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THE LIFE PATTERNS OF SINARRESMI COMMUNITY IN ADJUSTING TO ENVIRONMENT OF LANDSLIDE PRONE

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Abstract

Local wisdom is a utilization of environment to fulfil the needs without damaging environment. The aim of research is to analyze the shape of house, analyze the pattern of farming and pattern of community life in Sinarresmi community. Physical condition of indigenous Sinarresmi has high rainfall, slopes of 15 - > 40 %, soil texture that slightly rough – rough with slightly clay. This physical condition shapes the area to be vulnerable to disaster. Sources of agricultural irrigation, house and costumery property materials by utilizing opening forest. The shape of stilt houses is a characteristic of Sinarresmi indegeneous community, because the shape and material has elasticity against earthquake and landslides. Rice seeds use seeds developed by the indigenous community, because it has resistance to pests, so they always conservate by replanting the seeds. The sustainability of Sinarresmi indegeneous community life is greatly influenced by the existence of forest areas. Therefore, the community is very caring and maintain it by applying values, norms, culture and behavior in their lives. By applying local wisdom, the Sirnaresmi indigenous community conserves the environment in disaster-prone region.

Keywords: *Local wisdom; Stilt house; Seed; Conservation; Prone region.*

Introduction

Community development is done by develop the ability of community to fulfil their needs. In order to fulfil the needs, community should consider the preservation of environment and needs fulfilment. People should do their activity and farming to fulfil their needs by opening a new land which causing the change in ecosystem [1]. So that, in the activity there are value, norm, and tradition in cultivating land. Local wisdom is an arrangement of life value that unites in shape of religion, culture, and tradition. People adapt to their environment by developing a wisdom in the shape of knowledge or idea, tools, that combined with tradition norm, cultural value, activity of environmental utilization in order to fulfil their needs [2]. Shape of adaptation process to get economic benefit by making changes to their lands or house buildings [3]. While the statement that local wisdom is the implementation of cultural values adopted by a community in using natural resources in order to provide benefits for lives. The integration of religion and culture to build the discourse of social identity [4, 5].

In the effort of fulfil the needs, people are utilizing the development of knowledge and technology in cultivating land, although it would decrease the value and norm in cultivating land and have impact on environmental preservation. Science and technology on modern human

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create dualism result which complete opposite. Those results are as proper instrument to fulfill increasingly complex of human need and as nature exploitation instrument with dehumanization as result and the trap of historical rationality [6]. Globalization that developed in population were spread and influence them in cultivating land. Land cultivating would have impact on environment and breaking the traditional wisdom and knowledge [7].

Development as an effort to develop economic activity of community, so that they would have the ability to survive without disrupting environmental preservation. Human beings live in a certain area to meet their needs. In order to meet their needs, human beings have to utilize the land, causing disturbance to the stability and equilibrium of the environment [8]. This increasing of needs was trigger by population growth with high intensity. Rapid population growth in many developing countries has raised concerns regarding food security and household welfare [9, 10]. With high intensity, population is finding the income outside of farming. Find evidence that households in more densely populated areas increasingly rely on off-farm income to earn a living, but there appears to be a rural population density threshold beyond which households can no longer increase off-farm income per capita [11]. The policy of food security not only to create the food sufficiency with development economic with rural and agriculture are the basis, but also the sufficiency of food for poor society. In order to create food reserve of society, lumbung desa is important to be improved [12, 13]. Meanwhile [14] stated that village is a producer of the main part of farming outcome and food materials but can not yet fulfil their own needs of food and economic activity independently. Food is the basic needs of human to live and do the daily activities and rice is the primary food of basic human need, so the availability of rice for the community must always be guaranteed [15-17].

The increasing of food needs, but the area of land is still the same, so the availability of foods is decreased. Food insecurity is influencing health and welfare troughout the life [18]. The main factor of food security is food availability factor and the causes of kerawanan pangan are socio-economic factor, poverty [19, 20]. The demand of rice is bigger, but the farmer in village was not getting the benefits. Their potential to reap the benefits of increased market opportunities, increased incomes and food security is curtailed by various factors and in village, farming techniques that used was not guarantee the food security yet [21, 22]. Socio-economic of community in village that depends on farming are difficult to develop, because the area of farming was not wide. Most of the population relies on small-scale farming for its livelihood [23].

Community in this village is still holding on to the tradition because they assume that human should be adapting with nature condition, not exploitation. Community in Sinarresmi traditional village is located in the area that surrounded with mountain with steep slope. Landslide can be identified by the interaction between factors of climate, topography, vegetation, soil, and human. Land condition without vegetation on the steep slope was caused by human action [24]. Rainfall-induced landslides can happen within minutes, the wet conditions that precede them can take several hours or days to develop [25]. Beside landslide, this traditional village is ghosted by the earthquake, because the location of this village is in the north of Indo-Australia plate. Therefore, the activity of traditional village community in cultivating farming land did the adaptation with condition that vulnerable to disaster. Activity of community in farming and building house was adapted with nature.

To fulfill the needs of food, community in cultivating land are adapted with nature condition, but the productivity still fulfill their needs. That food security essentially is to create a situation that guarantee the food availability [26] The use of land management practices have a positive relationship with food security, and the more farmers engaged in the practices, the more food secured they were [27]. Household food security is vital to measure of a country's advancement and well-being [28] If community has less of food security, then food insecurity will emerge. Food insecurity is defined as lack of access to safe and sufficient food by all people at all times or uncertainty about acquiring acceptable [29]. Food insecurity in

globalization era, modernization that occur in various countries, including Indonesia was not applicable for Sinarresmi traditional village. Sinarresmi traditional village has a system of their own value and tradition with an assumption in fulfilling their life should be adapt with nature condition, such as; cultivating land and building house.

Because of Sinarresmi traditional village has a system of their own value, norm, and tradition, therefore this research was aim to:

- analyzing the shape of houses of the Sinarresmi traditional village community adjusting to natural conditions;
- Analyzing the agricultural patterns of the traditional Kampung Sinarresmi community in maintaining food insecurity;
- Analyzing the life pattern (gotongroyong) of Indigenous Sinarresmi community in adapting to the environment.

Methodology

Descriptive method with a qualitative approach is used for social and cultural observations of the community to answer the research objectives [30]. According to [31] that ethnographic designs are qualitative research procedures for describing, analyzing, and interpreting a culture-sharing group's shared patterns of behavior, beliefs, and language that develop over time. This method were used to describe the facts from community and village leader with the reason that appropriate historically. The approach that conducted to help researcher to explore and did an intellectual reflection about historical certainty that used to develop identity of community in *indigenous* in the field of building house, farming, and environmental preservation.

Data collection is carried out with literature studies and data collection by researchers. Research instruments are humans and researchers as instruments and analyze them. To obtain data, it is carried out in 3 stages:

- The first stage: interviews and discussions about the shape of the house and agriculture, their functions and benefits
- Second step: observe and follow the activities of making a house or costumery property shape (leuit), rice field and planting pattern.
- Third stage: an analysis of the results of interviews with the reality in the field was conducted.

Results

Sinarresmi Indigenous Community

Community groups that still practice and carry out their ancestral customary traditions in the Halimun-Salak area are known as the Banten Kidul Indigenous community. The Sinarresmi region has an area of 4,917 hectares, with a forest area of 2,950 hectares and agriculture area of 275 hectares. Patterns of daily life follow the habits of the ancestors from generation to generation inherited from the community associated with patterns of life in the making of houses, management of agricultural patterns, forests that refer to values, beliefs and culture.

Life pattern of *indigenous* is follow the tradition of ancestor that known as *sunda wiwitan*, especially in pattern of farming and house building. One of community that still hold on tight to the rules of ancestors is Sinarresmi indigenous. The pattern of their life is colored by custom habits, especially wisdom in attitude to nature and envionmental preservation [32].

Kehutanan

The vegetation diversity on forest land affects the sustainability of the Sinarresmi indigenous community. The types of trees that are protected are ki riung anak (*Castanopsis acuminatissima*), parengpeng pairs (*Quercus oidocarpa*), saketi (*Eurya acuminata*), rasamala

(*Altingia excelsa*), jamuju (*Quercus oidocarpa*), jamuju (*Dacrycarpus imbricatus*), puspa (*Schima wallichii*), and podocarpus (*Podocarpus macrophyllus*)

blumei) and ki putri (*P. neriifolius*), manglid (*sp. Manglietia glauca* Bl), ulin (*sp. Eusideroxylon zwageri*)**.** mahoni *(sp. Swietinia mahagoni)*. Hutan yang dilindungi oleh masyarakat sebagai habitat berbagai jenis khewan, seperti; macan tutul (*Panthera pardus melas*), owa (*Hylobates moloch*), surili *(Presbytis aygula)*, lutung budeng *(Trachypithecus auratus)*, dan ajag *(Cuon alpinus)*. Sedangkan jenis burung seperti; jenis elang *(Nisaetus bartelsi)*, luntur *(Apalharpactes reinwardtii)*, ciung-mungkal jawa *(Cochoa azurea)*, celepuk *(Otus angelinae)*, dan gelatik jawa *(Lonchura oryzivora)*.

This dependence affects indigenous community to maintain and protect forests, because in these forests flowing water sources are used as a source of irrigation for agriculture. Forest land that is managed by indigenous people for generations is divided into three namely: i. Prohibited forest (*leuweung titipan*), ii. Covery forest (*leuweung tutupan*) and iii. Openings forest (*leuweung bukaan*).

Prohibited forest is maintained and protected by indigenous peoples. Covery forest is a buffer forest, people are prohibited from using wood, but can take non-timber forest products, such as fruits. Forest openings called talun is land that can be used for human activities, such as rice fields, farming, gardening, building houses, making roads, places of worship, funerals, grazing [33].

Shapes of House and Customary Property (Leuit)

The house as a rest place for a family was built with using the exist resources in the Sinarresmi indigenous region. Every family in the community should have garden to be planting with hardcrops and vegetables. Hardcrops planted are Albasia (sp. *Albizia chinensis*), puspa (sp. *Schima wallichii*), manglid (sp. *Manglietia glauca Bl*), ulin (sp. *Eusideroxylon zwageri*). mahogany (sp. *Swietinia mahagoni*), jackfruit (sp. *Artocarpus heterophyllus*), durian (sp. *Durio zibethinus*), bamboo (sp. *Dinochloa scandens*), coconut (sp. *Cocos nucifera L*). If the family will use trees to build a house, then the family must replant. Even though they don't have trees in the garden, they buy from the community. Tree planting is carried out in each of its gardens in the shape of talun, which is a garden that is used by large trees and secondary crops.

The house shaped must be a stilt house with a roof shapeing an angle of 30-45°. The stilt house has a pit, which serves to raise chickens (sp. *Gallus gallus domesticus*), ducks (sp. *Anatidae*), ducks (sp. *Cairina moschata*), sheep (sp. *Ovis aries*), while golodog (*terrace*) to receive guests. The roof of the house is shaped of bamboo as a retaining roof. The roof of the house is shaped from palm fiber or coconut leaves. Besides the house, each family must have a rice storage area (sp. *Oryza sativa*). Costumery property shape (leuit) as a place to store rice is stored and taken if needed for daily needs. Costumery property shape with ingredients derived from plants owned by each family. In the house built goah near the kitchen premises. Goah is a food storage area, such as rice, banana, sweet potato, or vegetables. The construction of houses for families was carried out with mutual assistance from Sinarresmi indigenous communities voluntarily. The house and costumery property shape are shown in figures 1 and 2.

The shape of house which is made of wood, bamboo (*sp. Bambusa arundinacea***,** *Bambusa balcooa Roxb*), palm fiber and coconut leaves, it turns out that the house can last around 10 years and has resistance to earthquake tremors. Indigenous Sinarresmi goes to the beach about 23km, so Indigenous Sinarresmi is often hit by earthquakes, because it is close to the Ocean Indo- Australia plate. If an earthquake occurs, the house will only sway and cause no cracks.

Indigenous Sinarresmi region has an average rainfall of 2,120-3,250mm/year, the slope of the settlement is around 15-20%, rice fields around 15-40%, dry fields 30-40% and forests above 30%. Sinarresmi has a kind of latosol soil and andosol, with a depth of 1-2 meters, a rather coarse soil texture with a small clay content. With this physical condition, Indigenous Sinarresmi region which is prone to earthquakes and landslides.

Fig. 1. Stilt House shape of Sinarresmi Indigenous (survey)

Fig. 2. Customary Property shape (survey)

It means that shape of houses on stilts with materials from wood, bamboo and palm fiber is a shape of adjustment of the Indigenous community to physical conditions prone to disasters, because Indigenous Sinarresmi region are often hit by earthquakes and landslides. This situation is a reference for Indigenous to direct his community by not damaging the environment. Physical environment, so that community must adjust to their environment. Adjustment to this pattern of life ultimately shapes local wisdom, where community's lives are based on prevailing norms and customs. These values and norms are implemented in the shape of houses. Because the shape of houses on stilts made of wood has elasticity to vibrations, so that stilt houses are safer compared to walls.

Agriculture (Rice fields)

For fulfiling the food needs of the Indigenous community must plant rice. This rice is planted at the beginning of the rainy season around October-November, while the harvest is carried out at the beginning of the dry season around March-April. Rice planted by the community takes about 5 months, called big pare. The types of rice (sp. *Oryza sativa L*) planted are typical seeds of indigenous namely, cere gelas, kawat, layung, mariley, seghi, wesi. types of glutinous rice, such as cikur, srimahi, lepo, gantang hideung. Types of glutinous rice such as cikur, srimahi, lepo, black bushel. Rice planting starts from plowing, leveling the land (angler), planting rice (tandur), picking up weeds (ngarambet), harvesting (dibuat) is done in mutual cooperation. Harvesting is used knives (etem) and rice is used as rice to be done by pounding, because using a machine is prohibited. Paddy fields are shown in Figure 3.

The rice seeds planted by the community are different, depending on the seeds that are in the community. Rice is planted on paddy fields and huma (moor). In this paddy field can develop eels (sp. *Monopterus albus*), tutut (sp. *Bellamiya Javanica*), impun (sp. *Minnow*), paray (sp. *Barbodes binotatus*), catfish (sp. *Clarias*), bogo (sp. *Channa striata*), beunteur (sp. *Puntius binotatus*), paddy crab (sp. *Parathelphusa convexa*), worms (sp. *Lumbricus*), microorganisms (sp. *Micro-organizati*), whereas plant genjer (sp. *Limnocharis flava*), water hyacinth (sp. *Monochoria vaginalis*). Rice seeds that are planted take 5 months from planting to harvest but have resistance to pests. Therefore, this rice seed is maintained and maintained. On the paddy fields, water hyacinth plants are taken by farmers to be used as vegetables for daily food. For fulfiling vegetable needs of the community to plant in the home yard is shown in figure 4.

The yield of a family that has a narrow area of land is insufficient to 4 stakes (240kg of rice), so the family will lack. Therefore, the family is involved in harvesting from families who have large tracts of land. Family members who take part in harvesting for others, if they get 40

pocong harvests, they will get part 1 pocong. From the harvest, each family is partly handed over to the custom to be stored in costumery property shape (leuit) Gede (customary property). This rice is used if someone experiences difficulties, famine or when there is a disaster.

Fig. 3. Rice fields (sawah) on the slopes (survey).

Fig. 4. Vegetable plants in the yard (survey)

Secondary Crops and Fishery

At the beginning of the dry season around April-May, after the rice harvest season, the community can seasonally crop or fishery species. The land that was originally used in rice fields, this season was done by planting annual crops, such as; cayenne pepper (sp.*Capsicum frutescens L*), shallots (sp.*Allium ascalonicum*), long beans (sp. *Vigna sinensis*), beans (sp. *Phaseolus vulgaris*), cucumbers (sp. *Cucumis sativus*), Pumpkin Siam (sp. *Sechium edule*) , Eggplant (sp. *Solanum melongena*), Tomato (sp. *Solanum lycopersicum*). Annual plants such as enau (sp. *Arenga pinnata*), coconut (sp. *Cocos nucifera*), banana (sp. *Musa acuminate*), durian (sp. *Durio zibethinus*), mango (sp. *Mangifera indica*), water guava (sp. *Syzygium aqueum*). This vegetable plant is used as a side dish to eat everyday. Vegetable weaving is not only done on talun land but is planted in the yard or in embankment of the rice field.

Fisheries are carried out on paddy fields if the paddy fields have been harvested. Harvested rice fields are plowed and straw is burned, and straw bases are located underground. After plowing the paddy field, it is filled with water with a thickness of 20cm and the seeds of carp (sp. *Cyprinus carpio*) and tilapia (sp. *Oreochromis niloticus*) are spread. Fish harvesting is done after 4 months of age. The harvest can be sold for the benefit of side dishes everyday or to finance the children's schooling.

Discussion

The characteristics of the Sinarresmi indigenous house must be in the shape of a stage because the location of indigenous is located in the Halimun-Salak mountains area. This area is a mountainous region, so it has steep - very steep slopes with latosol and andosol soils with a rough texture, high rainfall above 200mm/year. While in the south there is the Indo-Australian Ocean plate which is pounding the Eurasian continental plate. Physical conditions affect the stability of land in Sinarresmi indigenous region. With this physical condition, there is great potential for disasters, such as earthquakes and landslides.

Forests have diversity of vegetation and as a place for animal life. In the forest area the water source is used by the Kasepuhan Sinarresmi community, so that the Kasepuhan community in Sinarresmi strongly prohibits disturbing the forest area. As a shape of adaptation in the ancestor of Sinarresmi Indigenous with the current custom leader that is; Abah Asep is cultivating a conviction and belief that the shape of house in this area should be the house on

stilts. Materials that used to build house, costumery property shape (leuit) are taken from their own land and if they have to chop down the trees, then they have to plant it back.

The fulfilling basic food needs of the indigenous Sinarresmi community planting rice both planting in the fields as well as huma. Rice planting is only done once a year, planting pattern in indigenous of Sinarresmi is different from other communities outside the indigenous area with 2-3 planting times. Rice seeds planted are special seeds with a harvest period of 5 months, known as bitter seeds. This big bitter seed has durability, because it can be stored on costumery property shape (leuit) with a lifespan up to 40 years. Rice planting once a year, assuming that the soil needs rest and the soil becomes fertile again and eliminates rat pests (sp. *Rattus argentiventer*). The rice seeds used are maintained and must be planted on community land. Rice is not fertilized in the fields or huma, such as pesticides or urea (chemicals). Planted seeds are seeds that are resistant to pests, so they always guard by replanting the seeds.

Fertilization is done naturally by burning straw and turning the soil, so that the straw and burning straw will rot and become fertilizer. the effect of chemicals (pesticides, food components, industrial waste water) on microbial community in different environments [34]. The chemical fertilizer is not used by the Indigenous community, because of the paddy and huma ecosystem. The disruption of fertilizer eliminates and kills life in rice fields. Animals and plants that breed in paddy fields are a daily food for the community and chemical fertilizer will kill the animals and plants.

The rice yields obtained by the indigenous Sinarresmi community are different, but they are prohibited from planting more than once, because it will disrupt the crop cycle. To overcome the community whose yields are a little, less people are allowed to help more people by participating in the harvest by dividing every 40 pocong to get 1 pocong. With this pattern of life in farming, the Indigenous Sinarremsmi community has never experienced food insecurity and famine. In paddy fields and huma after harvesting, the community grows vegetables or raises fish for 6 months. The results of vegetables and fish are used as side dishes for daily meals or sold to fulfill family needs. In addition to vegetables that can be sold are also garden products (talun) such as bananas, jackfruit, palm sugar, durian, coconut, mango and guava water are sold to fulfil their needs.

The life of the indigenous Sinarresmi community has the characteristics according to the needs in an activity namely, cooperation. Mutual cooperation in farming, making houses, leuit (costumery property shape), helping each other make people peaceful, comfortable, calmly and safely.

The sustainability of Kasepuhan Sinarresmi community life is greatly influenced by the existence of forest areas. Therefore, the community is very caring and maintains it by applying values, norms, culture, and behavior in their lives. By applying local wisdom, the Sirnaresmi indigenous community conserves the environment in disaster-prone region.

Conclusions

The indigenous Sinarresmi community is located around the mountains with steep - very steep slopes, latosol and andosol soils, with rather rough texture, high rainfall and tectonic plate collisions. This condition makes Sinarresmi region has a great potential for tremors due to earthquake and landslides. The shape of community adaptation to the environment, the house building, costumery property shape (leuit) must be in the shape of a stage. The shape of community adaptation to the environment, the house building, leuit must be in the shape of a stage. Because buildings that are shapeed from wood have elasticity against to tremors due to earthquake and landslides.

The agriculture pattern of rice field and vegetables is only done once a year in rotation, using natural fertilizers and systems, so that rice plants are resistant to pests. Daily life is obtained from rice fields, huma and gardens. In agriculture using natural fertilizers, so that they

are resistant to pests as well as yields from rice fields other than rice can provide them with side food.

Community life always works together (gotong royong) in carrying out activities, building houses, costumery property shape (leuit), farming, belief, confidence, and traditional celebrations. The community upholds the values and norms of social culture (adat) in the life together that shape the Indigenous Sinarresmi community which has a high level of food security. Leuit owned by each family and big owned by Indigenous is a means to help each other in togetherness in life.

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