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Perception and Adaptation Strategies of Tengger Community to the Land Transfer Function

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ABSTRACT

Perception and adaption strategies for the purposes of land transfer function have been increasingly debated in recent years. In Tengger society, in the region of Tengger Mountains, Indonesia, this issue has been debated over the years. To meet the purpose of this study, simple random sampling technique was utilized. About 10% from of the population in each village, 197 household farmers, was participated in this study. Both quantitative and qualitative studies were utilized in this study. Findings reveals that there has been a change of land transfer from idle land or unproductive land and forest field into farm field or productive land, which causes different farmers' perceptions on the strategy of Tengger society toward the change and that of public against land transfer function of productive or reproductive activity. Tenggerese have a variety of ways or strategies to respond to the occurred changes, both technically and socio-culturally such as: extensification, intensification, non-agriculture, conformity and innovation. © 2012 Friends Science Publishers

Key Words: Adaptation Strategies; Tengger Community; Land Transfer

INTRODUCTION

Background of the problem: Environment problem is not only about air pollution caused by industrial waste, but also an environmental impacts due to the worse impact of population pressure, development of natural resources and energy, the process of economic growth and development of science and technology. Right now community has no mechanism to regulate and control the population growth rate. However, the signs of population density have exceeded the carrying capacity in many places. Attempts to increase the carrying capacity of the environment by increasing the percentage of land used for agriculture are common reactions (Padhan, 2012). Expanding agricultural land is usually done on land suitable for agriculture flat land or sloping ramps, which are relatively fertile. Lowland forests in Java and Bali, for example, had long been gone and turned into agricultural areas, which in turn picked up the slope (Soemarwoto, 1983).

In Tengger Mountainous region, the rapid population growth has made people clear land on steep slopes for cultivation. Clearing land is rapidly increasing along with the entry of agricultural innovation and development or Green Revolution in the 1980's and 1990's in the area. Rapid population growth, the coming of new technologies and agriculture development in the region of Tengger Mountains will surely have an impact on the physical environment, which will further affect the socio-cultural life of society. To deal with these ecosystem changes, Tenggerese have to adopt new strategies. Based on these issues, the study was conducted : (1) to describe and analyze people's perceptions about the change and land use of unused land, about forests, which become agricultural land and about the result of these changes; (2) to describe and analyze the adaptation strategies of men and women to face the change and land uses.

Theoretical framework: Human/culture and environment is an integration of interrelated system and each system influences others. The change of physical environment will directly or indirectly change the socio-cultural community. Socio-cultural change is a variation of the way of life that has been accepted. There is a variety of factors led to social changes that occur in: geography, material culture, the composition of population (increase or decrease the total population), and the diffusion of ideology or a new discovery in the community. Population growth leads to changes in the physical environment. The increasing population growth rate has reduced per capita land holdings. Rules of the obligations become apparent in the limited area, such as lien system, ground rent, the system of inheritance, individual ownership of land which previously did not exist; then they came into existence (Soekanto, 1990). It often occurs for sufficient open land that marginal farmers clear the land for production, so that soil erosion is inevitable (Soemarwoto, 1983).

Before there was a change and land use caused by the application of new technologies in the field of Tengger community, they have cultural values that characterize the cultural values of traditional society. Tenggerese estimated that they would have a variety of ways or strategies to respond to the changes that occur, both technically and

socio-culturally such as: extensification, non-agriculture, conformity, innovation, intensification, or moral economy (Geertz, 1963; Hayami & Kikuchi, 1982; Scott, 1983; Palte, 1984) or a combination of these strategies.

However, with the land-use changes caused by population growth and new technology applications in agriculture, it is estimated that they will live in a culture that values community changes, which become more cultural values of modern society (Azam *et al.*, 2010). Tengger community as a cultural community has its own way to surely perceive, respond to changes that occur in the area to remain in a balanced condition. Perception or view of the changes are the result of observing, assessing the use of the senses and from one individual to another individual or group within one group even among other sexes whom each other is very different. The difference was caused by one's background or community group. A person or a group of people will perceive a positive impact on an object when there is conformity on the espoused values and on the experience and capabilities as well as the received benefits. Next, one's perception will influence attitudes and ultimately will affect the person's actions as responses to the object.

MATERIALS AND METHODS

The study was conducted in Wonokitri Village-Pasuruan District, Argosari Village-Lumajang District and Ngadas Village-Poncokusumo Malang District in East Java, Indonesia. The selection of villages is based on: (1) almost 100% of the population is Tenggerese who live from farming, and still hold strong cultural tradition of Tengger, (2) people in the region, especially the environmental changes and changes in land use (from marginal land & the forest to productive) since the 1980's, went continually until the beginning of 2000s.

Data were collected in various ways: structured interviews, in-depth interviews, observation, and documentation. Simple random sampling technique was used and the number of deliberately is set as much as 10% of the total population in each study village. The total number of respondents in this study was 197 people (Argosari 84 people, Wonokitri 70 people & Ngadas 43 people). The determination of key-informants interviewed in depth was done by purposive way, consisting of a group of bureaucrats, the elderly and the Tengger experts who understand and can explain various issues related to research problems. Documentation techniques were aimed at getting secondary data about the general state of research areas, and other related researches. "Qualitative analysis" as described by Milles and Huberman (1992) was applied.

RESULTS AND DISCUSSION

Plateau is one of the Tengger highlands with the most diverse ecological conditions. In the southern port city of Pasuruan and Probolinggo, Malang in East and Southwest Lumajang City of East Java, Tengger Mountain region is one of the mountain complexes, which consist of 120 mountains, and form the backbone of the East-West Java. Tengger mountainous region is divided into four districts, namely Pasuruan, Probolinggo, Malang and Lumajang. Each district has a capital city in the lowland and extends upward covering a quarter of the mountainous region. Those villages are located in the ± 1.800 meters height with temperature between 8 to 20 degree Celcius. The topography conditions are varied, flat, surge, slopping cliff, hilly, and even mountainous with the slope of 90%. Almost 100% (93% for exact) these villages are slopes or hills. Geographically, these areas are located on 70,54 - 800,13 SL and 1120,5 - 1130,04 WL. The types of the soil are *regosol* and *andosol*. The materials of these types are dust and intermediary volcanic sand so the basic and the permeability nature are very sensitive to erosion. The *andosol* soil has quite high fertility, because it has quite thick *solum*, as much as 1-2 m.

The texture are ranged from dusty to loamy, crumby texture in the upper part and globing in the lower part with the friable consistency. *Andosol* contains organic materials and the nutrients range from medium to high (the Nitrogen are usually high). The permeability is quick and the power to hold water and their susceptibility to erosion is big. Generally, this type of soil could absorb water easily, and the power to hold soil is low, but the sensitivity of erosion is big.

Tengger community has unique characteristics compared to the Java community at large. They live based on the Hindu-Buddhist religion that blends with the traditional customs and beliefs which they still cling to. In general, they live simply and peacefully as farmers who cultivate agricultural land on the slopes of steep mountains with advanced technology to a certain extent.

Community perceptions on change and land transfer function of wasteland, forest land and agricultural land: Perception means: (1) the views or judgment of a person or many people about a thing or an event that is acquired or received, and (2) the process of knowing something to someone through the five senses possessed (Hefner, 1999; Adnyana, 2003). According Thoha (1992), perceptions are intrinsically cognitive processes experienced by every person in the sense of the information about the environment, whether through sight, hearing, living, feeling and smell, and according to Thoha also that perception is a complex and active process. Perception is perceived as a process by which a person organizes and interprets the impressions received through the senses in order to gain an understanding of the environment (Adnyana, 2003).

A change in land use of unused land or that of forest land for agriculture is perceived differently among farmers. According to an informant, it is said there was a change of land use from forest or unused land into productive land but others stated there was no change. There were greater

respondents who said there was a change, namely 76%, than those who stated it does not change (26% of respondents). In general, people who said there was no change were young respondents. From birth to adult they have not experienced or seen any changes in land-use of unused land to agriculture. What is seen on agricultural land or idle land since their birth is seen at this time. Meanwhile, respondents who stated that there have been changes, they experienced the transition moments of the land that took place between the 1980s until 1995-1997. With the growing commercialization of agriculture that leads to greater profits when farmers only grow food crops (corn), many farmers expand agricultural areas by clearing land of unutilized steep.

"Depreciation" is due to the vast forests of Perhutani reforestation program in collaboration with local communities in managing forests. Land use is in accordance with Law no. 41 of 1999 article 29 paragraph 2, "that over the forests existing through changes in forest land allocation are focused to support the interests outside forestry, agriculture." In the study, cultivated crops are cash crops, potatoes. Since 2006 they have been replaced by annual crops, a type of eucalyptus oil. The new regulations are based on the evaluation by Perhutani after the occurrence of planting potatoes, which caused higher erosion.

Planting crops on forest land in the villages are not permanent in nature study. Once the principal crops cultivated by Perhutani parties are mature enough then the contract with local farmers will be terminated. Not all farmers are eligible for reforestation programs. There are certain requirements that must be met, among others: farmers who have small farms or who do not have land want to maintain perennials planted by Perhutani. It is interesting to explore how their perceptions of changes in forest land to agriculture. Most respondents (91%) cited a shift of land from forest land to agriculture. Meanwhile, those who stated that there was no change of land were only 10%. They were mostly from the village in Ngadas. They argued that since the ancient time, forest has remained in that way and has not changed. Another forest then became a National Park. A form of cooperation between the community and Perhutani in Ngadas is working together in the annual planting, so it is naturally if they perceive that there was no change in the function of forest land to agriculture.

The advantages and disadvantages of the change of land use: The study also showed that 26% of respondents who stated there was neither advantage nor disadvantage concerning the change of land use. 62% of respondents said the change of land use gave them advantages. The rest, 12% said it did not give them any advantages. The reason why most respondents said that it gave them advantages for the extension of their farm because it automatically gave them high profit. Those who stated that change of land use did not give them any advantages believed it would create more erosions and landslides. Nevertheless, they still grow paddies on steep land (marginal land) since they have no other choices for living.

The researcher also asked about the erosion happened in their village. More than 50% or exactly 60% of respondents said the rate of erosion was low, while 20% of respondent stated that erosions had happened in their village. It was based on their observation even though it had happened; it did not cause a serious effect. One of the farmers said bad erosion had happened in their village, but the villagers anticipated it by taking care of their land well and doing a religious ritual to ask higher harvest. Taking care of the land was done by creating the plots and planting trees or yearly plants or grass. The reason why 10% of respondents stated that erosion often happened in their village was because landslide often occurred in that village in rainy season, especially on the way to Argosari village. There were five points of landslide, where it has 2 to 4 meters in width. It of course gave a bad influence to transportation for it was difficult to go to or from Argosari. Meanwhile, the people of Ngadas Villages said that it was very dangerous to go to their village in rainy season for the landslide often happened especially around the bridge located about 10 km from Ngadas Village. It was even worse to go to or from Ngadas, because of the narrow road surrounded by steep cliff so that it needs a very good skill for drivers to go there.

In contrast with farmers' perceptions in Tosari, the majority of respondents stated erosion in that region has been serious enough. It was based on the data obtained through the observation. The unknowledgeable people about the erosion happening in their village were caused by two reasons. First, they really did not know. The second one, they knew but they pretended that they did not know.

In 1998, the local government implemented a reforestation program in Wonokitri Village with a theme "Cut one tree, grow two trees." It means when farmers cut one tree, they must grow two trees to change the cut one. This program did not show a satisfying result. Then, in 2004, the local government ran the program "The Project of one million trees" to minimize soil erosion generally in Pasuruan regency and especially in Tosari district as well as Wonokriti Village. The farmers who cut one tree in their land were obliged to plant ten trees.

According to the respondents, high rainfall and huts are the causes of the erosion. They said rain swept soil on top layer, while the hut could not keep the water so that it caused the erosion. Another factor that caused the erosion was high intensification of plants without good terracing technique. Respondents view that high plant intensification was caused by the desire of the farmers to get bigger and better harvest and high profit. "Terracing" technique was not appropriately applied according to the procedure so it caused the erosion. "Sabuk Gunung" technique would be very good if it was implemented but they ignored good "terracing" techniques due to economy consideration. Long time ago the farmers fertilized the soil by using *Bero* technique, but nowadays, because of the limited lands, they used fertilizer with higher doses every day.

There are some factors causing the change of land use according to an informant. They are: (1) the limited land that farmers have (2) the desire of farmers to improve the productivity of crops and income due to the development of technology in agriculture.

Adaptation strategy of tengger community to the change of land use: Adaptation strategy of Tengger community to the change of land use was reflected through their attitude to the physical and socio-cultural environment and its changes. The combinations of conformity, innovation, extension, intensification and non-farm strategy were implemented by Tengger community to face the changes happened in their region. In conformity, although there was a change in exploring natural resources, the people, both men and women, still adopted old pattern and culture in cultivating the lands. They farmed and did rituals based on their religions and local customs since it has been their tradition. To increase their income, they soon adopted the new techniques (innovation) to tackle the problem of the limited lands. They extended their farm by modifying non-productive lands and forest which had slope more than 45 degrees to be a farm (extension) and planted their farm intensively (intensification). Open-relationship among the society made them look for other jobs such as trade and service (non-agriculture).

Adaptation strategy to physical environment: Farming on steep slopes was an adaptation strategy on physical environment done by Tengger community. The limited lands and rapidly growth of people made farmers use non-productive lands on both steep slopes and forest. Farming on steep slopes had been popular in the past as "indigenous knowledge" long time ago before Tengger community knew an innovation in agriculture and when the growth of the people was still low, the strategy used to take care of the fertility of lands was shifting cultivation. Nowadays, because of the people growth, they farm on steep slope and they no longer implement shifting cultivation. Therefore, there is no space that not used by farmers. As Mr. T mentioned:

"All lands in this village can be planted if they are not difficult".

If on the road side or under the bridge there's a vacant field, it will be used to plant a commercial plan (like potatoes). As Mr A and Mr S mentioned that:

"Since the first time, we, Tenggerese, have already planted vegetables on the step slopes but it was not as many as now. Because of the population growth, then we make use of more unoccupied land" (Mr. A).

"The opening of vacant argicultural land on slopes was driven by the easiness of productivity and benefit from vegetable crops, which is much higher than the corn crop" (Mr. S).

What the farmers had done was actually contra-productive cultivations. In ecology term, it was called mal-adaptation leading to a bad attitude that gives bad effect on environment. If they did not do that, they could not survive due to the lack of job vacancies and skills. Beside that, the adaptation strategy in facing physical environment was shown by their living area in which the houses were built in almost no spaces from one house to another due to the lack of flat lands.

Adaptation strategy on social-culture changes: In many social-culture changes happened in Indonesia in cities and villages, Tengger community kept applying their local custom and religion. It was indicated by the harmony of their life in the society. Mutual aid values were still implemented in the form of both economy and social activities (Yuliati, 2010).

In productive activities, the change of agriculture system from traditional food crops system to commercial crops needs intensive care required by the male and female farmers who work harder in order to get big harvest. Started from 6 – 7 AM they go to land and at 4 PM they go back home. To avoid the shortage of labor on the wide land farm, the intensive of land is increased and the labour is needed. For a farmer who lacks of labour, it can be solved by *sambatan* or helping each others. Mutual aid values implemented by Tengger community were based on their local custom and religions. They did their tradition well. Another model of adaptation strategy in economy was job diversification. Job diversification done by Tengger community was related to jobs such as trade, transportations (hiring jeeps or horses to the tourists) and reconstructions.

In social activities, like wedding, funeral, and other traditional or religious ceremonies, they do it cooperatively by helping each others (*gotong-royong*). By applying it in those activities, the work load and the cost incured will be lighter due to work share.

Nevertheless, there was a social attitude which converts to commercial activity such as road work far from the housings. It does not mean the people no longer applied mutual aid "*gotong-royong*" values, but it was because road work needed a skillful person to do it and no villagers have the skill.

CONCLUSION AND SUGGESTIONS

Conclusion: There were changes of land use from non-productive lands and forest to productive land (farm). Most respondents had known that this has happened in their villages. The impact of the change of land use was erosion. It was perceived positively by most of respondents both men and women. It means the erosion on their lands was considered low since it did not give a bad effect. That is why the change of land use keeps going on. Strategies done by Tengger community in facing this were concluded as following: extensification, intensification, conformity and non-agriculture.

Suggestions: To decrease the serious degradation of environment, the socialization of the research should be done and increased through trainings/counseling about land conservation to both male and female farmers since

villagers do not understood well about how serious degradation of environment is. So far, the training/counseling done to socialize the research was less. The monitoring and evaluation should be continuously done during trainings/counseling in order that researchers can do the research suitably with their goals.

To anticipate the continuation of limited lands causing extension of agriculture lands, it is necessary to empower human resources to increase the productivity and home income through home industry trainings to manage the harvest especially potatoes.

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