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Three Generations of Forest Peoples' Empowerment in Indonesia: Process Towards Sustainable and Equitable Forest Management

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Abstract

Human activities that alter land cover have destroyed natural ecosystems and caused conflict. In Indonesia, community-based forest management (CBFM) policies implemented by the government seek to empower communities, ameliorate forest conversion, and reduce environmental conflict. This article critically assesses contemporary CBFM policy in Indonesia by analyzing its history and outcomes through policy analysis. To systematically review previous literature on CBFM, this research uses the PRISMA method. It finds that communities are often able to manage forest areas sustainably through sociocultural systems that combine management customs and culture. Empowerment through CBFM policy therefore promises to promote community subsistence, equity, and security regarding forest management. However, granting total resource rights to communities can result in land conversion unless managerial safeguards are in place. Many studies find that the clarity of land boundaries, the consistency of regulation, and the partiality of land governance drive CBFM program success. To facilitate land governance for the successful implementation of Indonesian social forestry, communities need access rights, authority to manage forests, and sufficient knowledge transfer to participate in formal forest management. In contrast to previous iterations of CBFM in Indonesia, current social forestry policy acknowledges these governance needs and seeks to implement them.

Keywords: forest peoples, empowerment, forest conservation, human well-being, socio-cultural dynamics

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Introduction

Coupled human-natural systems refer to the interacting components of social and ecological systems; forest systems are a specific subset of coupled human-natural systems (Vitousek et al., 1997; Dietz et al., 2007; Olsson & Gooch, 2019). In forest systems, people directly harvest food, fuel, and fibre. However, extensive conversion of forest cover has altered landscapes around the globe (Haddad et al., 2015). The extent of human intervention across global landscapes is referred to as the "human footprint" (Belote, 2018). Over 75% of the planet's land surface has been affected by the human footprint, which has had negative impacts on biodiversity conservation (Venter et al., 2016). Ensuring continued human well-being does not compromise forest landscapes and the biodiversity they contain is one of the greatest environmental challenges of the modern era (Mansuri & Rao, 2004). The extent of community-based tenure highlights the importance of community-based forest management (CBFM).

Recent research estimates that up to 65% of the world's land area is controlled by community-based tenure systems (RRI, 2015) and an estimated 350 million people live in and depend on forestlands (Chao, 2012). Though widespread, community-based land tenure varies drastically in terms of the rights “forest communities” hold over the forests in which they live[1]. Table 1 presents a basic framework for understanding the resource rights that forest communities can hold (Schlager & Ostrom, 1992). There are four categories of right holders for forest peoples: owners, proprietors, claimants, and authorised users. The extent of

[1] In this research, the term 'forest community' describes human populations that live in and/or around the forest area, and who derive some benefits from forests. Another commonly used term is 'forest people,' which refers to a community that lives in a forest landscape and has developed traditional ways of life and knowledge that are attuned to forest environments (Chao, 2012). Others terms often refer to anthropogenic forest uses, such as “hunter-gatherers” and “shifting cultivators.” These terms are often used to refer to rural populations, including indigenous and traditional people, in substantially forested and developing countries (Newton et al. 2016).

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resource rights increases from access and withdrawal to alienation.

Many national governments recognize few formal rights of forest communities to manage land (RRI, 2015). The majority of forest communities manage forests as authorised users or claimants, and therefore receive only the right to access forest areas that are owned by the state (Figure 1). Based on these data, few countries provide management rights to forest communities. Thus, community forest management can clash with competing and multi-scalar interests in commercial, subsistence and cultural forest uses (Olsson & Gooch, 2019). Because different stakeholders (who live in, around, or far from the forest) view forest in very different ways, forest governance is often a profoundly contentious process.

Many states seek to provide more comprehensive resource rights to forest communities in order to resolve complex land ownership conflicts (Pelletier et al., 2016). Empowerment and engagement have become an essential strategy for natural resource management (Ojha et al., 2016) and seek to unite sustainable forest management with direct and indirect improvements in the well-being of forest communities (Erbaugh & Oldekop, 2018)

Figure 2 presents the empowerment thinking framework, with policy examples from community forest management in Indonesia. The current research interprets empowerment as a

Table 1 Right holder types associated with position

	Authorised users	Claimants	Proprietors	Owners
Access and withdrawal	√	√	√	√
Management		√	√	√
Exclusion			√	√
Alienation				√

Modified from Schlager and Ostrom (1992) (Schlager & Ostrom, 1992)

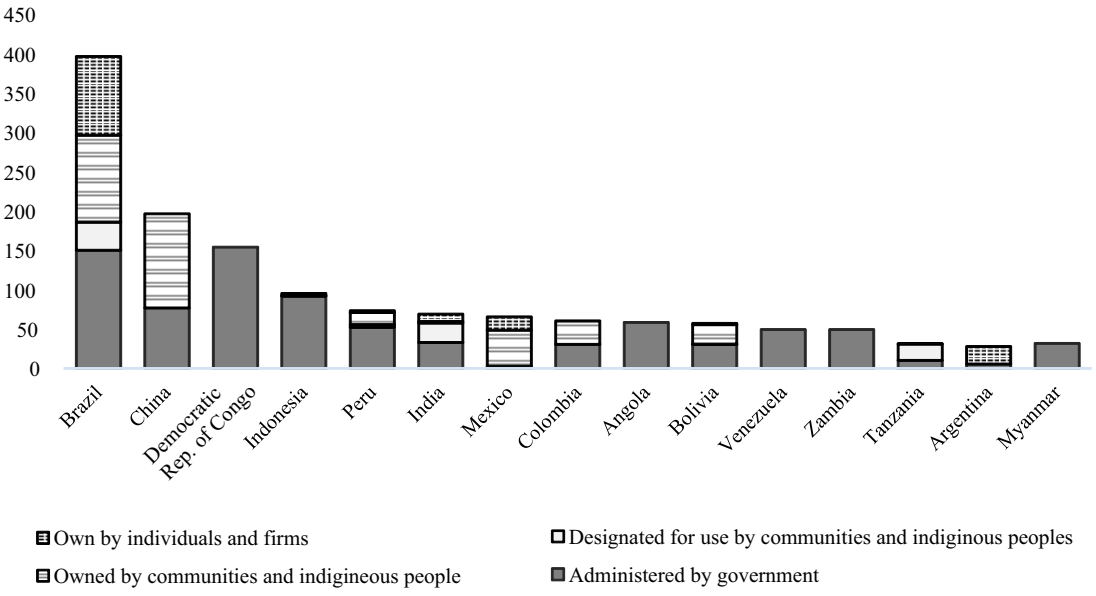

Figure 1 The 15 most forested developing countries (millions of hectares) and their forest tenure distribution in 2013.

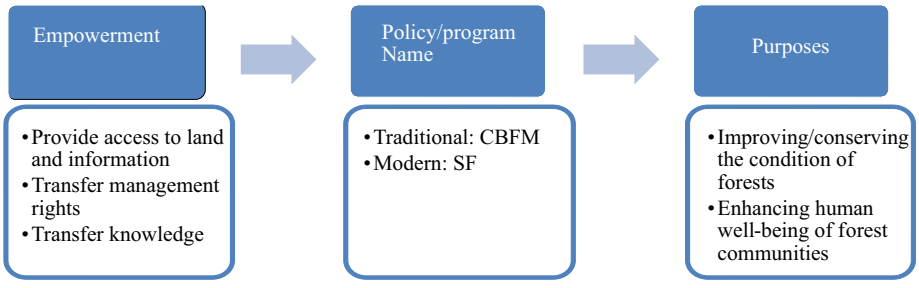

Figure 2 Empowerment thinking framework (Indonesian case).

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form of participation in decision-making regarding local land use and development. Building social capital to participate more effectively (Lawlor et al., 2013), empowerment involves providing communities with information, transferring power, and actively enrolling communities in the knowledge-making process. Examples of forest-based empowerment programs include community forestry enterprises, small and medium forest enterprises (SMFEs), community forestry (CF), leasehold forest (LHF), collaborative forest management (CFM), buffer zone community forestry (BZCF), religious forest (RF), collective forestry property rights reform (CFPRR), village forest management, forest management by groups of households and individuals, village land forest reserve (VLFR), community forest reserve (CFR), and private forest (PF), joint forest management (JFM), community-based watershed, and etc. (Bampton et al., 2007; Xu et al., 2010; Tomaselli & Hajjar, 2011; Phuc & Nghi, 2014; Treue et al., 2014; Scheba & Mustalahti, 2015; Erbaugh et al., 2016; Liu & Ravenscroft, 2016; Moeliono et al, 2017; Pathak et al., 2017; Sabin et al., 2019). As these many examples demonstrate, the idea of people's participation has long been part of development thinking (Agarwal, 2001). Nowadays, the belief that communities are in the best position to manage and protect forests if they participate in decision-making on the sustainable use of forest resources underlies CBFM policies (Duthy & Bolo-duthy, 2003). Thus, the empowerment of direct forest users is key. The history of Indonesian CBFM, and the current phase of social forestry implemented by the government of Indonesia (GOI), reflect the heightened awareness and importance of community empowerment.

Indonesia is currently recognizing communities' rights through an unprecedented change in forest-related policy that includes a focus on CBFM (Myers et al., 2017; Harbi et al., 2018; Erbaugh & Nurrochmat, 2019). In doing so, it has entered the third generation of empowering communities around forest areas (Fisher et al., 2019). In this current phase of community empowerment, the policies that provide access rights to communities, and the extent of their implementation, remain crucial. Until 2005, the government of Indonesia allocated only 0.2% (2,100 km^2) to community forests (Colchester et al., 2005). During this period, many communities continued to manage forest areas through traditional means; thus, we refer to this as "traditional empowerment" within the current research. Since 2016, the policy and program for empowering communities to manage forest areas incorporates five initiatives and is called social forestry (SF). The government of Indonesia (GoI) aims to allocate 12.7 M ha of forest area to social forestry initiatives, an area that represents 10% of the government forest estate (Suhardjito & Wulandari, 2019). The current research analyzes the history and outcomes from different CBFM projects based on their empowerment structure.

This research provides a novel analysis of forest community empowerment in Indonesia by comparing traditional and formal processes (Table 2). Through a review of relevant literature, it examines the achievements of forest community empowerment programs based on the program's implementation to assess if CBFM achieved its official objectives. Then, this article considers how community background, implementation elements, and if the CBFM scheme was formally or informally implemented to examine how the program may have generated outcomes. This article can be a reference for policy/decision-makers, researchers, practitioners and planners wishing to gain a meaningful understanding of this wide-ranging literature.

Methods

This research comprehensively finds and analyzes literature on Indonesian CBFM to examine policy trends and outcomes. To assess historical trends, this research reviews the historical context of forest society empowerment by examining the evolution of different policies, programs and initiatives within the three generations of Indonesian CBFM. To assess outcomes of Indonesian CBFM, this research considers cases of Indonesian CBFM and discusses the outcomes of forest society empowerment and the potential mechanisms through which those outcomes occurred (community background, implementation characteristics, and traditional/formal management). The geographical scope of this research is limited to Indonesia, and includes all published research on Indonesian CBFM.

In order to comprehensively collect literature on Indonesian CBFM, research analysts fluent in both Bahasa Indonesia and English used the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) method of systematic review (Moher et al., 2009). Figure 3 illustrates different steps in the PRISMA method. The first step is to find relevant publications by performing database searches. The current research queried the ISI Web of Knowledge and Google Scholar databases on July 2nd,

Table 2 Scope of study

Context	Description
Policy	Historical context, drivers of government policy and program, periodically
Overall outcomes/ goals	Human Welfare; Environmental balance; Socio-cultural dynamics
Characteristics (For discussion scope, based on field/ Site-specific realities)	Background (ethnicity, culture; conflict) Elements (Actor and power, social capital, community capacity towards self-governance; institutional arrangement; regulation and political/external support). Process/Mechanism

Adopted from Minister of Environmental and Forestry Regulation Number 83/2016 (MOEF, 2016); Pulhin 2007 (Pulhin, Inoue, & Enters, 2007); Pagdee 2006 (Pagdee, Kim, & Daugherty, 2006); Wollernberg 1998 (Wollenberg, 1998).

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Scientific Article
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2019. The Boolean search string of English words used to identify potentially relevant publications is found in the Supplemental Information (Table 1).

The second step in the PRISMA method is to generate a database from articles returned in the literature search. The analysts reviewed all articles that the literature search identified, and then identified relevant articles using exclusion criteria based on article content. Analysts included and coded articles with content related to forest community empowerment (traditional and formal) as well as interventions and assessed the outcomes (human welfare, environmental balance, and socio-cultural dynamics).

Article screening proceeded in two steps. The first step screened duplicate articles returned by both Web of Knowledge and Google Scholar literature searches, articles that were not written in either English or Indonesian, and articles that did not contain empirical data. The initial search generated > 4,000 results. The second screening used full text to eliminate articles that were not within Indonesia, and not in or around state forest areas. This screening removed publications without information on the research site, were not related to forest management, lacked methodological detail, and did not provide any information on empowerment. We screened articles using an iterative process to check search results and choose the studies included in this review (inclusion criteria/exceptions).

In the last PRISMA step, analysts coded publications according to our research interests. Categories for publication coding included: outcomes of empowerment (human welfare; environmental balance; socio-cultural dynamics) and characteristics of empowerment (traditional and formal empowerment type, background and elements).

The systematic review of case studies used publication as the unit of analysis and document coding to extract data (Table 3). Though this approach provides valuable and analyzable data for individual case studies, it is limited by the collection of empirical studies and the wide variability of temporal scope, spatial extent, methods, and sample size. Despite these limitations, this approach strikes a balance between extractable information and sample size. For each study, analysts coded the outcome reported from the case study as (1) for positive, (0) for neutral, or (-1) for negative. When the same case study was reporting both positive and negative outcomes on the same criterion (e.g., gain and loss of income), analysts coded the outcome as mixed (1/-1). When cases did not report outcomes, analysts coded them as missing (NA). This coding criteria allows for basic meta-analysis that is further informed by the reported sample size from each case study.

The analysts also coded cases for reported human welfare outcomes, environmental balance, and socio-cultural dynamics. Human welfare outcomes include subsistence, savings, and income (Harbi et al., 2018). For the environmental balance, study assessment reports are related to five REDD+ outcomes. These outcomes include (1) reducing deforestation; (2) reducing forest degradation; (3) carbon stock enhancement; (4) sustainable management of forests; and (5) forest conservation. For socio-cultural dynamics outcomes, we adapted a framework developed by Lawlor, et al. (Lawlor et al., 2013) and Fisher (Fisher et al., 2018) and looked at the reported results in terms of 1) security; and 2) equity.

To provide insight into the mechanisms that generated CBFM outcomes, analysts identified characteristics of empowerment in practice. These characteristics include community background, implementation elements, and the mode of forest management (traditional/formal). These

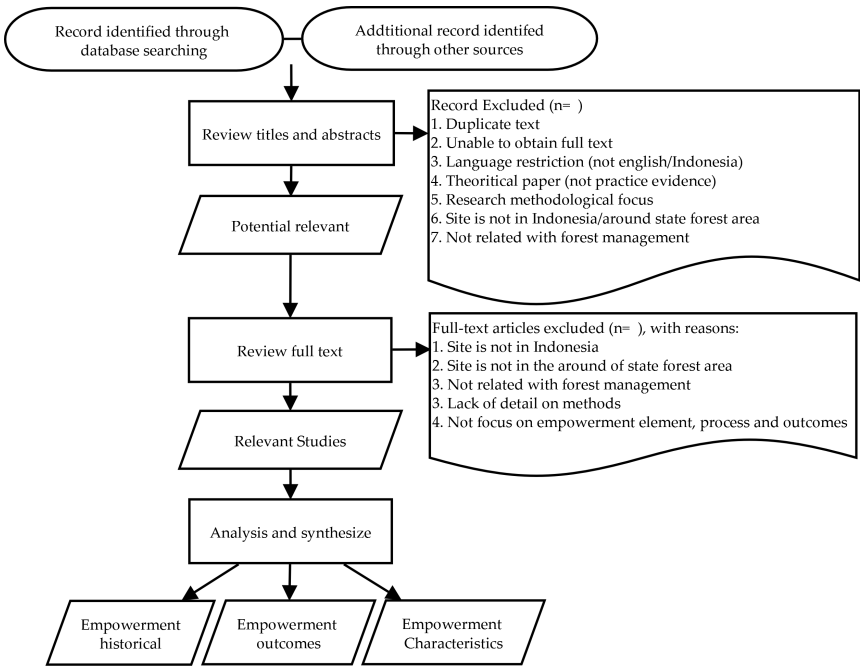

Figure 3 Flow diagram of the selection and filtering process for the systematic review at each stage.

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Scientific Article
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Table 3 Outcome analysis, code, and definition

No	Outcome	Code	Definition
(1) Human welfare			
1	Subsistence	1	Positive when the forest activity can provide subsistence
2	Savings	1	Positive when there is an asset that the community can get and generating income positive when they have product/service to sell and get money
3	Generating income	1	Positive when they have product/service to sell and get money.
(2) Environmental balance			
1	Reducing deforestation	1	Positive study results when proving a decrease in deforestation rates that occur over time under CFM, or a state of deforestation when compared lower than areas not below CFM.
2	Reducing forest degradation	1	Positive when poor forest conditions were noted to have improved over time under CFM or in comparison to other non-CFM areas
3	Carbon stock enhancement	1	Positive noted with quantified growing stocks or biomass increment
4	Sustainable management	1	Positive observed with no change in forest cover despite community extraction, and conservation impacts qualified as
5	Forest conservation	1	Positive when forest condition was improved or no change
(3) Socio-cultural Dynamics			
1	Security	1	Positive if the results of the case study prove that there is an increase through the development of ecosystem infrastructure or services in land ownership and management rights, access and use rights, carbon rights, health, and education.
2	Equity	1	Positive if the case study results reported the equitable or 'pro-poor' distribution of benefits among wealth groups.

Note: Others code: (0) it means that the article did not discuss this outcome in his research; (-1) it means the outcome is contrary to a positive statement.

characteristics (or modifiers) have been recognised in the literature as influencing the outcome of empowerment and were tested in this study. Analysts used Pearson's Chi-square test along with the Yates correction and the Fisher Exact Test in R statistical software (Crawley, 2013) to investigate statistical differences between empowerment characteristics (community background, implementation element, and management mode) within the ten outcomes. The null hypothesis for the Chi-square test was used to test two groups of data where the independent and dependent variables were categorical data. The case studies and the full list of references for evaluation are made available in supplementary materials.

Results and Discussion

From the set of articles identified in the Web of Knowledge and Google Scholar searches (more than 4,000), the search and initial exclusion protocol identified 120 papers relevant to CBFM in Indonesia. From these 120 relevant publications, analysts extracted data on study type. Of the 120 relevant publications, 55 publications provided data on CBFM in Indonesia relevant to the meta-analysis of community empowerment and outcomes (The case studies and the full list of references for evaluation are available in the supplementary materials, Table 2 to Table 4).

Study type and distribution The set of 120 relevant publications include case studies, reviews, and theoretical perspectives. To examine differences among empowerment characteristics and CBFM outcomes, analysts limited analysis to case studies. Most of the case study publications are from peer-reviewed publications (n = 52). A small number are from conference proceedings (n = 1), book/book chapters (n = 1), and theses (n = 1). Information on variables of interest to this study varied widely across the 55 case studies (Figure 4). Most articles (84%) include information on case study characteristics and included outcomes as part of CBFM implementation studies (65%). A minority of studies included information on the history of CBFM within the case study (28%).

The case studies provide a broad picture of CBFM across Indonesia (Figure 5). Community empowerment studies are distributed across the Indonesian archipelago, though there are a comparatively large number of studies from Jambi, Sumatera (n = 9) as well as East Kalimantan (n = 9), and comparatively few studies from West Papua and Papua (n = 1). On Java, Indonesia's most populated island, Central Java has a long history of community forest implementation and a similarly large number of community empowerment studies (n = 7). On the island of Sulawesi, empowerment research has focused on Lore Lindu National Park (LLNP) in Central Sulawesi, due to a history of land conflicts between communities and state-led conservation. In Kalimantan, empowerment studies tend to focus on community conflicts and partnerships with state-led forestry production. The statistical analysis of empowerment outcomes and characteristics indicate that there are non-significant differences between empowerment outcomes across studies with different empowerment characteristics (Supplemental Information Table 5).

Historical empowerment of forest communities This review found a greater number of traditionally implemented community forest initiatives (71%) than formally implemented initiatives (29%). The high level of traditional implementation indicates that many CBFM practices exist at

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Table 4 Traditional and formal empowerment of forest community in Indonesia

Context	Traditional	Formal		
		1st generation	2nd generation	3rd generation
Time period	No specifically	1970–1998	2001–2012	2012–present
Political Condition	No specifically	Centralization	Decentralization	Decentralization
Policy or program name	No term	No term	Joint community forest management	Social Forestry (Village Forest, Community Forest, People's Planted Forest, Partnership Forestry, Customary Forest)
Land ownership status	Private; Claimed as a private right	Private; Claimed as a private right	State forest	State forest
Forest type	All types of forest functions	All types of forest functions	All types of forest functions	All types of forest functions
Benefit and profit-sharing mechanism	Privately owned	Privately owned	Incentive (timber sharing)	- Community-owned - Profit-sharing if partnership scheme) note: Community must pay tax to the state
Planning document	No required	No required	Required	- Required
Permit form	No contract, no permit	Contract	Contract	- License permit
Empowerment type	No empowerment	Limited and temporal Access; No Power; No knowledge transferred	Limited and temporal Access; No Power; No knowledge transferred	- Free Access to land; Full Power; Facilitating program (knowledge/ information)
Length of permit	No specifically	No specifically	Two years, Five-year initial permits, extendable to 25 years	- 35 years, extendable
Community Institution	The custom institution, village institution, farmers' group.	Forest Farmers' Group	Forest Village Community Institutions (LMDH)	- Forest Farmers' Group - Village Forest Management Institutions (LPHD; Lembaga Pengelola Hutan Desa) - Cooperation
Other provisions	Tradeable; Can be inherited	Untradeable; Cannot be inherited	Untradeable; Cannot be inherited	Untradeable; Cannot be inherited

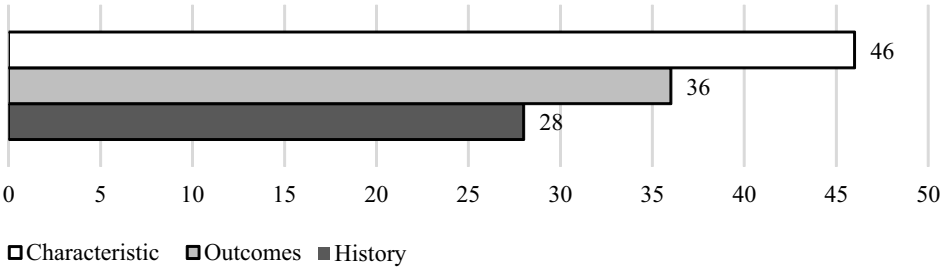

Figure 4 Publication distribution based on study analysis.

the site level and are outside the aegis of the state. The comparatively smaller number of formal CBFM indicates that few studies focus on community empowerment through the provision of formal permits. Increases in the area of CBFM permits began in 2016, and this increase has not yet been reflected in academic research. At present, social forestry permit holders do not yet manage the land allocated through new social forestry policies, as many of these communities are preoccupied with the licensing and administration process that requires making a management plan. To generate a management plan, communities often require assistance, because formal CBFM requires scientifically based forest management (Erbaugh, 2019). The initial implementation of contemporary social forestry is

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Scientific Article
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Figure 5 Publication distribution based on site of study.

Table 5 Elements that influence the process of implementing and developing CBFM

Element
Clarity of boundary/land boundaries
Legal clarity regarding land and society
Land management and processing system
Strong institutions (situation, structure, behavior, performance, interest, and power of stakeholders)
Partnership system with equitable contractual agreements (the length of the contract, working time, profit-sharing system and incentive)
Political and social capital
Leadership and actor management
The existence of third parties in the form of NGOs/CSOs and universities
Community capacity

often hard for communities with limited knowledge and funding.

Figure 6 illustrates the process of CBFM in different generation. Phase 3 of Indonesian CBFM is marked by the provision of management rights to communities and the expansion of community empowerment. At the beginning of Phase 3, there were limitations in the provision of management rights to communities because of cumbersome bureaucratic requirements. These limitations were initially addressed through Government Regulation Number 6/2007 and Number 3/2008 about Forest Governance and Preparation of Forest Management Plans. These regulations mandated the empowerment of communities through the development of community capacity and skills (Akiefnawati et al., 2010; Heripan et al., 2019). At present, permits are issued through the national government, without having to go through layers of province and district bureaucracy. Online platforms further seek to expedite the permitting process and make application more transparent and accountable (Erbaugh, 2019). It thus appears that in Phase 3, the GoI seeks to reform the process of transferring rights, knowledge, and information on forest management in order to devolve power/authority to forest communities.

Traditional CBFM predates and has continued throughout the three phases of formal CBFM in Indonesia. Traditional CBFM does not adhere to one format; rather, it is implemented differently according to the communities in which it is practiced. Comparing the traditional empowerment of communities for forest management to their formal empowerment illustrates stark contrasts (Table 4). Because traditional empowerment is not predicated upon legal rights, these CBFM initiatives be subject to greater conflicts with government, private land owners, and corporate interests. However, many of these traditional management structures have endured far longer than formal CBFM initiatives (Armitage, 2003; Bong et al., 2019) and their organic structure provides for a flexibility in adaptation and implementation (Ndan et al., 2009; Rahman et al., 2017).

Forest community outcomes In this study, we present the outcomes reported from publications on forest community empowerment according to the government mandates stated in MoEF Regulation Number P83 in 2016 (MOEF, 2016). These official government objectives include human welfare, environmental balance, and socio-cultural dynamics. Together, these outcomes are considered essential to enabling sustainable forest management that balances economic, social, and environmental benefits.

Human welfare outcomes are often the main objective of Indonesian CBFM programs. There are three indicators in this outcome, including subsistence needs (food, livestock

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feed, housing and materials), savings (reserved assets or money) and income (products to sell or money received from selling) (Harbi et al., 2018). 65% of case study articles provided information on human welfare outcomes from CBFM implementation (Figure 7). Over 70% of case studies that reported human welfare indicated that CBFM had a positive impact on subsistence, 25% reported positive savings outcomes, and 48% reported positive income outcomes. Only two cases referenced negative outcomes for income or savings; the rest of cases reviewed for this research did not mention human welfare outcomes.

The specific forms of human welfare outcomes varied across cases and geographies. Some cases reported the benefit of non-timber forest products when supplementing forest community income (Donovan & Puri, 2016). Many cases from Sumatra and Kalimantan reported community empowerment that transferred some rights to manage or establish rubber and palm oil plantations (Mahanty et al., 2006; Mahanty et al., 2009; Poor et al., 2019; Purnomo et al., 2020). However, these cases often report comparatively of poor management, with lower productivity (Kubo et al., 2018).

Outcomes concerning environmental balance (Figure 8) report a mixture of positive and negative outcomes. Cases reported 41 positive outcomes from CBFM related to reducing deforestation and forest degradation. However, cases reported 16 negative outcomes from CBFM activities related to environmental balance. This demonstrates the variability in environmental outcomes from CBFM in Indonesia. The appropriate alignment of incentives, knowledge transfer, and skills training is important for ensuring the community empowerment leads to positive environmental outcomes. Without the appropriate incentives and safeguards to ensure that environmental as well as human welfare objectives are promoted through community empowerment, there is a continued risk of forest conversion.

Socio-cultural outcomes were not often featured in the cases analyzed in this study (Figure 9). Most researches find that CBFM has a positive impact on social aspects, including relationships and networks (Purnomo et al., 2004;

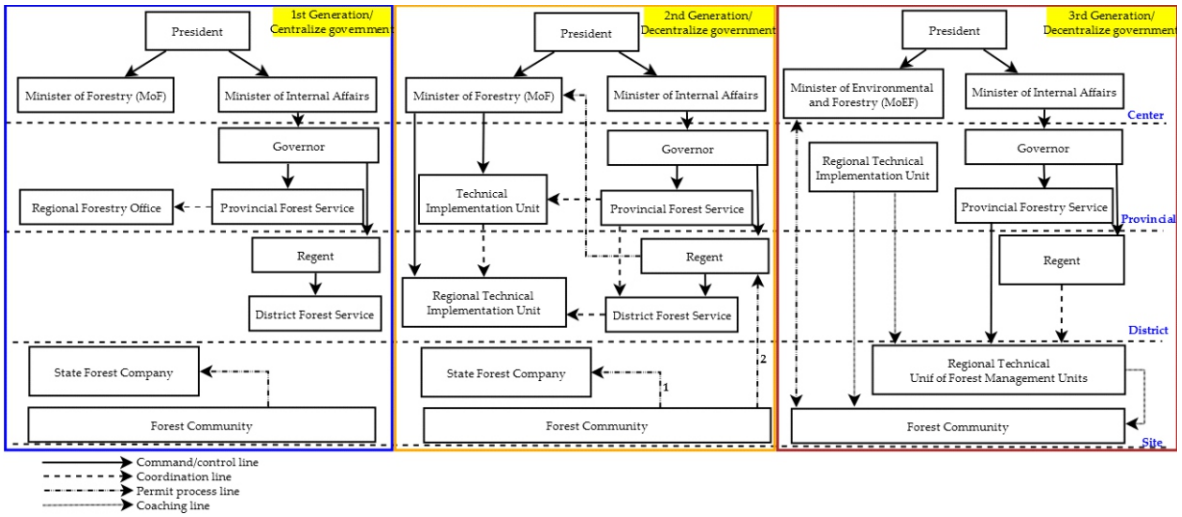

Figure 6 Process of forest management control and coordination, and process of community forest permit issuing and coaching.

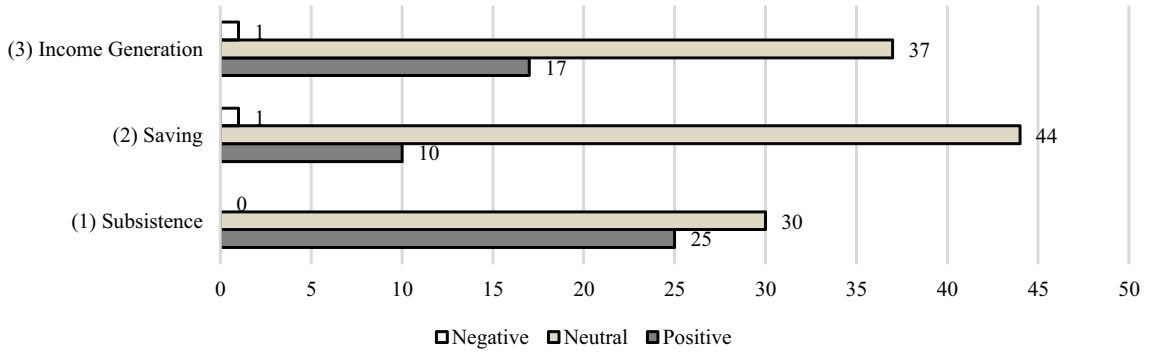

Figure 7 Outcome at human welfare (n = 55).

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Mulyoutami et al. 2009; Suwarno et al., 2009; Djamhuri, 2012; Harada & Wiyono, 2014; Asmin et al., 2019; Hiratsuka et al., 2019; Purnomo et al., 2011). CBFM programs are reported to increase social capital within participating communities. However, negative outcomes can occur, when communities become less equitable and secure as a result of increased empowerment for forest management (Feintrenie et al., 2010; Mahdi et al., 2016).

Potential causal mechanisms: Community background, implementation elements, and management mode

Descriptive analysis of the potential causal mechanisms for empowerment outcomes point to several narratives. Among these, implementation elements appear to have the strongest association with positive outcomes. However, there is a strong bias in the data toward reporting positive outcomes. This bias is common in literature on community-based forest management (Hajjar et al., 2016). In the case of Indonesian CBFM, it prohibits traditional meta-analysis techniques. Thus, the results discussed in this section reflect common narratives from Indonesian CBFM cases. Despite this shortcoming, these mechanisms discussed here represent the most comprehensive analysis of empowerment drivers in Indonesian CBFM.

Traditional CBFM occurs as part of *adat*/customary systems that teach forest management across generations. Customary systems produce traditional knowledge through intergenerational teaching of forest management skills (Ndan et al., 2009; Hariyadi & Ticktin, 2012). In contrast to traditional CBFM, formal CBFM is often implemented due to the loss of access rights/ownership of land. Like traditional management, it is often implemented within community groups that share a similar race, ethnicity and religion. CBFM policies/programs were born as a solution to a lack of clarity surrounding Indonesian land and resource rights. Formal CBFM thus provides a great opportunity to influence the emergence, or increase the social capital, of disenfranchised though often homogenous communities by promoting cohesiveness.

As with qualities of pre-existing community background characteristics, elements that characterize (Figure 10) the implementation of CBFM can influence the success/failure of empowerment policies. Within the literature on Indonesian CBFM, there are nine elements (Table 5). Many articles address the lack of clarity surrounding land boundaries as well as the consistency and partiality of implementing land and community regulation. As stated in the paragraph above, this lack of clarity is an essential factor and dramatically influences the occurrence of land conflicts. For example, this problem occurs in several locations such as in the Kenyah-East Kalimantan (Ndan et al., 2009), Lore Lindu National Park-West Sulawesi (Massiri et al., 2019), and Pasir District-East Kalimantan (Purnomo et al., 2004;

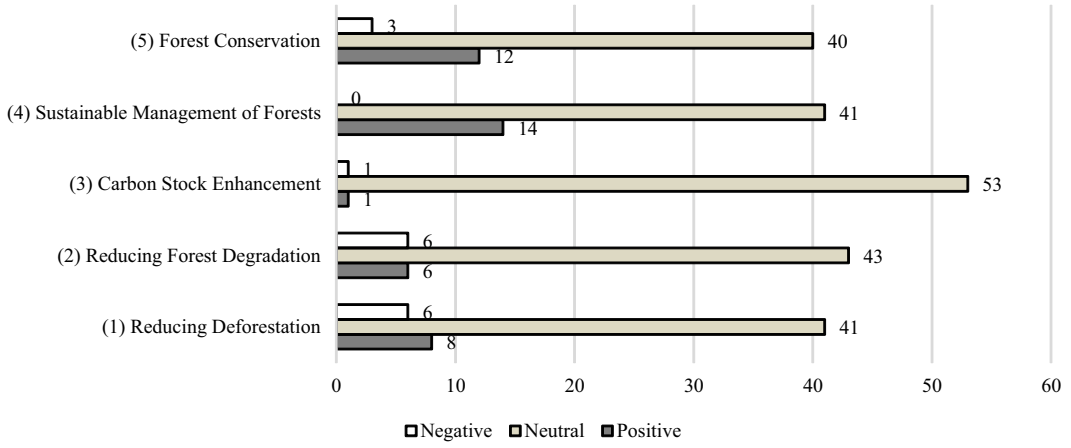

Figure 8 Outcome at environmental balance (n = 55).

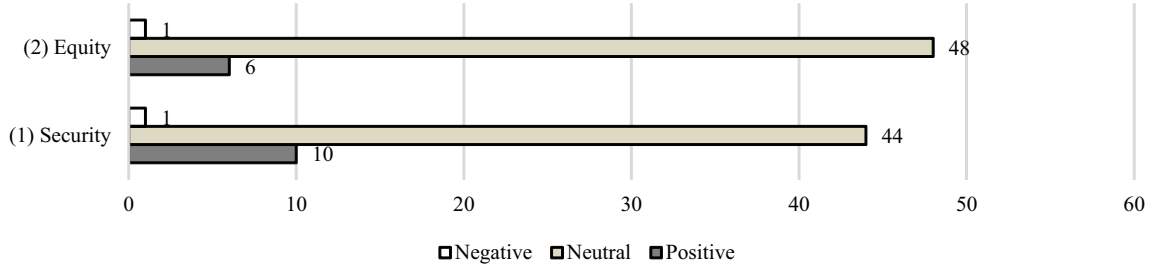

Figure 9 Outcome at socio-cultural dynamics (n = 55).

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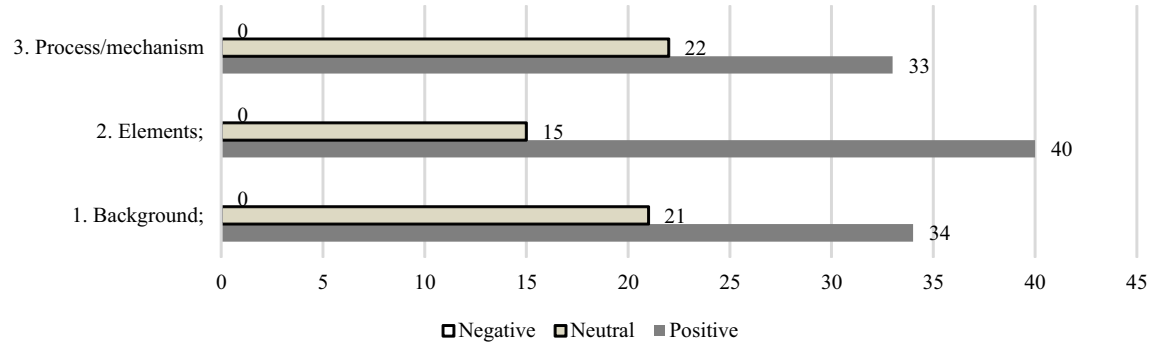

Figure 10 Publication content at forest community characteristics.

Purnomo & Mendoza, 2011).

In CBFM that relies upon a partnership between communities and government or communities and the private sector, equitable contractual agreements are important. Participatory agreements influence the control of conflict and the sustainability of cooperation (Nawir & Santoso, 2005; Suwarno et al., 2009; Permadi et al., 2018). There is a tendency for people to choose long-term contracts. Long-term contracts relate to the clarity of investment and return (correlated with value and time). Also, in a contractual scheme, communities typically need initial incentives, such as subsidies, to begin managing forest land. Implementing contract-based CBFM relies upon strong and transparent institutions as well as political and social capital in the community. For example, social and political capital can form a group's ability to lobby for their interests, and mass mobilisation influenced community forestry policies that enhanced community authority and income opportunities (Rosyadi et al., 2005). Social capital also often affects the level of collaboration between communities and the efficacy of their participation in contractual agreements (McGrath et al., 2018).

Community capacity (skill and knowledge) and institutional structure (situation, structure, behavior, performance, interest and power of stakeholders) are also an important determinants of CBFM sustainability (Massiri et al., 2019). This element supports appropriate forest management processes, especially with regard to technical forest management capabilities. Several studies report that there was limited community knowledge of efficient and effective forest management (De Royer et al., 2018; Hiratsuka et al., 2019). In the process of developing CBFM, external agents such as non-government organizations/civil society organizations (NGOs/CSOs) and universities play a vital role. External agents provide technical expertise, facilitated information exchange with other rural communities, developing skill and technologies and created a forum for conflict resolution (Akiefnawati et al., 2010).

Conclusion

CBFM empowers user-groups the opportunity to provide long-term environmental and human well-being benefits. Through a system of customs and culture, Indonesian communities have been able to maintain sustainable forest management. Through the cases analyzed in this research, it was possible to trace narratives of CBFM success in Indonesia. However, due to data that went unreported in many articles, and a lack of information on where, when, and why CBFM leads to sub-optimal outcomes, the current research was unable to quantify how causal mechanisms contribute to CBFM outcomes. Despite this shortcoming, this research provides the most in-depth analysis of community empowerment through CBFM in Indonesia, at a time when social forestry is a government priority. At present, Indonesian communities need the right to access forestlands, the authority to manage land, and the sufficient transfer of knowledge to participate in formal social forestry initiatives. Empowerment in the form of CBFM positively affects community subsistence, equity, and security. However, it can result in forest cover loss due to changing land functions. Through managerial safeguards that ensure communities promote sustainable forest management, CBFM promises to enhance sustainable outcomes in the long-term. Most of CBFM is implemented across groups with similar characteristics (race, ethnicity, and religion) that have lost access to land or the right to manage it. Many cases of CBFM in Indonesia find that the clarity of land boundaries, as well as consistency and partiality of the rule of law which regulates land governance and the community, are important drivers of positive CBFM outcomes.

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