



An Analysis of Stakeholders in Agroforestry Community Forest Management in Wonogiri Regency, Central Java Province, Republic of Indonesia

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Abstract

Community forests are the forests which are managed by the communities and located on the land owned by the communities. Wonogiri Regency is one regency that has long developed community forests. An agroforestry pattern is a model of community forests which has been selected by farmers because they can earn weekly, monthly, and yearly. Community forest stakeholders are very diverse in terms of their interests and influences. This study aimed to find out community forest stakeholders and their roles in the management of community forests. The data collection was carried out by indepth interview, observation, focus group discussion, and literature studies. The data were analyzed using a descriptive-qualitative method. The research found that forest farmers were a stakeholder who was always present in the management activities of the community forests, making them a key stakeholder in the community forests. Other stakeholders are timber traders, the central government, forestry extension officers, timber trader association, (wood and non-wood) industries, local governments, farm laborers, loggers, seed providers, fertilizer sellers, Forest Farmers Group (KTH) and NGOs.

Keywords: community forest; agroforestry pattern; stakeholders; interest; influence.

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1. Introduction

The forests which are being developed by the communities show an exceptional existence [1]. Local wisdom has been used to manage forests and sustainability has become a non-negotiable principle to be applied. Community forests are the manifestation of forest management by the community. Wonogiri regency is one of the regencies in Central Java Province that has succeeded in developing community forests with an agroforestry pattern. The types of timber trees grown by farmers are dominated by teak, acacia and mahogany. King in reference [2] stated that agroforestry is a land management system on a sustainability basis that improves land productivity as a whole by combining crops, forest plants and livestock simultaneously or sequentially in the same unit of land and implementing management measures in accordance with the culture of the locals. Wonogiri community selected an agroforestry system since it has a number of advantages, among others, the community can obtain short-term earnings (weekly and monthly), and long-term earnings [3,4]. Most farmers in Wonogiri use spice plants such as turmeric and *temu lawak* and cayenne pepper as intercropping.

The benefits of the community forests in Wonogiri have been quite obvious, particularly related to the environmental conditions. The increase in the cover of critical land with timber stands and annual plants has transformed rocky areas into green land. The water discharge has increased in the old water sources, new water sources have emerged, and the air has become comfortable. However, the many ecological benefits that have been bestowed by the community forests have not significantly been followed by the increase in economic benefits for the community forest farmers in particular and the community in general. The community forests can not yet serve as the main livelihood and this has triggered many farmers to go out of town or work in another sector to make ends meet, even though the study in Pati District showed that 70% of its population made growing albizia trees as their livelihood [5]. Based on several studies, they were found that the community forests had not become a major source of income for farmers [3,4,6,7]. The income derived from the community forests was still not able to meet the needs of farmers, so they had to work in another sector, even leaving their hometown just to be able to meet their needs. This indicates that community forests have not been able to provide optimal economic benefits. Community forest is a system that consists of several sub systems such as production, marketing, processing, and the institution of the forest [8]. The four sub systems should be developed simultaneously because they are interrelated and influence each other. The disruption of one of the sub systems will make the community forest unable to function properly. Various problems have occurred in the four sub systems so that the development of the community forest can not run optimally. The problems that occurred in the four sub systems could not be solved by the farmers themselves. The involvement of stakeholders is very often required to resolve the problems. Stakeholders who are directly or indirectly engaged in the community forest management should be analyzed to identify who they are, how strong their influence and their interest in the community forest with an agroforestry pattern. Stakeholders are the people who have the rights, interests and influence in a system [9]. Stakeholders are the parties that may affect or be affected by the system. Stakeholders can be individuals, communities, social groups, or organizations. The stakeholders in this study are the related parties, both individuals, communities, social groups, and organizations that may influence or be influenced by the existence of community forests. A stakeholder analysis is an approach and a procedure to understand a system by identifying the key actors or stakeholders in the system to assess their respective interests [10]. Given the importance of stakeholders engagement in the community forest management, the

problems in this study were formulated as follows: Which stakeholders were involved in the management of the community forest with an agroforestry pattern in Wonogiri? What were the roles of the stakeholders in the management of the community forest with an agroforestry pattern in Wonogiri? Therefore, the aim of this study was to identify the community forest stakeholders, to analyze their role, to learn about the stakeholders's interests and their influence on the community forest with an agroforestry pattern in Wonogiri Regency.

2. Research Method

This research was conducted in Wonogiri, and to be specific in Giriwoyo sub district (the villages of Sejati, Guwotirto, Tirtosuworo, and *Kelurahan* Girikikis) and Batuwarno sub district (*Kelurahan* Selopuro). The location selection was performed intentionally (purposive), namely the village/*kelurahan* which had obtained the recognition (certificate) of ecolabel, showing that the community forest had been managed in an environmentally friendly manner. The study was carried out from December 2015 to May 2016. This is a qualitative research design, namely a method to explore and understand meaning [11]. The data used were primary data and secondary data. The primary data were collected using the technique of indepth interviews, observation, and Focus Group Discussion (FGD), while secondary data were obtained from various supporting documents of relevant agencies. The data collected were analyzed by a descriptive qualitative method. The analysis used to analyze the stakeholders in the management of the community forest was the stakeholder analysis of reference [12]. The analysis was conducted by: (1) identifying stakeholders, their influences and their interests; (2) classifying and categorizing stakeholders; and (3) investigating the relationship of the stakeholders. The relationship of the stakeholders was investigated by using a matrix that connects between influence and interests in the management of the community forest in Wonogiri (Figure 1).

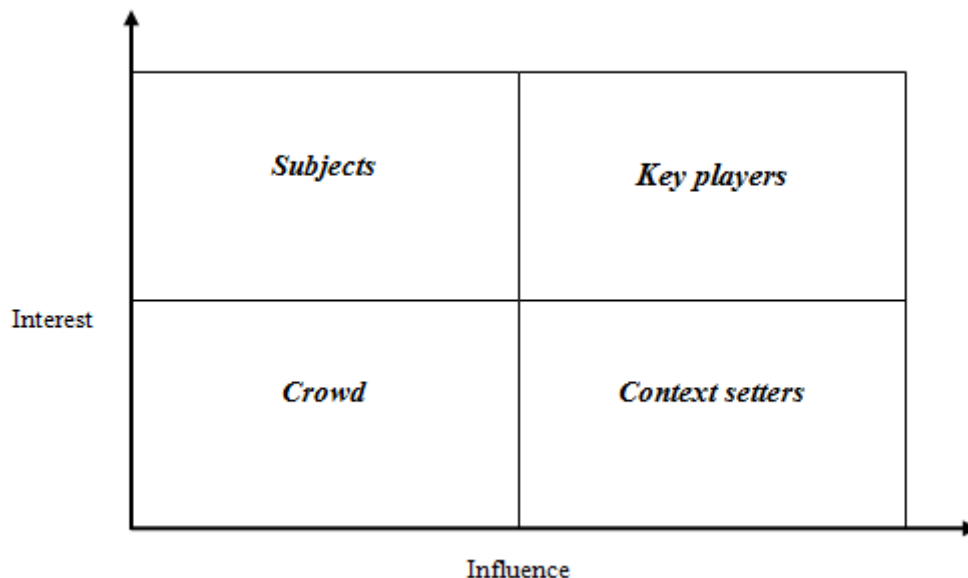


Figure 1: Interest-influence matrix of stakeholders in community forest

The research population was the forest farmers in the research sites. The research sampling technique used snowball sampling, which is a technique of determining a research sample that is initially small in number and

then it becomes bigger [13]. Snowball sampling is one of the non probability sampling techniques, ie: a sampling technique that does not give a probability/equal probability for every member of the population.

3. Results and Discussion

3.1 Agroforestry Community Forest Management in Wonogiri Regency

The community forests in Wonogiri are the forests managed by the community and located on the land owned by the community. The community forests are relatively narrow, ranging from 0.03 ha to 3.3 ha. This is consistent with the statement made by the author [8] saying that the community forest has a narrow area. The community forests in Wonogiri are located in different areas, not in a single stretch of land, so that very often the forests are located in different villages or hamlets, far from the houses of the farmers. The land where timber plants are growing is dry and the locals call it *gunung* (mountain) or *alas*, yards, and field edges. The plants on dry land (Figure 2) are dominated by forest plants and the species are mostly teak (*Tectona grandis*), mahogany (*Swietenia mahagony*), saman tree (*Albazzia saman*), rosewood (*Dalbergia latifolia*), and mangium (*Acacia mangium*). The yard is planted with forest plants, dominated by mango trees and cayenne pepper, while the timber plants in the rice field are planted just to show the land ownership boundaries.



Figure 2: Community forest in dry land (*gunung/alas*)

The community forests in Wonogiri largely implement an agroforestry system. In the same stretch of land are grown forest plants mixed with other crops either simultaneously or alternately. The community forest in *Kelurahan Selopuro* is dominated by teak and mahogany, but some farmers who have relatively fertile land began to replace mahogany plant with albizia. This is because albizia began to have a good market that makes a good selling price. In accordance with the statement of author [8] saying that one of the farmer's considerations in choosing the type of timber is the availability of the market. In 2012 in Wonogiri a wood processing industry

was built, namely PT Nagabhuana Aneka Piranti whose products consist of barecore, veneer and plywood. According to Perindagkop and UKMK Wonogiri Regency in 2015 nearly 60% of the company's raw materials came from the community forests, namely albizia (*Albizzia falcataria*) and Kadam (*Anthocephalus cadamba*). This market has led farmers to change the type of timber they planted, making relatively fertile land be planted albizia to replace mahogany.

In addition to the market, the change is also due to the current price of mahogany being down and the mahogany cycle is longer than albizia. Albizia has a shorter cycle than mahogany. Albizia can already be harvested at the age of 4-5 years with the selling price ranging from Rp 900,000 per cubic. Mahogany has a longer cycle of 10-15 years with a selling price of Rp 1,200,000 per cubic. Selection of timber crop species by farmers is not only based on the timber price but rather on the suitability of their land with the type of plants. Albizia rising prices is not necessarily followed by the shift of farmers to the species. Farmers still consider the condition of their land whether or not it is suitable for planting the timber crop.

Intercropping plants grown under stands are mainly turmeric and curcuma (*temu lawak*), grass, cayenne pepper, or secondary crops. Spice plants are harvested once a year and sold to the sellers, who come to the farm, in the form of bulbs with the current selling price of Rp 2,500. Some farmers cultivate herbs to be sold around the village. The processing of the roots / bulbs of spice plants into medicinal herbs is one of the efforts made by farmers to increase the selling prices of spice bulbs.

The community forests in Sejati Village, Guwotirto Village, Tirtosuwo Village, and *Kelurahan* Girikikis are dominated by teak (*Tectona grandis*), mahogany (*Swietenia mahagony*), mangium (*Albizzia falcataria*), rosewood (*Dalbergia latifolia*), and saman tree (*Albizzia saman*). These types have been cultivated by farmers since the beginning because they can grow and thrive in farmers' land. Intercropping plants cultivated under three stands were also the types of spice plants dominated by turmeric. Farmers sell turmeric to traders, who come to the houses, in the form of bulbs. Similarly, the farmers in Selopuro, they process spice bulbs into medicinal herbs to be sold around the village.

The conditions of the community forests in the research sites showed that farmers had managed their forests very well. Based on the observations made, the land cover in the five villages/*Kelurahans* showed a high density because there is no land left vacant by the community. Almost every house is surrounded by a yard overgrown with forest plants both timber and fruit trees. The success of the community forests is shown by the many water sources that appeared in the vicinity of the community forests. These water sources have also been used by the community to meet their water needs. Pipelines have been installed to bring water to people's homes. *Kelurahan* Selopuro has been able to manage the water source to become Village PAM (Drinking Water Company) so that the water need of the village inhabitants can be met by Village PAM (Figure 3). The water price set by Village PAM in *Kelurahan* Selopuro is Rp 1,200 per cubic meter. In other villages (Girikikis, Guwotirto, Tirtosuwo, and Sejati), the water resources are utilized by the local government as the water source for the Regional Water Company (PDAM) Giriwoyo sub-district. The water source used by the regional government is Kakap Water Source, which is the largest water source in Giriwoyo sub district. This water source has never run out during the dry season.



Figure 3: Village PAM in *Kelurahan Selopuro*

3.2 Identification of the Community Forest Stakeholders in Wonogiri Regency

The community forest lands in Wonogiri are mostly rocky so that they are less conducive to agricultural lands but suitable for timber crops, especially teak, mahogany, tamarind and acacia. Land preparation is a very simple activity because there are no special activities for the farmers to do. Land preparation activities such as terracing are only done in the early development of the community forests. The only land preparation to make after that is making planting holes and putting manure in the holes. Based on the identification results, stakeholders concerned with the land preparation of the community forest were:

1. Farmers of the community forests
2. Persepsi Foundation
3. Farm workers
4. Fertilizer Seller

Planting activities in the community forests of Wonogiri Regency were mostly done by moving the tillers from a densely-spaced area to a sparsely-spaced area. The rocky terrain conditions made farmers unable to apply spacing as recommended by the government. The types of plants that are currently grown by farmers are teak, mangium, mahogany, rosewood, and saman tree. In some locations of the community forests that are very fertile, albizia trees have begun to be planted. Since albizia trees have a shorter cycle, at the age of 4-5 years farmers can already harvest the trees with a relatively high price on the market. For albizia, farmers buy the seeds from seed sellers in Baturetno Market or from mobile providers. Farmers also received assistance in form of seeds from the government (BP DAS Solo). Based on the identification results, stakeholders related to the planting activities of the community forests were:

1. Farmers of the community forests
2. Forest Farmers Group (KTH)
3. Seedlings provider

4. Center for Watershed Management (BPDAS) Solo
5. Farm workers
6. Dishutbun of Wonogiri Regency
7. Forestry Extension Officers
8. Persepsi Foundation

Plant raising activities in the community forests are not as intensive as the raising of agricultural crops, since it is only related to fertilization. Fertilization is done at the beginning of planting, namely when making holes for planting and putting the manure (goat and cow) in the holes. Fertilization is continued when the plants have reached the age of six months and one year using NPK. After that, the plants will not be fertilized until harvested. Another raising activity is weeding, ie cleaning weeds that grow and interfere with the main crops. Weeding is also carried out every six months up to the plants have reaches two years old. Weeding is done by using a sickle. No pruning activities are carried out by farmers because they love their plants. In addition, according to them, pruning can cause the plants to die due to pest attack. Farmers believe that the activities of pruning cause wounds on the trunk and through the wounds, the germs can enter and attack the plants. Spacing activities are not carried out by the farmers because the poor condition of the land makes it not possible. Every inch of the land will be planted as long as the timber plants can still grow. Pest and disease control is not done by farmers. The pest which attacks many plants such as teak is a kind of beetle that causes plants to get holes on them. Pest and disease control is still carried out in a simple, namely by burning the pests found. The purpose is to kill the beetles so that they will not attack other plants. Stakeholders successfully identified in plant raising activities were:

1. Farmers
2. Fertilizer seller
3. Forestry Extension Officers
4. The Ministry of Environment and Forestry

The community forest farmers in Wonogiri Regency still use a felling system based on an urgent need. The farmers will harvest their timber when they need substantial funds, for example, to marry off children, to pay school fees, or other purposes. The logging activity is done when agricultural crops and livestock can not meet the needs of the farmers. The cutting down the trees is usually done by timber buyers because farmers sell the timber in form of tree stand. Harvesting intercropping crops, namely spice plants, is done every year. The fact that timber crops are harvested only when there is an urgent need is consistent with the statement of Mr. Rjm (60 years old) who stated that:

".....timber is a source of the last need fulfillment after the sales of crops and livestock. When farmers have an urgen need, they will sell their produce (crops). When famine occurs or harvest time for food crop has not come yet, to meet their needs they sell their livestock such as chicken, duck, goat and cow. Timber plants are the last reserve funds for farmers to meet their needs....."

This is consistent with the research conducted by author [14] saying that the community forest farmers in

Gunung Kidul Regency considered timber plants as savings and they would be harvested only when no other funding sources could be used by farmers. Unlike the farmers in the regency of Tanah Laut who see timber as income diversification.

Harvesting with a felling system based on need is not considered recycling plants, so that it is feared that it would threaten the sustainability of the community forests, as expressed by author [15] that over exploitation of the community forest products could threaten the sustainability of the community forests. However, based on research conducted by author [16] in Ciamis community forest, a felling system based on need did not interfere with the preservation of the community forest. The practice of a felling system based on need is seldom carried out. For example, within a 10 years period, on average, it is done 1-2 times. Timber harvesting is done by farmers by applying a selective cutting method so that the community forest will still be able to carry out its ecological functions to conserve soil and water. Clear-cutting harvest is only done by the farmers when they want to convert or replace the community forest land for other uses. In addition, the community forest farmer groups in Wonogiri also apply the unwritten rule that binds the members. The rule states that when farmers cut down their timber trees, they have to grow ten times as many as the number of the trees that have been cut down. This rule is expected to ensure the preservation of the community forests.

Once in a while farmers harvest their timber by hiring loggers for Rp 75,000 per person per day, and the cost of a chainsaw is Rp 250,000 per day. The farmers do this because they want to use the timber for themselves. Once harvested, the timber would be taken to a sawmill to be sawed in accordance with their demand. For that, the farmers would pay Rp 200,000 per cubic for teak and mahogany, and Rp 250,000 per cubic for acacia. Farmers would feel more satisfied when using timber from their forest. According to farmers, the wood from their forest has a much better quality compared to the one bought from the building material shop. Based on the identification results, stakeholders involved in harvesting the community forest were:

1. Farmer
2. Farm worker
3. Mobile wood trader
4. Timber Traders Association (ASPEK) Wonogiri
5. Forest Farmers Group
6. Logger
7. Firewood seller
8. Ministry of of Environment and Forestry
9. Forestry Extension Officers

Farmers did not do the processing activities for the community timber products. A few years ago (2007-2011) in *Kelurahan* Selopuro there was a workshop that processed the majority of community timber products (especially the waste) into souvenirs such as picture frames, wall clocks, table clocks, ashtrays, and key chains. However, the workshop was forced to close down because it operated by order, so that when there was no order, the workshop was not in production. As a result, the workshop workers sought for another job, making the workshop abandoned. For now, farmers are not doing the processing of the community timber. They sell the

timber in form of logs. Most small farmers process spice bulbs into medicinal herbs and sell it by going around the village. Wonogiri is an area that is famous for its “jamu gendong” (medicinal herbs sold by carrying it around the residence). *Jamu gendong* is made from spice bulbs (turmeric, various curcumas, ginger) and other plants (papaya, sambiloto), in the form of drinks, placed in bottles and sold using a basket carried by the seller. Currently, many farmers sell *jamu gendong* by riding a motorbike or a bicycle that has been modified.

The existence of the community forests can encourage the growth of wood-processing industries, ranging from small scale industries to large industries. The current timber industries are sawmills, furniture industry, veneer industry, barecore industry, window and door frame industry, doors, and shutters. In addition to timber, the community forest products in form of spice bulbs are usually processed into traditional medicinal herbs. Wonogiri and its surrounding areas have some herbal industries such as PT Air Mancur and PT Deltomed. Based on the identification results, the stakeholders in the community forest product processing activities were:

1. Small-scale wood industry (sawnwood, furniture, frames, doors, shutters)
2. Large-scale wood industry (venir, barecore)
3. Herbal industry

Most farmers of the community forests in Wonogiri sell their timber in the form of tree stands. Only a small number of farmers sell their timber in the form of logs. Many farmers prefer to sell in the form of trees for several reasons: 1) Most farmers do not have the skills to cut down trees so that the risk of damaged timber will be higher which can lower the selling price; 2) Farmers have to hire people to cut down the trees and rent a chainsaw. Rp. 75.000,00 per logger per day and 250,000 per chainsaw per day are the costs the farmer have to spend, which is not efficient because the number of the trees harvested is normally not many, in line with the needed funds; 3) The location of trees is usually far from the main road, so it takes a lot of energy to transport it. Timber marketing is not difficult because almost every day there are mobile traders who come to the villages to ask for people’s timber. In the timber market, farmers will look for the trader who offers the highest price. Normally, some traders will visit the farmers who will sell their timber. Each trader will provide a bidding price to farmers and the farmers will give their timber to the trader who can afford the timber according to the demand of the farmers. Timber price information is usually obtained by farmers from their fellow farmers. When there are farmers who sell timber, the price information will be spread to other farmers. Some farmers even obtain price information from the collectors. They will come to collectors to obtain information on timber prices at the time. This is done because there is a significant difference in price between the timber offered by a mobile seller and the timber offered by a collector. The farmers sell spice plants in the form bulbs to the traders who come to their village. In addition to logs and tree stands, as well as spice bulbs, farmers also use twigs and branches of trees as firewood. Twigs and branches are sold at a price of Rp 400,000 per pickup vehicle. Twigs and branches are sold in wet conditions.

Author [16] stated that the ones who enjoyed the profits of timber business were traders, not farmers. This is due to the length of the marketing chain of the community timber. To help farmers obtain a greater benefit, BPDAS Solo together with Persepsi Foundation serves as facilitators, for example, by arranging a meeting between the community forest farmers and the wood processing industry (PT Rimba Sentosa) directly without a broker. Both

sides made an agreement that they would work together in the buying and selling of the community timber. PT Rimba Sentosa is one company that is doing business in the field of furniture. Teak and mahogany are the types of wood that are favored by buyers because of their strength and durability as well as their beautiful motifs. The cooperation was expected to bring benefits to the farmers so that they could improve their welfare. However, many obstacles encountered in this cooperation, among other things, were: 1) the quality of the timber that had been predetermined by farmers had to pass the test held by the company to find the class, and this often made the timber from the farmers was rejected because of being below company standards; 2) the payment was made after the timber reached the industry, while farmers needed the funds as soon as possible so that many farmers were unwilling to sell in groups. Based on the identification results, the stakeholders in the marketing activities of the community forest products were:

1. Mobile timber trader
2. PT Rimba Sentosa
3. Persepsi Foundation.
4. BPDAS Solo
5. Firewood seller
6. Spices seller

3.3 The Roles of Stakeholders in the Community Forest Management in Wonogiri Regency

3.3.1 Land Preparation for the Community Forest

Community forest farmers are the party that has a high interest in and a great influence on the preparation of the community forest land serving as key players. The interest in this case is related to the benefits received by farmers from the community forest land preparation activities. In the meantime, farmers have the influence to influence decision making and activities in the preparation of the land. The interest of forest farmers is very high in the land preparation activities since good land preparation will bring a benefit in form of optimal plant growth that will produce a high yield. The community forest farmers in Wonogiri Regency are the manager and owner of the land so that every decision related to the preparation of the land is made by forest farmers.

Persepsi Foundation is an NGO that has a strong influence but a low interest. Persepsi Foundation became one source of information for farmers on good land preparation techniques. Persepsi Foundation even offered support to farmers to improve their skills in preparing the land. In fact, this Foundation has conducted several kinds of training to improve the knowledge and skills of farmers in preparing the land for community forests. The innovation delivered by the foundation greatly influenced the decisions made by farmers.

Farm workers are a party that has a high interest in but a low influence on the land preparation activities. Farm workers are usually hired by the community forest farmers to assist them with land clearing and hole making for planting. Farm workers are usually the neighbors of the forest farmers. Land preparation activities become a source of income for farm workers. The income obtained by a farm worker is around Rp. 75,000.00 per day. The more area of land owned by a farmer, the more income a farm workers gets. Farm workers do the land

preparation work based on the instructions from the forest farmers, They do not have the authority to make a decision regarding land preparation activities. Nevertheless, the work of farm laborers will affect the performance of the existing community forests. Hole making for planting and fertilizer application will affect plant growth, thus indirectly affecting the results of the community forests. Therefore, most farmers farmers choose farm workers who have already had the ability to do land preparation activity well. Forest farmers who have a narrow field (<1.8 ha) usually do not employ farm workers for land preparation activities, but they will do it together with their family.

Forestry extension has a low interest in and a high influence on the land preparation activities. Forestry extension does not receive direct benefits from land preparation activities. Forestry extension is one source of information on good land preparation techniques. Farmers need information from forestry extension on the techniques to carry out good land preparation so that the plants are able to grow optimally and provide satisfactory results to farmers. Forestry Extension is in cooperation with Persepsi Foundation in improving the ability of farmers in the land preparation activities. Fertilizer (manure) sellers have a high interest in and a low influence on the community forest land preparation activities. They will earn revenues from the sales of fertilizer. The larger the land owned by farmers, the greater the need for manure, making it more profitable for the seller of manure. The influence of fertilizer sellers is categorized as low because the farmers buy manure to the sellers only when they are not able to meet the needs of livestock manure by themselves. Mostly community forest farmers raise small livestock (chickens, ducks), medium-size livestock (goat), and large livestock (cattle, buffalo) so that they can get enough manure for fertilizer.

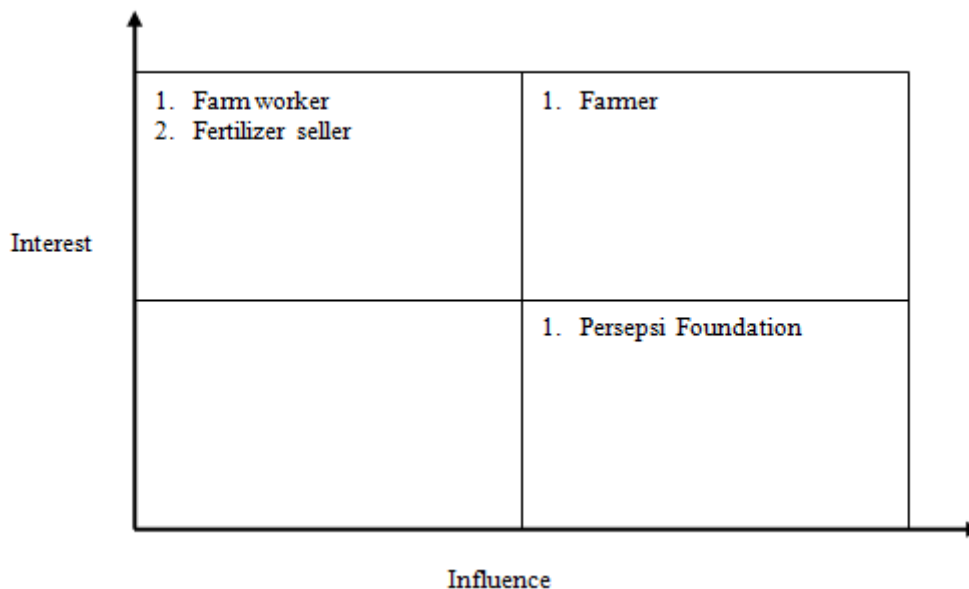


Figure 4: Interest-influence matrix of stakeholders in land preparation

3.3.2 Planting Activities of the Community Forests

Community forest farmers are the party who has an interest in and a great influence on planting activities. The interest of the farmers very high in forest planting activities because the use of seedlings and planting techniques

will determine the quality of the community forest timber. The better the quality of the community forest timber, the greater the benefits for the community forest farmers. Each decision is associated with planting activities undertaken by the community forest farmers so that the influence of farmers on planting activities of the community forest is very large.

KTH has a high influence on and a low interest in the community forest planting activities. Each forest farmer is a member of KTH, and KTH has binding rules that every member has to obey. KTH members uphold the rules of the group. One KTH rule related to planting is that when a member of the group cuts down a tree he must plant 5-10 new trees. KTH is also one source of information for farmers on good planting techniques. KTH also becomes a mean for learning because any program or activity that is held by the government is always done through the group. Farmers can exchange information with other farmers in the group.

Seedlings providers are a party that has an interest but low influence on planting activities. Seedlings providers make seedlings as a commodity that generates money so that they earn from the community forest planting activities. Planting activities in the community forests of Wonogiri Regency were mostly done by moving the tillers from a densely-spaced area to a sparsely-spaced area. They plant their own natural seedling from their farm. They believe that seedling more adaptive than the others.

BPDAS Solo has an influence on and a great interest in the community forest planting activities. BPDAS Solo is one of the institution that provide facilities such as timber crop seeds to farmers. Through People's Seeds Garden (KBR), BPDAS Solo provides facilities in form of funds to the group to make timber plant seedlings and distribute the seedlings to its members to be planted on their land. The better the development of community forests, the better the credibility of BPDAS Solo as the builder of the community forests. The good conditions of the community forests will make the forests able to function properly.

Farm workers have a high interest in but a low influence on planting activities in the community forests. Farm workers are hired to help farmers plant seedlings in the community forest. The wages they receive are based on an agreement between the farmers and farm workers.

The Department of Plantation and Forestry (Dishutbun) Wonogiri has a high interest in and influence on planting activities in the community forests. Dishutbun is a local government agency whose job is to direct the community forests so that the success of the community forest management will make Dishutbun have high credibility because it can foster the community forests in the region. The success is determined by the community forest planting activities. Dishutbun becomes one of the institution that provides facilities such as forest plant seeds. Through the reforestation movement and the like, Dishutbun distributes forest plant and fruit seedlings to farmers. Dishutbun is also one companion of KTH in managing Community Seedlings Farm (KBR).

Forestry Extension Officers has a low interest in and a high influence on the community forest planting activities. Extension Agent does not receive a direct benefit from the planting of the community forests. Forestry extension is one source of information on good planting techniques. Farmers need information from forestry

extension regarding cultivation techniques, including the selection of good quality seeds so that the plants will be able to grow optimally and provide satisfactory results to farmers. Forestry Extension was in cooperation with Persepsi Foundation in improving the ability of farmers to conduct planting activities in the community forests.

Persepsi Foundation is an NGO that has a high influence on but a low interest in the community forest planting activities.. Persepsi Foundation became one source of information for farmers on good planting techniques. Various training had been conducted by Persepsi Foundation so as to improve the knowledge and skills of farmers in conducting planting activities in the community forests.

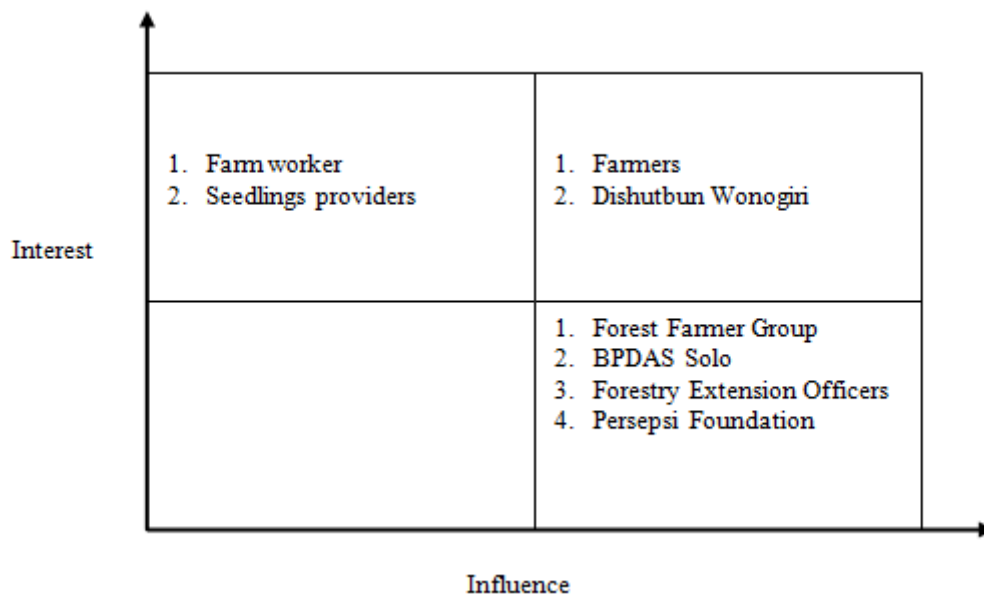


Figure 5: Interest-influence matrix of stakeholders in planting activities

3.3.3 Raising Activities of the Community Forests

Farmers have a high interest in and a high influence on the tree raising activity. Fertilization is usually done by farmers themselves with their family because this work does not require a lot of energy and relatively simple. Farmers realize that fertilization should be done until the plants reach the age of 2 years and after that there is no more fertilization because the plants are able to meet their nutritional needs. Fertilization aims to promote plant growth so as to provide optimal results for farmers. Farmers are the decision makers for all raising activities done.

The sellers of fertilizer (chemical fertilizer in this case) have a high interest in planting activities. The community forest farmers are the consumers of fertilizers so that fertilization activities benefit the sellers of fertilizers. The sellers earn money from farmers as a result of the sales of the fertilizers used in plant raising activities of the community forests. The influence of the seller of fertilizer is low in the fertilization activities because fertilizer sellers have no ability to influence the decisions of the farmers on which fertilizer should be used in the plant raising activities.

Forestry Extension Officers has a low interest in and influence on the raising of forest plants. Forestry Extension Officers provide information on the many benefits of raising activities other than fertilization (ie proper spacing, pruning, and pest and disease control) but does not have the ability to influence the decisions of the farmers. For example, until now farmers have not been applying the raising techniques shared by forestry extension.

The Ministry of LHK has a high interest in the raising of the community forest plants. Good raising of the forest plants will improve the performance of the community forests. This will help the Ministry of LHK in carrying out its duties and functions, that is, to keep the forests so that they are able to function optimally. The influence of the Ministry of LHK plant raising activities is low because it does not have the influence to coerce or influence the forest farmers to perform raising activities in the forest plants.

Actually, there are other stakeholder related to plant raising activities in the community forests. These stakeholders are the future stakeholders [17], the stakeholders who do not currently have a relationship with the plant raising activities in the community forests, but in the future, these stakeholders may be associated with the raising of the plants in the community forest. The stakeholders are the sellers of firewood and charcoal makers. They have a high interest in the raising of forest plants. They need the waste of timber thinning and pruning to be used as firewood and charcoal-making raw materials. Firewood is needed in Wonogiri Regency because many industries still use firewood such as tofu, tempe, and the burning of limestone.

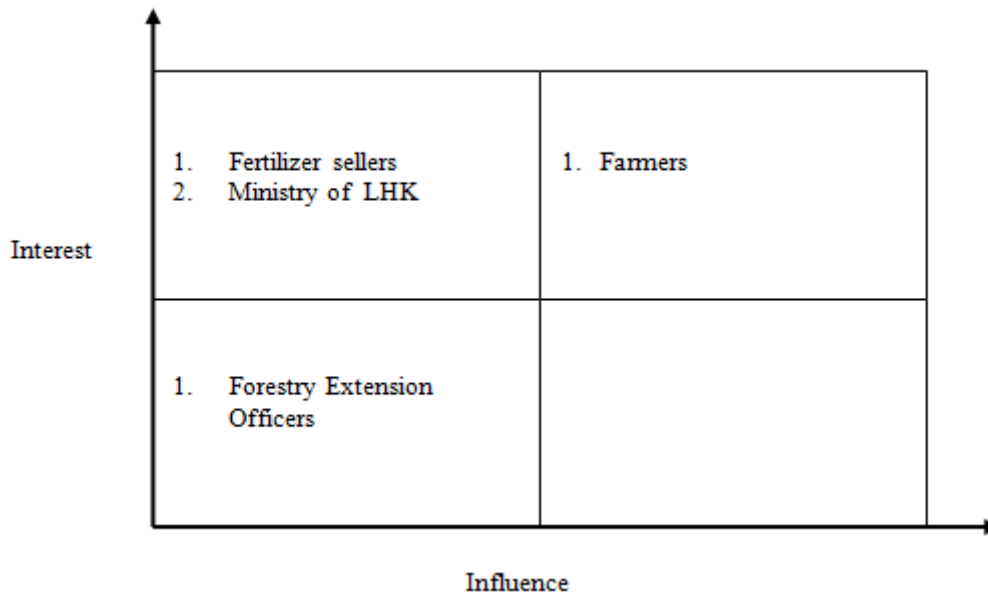


Figure 6: Interest-influence matrix of stakeholders in raising activities

3.3.4 Harvesting Activities of the Community Forests

Farmers have a high interest in and influence on the harvesting activities of the community forests. They earn large sums of cash to meet their needs. Because the timber harvesting system is usually based on farmers' urgent need, they will harvest the timber only when their need can not be fulfilled from selling agricultural crops and livestock. The decision regarding when and how many trees will be harvested is entirely in the hands of the

farmers.

Farm workers have a high interest in but a low influence on harvesting activities of the the community forests. They are usually hired by farmers to harvest intercropping plants ie spice plants grown under timber stands. Farm workers harvest and clean the bulbs until they are ready to be marketed.

Mobile wood traders have a high interest in and a high influence on the community timber harvesting activities. They will get timber as a commodity to be sold to collectors for an adequate profit, and very often the profit the traders obtain is higher than that of the farmers. Allegedly, the party who enjoys the most profit of the community timber management is the farmers but the middlemen because the distribution pattern (trading system) is created by traders and their networks. Traders also have a major influence on timber harvesting operations because they can influence the decisions made by the farmers as to harvest their timber. Fellow timber traders usually have a range of prices agreed among them so that the prices will be accepted by forest farmers. Authors [7,15] stated that in the system of the sales of the community timber, the bargaining position of farmers is still low so that the price of their timber is often determined by timber buyers (traders).

Timber traders in Wonogiri Regency have formed an association called Timber Traders Association (ASPEK), which was established in 2005, and it currently consists of 86 members. Every month ASPEK can afford to buy timber of approximately 300 m³. ASPEK is one of the farmer partners in marketing the community timber, mainly acacia, teak, and mahogany. ASPEK provides the community timber prices in accordance with the market prices. For now the prices of teak wood per cubic with a diameter of 10-13 cm is Rp 700,000; a diameter of 16-19 cm Rp 1,200,000 (1.2 million); a diameter of 22-28 cm Rp 2.000.000 (two million); and sortimen A3 is Rp 3,000,000 (three million). The prices of mahogany per cubic with a diameter of 10-14 cm is Rp 200,000; a diameter of 15-19 cm Rp 500,000; a diameter of 20-29 cm Rp 800.000; and sortimen A3 is Rp 1,100,000 (1.1 million). For acacia wood, it costs Rp 50,000 higher than mahogany for each cubic.

ASPEK of Wonogiri Regency is an association of timber traders which is the most orderly in the scope of Central Java province. This is because ASPEK always gives a report to the provincial and regency forestry office regarding the number and types of wood they purchased. For the purposes of the administration, ASPEK charges its members with dues amounting to Rp 30,000.00 per month. The dues are used for operational purposes, including the printing of forms (Rp 15,000), regional cash (Rp 5,000) and member cash (Rp 10,000). Members will be facilitated by ASPEK when they face problems in the field, such as being arrested by the officer due to incomplete administrative papers. ASPEK has a price range which they use as a guide in buying the community timber.

KTH has a high influence on but a low interest in harvesting the community timber. KTH is a mean for farmers to gather and exchange information, including information on the price of wood. Farmers usually obtain information from their fellow farmers as KTH members on timber prices, who meet monthly. Another important information is the information on the names of timber traders who dared to give the highest price.

Loggers have a high interest in and influence on the community timber harvesting activities. They will earn

from timber felling activities so that they can meet their family needs. Loggers are employed by mobile traders for harvesting the timber they buy.

Traders will choose loggers who have a great ability to harvest timber. This is because their ability will greatly affect the quality of the timber harvested.

The higher the ability of a logger, the less defects due to the improper cutting down of the timber. This will affect the price of wood when it is sold to the wood collectors (wholesalers). If a defect arises in wood because of an error in cutting down, the party who bears the loss is the trader.

The Ministry of LHK have a high interest in the harvesting activity of the community timber. The fact that farmers harvest their timber on their urgent need arises can threaten the sustainability of the community forests, especially when they harvest the trees that have not reached their cycle.

As a result, the community forests are unable to function properly. Certainly, this is quite alarming. The Ministry of LHK as an institution has the duties and functions to ensure the forest to be able to function properly. To that end, the Ministry of LHK creates a program called Credit for Delayed Cutting (KTT) that can be utilized by farmers. Farmers get cash from KTT to meet their needs on condition that they will not cut down the trees before the right harvest time.

However, KTT has not been utilized because farmers feel that the procedure to be followed is still too complicated and takes a long time, while they have urgent needs that must be immediately met. The Ministry of LHK may worry if the forest functions are disturbed because of this occasional cutting down of trees. However, this worry is not relevant any longer as indicated by a research conducted by author [16] in the Ciamis community forest that showed that the occasional cutting system based on farmer's urgent need was not interfere with the preservation of the community forests.

The practice of cutting down the trees due to urgent need in 10 years, on average, only occurred 1-2 times. Timber harvesting is done by farmers by way of a selective cutting method so that the community forest is still able to carry out its ecological functions, that is, conserving soil and water. A clear-cutting harvest is only done by the farmers if they want to convert or replace forest land into other purposes.

Forestry extension officers has a low interest in and influence on the community timber harvesting activities. Information on plant recycling and the logging techniques delivered by the forestry extension officers was not able to influence the decision of the farmers not to harvest their timber simply because the timber harvesting system is related to farmers' urgent need.

3.3.5 Processing Activities of the Community Forests

Timber industry and herbs industry have a high interest in and influence on the community forest processing activities. The community forests become one of the suppliers of raw materials for industries. Timber industry and herbs industry have also have a great influence on the processing activities of the community forests. If

there are more processing industries of the community forest products, it is expected that demand for timber and medicinal crops will also get higher and will increase the selling price of the community forest products.

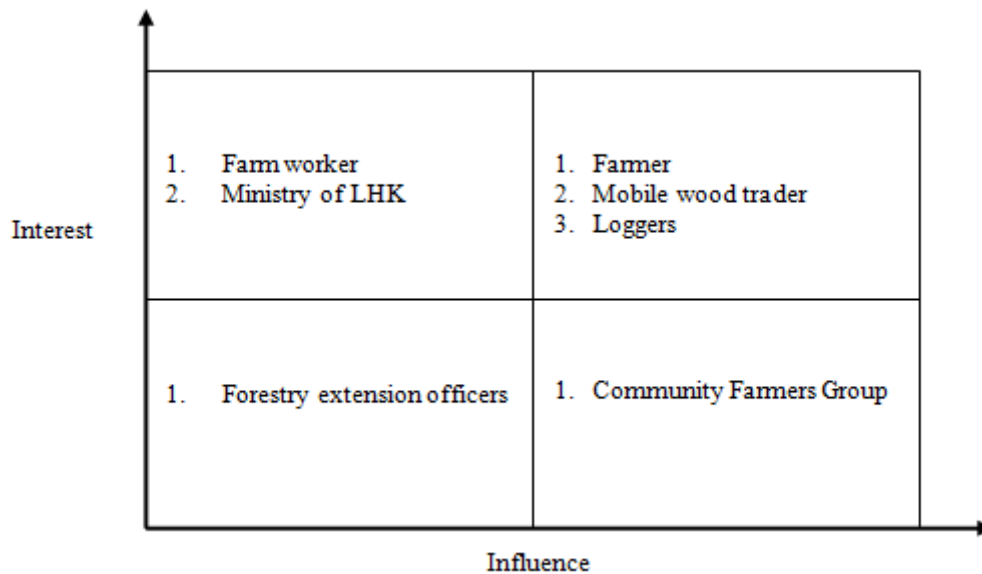


Figure 7: Interest-influence matrix of stakeholders in harvesting activities

The Department of Industry, Trade, Cooperatives and SMEs (Disperindagkop UMKM) of Wonogiri Regency has a high interest in the processing activities of the community forest products. Disperindagkop UMKM is an institution that has the duty and function of building the industrial sector in Wonogiri. The existence of the community forests as suppliers of raw materials for industries plays an important role in supporting the growth of the industrial sector, especially medicinal herbs and timber industries in Wonogiri. The close relationship between the industrial sector and the community forests has not yet been followed by the participation of Disperindagkop UMKM in developing the community forests.

Farmers are also the future stakeholders [17] because of their great potential to play a role in the processing activities of the forest products. Farmers can even become a key actor in the processing activities of the community forest products. Farmers' ability need to be enhanced in the processing forest products. A few years ago, the farmers in Selopuro had a workshop that could process wood waste to be souvenirs such as photo frames, ashtrays, table clocks, key chains, and some kitchen utensils. Unfortunately, however, this workshop stopped operating due to marketing constraints. They worked by order, and when there was no order, the craftsmen did not earn. This caused the craftsmen to look for another job that could provide sufficient income to meet their needs.

The community forests, in addition to producing timber and intercropping crops, also have a major role in the emergence of new water sources and continuous water supply in other water sources. The existence of these water sources are managed by the local government (PDAM of Giriwoyo sub-district) and the village administration (PAM of Selopuro Village). Under these conditions, the result of the community forests is clean water.

Giriwoyo PDAM has a high interest in the water treatment from Sumber Air Kakap Sejati in Sejati village. The company uses the water resources to meet the water needs of the people in Giriwoyo sub-district. The influence that Giriwoyo PDAM has on the processing activities of the community forests is low because there has been no contribution by the company to the farmers. Giriwoyo PDAM in this case can be considered as rent seeker, ie the party that gain benefits without being involved in the community forest development activities. Giriwoyo PDAM harvests the community forest product in the form of clean water but has not participated in the development of the community forests.

Village PAM has a great interest in and influence on the processing of water in Selopuro village. Village PAM is managed by forest farmers and this motivates the farmers to continue to preserve the community forests. The sustainability of the community forests will also contribute to maintaining the continuity of the clean water supply for Village PAM to meet the community's needs of clean water.

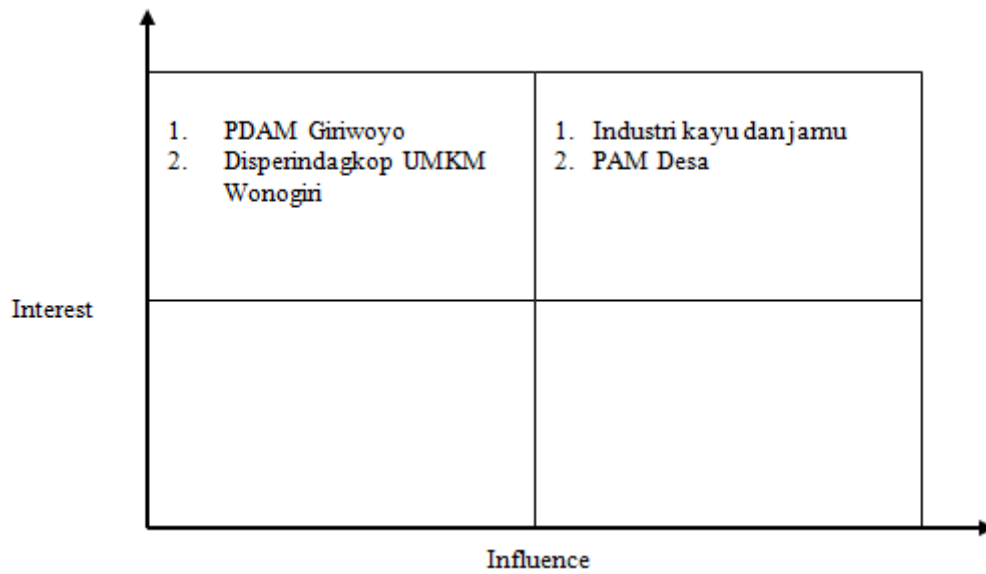


Figure 8: Interest-influence matrix of stakeholders in processing activities

3.3.6 Marketing Activities of the Community Forest Products

Farmers have a high interest in and influence on the marketing activities of the community forest products. Farmers have the absolute influence to choose as to whom and how they will market their forest products. With this influence, the farmers will choose the parties that can provide them with the greatest benefits.

Timber traders have a high interest in and influence on the community timber harvesting activities. Forest farmers usually sell timber branches and twigs (logging waste) to timber traders. Firewood is still one source of energy for industries in Wonogiri and its surrounding areas (tofu and tempe industry, the burning of limestone, household fuel). Timber traders are also very influential because they are capable of affecting farmers in making the decision whether twigs and branches will be sold or used by themselves for the fuel need of their households. The higher the price offered by a trader, the greater the chance that the farmers will sell the twigs

and branches. Spice bulbs traders have a high interest in and influence on the marketing activities of root plants derived from the community forest. Farmers usually sell root plants (medicinal spices) to mobile traders. Medicinal spices are sold in the form of bulbs that are still wet. Currently, the price of medicinal spices, especially turmeric, is around Rp 2,500 per kg. Wonogiri is one region that is widely known for its medicinal herb industry. However, until now there has been no cooperation between the herbal medicine industry with the community forest farmers, especially in the marketing activities of medicinal spices. A cooperation with a herbal medicine industry once occurred in the period 1990-2000s, where the community forest farmers sold medicinal spices in the form of simplisia (dried slices of the bulbs of medicinal spices which are ready to be processed into herbal medicine). PT Rimba Sentosa is one of the furniture industries which has become the market of Wonogiri's community timber. Teak and mahogany are the types of timber that are favored by buyers because of their strength and durability as well as their beautiful motifs. This cooperation is expected to bring benefits to the farmers so that they can improve their welfare. PT Rimba Sentosa has a high interest in and influence on the marketing activities of the community timber. PT Rimba Sentosa obtains raw materials from the community forests and the farmers obtain a higher price than when selling the timber to mobile traders. Because PT Rimba Sentosa is a wood processing company, this cooperation can shorten the commercial chain of the community timber. It is hoped that the farmers will get more benefits. KTH has a high influence on and a low interest in the timber marketing activities of the community forests. KTH becomes an institution for farmers to cooperate with PT Rimba Sentosa in order to reach an agreement set forth in the joint marketing of the community forest timber. Persepsi Foundation and BPDAS Solo facilitated the farmers and PT Rimba Sentosa to establish a cooperation in the timber marketing so that it has a high influence on but low interest in the marketing activities of the community timber.

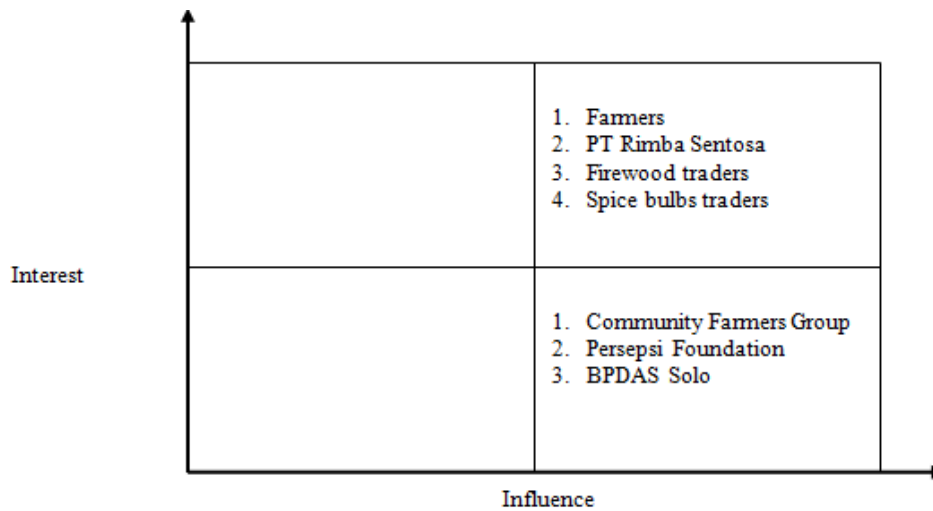


Figure 9: Interest-influence matrix of stakeholders in marketing products

4. Limitations

This study used only a method that analysis of reference [12] to analyze the stakeholders in the management of the community forest. The relationship of the stakeholders was investigated by using a matrix that connects between influence and interests in the management of the community forest. It is possible that other researchers

used another method to analyze the stakeholders in community forest and using another matrix to investigate the relationship between stakeholders, for example a matrix that connects between interest, power, and legitimacy.

5. Conclusion

Management of the community forests included land preparation, planting, raising, harvesting, processing, and marketing. The stakeholders involved in the management of community forests vary based on their interests and influence. The stakeholders in planting activities included community forest farmers, Regency Forestry and Plantation Agency, Ministry of LHK, NGO Persepsi, farm laborers, Forestry Extension, and sellers of fertilizers. The stakeholders in the activities of land preparation included community forest farmers, Forest Farmers Group (KTH), seed providers, Watershed Management Institute (BPDAS) Solo (Technical Implementation Unit / UPT Ministry of LHK), farm workers, Dishutbun of Wonogiri Regency, Forestry Extension, and Persepsi Foundation. The stakeholders in the plant raising activities included community forest farmers, fertilizer seller, Forestry Extension and the Ministry of LHK. The stakeholders in harvesting activities included community forest farmers, farm workers, mobile wood seller, Timber Traders Association (ASPEK) Wonogiri, Forest Farmers Group (KTH), farm laborers, loggers, firewood sellers, the Ministry of LHK, Forestry Extension. The stakeholders in the community forest product processing activities included herbs and timber industry and the Department of Industry, the Regional Water Company (PDAM) Giriwoyo, Traders, Cooperatives and SMEs (Disperindagkop SMEs) Regency. The stakeholders in marketing activities included community forest farmers, PT Rimba Sentosa, firewood sellers, spice product sellers, KTH, Persepsi Foundation, and BPDAS Solo.

6. Recommendations

Based on the interest and influence, there's a lot of stakeholders in community forests, either direct or indirect stakeholders, present stakeholders or future stakeholders. Their involvement is still very limited for the time being so that the development of community forests is not optimal. Stakeholders who have high influence and high interest should actively be involved in community forest management. One effort that can be done to improve the involvement of stakeholders is through extension activities. Currently, the client of forestry extension is farmer, even though the other stakeholders still many who do not understand the community forest management in a holistic manner. The client of extension should include the other stakeholders. Through extension activities, the ability of (knowledge, attitudes, and skills) stakeholders can be improved. Improving the ability of stakeholders are expected to increase their participation in the management of community forests.

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