

Existence of Swidden Agriculture in a Small Island

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-----ABSTRACT-----

Wawonii Island is one of the small islands in Southeast Sulawesi Province whose entire region represents one Regency in Southeast Sulawesi, namely Konawe Kepulauan Regency. The people of Wawonii Island are people who are more likely to choose to live farming and use existing forest resources than being fishermen, whereas generally they live in coastal areas. This is supported by the fact that Wawonii Island holds a large amount of potential, especially the potential of forest resources which if managed wisely will be able to provide welfare for people living around the forest, especially swidden agriculture who cultivate forest land with local wisdom that can ensure the sustainability of forest ecosystems also means sustainability human life on the island. In fact, existing forests have suffered a lot of damage due to exploitation for the sake of clearing land for plantations and mining and the occurrence of illegal logging by a number of irresponsible individuals. Slowly, the forest destruction that occurs will threaten the existence and reduce the access of swidden agriculture to the forests that have been the pillars of their lives. The objectives to be achieved in this study are: (1) Describe the farming patterns in Wawonii Island (2) analyze the existence of swidden agriculture on Wawonii Island. The analytical method used is descriptive qualitative analysis. The people of Wawonii Island manage their fields using two agricultural patterns that have been carried out for generations, namely mix cropping and monoculture. This farming system is carried out by farmers with mixed fields called wita laro planted. The activity is known as laro nii which is if the existing land is planted with coconut plants, laro sokolati ie if the existing land is planted with cocoa or laro dambola if the land is planted with cashew crops. The second agricultural pattern is the final activity of processing the fields owned by the farmers because after planting these long-term crops, the activities of the fields by planting crops or vegetables are no longer done. The existence of swidden agriculture has decreased. This can be seen from the shorter fallow period, the smaller variety of cultivated commodities, the use of chemical inputs which should not be used by farmers, and the distance of fields that should be far from settlements have now become closer to settlements or public facilities.

KEYWORDS;- existence; swidden agriculture; small island

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I. INTRODUCTION

Indonesia is a country that has abundant natural resource potential both on land and at sea which if managed wisely will be able to support all sectors of life. The agricultural sector for example is a sector that plays an important role in the supply of food which is a basic need for all humanity. In addition, it cannot be denied that some people depend on this sector for their lives. Given its urgent role, the development of the agricultural sector is an important thing to be concerned about, especially farmers who are the main actors of the sustainability of this sector. Seeing the many food problems in Indonesia related to environmental problems, it is necessary to do innovation and development models sustainable food. Aside from being an agricultural country, Indonesia is also known as an archipelago that has thousands of islands. The Southeast Sulawesi region consists of several islands, both small and large. Overall, the number of islands in Southeast Sulawesi is 530.

Wawonii Island is one of the small islands found in Southeast Sulawesi Province, precisely in the Konawe Islands Regency. Wawonii Island besides having good natural and coastal beauty for tourism is also an important area for the development of the agricultural and plantation sectors because it has the potential of supporting natural resources. The area of Wawonii Island is 86,758 Ha, of that area 26,528 Ha is used for agricultural and plantation land with details of 9,344 Ha used for plantations, 7,288 Ha for farms, 6,213 Ha of which are used as Fields while for paddy fields only 3,683 Ha [1]

The people of Wawonii Island are people who are more likely to choose to live farming and use existing forest resources than being fishermen, whereas generally they live in coastal areas. The population of Wawonii Island until 2018 was 31,688 inhabitants. 75% of the population are farmers (consisting of coconut

farmers, cashew nuts, cacao, cloves, nutmeg, rice, corn, cassava, sweet potatoes, peanuts, green beans, and vegetables), 20% fishermen and 5% civil servants [1]. This phenomenon has become an interesting thing to study especially with regard to the empowerment of swidden agriculture who are still the choice of farming for the island community, especially Wawonii Island which is often associated with issues of food insecurity due to the geographical conditions of its isolated area which causes limited access to economic resources.

Data from the Agriculture and Forestry Service District Konawe Islands in 2018 shows that the number of swidden agriculture is 800 families spread across 6 sub-districts in Konawe Kepulauan Regency. This implies that empowering swidden agriculture is an important factor considering that farming is still the main choice for the people of the island. On Wawonii Island, there is even a perception that some people are expanding their fields to guarantee family life in the future rather than education. Not surprisingly, one farmer owns fields in several places far from his home.

Farming activities cannot be separated from the forest, it can be said that without forests there would be no fields. This fact explains the dependence of swidden agriculture on the forest so that wise forest management is needed to ensure its sustainability which also means survival for swidden agriculture. One of the problems currently faced by swidden agriculture on Wawonii Island is the exploitation of forest resources by irresponsible parties. A number of factors that are suspected of causing deforestation include land clearing for plantations, mining and illegal logging.

The forest area on Wawonii Island prior to the entry of planters in 2007 was 57,222.56 ha and after the entry of plantation and mining entrepreneurs reduced to 36,565.35 ha until 2017. This will disrupt the function of forests as carbon sinks and providers of oxygen for life on this earth. The function of the forest as a store of ground water will also be disrupted due to ongoing forest destruction. This will result in more frequent droughts in the dry season and floods and landslides in the rainy season. In the end, this will have a serious impact on the economic condition of the community.

The entry of planters and mining companies that exploit forests is a big problem for farmers in Wawonii Island. Farmers do not have the power and ability to compete with entrepreneurs who enter and intend to exploit forest resources which have been the pillars of their lives. Development orientation that has not touched the interests of the community is also the cause of the powerlessness of swidden agriculture. Based on the background above, the research problem can be formulated as follows:

1. What is the pattern of swidden agriculture on Wawonii Island?
2. How is the existence of swidden agriculture on Wawonii Island?from relational databases to graph database.

II. CONCEPTS AND METHODS

2.1 Theory of existence

The existence theory in this study refers to the basic concept of self existence. Some experts describe the existence of oneself with similar tendencies such as those described by Abidin (2007) as follows:

- a. Existence is a dynamic process, a process of "becoming" or "being". So, existence is not rigid and stops, but is flexible and experiences development or otherwise setback depends on the individual's ability to actualize his potential potential.
- b. Existence is the giving of meaning. This is in accordance with the essence of human consciousness itself as intentionality, which always leads to itself and beyond itself. Originally objective reality, then given a subjective meaning, according to their needs.
- c. Existence is existent in the world. Humans do not live alone and are in themselves, but are in-the world. Humans cannot escape (and cannot be realized without) their world. The world in this sense continues to develop and is subjective, because it is centered on humans, so that every human contact with something outside of itself is always marked by its subjectivity.

The characteristics of individuals who have self-existence according to Smith (2003) are as follows:

- a. Self-awareness, namely the ability to recognize the strengths and weaknesses of oneself, what can be done, and how to do it.
- b. Self-confidence, namely the ability of individuals to see the positive side of an event.
- c. Self-esteem, which is how individuals focus on the people served or individuals able to work.
- d. Role awareness, namely awareness of the importance of the role that is in him to be realized immediately.
- e. Awareness of the power of personal mission, namely the vision of what needs to be done and the spirit and focus in doing it.
- f. Personal attraction, that is something that becomes an individual's attraction so that it can influence the judgment of others towards him.
- g. Awareness of uniqueness, namely not comparing yourself with others or worrying about what is not owned by yourself.
- h. Consistency with life, which is not tossed around with any new ideas or opportunities or changes in events.

i. Peace and peace, that is, staying cool-headed despite facing many problems.

Based on the definitions stated by some scientists, the meaning of the existence of swidden agriculture illustrates the existence of swidden agriculture in small islands including the success and sustainability of farmers in managing their farms managed and efforts made to make farming better, dynamic and capable of delivering on the welfare of themselves and their families. In other words, existence means the ability of farmers to survive in all conditions. Existing farmers are farmers who are able to deal with any changes related to their farming. Thus the existence of farmers requires creativity and innovation to remain dynamic along with the existence of social and cultural changes in the social system of the community.

2.2 Farming System of Farms

Moving farming is a traditional farming system commonly used by indigenous peoples. This shifting plantation has existed since 10,000 years before BC. Landscape farming techniques are carried out with the process of land clearing in a certain area, cutting down and burning forests, then planted with various crops such as rice, maize, or cassava. The shifting farming technique depends largely on the climate, because the climate affects the time of burning and cultivating the fields. During the dry season, people cut down the trees and then burned the land, but when the rainy season came, people planted a plant seed in the fields. The land used for moving fields continues to be used up to a very long time. The land used for farming, within 2 to 3 years will be left out, as the land is unproductive. When the first land that has been left back is fertile, the land is re-opened into fields, and the second land will be abandoned. The process occurs continuously, so indirectly, the land used for the farm has been mapped. Mapping of plantation areas for traditional communities can reduce the risk of opening new land from primary forests (Thrupp et al., 1997).

Swidden agriculture, shifting farming, rotational farming, turnaround farming or in FAO (2004) referred to as fallow farming system are a number of terminology used to describe a land use system involving 'planting phase or production phase' and 'time bera ', that is, the period in which vegetation is allowed to naturally succumb. Here it is clear that time is very big influence on soil fertility and the production level produced. Farming shifts as a farming system that makes use of it as the main thing in maintaining productivity. The plantation system is carried out only 1 - 2 years in planting and then continued with long periods of time (Mulyoutami et al., 2010).

Fallow farming system, or commonly abbreviated as fallow system, is an agricultural system in which farmers cultivate a plot of land to be planted with seasonal agricultural crops such as rice and vegetables and after a few years the soil will lose its fertility so that the yield decreases. When this condition is reached, the farmer will move to another plot of land that is also his and start replanting as was done on a previous plot of land. And so it is done by moving and repeating. The purpose of leaving the land is to restore soil fertility so that the system will form rotation (FAO, 2004).

Farm farming systems according to Cox and Atkins (1974) referenced by Pardosi (2005) state that field farming systems are the most effective method of overcoming the ecological reality of tropical forests rather than damaging and causing environmental degradation. Some opinions state that swidden agriculture is a forest encroacher that causes forest destruction. However, this opinion is contradicted by Mubyarto et al. (1990) who said that swidden agriculture is not a forest encroacher because it is carried out in a planned manner with the main goal being food security while the forest squatters are commercial.

Farming is a farming activity by a group of people to fulfill their needs, this is very closely related to cultural traditions. 'Rotating cultivation' or commonly known as 'shifting cultivation', is another term that describes the planting period and fallow period which takes place in turns. 'Slash and burn system', refers to the concept of rotating fields, which in the land preparation process begins with 'slash and burn'. However, this method is often associated with forest destruction or encroachment because it is carried out on a large scale by large plantations or migrant farmers (Mulyoutami et al., 2010).

Some notions of shifting fields within FAO (2015):

1. Removal of natural vegetation (usually forest or shrub land) in many cases by cutting and burning.
2. A change between the short time of the planting phase (cultivation) and the length of fallow, where access to land is unlimited, planting length and fallow period depends on the nature of the soil and the microclimate conditions that determine how quickly the forest grows.
3. In many cases it is often referred to as rotational or rotational farming.

The field farming system is still an important way of life for some of the poorest and most remote communities in the countryside. A common strategy carried out by farmers in maintaining their farming systems is to adapt and integrate. For example in the tropics, generally plant structures that are managed in field farming mimic the forest vegetation structure around it. Therefore a common strategy developed by swidden agriculture in Indonesia, is first, farmers plant various types of plants that are suitable and their arrangement almost resembles the structure of the unopened forest. Such conditions are shown by vegetation structures in fields and forests that have layered stratification. Second, plant nutrients are mainly stored in vegetation biomass.

Therefore cultivators tend to manage the dynamics of vegetation carefully and carefully, for example with proper management of time and soil fertility. Third, with respect to field plots that are planted with lots of crops, then the dense vegetation structure itself also has relatively more functions (Geertz, 1983).

2.3 Methods

This research is classified as qualitative research emphasizing the analysis of the process of inductive thinking activities related to the dynamics of relations between phenomena (Gunawan, 2014). Qualitative methods produce information or data that can describe social reality and events related to people's lives, history, behavior, kinship, and social movements (Ratna, 2014). The use of a qualitative approach is intended to understand and observe more deeply and also to explore more deeply and expose (explore) in detail and broadly about the pattern of swidden agriculture carried out by swidden agriculture on Wawonii Island and how it exists. Data analysis in this study follows the opinion of Miles & Huberman (1984) that there are three main components that researchers must be aware of, namely data reduction, data display and conclusion drawing. The three components according to Miles & Huberman are called interactive analysis models; namely, the three components are activities in the form of interactions with the process of collecting data in the field as a cycle process. In this form the researcher still moves between the three components with the data collection component during the data collection process. Likewise after the data collection was conducted, then moving between data reduction, data display and conclusion drawing to build a substantive understanding based on empirical findings.

In an effort to obtain data that the truth can be believed, the validity of the data is tested through source and method triangulation techniques. This is done in order to reduce the possibility of misinterpretation. According to Stake (2000) triangulation is the process of using multiple perceptions in clarifying meanings and in verifying repetition of the implementation of observation interpretations. In this study triangulation is done by clarifying or comparing data and information that comes from different sources of information and data collection methods. The existence of swidden agriculture in this study was measured based on the period of harvest (period of rest of the land), diversity of commodities, use of inputs and distance of fields to the location of settlements.

III. RESULT VIEW

3.1 General description of farm agriculture on Wawonii Island

The people of Wawonii Island in their daily lives depend on traditional farming systems. Based on the results of the study, it is known that the people of Wawonii Island in managing their fields use two agricultural patterns that have been handed down for generations, namely mix cropping and monoculture. This farming system is carried out by farmers with mixed fields called wita laro planted with crops and seasonal crops such as rice, cassava, corn and sweet potatoes. In general, mixed gardens are cultivated for about 3 years and then added (rested) for several years to restore soil fertility. During the harvest period, farmers will move to other fields to manage. However, there are also farmers who will make their fields into plantations planted with annual crops.

The beginning of land use after it is opened and processed is planted first with field rice crops, after which farmers plant various crops and seasonal crops by the people on this island called larowita or mixed gardens. Subsequent land use depends on the type of annual plant or dominant plantation. on the land. The activity is known as laro nii which is if the existing land is planted with coconut plants, laro sokolati ie if the existing land is planted with cocoa or laro dambola if the land is planted with cashew crops. The second agricultural pattern is the final activity of processing the fields owned by the farmers because after planting these long-term crops, the activities of the fields by planting crops or vegetables are no longer done. Planting annual crops in the form of plantation crops is also evidence that the field has already mastered it, and functions as a boundary if it will be reopened later on.

Farming activities have been commonly found on Wawonii island, this occurs because of a decrease in soil fertility so that the land is unable to provide results to meet the needs of the local community. Agricultural technology is generally not yet known by Wawonii traditional farmers, so the need for nutrients for plants still relies on natural soil fertility that can be obtained through cultivation. Falling period or resting period of the land can help restore plant nutrient elements which are reduced due to previous crop cultivation activities. The selection of land to be made into fields is done with full calculation, because the fields are a source of food for farmers.

In relation to agricultural systems such as land clearing, farming and harvesting of paddy fields, local communities on Wawonii Island perform traditional ceremonies led by sandals such as new field opening monopolies, rice cultivation motors and rice harvesting mosows. The meaning of this ceremony is to apply to sang sang (the Creator) so that his business does not fail.

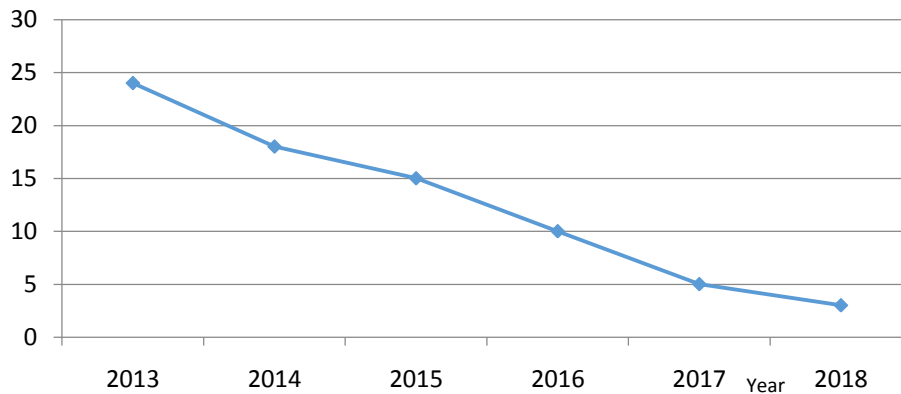
3.2 Existence of Farmer Farmers

The existence of swidden agriculture is the ability of swidden agriculture to stay in managing their farms that are measured in the period of harvest (the resting period of the fields before replanting), the diversity of commodities, the use of inputs and the distance of fields to residential / public facilities.

3.2.1 Giving Period (Land Rest period)

The Giving Period is the resting period of the land before the land is cultivated and replanted. Farmers apply a long fallow farming system to produce food crops for their daily needs (subsistence). This system is ecologically stable in conditions of low population density. But today, population growth is accelerating, market demand for agricultural products is increasing, and government policies in land development and residential areas have transformed farming activities more intensively (Myers and De Pauw, 1995).

Fallow Period

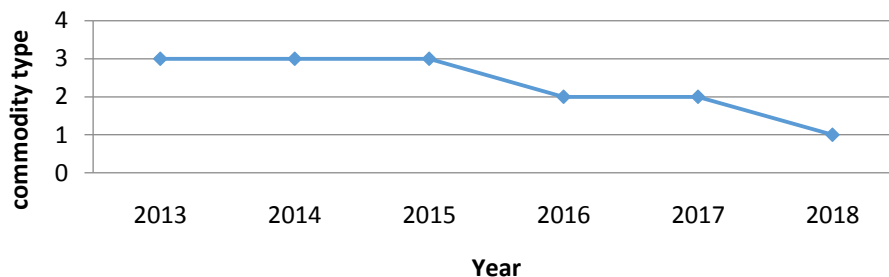


Based on the results of data analysis in the field, it shows that from 2013 to 2018 the period of restoration of land before planting has decreased or in other words, from 2013 to 2018 there is a slow shortening of fallow period.

3.2.2 Diversity of Commodities

Shifting cultivation techniques are carried out by the process of clearing certain areas of land, cutting and burning, then planted with various food crops such as rice, corn, or cassava. Shifting cultivation techniques are very dependent on climate, because climate greatly affects the burning time and planting of fields. During the dry season, people cut down trees and then burn the land, but when the rainy season arrives, people plant seeds in the fields. Land used for shifting cultivation continues to be used for a very long time. Land used as a field, within 2 to 3 years will be abandoned, because the land is already unproductive. When the first land that has been left back is fertile, the land is re-opened into fields, and the second land will be abandoned. The process occurs continuously, so that indirectly, the land used for farming has been mapped. Mapping areas of cultivation for traditional communities can reduce the risk of clearing new land from primary forests (Thrupp and Browder, 1997)

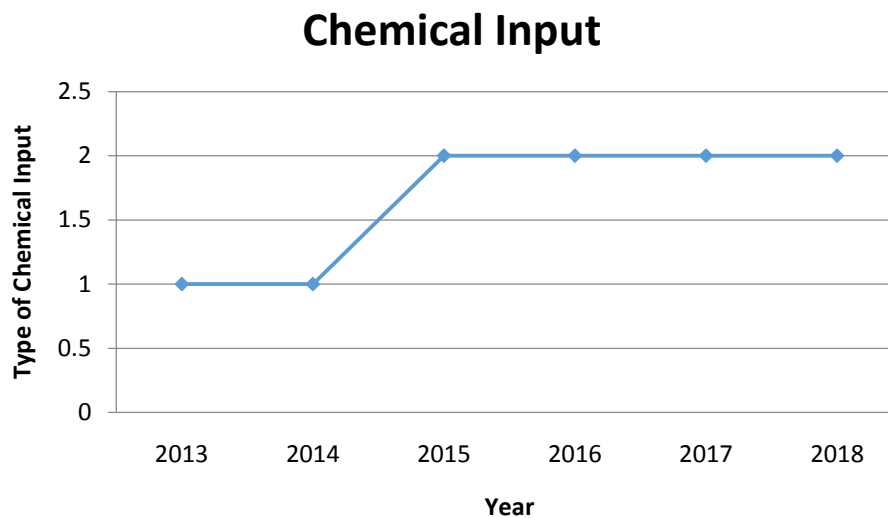
Commodity diversity



Based on data obtained from the results of the study, there was a decrease in the number of commodities cultivated in the fields owned by farmers. In 2013 to 2015, farmers still planted 3 types of commodities after planting paddy fields at the beginning of opening fields. Commodities cultivated after field rice include corn, cassava and sweet potatoes. However, in 2018 the commodities cultivated into one commodity are cassava, corn or sweet potatoes only. The most cultivated commodity is cassava because it does not require special care which is considered troublesome for farmers. While corn is cultivated only during the rainy season because it is easier in terms of water availability.

3.2.3 Use of Chemical Inputs

The use of excessive pesticides has a negative impact on surface water (surface water), groundwater, soil fertility, damaging crops and killing organisms. the agricultural system in Indonesia uses a modern, conventional agricultural system. The conventional system applied in modern agriculture is to use pesticides in the form of insecticides, herbicides, and other types that are not environmentally friendly. Materials such as large amounts of pesticides can pollute the environment such as rivers, lakes and reservoirs. Pesticides are materials that are difficult to decompose. Waste pesticides that enter the ecosystem will accumulate in the body of the organism. Field farming systems, are environmentally friendly agricultural systems. Shifting cultivation techniques are carried out by clearing fertile forest land and then burning it to ash in certain areas. Combustion ash will help significantly in the process of soil enrichment. Combustion ash can increase soil pH, so this technique is very suitable to be done in areas that have acidic soil content. In addition, the fallow system applied to field farming is one of the effective ways to restore fertility before the land is processed and used again for cultivation.

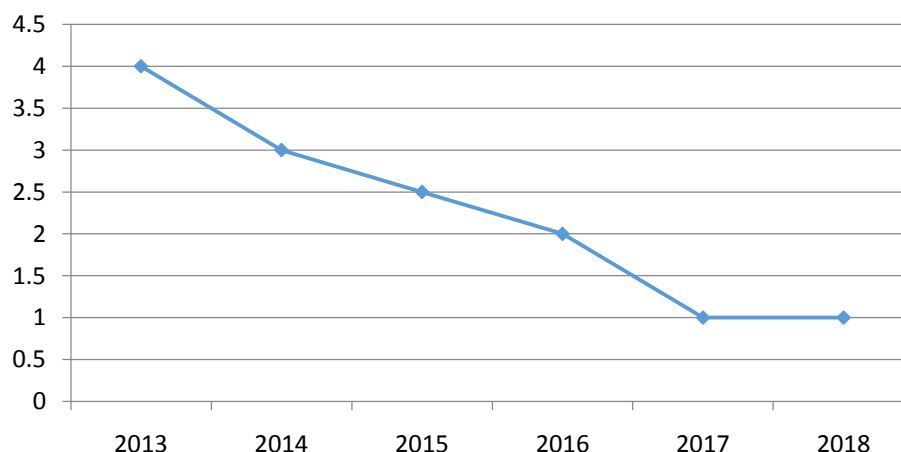


Based on the results of the study, it was seen that there was an increase in chemical inputs used by swidden agriculture, at first farmers only used herbicides to clean the grass they were going to land but, slowly, farmers began to be interested in using other chemical inputs such as fertilizers to maintain soil fertility or the fields they cultivate. This is because the fertility of the land has been reduced so that it cannot provide the expected results because the cultivated land no longer pays attention to the fallow period before the land is finally reused.

3.2.4 Distance of Fields with Settlements or Public Facilities

At first, the fields were opened in the forest far from residential areas or public facilities. However, over time and because of increasing population density the distance between fields and settlements or public facilities is closer.

Distance



Based on the results of the study, it can be illustrated that the distance between fields and settlements or public facilities from year to year is getting closer. In 2013 the distance between fields and settlements is still around 4 km and continues to get closer until 2018 the distance becomes 1 km from settlements or public facilities.

3.2.5 Existence

Based on the explanation regarding the indicators used to measure existence, it can be said that the existence of swidden agriculture has decreased. This can be seen from the shorter fallow period, the fewer varieties of cultivated commodities, the use of chemical inputs which should not be used by farmers, and the distance of fields that should be far from settlements have become increasingly close to settlements or public facilities.

Land used for shifting cultivation continues to be used for a very long time. Land used as a field, within 2 to 3 years will be abandoned, because the land is already unproductive. When the first land that has been left back is fertile, the land is re-opened into fields, and the second land will be abandoned. The process occurs continuously, so that indirectly, the land used for farming has been mapped. Mapping areas of cultivation for traditional communities can reduce the risk of clearing new land from primary forests.

IV. CONCLUSION

The people of Wawonii Island manage their fields using two agricultural patterns that have been carried out for generations, namely mix cropping and monoculture. This farming system is carried out by farmers with mixed fields called wita laro planted with crops and seasonal crops such as rice, cassava, corn and sweet potatoes. In general, mixed gardens are cultivated for about 3 years and then added (rested) for several years to restore soil fertility. During the harvest period, farmers will move to other fields to manage. However, there are also farmers who will make their fields into plantations planted with annual crops.

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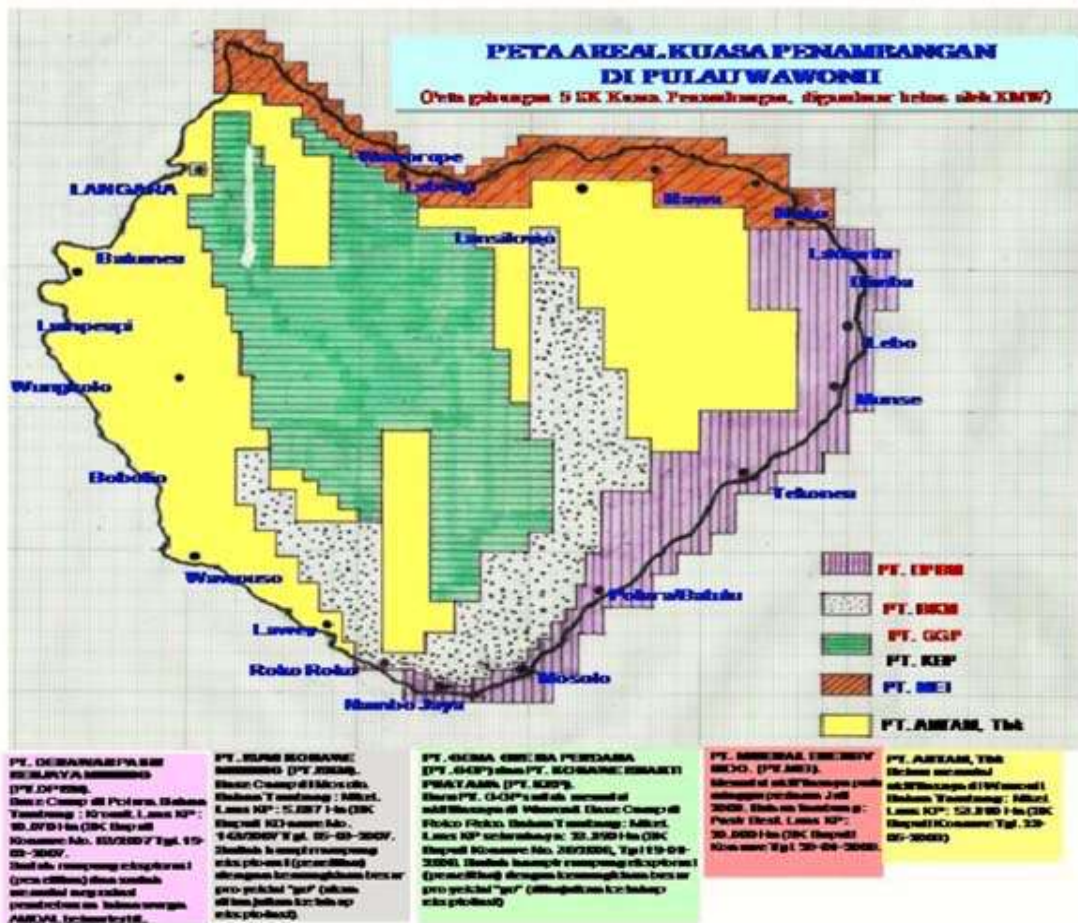
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Appendix A

Picture of wawonii island



Sitti Rosmalah" Existence of Swidden Agriculture in a Small Island" The International Journal of Engineering and Science (IJES), 8.3 (2019): 68-75