

Social Forestry for Economic, Social, and Environmental Sustainability: A Bibliometric Analysis

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ABSTRAK

Perhutanan sosial merupakan strategi untuk menyelesaikan konflik tenurial hutan, mengurangi kemiskinan, dan menjaga keberlanjutan ekosistem hutan/ lingkungan. Namun demikian, kajian yang membahas tinjauan literatur perhutanan sosial masih terbatas, yang dapat mengakibatkan terhambatnya pemahaman secara holistik dan menghambat peluang riset perhutanan sosial di masa mendatang. Penelitian ini bertujuan menganalisis perhutanan sosial dalam mewujudkan keberlanjutan sosial, ekonomi, dan lingkungan. Penelitian menggunakan basis data Scopus, mencakup 429 naskah, serta menggunakan R-Studio dan Vosviewer untuk analisis data. Temuan penelitian menunjukkan *Forest and Society* merupakan penerbit yang paling produktif. Tiga institusi dengan publikasi tertinggi adalah Universitas Hasanudin, Universitas Gadjah Mada, dan Institut Pertanian Bogor. Analisis ini menunjukkan Indonesia merupakan negara dengan jumlah publikasi paling dominan di bidang perhutanan sosial. Kajian perhutanan sosial mengalami perkembangan signifikan di mana pada tahun 2000-an, sebagian besar terkait dengan subtema deforestasi, biomassa, dan partisipasi. Sementara pada tahun 2010, sub tema kajian lebih dominan terkait mata pencaharian dan perhutanan masyarakat; dan pada tahun 2020-an lebih dominan ke arah konservasi, perubahan iklim, dan pengelolaan hutan lestari. Perhutanan sosial menghadapi sejumlah tantangan dan masalah dalam implementasinya. Di beberapa wilayah, perhutanan sosial mampu menyelesaikan konflik tenurial dan memberikan jaminan kepastian hukum atas penguasaan lahan. Namun demikian, kebijakan ini belum sepenuhnya mampu meningkatkan taraf hidup masyarakat, dan juga belum mampu mewujudkan kelestarian lingkungan/keberlanjutan ekosistem hutan. Lemahnya pendampingan, pendanaan, partisipasi masyarakat, terbatasnya monitoring dan evaluasi yang terstruktur terhadap kebijakan perhutanan sosial menyebabkan kebijakan ini belum sepenuhnya dapat mewujudkan keberlanjutan sosial, ekonomi dan lingkungan.

Kata kunci: Bibliometric Analysis, Perhutanan Sosial, Konflik Tenurial, Penghidupan, Konservasi, Pengelolaan Hutan Berkelanjutan

ABSTRACT

Social forestry can be defined as a strategy for resolving forest tenure conflicts, reducing poverty, and maintaining the sustainability of forest ecosystems/environments. Nevertheless, studies that address the subject of social forestry literature reviews are extremely scarce. This condition has the potential to impede a comprehensive understanding and limit prospects for future social forestry research initiatives. The present study aims to analyse the role of social forestry in achieving social, economic and environmental sustainability. The present study utilised the Scopus database, which encompasses 429 manuscripts, and employed R-Studio and Vosviewer for the purpose of data analysis. The research findings indicate that *Forest and Society* is the most productive publisher. The three institutions with the highest number of publications are Hasanuddin University, Gadjah Mada University, and Bogor Agricultural University. This analysis demonstrates that Indonesia is the nation with the most prolific number of publications in the domain of social forestry. Social forestry studies have undergone substantial development. In the 2000s, the majority of studies were related to the sub-themes of deforestation, biomass, and participation. Concurrently, in 2010, the study sub-themes exhibited a stronger correlation with livelihoods and community forestry. In the 2020s, the focus shifted towards conservation, climate change, and sustainable forest management. The implementation of social forestry is encumbered by a number of challenges and problems. In certain regions, the implementation of social forestry initiatives has successfully addressed tenurial conflicts, thereby ensuring legal clarity with respect to land tenure. Nevertheless, the implementation of this policy has not yet resulted in significant improvements to people's lives or achieved environmental sustainability, including in terms of forest ecosystems. It is evident that inadequate mentoring, inadequate funding, limited community participation, and limited structured monitoring and evaluation of social forestry policies have collectively impeded this policy from achieving the desired levels of social, economic, and environmental sustainability.

Keywords: Bibliometric Analysis; Social Forestry, Tenurial Conflict, Livelihood, Conservation, Sustainable Forest Management

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1. INTRODUCTION

Forests have multiple strategic values, including production functions as a source of food and livelihoods, environmental ecosystem services, habitat for biodiversity, and play a very important role in climate change mitigation (Gosnell et al., 2020; Kurnijanto et al., 2023; Naito et al., 2021). The high level of interest in forests and the orientation of development, which often focuses on the economic sector, has implications for increasing tenure conflicts (Massiri et al., 2024). Furthermore, the acceleration of economic development, which is regarded as a strategy to address poverty and underdevelopment issues through the exploitation of natural resources, has resulted in substantial forest destruction (Ardiyanto et al., 2022; Golar et al., 2021; Rustiadi & Veriasa, 2022). Data from the Consortium for Agrarian Reform shows that forest conflicts in Indonesia continue to increase, with 17 incidents in 2023 (KPA, 2024). These conflicts are largely caused by unilateral claims to state forest land and the granting of forestry concessions on land previously controlled by communities (Halomoan et al., 2024; KPA, 2024).

The presence of communities residing in forest areas across various regions is not a recent phenomenon (Golar et al., 2021; Harbi et al., 2021). Baynes et al. (2015) mentioned that more than half a billion people, especially in developing countries, live in and rely heavily on forest areas. Data from the Ministry of Environment and Forestry/MoEF (2017) shows that more than 3,324 (3.97%) villages in Indonesia are claimed and included in forest areas and approximately 39,147 (46.76%) villages are located around forest areas. Data from the MoEF (2021) also shows that an area of 42.2 million hectares of forest area is designated to support economic activities, but of this area, 96% is held by corporations while only 4% is managed by the community. The high inequality of forest tenure and utilisation results in inequality and injustice in land access. Tenure issues and uncertainty over land tenure status have implications for increasing socio-economic problems in the community (Fisher et al., 2017), as well as high poverty (Koeswara et al., 2024). The distribution of numerous concession licences without taking into account the prevailing land conditions and socio-economic circumstances may also result in significant displacement of existing settlements and community-managed agricultural land within the area (Madihong et al., 2023).

Social forestry policy is an effort to regulate and provide legal certainty, as well as provide direction on land use and utilisation to meet the needs of the community while maintaining the forest ecosystem (Nacionales & Gevaña, 2021; Wulandari & Kurniasih, 2019). Social forestry is also one of the strategies to manage forest areas in an inclusive and collaborative manner (Asmin et al., 2019; Suhardjito & Wulandari, 2019). Illegal logging, which is very massive in Indonesia, certainly cannot be solved by the government, in which case the participation of

communities living in forest areas has a very important role to be directly involved in the suppression of illegal logging (Afrianto, 2025; Ardiyanto et al., 2022). The concept of forests for people, especially in Indonesia, has existed since 1978, which was influenced by the World Forest Congress held in 1978 (Maring, 2022). Forest management through social forestry is the development of a sustainable forest concept that seeks to balance economic (poverty alleviation and economic empowerment), environmental (conservation and ecological balance) and social (rights/authority strengthening and community empowerment) aspects in line with forestry principles to achieve sustainable development (Fisher et al., 2018; Gunawan et al., 2024; Wahyu et al., 2022).

Despite the long-standing existence of the concept of social forestry, research addressing its implementation for social, economic, and environmental sustainability remains diverse. As stated in the seminal work of Madjid et al. (2025); Suryaningsih et al (2026), a synthesis of social forestry research trends in Indonesia was previously conducted. However, a more profound examination of the context for social, economic, and community sustainability was not undertaken. Further research is required to be conducted through bibliometric analysis, as previously undertaken by Risnawati (2026), who examined forest management policies in Indonesia, and Santillán-Fernández et al. (2023), who synthesised studies on forest management in Mexico. It is evident that both studies were partial in nature, as they focused exclusively on specific countries and did not undertake a comprehensive examination of the context, including its social, economic, and environmental dimensions. This research suggests that a comprehensive understanding of the concept of social forestry is impeded by the existence of a plethora of literature reviews. The paucity of bibliometric studies in the context of sustainability for social, economic, and environmental life has the potential to hinder the capacity and understanding of social forestry. The dearth of research in this area, particularly with regard to the mapping of the evolution and development of social forestry, its challenges, and the elaboration of the concept of social forestry to achieve social, economic, and environmental sustainability, often hinders researchers from conducting future studies. The bibliometric method utilised in this study enables the mapping of research trends, citation networks, emerging thematic areas, influential publications, and inter-institutional collaborations.

Research related to the concept and implementation of social forestry in promoting social, economic, and environmental balance is of interest to continue in the midst of increasing threats to food security, global warming disasters and ecological crises. This bibliometric analysis aims to describe 1). the development trend of social forestry research, especially in relation to social, economic and

environmental aspects, 2). citations and authors who dominate social forestry, 3). how research topics are related, and 4). affiliations and countries that significantly produce social forestry publications. The bibliometric analysis carried out by R-Studio and Vosviewer is expected to provide comprehensive information on the implementation and challenges of social forestry in achieving sustainability in social, economic and environmental aspects.

2. MATERIALS AND METHODS

The present study employs bibliometric methodologies (the integration of mathematical and statistical methods) to assess and categorise extant social forestry research. The primary data utilised in this study is sourced from the Scopus database, a globally recognised repository of literature, which is renowned for its comprehensive data, authored by a diverse range of researchers, undergoes rigorous peer review, and is characterised by its high quality and accountability (Pranckute, 2021). The Scopus database offers straightforward keyword filtering and provides a comprehensive range of formats (.csv and .bib) for bibliometric analysis. The following keywords were utilised in the data search: the search strategy was formulated with the following keywords: 'forest society' OR 'forest AND social' OR 'economy' OR 'environment', and the search was limited to English-language publications. The extant literature was reviewed, with the focus being on papers published between 1979 and 2024, a period which saw the emergence and rapid growth of studies in this field. It is evident from the results of this search that the number of publications totalled 473 manuscripts. The framework utilised in this review is the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). This framework provides an overview of the stages of a literature review and explains the identification, screening, eligibility, and inclusion mechanisms for a literature review (Page et al., 2021). In this study, the researchers screened 473 manuscripts. The initial selection was made for articles that employed English as the standard language for bibliometric analysis. The publication of English-language articles facilitates the citation and access of manuscripts by readers from diverse international backgrounds, thereby fostering collaborative publishing initiatives among nations. At this stage of the research, 12 manuscripts were excluded, leaving 461 for further analysis.

In this bibliometric analysis, the authors have limited the manuscripts to those published in journals, excluding articles in the form of book chapters, reports, and conference proceedings. The selection of articles from journals was based on the fact that the publication process in such journals is subject to peer review, thus ensuring the highest standards of quality and scientific rigour. The restriction of articles to Scopus-indexed publications is maintained through academic processes, thus

ensuring the maintenance of quality and accountability. This selection process resulted in the exclusion of 22 manuscripts, and in the subsequent stage, the authors further restricted the selection to only accessible publications. The objective of this stage is to ensure that publications can be downloaded, screened, and reviewed/analysed by researchers, while ensuring the manuscripts' quality. At this stage, the authors excluded 10 publications that were not accessible. Following a rigorous selection and analysis process, 32 manuscripts were reduced from 461 publications, resulting in 429 publications that were utilised for the bibliometric analysis. The selection process for journal articles can be outlined as demonstrated in Figure 1.

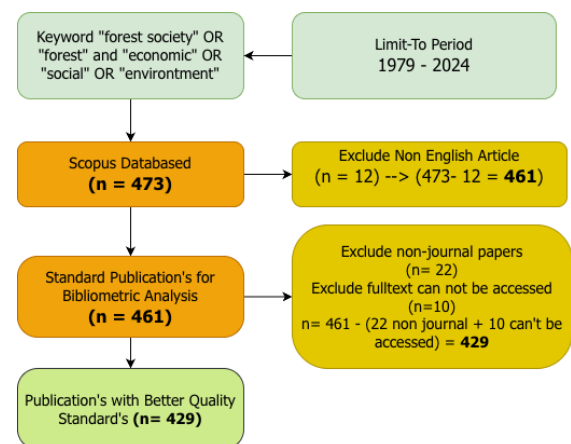


Figure 1. Diagram of Article Review Selection Process

In this study, the author used Vosviewer and R-studio software to analyse the bibliometrics of journal articles. In the first stage, the researcher carried out an overview analysis of the publications, including an analysis of the number of publications related to social forestry on a regular basis. In the next stage, the authors with the most dominant publications were reviewed and the trend of regular publications was analysed. A review of the affiliation of authors working on social forestry was carried out to provide information on the concentration of institutions working on social forestry and how they are related to each other. A review of the development trend of social forestry studies was conducted to provide information on the shift and development of study topics over time. An analysis of linkages between themes was also conducted to identify opportunities and challenges for further research in the conduct of social forestry studies.

3. RESULT AND DISCUSSION

3.1. Overview of Bibliometric Analysis

The statistical analysis results as shown in Figure 2 show that publications related to social forestry used in this bibliometric analysis started from 1979 to 2024 with a total of 429 articles. Studies related to social forestry began to appear in 1979, influenced by the forestry congress in 1978 which raised the theme of 'forest for people'. The average growth in the

number of publications related to social forestry per year is 8.15%. 429 publications were written by 1,055 authors with 124 single authors. Studies related to social forestry quite a lot involve international collaboration between authors, reaching up to 20%. Overall, this research has a high average citation rate, where on average each document is cited 10.98 or almost 11 times.



Figure 2. Descriptive Statistics of Social Forestry Topic

Publications related to social forestry are quite fluctuating, where there was an increase from 1987 to 1993, but again a decrease until 2006, and again an increase from 2017 to the present 2024. The increase in publications related to social forestry that occurred since 2017, with the most dominant location in Indonesia, was influenced by the President's affirmation on the efforts to solve the problems of forest areas, which was then regulated by the Minister of Environment and Forestry Regulation No. 83/2016 on social forestry, the Minister of Environment and Forestry Regulation on social forestry in the working area of Perum Perhutani established in 2017, the Minister of Environment and Forestry Regulation No. 9/2021 on social forestry management, and Presidential Regulation No. 28/2023 on integrated planning for the acceleration of social forestry management. The objective of social forestry, which is included in the National Strategic Programme and is part of the agrarian reform objective, has had an impact on the massive efforts to establish social forestry in different regions, and this condition correlates with the increase in various researches related to social forestry. Data on the distribution of the number of publications per year on social forestry can be explained in Figure 3.

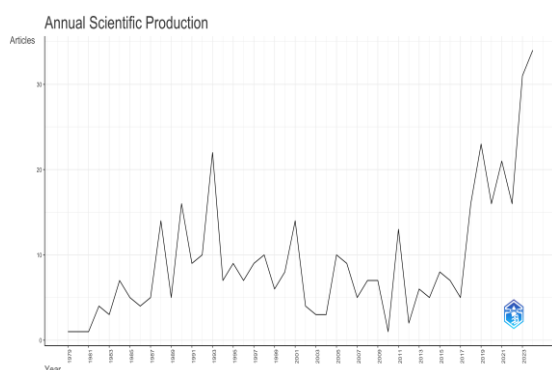


Figure 3. Annual Scientific Productions on Social Forestry

This overview also analyses the Sankey diagram to describe authors who have significant contributions to social forestry studies in relation to keywords and journal sources/publishers.

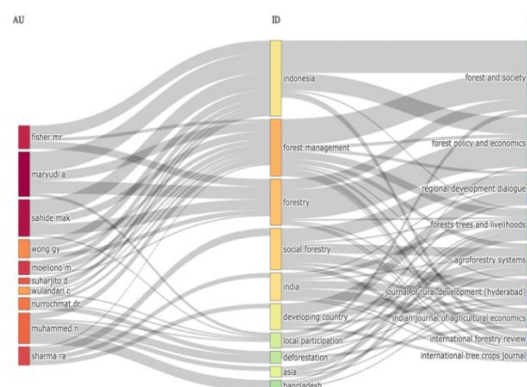


Figure 4. Sankey Graph of Author (AU), Keywords (ID), and Sources (SO) of Social Forestry

The sankey diagram shows that Maryudi, Sahide, and Fisher have significant contributions, where the dominant keywords used are: Indonesia, forest management and social forestry. Figure 4 shows that most of the researchers, namely Maryudi, Fisher, Sahide, Wong, Moeliono, Wulandari, etc. are connected to the keyword Indonesia, which shows that forest areas in Indonesia are the most dominant location studied by researchers. In addition, the keyword forest management is also dominantly studied by researchers, indicating that the various studies emphasised by researchers are about how social forestry in the framework of sustainable forest management.

3.2. Description of Publication Analysis

The theme of social forestry has become a subject of interest for academic study in recent decades, emerging as a prominent research trend, particularly in several developing countries. The substantial number of studies conducted in these countries is influenced by various factors, including the large population residing in these areas, the presence of complex and unresolved tenurial conflicts, and the high levels of poverty and inequality experienced by individuals living in and around forest areas (Ellis et al., 2017). Data related to journals/publishers that dominantly publish publications on social forestry can be explained in Figure 5.

As demonstrated in Figure 5, *Forest and Society*, a journal publisher from Indonesia, has the highest number of publications related to social forestry, with a total of 25 manuscripts. This Scopus-indexed journal provides opportunities for researchers to publish conceptual, methodological, and implementation aspects related to forestry, sustainable environment, ecology, and land use related to community, land, and forest aspects. In second place, with a total of 17 publications, is *agroforestry systems* as a journal under springer nature, while in third place, with 12

manuscripts, is Indian Forester, a journal published by India. The review also analyses the authors who have the most dominant publications, as described in Figure 6.

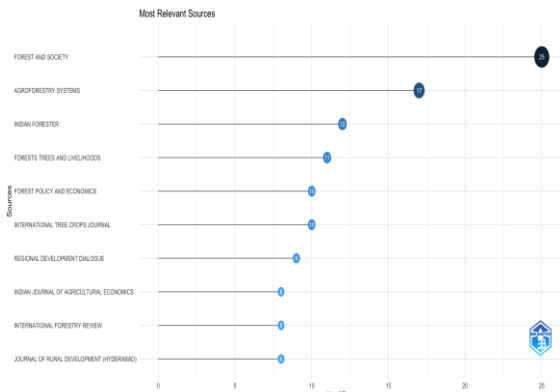
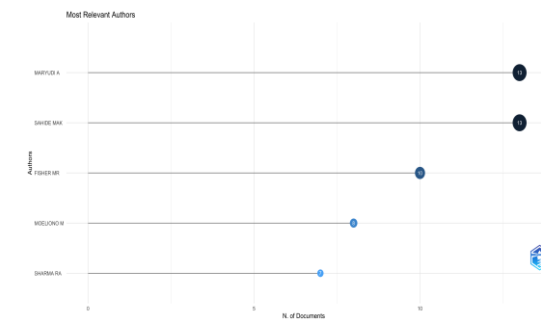
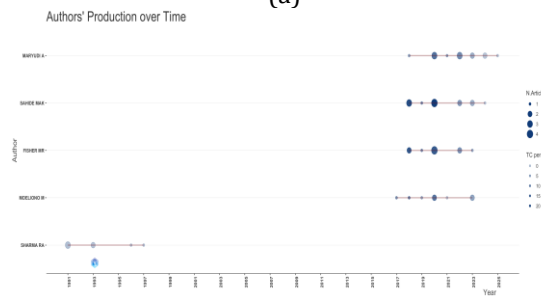


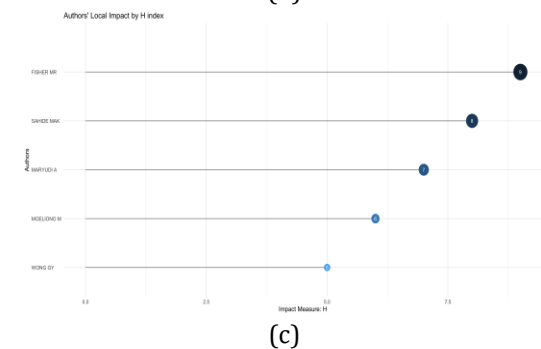
Figure 5. Most Relevant Sources about Social Forestry



(a)



(b)



(c)

Figure 6. (a) Most Relevant Author; (b) Number of Author Publications by Time Period; (c) Number of local H-Index of authors

Based on Figure 6, Maryudi with 13 publications, Sahide max (13 publications) and Fisher (10 publications) are the three authors with the most dominant publications related to social forestry and forest management. The three authors produced

publications on social forestry with a very dominant number of publications with the same time period, namely from 2017 to the time of this study, namely 2024. Meanwhile, based on the local impact H-index, the author with the highest H-index is: Fisher (local impact H-index: 9), Sahide max (H-index: 8) and Maryudi (H-index: 7). The analysis shows that the authors contributing to social forestry are related to each other, which can be explained in Figure 7.

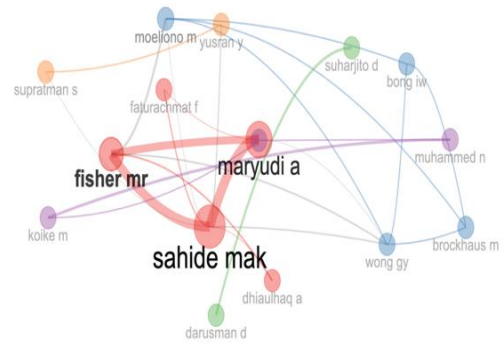
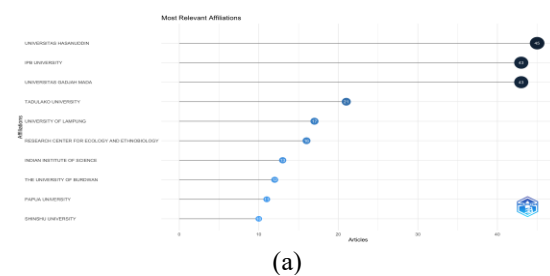


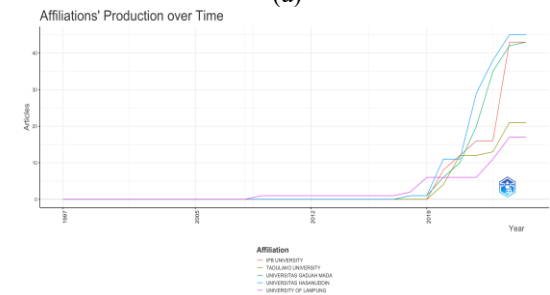
Figure 7. Linkages Between Authors, Larger Nodes Indicate Greater Connectivity

As demonstrated in Figure 7, the three authors: Sahide mak, Maryudi, and Fisher, who have contributed the most works on social forestry, exhibit a high level of connectivity and substantial node size. This suggests that these three authors have a significant influence on the development of social forestry studies and have a substantial network of connections with other authors. Additionally, Figure 7 reveals a notable level of collaboration among authors in producing joint publications related to social forestry.

In this study, in addition to analysing the authors' contribution in studying social forestry, the affiliation of authors who significantly contribute to social forestry studies is also analysed, as explained in Figure 8.



(a)



(b)

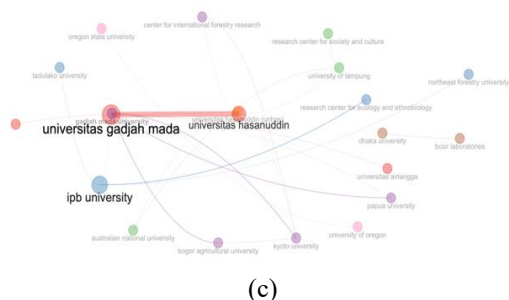


Figure 8. (a) Most Relevant Aviation; (b) Affiliations' Production Over Time; (c) Interrelationships between Aviations

The results of the affiliations' analysis, as demonstrated in Figure 8(a), indicate that Universitas Hasanudin with 45 publications, Bogor Agricultural University/IPB (43 publications), and Universitas Gadjah Mada (43 publications), are the affiliations that produce the most dominant publications on social forestry. The high number of publications from these three affiliations can be attributed to several authors, with Maryudi being the author with the most publications at the Universitas Gadjah Mada affiliation, and Sahide Max being the second most prolific author at the Universitas Hasanuddin affiliation. Meanwhile, Suharjito and Darusman, who are well-known authors and make significant contributions to the field of social forestry, are affiliated with the Bogor Agricultural Institute. The substantial number of publications resulting from the collaborative efforts of these authors underscores the high level of affiliation that engenders the production of social forestry publications.

The results of the production over time analysis demonstrate that several affiliations exhibit a similar trend, with the number of publications remaining low from 1997 to 2017. There was a significant increase in publications starting in 2019, reaching its peak from 2022 to 2024. The results of the analysis of the relationship between affiliations, as illustrated in Figure 8(c), demonstrate that the most prevalent affiliation relationships are between Universitas Gadjah Mada and Universitas Hasanudin, and between Universitas Gadjah Mada and IPB University. The affiliation network extends beyond national boundaries, with numerous affiliations engaging in collaborative research endeavours with international partners, including the Centre for International Forestry Research, the Australian National University, Kyoto University, and the University of Oregon, among others.

This result shows that the countries with the highest number of corresponding authors with publications related to social forestry, as shown in Figure 9 (a), are: Indonesia, India and the USA. Indonesia ranks first as the country with the highest number of publications related to social forestry, influenced among other things by its vast forest area, which is the third largest tropical forest in the world (Nugroho et al., 2023), the high number of people

living in forest areas, the high number of conflicts in forest areas, and the massive implementation of social forestry policies in the country. The results of the most cited countries in Figure 9 (b) also show that Indonesia is the country with the highest number of citations with 805, followed by the United Kingdom with 411 citations and Australia with 392 citations.

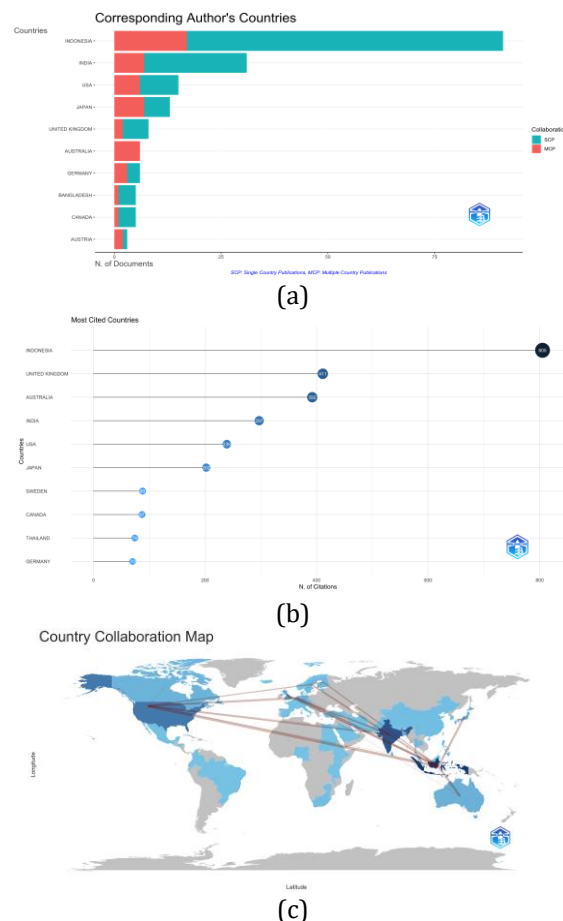


Figure 9. (a) Corresponding Author's Countries; (b) Most Cited Countries; (c) Country Collaboration Map

Figure 9 (c) shows the level of collaboration between countries in the production of publications related to social forestry. Indonesia is the country with the highest connectivity compared to other countries, followed by India, the United States, the United Kingdom, Japan and Australia.

3.3. Keyword Analysis

The keyword analysis in this study is intended to provide an explanation of the most frequently occurring and dominant keywords from the manuscripts, as shown in Figure 10 (a), and the co-occurrence relationship of the keywords, as shown in Figure 10 (b). Figure 10 (a) shows that the larger the box size, the more frequently occurring keywords and vice versa. The results of the keyword analysis show that the keyword social forestry is the dominant one with almost 32%, followed by the keywords Indonesia (7%), community forestry (5%), agroforestry (5%), forest management (3%), conservation (2%),

As demonstrated in Figure 13, the thematic evolution from 1979 to 2000 reveals a limited progression in research themes, with the predominant themes exhibiting a tendency towards simplicity, centring predominantly on social forestry and deforestation. Conceptually, studies conducted during the 1979-2000 period were heavily influenced by forest utilisation policies, the high level of exploitation of forest areas, and the emergence of various damages caused by deforestation. Over time, however, research themes evolved rapidly, with studies on forest management, agroforestry, conservation, social forestry, social capital, and forestry dominating the study from 2001 to 2014. The thematic findings during this period are consistent with those reported by Risnawati (2025), who identified forestry policy as the dominant theme in their study, focusing on environmental protection. The concept of forest management was, among other things, heavily influenced by the high level of forest destruction and the government's policy efforts to address various forest issues. In the subsequent phase, spanning from 2015 to 2024, a modest shift in the research theme became evident. The primary theme of social forestry encompassed not only the conceptual framework but also the involvement of communities in the formulation of social forestry policies. Conceptually, the publication theme underwent a substantial shift from the preceding period (2001-2014), which initially concentrated exclusively on forestry. The theme underwent a shift in focus during the period 2015-2024, with the focus moving towards sustainable forest management. The publication themes for the 2015-2024 period were conceived as a response to various forms of environmental degradation resulting from forest area destruction, whilst also addressing forest management initiatives involving communities at the grassroots level. The concept of social forestry, and the various implementations of social forestry policies during this period, focused not only on how forests can provide economic benefits, but also on how implemented social forestry policies simultaneously respond to conservation and environmental sustainability efforts.

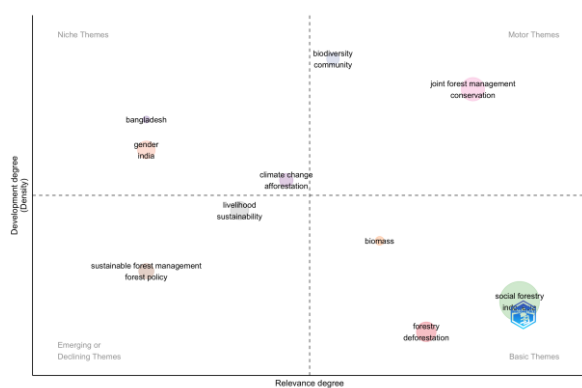


Figure 14. Thematic Map Social Forestry

As illustrated in Figure 14, the thematic map provides information on the centrality of keywords, which are divided into four quadrants. Quadrant 1 contains motor themes, quadrant 2 contains basic and transversal themes, quadrant 3 contains emerging or declining themes, and quadrant 4 contains basic and transversal themes (Giannakos et al., 2020). As demonstrated by the thematic map diagram of this bibliometric analysis, it can be posited that there are two x-axes, which illustrate the central theme and the level of development of the publication theme, respectively. The diagram delineates four quadrants. Initially, the upper right quadrant/motor themes are: joint forest management and biodiversity-community. This quadrant denotes that the theme under consideration constitutes a robust foundation of research, with a significant body of studies and publications addressing it. Secondly, the upper left quadrant (Niche Themes) encompasses the theme of climate change, with a particular focus on afforestation. The themes contained within this Niche quadrant demonstrate a high level of specificity and are undergoing rapid development. Thirdly, the Lower Left quadrant (Emerging or Declining Themes) is the theme of sustainable forest management, encompassing forest policy and livelihood sustainability. The themes in this quadrant are those which are currently in a state of development and have not yet been extensively explored; consequently, this theme represents a novel research opportunity for future investigation. Fourthly, the lower right quadrant (transversal themes) encompasses the subjects of forest deforestation and social forestry, with a particular focus on Indonesia. The themes in this quadrant are fundamental and of paramount importance, as they exhibit the highest thematic strength in relation to other themes.

3.4. Discussion

The management of forest areas in various countries, especially developing countries (Indonesia, India, the Philippines, etc.), cannot be considered in isolation from historical, socio-economic, political, and national policy contexts, as well as international agendas related to the sustainability of human rights and global warming issues (Fisher et al., 2019; Herrawan et al., 2022; Maring, 2022). As Willmott et al. (2023) have asserted, the ongoing loss of vast forest areas and the imminent threat to the sustainable livelihoods of communities have exerted a profound influence on the evolution of forest governance systems. A pertinent example of this phenomenon can be observed in Indonesia, a nation that boasts the third largest forest reserve in the world. Since the mid-1960s, the country has witnessed a substantial escalation in commercial forest exploitation and massive deforestation (Gunawan et al., 2024). The high granting of concession permits for plantations and mining has resulted in indigenous peoples and communities living in forest areas being deprived of their

livelihoods (Gunawan et al., 2024). The social forestry policy scheme also emerged due to the high level of state forest conflicts, limited forest management resources, and the threat of unsustainable life for indigenous communities and communities who have long lived in forest areas (Willmott et al., 2023).

Social forestry, defined as a sustainable forest management scheme, can be implemented in state forest areas and customary forests, with the objective of providing legal certainty regarding land ownership. This social forestry scheme can be implemented in several forms, namely village forests, community forests, community plantation forests, customary forests, and forestry partnerships. A bibliometric analysis was conducted to identify the most frequently used keywords in social forestry studies. The analysis revealed that the keywords "forest society" and "Indonesia" are frequently appearing in relevant studies. The research community has identified forest areas in Indonesia as a location of interest for research, due to the potential of these forests to store significant carbon stocks and act as biodiversity ecosystems (Estoque et al., 2019). The social forestry scheme in Indonesia was reinvigorated in 2014 in response to a high level of tenurial conflicts and overlapping control of forest areas. In an effort to resolve this conflict, the president issued a mandate for immediate action to address the issue of forest areas (Tajuddin et al., 2019). The bibliometrics in this study analyse the implementation of social forestry in relation to the social, economic, and environmental aspects that underpin successful sustainable development.

From a social perspective, social forestry policy is an important aspect of ensuring legal certainty for communities and indigenous peoples in accessing natural resources in forest areas (Massiri et al., 2024). The social forestry scheme in Indonesia is a top priority because it is included in the national strategic programme, namely agrarian reform. This initiative is particularly salient in Indonesia and other developing countries, where land access and control are often marked by significant disparities (Herrawan et al., 2022). Social forestry emerges as a pivotal solution to address the injustices and uncertainties surrounding land access and customary forests, which often prove challenging to resolve (Ungirwalu et al., 2021). The implementation of this social forestry policy has been demonstrated to resolve land conflict issues in various regions, including Papua (Fatem, 2019) and Sulawesi (Kurnijanto et al., 2023). The success of social forestry schemes in several regions is indicative of the government's commitment to involving and accommodating the interests of the community (Ungirwalu et al., 2021). However, the implementation of the social forestry policy in various locations has been accompanied by several challenges and problems in managing forest areas, including: a low level of community/farmer trust in the social forestry program, and a limited ability of facilitators to

assist in the preparation of social forestry planning and implementation (Galudra, 2019), the limited level of community understanding of social forestry regulations, the limited capacity of the community in managing forest areas, and the weak institutions in the community in planning and implementing social forestry (Ramadhan et al., 2022). In addition to the aforementioned problems, a study conducted by Sirimorok et al., (2024) stated that the lack of community participation, weak planning processes, and limited identification and inventory activities in the field resulted in some of the land used for social forestry being marginal land and its location being very far from community settlement.

From an economic perspective, social forestry can be regarded as a mechanism that is effective in providing livelihood opportunities for communities and reducing poverty levels, particularly in rural areas where poverty levels are still very high. This scheme is also implemented with the aim of reducing the significant inequality between urban and rural areas, as well as serving as a strategy to achieve equitable development. A key aspect of the scheme is the strengthening of the legal status of access rights through the issuance of permits for the management of forest areas, enabling communities to optimise their utilisation of forest areas. The provision of legal certainty and assistance to communities has been shown to have a positive impact on income generation (Kusuma et al., 2023). Despite the capacity of this initiative to enhance revenue and reduce inequality, the social forestry programme confronts numerous challenges in the field, including the presence of previously established control mechanisms, the existence of normative principles or values that govern land use in specific areas, and the impact of market forces on land utilisation (Kusuma et al., 2023).

Social forestry policy, through the implementation of an agroforestry system, has been identified as a highly effective mechanism in achieving environmental sustainability (Octavia et al., 2022). The integration of agricultural crops with forestry in land use patterns has been demonstrated to enhance food security and environmental sustainability while fostering biodiversity in forest areas (Tsani et al., 2024). Research has demonstrated that social forestry initiatives have been associated with a decline in illegal logging activities in designated areas (Astuti et al., 2020). Furthermore, data from the Ministry of Environment and Forestry has shown that social forestry has been effective in reducing deforestation rates by 0.49 million Ha during the 2017-2018 period. The correlation between increased income and community welfare through agroforestry with low deforestation has also been demonstrated (Octavia et al., 2022). In addition to reducing illegal logging, social forestry is also able to increase reforestation so that forest functions return to optimal (Umarhadi et al., 2023). The provision of assistance through social

forestry schemes has been identified as a means of increasing public awareness regarding the protection of forest areas, the maintenance of biodiversity, and the implementation of conservation values (Samek et al., 2022). Furthermore, social forestry schemes have been identified as an effective strategy for involving and mobilising communities in the conservation of forest areas (Fatem, 2019).

The social forestry policy in Indonesia is stipulated in the Medium-Term Development Plan (RPJM) and has been regulated through various ordinances. This policy was extensively implemented by the Indonesian government from 2015 to 2019, and the ambitious target for social forestry with a limited time during that period is referred to as the social forestry explosion (Sahide et al., 2020). The social forestry target promoted by the Indonesian government of 12.7 million hectares should not be evaluated solely in terms of the number of hectares (Resosudarmo et al., 2019). Social forestry, as a policy mechanism, is not singular; it involves and integrates bureaucracies and stakeholders at various levels (Resosudarmo et al., 2019). Social forestry as a policy mechanism that is not a single mechanism, in which there is involvement and integration between bureaucracies and between scaleholders (Budi et al., 2021; Rahayu et al., 2024). The ultimate objective of this policy is not merely to facilitate access, but rather to empower communities to leverage available natural resources in a manner that enhances economic prosperity, safeguards social well-being, and upholds environmental sustainability. A study undertaken by Resosudarmo et al., (2019) reveals that the social forestry policy, despite its hasty implementation, still exhibits several deficiencies in its execution. Social forestry, as a policy to realise sustainable forests and absorb and store carbon stocks (Pelawi et al., 2024) certainly requires regular monitoring and evaluation. A comprehensive study of how the implementation of social forestry policies in achieving a balance between social, economic, and environmental sustainability aspects is important amidst Indonesia's commitment to reduce carbon emissions by 29%.

Empirically, social forestry policies in Indonesia have been regulated and implemented through various mechanisms. However, the implementation of these policies has not been effective in achieving the desired targets for improving economic, social, and environmental sustainability. At the site level, several findings indicate that the limited number and resources of Forest Management Units (FMUs) act as obstacles to the suboptimal implementation of social forestry policies. This weakness has an impact on: 1) less optimal assistance in the licensing preparation process; 2) lack of community participation in preparing farmer group plans; and 3) weak institutional capacity in social forestry (Massiri et al., 2020). The programme has also been found to be less than optimal due to limited support at the local government level (Rahayu et al., 2024). Social forestry, which was distributed across a minimum of

6.4 million hectares in 2023, necessitates substantial political endorsement and backing from government and bureaucratic elites. In order to ensure that social forestry extends beyond the mere distribution of land to the community (Hultera et al., 2020), it is imperative to recognise the pivotal function of forest stands, which serve a dual purpose in mitigating global warming. Achieving balance and harmony in the benefits of social forestry, which improve social, economic and environmental aspects, is an absolute and inseparable unity.

4. CONCLUSION

A substantial corpus of research has been dedicated to the study of social forestry, with numerous researchers from various countries exploring this field. A thorough examination of publications in Scopus discloses that from 1990 to 2024, the number of documents rose to 429, with 1,055 authors contributing to this growth. A significant surge in publications was observed between 2017 and 2024, largely influenced by the substantial social forestry policies implemented in Indonesia. While the 1990s and 2000s witnessed a focus on biomass and deforestation, the subsequent period (2010 to present) has seen a paradigm shift towards livelihoods, community forestry, climate change, and sustainable forest management. Despite the success of social forestry policies in resolving land tenure conflicts in certain areas, various challenges and problems remain in their implementation. Consequently, empirical research findings indicate that social forestry policies have not been effective in achieving the desired sustainability for community life and the environment. A multiplicity of factors have contributed to the failure to achieve the goals and benefits of social forestry. These include limited assistance, budget constraints, a lack of community understanding and stakeholder engagement. In terms of future research, this literature review suggests that efforts should be directed towards the formulation of strategies that enable social forestry policies to achieve a balance between social, economic, and environmental aspects in the face of increasing global disasters and climate change. Theoretically, the research findings can provide researchers with insight into the concept of social forestry, where this policy is not limited to forests (vegetation), but also encompasses other important elements, namely communities and the relationship between communities and forests, which form an inseparable whole. Conceptually, the findings of the literature review indicate that the keywords 'sustainable forest management' and 'livelihood sustainability' are predicted to present significant research opportunities in the field of forest community studies and are therefore recommended for future study.

However, this bibliometric analysis study has limitations, including the fact that: Firstly, in terms of the data source, this study only uses the Scopus database and does not consider data from the Web of

Science or other databases, which are likely to influence social forestry research. Secondly, the study focused solely on English-language research available in the Scopus database and did not utilise any Indonesian-language or other foreign-language literature. This may result in an incomplete understanding of social forestry. Thirdly, bibliometric analysis is limited in its ability to capture theoretical innovations because it is based solely on the number of documents and citations.

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