Evaluating the multiple aspects of the new era of social forestry in Indonesia

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Abstract. Social Forestry (SF) is a scheme to achieve sustainable development in the forestry sector. SF in state forests is mainly implemented using an agroforestry pattern, where government-owned wood plants are combined with agricultural plants owned by farmers. SF in Indonesia has been managed under the Minister of Environment and Forestry (MoEF) Regulation No. 9 of 2021 concerning SF Management. In addition to those regulations, the MoEF Regulation No. 4 of 2023 concerning SF in Forest Areas with Special Management (KHDPK) is marking a new era for SF in Indonesia. This paper examines the performance of SF in the last ten years (2013-2023). The method used is a Systematic Literature Review (SLR), with the literature sources from the Scopus and Google Scholar databases. The study results show that SF performs well in ecological and economic aspects, especially regarding SF as a source of income and livelihood for SF license holders. Meanwhile, there is a balance between low and high performances regarding social aspects, access, and technology. Many existing problems give institutional and policy aspects the lowest performance compared to other aspects. These findings alarm policymakers and related stakeholders to evaluate existing policies and whether they have tackled problems in SF implementation.

1 Introduction

Social Forestry (SF) is one of the tools used by the government to increase the value of forest benefits and make an economic contribution to society while maintaining forest sustainability. The SF, which focuses on the forest-related needs of local communities and their involvement in sustainable forest management, has brought about significant changes in the role and orientation of professional foresters [1]. It has also been applied in various contexts, including tropical forests [2]. The development of SF in the global context is a complex and multifaceted issue, influenced by multiple social, cultural, and economic factors. Vanhanen [3] emphasized the need for a balance between social and ecological systems, focusing on the perceptions and attitudes of individuals and societies. Moreover, [4] highlights the importance of considering cultural and behavioral variables when designing

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and implementing forestry projects, particularly concerning land tenure systems. The success of the SF program should also underscore the historical context of SF itself while anticipating the potential for conflict between different stakeholders [5], embracing the role of community participation in development and simplifying the bureaucracy system [6,7

In the Indonesian context, social forestry (SF) is characterized as a system applied in state forest areas or community/customary forests, where local communities or customary law communities serve as the primary actors. This approach aims to enhance their welfare, maintain environmental balance, and foster socio-cultural dynamics. In the form of Village Forests (VF), Community Forests (CF), Community Plantation Forests (CPF), Customary Forests (CF), and Forestry Partnerships (FP) [8]. The issuance of five SF schemes is based, among other things, on the existence of tenure conflicts in state forests, forest degradation, the threat of deforestation, and limited resources of forestry managers [9].

The SF in Indonesia has experienced various changes regarding forms and regulations. Many policies related to forestry were issued during the reform era (1998) to 2016. Some of them were Law No. 41 of 1999 concerning Forestry. Perum Perhutani, as the forest administrator in Java, also issued a Supervisory Board Decree No. 136 of 2001 concerning Community-Based Forest Management. The final regulation is MoEF Regulation No. 9 of 2021 concerning SF Management. The issuance of this regulation is to improve the MoEF Regulation No. 86 of 2016 concerning SF. Several researchers and scholars consider that this policy is the beginning of the birth of the third generation of SF [10,11]. According to [11], the first generation of SF programs occurred during the New Order government. The second generation of SF was born at the same time as the reform era.

The third generation began with new SF-related policies, fundamentally changing community involvement in SF. Furthermore, Fisher et al. [11] noted that the third FS period was characterized by increased interest from various stakeholders in formalizing licensing schemes. The government is making this new generation of SF the foremost step in regional development policy to improve community welfare while inviting them to participate in forest rehabilitation. The increase in SF permits has encouraged more open bureaucratic access for forest administrators, in this case, MoEF, to be more inclusive and collaborative with other parties [12]. The issuance of Law No. 11 of 2020 concerning Job Creation has brought several changes to the SF - management in Indonesia. The mandate of Government Regulation (PP) No. 23 of 2021 concerning Forestry Management, one of which is derived in MoEF Regulation No. 287 of 2022 concerning Forest Areas with Special Management (KHDPK). For production forest areas in Java, MoEF has solely an authority issuing MoEF Regulation No. 4 of 2023 concerning SF in KHDPK, marking a new era on the island of Java.

In the implementation of SF, there are many reports of SF program success, especially concerning the contribution of SF to the income of communities around the forest, offering livelihood options, providing food reserves, and increasing community access to forest resources [13]. Moreover, [14] reported that the SF-program provides farmers with economic, social, and environment benefits. The SF has increased community and farmer access to forestry land and improved household income from the agricultural sector. However, [15] emphasized that the objectives of the SF and TORA programs were overly ambitious, and the expedited land distribution adversely impacted the effectiveness of both schemes. This included issues related to rights and responsibilities, unsuitable site selection, the types of forestland allocated, and a lack of consideration for community and local governance capacities [15].

However, it was found that SF – also experiences various problems resulting from the state's history of exclusiveness in the forestry sector, problematic land administration processes, deep-rooted political-economic interests among local actors, and a lack of institutional involvement outside the licensing process. Shortcuts to resolve deep-rooted conflicts will only increase tensions or further marginalize the community as the most

vulnerable group, producing no guarantees for forest sustainability [16]. This study aims to evaluate the implementation of SF in Indonesia based on the results of research carried out in the last ten years. Successes, failures, challenges, and opportunities for SF development in the future will be presented based on its current conditions. It is expected that the results of this study can be a primary consideration for policymakers and stakeholders when applying SF to optimize its implementation and ensure its sustainability.

2 Method

This study uses the Systematic Literature Review (SLR) method. The SLR method is a method for identifying, evaluating, and interpreting findings on a research topic to answer research or study questions [17,18]. The SLR approach used refers to [19–21]. The SLR method begins by determining the objectives and limitations of the literature according to the study objectives. The second step is to search for the literature based on the required keywords, limit the number of searches, and obtain the needed literature. The next step is to select the literature obtained that supports the study objectives and check to avoid duplicating the literature. The final step is the synthesis of the selected literature. The primary source of literature is publications indexed in the Scopus database, as they originate from high-quality journals, proceedings, or books and undergo a rigorous peer review process.

Literature is limited to the last ten years (2013-2023) to obtain the latest sources of information. Apart from the Scopus database, literature was also obtained from other sources such as Google Scholar, local journals, proceedings, and other books. Even though it has been widely published in international journals indexed by Scopus, SF research is a local issue, so additional local information is needed. The keywords used for English language sources are "Social Forestry" and "Indonesia". Meanwhile, for keywords to search for literature from local sources, use the keyword "Perhutanan Sosial". Next, a screening is carried out using keywords. *"Hutan Desa/HD" "Hutan Kemasyarakatan/HKm", "Hutan Tanaman Rakyat/HTR', "Kemitraan Kehutanan", "PHBM", "Kulin KK", "Hutan Rakyat/HR" dan "Hutan Adat/HA".* The data search and selection stages is illustrated in Figure 1.

The literature selected according to the study objectives is then grouped based on five forms of SF (HD/VF, HKM/CF, HTR/CFP, HA/CF, and FP/KK–as well as smallholder private forest/HR) Additionally, literature discussing SF in general, without focusing on a specific scheme, is included. Grouping and discussion are also carried out based on five main aspects of SF : economic, social, ecological/environmental, institutional/political/policy, and access/technology. The selection criteria for the literature are as follows (1) it must include at least one SF scheme, (2) it must focus on SF in mineral soils (excluding peat and mangrove ecosystems), and (3) SF must be the central topic of discussion.

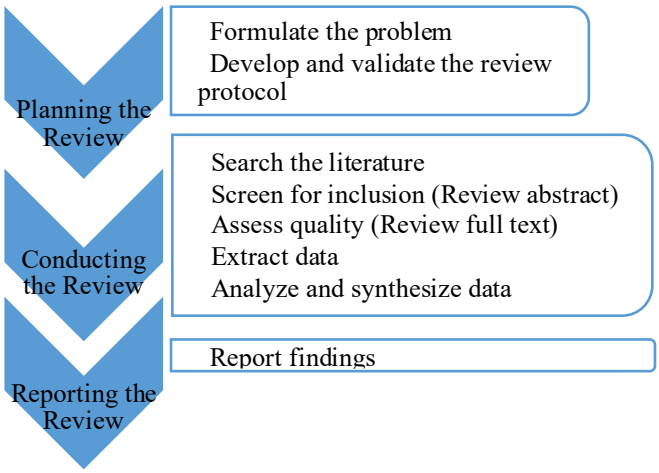

Fig 1. SLR stages (Adopted from [21])

3 Result and Discussion

Based on MoEF Regulation No. 9 of 2021, there are five SF schemes in Indonesia, namely VF, CF, CPF, CF, and FP. The SF in forest areas managed by Perum Perhutani is regulated separately through MoEF Regulation No. 39 of 2017. Regulation No. 9 of 2021 was updated with Regulation No. 4 of 2023 concerning Management in Forest Areas with Special Management (KHDPK). The differences in SF schemes in Indonesia can be seen in Table 1.

Table 1. Social forestry scheme in Indonesia

Scheme	Forest owner	Forest Area Type
Village Forest (*Hutan Desa*)	State	Production/Protected
Community Forest (*Hutan Kemasyarakatan*)	State	Production/Protected
Community Plantation Forest Plantation (*Hutan Tanaman Rakyat*)	State	Production
Forestry Partnership (*Kemitraan Kehutanan*)	State	Production/Protected
Customary/People's Forests (*Hutan Adat/Hak/Rakyat*)	Customary/People's Forests	According to forest ownership

A total of 119 articles were retrieved from the Scopus database based on the selected keywords, of which 61 were processed for further analysis. Additionally, a search in the Google Scholar database yielded 4,590 articles, from which 91 were selected for the next stage. In total, 152 representative articles were taken from the two databases. Following a quality assessment, data extraction, analysis, and synthesis, only 78 articles were ultimately included in the writing process. The stages of the systematic literature review (SLR) process are illustrated in Figure 2.

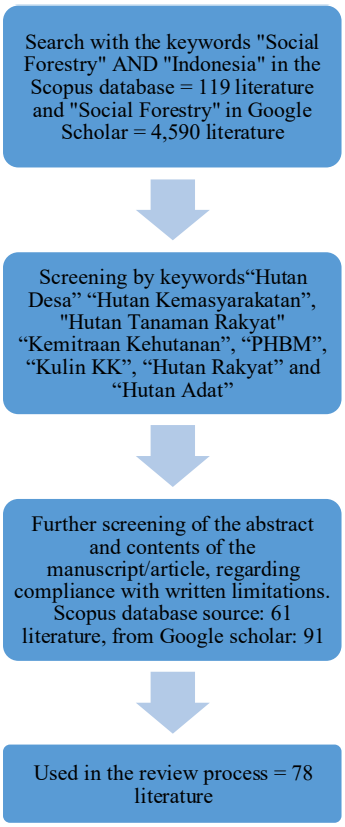

Fig 2. Stages of literature selection using SLR

Articles were grouped into five types of SF in Indonesia : HTR, HKm, HD, KK (including Social Forestry activities in Perum Perhutani), and HA/HR. The articles were then classified into five main aspects : economic, social, environmental and ecological, institutional and policy, and access and technology. The articles collected can be combinations of more than one scheme or SF in general. In terms of aspects, discussions of more than one aspect were also grouped separately. Articles are also grouped by region, including the large islands in Indonesia : Sumatra, Java, Bali/NTB/NTT, Kalimantan, Sulawesi/Maluku, and Papua/West Papua. The grouping results can be seen in Table 2.

Based on the Social Forestry (SF) schemes, the Forestry Partnership (KK) is the most widely written scheme. Because this scheme can be implemented in all types of forests - production, protection, and conservation - the community most widely practices it. On the other hand, HTR is the least thorough scheme. Apart from the fact that it only applies to production forests, this scheme also uses a particular silvicultural system, which requires certain conditions. The only types of species planted are wood and NTFPs, making it less attractive for people who need undergrowth to use this scheme. In terms of aspects, policies and institutions are the aspects most researched. It shows that institutional and policy aspects have many problems that are good topics for research. The ecological and environmental aspects have been researched, at least. It is thought to be because research on ecology, especially ecological impacts, requires more significant costs and usually takes a long time.

Table 2. Social Forestry study based on scheme, aspect, and location

Classifications	Number of studies based on aspects						
	SF in general	**HTR**	**HKm**	**HD**	**KK/ PHBM**	**HR/HA**	**TOTAL**
Aspect							
- Economy	1	1	4		12	3	21
- Social	2	1	7		10	1	21
- Ecology and Environment	1		3	1	1		6
- Policy and Institutional	39	2	15	6	20	9	91
- Access and Technology	5		2	1	4		12
- More than one aspect	5		2		9	5	21
Total by scheme	**53**	**4**	**33**	**8**	**56**	**18**	**172**
Location							
- Sumatra	5	1	7	4	5	9	31
- Jawa		1	13		22	7	43
- Bali/NTB/NTT		1	4	1	1		7
- Kalimantan			4		2	1	7
- Sulawesi/Maluku	3	1	9	1	1	2	17
- Papua/West Papua	1					1	2
Total by location	**9**	**4**	**37**	**6**	**31**	**20**	**107**

Java Island has the most research on SF of the six provinces, followed by Sumatra Island. The content results are in line with the results of [22] study, which found differences in performance between three regions in Indonesia – Sumatra and Kalimantan; Java; as well as Sulawesi, Bali, and Nusa Tenggara. Studies in western Indonesia - Java, Sumatra, and Kalimantan dominate the literature on Social Forestry. Although there are differences in terms of study aspects. Rakatama & Pandit [22] stated that social forest studies focus on social and economic aspects, while our study found that institutional and policy aspects are the most dominant.

Apart from the island with the largest population in Indonesia, on the island of Java, there are also various social forestry schemes, including Perum Perhutani, which manages production forests in Java. In addition, many research institutions and universities make it possible to carry out a lot of research on the island of Java. Meanwhile, Papua and West Papua have the least Social Forestry activities. As an elaboration of Law No. 41 of 1999, as a special autonomous region, Papua Province has Special Regional Regulation for Papua No. 21 of 2008 concerning Sustainable Forest Management in Papua Province. As a follow-up, several initiatives were carried out to provide formal access and support to local communities in managing forest resources. However, some of these initiatives received no response from the central government [23].

3.1 Social forestry performance

Social forestry performance will be discussed in terms of social, economic, ecological/environmental, institutional and policy, and access and technology. The literature taken represents various studies in each aspect. Performance is divided into poor or low and good or high. Performance is based on the author's assessment of the articles cited.

3.1.1 Social aspect

Some social aspects discussed include the Gini coefficient, community participation, resilience, shared knowledge, gender, and collective action. The Gini Coefficient shows the level of welfare inequality. The data shows that the Social Forestry Program has reduced the Gini Coefficient [24]. However, [25] said that implementing forestry partnerships had not overcome the welfare gap but strengthened the position of already strong actors.

The failure of the social forestry community to carry out collective action occurred because of the inability to form common knowledge. Furthermore, this is due to inadequate facilitation and communication problems between the parties involved [26]. The opposite opinion was expressed by [31], who said the program could encourage the groups involved to build collective action in managing state forests. Furthermore, this Social Forestry program can promote the formation of togetherness. The similarity of community thoughts and actions is the key to the successful Social Forestry implementation of Social Forestry, one of which can be seen from the level of community participation. According to [32], the new Social Forestry model increases the level of community participation, especially in 1) institutionalizing business unit management, 2) integrating village forest management into village funds, 3) increasing the capacity of village entrepreneurial institutions, and 4) contributing to conflict resolution.

Regarding resilience, communities that carry out Social Forestry activities with agroforestry in state forests (through the Forestry Partnership Recognition and Protection /Kulin KK scheme) have a higher level of resilience against COVID-19 compared to monoculture activities, although still lower than agroforestry farmers in community forests [29]. Social Forestry activities in state and community forests are expected to involve women. In its implementation, women are marginalized in Social Forestry activities. Women are generally not the primary users of forest land, have low representation and participation in Social Forestry groups, and there is an unequal distribution of benefits between women and men in obtaining assistance and participation in training and capacity building [30].

3.1.2 Economic aspect

Social Forestry's economic performance is measured primarily by its contribution to income and provision of livelihood sources. For the community, social forestry's financial contribution to their total income greatly influences the program's participation level. Many studies agree that social forestry contributes to farmer income [13], although the contribution level to meeting farmers' needs varies. The small contribution could mean that the Social Forestry program is not a priority for farmers because they will look for other sources of income, both on-farm and off-farm activities.

Social Forestry in national parks, for example, the rubber-coffee-wood and fruit agroforestry pattern, has a higher NPV than other combinations, such as Cocoa [31]. Utilizing and developing Non-Timber Forest Products (NTFPs) is key to implementing social forestry. NTFPs can be the basis of medium- to long-term income for farmers. Some NTFPs can also be utilized for two years, for example, medicinal plants, cardamom, and coffee, even though they are not yet being produced optimally.

The challenge is to increase the competitiveness of NTFP products, such as medicinal plants, and the proceeds from their sales to compete with other income sources, such as illegal logging.

3.1.3 Ecological aspect

Social forestry research related to ecology is small in number compared to other aspects. Ecologically, the presence of Social Forestry can play a role in maintaining animal and plant biodiversity in an area. For example, maintaining the existence of several species of bats [32] protects ironwood seedlings from pest and disease attacks compared to open areas [33] crop diversification, land use rotation, and crop diversity, for example, with legumes, are essential to maintaining the ecosystem [34].

3.1.4 Policy and Institutional aspect

Institutionally, many studies say that Social Forestry institutions, including all parties involved in them, are still weak and need to be strengthened. Regarding this matter, [35] said there was a strong element of decentralization in the forestry sector regarding licensing, where decision-making authority was transferred to the central government. Another finding that emerged was the weakening of community capacity to benefit from the establishment of Social Forestry. Many local communities are not interested in this scheme because it requires them to make large investments in reforestation and payments to the government beyond their means [36].

Bureaucracy and regulations are also among the main obstacles to implementing Social Forestry. Many farmer groups have not received forest management permits due to regulatory constraints. Even though some communities have accepted the formal Social Forestry scheme as a strategic step to legalize forest use and claims by the community, this is not necessarily a long-term solution [37]. Several bureaucracies hold the implementation of Social Forestry policies hostage through other forestry mandates, resulting in the squeezing of prominent Social Forestry institutions [7] Many actors and institutions collaborating in their own ways cause government programs to be rigidly suited to local situations and needs, which is where problems and challenges arise [38].

Bureaucratic obstacles are exacerbated by weak coordination and the role of several parties involved in implementing social forestry. Galudra [39] said coordination within ministries was still the main obstacle, extending to coordination issues across and between regional governments. Finally, the distribution of Social Forestry facilitators and extension workers across various Social Forestry locations in Indonesia and the need for overall capacity development among facilitators continue to be the main obstacles to achieving targets.

For example, the role of Forest Management Units (KPH) is not considered to be in encouraging community-based forest management. The weak institutional capacity of KPH causes this problem [40] and interaction with society [41]. If left unchecked, this can cause stagnation or even a decline in Social Forestry management [41]. Ramadhan [51], for example, reported that the institutional effectiveness of one LMDH tends to decline. The level of farmer confidence in the Social Forestry program is only around 28.9%, and the level of understanding is 26.7%. The research results also show a low percentage of farmer participation, external support, and availability of facilities.

This new generation of Social Forestry provides a broad scope for Non-Governmental Organizations (NGOs) as companions and facilitators, from the licensing process to implementation. NGOs play an essential role in implementing Social Forestry, as evidenced by obtaining permits and Ministry of Environment and Forestry policies recognizing that

NGOs are formally involved in implementing social forestry [43]. However, many studies say that the role of NGOs is not optimal. It is still low. Most NGOs attempt to live up to the claim of representing group interests, although their political influence on governments is usually limited [39,44]. There are challenges NGOs face when partnering with government agencies. They may face rigid, demanding bureaucratic procedures and complex coordination [43].

Moreover, [45] also said that former NGO activists working within the government did not push for substantive policy outcomes, while other activists were prohibited from coming to the negotiating table. The new Social Forestry model was shaped by the strong interest in maintaining control of forests by state companies owned by a handful of individuals within and with ties to government institutions.

3.1.5 Access and technological aspects

The access and technology aspects are related to the community's "entrance" to the forest and its resources. Access can be physical or related to rights that communities in managing forests can obtain. Technology is related to activities and innovations that increase the benefits received by parties from social forestry. The Social Forestry program provides forest area communities access to forest management by prioritizing empowerment and assistance, one of which aims to resolve forest area tenure conflicts [46]. Some poor and landless farmers also secure their rights and access to manage state forests by joining the social forestry program [47].

Apart from access to forest resources, communities need access to production facilities, access to information, access to infrastructure, access to education, access to capital, and so on. Regarding infrastructure, for example, it is hoped that the presence of Social Forestry will not cause a decline in existing conditions, such as roads and public facilities [58]. Regarding technology and innovation, it does not always have to come from outside. Still, it can also come from experience and trials carried out by farmers, with a testing or verification process first. For example, coffee farmers who practice bending techniques are proven to increase productivity, reduce production costs, and are easy to do, and are more environmentally friendly [59]. Technical experts must validate it and accept it as a shared innovation. The ability to adapt to local socio-ecological contexts and techno-economic constraints makes this innovation prospective for expansion through Social Forestry programs [49]. Social Forestry performance from each aspect is summarized in Table 2.

3.2 Social forestry opportunities and challenges in the future

It can be concluded that Social Forestry's performance has not been optimal. There are still many things that need to be improved in the future. Several important notes need to be considered when developing Social Forestry.

In the social aspect, more attention must be paid to studying conflict resolution through an integrated and long-term approach to conflict transformation and collaboration. An integrated Social Forestry policy that synergizes various schemes initiated by stakeholders to realize forest sustainability and support the interests of local communities is essential [56].

In the economic aspect, entrepreneurship-based facilitation is essential for social forestry groups that are over ten years old [57]. The facilitation needed for new social forestry groups is related to strengthening the groups' institutions. Building business management on the Social Forestry scheme permits in production forests is a business partnership with the business world or KPH, greater authority for communities in harvesting forest products, more straightforward forest product administration regulations, incentives in processing forest products, and ease in obtaining capital support [58]

In the policy aspect, clarity of cultivation area boundaries, consistent rules for access rights, authority to manage forests, and adequate knowledge transfer to participate in forest management [59]. About half of the small farmers expect more significant tenure security from this scheme [54]. Social Forestry can be successful if policies and regulations in Indonesia provide legal certainty over rights to community-managed forest land [60]. It is related to streamlining bureaucracy and reducing the time required to obtain forest management and utilization permits.

In the ecological aspect, policymakers should pay more attention to environmental functions to ensure forest sustainability in Social Forestry development [61]. In addition, it is necessary to monitor and evaluate Social Forestry programs, increase access to facilities, and increase conservation awareness among forest-dwelling communities [62]. *In the access and technological aspect*, community networks' high level of access and capacity determines how they benefit from implementing social forestry policies [55].

Table 2. Social forestry performance based on study aspects.

Aspect/Sub Aspect	Performance	
	Poor/Low	**Good/High**
Social/ Gender equality	[30]	
Social/ Collective action	[26]	[27]
Social/resilience from climate change and pandemic		[29]
Social/ Tenurial	[54]	
Social/ Income distribution and Gini coefficient	[25]	[24]
Social/ Community empowerment	[50]	
Economy/source of or contribution to income	[51]	[13]
Economy/source of livelihood		[61]
Economy/ Business feasibility		[31]
Ecology and Environment /Biodiversity		[31]
Ecology and Environment /Land Rehabilitation		[37]
Ecology and Environment /Decreasing in deforestation		[14]
Policy and Institution/ The role of facilitator and instructor	[39,57]	
Policy and Institution / Coordination between relevant ministries and between regional government institutions	[38,39]	
Policy and Institution / Role of NGOs	[43,44]	[43]
Policy and Institution / Bureaucracy	[52]	
Policy and Institution/ Role and effectivity of institution	[42,50]	
Policy and Institution / NGO involvement	[39]	
Policy and Institution / Community Participation	[36]	[28]
Policy and Institution / Role of KPH	[40,58]	[53]
Policy and Institution / Community knowledge of the Social Forestry program	[54]	
Access and Technology/ Knowledge, technology, finance, markets, social capital, facilitators, programs, authority		[55]
Access and Technology / Supporting facilities	[48]	
Access and Technology / Utilization of Forest Resources	[46]	[47]
Access and Technology / Local Cultivation Techniques		[49]

4 Conclusion

The results of the study show a variety of social forestry implementations in various regions in Indonesia. All regional clusters show different numbers of aspects and studies. For this reason, it cannot be generalized that a particular scheme is superior and beneficial to others. Social forestry studies are site-specific and case-by-case. Each scheme and region has different challenges. This condition is compounded by many studies discussing social forestry without mentioning specific schemes. However, one common thread that can be drawn is that existing regulations are still not optimal when implemented in the field. It indicates two things: 1) regulatory aspects that have not answered the existing problems or 2) obstacles in implementing policies with the many actors involved. For this reason, a study that evaluates these two factors is needed to find out the real problem so that appropriate recommendations can be formulated.

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