environmental condition and increasing incomes.

However, income distribution within communities was in many cases uneven or inequitable. Benefit sharing was mostly inequitable or more inequitable following CFM for 51 percent of 271 reporting cases. The next section further discusses distributional asymmetries.

JOINT ENVIRONMENT AND RIGHTS OUTCOMES

While few cases reported tradeoff outcomes between environment and incomes, a large number reported environmental improvements while also seeing loss of resource access rights (see Annex 1, Figure A21).

Forty-five percent of the186 cases that studied both resource rights and forest environmental condition reported win-lose outcomes, with most (82 percent of the 83 win-lose outcomes) being increases in environmental conditions and decreases in resource rights. In these cases, reductions in resource rights occurred either for all resource users or, often, for the most marginalized resource users who were unable to benefit from increased rights brought by CFM interventions. In many cases, these win-lose outcomes can be interpreted as true tradeoffs, where environmental condition has improved explicitly as a result of decreased access rights (keeping people out of the forest allowed for recovery and regeneration).

Proportionally to the sample size in each region, Africa and South Asia saw the most of such tradeoff cases (see Annex 1, Figure A7). One study (Anderson et al. 2015), examining cases in Kenya and Cameroon, found that formalization of resource rights added constraints over lower-value products that the community previously used, while limiting community control of higher-value products such as timber. In the Cameroonian cases, forests allocated to communities included already degraded forests from non-permanent forest estate and allocations were a fraction of their traditional territories. In one case in Cameroon, villages had been given rights to 2,800 ha following CFM, even though their customary forest was about 17,000 ha (Oyono et al. 2012). In some cases, communities did not control timber in community forests, and some state-assigned timber concessions on community forests prohibited local communities from even harvesting NTFPs. While forest condition improved because of restrictions to illegal logging and clearing activities in these cases (particularly those starting from a 'degraded' baseline), most in the communities experienced reductions in access, and CFM as a whole had not improved livelihoods. Similar findings came from cases in India and the Philippines, where forest cover greatly increased following protection and planting, largely because they were highly degraded when they were handed over to communities. One site in India was described as a "wasteland" at the time it was allocated to a community (Larson et al. 2010).

Only 15 cases saw increases of rights but decreases in environmental condition. Eleven of these cases were in Africa (Cameroon, Burkina Faso, Kenya, and Tanzania). In the Cameroonian cases, CFM was dominated by a few people seeking profits who failed to implement newly acquired rights and management plans appropriately (Larson et al. 2010; Oyono et al. 2012). The extensive and expensive process of obtaining community forests and management plans had been fraught with corruption, captured by those local and external elites who could afford it (Larson et al. 2010). Interestingly, the only Cameroonian site in the Larson et al. study that saw improved forest condition was where communities had more traditional and hierarchical organizations where customary rules had been maintained under powerful chiefs. In the same study, which examined several sites around the world, a large increase in rights in a case in Burkina Faso was also accompanied by increased deforestation due to market demand and population growth, putting more strain on forest resources. Other cases in the study that saw large increases in rights had positive forest condition outcomes. In contrast, moderate rights increases in Cameroon and one case in Brazil saw increased degradation and deforestation for agriculture.

Twenty-five cases saw both decreases in rights and environmental conditions. Five of those cases came from one study from China where collective forests were becoming more degraded from overharvesting of NTFPs, despite increased regulations and prohibitions on commercial extraction, as regulations were not enforced (Ghorbani et al. 2012). Similarly, one study, citing seven cases in Tanzania, found that despite increased regulations in village land forest reserves, meant to limit villagers' cutting of live trees and protect forests, a lack of effective monitoring ultimately led to *de facto* overharvesting (Treue et al. 2014).

INCOME AND RIGHTS OUTCOMES

Studies examining income and access rights outcomes (n=169) found similar levels of joint increases (34 percent of these 169 studies) and tradeoffs (31 percent), with increases in income associated with decreases in access rights in all these latter cases (see Annex 1, Figure A22). This was somewhat surprising given that these two outcomes were expected to be synergistic in nature: increased rights theoretically would entail increased ability to use and commercialize forest products for additional income, or areas that were given increased rights would often be accompanied by interventions with capacity-building support for alternative livelihoods, community development funds, etc.

This was true in the majority of cases in Latin America and the Caribbean (11 of 14) and Africa (18 of 31) reporting on these two outcomes (see Annex 1, Figure A8). Communities in Peten, Guatemala, that were awarded rights over forest concessions have garnered significant income and employment from timber management (Niesenbaum et al. 2004; Barsimantov et al. 2011). In Bolivia, strong, permanent, enforceable, and uncontested rights resulted in improved incomes from Brazil nuts in titled lands (Larson et al. 2010).

In many tradeoff cases, alternative livelihood projects brought increases in household or community incomes to compensate for reduced access to forest resources. Or, formalizing community forest areas was accompanied by the implementation of formal management plans that reduced forest resource access (for commercial purposes mostly but also for subsistence purposes in some cases) that communities had previously enjoyed informally. However, those management plans for commercially valuable forest products eventually led to increased community incomes.

In many of these 52 cases of tradeoffs, however, forest-based income mostly benefited village elites, or the poor and marginalized were left out of new income-generating activities, while additionally suffering from forest-use restrictions implemented as part of formalized management plans. In Tanzania, JFM cases in the Eastern Arc Mountains placed significant restrictions on harvesting forest products in favor of biodiversity and watershed protection. In one case, a temporary ban on harvesting to allow for forest regeneration was so strict that residents were not even allowed to walk through the forest. While alternative income-generating activities brought benefits to the communities in compensation, these were captured by village elites. PFM in the same region also generated income for most groups despite increased restrictions for community members on forest use relative to their resource access prior to PFM, but technical and administrative obstacles prevented the poorest from taking advantage of these benefits (Vyamana 2009). In another case in Tanzania (Nielsen 2011), JFM in the Kilombero Nature Reserve resulted in curtailing hunting rights of community members (which were actively enforced). Hunters whose livelihoods had been newly outlawed were least likely to see economic benefits associated with JFM, including benefits from alternative livelihoods such as domestic animal rearing and beekeeping. Hunters were more likely to be asset poor, with limited ability to take advantage of new opportunities presented by JFM, not having starting capital or the right social connections. Following JFM implementation in one case in Rajasthan, India, some groups experienced loss of livelihoods due to forest restrictions, while others were the focus of alternative livelihood projects and saw economic gains (Aggarwal 2006).

No cases reported that rights had increased but incomes decreased. Other studies, however, have documented cases in which communities were not able to take advantage of any newly formalized rights because of administrative bottlenecks and burdensome regulations, limiting potential for livelihood improvements (Pulhin and Dressler 2009; Larson et al. 2010).

Only 16 cases saw decreases in both rights and incomes, 10 of which were in India. In one of those cases (Nayak and Berkes 2008), JFM replaced informal CFM arrangements, eroding the bundle of

common rights held by the community. Bans on economic activities including forest "cleaning" – a source of firewood for the community, particularly the poor – and cattle grazing in the forest – also an important resource for the poor, with seemingly no alternatives, reduced community income.[25]

KEY MESSAGES

Community forestry is often promoted as a means to recognize *de facto* community rights. However, the Hajjar et. al. results highlight the need to carefully examine who in local communities benefits from collective rights, who is left out of the creation of new community-based institutions, and who is negatively affected by changes to individual rights.

The study results show that CFM does not lead to the presumed tradeoffs when forest conservation is prioritized – livelihoods are broadly maintained or, more likely, well substituted – at least for a portion of the community. While a CFM intervention may have constrained a community's *de facto* informal forest rights, having limited but formal rights over some forest products may still result in increased individual or communal income due to the ability to legally commercialize those forest products. Having formal communal rights also brings enhanced tenure security.

However, the Hajjar et al. findings also suggest that the resulting livelihood benefits are not equitably distributed, as numerous individual CFM studies have highlighted for decades. CFM interventions have often brought a decrease in forest rights for some if not all community members. This has been observed particularly for certain co-management models such as JFM that often retain much control within state forest departments. In many cases, policies aim to compensate this decrease in access to commercial or subsistence forest products with other livelihood prospects. In other cases, however, those who are most affected by loss of forest access are the least likely to benefit from 'alternative' livelihoods or new forest-based community businesses. Income increases in these cases within the Hajjar et. al. sample were experienced by some, while others saw their access to the forest restricted, highlighting distributional asymmetries within communities. A tradeoff can be seen in these cases: the formalization of local rights has benefited some in the community by improving their livelihoods, at the expense of others excluded from previously enjoyed access rights. Limiting local rights by placing poorly conceived restrictions may also undermine previously effective local management institutions and reduce livelihood benefits (Larson et al. 2010).

[25] While this section focuses on tradeoffs across outcome categories, the authors also observed tradeoffs within categories in a number of cases. For example, six cases reported the expansion of some rights over resources—formally recognizing the existence of local customary rights—while simultaneously restricting other rights, including curtailing commercialization of forest resources or hunting rights. Sixteen cases reported increases in community income (in the form of investments in community development infrastructure such as schools or wells) while individual or household incomes throughout the community decreased, usually from a loss of access to forest products. In terms of environmental outcomes, 17 cases reported increases in forest cover but decreases in forest biodiversity, or vice versa. While these and other conflicting outcome cases represent only 8 percent of the sample (and were excluded from the analyses of tradeoffs among the principal outcome categories of environment, income, and rights presented here), these conflicting outcomes illustrate the need for closer examination of more nuanced tradeoffs within outcome domains

The Hajjar et. al. results thus call attention to a need for CFM initiatives to pay closer attention to the nature of rights in rights-based approaches, not only in devolving rights to communities but also in how those rights (and thus benefits) are shared within communities.

A key related finding from Hajjar et al. is that for cases in which rights were increased (85 cases), forest condition and income were generally either maintained or enhanced. Of the cases that reported increases in rights, 75 percent saw improvements in or maintenance of forest condition, and all saw improvements or no change in incomes. This suggests that even if development and conservation agents are mostly concerned with improving forest condition or increasing local incomes, a rights-based approach can help lay the foundation for positive outcomes for those goals. This is consistent with other published studies showing that formal recognition of Indigenous rights to traditional lands has been associated with reduced deforestation relative to other ownership and management arrangements (for example, Blackman et al. 2017; Sikor et al. 2020; Wren-Lewis et al. 2020).

DEEPER DIVE II: WHICH CONTEXTUAL FACTORS PREDICT POSITIVE JOINT OUTCOMES?

This section provides a descriptive summary of key results from Hajjar et al. and examines associations between contextual factors and the three outcome variables individually. Hajjar et al. also used information about 50 context characteristics it extracted from the 643 cases (see Table A10 in Annex 3) to look at how those characteristics were associated with achieving positive outcomes across at least 2 of the dimensions[26]. The authors selected these 50 variables from a detailed literature review. These variables covered categories such as characteristics of the CFM intervention, the groups within communities that use or manage forests, institutional arrangements within the communities related to forest governance, biophysical factors, and market factors. The authors used statistical analysis (detailed in Annex 3) to look for associations between these contextual factors and jointly positive CFM outcomes.

Intervention Characteristics

- **Co-management** cases performed better than all other types of CFM in the joint environment-income model.
    - Where both government and local actors were actively engaged in CFM, and where co-management potentially leads to greater access to additional resources (e.g., financial support, extension services), joint environment and income outcomes may result. The broader category of "other CFM" may have encompassed too wide a range of interventions to produce a clear trend in outcomes.

[26] Hajjar et al. chose not to do bivariate analyses for each contextual variable and each set of outcomes to avoid increasing the chance of statistical errors and false positives. This section dissects the results for each factor and includes descriptive summaries of how each factor relates to the outcomes, based only on the raw, non-imputed data.

- **The number of years since a major CFM or decentralization policy change** at the national or regional level was important in explaining triple-positive outcomes.
    - Triple-positive outcomes were more likely to occur after 10 years and least likely to occur within 5 years of the policy change, indicating that positive outcomes can take time to achieve.

Biophysical Characteristics

- **Forest type mattered** for joint positive environmental and income outcomes, likely linked to opportunity costs and the presence of valuable species in different forest ecosystems.
    - Joint positive environment and income outcomes were more likely to occur in tropical and subtropical montane forests than in any other forest types.
    - Positive environment and resource rights outcomes were more likely to occur in tropical and subtropical humid and montane forests.
    - Positive income and resource rights outcomes were more likely to occur in temperate montane forests.
- **Elevation was important** for joint outcomes, but did not appear to affect individual outcomes. While also correlated with forest type, elevation only came out as important when considered in combination with other context factors.
    - Cases with forests at low or medium elevation saw more joint environment-income and environment-access successes than those at higher elevations, perhaps linked to limited forest productivity or difficulties in transporting forest products at higher elevations.

Local Institutions

- **Rule adherence** was associated with positive joint environment-income outcomes as well as with those outcomes on their own.
    - This intuitively makes sense: where local communities adhere to forest management rules such as harvesting timber only with permits or following bans on grazing, the forest condition is likely to improve.
- Both ***de facto*** and ***de jure* tenure rights** were associated with individual environment and income outcomes, and were important in several joint outcome models but in different ways.
    - Having *de facto* management and exclusion rights was more often associated with positive (separate) environment outcomes and income outcomes than having withdrawal or alienation rights. At the same time, communities that had *de facto* management and exclusion rights were more likely to report increases in resource rights (and thus positive joint outcomes) following CFM policy or project implementation. When considering formalized *de jure* rights, however, the act of formalization of management and exclusion rights often represented a decrease in actual rights that had been practiced, making it less likely to have positive joint outcomes.

User Group Characteristics

- **Smaller populations** were associated with better joint environment and rights outcomes. However, larger groups had proportionally better environmental outcomes than medium or small groups (although smaller groups had proportionally better outcomes in incomes and access).

- Communities with either **no migration or marked out-migration** were more often associated with positive income and rights outcomes, and triple-positive outcomes, than were communities with marked in-migration.
    - Remaining forest users in communities with heavy out-migration may also be able to access larger shares of forest benefits and rights.
    - Communities experiencing in-migration were less likely to report individual or joint positive outcomes, perhaps because in-migration can lead to further contestation of rights, increased pressure on forest resources, or exacerbation of existing inequities.

National-Level Characteristics

- Joint positive outcomes were negatively correlated with two national-level indicators: governance scores (an aggregate index of six governance indicators obtained for each country from the World Bank data catalogue) and Human Development Index (a composite index of income, education, and health dimensions).

Annex 2 provides further details on each of these findings. It is important to note that while the analysis was able to find *associations* among these context characteristics and whether at least two positive outcomes were achieved, it could not determine whether any of these characteristics actually *caused* the outcomes. To do so would require a different kind of analysis. Annex 2 also provides more information on important caveats to these findings.

COMPLEMENTARITIES WITH SIMILAR WORK ON ENABLING ENVIRONMENTS FOR CFBES

This section highlights key complementarities and differences between Hajjar et al. and recent USAID guidance related to programming for community-based forest enterprises (CBFEs) and strengthening enabling environments for such enterprises. The aim of this comparison is to identify additional areas of consideration for USAID program designs that may help CFM programs achieve their diverse objectives. However, one should keep in mind that the slightly different focus of USAID's CBFE sourcebook[27] ("the sourcebook" hereafter) on CBFEs specifically as the intervention of interest, rather than a broader CFM umbrella, means that some aspects of the sourcebook or Hajjar et al. may not strongly translate to the other.

Sourcebook Definitions

The sourcebook defines **CBFE** as "a community-endorsed social enterprise that uses forest resources for commercial purposes to generate income that sustains the enterprise, while providing agreed benefits to the whole community."

The sourcebook defines **CF** as "any formally recognized use of forest resources by Indigenous groups or other local communities in a defined area." The sourcebook focuses primarily on timber-based enterprises, but states that learning is also applicable to income-generating enterprises that focus on NTFPs, or less extractive ones focused on ecotourism or ecosystem services.

[27] Donahue, M. and Ed Harvey. *A Sourcebook for Community-based Forestry Enterprise Programming*. Tetra Tech. 2020.

THE USAID CBFE SOURCEBOOK

The sourcebook provides information on the design and implementation of CF interventions that seek to deliver social, environmental, and economic outcomes. The sourcebook also drew on a 2018 CBFE assessment[28] that synthesized knowledge on enabling conditions for establishing and maintaining CBFEs.

The sourcebook highlighted four key enabling conditions as both necessary and sufficient for effective CBFE operation and prosperity:[29]

1. **Secure tenure and other supportive policy**, including secure rights to develop, exclude others, and sell a forest product or service and enable long-term investments in CBFE.
2. **Community governance and enterprise management**, with a focus on effective leaders and technical knowledge, accountability to the community as a whole, and financial integrity.
3. **Social enterprise models**, including having a viable model that produces sufficient benefits to reinvest in the enterprise and provides economic benefits to the community.
4. **Value chain partnerships** to access external financial and technical support and provide help with product aggregation, marketing, and infrastructure development. Partnerships could include with local and national government, donors, civil society, and the private sector.

COMPLEMENTARITIES AND DIVERGENCES IN THE SOURCEBOOK AND HAJJAR ET AL.

While there are some clear complementarities between the sourcebook and Hajjar et al.'s findings, there are also notable differences that may be useful to consider. Annex 4 provides a detailed comparison across Hajjar et al. and the sourcebook.

Some of the key complementarities center around:

- Consistent multidimensional focus on environmental, social, and economic outcomes.
- A similar acknowledgement of complexity, including the complex systems that comprise the interventions and the contexts they are embedded in, together with the multiple complex interactions that are possible in these systems.
- A need for a systems approach to learning and adaptive, flexible management for such interventions.
- A prominent focus on the role of community rights to access, use, manage, and exclude others from forest resources as a key shaper of outcomes.
- Strong acknowledgement of a need for greater attention to equity issues within communities engaged in such interventions.

[28] Donahue, M. and Ed Harvey. "An Assessment of Critical Enabling Conditions for Community-Based Forestry Enterprises (CBFEs)." Tetra Tech. 2018.
[29] Absent broad deleterious circumstances such as conflict, government instability or corruption.

Notable differences include:

- More nuanced attention in Hajjar et al. to the role of theories of changes and their influence in program design and planning phases, including a need for programs to work out detailed theories of change at that stage to help identify options for programming and clarify potential tradeoffs.
- A different focus on the role of communities with respect to the intervention. Hajjar et al. conceptualize communities as having a range of characteristics that can potentially shape trajectories of outcomes, while the sourcebook's envisioned role of communities is more as recipients of interventions, and that project support largely determines outcomes.
- The sourcebook focuses on a *project's role in creating enabling environment conditions*, or choosing not to implement the intervention in places where such conditions are not achievable. In other words, using the intervention itself as a way to change some of these conditions, or deciding not to implement an intervention in such places. In contrast, Hajjar et al.'s results point to the *role that many unchangeable context factors directly play in shaping outcomes*, suggesting that projects may need to think more strategically about how to work within a given set of conditions that interventions themselves will not be able to change (but nevertheless are part of the dynamic system in which the intervention is embedded), and what that might mean for managing project expectations on outcomes. Hajjar et al.'s findings also highlight that simply choosing not to work in a given context may be an uncommon option, as the set of factors that influence outcomes includes a range of characteristics of communities, forests, and national policy contexts. Rather, development programs may need to focus more on the nature of potential tradeoffs in a given implementation context, what interventions might be a stronger fit for such contexts, and where communities may need additional support to overcome unfavorable context conditions.
- Hajjar et al. has a stronger focus on the nature of rights in communities: who in local communities benefits from collective rights, who is left out of the creation of new community-based institutions, and who is negatively affected by changes to individual rights.
- The focus of the enabling conditions is also necessarily somewhat different given the sourcebook's focus on CBFEs.

Annex 4 summarizes how the sourcebook and Hajjar et al. each approached the conceptualization of CFM theories of change and learning approaches, their specific focus on enabling conditions, context factors, co-benefits and related issues, and key messages for programming design and implementation.

CONCLUSIONS AND RECOMMENDATIONS FOR USAID

This brief drew on recent published findings from a large-scale analysis of 643 CFM cases across 51 countries. It examined tradeoffs among three dimensions of outcomes that CFM aims to achieve (environmental, income, and natural resource rights) and identified key factors linked to positive outcomes across at least two of these dimensions. The findings summarized here highlight opportunities for learning and for USAID programming to consider regarding CFM program design and implementation, to strengthen CFM's likelihood of meeting its multiple and diverse sustainability goals.

Many studies have pointed to the complex ways that multiple factors likely interact in a given setting to either facilitate or complicate the ability for a CFM project to achieve success across multiple dimensions. Hajjar et al. shed new and useful light on several factors that appeared in many cases to be associated with achieving at least two of CFM's focal dimensions and highlighted that in many cases CFM is not achieving all three of its ultimate goals. Improvements on resource rights and access are often not

achieved, highlighting a need for greater programming attention on how CFM interventions can better promote this outcome.

Additional key conclusions include:

- The nature of community *de facto* and *de jure* rights prior to CFM interventions and the changes to them as a result of a given intervention are of high importance in shaping the potential for CFM's diverse goals to be achieved.
- CFM interventions can do more to consider who in local communities benefits from collective rights, who is left out of the creation of new community-based institutions, and who is negatively affected by changes to individual rights under CFM.
- Many contextual factors can influence the likelihood of a CFM intervention to achieve its stated goals. No single or small group of factors will universally determine whether a CFM intervention will achieve its goals in a given context. Context factors appear to matter, which may have implications for where interventions are located, the nature of programming provided, and expectations for outcomes. Hajjar et al. highlighted several key factors including type of CFM, time since policy change, type of forest, degree to which a community adheres to forest rules, nature of community *de facto* and *de jure* rights to forests, population size of the management community, and migration.

Ultimately, as with any policy intervention, CFM will likely work better in some places than others and it is not possible to predict exactly how the trajectory will unfold at a given site.

Rather than being prescriptive, the findings point to factors that should be carefully considered when designing or supporting CFM programs. Decision makers and practitioners can use these factors as starting points when thinking through theories of change in setting up or supporting CFM projects. For example, rather than just focusing on rights given (*de jure*), program designers are encouraged to also consider the nature of rights practiced (*de facto*) and who within a community is allowed to practice them. They can consider: what a given forest type might mean in terms of how to compensate for opportunity costs or product marketability, which in turn can help to clarify the nature of the CFM intervention's support to the appropriate enterprises; what appropriate support systems and what empowering co-management might look like to overcome other unfavorable conditions; and how the influx or outflux of people might affect local institutions in this situation, if applicable. Program designers can also gain additional information in these respects from the growing list of comprehensive country-specific studies,[30] where policy context and other key context factors are confined to a narrower range of possibilities and patterns and trends within that more limited universe of possibilities can potentially be more easily discerned.

Hajjar et al.'s findings also pointed to ongoing and important knowledge and data gaps regarding CFM programming's effectiveness and its relationship to the contexts in which these programs are embedded. Besides geographical gaps in knowledge, there was limited data availability on several contextual factors in the CFM literature reviewed. Market factors (e.g., distance to markets, product values, input costs for forestry or agriculture) were the least recorded, despite a growing understanding of their importance to

[30] For example, see Meijaard et al. 2020 for Indonesia.

successful CBFEs and forest conservation. As Hajjar et al. shows, there is potential to contribute to some of these gaps through targeted case studies, special studies, learning, and evaluations of CFM programs, including those supported by USAID. There are also opportunities for USAID to contribute to building a more systematic and nuanced evidence base through such data collection, which in turn opens up opportunities for additional research to answer key questions on what works best for achieving CFM goals.

Hajjar et al.'s work draws attention to the following key issues where targeted studies and research could help fill knowledge gaps:

On identifying causal mechanisms:

- Several studies have begun to use national-level data to examine country-wide CFM program impacts with rigorous methods,[31] yet most assess the presence or absence of CFM without examining the different types of institutional arrangements, including the role of CFM tenure types and tenure security, in moderating impacts. Hajjar et al. point to the importance of tenure types but were unable to establish cause-and-effect relationships or determine effect sizes. While typically data intensive and time consuming to develop, it is possible to design studies that use available national-level data (e.g., remote sensing, socioeconomic surveys, CFM boundary data, types of in-country CFM policies) and rigorous counterfactual study designs to test hypotheses related to tenure types and security to assess the differential impacts of different CFM institutional arrangements. This is more feasible in certain countries and is highly dependent on the availability and quality of existing and historical data in the country.
- Knowing that a number of factors likely interact in a given context, it is often difficult to isolate mechanisms using large-scale quantitative analyses that gloss over nuances and quantitatively unobservable interactions. As such, qualitative methodologies that trace causal mechanisms on small to medium sample sizes of community forests (such as process tracing, qualitative comparative analysis, or realist-synthesis reviews) can also illuminate causal pathways to successful CFM implementation.

On geographical bias:

- Southeast Asia is greatly underrepresented in the CFM literature, despite USAID's program focus and CFM policies expanding dramatically in the region in the last two decades. Availability of secondary data in several countries could, however, allow for a rigorous study design that could produce generalizable knowledge for the region on CFM's impacts and the role of different types of rights.
- While several Latin American countries are often cited as great examples of CFM, this region is proportionally underrepresented in the literature given the extent of its community forests. The literature also largely overlooks unconventional CFM models, excluding extensive areas of locally and informally controlled endogenous community forests. Policymaking thus occurs without an accurate understanding and evidence base of very diverse community-level forestry experiences and outcomes. Mapping how communities engage with forests in both formal and informal realms can inform how legislative and project support can accommodate and enhance

[31] For example, see Oldekop et al. 2018 and Rasolofson et al. 2017

varying models of community-managed forests and how informal actors can be brought in the legal fold.
- In Africa, CFM research has focused on a small number of countries with early national policy change such as Tanzania and Cameroon, but even in those countries there is still insufficient comprehensive quantification of CFM's impacts and mechanisms at the national level. In addition, many countries have more recently implemented national forest policy reforms with varying devolution of rights and support to communities, and may also be well placed for targeted or larger-scale CFM studies (e.g., Liberia, the Democratic Republic of the Congo).

On specific outcomes that remain understudied:

- Hajjar et al. did not specifically track gender equity issues, although case study work has repeatedly pointed to project interventions further marginalizing women from decision-making processes and exacerbating inequalities. Regional comparative case studies, or a targeted systematic review of CFM literature that addresses gender issues, could illuminate trends in gender equity following CFM as well as identify mechanisms that have been successful at empowering women.
- Hajjar et al. tracked CFM's impacts on food security but few papers reported on food security so they were unable to use it in their analysis. Given the importance of forest foods and the common use of forestlands for small-scale agriculture, USAID's CFM programs could track how forest restrictions, or enhanced incomes from alternative practices, impact food security of communities (and asymmetries of this within communities).

RECOMMENDATIONS FOR USAID

This section highlights recommendations for USAID to consider in the design and implementation of CFM programming as well as considerations for learning and evaluation of CFM activities for multidimensional sustainability outcomes. The recommendations stem from the findings and main conclusions highlighted in this brief, and particularly regarding Hajjar et al.'s evidence regarding two issues: (1) the commonness of rights losses under CFM interventions, which suggest a need for additional ways to ensure that community rights are not compromised in pursuit of other goals under CFM; and (2) a need to more strongly account for and consider contextual conditions in CFM program design and implementation. CFM program designers should take the conclusions of Hajjar et al. into consideration but also keep in mind that the findings from this research are not intended to be prescriptive in the sense that if conditions the authors highlight are in place then CFM programmers can expect the desired CFM outcomes will necessarily be achieved.

Recommendations with respect to next generation activity design for USAID CFM programming and implementation:

- Ensure that CFM program design phases include ample focus on developing clear and detailed theories of change that consider not only program assumptions, inputs, intermediate outcomes/mechanisms, and impacts across each of the three major categories of objectives, but also attention to context factors and how specific factors might interact to shape outcome trajectories. This includes characteristics of communities, forests, and national policy contexts.
- Ensure adequate time for projects to think strategically about how to work within a given set of unchangeable context conditions that may influence outcomes in different ways, the nature of potential tradeoffs in a given implementation context, what interventions might be a stronger fit for such contexts, and where communities may need additional support to overcome unfavorable context conditions.

- Ensure consideration of projected distributional asymmetries in communities as resource access rights are modified through formalizing CFM, ensuring that any losses of previously enjoyed rights are compensated for adequately and equitably in project design or in leveraging alternative livelihood and resource options. Carefully consider viability and sustainability of existing activities and alternative management options of resources, rather than outright bans and heavy restrictions on forest use, so as not to unduly burden vulnerable user groups.

Recommendations with respect to research, evaluation, and learning from CFM activities:

- Continue to support a systems approach to learning around CFM interventions, including encouraging research, evaluation, and learning to engage more substantively with the complex set of factors and interactions that shape CFM trajectories.
- Ensure that gender and equity issues within CFM communities receive adequate attention in research, evaluation, and learning activities, in addition to a focus on community-level processes and outcomes.
- To enhance learning opportunities from USAID investments, collect baseline data (including on a variety of contextual factors) prior to the start of USAID-supported CFM interventions where possible, and at follow-up intervals to better understand forest-livelihood dynamics and how these are influenced by CFM interventions. Counterfactual research and impact evaluation methods, which have increasingly been applied in the CFM space, are generally the most credible way to learn about CFM's impacts at scale, though they require advance planning and can be more costly and time consuming to implement. A variety of other research approaches can also shed light on aspects of change in communities and forests under CFM.
- Ensure that projects adopt an adaptive management approach to continually reassess project and program support to suit changing community needs and changing economic and ecological landscapes. Consider a participatory action research approach to involve communities in agenda setting, monitoring of intermediate impacts, and adapting to new findings.

ANNEX 1: ADDITIONAL TABLES AND FIGURES

TABLE A1: CASES REPORTING THE CFM INTERVENTION'S PRINCIPAL AIM

	Frequency	Percent
Forest conservation	97	18
Forest conservation and livelihood improvement	406	75.5
Livelihood improvement	35	6.5
Total	538	100

TABLE A2: YEARS SINCE POLICY CHANGE, WHEN A POLICY CHANGE WAS NOTED BY THE AUTHORS

	Frequency	Percent
>10 years old	389	55.8
<5yrs	39	5.6
5-10 yr	92	13.2
no policy change	48	6.9
NR	129	18.5
Total	697	100

TABLE A3: YEARS SINCE LOCALIZED PROJECT INTERVENTION WAS IMPLEMENTED

	Frequency	Percent
>10 years old	153	22
<5yrs	68	9.8
5-10 yr	170	24.4
NR	306	43.9
Total	697	100

TABLE A4: FOREST OWNERSHIP BY REGION

	Communally owned	Customary	Open access	Private	Protected public	Total
Africa	86	13	0	0	30	**129**
East and Southeast Asia	24	7	4	1	10	**46**
Latin America	79	3	2	1	3	**88**
South Asia	280	14	9	0	16	**319**
Total	**469**	**37**	**15**	**2**	**59**	**582**

TABLE A5: DE JURE RIGHTS* BY REGION

	Access	Partial withdrawal	Management	Exclusion	Alienation	Total
Africa	0	16	65	17	12	**110**
East and Southeast Asia	2	14	15	6	0	**37**
Latin America	0	4	24	29	13	**70**
South Asia	4	35	118	122	0	**279**
Total	**6**	**69**	**222**	**174**	**25**	**496**

**CFM rights are cumulative; to have withdrawal rights, one also has access rights; to have management rights, one also has withdrawal and access rights. Thus, the number of cases listed as having partial withdrawal rights indicate that they only have withdrawal rights, and have no management, exclusion or alienation rights. "Partial" withdrawal here indicates that they have rights to withdraw some resources, but this rarely includes more valuable resources such as timber.*

TABLE A6: DE FACTO RIGHTS BY REGION

Region	Partial withdrawal	Management	Exclusion	Alienation	Total
Africa	14	45	27	15	**101**
East and Southeast Asia	10	18	13	1	**42**
Latin America	3	26	24	23	**76**
South Asia	17	104	126	0	**247**
Total	**44**	**193**	**190**	**39**	**466**

TABLE A7: TENURE SECURITY BY REGION

	Insecure tenure	Secure tenure	Total
Africa	35	38	**73**
East and Southeast Asia	10	13	**23**
Latin America	16	39	**55**
South Asia	37	170	**207**
Total	**98**	**260**	**358**

TABLE A8: CHANGE IN OUTCOMES BY ACTIVITY

	Environment			Income			Access		
	increase	decrease	little or no change	increase	decrease	little or no change	increase	decrease	little or no change
timber only*	11	16	5	25	4	8	3	8	8
timber and NTFP	70	25	8	63	1	15	26	41	3
timber and conservation	1	0	2	3	0	0	3	0	0
NTFP only	12	7	2	14	0	3	7	6	4
NTFP and conservation	84	42	18	56	10	32	19	50	3
conservation only	50	21	10	24	3	10	10	11	4

**Timber extraction alone more often led to decreasing environmental conditions, but interventions that focused on both timber and NTFPs performed better.*

TABLE A9: CHANGE IN OUTCOMES BY RIGHTS

	Environment*			Income**			Access		
	Increase	Decrease	Little or no change	Increase	Decrease	Little or no change	Increase	Decrease	Little or no change
Insecure rights	20	37	9	21	10	9	18	26	6
Secure rights	117	63	29	118	6	39	40	66	11

*Pearson's Chi-square p<0.001; Phi and Cramer's V = 0.241 **Pearson's Chi-square p<0.001; Phi and Cramer's V = 0.317

FIGURE A1: OUTCOMES OF THREE ENVIRONMENTAL INDICATORS

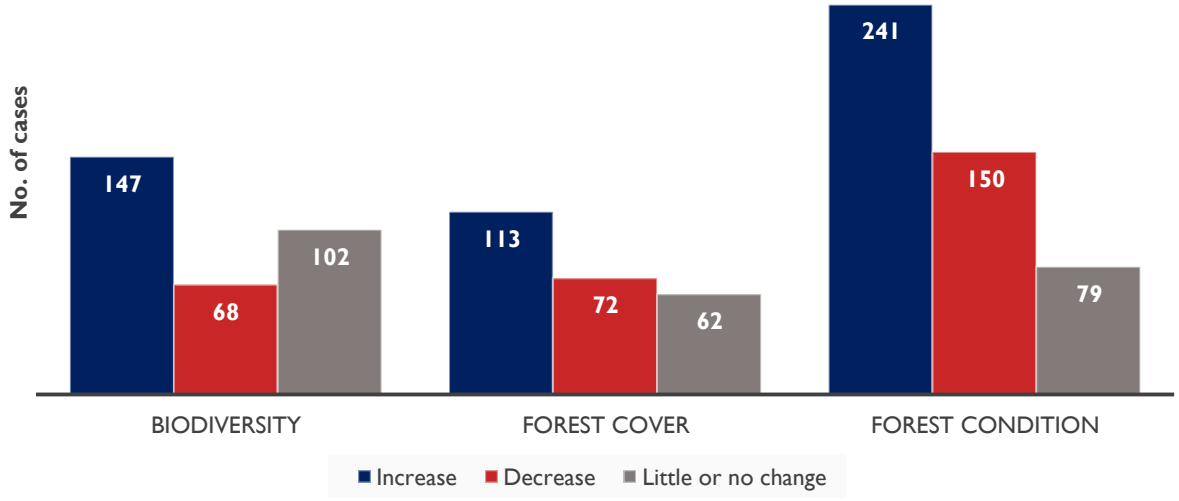


FIGURE A2: OUTCOMES OF ECONOMIC INDICATORS

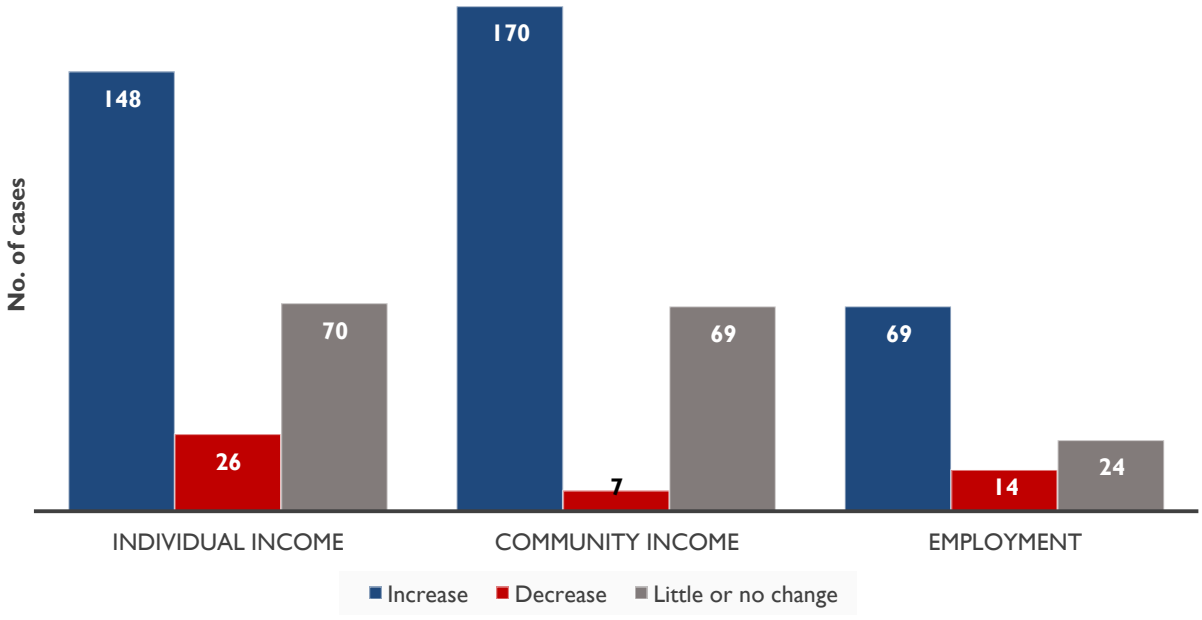


FIGURE A3: RESOURCE RIGHTS INDICATORS

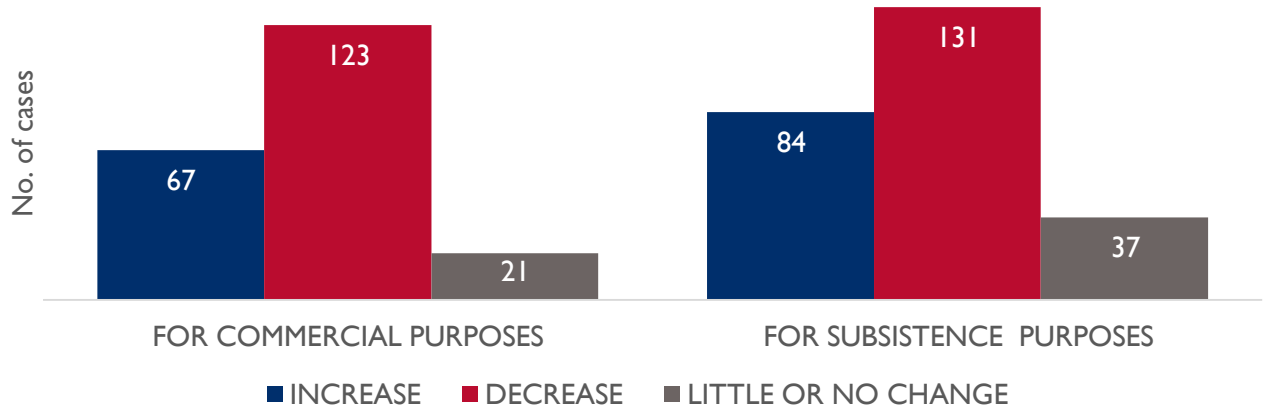


FIGURE A4: REGIONAL DIFFERENCES IN COMPOSITE OUTCOME INDICATORS

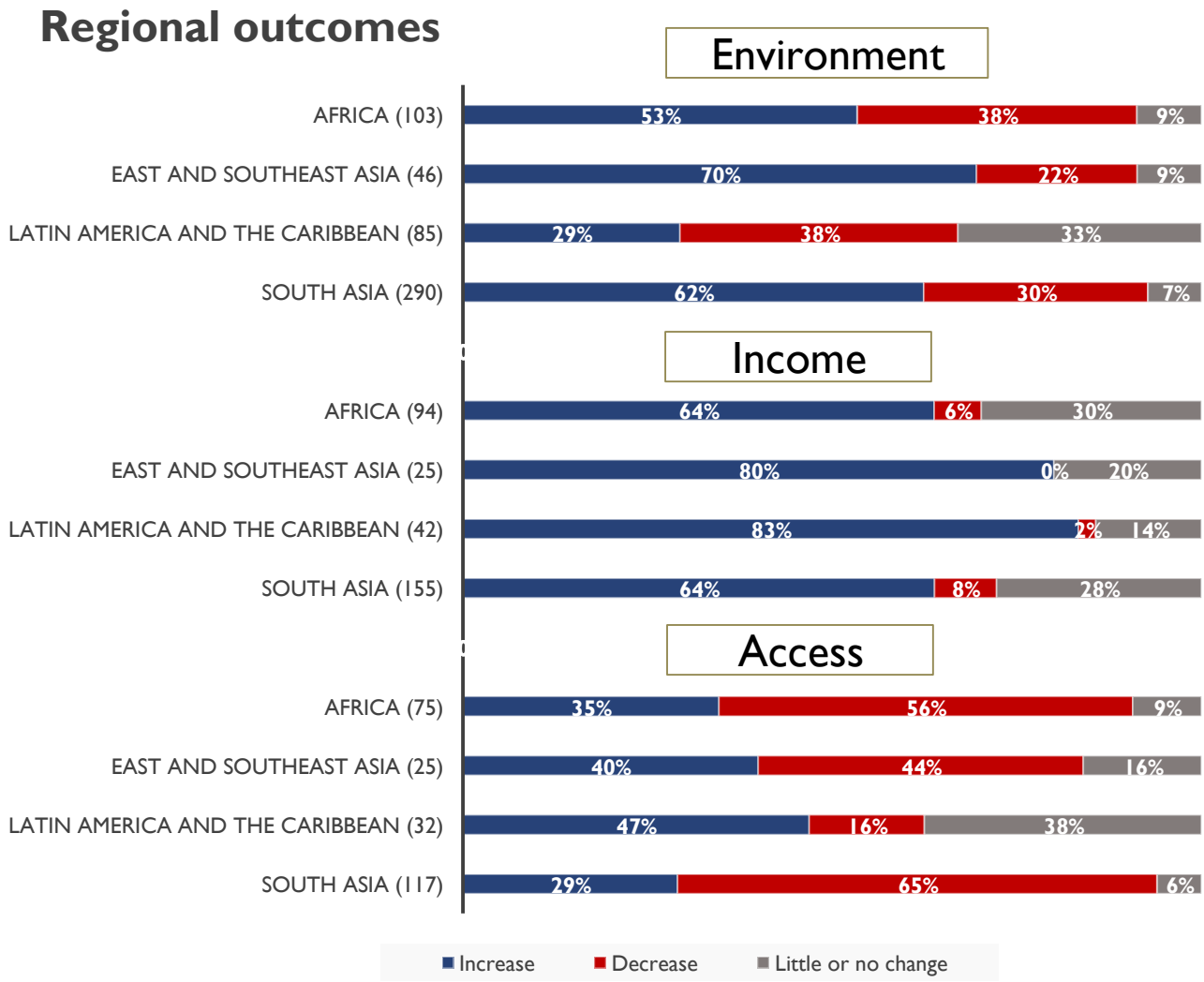


FIGURE A5: CFM OUTCOMES IN INDIA, NEPAL, MEXICO, AND TANZANIA

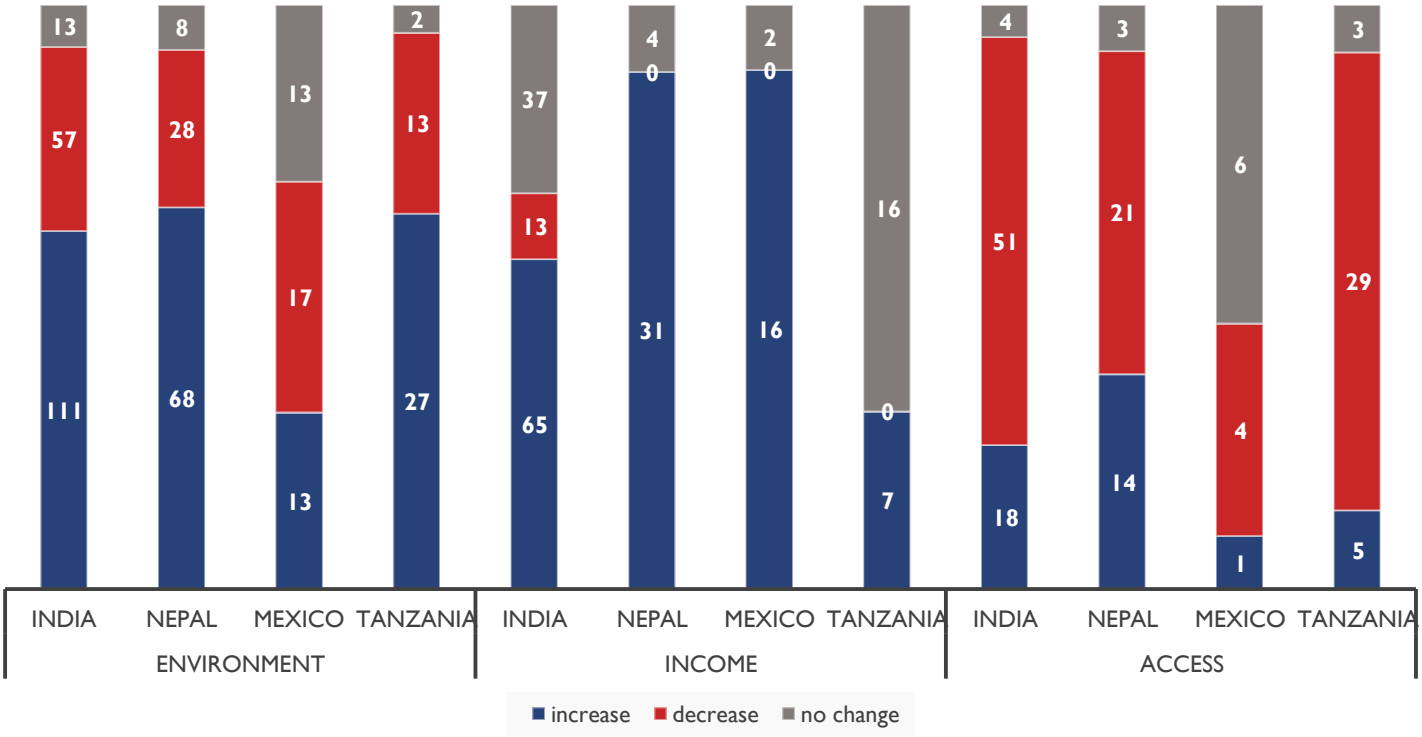
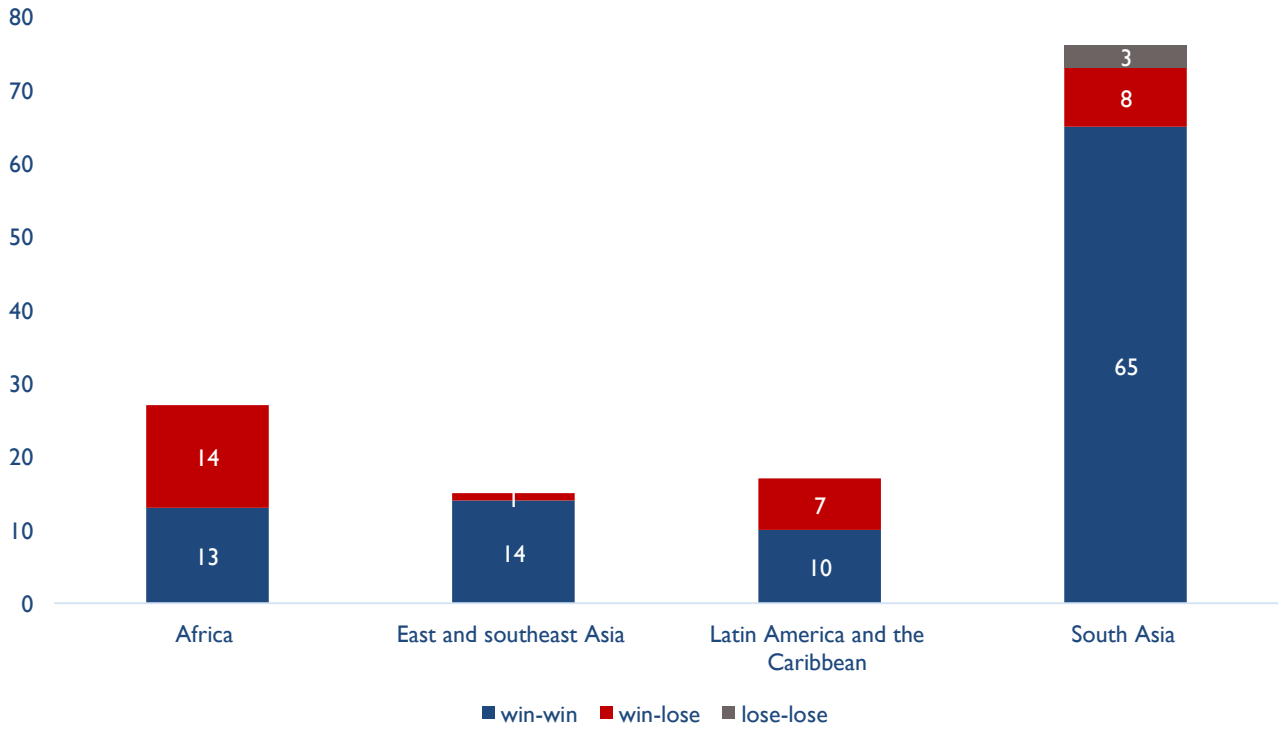


FIGURE A6: JOINT* ENVIRONMENT AND INCOME OUTCOMES BY REGION



**Reporting win-win, win-lose, and lose-lose outcomes. Not depicted: cases that saw little to no change in one or both outcomes, or cases only reporting on one dimension.*

FIGURE A7: JOINT ENVIRONMENT AND RIGHTS OUTCOMES BY REGION

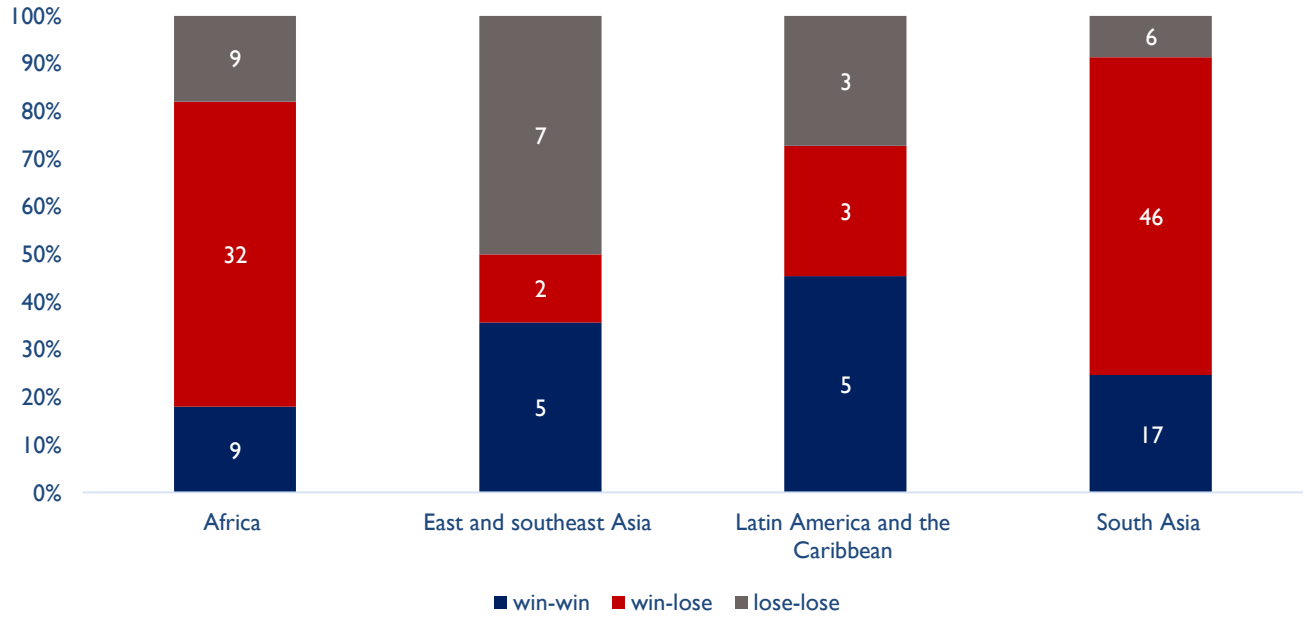


FIGURE A8: JOINT INCOME AND RIGHTS OUTCOMES BY REGION

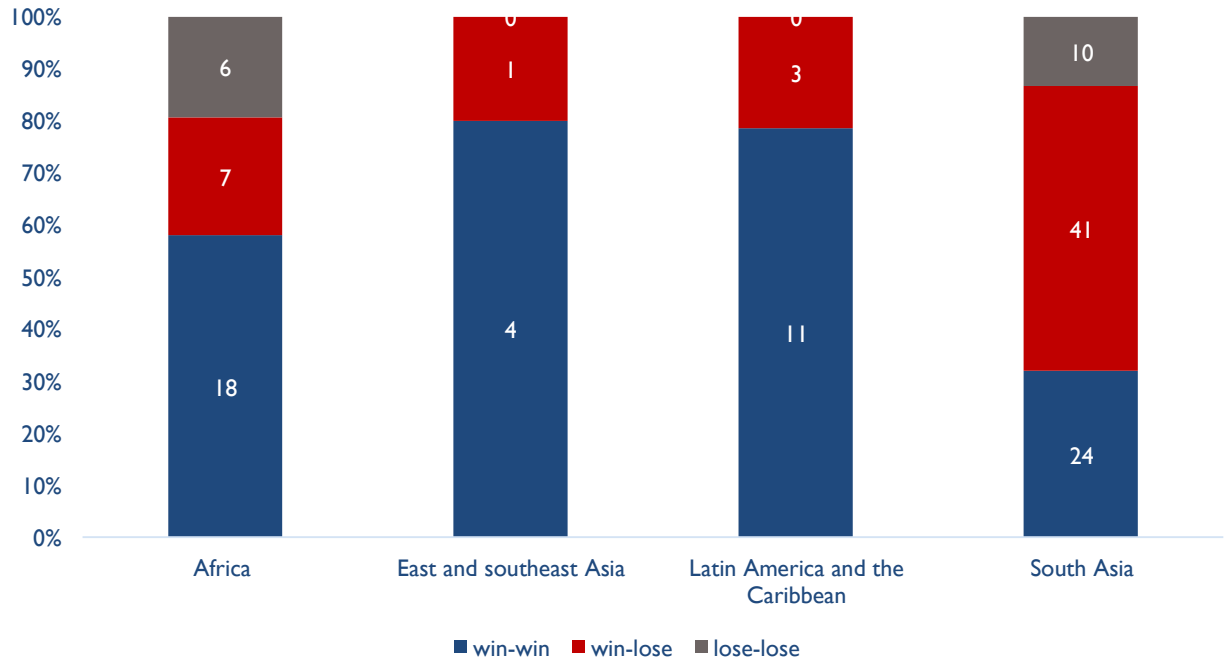
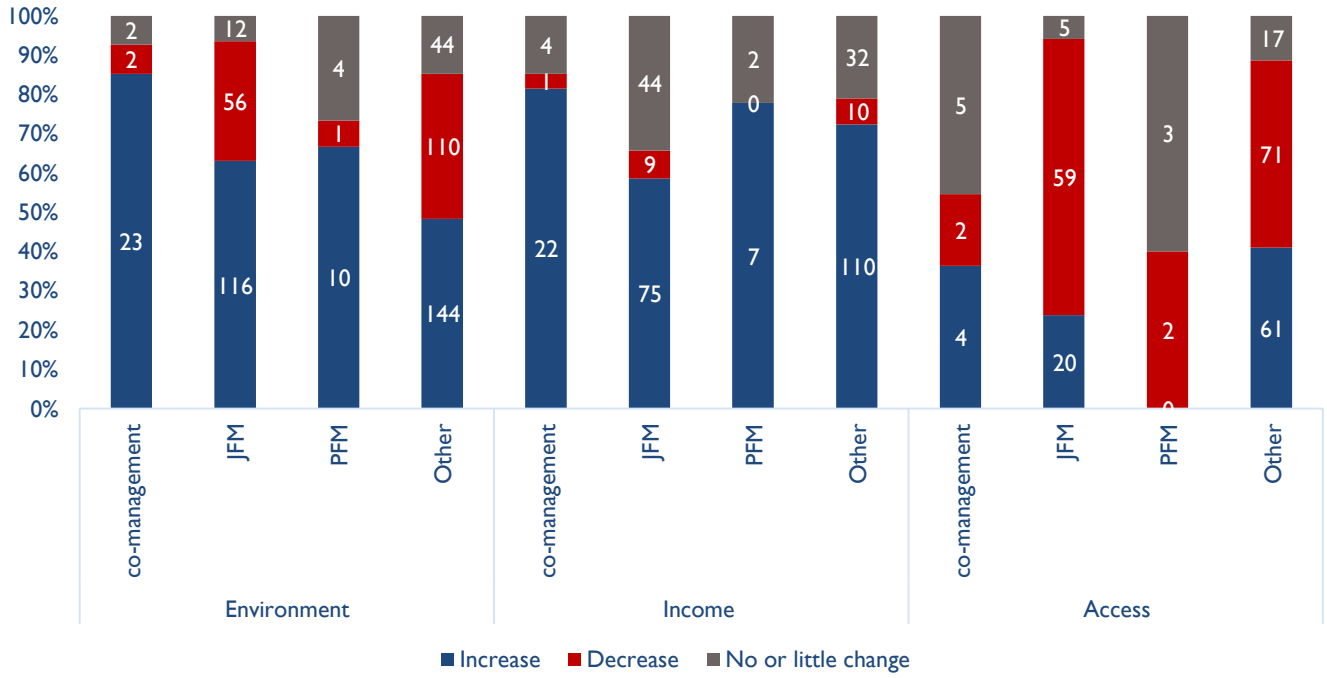
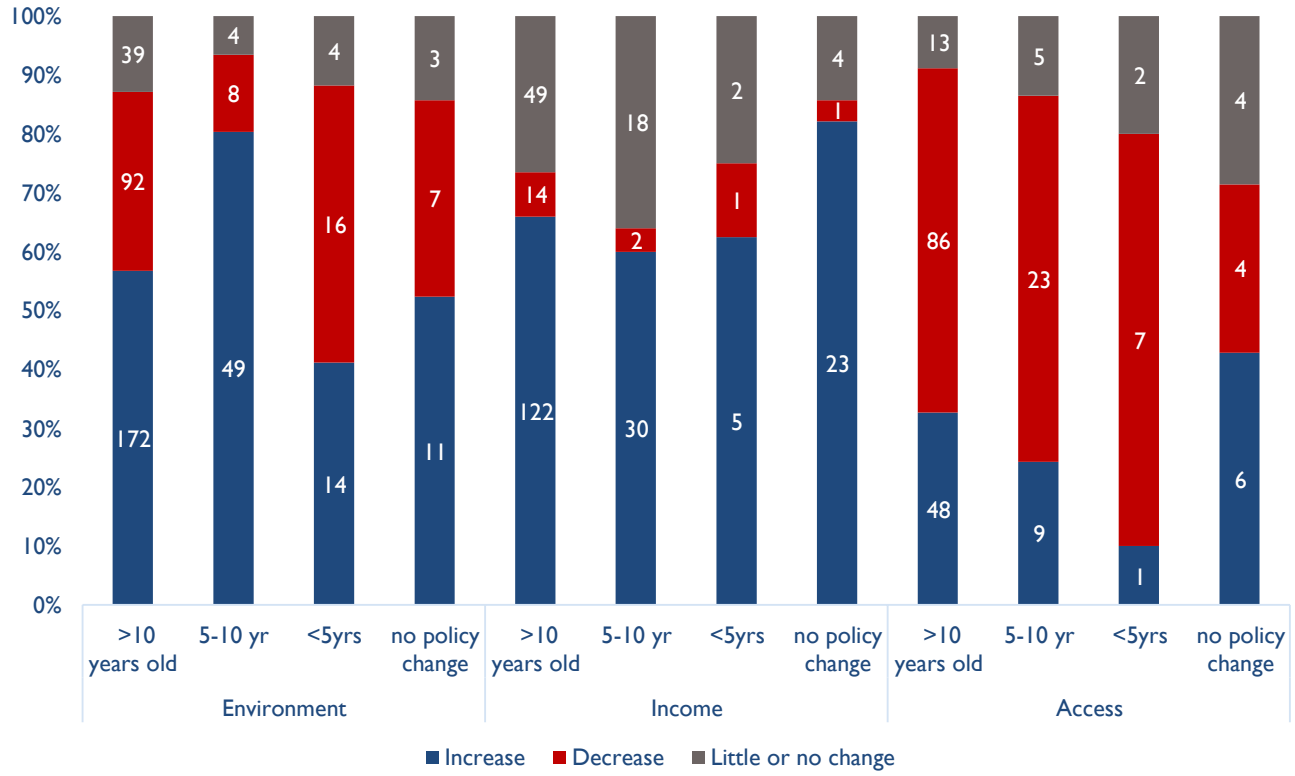


FIGURE A9: OUTCOME BY CFM TYPE*



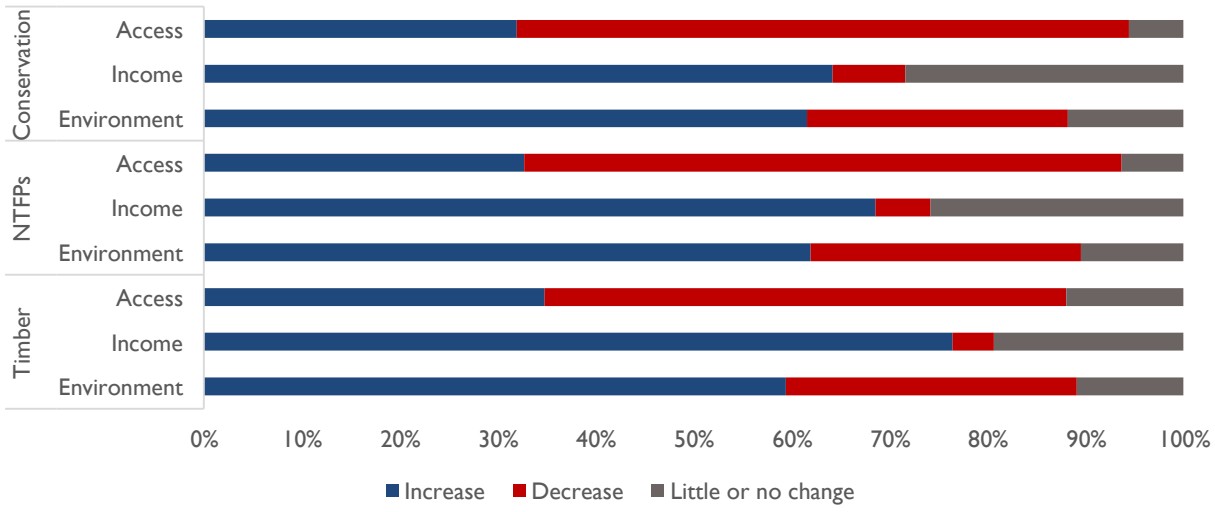
**Co-management cases performed better than all other types of CFM for cases where both environmental and income outcomes increased.*

FIGURE A10: OUTCOME BY YEARS SINCE POLICY CHANGE*



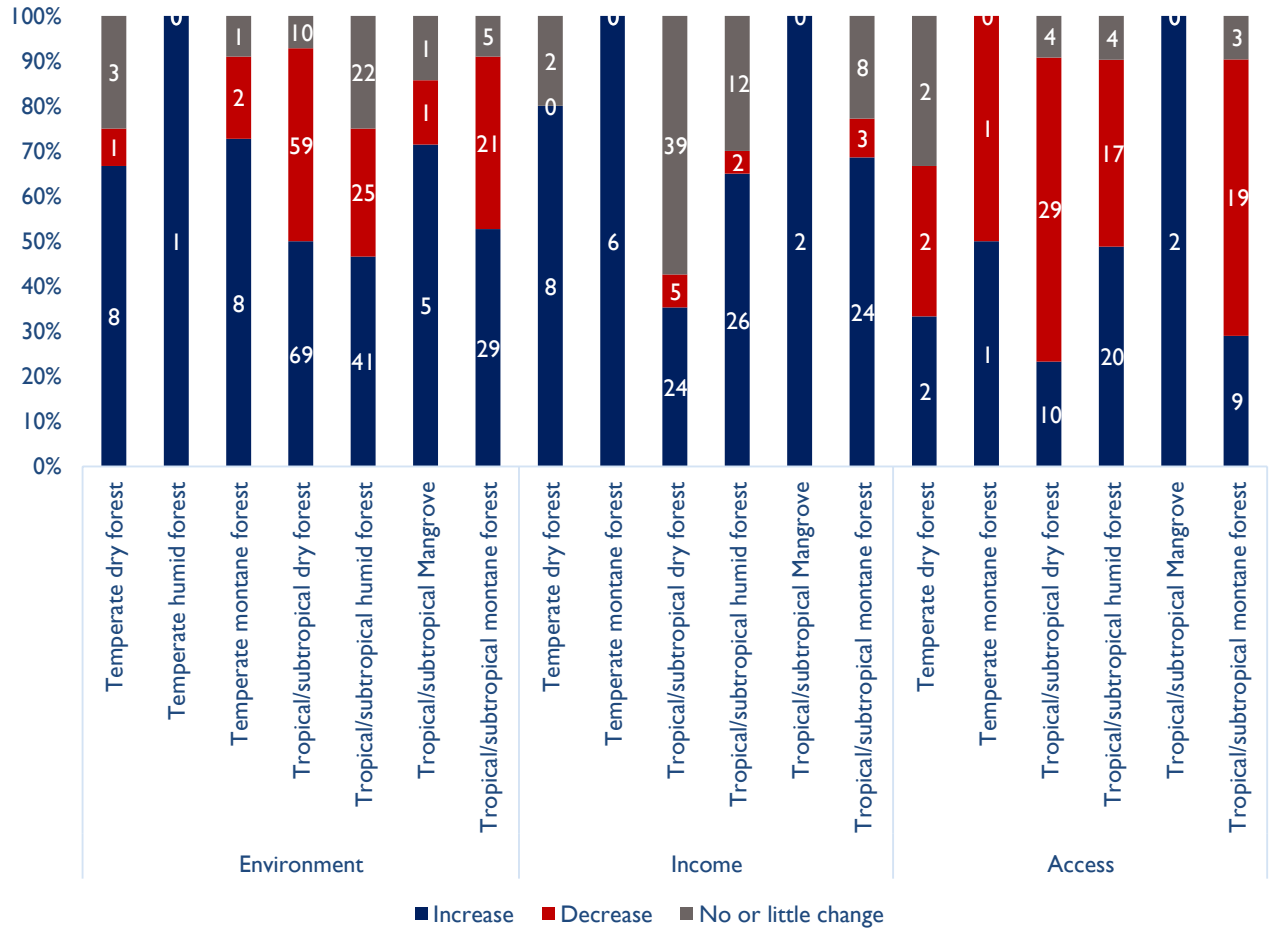
This variable was recorded as the number of years since a major CFM or decentralization policy change at the national/regional level at time research conducted. If multiple policies/laws have changed, the latest policy or the focus of the research was recorded. No policy change (most associated with positive triple outcomes) refers to no policy change being noted in the article (the intervention was a specific project only, or the authors made no references to specific policy change). >10 years was more likely to be associated with positive triple outcomes than <10 years.

FIGURE A11: OUTCOMES BY MANAGEMENT ACTIVITY*



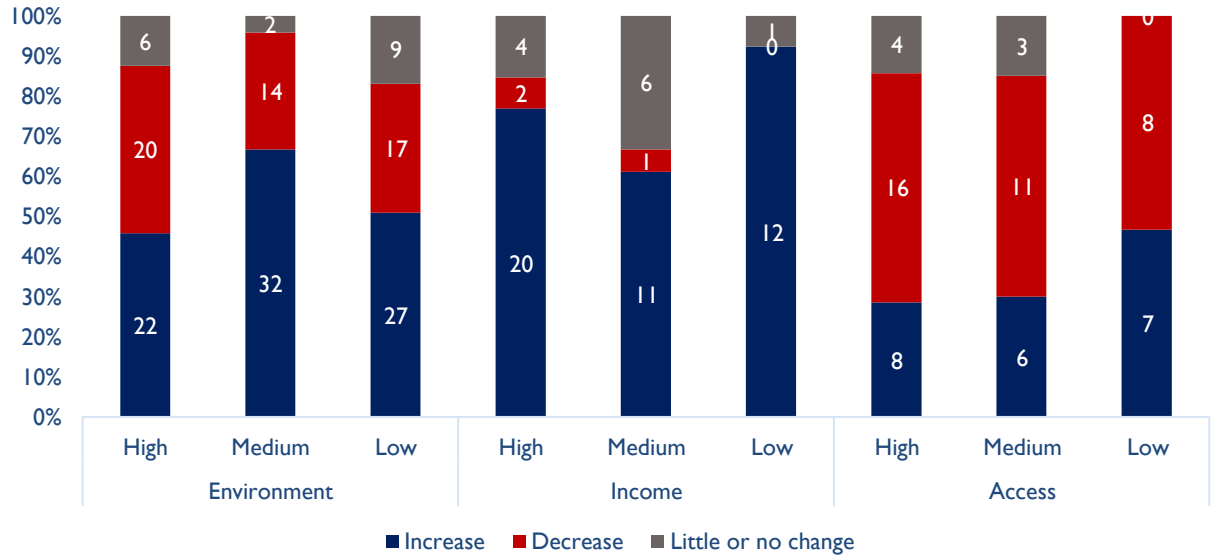
Whether the CFM intervention included commercial timber extraction did not emerge as an important factor related to positive joint outcomes.

FIGURE A12: OUTCOMES BY FOREST TYPE*



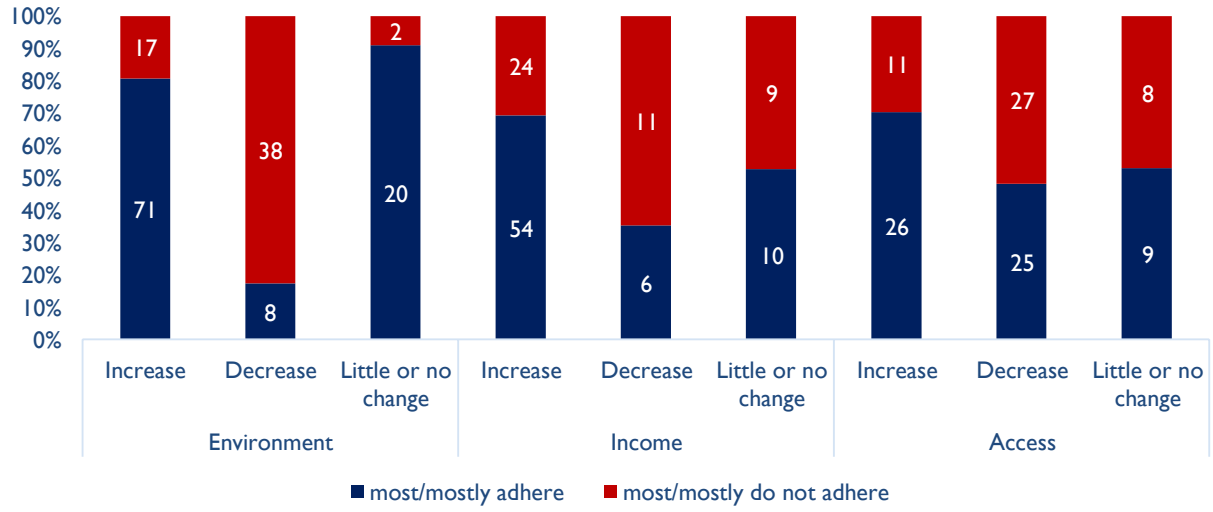
**Forest type was linked to all double- and triple positive outcomes, with different forest types associated with particular combinations of outcomes. Positive environment and income outcomes were more likely to occur in tropical/subtropical montane forests than in any other forest type. Positive environment and resource rights outcomes were more likely to occur in tropical/subtropical humid and montane forests. Positive income and resource rights outcomes were more likely to occur in temperate montane forests.*

FIGURE A13: OUTCOME BY ELEVATION*



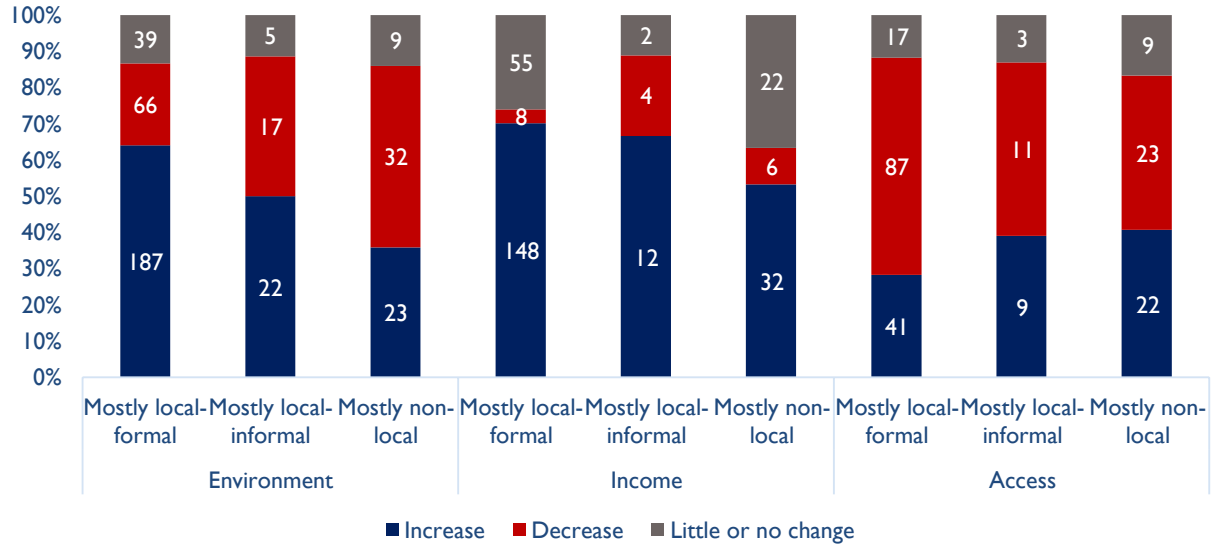
Elevation was not correlated with individual outcomes, but emerged as important for joint outcomes, and when interacting with other contextual factors. Community forests at low or medium elevations were associated with positive joint environment-income outcomes and environment-rights outcomes.

FIGURE A14: OUTCOME BY RULE ADHERENCE*



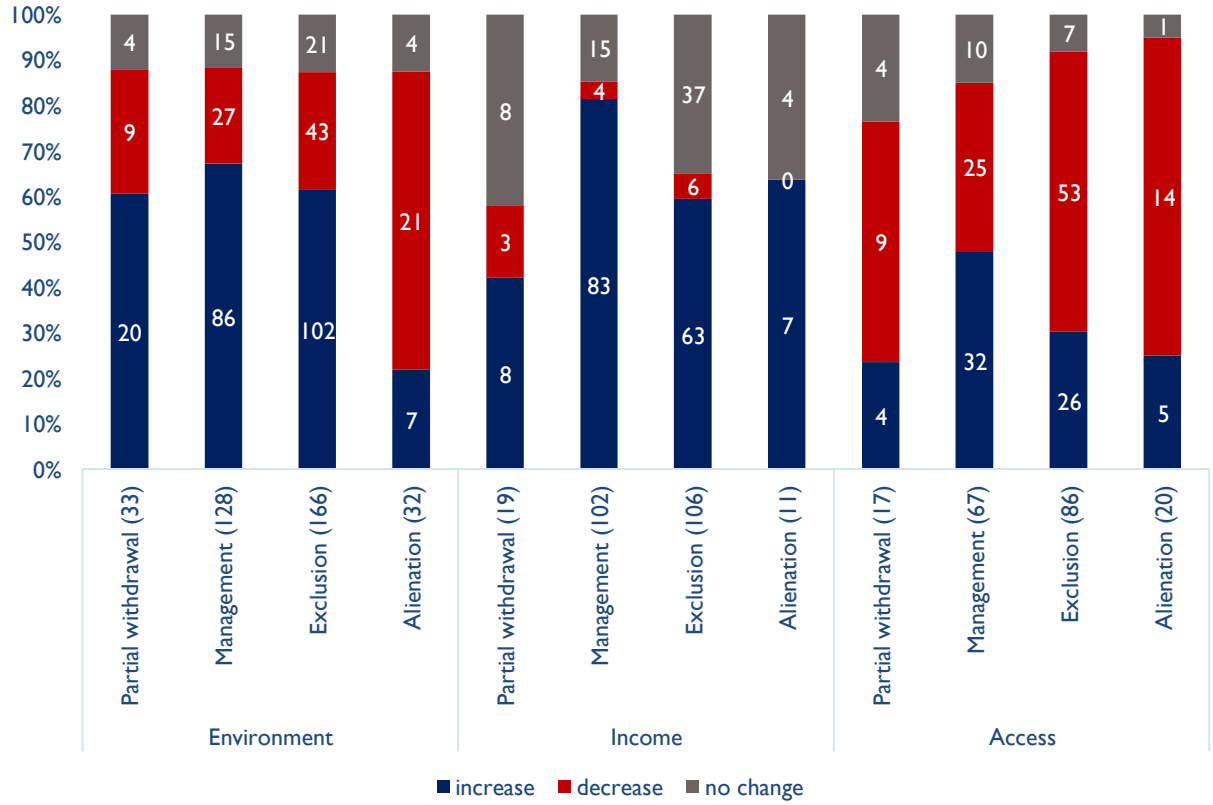
CFM communities that adhered to local rules for forest management were more likely to be associated with positive individual and joint environment and income outcomes.

FIGURE A15: OUTCOME BY AUTONOMY*



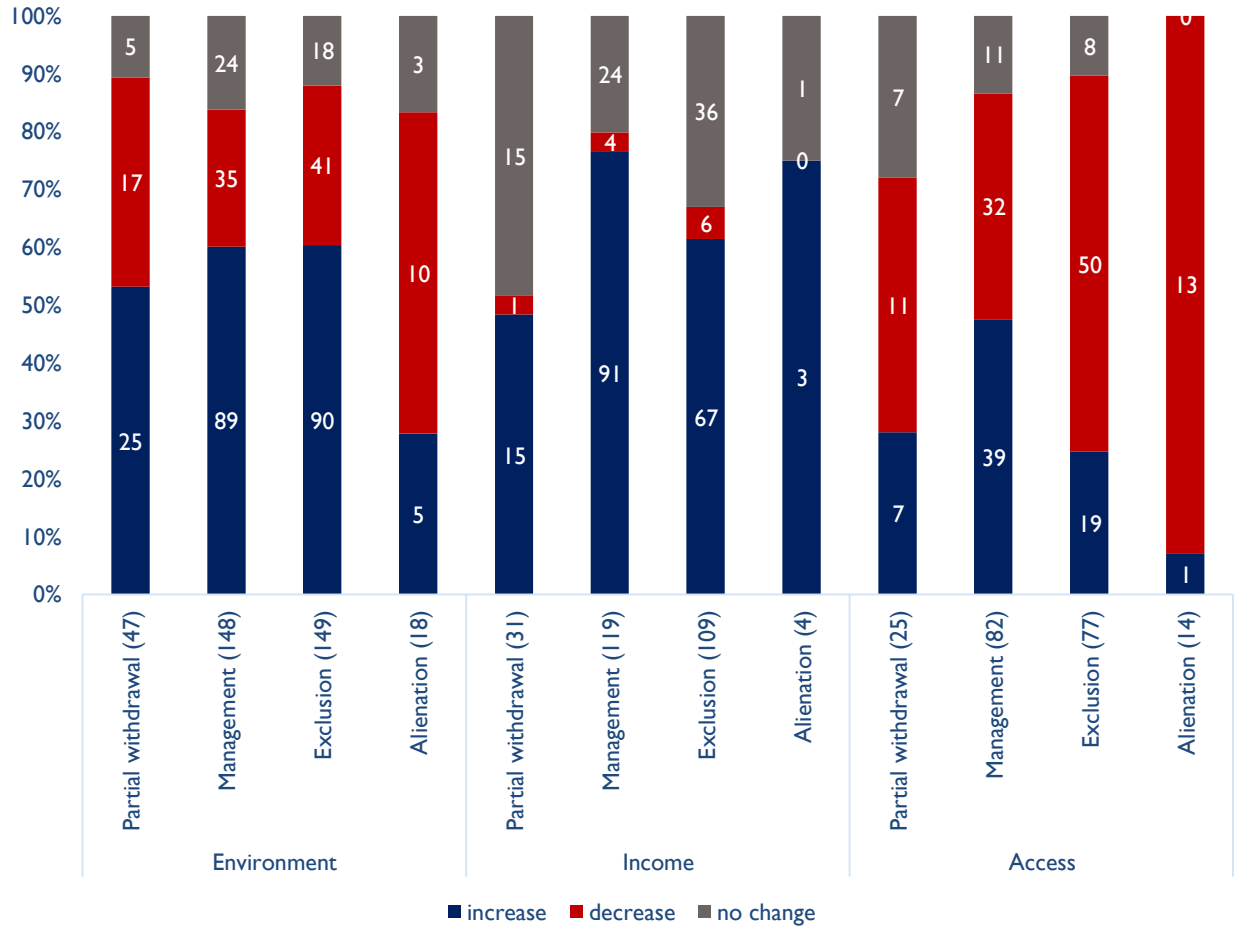
**Local autonomy in decision making did not emerge in the Hajjar et al. models of joint positive outcomes, but was weakly linked to individual environmental and income increases.*

FIGURE A16: OUTCOMES BY DE FACTO RIGHTS*



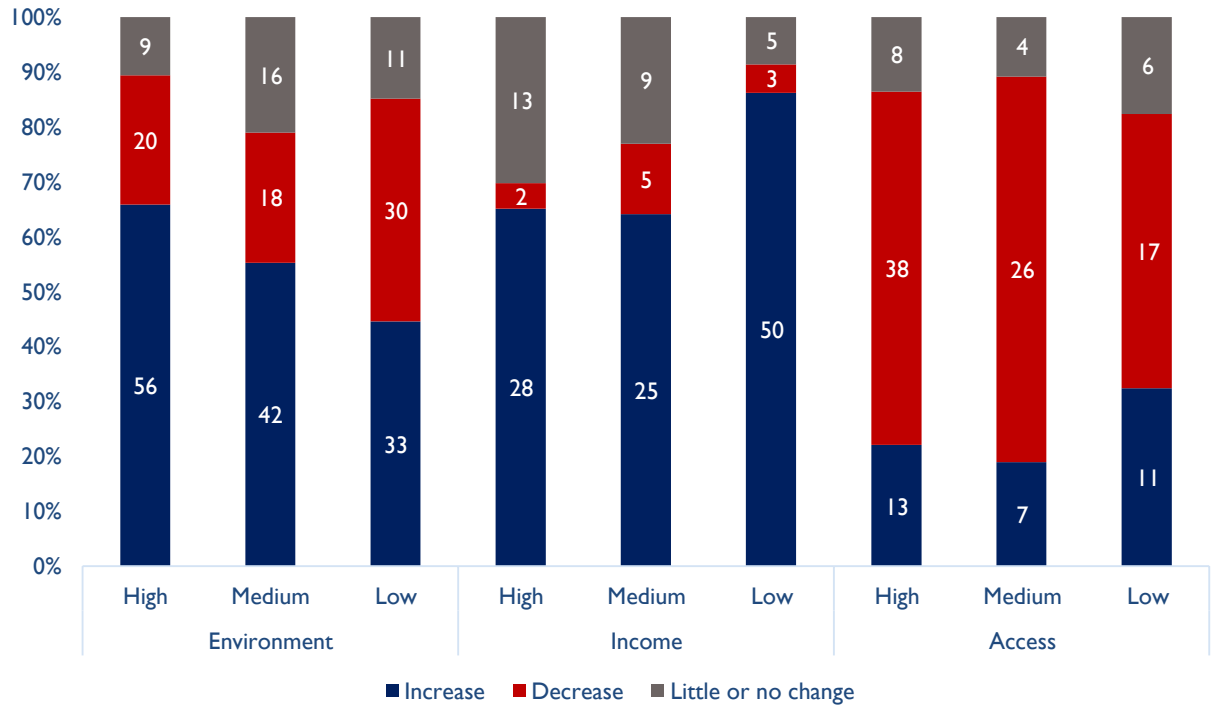
**De facto management rights were associated with better joint outcomes for environment-rights outcomes, income-rights outcomes, and environment-income-rights triple positive outcomes. De facto exclusion and alienation rights were also associated with better income-rights outcomes, and de facto exclusion rights with positive environment-rights outcomes.*

FIGURE A17: OUTCOMES BY DE JURE RIGHTS*



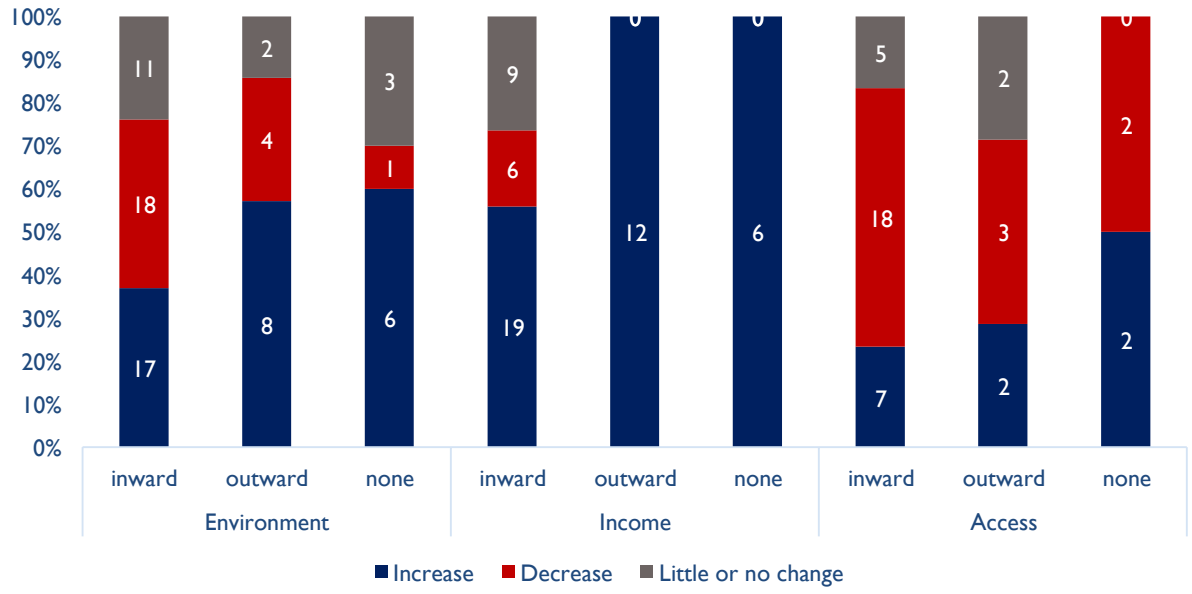
**De jure partial withdrawal rights were associated with better joint environment-rights and joint income-rights outcomes.*

FIGURE A18: OUTCOMES BY POPULATION SIZE*



**Population size was recorded where noted in the article. The sample was then divided into equal terciles to categorize the cases as high, medium, or low. While population size was correlated with all outcomes, when looking at joint outcomes, cases with low population size were only more likely to see joint positive environment and access outcomes.*

FIGURE A19: OUTCOMES BY MIGRATION*



**Inward migration was associated with worse environment and rights, and worse triple outcomes.*

FIGURE A20: JOINT INCOME-ENVIRONMENT OUTCOMES

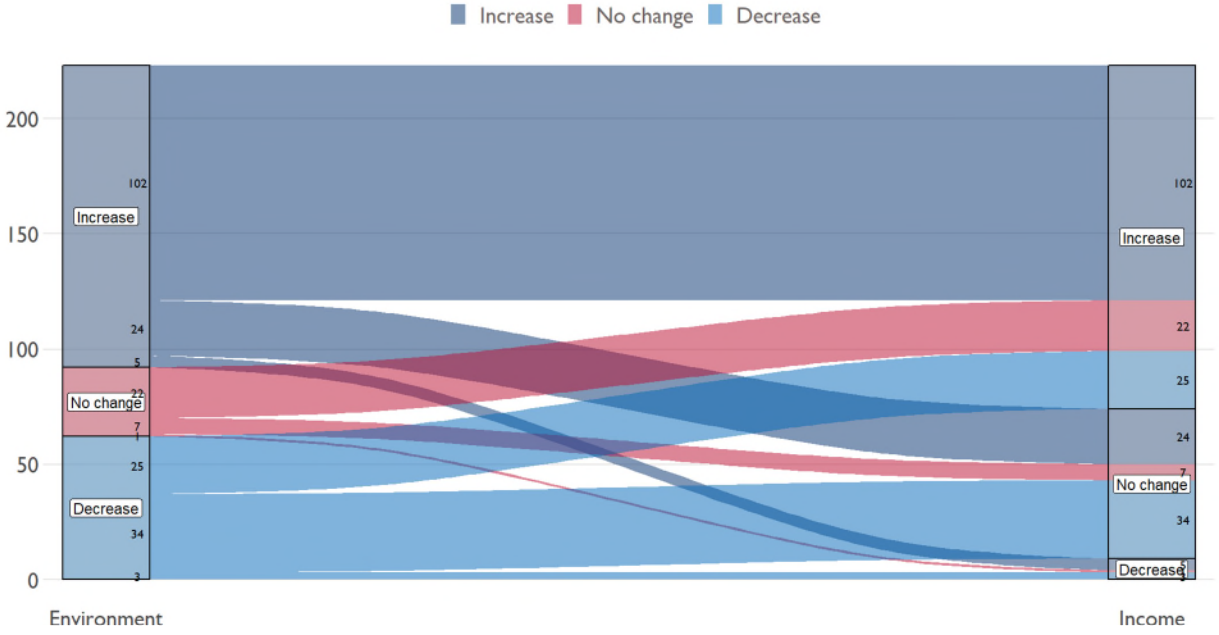


FIGURE A21: JOINT ENVIRONMENT-ACCESS OUTCOMES

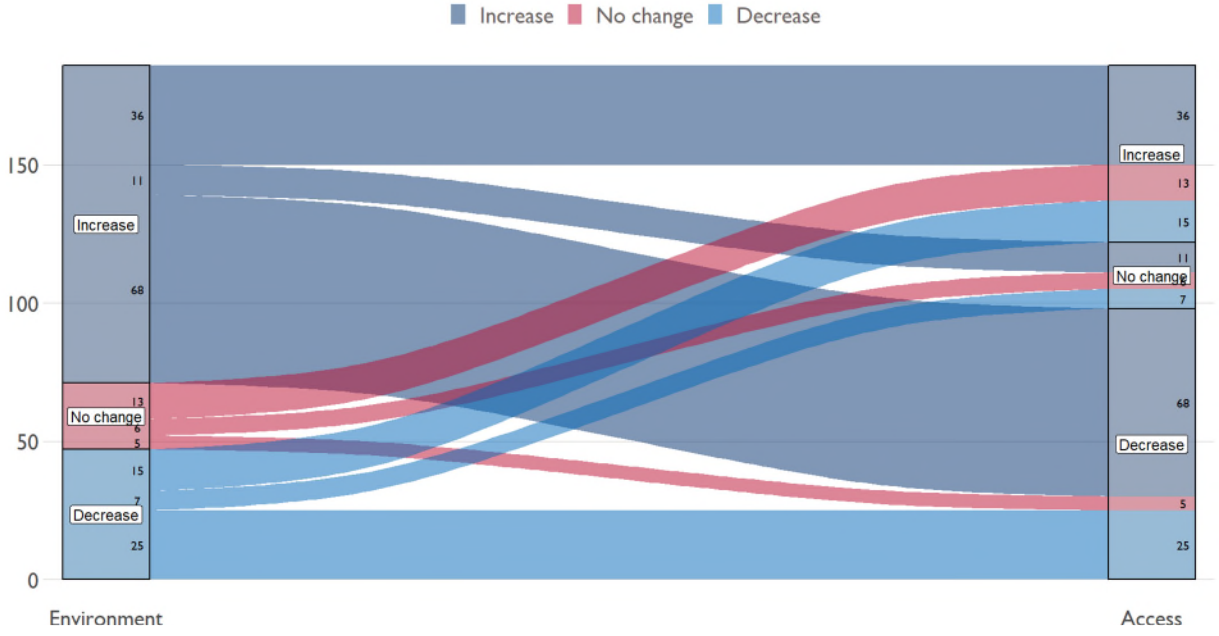
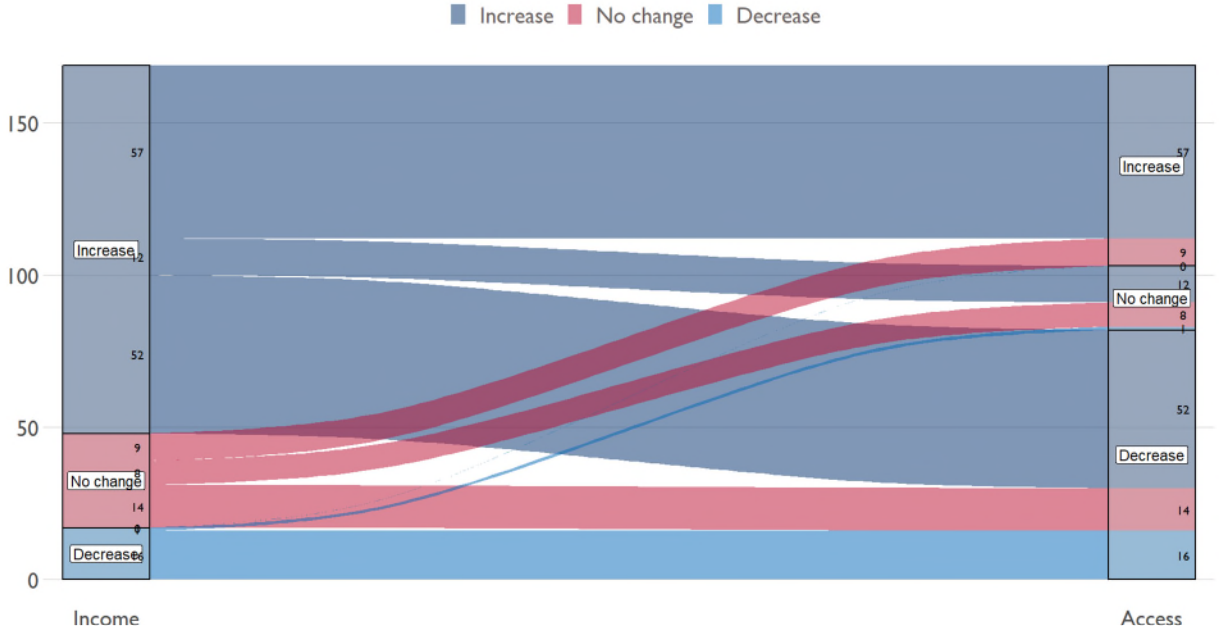


FIGURE A22: JOINT INCOME-ACCESS OUTCOMES



ANNEX 2: ADDITIONAL INFORMATION ON PREDICTOR VARIABLES

INTERVENTION CHARACTERISTICS

"Intervention" in Hajjar et al. refers to either the CFM project or policy change that impacted one of the three outcome variables. The authors studied the type of CFM, the years since the project/policy had been implemented, and the types of activities promoted as part of the intervention (products and services managed for, trainings, and materials), to see if these were associated with the outcomes.

In terms of types *of* CFM policy, **co-management** cases performed better than all other types of CFM for cases in which both environmental and income outcomes improved. This result could suggest that where both government and local actors are actively engaged in CFM, and where co-management potentially leads to greater access to additional resources (e.g., financial support, extension services), positive environmental and income outcomes may be more likely. In contrast, JFM cases mostly saw increases in environmental condition and increases or no change in incomes, but mostly decreases in rights. Several JFM cases in Hajjar et al. described how JFM, a partnership between government and community members to manage forest resources that has often been criticized for power imbalances and control in favor of government, had brought new rules that often resulted in reductions in access to forest resources by community members, such as for grazing livestock or collecting forest products. Inevitably, these access restrictions resulted in improved forest condition, but did not always lead to positive income changes for communities. "Other" cases – a catchall indicator for the large number of cases that were not explicitly labelled as JFM, PFM, or co-managed – were more evenly spread in terms of increases and decreases in environmental and rights outcomes, and mostly increases in incomes. This variation and lack of a clear trend could relate at least in part to the wide range of intervention types that were captured under this broad heading.

The number of years since a major CFM or decentralization policy change at the national/regional level was also an important factor for cases in which all three outcomes were positive. When the authors noted a policy change,[32] these "triple positive outcomes" were more likely to occur after 10 years and least likely to occur within 5 years of the policy change (Annex 1, Tables A2 and A3). Many studies have shown that community-level improvements following major national policy changes to forest governance and management take time to achieve. While it often takes several years for implementation processes from such policy changes to become fully established and truly functional within communities, positive improvements from such changes might be longer lasting.

The analysis in Hajjar et al. also looked at whether the CFM intervention included commercial timber or NTFP extraction, but none of these emerged as important factors for predicting joint outcomes.

Intervention management activities. Whether the CFM included commercial timber extraction did not emerge as an important factor related to positive joint outcomes. Timber extraction is an expected income generator and has also been theorized to motivate sustainable forest management practices (Humphries et al. 2018; Bray et al. 2003). In the Hajjar et al. sample, however, interventions that focused

[32] Hajjar et al. included many cases that did not mention any policies and the focus of the study was just a specific intervention.

only on timber extraction more often led to decreases in environmental conditions (16 of 32 reporting cases) than increases (11 of 32 cases), even though most cases reported increased incomes (25 of 37 reporting cases; see Annex 1, Table A7 and Figure A11). However, interventions that focused on both timber and NTFPs performed better on environmental measures (increases in 70 of 103 reporting cases), but these differences were not marked enough to emerge as key in the statistical analysis. Almost all the interventions in the cases where timber was promoted also included investments and trainings from outside the community, with the idea that that early investment would help communities overcome difficulties in entering a capital- and regulation- intensive activity. Yet even with these early investments, a focus on timber was not consistently associated with positive outcomes beyond the income category. Hajjar et al. (2011) examined additional roadblocks that timber-based CBFEs face in becoming self-sufficient enterprises, and pointed to a need for interventions to look beyond the initial push for capital and technology investments to more sustained and varied support (e.g., infrastructure, business management, marketing capacity building) as the enterprise continues to get off the ground.

BIOPHYSICAL CHARACTERISTICS

Hajjar et al. also looked at how different forest biophysical characteristics, including forest size, type, soil fertility, slope, and elevation, were related to the pattern of outcomes they found. Two biophysical characteristics emerged as important: forest type and elevation.

Forest type. The type of forest (and related biodiversity) can affect the management goals and values that are likely to be set by a CFM effort, while opportunity costs related to different kinds of forest use and management (linked to other biophysical and market conditions as well) can affect the choice of whether to keep a forest standing. At the same time, knowledge and tools to manage tropical forests lag behind those for temperate forests, and humid tropical forests are often located on terrain that makes silvicultural treatments difficult. Humid tropical timber management also tends to focus on only the most valuable species, which are not as abundant as desirable species in temperate forests (Torres-Rojo et al. 2016). Some forest types are also more understudied from a forest management perspective than others, such as tropical dry forests that tend to have fewer valuable species and higher rates of degradation in some countries (Peters 2011).

It is also difficult to disentangle forest type from other potential confounding variables (e.g., which country the forests occur in and the types of CFM policies and practices prevalent in those countries). The analysis was not able to pick apart more complex interactions across several factors, which is why one should not focus too strongly on any one factor as the sole driver of the associations that Hajjar et al. observed. For example, tropical and subtropical dry forests were less likely to have joint positive outcomes and had a proportionally higher number of cases with decreases in access than other forest types. At the same time, tropical and subtropical dry forests were overwhelmingly located in India (90 of the 162 cases in this biome) and Tanzania, both of which also saw a high proportion of cases in which resource access rights decreased following CFM. Similarly, for joint income and rights outcomes, tropical and subtropical montane forests performed poorly while a large proportion of these forests in the sample were located in Tanzania, where there were many cases with "tradeoffs" across the income and rights outcomes (with more losses than gains in access rights).

Elevation. While the study did not observe any correlations between elevation and individual outcomes, *elevation* emerged as important for joint outcomes and when interacting with other contextual factors. Cases with forests at low or medium elevation saw more joint environment-income and environment-access successes than those at higher elevations. Tropical and subtropical montane forests and forests at medium elevations (many of which were tropical and subtropical montane forests) were more strongly associated with positive joint environment-income outcomes. Income opportunities

could be lower in forests at higher elevations due to lower forest productivity in high elevation forests relative to mid-level elevations (Leuschner et al. 2007) and/or difficulties in harvesting and transporting forest products to market (Thanichanon et al. 2013). As such, while elevation was also highly correlated with forest type (montane forests more likely to be categorized as high or medium elevations and non-montane humid and dry forests as low or medium), Hajjar et al.'s inclusion of forest type *and* elevation together allowed for a stronger analysis of factors associated with joint outcomes.

LOCAL INSTITUTIONS

Rule adherence was recorded as whether the majority of the community generally adhered to local rules related to forests, as noted by authors. Cases that mostly adhered to rules were associated with positive joint environment-income outcomes. Rule adherence was positively correlated with environment outcomes and income outcomes on their own as well (Annex 1). This intuitively makes sense: where local communities adhere to forest management rules, such as harvesting timber only with permits or following bans on grazing, the forest condition is likely to improve. Incomes may increase as an indirect result of newly available alternative livelihoods, or if the improved forest condition can sustainably be translated into a commercial activity. Perhaps more interesting than whether communities are adhering to forest rules is what might make them more likely to adhere to the rules. Local participation in rulemaking has been linked to promoting legitimacy over forest rules and promoting management accountability, and increasing the probability of achieving sustainable biodiversity and livelihood outcomes (Persha et al. 2011). In Hajjar et al.'s analysis, local autonomy over forest resource decision-making (whether formally conferred or informally practiced) was not strongly associated with joint outcomes, although local autonomy was positively (but weakly) linked to rule adherence as well as to individual environmental and income increases (Annex I).

Tenure rights. Both the *de facto* and *de jure* rights that communities have were important in Hajjar et al.'s analysis but performed quite differently. Having *de facto* management and exclusion rights was more often associated with positive (separate) environment outcomes and income outcomes than having withdrawal or alienation rights (Annex 1, Figure A16). At the same time, communities that had *de facto* management and exclusion rights were more likely to report increases in resource rights (and thus positive joint outcomes) following CFM policy or project implementation. When considering formalized *de jure* rights, however, the act of formalization of management and exclusion rights often represented a decrease in actual rights that had been practiced by community members before the CFM intervention (Annex 1), and those restrictions in turn were less likely to be associated with positive joint outcomes. Almost half the cases in which communities had been given *de jure* management and exclusion rights saw decreases in some form of their access to forest resources (45 percent of 161 of cases reporting rights outcomes). These are cases in which forests had been set aside for management by communities (with exclusion rights in 77 of those cases) but that also had a number of restrictions on community activities in those forests, such as no clearing, grazing, or harvesting of particular products – which represented a decrease in the rights that they had previously enjoyed.

The relative importance of *de facto* rights compared with *de jure* rights in the Hajjar et al. analysis reaffirms studies showing that perceived tenure, as well as customary tenure rights and other informal institutions and their enforcement, can be more important than formal property rights for ensuring sustainability (Place and Hazell 1993; Gibson et al. 2002; Bugri 2008; Cronkleton and Larson 2015). This study highlights the importance of examining how CFM interventions interact with existing resource rights in communities for optimal outcomes across dimensions. While the management rights across the cases include a variety of institutional arrangements with varying degrees of decision-making autonomy (Hajjar et al. 2012), the results support studies linking local participation in decision making and

management to positive social and environmental outcomes (Chhatre and Agrawal 2009; Persha et al. 2011; Sikor 2013).

Security of tenure rights,[33] as case paper authors assessed, was not a key factor in Hajjar et al.'s analysis. However, tenure security was significantly but weakly linked to positive environmental outcomes and positive income outcomes individually (Annex 1, Table A8). This latter finding supports other studies (Baynes et al. 2015; Robinson et al. 2011). Potential reasons for the Hajjar et al. results include that the proxy measure available to indicate tenure security in Hajjar et al. was too coarse to capture nuanced dimensions of tenure security that often vary within communities or on the basis of which rights communities actually have,[34] or that tenure security interacts with other contextual factors in ways that mask its direct role in predicting joint outcomes.

USER GROUP CHARACTERISTICS

Population size of CFM user group. Hajjar et al. found that smaller communities practicing CFM were associated with positive joint environment and rights outcomes, but larger communities performed better on environment outcomes on their own. This latter finding on larger group size and environmental outcome supports other studies (e.g., Nagendra et al. [2005], Balooni et al. 2007) that found that larger groups tended to be more efficient at protecting their forests. Agrawal and Yadama (1997) also argued that larger groups were more likely to be able to collect funds to cover the cost of forest monitoring, relative to smaller groups. The Hajjar et al. analysis found that when also considering other contextual factors, smaller groups seemed to be associated with positive joint outcomes. This echoes other studies that examined how the size of the group might interact with the local institutions established to manage the resource. For example, a meta-analysis of common resource management regimes found that while group size was not significantly associated with conservation outcomes on its own, it did have a significant effect on outcomes when considered in combination with the strength of local institutions (Oldekop et al. 2010). Agrawal and Goyal (2001) also found that communities with larger populations met less frequently as a whole and had higher associated transactions costs, which in turn affected the strength of the local institutions established to make forest decisions. In the end, Hajjar et al. supports the conclusion that there is a complex relationship between the size of communities involved in CFM on its own and other community and governance factors that together likely affect environmental and other outcomes.

Communities with either no *migration* or marked out-migration were more often associated with positive income and rights outcomes, and triple-positive outcomes, than were communities with marked in-migration. Rural migration to urban areas and other countries has been linked to natural reforestation on abandoned agricultural lands (Rudel et al. 2005; Erbaugh and Oldekop 2018; Honey-Rosés et al. 2018). Local incomes could also increase through remittances (Oldekop et al. 2018; Peluso and Purwant 2018). Remaining forest users in communities with heavy out-migration may also be able to

[33] Hajjar et al. proxied security of tenure rights by whether the community's bundle of rights was not being challenged by outsiders or governments, or if community leases were longer than 10 years.
[34] For example, the Hajjar et al. coding would not capture at least two common situations in the forest governance space, such as where less empowered community groups are differentially excluded from forest rights, or where the rights conferred to communities via a CFM intervention left them less secure in their *long-term* certainty to continue using forests or forest resources in ways they had been accustomed to before the intervention.

access larger shares of forest benefits and rights. Communities experiencing in-migration in the Hajjar et al. sample were less likely to report individual or joint positive outcomes (Annex 1, Figure A19), perhaps because in-migration can lead to further contestation of rights, increase pressure on forest resources, or exacerbate existing inequities (Sikor and Nguyen 2007; Pulhin and Dressler 2009; Jones et al. 2018). Cases with no migration also fared slightly better relative to cases with out-migration. However, the sample also had a relatively small number of cases that reported migration rates, and this slight difference could simply be due to sampling error. It is worth considering how out-migration effects local institutions and traditional practices (Robson and Berkes 2011), as well as incentives and capacities for long-term management of community forests.

National-level characteristics. Higher governance scores at the national level could mean that property rights, the rule of law, and other related institutions might be expected to be better enforced in any locality within a country, and markets function as expected, which could be supportive for community forest interventions. Higher Human Development Index scores at the national level could mean that higher levels of financial and human capital might be expected to be available at a given CFM location within a country, which in turn could positively contribute to the functioning of community forests.

However, Hajjar et al.'s results show negative correlations between these two measures and positive outcomes across at least two dimensions. The negative correlations could be due to changes relative to low baselines before implementation of CFM projects. For example, a CFM intervention in a country starting with an overall lower governance score may more readily see improvements in rights and incomes attainment at the local level (so would get recorded as increases in the study), because of the pre-intervention low baseline scores. Or countries with higher scores may have less room for improvement and may see more "no change" outcomes. Since the connections to the larger national context are an understudied component of CFM, it remains unclear what mechanism is at work here without more careful studies that test specific pathways and theories of change, likely using longitudinal datasets and causal inference methods.

Notably, Hajjar et al. did not find any market factors to be importantly associated with joint positive outcomes. This was also surprising given strong theories of change and existing evidence in the literature linking markets to land-use change (Lambin et al. 2011) in forest contexts and elsewhere, and for CFM development (Scherr et al. 2003). However, market factors were some of the least reported variables in the CFM literature (Hajjar et al. 2016), including in the Hajjar et al. sample, which likely contributed to its low visibility in those results.

CAVEATS

The Hajjar et al. exercise of building predictive models for CFM success using a literature meta-analysis and a statistical analysis based on data imputation contained a number of important limitations:

1. **Analysis derived from secondary data and possibility for coding errors:** the secondary data used in the study came from published articles and thus were subject to the authors' research interests, bias, and interpretations. This is a difficulty in any meta-analysis, increasing the chance of error in representing what is truly happening on the ground.
2. **Simplifications to enable analysis across many cases:** in the same vein, Hajjar et al. greatly simplified information extracted from the articles to be able to standardize the information captured across the different studies. In doing so, much nuance in specific studies was sacrificed to be able to make broad-scale generalizations.

3. **High level of missing data:** given the large number of contextual factors studied and the lack of reporting on many of these by the case paper authors, the Hajjar et al. analytic dataset contained large amounts of missing data (for example, some variables had up to 85 percent missingness). To overcome these gaps in information, Hajjar et al. employed data imputation methods. Although widely used to overcome missing data, the appropriateness and process of data imputation is typically dependent on the level of missingness and on the assumption that the data from cases that did have full information is meaningfully representative of those that did not. The likelihood of this in practice for the Hajjar et al. sample is unknowable, may not be strong, and almost certainly varies across subsets of cases. There is also a risk that particular associations that were present in a smaller amount of cases with full information could be amplified across the dataset as a result of the imputations. For this reason, the authors primarily highlighted findings that were derived from a larger number of complete observations, and did not put as much weight on findings derived from a small percent of the original sample. Still, the high level of missingness warrants some caution in how strongly to interpret findings.
4. **Extrapolation of linkages across factors and inability to establish causal relationships:** Hajjar et al. extracted available data on contextual factors from the published papers that formed their sample. Many of these factors were presented in the background and descriptive sections of the studies, and the original authors often did not explicitly make linkages between contextual factors and the outcomes of interest to Hajjar et al. Moreover, many studies in the sample were not designed to extract causal relationships or detect underlying mechanisms. Hajjar et al. was similarly not designed for this, and thus also carries some limitations in the extent to which it can provide insights into what works to strengthen the likelihood of achieving positive outcomes under CFM.[35]

As with any study, findings from this work should not form the sole basis or be seen as having primacy for policy or programming decisions, but instead be taken in conjunction with the existing literature on CFM and related issues. Despite the limitations in Hajjar et al., however, the strong importance but also existing knowledge gaps related to CFM more generally and the topics covered for forest conservation and development agendas globally, renders their comprehensive synthesis from available existing literature to be a valuable addition to the knowledge base.

[35] A future meta-analysis study could do so more rigorously through a different approach, known as a realist-synthesis meta-analysis, which can analyze mechanisms wile considering the role of context factors as well. Such a study would need to use a different filtering process to identify papers that report on studies explicitly designed to identify causal mechanisms and meet other established criteria. Working with this smaller sample of published qualitative and quantitative studies, researchers use an established process to conduct a qualitative systemization of pathways and mechanisms, where causal mechanisms linking variables and outcomes that are explicitly cited in the articles would be tabulated.

ANNEX 3: METHODS

This annex summarizes the methods Hajjar et al. used in the systematic review and meta-analysis of CFM. For detailed methods, see Hajjar et al. (2020), Newton et al. (2015) for a published protocol of the review, and Hajjar et al. (2016) for an overview of the data.

CASE STUDY SELECTION

The database Hajjar et al. used was compiled from 267 peer-reviewed articles studying social and/or environmental outcomes of community forests, from an initial pool of 15,874 articles. Figure A23 illustrates the stages used to narrow down the pool of papers to fit the selection criteria.

Papers in the database were limited to those that were peer-reviewed and published in English, and presented cases from Latin America, Africa, and Asia-Pacific, where most community forests are located (Rights and Resources Initiative 2018). To be included in the sample, papers had to describe at least 1 case of a community forest – defined as a forest shared by at least 3households (IFRI 2013), and had to report environmental or livelihood indicators of community forests as well as at least 1 of 50 key contextual variables. The sample excluded cases of afforestation (except enrichment planting) and exotic species plantations to ensure that environmental outcomes were comparable across natural forests.

The 50 contextual variables (Table A10) represented key potential sources of variation associated with CFM outcomes that were identified through a preliminary review of 35 highly cited articles on community forests and forest-cover change (Hajjar et al., 2016). Papers that described multiple community forests were treated as separate individual cases. The 267 papers that met the selection criteria provided data on an initial set of 697 cases of community forests. Following removal of cases with contradictory outcome variables (see outcome variables below), this number was reduced to a final set of 643 cases from 51 countries that were used for the analyses.

VARIABLE CONSTRUCTION

Data extraction followed a protocol that converted information into a simple categorical variable (e.g., low, medium, high; or present not present) to allow for standardization across studies. For numerical variables (e.g., elevation), the numbers were later transformed into categorical values (low, medium, high) by dividing the sample into terciles (lowest, middle, and highest 33 percent of values). The authors created three composite outcome variables by combining information on environmental indicators (forest cover, forest condition, and biodiversity), income indicators (community and household income), and resource access rights indicators (commercial access and subsistence access).

Values of the outcome variables were recorded as decrease, little or no change, or increase, depending on what case paper authors reported. Conflicting cases in which indicators within outcomes variables showed opposing trends (e.g., increases in forest condition and decreases in biodiversity) were excluded from the analysis (n=54), although these merit further discussion to bring attention to the nuances of tradeoffs within outcome categories. Instances in which variables combined no change with increases or decreases were classed as either increases or decreases, respectively.

STATISTICAL ANALYSIS

Four separate datasets were used for the statistical analysis, so there were no missing data on the joint outcomes of interest: environment and income (n=223 cases); environment and rights (n=186); income and rights (n=169); and environment, income, and rights (n=122).

The compiled dataset presented two main challenges to statistical analysis: (1) large and variable amounts of missing data – information that was not present in the case papers on particular context variables or intervention characteristics, and (2) a large number of number of context variables (50) relative to the number of cases. Hajjar et al. developed an analytical algorithm to address these constraints:

- Rather than remove cases with missing information (which would have resulted in a very small sample size for each outcome), Hajjar et al. used data imputation to generate data subsets with no missing values for the context variables. This is a common procedure to overcome missing data. With data imputation, missing values are calculated based on the data available from other cases in the dataset.
- To narrow down the number of relevant variables being examined, Hajjar et al. used a machine learning algorithm (Random Forest) to select variables for inclusions in the four models (one for each outcome combination).

These processes were repeated 100 times for each outcome combination, to produce a final model that represented the average contribution of the 5 variables most frequently selected by the algorithm, indicating that these variables were most strongly associated with the joint outcomes in question. Hajjar et al. presents further details including robustness checks.

FIGURE A23: SYSTEMATIC REVIEW SELECTION STAGES AND ANALYSIS STEPS

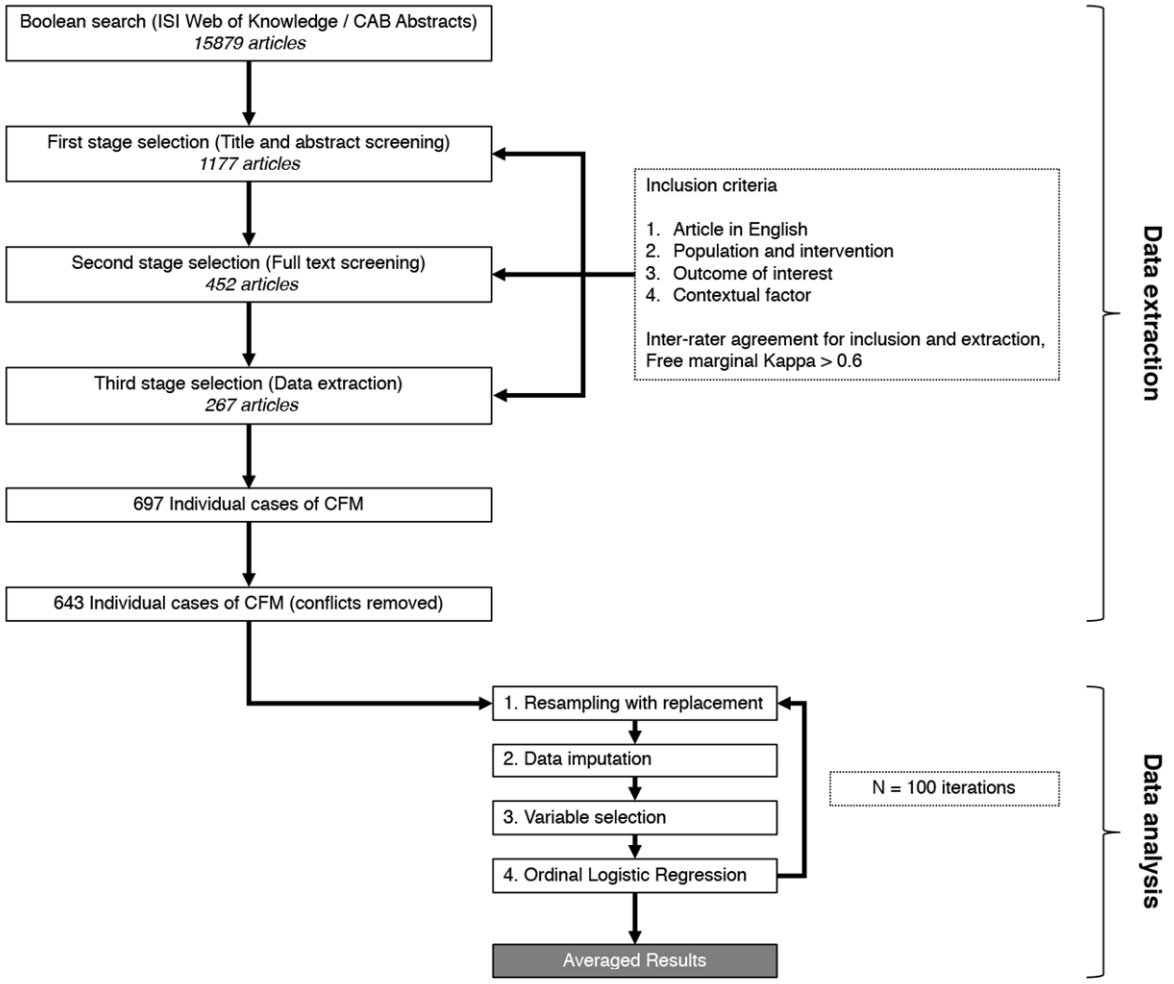


TABLE A10: LIST OF CONTEXTUAL VARIABLES, THEIR DEFINITIONS, AND LEVELS

Category	Variable	Description	Levels
User group	1. Socio-cultural heterogeneity	What is the socio-cultural heterogeneity of the community?	high | mixed | low
	2. Economic heterogeneity	What is the economic or wealth disparity of the community?	high | mixed | low
	3. Social capital	What is the level of social capital in the community?	high | medium | low
	4. Education	What is the level of education of the majority of the community?	< than 5 yrs | > than 5 yrs
	5. Commercial forest dependence	What is the group's commercial forest dependence?	high | low
	6. Subsistence forest dependence	What is the group's subsistence forest dependence?	high | low
	7. Remoteness	How accessible is the community?	accessible | inaccessible
	8. Cash poverty	How cash-poor is the majority of the community?	above | below poverty line
	9. Population size	What is the community's population size	high | medium | low
	10. Population density	What is the community's population density?	high | medium | low
	11. Population change	How has the local population changed?	increase | stable | decrease
	12. Migration	What kind of migration has there been in the community?	inward | none | outward
Institutional / economic factors	13. World governance index*	Aggregate index of six governance dimensions	*Continuous variable*
	14. Human development index*	Composite index of income, education and health dimensions	*Continuous variable*
	15. Gini coefficient*	Measure of economic inequality at the national level	*Continuous variable*
	16. Local government support	Are higher levels of governance able to provide support to local communities (e.g., through enforcement of regulations)?	strong | weak
	17. Property rights	What is type of formal property rights held by the community?	communally owned | customary rights | open access | private | state owned
	18. De jure rights	What is the bundle of *de jure* rights held by the community?	access | withdrawal | management | exclusion | alienation
	19. De facto rights	What is the bundle of *de facto* rights held by the community?	access | withdrawal | management | exclusion | alienation
	20. Tenure security	How secure are the tenure rights held by the community?	secure | insecure
	21. Local autonomy	To what degree can communities make their own decisions about resource use?	mostly local formal | mostly local informal | mostly non-local
	22. Local monitoring	Does the community actively monitor its resources?	yes | no
	23. Local enforcement	Does the community actively enforce transgressions or incursions?	yes | no
	24. Local accountability	What is the level of accountability of local community leaders to the community?	high | low
	25. Well-defined rules	How well defined are formal or informal local-rules on resource use?	defined | undefined
	26. Rule understanding	Does the majority of the community understand (or is aware) of local rules?	most understand/are aware | most do not understand/are not aware
	27. Rule adherence	Does the majority of the community generally adhere to to local rules?	most adhere | most do not adhere
	28. Collective action	What is the level of collective action at the local level?	high | low
Market factors	29. Market liberalization	Does the author provide evidence that the country or region has undergone any liberalization policies?	present | absent
	30. Market distance	How far away is the nearest admin/market centre using the community's main mean of transport?	equal less than a days travel | more than a days travel

	31. Forest product demand	What is the level of market demand for the main forest product?	high | low
	32. Agricultural product demand	What is the level of market demand for the main agricultural product?	high | low
	33. Forest product prices	What is the commercial value of the principal forest product?	high | low
	34. Agricultural product prices	What is the commercial value of the principal agricultural product?	high | low
	35. Input costs	What is the level of input costs for the main forest or agricultural product?	high forest cost | low forest cost | high agricultural cost | low agricultural cost | high forest & high agricultural cost | low forest & low agricultural cost | high forest & low agricultural cost | low forest & high agricultural cost
Biophysical factors	36. Soil fertility	What is the level of soil fertility in the community?	high | low
	37. Slope	How steep is the area of the community?	steep | not steep
	38. Elevation	What is the elevation of the community?	high | medium | low
	39. Precipitation	How much rainfall does the community experience?	high | medium | low
	40. Fire	What is the level of fire frequency in the community?	high | low
	41. Forest fragmentation	What is the level of forest fragmentation in the community?	high | low
	42. Forest size	What is the size of the forest?	large | medium | small
	43. Forest type	What is the local forest type?	temperate dry forest | temperate humid forest | temperate montane forest | tropical/sub-tropical humid dry forest | tropical/subtropical humid forest | tropical/subtropical montane forest | mangrove
Intervention factors	44. Endogenous CFM	Do the authors mention or provide evidence of community forestry existence prior to the intervention or policy change?	yes | no
	45. JFM, PFM, co-management	Does the study specifically mention PFM, JFM, or co-management?	JFM | PFM | co-management | other
	46. Years since policy change	What is the time since the latest major policy change at the national or regional level?	no policy change | > 10 years | 5-10 years | < 5 years
	47. Years since intervention	What is the time since the latest localized intervention or localized implementation of policy?	no intervention | > 10 years | 5-10 years | < 5 years
	48. Timber commercialization	Was timber commercialization part of intervention?	yes | no
	49. Training	Did the community receive training as part of the intervention	yes | no
	50. Materials	Did the community receive any materials or technologies as part of the intervention?	yes | no

*indicates country-level data obtained from the World Bank's Development indicators, recorded for the year the study indicated data collection occurred.

ANNEX 4: COMPARISON BETWEEN HAJJAR ET AL. AND THE CBFE SOURCEBOOK

Issue	CBFE Sourcebook (2020)	Hajjar et al. (2020)
Conceptualization of CFM theory of change	The intervention focus is CBFE, and particularly timber-based CBFEs. Broad outcome focus is multidimensional and mirrors Hajjar et al. (forest resources, social/community benefits, economic benefits). Works from a highly generalized and fairly simplified theory of change (TOC) that states that if each of four key enabling conditions are met, a given CBFE will become self-reliant and provide sustainable economic, social and environmental benefits for the CBFE and for the community as a whole. The TOC does not discuss or identify inputs, assumptions, intermediate outcomes, or mechanisms. It does highlight a general need for investment in community rights and governance, administrative and management capacity, or aspects of the enterprise itself, per Gynch et al. 2020. Encourages the development of more detailed project-specific TOCs. Envisioned role of communities appears somewhat passive with respect to the intervention, for example as recipients of rights and community governance investments by donors and government, followed by project support to help communities use those rights to build up the aspects of the forest enterprise itself (together with government and donor support).	The intervention focus more broadly encompasses a range of interventions that fall under the CFM umbrella rather than those that are solely enterprise-driven and/or focused on commercial utilization of a forest product. Similar multidimensional outcome focus. Works from a complex, though unstated, TOC that acknowledges the roles and interrelationships of many potential inputs and context factors in shaping outcomes under a given CFM intervention, and leaves open many possibilities for different intermediate outcomes and mechanisms to drive the trajectory of outcomes. Communities are conceptualized as an intrinsic part of the intervention, with a range of community characteristics having explicit potential to shape trajectories of outcomes.
Learning approach(es)	Acknowledges complex systems interactions within CBFEs. Advocates a collaboration, learning, and adapting approach to learning. Highlights a need for project design and implementation flexibility to adjust activities (and potentially even TOCs) as targets evolve (and presumably based on adaptive learning during the process). Advocates for a systems view and adaptive management approaches for CBFE interventions.	Similar.

Issue	CBFE Sourcebook (2020)	Hajjar et al. (2020)
	Acknowledges that some CBFEs will fail, and projects need to take a monitoring, evaluation, and learning approach that anticipates learning through trial and error.	
Enabling conditions and contextual factors	Highlights four: • Secure tenure • Community governance and enterprise management • Viable social enterprise models • Presence of value chain partnerships Strong focus on secure community tenure over forests and functioning community institutions. This includes suggesting that projects work toward *de facto* rights first/in the interim while advocating for or supporting broader policy change at national level on *de jure* rights. Like Hajjar et al., community rights to access, use, manage, and exclude others from forest resources are prominent (including right to harvest and sell forest products). Unlike Hajjar et al., equates having these rights with secure forest tenure, while Hajjar et al. treats these as distinct qualities (as do many other approaches to estimating tenure security). Highlights importance of reducing out-migration (particularly of youth) to help ensure CBFE sustainability and demographic sustainability within communities. Hajjar et al. also found that communities with no strong migration (inwards or outwards) were linked to positive outcomes, but additionally found that strong out-migration was linked to positive outcomes.	Highlights many contextual factors for achieving at least two of three diverse outcomes. Particularly key are: • Type of CFM (co-management was most associated with jointly positive outcomes) • Number of years that a major CFM policy has been underway (longer is better) • Type of forest (relates to resource availability and harvesting/marketing opportunities, together with nature of potential opportunity costs to extractive or other forest uses) • Adherence to forest rules • *De facto* management and exclusion rights over forests (but *de jure* management rights were associated with a reduction in resource rights and fewer jointly positive outcomes) • Size of population using and managing the forest (smaller is better for achieving some outcomes – environment and resource rights – while larger groups had better environmental outcomes on their own) • Migration (lack of it or strong out-migration were both associated with positive outcomes; strong in-migration was the more challenging situation)
Co-benefits and related issues (e.g., equity, gender)	Attention to equity and gender integration. Acknowledges that CBFEs often fail to provide equitable benefits across a community (e.g., do not help poorest community members) or effectively promote gender integration.	Provides evidence that CFM interventions have often brought a decrease in forest rights and income distribution asymmetries for some if not all community members.

Issue	CBFE Sourcebook (2020)	Hajjar et al. (2020)
	Recommends addressing through a greater project focus on this.	Highlights a need to carefully examine who in local communities benefits from collective rights, who is left out of the creation of new community-based institutions, and who is negatively affected by changes to individual rights. To address co-benefits and related issues, suggests that CFM interventions pay more attention to the nature of rights in rights-based approaches and how those rights (and thus benefits) are shared within communities.
CFM programming design and implementation focus	Focus is on CBFE project design and implementation, including: • Participatory process • Community desire for a forest-based timber enterprise (or other CBFE) • Determining technical and economic feasibility • Specific programming entry points around: rights, capacity, finance, and infrastructure • A need for detailed specific site selection and feasibility work during design phase, and sufficient time to conduct • A likely need for phased support over potentially decades, and a need for longer strategic USAID engagement If the four enabling conditions are not present, recommends projects focus on creating them. If not achievable, recommends that projects engage communities in CF projects that help conserve forests, rather than CBFEs. Provides a simplified decision tree for projects to consider on whether to pursue a CBFE activity, though decision focus is primarily on existence of supportive national policies rather than specific site or context factors. A need to consider general community-level impediments is noted, such as resource conflicts or land use disputes in the community; adequate forest resources, and existence of a market.	Not an explicit focus, but results highlight that many site, forest, or community context factors should be taken into account when determining where and how to implement a CFM intervention. At minimum, program designers and implementers should be aware that such factors can greatly shape the likelihood of achieving their desired outcomes under the intervention. Suggests that more detailed work into developing nuanced TOCs at design phase can help identify available pathways for achieving positive outcomes under different contexts, and clarifying nature of potential tradeoffs. Advocates for more attention to specific context conditions at design phase and during site selection, including forest biophysical conditions, community institutional arrangements, and characteristics of forest users within communities (and provides examples of specific characteristics that projects should consider during design and site feasibility stages).

ANNEX 5: REFERENCES

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