

## REVIEW

## The Role of Indonesia's Forest Area with Special Purpose in Supporting Sustainable Development Goals

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### ABSTRACT

Forest areas with special purpose (FASP) are decentralized management rights of state forest areas for universities and research institutions. The area of FASP management licenses continues to increase, as recorded in 2019, covering an area of 37,569 ha. At the end of 2024, there are 45 FASPs in Indonesia with a total area of 107,085.91 ha. The management of FASP is expected to achieve its main objectives of education and research, without leaving the ecological function as the main function of the forest. Various studies have been conducted in FASP on different research topics, but none of them have summarized the role of FASP in supporting sustainable development goals. This study aims to determine the role of FASP in Indonesia in supporting the implementation of SDGs. This research was conducted through a systematic literature review using articles from the Scopus and Web of Science databases. Through a series of data collection activities, 48 articles were obtained as review material in this study. The results of this study indicate that the FASP management that has been implemented in Indonesia not only supports educational and research objectives, but also supports the achievement of SDGs which are divided into 1) ecology and biodiversity (SDG 15), 2) community welfare (SDG 1, 2, and 5), 3) sustainable utilization (SDG 12), 4) climate change response (SDG 13), and 5) water and soil conservation (SDG 6). Further research can be conducted at different FASP locations to support information on the role of FASP in achieving the SDGs.

**Keywords:** Biodiversity; Climate Change Response; Community Welfare; KHDTK; Systematic Literature Review

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#### ARTICLE INFO

Received: 24 March 2025 | Revised: 4 May 2025 | Accepted: 6 May 2025 | Published Online: 6 June 2025  
DOI: <https://doi.org/10.30564/re.v7i2.9218>

#### CITATION

Madjid, M.I.N., Rahmadwiati, R., Wicaksono, R.L., et al., 2025. The Role of Indonesia's Forest Area with Special Purpose in Supporting Sustainable Development Goals. *Research in Ecology*. 7(2): 179–191. DOI: <https://doi.org/10.30564/re.v7i2.9218>

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# 1. Introduction

Forests are one of the natural resources in Indonesia that have a high quantity, with a total area of 125.9 million ha<sup>[1]</sup>. Forest management is expected to provide ecological, economic, and social impacts, as well as optimal benefits for all living things that depend on the existence of forests. State forest management in Indonesia is under the authority of the Ministry of Forestry, formerly known as the Ministry of Environment and Forestry. The decentralization of management rights to manage state forest areas can be granted to local governments, private companies, universities/research institutions, and community groups. Decentralization of forest management permits provides benefits to improve the community's economy and increase community participation in forest management activities, one of which is through surveillance of other parties that utilize forest resources<sup>[2]</sup>.

Forest area with special purpose (*Kawasan Hutan dengan Tujuan Khusus*/FASP) is a state forest management license granted by the Ministry of Forestry to universities/research institutions with the main purpose of enriching information in the field of education, religion, and culture. Indonesian Law No. 41/1999 states that FASP management aims for research and development, education and training, and religion and culture. It seems that FASP management not only focuses on these objectives, but also has an impact on the economy of buffer village communities through the mechanism of rights and access to forest resources<sup>[3]</sup>. Management of FASP is expected to be able to make a real contribution to the development of science, especially in the forestry sector, through research activities, and become the basis for government considerations in determining policy<sup>[4]</sup>.

FASP management in Indonesia involves stakeholders interacting directly or indirectly with forest resource utilization, divided into key players and crowd groups. Stakeholders included in the key player group are the Government (such as the Ministry of Forestry, Forestry Service, Plantation Service, and Village Administration), while the crowd group is the community, both individually and in farmer groups and non-governmental organizations (NGOs)<sup>[5]</sup>. Stakeholders in the key player group have a role in policy formulation and supervision. Meanwhile, the crowd group, namely the community, has a role as a party that utilizes resources directly

based on existing regulations. NGOs play a role in conducting mentoring activities to increase community capacity. Various actors who have an interest in FASP management must coordinate continuously to minimize conflicts of interest in forest management<sup>[6]</sup>.

Tourism activities are one form commonly carried out in FASP, considering the limits of utilization activities that can be carried out, but still provide the value of economic benefits received from managers. Some types of tourism activities that are generally located in FASP locations are camping, tracking, and mountain biking<sup>[7, 8]</sup>. Tourism activities carried out at the FASP location can act as a source of funding, which is then used for FASP management operations<sup>[9]</sup>. In addition, tourism activities in the FASP that involve communities around the forest impact increasing community participation in forest management activities.

In 2019, 35 FASPs covered an area of 37,569 ha spread across various regions in Indonesia<sup>[10]</sup>. FASP management continues to increase, recorded until December 2024 there are 45 FASP locations with a total area of 107,085.91 ha<sup>[11]</sup>. The largest FASP management license is owned by Mulawarman University, which manages the Mulawarman University Research and Education Forest, which has a total area of 20,271 ha in East Kalimantan Province. Meanwhile, the smallest FASP management license is held by BPLHK Kadi-paten, which manages the FASP Forestry Training in Purwakarta Regency, which has a total area of 6 ha. The forest area management license through FASP is expected to not only leave the forest in an unmanaged condition due to the lack of management actions by universities and research institutions, but also provide examples of effective and efficient forest management that supports achieving sustainable development goals (SDGs).

The SDGs are a renewal of the development concept that emphasizes the achievement of social, economic, and ecological aspects in a sustainable manner, which distinguishes them from the Millennium Development Goals (MDGs)<sup>[12]</sup>. The SDGs are a global action plan agreed by world leaders in 2015 with a target of achievement by 2030. One of the differences between SDGs and MDGs is that the process of setting goals is participatory through the involvement of various actors such as the government, private sector, and academics. In addition, the main principle of the SDGs is 'No One Left Behind,' which indicates that the

development process is carried out with all parties' involvement. As a resource capable of providing benefits to many parties, forests are expected to align with the SDGs. The contribution of forests is proven to support the implementation of the SDGs, with the most substantial contribution to SDG 15 (Life on Land), followed by SDG 1 (No Poverty), SDG 2 (Zero Hunger), and SDG 7 (Affordable and Clean Energy)<sup>[13, 14]</sup>.

Researchers at different FASP locations have conducted various studies that have spread across several regions in Indonesia. Some studies focus on community interactions with FASP<sup>[3, 15, 16]</sup>, biodiversity<sup>[17–20]</sup>, and community economic improvement<sup>[21]</sup>. Existing FASP research is still partial; no study summarizes all FASP research and classifies research that supports the achievement of sustainable development goals. The research question raised is: How is the role of FASP in Indonesia in supporting the implementation of SDGs? Therefore, this research needs to be conducted to determine the role of FASP management in Indonesia in efforts to achieve the SDGs. The results of this research are expected to show the actual condition of the role of FASP towards achieving SDGs and become a consideration for determining the future direction of management.

## 2. Materials and Methods

This study uses the systematic literature review (SLR) method because this method helps collect research data based on criteria determined to answer research objectives<sup>[22]</sup>. Various researchers use the SLR method to search, select, assess, and synthesize literature to deeply understand the current state of research and provide an evaluation. The SLR method requires defining boundaries in data collection and analysis to ensure consistency of analysis, accountability, integrity, and transparency of the results presented<sup>[23]</sup>. The success of article review activities goes through three main components, namely 1) planning the review, 2) conducting the review, and 3) reporting the results of the review<sup>[24]</sup>.

Tranfield et al. explained that there are 5 fundamental stages in SLR analysis<sup>[25]</sup>, namely 1) Research questions, determining research questions is the first stage in SLR analysis, the selection of research questions significantly affects the results to the conclusion of the research; 2) Research data

collection, research data sourced from trusted databases are collected based on keywords that can answer the objectives of this research; 3) Determination and evaluation, carried out after the researcher gets the data from the keyword search, then screening is carried out to determine whether the article is following the research objectives or not; 4) Descriptive analysis and synthesis, this stage is carried out by looking for interrelationships between selected data; 5) Results, in this section the researcher conducts a comprehensive analysis based on the previous stages so that a discussion of the research topic is obtained.

The data source in this study is a trusted research database used by various researchers, namely Scopus and Web of Science. Data collection was carried out on 23rd January 2025 using the keywords "Forest with special purpose", "*Kawasan hutan dengan tujuan khusus*", and "FASP". Another criterion is that the article has no limitation on the year of publication, while the country is limited to Indonesia. Specifically, the search string we used to collect data on Scopus (TITLE-ABS-KEY (forest AND with AND special AND purpose) OR TITLE-ABS-KEY (Kawasan AND hutan AND dengan AND tujuan AND khusus) OR TITLE-ABS-KEY (fasp)) AND (LIMIT-TO (AFFILCOUNTRY, "Indonesia")). Meanwhile, the search string on Web of Science (TS=(forest with special purpose) OR TS=(*Kawasan hutan dengan tujuan khusus*) OR TS=(FASP)) AND (CU==(“INDONESIA”)). The search results obtained 119 articles, consisting of 90 Scopus articles and 29 Web of Science articles. After receiving initial data based on database searches, researchers checked document duplication and found 27 duplicated articles. Although the data search has been focused on the title, abstract, and keywords in the Scopus search, the search in Web of Science is Topic-based. Hence, it is necessary to recheck the selected data based on assessing the suitability of the title, abstract, and keywords of the article, whether it is suitable for use as research data with a research focus at the Indonesian FASP location, and obtain 63 articles. In the final stage, researchers checked the selected articles. We determined the relevance of the research to the implementation of the SDGs goals. Until the final data were obtained, 48 articles were reviewed in this study. The research data analysis stage is presented in **Figure 1**.

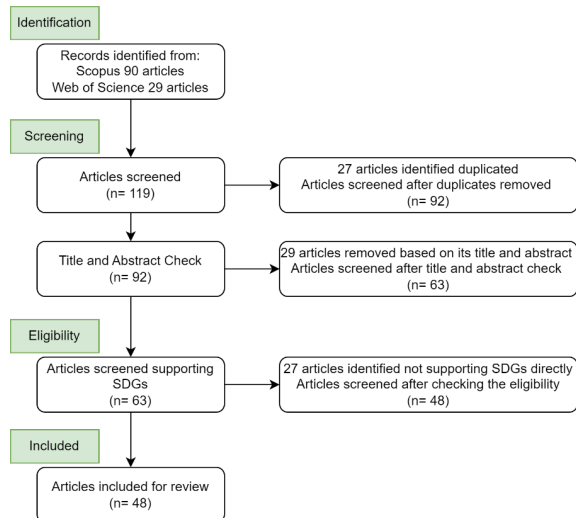


Figure 1. Article Process Selection for Review.

### 3. Results

#### 3.1. Historical Context of the Articles

The results of data analysis show that 48 articles match the research topic (Figure 2). The distribution of FASP research began in 2018 (1 article), which continued to experience an increasing trend until 2022 (13 articles), then decreased for 2 consecutive years. Article publications are dominated by proceedings (54%) while journals (46%) have a smaller proportion. This condition shows that publications related to FASP in Indonesia, as an effort to support the achievement of SDGs, are still limited. This is because most FASP-related studies are not published in international publications, but in national or unpublished publications, which are only stored in university libraries as final project work. This information shows that researchers conducting research in FASP must publish their articles globally to disseminate the research results on a broader scale.

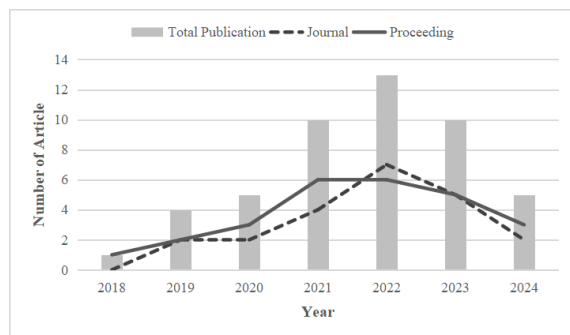


Figure 2. Publication Year of Selected Articles.

#### 3.2. Perspective of FASP in Supporting SDGs

Based on 17 sustainable development goals, 7 goals directly correlate to FASP management in Indonesia. These goals consist of SDGs 1 (No Poverty), 2 (Zero Hunger), 5 (Gender Equality), 6 (Clean Water and Sanitation), 12 (Responsible Consumption and Production), 13 (Climate Action), and 15 (Life on Land). We divided these goals into five groups that show the role of FASP in supporting the implementation of the SDGs, namely 1) FASP for Ecology and Biodiversity, 2) FASP for Community Welfare, 3) FASP for Sustainable Utilization, 4) FASP for Climate Change Response, and 5) FASP for Water and Soil Conservation (Figure 3). The four roles of FASP in supporting SDGs are supported by only one aspect. Meanwhile, the role of FASP for community welfare is supported by SDGs 1, 2, and 5.

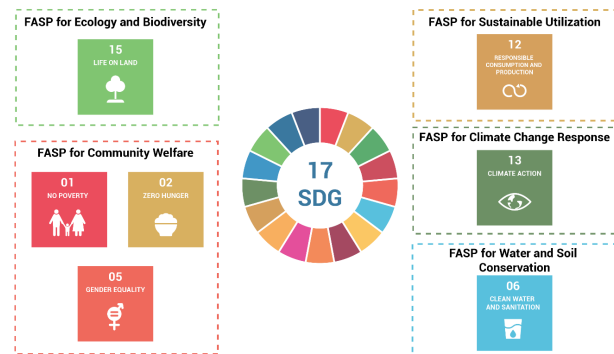


Figure 3. Relationship Between FASP and SDGs.

#### 3.3. FASP for Ecology and Biodiversity

Forests in general play a key role in ecology and biodiversity, tropical forest ecosystems (such as Indonesia's) are home to the majority of the world's biodiversity, and are therefore considered a critical point for biodiversity conservation<sup>[26]</sup>. FASP is essential because it is a space for various plant species to grow and an animal habitat. Although FASP management has the main purpose of education and research, the ecological value cannot be excluded from forest management activities. Management permits granted by the Ministry of Forestry to universities/research institutions have a positive impact compared to forests managed by the Ministry but are not optimally managed due to limited human resources.

As shown in Table 1, various endemic plant species have IUCN Vulnerable and Near Threatened status, including *Pericopsis mooniana* and *Shorea stenoptera* species<sup>[27, 28]</sup>.

The cultivation of endemic plant species in FASP aims to minimize the threat of land conversion and illegal logging. This information indicates that FASP acts as a habitat for rare plant species, given that utilization activities in the form of timber extraction at FASP are limited compared to other forest areas. Research on tree diversity in FASP includes *Pinus merkusii*, *Tamarindus incica*, *Antidesma bunius*, Dipterocarpaceae, Myrtaceae, and Sapotaceae subfamily<sup>[29–31]</sup>.

FASP conditions with poor forest cover can be reforested with various species, namely avocado, jackfruit, pine, durian, and cinnamon<sup>[32]</sup>. The FASP is also important in developing eucalyptus germplasm gardens and research centers for *Araucaria cunninghamii* and *Dryobalanops lanceolata* Burck<sup>[33–35]</sup>. In addition to the diversity of biodiversity at the tree level, there is a diversity of understory plants in FASP locations in secondary forest cover and agroforestry<sup>[36, 37]</sup>.

**Table 1.** Study on the Tree Diversity of FASP.

| No | Name of FASP | Biodiversity   | Reference  |
|----|--------------|--|--|
| 1  | Malili       | <i>Pericopsis mooniana</i>   | Suhartati and Alfaizin 2020 <sup>[27]</sup>                                    |
| 2  | Bondowoso    | <i>Araucaria cunninghamii</i>  | Setiadi et al. 2021 <sup>[34]</sup>  |
| 3  | Carita       | <i>Dipterocarpus elongatus</i> Korth, <i>Dipterocarpus gracilis</i> Blume, <i>Dipterocarpus hasseltii</i> Blume, <i>Hopea mengarawan</i> Miq., <i>Hopea dryobalanoides</i> Miq., <i>Shorea leprosula</i> Miq., <i>Shorea ovalis</i> Blume            | Meinata et al. 2021 <sup>[30]</sup>  |
| 4  | Pesanggrahan | <i>Tectona grandis</i> , <i>Schleichera oleosa</i> , <i>Corypha utan</i> , <i>Garcinia celebica</i> , <i>Swietenia macrophylla</i> , <i>Pterocymbium tinctorium</i> var. <i>Javanicum</i>  | Rohman et al. 2023 <sup>[38]</sup>   |
| 5  | Haurbentes   | <i>Dryobalanops lanceolata</i> Burck., <i>Shorea stenoptera</i>  | Mudzaky et al. 2023 <sup>[28]</sup> , Mardhatillah et al. 2019 <sup>[35]</sup> |
| 6  | Aek Nauli    | <i>Toona Sureni</i> , <i>Pinus Merkusii</i> , <i>C. Arabica</i>  | Latifah et al. 2022 <sup>[37]</sup>  |
| 7  | Haurbentes   | <i>Shorea leprosula</i>  | Erizilina et al. 2019 <sup>[39]</sup>  |
| 8  | Gunung Bromo | <i>Pinus merkusii</i> , <i>Artocarpus heterophyllus</i> , <i>Spathiphyllum wallisii</i> , <i>Xanthostemon chrysanthus</i> , <i>Acacia</i> sp., <i>Tamarindus incica</i> , <i>Antidesma bunius</i> , <i>Dillenia</i> sp., <i>Endospermum diadenum</i> | Nufus et al. 2020 <sup>[29]</sup> , Agustina et al. 2022 <sup>[40]</sup>       |

In addition to plant biodiversity at various levels of growth, there is also a diversity of animals in the FASP location. Research conducted by Siahaan et al. showed that the FASP location is used as ex-situ conservation of *Elephas maximus sumatranus*<sup>[41]</sup>. Furthermore, there are various primate species in FASP locations such as *Sympalangus syndactylus*, *Macaca nemestrina*, and *Macaca fascicularis*<sup>[42]</sup>. Furthermore, FASP is used as a breeding location for sambar deer (*Rusa unicolor*), where the food source comes from grasses from the FASP area itself<sup>[43]</sup>. Other studies also show that the Odonata order is found with an abundant number of species and *Tetragonula laeviceps*, which supports honey bee cultivation activities in FASP<sup>[40, 44]</sup>.

A review of previous studies shows that FASP has been shown to support biodiversity conservation as evidenced by the diversity of trees, understory plants, and animals. This information suggests that FASP managers need to maintain the forest ecosystem so that biodiversity at the FASP site will not

be reduced, but preferably increased. In contrast, secondary forest conditions have better animal diversity (such as birds) than a forest converted to oil palm plantations<sup>[45]</sup>. FASP management with research and development as the main objectives can also be optimized by creating a demonstration plot to maximize the growth of endangered plant species, which can then be replicated in other locations outside FASP.

### 3.4. FASP for Community Welfare

The existence of forest areas in general is inseparable from forest buffer village communities, which have a dependence on forest resources, as well as in FASP. Communities living around forest areas generally have low welfare levels. This is ironic considering they live around forests with a high quantity of resources and the potential for various utilization activities. Community involvement in FASP management is carried out through several activities, namely agroforestry, ecotourism development, and pine resin tapping<sup>[46–48]</sup>. Eco-

tourism management by the community in FASP is an effort to transform people's jobs from pine resin tappers to ecotourism managers<sup>[7]</sup>. In addition, the community is also given the right to collect grass from FASP, which is used as animal feed, thereby reducing the costs incurred by farmers for livestock

cultivation. This phenomenon shows that the role of FASP in poverty alleviation is not only limited to increasing the economic value received by farmers every month, but also the fulfillment of livestock needs so that income can be allocated to other household needs (**Figure 4**).



**Figure 4.** Grass Collection by the Community in FASP.

The involvement of forest farmer groups (FFG) in the cultivation of MPTS plants in FASP is expected to improve farmers' economy significantly. Research by Utomo et al. shows that the selection of MPTS plants in FASP restoration activities is expected to bring economic benefits to farmers in the future<sup>[32]</sup>, derived from the production of MPTS. Furthermore, the cultivation of annual plants through agroforestry produces IDR6 million/month, increasing the economic income of farmer households 3–4 times compared to monocrop<sup>[49]</sup>. The increase in the economy is not only felt by farmers who are members of farmer groups, but agroforestry cultivation in FASP also provides economic benefits for cooperatives and retailers as a unit of the production chain<sup>[48]</sup>. However, other research on galangal (*Lenguas galanga*) agroforestry cultivation has not contributed significantly to farmers' income; there is an effort needed to increase soil fertility and select more profitable plant types<sup>[47]</sup>.

Research conducted by Supriyadi et al. shows a potential total economic value of FASP from agricultural, forestry, and fisheries activities of IDR122,391,763,500/year<sup>[50]</sup>. In line with other studies, there is a potential for tapping the sap as a wood forest product from FASP of more than 1000 plants<sup>[51]</sup>. Furthermore, research conducted by Permadi et

al. showed that beekeeping carried out in FASP locations was estimated to be worth IDR317 million/year<sup>[52]</sup>. Several research results that have been conducted show that FASP not only plays a role in supporting education and research activities but also has economic benefits that impact the local and national levels. Various potential economic values at the FASP location can be the baseline for determining the direction of management to optimize the economic benefits. The existence of FASP is expected to make a real contribution to the economy of the communities around FASP.

In addition, managers of FASP can also increase the community's involvement through community empowerment activities. Community involvement through FASP management is expected not only to be dominated by men, but FASP managers need to accommodate the contributions of men and women equally. Research conducted by Dewi et al. shows that only one woman's name is recorded as a land cultivator<sup>[53]</sup>, while another name is recorded as a man as the head of the family. In reality, men and women carry out relatively the same land management activities, namely land management and post-harvest decisions. This condition is an essential note for FASP managers to accommodate the role of women in forest management activities, which is also a component of SDG 5 in the form of gender equality.



### 3.5. FASP for Sustainable Utilization

Responsible resource utilization is a mandate of SDG 12, which aims to create responsible and sustainable forest resource utilization activities and apply cultivation practices that minimize negative impacts from ecological aspects (such as agroforestry). Forest resource utilization practices that do not consider sustainability impact the gap in environmental benefits from forests received by current and future generations. This condition does not follow the target of sustainable development because resource utilization only considers economic aspects in the form of increasing and equitable distribution of human welfare, without taking care of ecological values. Implementation of SDG 12 is carried out by utilizing forest resources by limiting non-deforestation activities and avoiding risky commodities from being in forest areas (e.g., oil palm)<sup>[54]</sup>.

Utilization of forest resources in FASP is focused on non-timber forest product commodities, environmental services, and wood resources, with limited use for research activities and not for commercial purposes. Cultivation of betung bamboo (*Dendrocalamus asper*) in FASP can be used as raw material for making pulp and paper and composite materials, with the final product being bamboo laminate<sup>[55, 56]</sup>. Betung bamboo cultivation activities at the FASP site demonstrate efforts to increase economic value by utilizing non-timber forest product commodities. In addition, FASP can also act as a demonstration plot for Pelawan (*Tristaniopsis merguensis* Griff.) to be then replicated in locations outside FASP because this plant has the potential to be used as an energy fuel and has a good market in the South Sumatra region, Indonesia<sup>[57]</sup>.

The role of forests in achieving sustainable utilization targets can be implemented through the certification of forests and marketed forest products (such as timber). However, these activities cannot be implemented in FASP due to limited utilization activities, where timber is banned for commercial purposes. Timber certification, which has been implemented in Indonesia, increases ecological value because forest resources are utilized responsibly and without deforestation. Furthermore, forest and forest product certification has been shown to significantly reduce deforestation rates by 5% and reduce the amount of air pollution by 31% compared to other forestry businesses that have not

implemented certification<sup>[58]</sup>.

### 3.6. FASP for Climate Change Response

Environmental and forest destruction is a crime that impacts not only at the local and national levels, but also at the global level<sup>[59]</sup>. The deforestation rate of Indonesia increased from the 1970s to the mid-1990s due to the growing log export industry and agricultural crop production. From the mid-1990s to 2015, illegal logging in Indonesia increased in line with rising international demand for timber. It is claimed that changes in forestry regulations since 2011 have led to a decrease in deforestation rates<sup>[60]</sup>. If left unchecked, this condition will lead to an increase in greenhouse gas emissions in the atmosphere, which will cause climate change.

Reducing the rate of deforestation and forest degradation is a target to be achieved in climate change mitigation efforts, supported by conservation activities, sustainable forest management, and increasing carbon stock<sup>[61]</sup>. FASP management plays a role in climate change mitigation efforts through climate change mitigation efforts by reducing the amount of carbon emissions and the potential for increasing state revenue through the Result-Based Payment mechanism<sup>[62, 63]</sup>. Agroforestry cultivation in FASP is considered the right step to reduce CO<sub>2</sub> emissions and increase carbon absorption through plant diversification on the same landscape<sup>[37]</sup>, where the highest carbon absorption is through the bamboo agroforestry pattern (16,599 tons/ha) compared to the coffee, vanilla, and annual crop agroforestry patterns<sup>[64]</sup>.

Changes in land cover in FASP from forest to non-forest due to fires and illegal logging have a direct impact on reducing the forest's ability to store carbon reserves, and affect the release of carbon emissions to the atmosphere<sup>[65]</sup>. Management of FASP for research and education purposes must not sacrifice ecological values, which are the main benefit of the existence of forests. The construction of buildings to develop research and science at FASP locations must consider the principle of reducing carbon emissions by determining the design and materials for construction, land cover, and water management systems<sup>[66]</sup>. Therefore, infrastructure development plans in FASP must be well-planned to minimize the resulting environmental losses, including carbon dioxide released into the atmosphere.

### 3.7. FASP for Water and Soil Conservation

Water availability is one of the key factors affecting forest and agricultural management. Forests are recognized as water supply providers and play an essential role in the hydrological cycle<sup>[67]</sup>. Activities carried out by humans in the form of deforestation and forest degradation for other land uses, such as agriculture, will directly affect the ability of water transportation in the soil, which has an impact on water quality and quantity<sup>[68]</sup>. Changes in forest cover to other cover also affect the availability of litter on the soil surface, directly impacting soil quality degradation and increased erosion<sup>[69]</sup>. This information shows the critical role of forest ecosystems in maintaining soil quality and minimizing erosion rates.

The role of FASP as a provider of adequate water and sanitation can be realized through efforts to maintain the quantity and quality of forest cover, with the main objective of maintaining good water quality, especially in water catchment areas<sup>[70]</sup>. FASP produces clean water that is used by the community for various daily activities, such as bathing, washing, and drinking at high intensity<sup>[7]</sup>. Water availability from the forest directly benefits the community, especially those living around the FASP. Therefore, forest resource utilization activities are expected to be carried out responsibly; if there is excessive utilization, the community will feel the direct impact in the form of a decrease in water quantity and quality. The condition of forest cover density affects water flow, where the higher the density of forest cover, the higher the evaporation rate and the lower the runoff compared to open conditions<sup>[71]</sup>, also has a positive effect on soil infiltration and permeability<sup>[72, 73]</sup>. Various studies that have been conducted previously have shown that FASP has a vital role in maintaining the hydrological cycle, and it can achieve the goal of providing clean water and sanitation for sustainable development.

## 4. Discussion

Forests have essential values for ecological aspects and balance, but they cannot be separated from various forest resource utilization activities to meet daily needs and improve the economy. The state forest area managed by the Indonesian Ministry of Forestry is vast, so several areas do not receive serious attention in their management activities,

resulting in empty forests due to irresponsible utilization by free riders. One effort to improve the quality of forest cover is by decentralizing forest management permits to universities/research institutions. The management of FASP in Indonesia that has been carried out so far has proven to realize the sustainable development targets that are international commitments. FASP has the most important role in ecological protection and biodiversity conservation. This information aligns with our review that FASP is home to several species of flora and fauna, even with an IUCN status that is vulnerable or heading towards extinction. FASP managers need to conduct periodic monitoring and evaluation activities to ensure the sustainability status of biodiversity and carry out rehabilitation and restoration activities to improve the quality and quantity of forest cover, which is expected to directly impact increasing biodiversity in the FASP location. Suboptimal forest management activities can affect the decline of biodiversity and increase soil erosion and degradation, which in the long run can lead to a decrease in land carrying capacity and soil quality<sup>[50]</sup>.

Biodiversity conservation directly and indirectly impacts climate change mitigation efforts and water resource conservation. The presence of plants in FASP at various growth stages indicates the diversification of plant species and directly affects the carbon absorption rate of the FASP location. This condition is pleasing considering that multiple countries are committed to achieving the FOLU Net Sink 2030 by avoiding deforestation and increasing carbon absorption. Furthermore, FASP with good forest cover conditions provides other benefits in maintaining water quality, especially in water catchment areas. Water quality and quantity are essential aspects of driving sustainable development, considering that water is a component that supports life, as evidenced by the most significant element of the Earth. This information shows that biodiversity conservation in FASP cannot only be interpreted as an effort to preserve flora and fauna, but also provides benefits to humans through its role in preventing the acceleration of climate change, which can increase the risk of natural disasters, and providing water of good quality for daily life.

Meanwhile, FASP also plays an important role in meeting the community's needs around forest areas. Some activities carried out by the community in FASP are collecting grass for animal feed, cultivating understory plants, cultivat-



ing bamboo, and honey beekeeping. The existence of FASP has a positive impact in the form of increasing the economy for the community, especially those who live directly adjacent to FASP. The management of FASP needs to determine the limits of activities that may be carried out in FASP so that no over-exploitation of resources only provides short-term economic benefits, but sacrifices the ecological value of FASP and economic value in the future. The results of this study support the research conducted by Jong et al. and Ma et al. that forest management can support the Sustainable Development Goals that various countries want to achieve internationally<sup>[13, 14]</sup>.

This study shows that the decentralization of permits granted by the Ministry of Forestry to universities/research institutions through FASP is not only in the form of transfer of management rights, but also has a positive impact on ecological, social, and economic aspects. While the management of FASP benefits the livelihood, regular monitoring and evaluation are needed to ensure that there aren't irresponsible forest resource utilization activities. We recommend that the Ministry of Forestry be able to grant FASP management permits to other universities/research institutions so that forest management can provide wider benefits, especially in the restoration of degraded forest areas. Moreover, the Ministry of Forestry needs to assess existing management permits periodically. If the permit has not been optimally utilized but is not following the previously set objectives, then the management permit can be withdrawn.

## 5. Conclusions

This study collects essential information about various studies conducted at FASP locations in Indonesia. Studies that meet the criteria are reviewed to map the role of FASP management in implementing SDGs in Indonesia. The results of the survey show that FASP supports the implementation of SDGs in 7 aspects, which are divided into 1) ecology and biodiversity, 2) community welfare, 3) sustainable utilization, 4) climate change response, and 5) water and soil conservation. This information shows that FASP management carried out by universities and research institutions not only carries out educational and research goals, but also provides ecological, social, and economic benefits. Moreover, it supports the implementation of Sustainable De-

velopment Goals. This study identified a downward trend in research publications in 2023 and 2024, while FASP is proven to contribute to achieving sustainable development goals. Therefore, further research is needed at various FASP locations to obtain more complex information regarding the role of FASP towards SDGs. This study has limitations, namely, the search for scientific articles on the topic of Forest Area with Special Purpose is focused on articles in English and sourced from two search databases (Scopus and Web of Science). We suspect many studies related to FASP support the implementation of SDGs, but they have not been written in English. Further, the researcher suggests that researchers publish their articles in English so that various researchers can utilize research information on a broader scale.

## Author Contributions

Conceptualization, M.I.N.M.; methodology, M.I.N.M.; formal analysis, M.I.N.M. and R.R.; writing—original draft preparation, M.I.N.M., R.R., R.L.W. and D.A.; writing—review and editing, M.I.N.M., R.R., R.L.W. and D.A. All authors have read and agreed to the published version of the manuscript.

## Funding

This work received no external funding.

## Institutional Review Board Statement

Not applicable.

## Informed Consent Statement

Not applicable.

## Data Availability Statement

This article reviews previously published literature; all data supporting the findings are available in cited references.

## Acknowledgments

The authors thank the reviewers who gave feedback on improving our manuscript.

## Conflicts of Interest

The authors declare no conflict of interest.

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