

The Lives of Women Forest Farmers and The Impact on Sustainable Forest Management: Empirical Evidence in the Rural Slopes of Mount Kendeng

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Abstract. In rural areas, forests show that women's role in forest management exists and is accurate. However, there are often doubts about the role of women in forest management, which impacts the gender gap. This study examines the phenomenon in the North Kendeng Mountain Area, Central Java Province, which captures the lives of rural women in forest management. Poverty is still very much attached to forest areas. The low economy makes women willing to work in any condition to meet the economic needs of their families. The study results are presented as case studies between regions with ecofeminism problems and areas with agrarian issues due to mining. This study aims to analyze the time division of women forest farmers and the role of rural women in sustainable forest management. Data collection was conducted through documentation, participatory observation, and in-depth interviews. Data were analyzed using gender analysis with a qualitative approach of comparative case studies. The results showed that women's time in forest management is higher, influenced by several factors, and women's influential roles in economic, social, and ecological factors. Therefore, it is crucial to pay special attention to the struggles of rural women in managing forests and ensuring they have equal access and opportunities.

1 Introduction

Indonesia is a country that has an extensive forest area of 125,795,306 Ha. With this potential, Indonesia is important for sustainable development through good forest management [1]. In

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principle, sustainable development recognizes that growth must be inclusive and environmentally friendly to reduce poverty and build prosperity for the current population to meet the needs of future generations [2]. The development of forest area villages requires close cooperation between residents around the forest and forest managers, in this case, the government [3]. The existence of communities around the forest is the capital and key to maintaining the condition of the forest to remain sustainable. Policymakers are increasingly delegating responsibility for natural resource management to local communities. The community around the forest village will spearhead forest management and benefit the surrounding community [4].

The government and all communities actively participate in implementing forest protection because forests are crucial for human life. Community-Based Forest Management (CBFM) is a forest management approach that allows communities living around forests to take the lead in forest management.

However, the high poverty in communities around forest villages causes the illegal cultivation of forest land to be a temporary solution for people to survive [5]. The dynamics of poverty in rural communities around forests is a significant factor underlying the involvement of illegal loggers in increasing livelihoods and income needs [6]. Forest governance policies must consider local wisdom and poverty problems at the regional level [7].

The government has made various efforts to reduce population pressure on forests by involving local communities in using forests as their source of life. Community-Based Forest Management (CBFM) is a forestry development program that uses forests for community welfare while maintaining the sustainability and continuity of forest functions [8].

The phenomenon is seen in marginal communities in rural areas around forests in the Kebonharjo Forest Lap Unit (KPH) region, which is administratively included in the Blora Regency and Rembang Regency, where some of these forest areas are located on the slopes of North Kendeng Mountain, Central Java Province [9]. The results of field research show that exciting findings and recommendations need to be studied from the interviewees' households, where women (wives or adult daughters) in each family are actively involved in forest management. Other findings at the site level also show that women's role in forest management does exist and is accurate.

The evidence demonstrates that numerous rural women participate in forest management, yet there is an imbalance in their access, control, and overarching institutions. This points to gender inequality, as there are lingering uncertainties about the role of women in forest management. [10]. Press Release of the Ministry of Women's Empowerment and Child Protection Number: B- 216/SETMEN/HM.02.04/04/2022 also states that forest management within the community still tends to benefit male elites [11].

The Kendeng Mountains in Blora and Rembang Regencies were chosen because the Gender Development Index (GDI) figure is still far behind Indonesia's IPG standard. Blora Regency has the lowest GDI value in Central Java Province. The Rural Case Study on the Slopes of the North Kendeng Mountains will uniquely examine and photograph the lives and active roles of women forest farmers through an analysis of women's working time and see the impact of women's struggles in sustainable forest management and rural development.

2 Research method

2.1 Study Area

The location of the study was determined purposively according to the purpose of the study, namely in villages on the slopes of Mount North Kendeng, which stretches between two districts. This study took two villages in the Blora and Rembang regencies. This is because the Gender Development Index (GDI) in 2022 is still far behind Indonesia's IPG standard, which is 91.63. Blora Regency has the lowest IPG value in Central Java, with a value of 84.92 and Rembang Regency has 87.60. The location of this study is on the slopes of the Kendeng mountain range, where most of the people make a living as farmers on state-owned forest land. Women are actively involved in forest management to help the family economy. Figure 1. Indicates the location of the study.

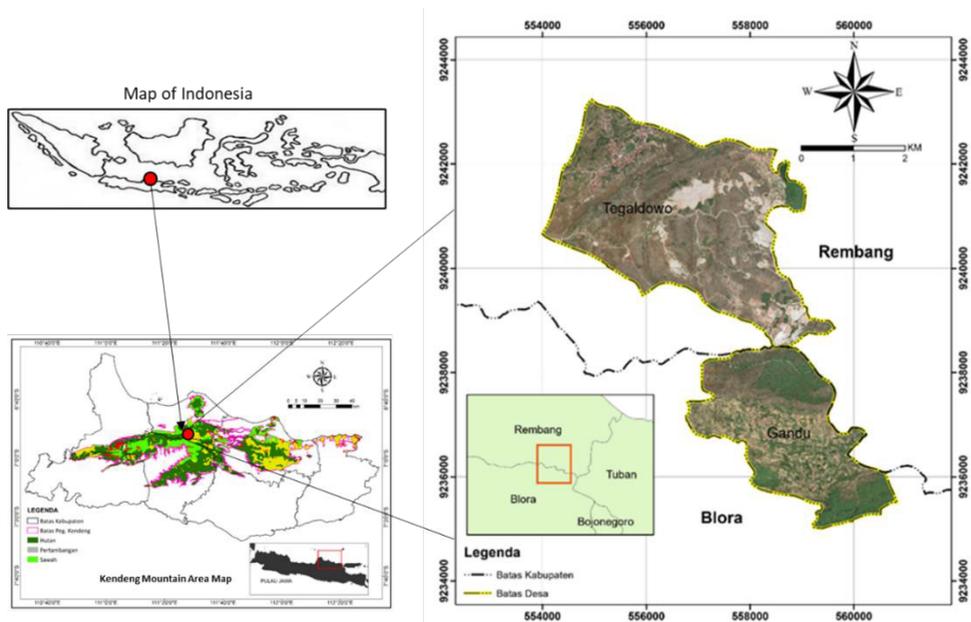


Fig 1. The Location Area of the Slopes of Mount North Kendeng as the Location of the Study Area

2.2 Data Types and Sources

The research method is carried out in a qualitative descriptive manner. The strategy used is a case study. Case studies can be used to develop critical thinking and find new solutions to a topic being solved. The types of data used in this study are primary and secondary. Primary data were obtained through in-depth interviews with informants, as shown in Table 1. Meanwhile, secondary data were obtained from literature searches/literature studies and reports/documents from Perum Perhutani, Public Summary of Kebonharjo Forest Lap Unit (KPH), village monographs, and documents from Forest Management Resorts (RPH), or Forest Village Community Institutions (LMDH) related to research studies.

Based on Table 1, it can be seen that 70 informants of farmer households were taken by snowball sampling. To obtain saturated data, the number of informants was selected based on the distribution of women forest farmers in several plots of agroforestry land locations.

Information was collected through in-depth interviews on farmers' daily activities in managing forests and the division of working time between men and women in forest management activities. In addition to farmer households, interviews were conducted with purposively selected key informants, including the head of the Forest Village Community Institution, Kebonharjo Forest Unit administrators, community leaders, and facilitator assistants. Before conducting the primary interview study, researchers explored the various questions asked to encourage informants to speak freely and openly.

Table 1. Key Informants of Forest Farmer Households at Research Sites

Forest Union	Forest Union Body	Forest Management Resort	(Forest Village Community Institution)		
			Name	Village	Informant (n)
Kebonharjo	Gayam	Sumber Wungu	Gunung Lestari	Gandu Village, Bogorejo District, Blora Regency	35
	Tuder	Tengger	Giri Wana Lestari	Tegaldowo Village, Gunem District, Rembang Regency	35

2.3 Data Analysis

The study's data analysis demonstrates how women forest farmers engage in agroforestry activities, using gender analysis to assess the amount of time they dedicate to work. The working hours were analyzed by calculating the total number of hours spent by women farmers on agroforestry activities. The percentage of working hours dedicated to agroforestry activities by women farmers can be calculated using the following formula (1):

$$P = \frac{Y1}{Y2} + 100\% \tag{1}$$

Information:

- P = Women's working hours in agroforestry activities (CBFM) (%)
- Y1 = Number of working hours of women farmers in Agroforestry (CBFM) activities (hours)
- Y2 = Total outpouring of working hours allocated for agroforestry activities (CBFM) (hours)

3 Results and discussion

3.1 Profile of Farmer Household Activities of Gandu Village and Tegaldowo Village in Forest Management (Agroforestry) as a Livelihood

The activity aspect is used to identify who is carrying out all agroforestry activities. Communities around forests are very dependent on their survival forests, and they are given flexibility by Perum Perhutani to manage forest land [12]. The villagers around the forest responded to this very actively, namely Gandu Village and Tegaldowo Village. Figure 2 and Figure 3 explain the division of labor between women (wives) and men (husbands) in agroforestry activities on their arable land.

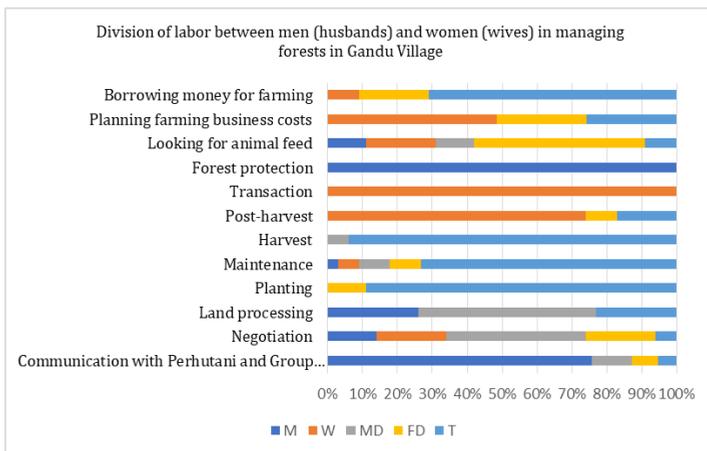


Fig. 2. The division of labor between men and women in managing forests as a livelihood for rural communities Gandu Village.

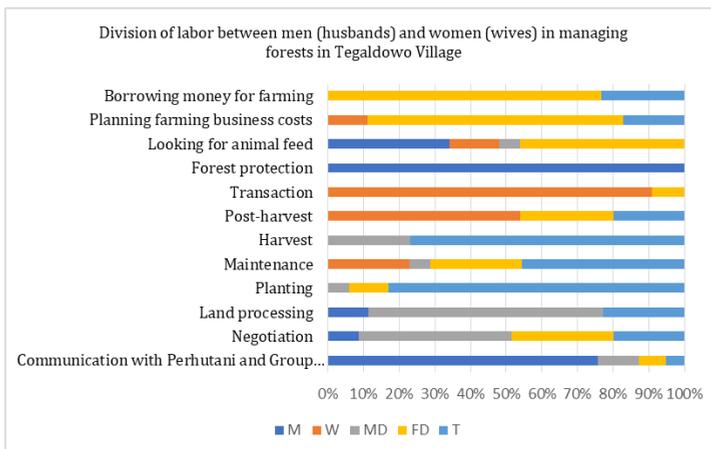


Fig. 3. The division of labor between men and women in managing forests as a livelihood for rural communities in Tegaldowo Village

Note:

M = Man; *W* = Woman; *MD* = Male Dominant; *FD* = Female Dominant; *T* = Together

Based on Figure 2. It can be seen that in terms of participation in institutions, Forest Village Community Institutions or agreements with Perum Perhutani and forest security are 100 percent dominated by men. Only widowed women or female heads of families are officially registered in the institution. Meanwhile, the agreement on determining men dominates the crop type and land processing. Men in land processing have a dominant role because the work requires more incredible energy and heavy equipment. In this case, the women's task is to clean weeds and former crops from the previous planting period. Most planting, care, harvesting, and postharvest activities are carried out simultaneously. During the planting period, there is a division of tasks, where the man makes a hole in the field with a "ngoak" hoe, and the woman fills the seed into the "ngicir" planting hole. In addition, men spray herbicides and pesticides in the care of plants because they have to use a carrier tank containing 16 liters of water herbicide and pesticide solution. In contrast, the role of women is to sow fertilizer. Harvest season requires solid cooperation between husband and wife because this process requires extra time and energy.

The division of labor between women and men is that men cut corn stalks, and women peel corn husks "ngonceki" and then help each other in transportation. In the postharvest stage and the sale of crops, women play an essential role because they are more talented in negotiating with traders to make the harvest more profitable. Men rarely transact with collectors. Women tend to be dominant in foraging activities and planning finances for farming. In addition, livestock in households around the forest in Gandu Village is raised mainly by women because men do a lot of activities as slaughter laborers. In terms of preparing capital for planting, many farmers make capital loans to BMT (Baitul Maal Wat Tanwil), People's Credit Banks (BPR), cooperatives, or collectors. The process of borrowing agricultural capital is carried out jointly between husband and wife because there are requirements for husband and wife identity cards and repayment agreements during the harvest period that must be met.

Regarding forest management activities, women's involvement seems more dominant than men in some forest management activities. However, women's participation in agroforestry activities is not comparable to access and control. The analysis results show that decision making regarding the location of arable land, involvement in agreements with Perhutani, decision making in institutions, determination of the type of planting commodities, equipment used, labor needed are under the husband's control. Women are rarely involved in training meetings with Perhutani. In terms of benefits, the most significant benefit obtained is the income used to meet daily needs.

3.2 Distribution of Time Expenditure of Women Forest Farmers in Agroforestry

The outpouring of working time is the amount of time devoted to earning a living. In this study, the outpouring of women's working time is the amount of time (hours) devoted by women forest farmers to agroforestry activities both in Gandu Village and Tegaldowo Village. Women farmers of Gandu Village spend 6 hours per day on arable land, starting at 07.30-10.30 a.m, then return home to pick up children and prepare lunch, then return to arable land at 13.00-16.00 p.m. Meanwhile, women farmers in Tegaldowo Village work for 7.5 hours per day. From 08.00 a.m -15.30 p.m, some households stay overnight on arable land at certain moments, such as planting or harvesting. This happens to the Tegaldowo community because the land is far from the residence, even outside the district, and must be reached in approximately 1-2 hours. This happened because Tegaldowo Village was controlled by mining, so the forest area, which was the main livelihood land for the community, was lost. Table 2. Presenting the outpouring of working time of women and men in agroforestry activities calculated in one planting period, which is three months.

Table 2. Average and percentage of working time of rural men and women in agroforestry management in a single corn growing season

No.	Gender	Hourly workflow/corn growing season			
		Gandu Village		Tegaldowo Village	
		Hours	Percentage	Hours	Percentage
1.	Man	585	52.6%	675	50.6%
2.	Woman	527	47.4%	659	49.4%
Total		1112	100%	1334	100%

From Table 2 or visualized in Figure 2, it can be seen that the outpouring of working hours of farmers in Tegaldowo Village in managing agroforestry as a livelihood is more significant than in Gandu Village. The total time used by Tegaldowo Village farmers is 1,334 hours per planting season (in this case, the corn planting season is the primary commodity for agroforestry farmers). Meanwhile, the outpouring of farmers' working time in Gandu Village is 1,112 hours per planting season. This happened because the forest in the

Tegaldowo Village area was deforested due to karst stone mining projects and cement factories. The people of Tegaldowo Village who have a low level of education have an impact on their dependence on high forest areas to meet their daily needs. The reduction of forest land in rural areas has resulted in people looking for forest land far from where they live to be used for agroforestry to meet the sustainability of livelihoods [13].

The long distance from the arable land makes the outpouring of work time longer and optimizes the time on the arable land. If the weather is unfavorable or there is heavy rain, Tegaldowo Village farmers will have difficulty accessing their arable land. Meanwhile, in Gandu Village, the time spent working on forest land tends to be less than in Tegaldowo Village. The principle of believing that this is "Mother Earth" and that some people still tend to follow the Samin tribe makes people believe that they should protect their forests. The Samin tribe is an Indigenous people who inherit ancestral culture, one of which is farming [14], and lives in groups in Blora Regency, Central Java. This is what makes the Gandu Village area still maintain the preservation of its forest. The distance between their homes and the close arable land means people do not need to spend a long time traveling, and during the day, they can go home to rest and continue planting on their arable land in the afternoon.

3.3 The impact of women farmers' involvement and participation in sustainable forest management and rural development

The involvement or participation of women in participation in agroforestry forest management (CBFM) has an impact on several aspects, including :

3.3.1 Improved well-being (Economy)

Based on the results of the study, there is a tendency for women to experience an increase in workload as a consequence of their multiple roles. Inevitably, due to economic factors, women in Gandu Village and Tegaldowo Village have to help their husbands manage agroforestry cultivation land. However, with the ability to adapt to their environment, these forest farming women can gradually balance the workload between domestic and public work as a productive field. This was found in interviews with research informants. Although challenging, most of these forest farming women do not mind and rarely complain to their families. In general, these women take what they do to be natural. When a family is experiencing economic difficulties, a mother tries to help her husband earn a living, even though playing a double role is a heavy burden. In an interview, this is the opinion of Mrs. PR (35 years old), a wife who joins her husband in helping manage agroforestry land in Tegaldowo Village.

"My wife must care for my husband and children. In difficult times like this, if women or wives do not help the family economy, for example, if I do not work in the forest, I will be unable to make ends meet. Even though my body feels tired, I still feel happy because I have helped my family and for the sake of my children." (Mrs. PR, Forest Farmer Woman)

3.3.2 Social aspect (social interaction)

The social condition of women involved in agroforestry activities also has much better social interaction with the surrounding community [15; 16]. Neighbors usually have plots of arable land adjacent to each other. Therefore, the women forest farmers in Gandu Village will go to the arable land in the forest together. These women take turns carrying food and drink supplies with each other and work together to build huts for shelter or help each other when they start planting or harvesting. Social interaction established as women forest farmers takes

place with a broader scope; the role of women is significant in selling crops to collectors or traders. Most of these postharvest transactions are carried out by women.

3.3.3 Forest Sustainability (Ecology)

It can be seen from the study results that so far, the role of women in the agroforestry sector is very high. Still, they are often not involved in the decision-making process because women who work in agriculture are not considered to work. But only as a wife or member of a peasant family, who is obliged to help with all the work of her husband or family members. Environmental ethics in implementing agroforestry are more obeyed by women, such as not being able to spray pesticides and herbicides on annual crops owned by Perhutani, not burning residual plant litter carelessly, and participating in maintaining Perhutani's teak yearly plants. They consider forest sustainability crucial because apart from being their primary source of livelihood, they are also one of the beliefs of the people of Gandu Village, who still uphold the principle of "mother earth." Women related to the environment are now widely voiced through ecofeminism. Ecofeminism emphasizes the environment and women's relationship with the earth analytically and practically.

4 Conclusion and recommendation

4.1 Conclusion

The primary source of income for the people living in the forest village areas on the slopes of the North Kendeng Mountains, specifically Gandu Village, Blora Regency, and Tegaldowo Village, Rembang Regency, is agriculture on forest land (agroforestry), which is carried out under the Community-Based Forest Management (CBFM) program. Because women actively manage the majority of the forest area in these two sites, the gender dimension of the forest management activities is distinctive. When it comes to agroforestry, women appear to be more involved than males are or at least equally so in tasks like planting, maintaining, harvesting, and postharvesting forests. Women's control, decision-making, and involvement in institutions still ruled by men are not comparable to women's involvement in agroforestry operations. The total outpouring of time between women and men is slightly different. This shows that women's participation is very high. The poor economic level makes women willing to work to help their husbands in any condition to meet the family's financial needs and the farming culture of the "Samin" community, which has been preserved for generations. The outpouring of working time of Tegaldowo Village farmers is more than Gandu Village because it is influenced by several factors, namely factors such as village forest area, environmental problems, distance to land, travel time to land, access to land, and different locations of arable land. Women's involvement or participation in agroforestry management impacts sustainable forest management and rural development, improving economic welfare, social interaction networks, and forest sustainability.

4.2 Recommendation

Women's contribution to economics and ecology is genuine, but the phenomenon is hidden or poorly realized. Because there is no data and a lack of studies on women in rural areas, the results of this study show that at the site level, women's contribution to forests and rural development exists. Therefore, the recommendation that can be proposed is that women not only take firewood, care for crops, and reap crops but also need to be prepared to enter

decision-making processes, forestry technical activities, and spearhead rural development in forest areas.

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