

# Education Model for Environmental Living Environment Based on Local Genius for Elementary School Students Who Lived in Peatland

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## ABSTRACT

The lack of studies on children's education in peatlands in Kalimantan, Indonesia, inspires researchers to examine in depth about the various local wisdoms that must be internalized to future generations. The purpose of this study is to understand the various local wisdoms that exist in peatland communities, which can be transmitted and preserved through education to elementary school age children. The method used in this research is qualitative research, with a grounded research approach. The study was conducted in the Kalampangan sub-district, Sabangau sub-district, Palangka Raya City in January-August 2019. Data were collected through in-depth interviews and participatory observation. The validity of the data is obtained by prolonging the stay at the study site, using data triangulation, both checks, checks, and crosses. Data were analyzed using four steps ranging from data collection, data reduction, data classification, and drawing conclusions. The results of the data analysis show that: 1) a lot of local parish can be internalized to elementary school-age children in preserving peatlands, such as not burning peat, not hurting peat soil, using peat wisely, and keeping peat friendly, 2) local wisdom values that can be learned by elementary school children are, the value of independence living in peat areas is, the value of creativity, the value of love for the environment, cultural values, the value of togetherness or values of mutual cooperation, the values never give up with the state of the natural environment, and the value of independence.

**Keywords:** Peat, Local wisdom, Value education, Nature preservation.

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### Highlights of this paper

- The lack of studies on children's education in peatlands in Kalimantan, Indonesia, inspires researchers to examine in depth about the various local wisdoms that must be internalized to future generations.
- The purpose of this study is to understand the various local wisdoms that exist in peatland communities, which can be transmitted and preserved through education to elementary school age children.

## 1. INTRODUCTION

A deep problem relates to the education of local wisdom in the people living on peatlands in Central Kalimantan, namely the absence of local content in schools that specifically teaches how to be friendly to the peat environment, the environment where children live everyday. On the one hand, the environment where children live in peat areas, but on the other hand, there is no media or vehicle that can be used to increase children's literacy in relation to their environment.

This study is specifically intended to examine, various local wisdom can be internalized to children of primary school age related to the education of the value of peat environment preservation. There is a lot of local wisdom that can be explored and applied to children in order to introduce a variety of values that are still relevant today, especially in order to realize friendly management of peat areas.

The lack of understanding of local wisdom related to peatland management, causes difficulties for children in adapting to their environment, which in the end children are reluctant to live in peat areas, and tend to leave their area after completing their education. The impact continued, the peat area was abandoned by competent and highly educated children. With this research children are expected to have a good understanding of the peat environment, so they have a strong determination to be friendly to peat, and always want to empower peat resources in order to improve the welfare of the community.

Many experts who have examined the high condition of the community in peatlands, among others [Prayoga \(2017\)](#) concluded that, "Local wisdom that lives and develops in the community is still not used as a basis for strategy in policy making, so that technological innovation in peatlands is not acceptable community because it is not in accordance with existing local practices. "

Regarding the curriculum in schools, [Alpusari \(2013\)](#) study concluded that, "Analysis of school curricula on environmental education can be integrated into five groups of subjects, namely religious and noble subjects, civics and personality subject groups, science and technology subjects groups. , aesthetic subjects and physical, sports and health subjects "([Alpusari, 2013](#)).

During this time, "The existing peatland management practices were passed down to the next generation through oral traditions. However, lately, tradition has been passed down through various media including the internet which can be accessed by all levels of society, in the form of writings, journals, artikel, books, papers, pictures, posters and others "([Prayoga, 2017](#)).

The writing of this paper aims to document the local wisdom of Central Kalimantan farmers, especially those in the Kalamangan Village, Sabangau District, Palangka Raya City, Central Kalimantan, Indonesia in order to manage environmentally friendly peatlands using a variety of local wisdom. This is intended so that in the future all generations can manage peatlands well and in accordance with research-based science combined with local skills owned by farmers. In other words, the purpose of this paper is that cultural heritage in the form of local wisdom does not disappear with the change of generations, but can be known by many parties and can be taken into consideration in taking a policy related to peatland projects.

## **2. THEORETICAL BASIS**

Peatland management is not as easy as imagined. In its journey various problems were encountered in utilizing peatlands. This happens because peatlands have characteristics that are far different from rice fields and dry fields that are commonly found in Indonesia. Peatland management requires a long time to be able to change peatlands into productive land and suitable for agricultural activities. Needs various improvements and treatments so that vegetables, annual crops, annual plants, and fruit can flourish in the peatland area. Appropriate handling is needed because peatlands also function as an environmental buffer (Prayoga, 2017).

Based on the interpretation of satellite imagery, Indonesia has the largest tropical peatlands in the world at around 21 million ha, spread mainly in Sumatra, Kalimantan and Papua (Wahyunto *et al.*, 2009). "Although physically it looks almost the same, but actually peat has very high variability in terms of thickness, maturity and fertility. Therefore, not all peatlands are suitable for agriculture due to various physical and chemical constraints. Out of 18.3 million ha of peatlands, only around 6 million ha are eligible for agriculture. However, due to limited productive land, finally peat land which was once considered as waste land and not feasible, is also used for agricultural extensification, especially for oil palm and rubber plantations "(Subiksa, 2007).

Peat swamp forest was originally a source of livelihood, a source of arable land and has a function of protection and climate functions that can be used by forest village communities directly or indirectly. However, the existence of oil palm plantations in peat swamp forests has caused significant changes in the biophysical environment that have an impact on social change (Nurhidayati, 2016).

Under natural conditions, "Peat forest ecosystems are stable ecosystems. The thickness can increase because the deposition process of organic matter is greater than the decomposition process. However, if natural conditions are disturbed, the opposite occurs, land is degraded, so it is said that peatlands are fragile ecosystems. Peatlands are also marginal land because inherently (sifat asli) the land reacts sour, nutrient poor and minerals needed by plants. Therefore, land use must begin with soil enhancers and the addition of production inputs so that plants grow optimally" (Subiksa, 2007).

"Peatlands formed from the accumulation of organic matter are classified as marginal and fragile ecosystems. Utilization of this land for agriculture will change the balance of GHG emissions in a negative direction, potentially resulting in land damage. Drivers of damage to agricultural land on peatlands include land fires, drainage canals and land management. Land fires can occur during peat forest clearance, land preparation before the planting season or the extreme dry season. Fires that occur during forest clearing and land preparation often occur because of deliberate action, whereas fires when plants are planted can occur because of a long drought or accident. The case in West Kalimantan, based on interviews with farmers, burning land before the planting season could use up 3-5 cm of the peat layer. This is done by farmers to get ash which improves pH and saturation of the soil base "(Subiksa, 2007).

Peatlands are a type of wetland ecosystem (Mitsch and Gosselink, 2000). The area of peatlands in Indonesia is estimated to be around 14.95 million hectares spread across the islands of Sumatra, Kalimantan and Papua and a small portion in Sulawesi (Wahyunto *et al.*, 2009).

According to Phillips (1998) "The existence of forest and peatland ecosystems is currently increasingly threatened, because the status of its existence is under extreme pressure from various activities and activities that are not environmentally friendly." Data taken by Wahyunto *et al.* (2009) show, "Of the approximately 14.95 million hectares of peatlands it is estimated that 6.66 million hectares or 44.6% have been degraded. Peatland degradation can be caused by: 1) faulty water systems being the main cause of peatland degradation, 2) fires and mining activities "(Masganti *et al.*, 2014).

According to [Masganti et al. \(2014\)](#) "Peat fires will contribute to global climate change as a result of increased greenhouse gas emissions released into the air." Whereas according to [Whelan \(1995\)](#) "Its main function is as a biodiversity resource and place carbon storage in nature." Furthermore, [Agus and Subiksa \(2008\)](#) explained, "Forest and peatland fires often occur during land clearing, which are the highest contributors to greenhouse gas emissions and often corner Indonesia in international forums on the environment and climate change. Burning accelerates the process of peat subsidence and land degradation, whereas the speed of peat formation for primary forests is only 3 mm / year "[\(Darmawan et al., 2016\)](#).

Peat swamp forests are known as fragile or vulnerable natural resources with changes in characteristics that are not environmentally friendly. Therefore, specific management is needed so that there is no change in characteristics that cause its role to decrease, especially if there is very severe damage (fire). The results of the evaluation of the 5 dimensions of the index and the status of sustainability of peat swamp forest management to fire have caused the ecological and social dimensions to be less sustainable. The level of sustainability of the two dimensions is more due to the low level of knowledge of the roles (functions and benefits) of the peat swamp forest ecosystem because it still uses the burning method when clearing land because it is considered an inexpensive and easy way.

In its development, "To achieve the government's goals in food self-sufficiency the government must also play an active role in helping farmers develop peatlands on a large scale. Financial and institutional assistance must be provided so that farmers have no difficulty before planting or after harvesting. In the future the government is expected to also actively involve farmers in the peat program. The government is not here to change the system but as a facilitator who assists the community by utilizing existing local wisdom without changing local practices of farmers in utilizing peatlands "[\(Prayoga, 2017\)](#).

In addition, "Weak law enforcement by the relevant authorities has resulted in the freedom of the public and companies to conduct land conversion by burning. To ensure the continued role of peat swamp forest ecosystems, relevant stakeholders need to conduct special policy interventions to reduce fires by applying technological innovations or alternative land clearing programs without burning, subsidizing or funding environmentally friendly agricultural / plantation technology, and strengthening law enforcement against land burners . The absence of an institution that functions to manage integrated area management causes considerable uncertainty regarding its future. For this reason, integrated efforts and strong political will by stakeholders are needed to manage the existence of the region. "[\(Darmawan et al., 2016\)](#).

It was also explained that, "Reduction of forest area that is not balanced with reforestation conducted spur climate change, because agents to absorb CO<sub>2</sub> are increasingly limited. One way that is being developed to overcome this problem is to study and calculate how much carbon content can be stored by existing green areas, to be used as a reference to calculate how much land should be greened. Several studies have shown that various ecosystems in Indonesia have high potential as carbon storage. To support the implementation of the said program, environmental education is very important, both formally and informally given to students and the wider community "[\(Zulkifl, 2010\)](#).

According to [Sugihen \(1996\)](#) "Social change refers to a process of transition from a certain stage of social conditions to the next stage of social conditions within a period of time. So with the occurrence of peatland land use change, it is assumed that there has been a process of transition from the stage of certain social conditions of the community to the next stage of social conditions of the community within a period of time. Social conditions due to social change can be influenced by internal force conditions and the external force conditions of society "[\(Nurhidayati, 2016\)](#).

Peat swamp forest initially, "Is a source of livelihood, a source of arable land and has a protection function and climate function that can be used directly by the forest village community directly or indirectly. However, the existence of oil palm plantations in peat swamp forests has caused significant changes in the biophysical environment that have an impact on social change. Changes in the biophysical environment as a result of changes in the conversion of peat swamp forests to oil palm plantations have encouraged forest village communities around the plantations to adapt so that they continue to exist as individuals and communities in existence and increase welfare. The adaptation referred to in the terminology of sociology is often known as ecological adaptation and socio-cultural adaptation." (Nurhidayati, 2016).

The environment is a unity of space with all objects, power, conditions, and living things, including humans and their behavior, which affect nature itself, the continuity of life, and the welfare of humans and other living things (Law No. 32 of 2009). The development process must pay attention to the functions of natural resources and human resources, so that they can continue to support the sustainable development process. Sustainable development aims to, "Meet the needs and aspirations of the present without compromising the ability to meet the needs of future generations. Sumarwoto (1997) explains further understanding of sustainable development as a positive socioeconomic change that does not neglect the ecology and social environment in which people depend on the environment. Successful implementation of sustainable development requires integrated social learning policies, planning and processes, political viability that depends on full community support through government, social institutions, and business activities." (Alpusari, 2013).

The concept of environmental education for students is directed to create knowledge, attitudes and behavior of people in order to have conservation insights that lead to improving the quality of life for students themselves. Therefore, "Environmental education must be able to empower people to be consistent but flexible with wisdom, in order to be able to produce a balance in a variety of ways that require approaches from different dimensions. Thus an important factor to form the basis of human wisdom in behaving towards the environment is through Environmental Education." (Alpusari, 2013).

Sunaryo and Joshi (2003) suggested that, "The failure of adoption of innovation in society occurs not because of weak human resources or difficult technological designs. However, the failure is more due to the technology and innovation provided to the community that is not in accordance with the social, economic and cultural conditions of the community. Peatland farmers in Kalimantan basically already have provisions to manage peatlands. Various local wisdom handed down from generation to generation become a reference for farmers in processing peatlands. For a long time, people in Kalimantan have used peatlands to meet their various needs in life. "

Another problem that arises is, "Various rejection of the peat project issued by the government by farmers in Kalimantan. This can happen because, so far, the orientation of the policy holders related to the development of peatland projects is contrary to the local knowledge and wisdom of farmers. As a result, there was a refusal from farmers to adopt the innovation technology offered by the government. The farmers' doubts about the products and their danger to nature are also one of the reasons why the waves of opposition from farmers have come so hard. Farmers prefer to manage peatlands in accordance with local practices that they have been using." (Prayoga, 2017).

### **3. METHODOLOGY**

The method used in this research is qualitative research, with a grounded research approach. Grounded research is a research method that emphasizes direct data collection in the field, using participatory observation and in-depth interviews to get the clarity of a phenomenon, by entering into the deepest recesses of the setting encountered (Miles and Huberman, 1984).

The study was conducted in the Kalampangan Sub-District, Sabangau Sub-District, Palangka Raya City, Central Kalimantan, Indonesia in January-August 2019. The data was collected through in-depth interviews and participatory observation. The validity of the data is obtained by prolonging the stay at the study site, using data triangulation, both checks, checks, and crosses. Data was also extracted from relevant agencies, in this case the Agricultural Technology Assessment Center (BPTP-Balitbang) of Central Kalimantan, the elementary school of the Kalampangan Village, the Education Technical Implementation Unit in Sabangau District, the Education and Youth Office of Palangka Raya City, and the Educational Office of Palangka Raya Province .

Data were analyzed using four steps ranging from data collection, data reduction, data classification, and drawing conclusions. Initial conclusions have been drawn up since researchers in the field, but the interim conclusions are still locked up (bracketing) not yet being made a final conclusion, because they are still matched with new data received, both through observation and follow-up interviews. After the data is completely saturated, meaning no more new data is received, the final conclusions are drawn up (Basrowi and Suwandi, 2016).

## 4. RESULTS

### 4.1. General Description of the Research Location

Kalampangan is located 18 km north of Palangka Raya City, Central Kalimantan Province. This village consists of 3,066 people occupying an area of approximately five thousand hectares. With that area, Kalampangan village can be said to be very broad. This gives an opportunity to the entire community to be able to do better in managing their land, in order to improve their welfare.

The added value of Kalampangan is that the ex-transmigration village, which was opened in 1979 and occupied from 1980-1981, was built on deep peat soil, ie peat with a depth of approximately 4 meters. Such depth can be categorized as moderate, so that in managing the biological environment requires its own wisdom. As we already know that peat land is a problematic and marginal land, so that management is not the same as management of paddy fields or dry fields.

Peatlands are known as fragile or vulnerable areas with unfavorable changes in characteristics. Peatlands have multifunctional benefits namely hydrological, production and ecological functions which are vital for the survival of human life and the surrounding environment (Masganti, 2003). Therefore it is necessary to have a specific management so that there is no change in the characteristics that cause land productivity to decline, unproductive and burn (Masganti, 2003).

Kalampangan Village is a successful rural area. The success of Kalampangan is supported by the horticulture and cattle sectors. With the existence of cattle can be a supplier of plant fertilizer, so it is expected to increase soil fertility. The combination of horticulture and cattle has been able to improve the welfare of the community and increase the level of education of children (BPPT Kalimantan Tengah, 2019).

The condition of the former wooden-walled transmigration house is no longer found, houses with walls and satellite dishes, two-wheeled and four-wheeled vehicles, production facility stalls, shops, internet cafes and cell phone use have become a common sight in Kalampangan. From the interview results it turns out that the vegetable farming is able to provide benefits of more than 5-6 million rupiah in one planting season or an interval of 3 months to grow vegetables. This success has made Kalampangan a reference for various farmers and related institutions (BPPTKT, 2019).

#### *4.2. The Values of Local Wisdom in Utilizing Peat*

The values of creativity carried out by the Dayaks, Central Kalimantan, according to Haryadi (2019) "Local people only collect litter on it, stacked, then burned but still maintained so as not to spread or expand, the burnt ash is used as organic fertilizer for plants. "

According to BPPTKT (2019) "The way for kalampangan farmers to tame peat is through hard work and also the local wisdom they have, namely the addition of burnt ash. This burnt ash they make by burning various weeds that grow in their land. It turns out that peat ash weed burnt is quite effective as a soil conditioner to improve acidity and poisoning in peat soils, so deep peat becomes very productive. "

Furthermore, it was explained by BPPTKT (2019) that, "The cropping patterns in the farming they are trying are quite unique, the mainstay is the land area of 0.25 hectares (plot yard) and part of the business area. With this farming they have been able to achieve a more decent standard of living. Rotational cropping patterns with various vegetable commodities provide a sustainable income, so that within a year they can sell their vegetable production which is marketed to the City of Palangka Raya. "(BPPTKT, 2019).

Some of the local shrouds related to the type of weed or tree plant that can be used as indicators are, "Rat drop (*Eleocharis dulcis*) which shows very acidic conditions and waterlogging conditions, galam tree (*Meleleuca leucadendron*) which shows acidic conditions, excess drainage, and karamunting plants (*Melastoma malabatricum*) and pink flowers (*Rhododendron Singapore*) which show symptoms that the land is not suitable as a place of cultivation. "(Noor, 2008).

Noor (2008) explained that in addition to indicators of vegetation, local wisdom owned by the community that is, "The state of water can also be an indicator by farmers. If the water is clear and bright, it shows that the land is very acid type, on the contrary if it is cloudy and brown, it shows less acidity and is a potential area for farming. Dark brown color like tea water shows the area around thick peat. "

In cutting grass to clear land, Noor (2008) suggests that the community has a local wisdom that, "Weeds and grass collected will be shaped like a ball and soaked. This process is commonly called as spitting. After the weeds and straw balls are ripe, the weeds will be chopped. The results are spread on the land surface. This process aims to reduce soil acidity. "

Whereas Ar-Rhiza *et al.* (2012) states that the community has local wisdom, "In preparing paddy fields, that is by cutting and cleaning marsh grass when the swamp water is still deep, so that the open area provides opportunities for the growth of aquatic plants. Then the farmers plant rice seedlings on a stretch of water plants, plants will grow well and aquatic plants will become effective mulch to control the rate of evaporation of ground water, effective weed control and as an additional source of nutrients. "

#### *4.3. Values of Love for the Environment through Preservation*

The value of love for the environment can also be in the form of fire prevention efforts. Various efforts of local people to prevent peat fires, according to Haryadi (2019) "So that peat does not burn, every landowner is obliged to make a moat around his land or land. The mutual cooperation pattern is always prioritized both before and after farming. So when there is potential for fire, the community works together to extinguish the fire traditionally. "

The results of the interview show that the pattern of peat conservation can be done through the value of cooperation or mutual cooperation. The value of togetherness is always upheld and always put forward so that all heavy work can be lighter, and able to solve problems faced together.

Furthermore, Haryadi (2019) explained that, "The size of the planting area is adjusted to the energy and the number of farmers, so that they can be handled by the person concerned. The farmers really understand what and

how to do when they start farming. Even after harvesting, it will still be handled well and land will be managed well. "

According to [BPPTKT \(2019\)](#) "Farms in Kalampangan do not know the season, because vegetables (chopped spinach, sweet corn, mustard greens, long beans, cabbage and cabbage) that they plant throughout the year, and in the dry season they have on average been using a pumping system using groundwater for irrigating their agricultural land. Lately, in Kalampangan cattle fattening has also developed, by buying feeder cattle within 5-7 months before the Hajj, and they sell during the feast with a profit of up to 2-4 million per cow. The number of cattle is generally 1,871 head per year, and after the Eid Hajj will be reduced drastically, but the supply of cattle going to increase again before the Eid Hajj. The current pattern of agriculture in Kalampangan has been integrated between vegetables and cattle, because between the two they have a synergistic relationship. The remaining sorting vegetables can be given as cow feed and cow dung is a source of organic fertilizer for vegetable fields. "

Further described ([BPPTKT, 2019](#)) "Environmental preservation has become a matter that must be known by all people, because they know that due to environmental damage will threaten their income and lives. Awareness of the sustainable environment causes them to choose tips to conserve the use of burnt ash, giving the ash is not necessary every time planting, but once giving for 3-4 times planting. Besides that, the utilization of business land I and II is used for tree crops, both horticultural crops (vegetables and rambutan), plantations (rubber) and forestry (jelutung and aloes). "

As it is known that peat fires are very difficult to extinguish, unless trenches are made that can cut fire locations. Without that effort, the effort to extinguish it by using water is very difficult, because it must be able to soak the entire location of peat fires. Continuous rainwater so that it can inundate the entire area of fire, can only kill peat fires. Therefore, the community is very careful that peat does not burn.

According to [Tan \(1994\)](#) and [Setyaningsih \(2000\)](#) the community has a local wisdom that, "Burning on peatlands causes the extinction of microorganisms that disrupt the process of decomposition and soil chemistry and the loss of various biota or other biodiversity." [Masganti \(2003\)](#) also said that, "Burning does produce ash containing bases, but it is not enough to supply plant nutrient needs."

Peat forest fires also cause haze disasters. The direct impact of forest and peatland fires for humans is the loss of people's livelihoods, especially for those who still depend on natural resources ([Adinugroho et al., 2005](#)).

According to [Subiksa \(2007\)](#) the community has a local wisdom that, "Options for utilizing peatlands for agriculture or conservation actions to protect the environment, must be based on a correct understanding of the characteristics of peatlands. This is to prevent massive land damage such as the clearing of 1 million ha of peatland (PLG). Peat soil is composed of organic material that has not been weathered completely so that it is very different from mineral soil, both physical and chemical properties. Therefore, land management and conservation technologies are very different from mineral soils and are site specific." ([Subiksa, 2007](#)).

In accordance with Presidential Decree No. 32/1990 peat with thickness > 3 m intended for conservation areas. Next Permentan No. 14/2009 regulates the use of peatlands for plantations, especially oil palm. Land with peat thickness between 0-3 m is suitable marginal for some annual crops such as rubber and palm oil. This is because the thicker the peat layer, the more fragile the peat is.

By maintaining it as a conservation area, its function as a hydrological buffer is maintained. Furthermore, the Department of Agriculture recommends that for food crops and horticulture be directed at shallow peat (<100 cm) and for annual crops can be cultivated on peat with a thickness of 2-3 m. The basic consideration is that shallow peat has a relatively higher fertility rate and lower environmental risk than deep peat.



The community has a local wisdom that, "In general, peatlands are classified as marginal (low suitability) for various types of food plants with the main limiting factor of acidic root media containing toxic organic acids, low nutrients and drainage that does not support plant growth. By improving the environmental condition of roots, several food crops are able to grow and adapt, among others, rice, corn, soybeans, cassava, sweet potatoes, taro and so on." (Subiksa, 2007).

Management and conservation of peatlands is a central issue today. Considering that peatlands are an alternative answer to the problem of lack of land in Indonesia. Peatland is very potential to be used by farmers in conducting farming activities. However, the difficulty of managing peatlands is also a problem in itself. Therefore, local wisdom in peatland management that is known to farmers and can then be used as a reference in managing it. Basically, peatland farmers in Kalimantan already have a variety of traditional ways of managing peatlands, including: (1) utilizing tidal movements for irrigation and drainage, (2) determining plants grown around irrigation, (3) water conservation with a tabat system, (4) land selection system, (5) land preparation and land management system, (6) land management system, (7) soil fertility management system, and (8) how farmers recognize seasonality (Prayoga, 2017).

According to Haryadi (2019) who is also a UTI lecturer stated that, "Folklore specifically related to peat seems to be non-existent especially related to peat preservation. However, in the framework of local wisdom, wisdom is inherited that the land has a prophet, so that since children are planted so as not to carelessly injure the land using a machete or knife, burn, etc., except for certain purposes, and even then must the permission of the land prophet."

Haryadi (2019) that, "Although we are not yet clear who and what the Land Prophet is like, we obediently obey the message. The effect is if the land prophet is angry, the land becomes infertile, the fruit trees do not bear fruit perfectly until they do not bear fruit at all. For example, you cannot marry auntie or uncle (uncle). The effect also makes the land or land become unproductive to the plants above it. To overcome this ritual must be held, the two couples must eat like pigs in the middle of the village. "

Local wisdom that lives and develops in the area of peatlands is used by the community as a guide in acting and managing the environment. One of the local wisdoms in managing peatlands is found in the Kalimantan area, namely, "By utilizing the tidal movement for irrigation and drainage. The community made water channels that led perpendicularly from the riverbank to the interior, the channel was known as handil. The handil system is carried out cooperatively by small groups of 7 to 10 people." (Dariah and Nurzakiah, 2014).

In the same study also explained to me that, "A larger scale community in Kalimantan recognizes the existence of a flood system. This system is a channel making system that connects two major rivers. Handil itself is made along the banks. Besides that, there is also the existence of saka. Saka is a water channel smaller than handil and is owned by individuals. Handil production begins with the cutting of large trees to clear land. "According to Idak (1982)" Handil is made pointing perpendicularly from the edge of the river towards the interior as far as 2-3 km with a depth of 0.5-1.0 m, and a width of 2-3 m. there are several things that affect the process of making handil, namely land conditions, tides and peat thickness. In Handil, there is also the manufacture of flowers that function to enter and release water in the land. The process of getting in and out of water from handil to the land also depends on the tides. When the tide then the water will flow into the land while at low tide the water will come out of the land toward the river. The people in Kalimantan also have a policy locally to plant handil margins with rubber and fruit plants to strengthen the embankment to prevent landslides. In the policy making process related to handil, all of them are under the leadership of a chief handil. The head of the handil himself is chosen by the handil members by a deliberation system." (Dariah and Nurzakiah, 2014).

#### *4.4. The Values of Independence Live in Peat Areas*

The strategy of survival in peat areas is by planting. According to Haryadi (2019) "Efforts to grow crops are only carried out by local people by opening sufficient land, using manual tools such as hoes, machetes and axes. Slash is localized or collected in the middle so that when it burns it becomes easier in terms of supervision. "

The results of the interview show that, the values of local wisdom that can be picked, include: the values of never giving up, always trying to get the best results, not giving up on the situation, always wanting to advance in the acquisition of work, always wanting to do the slightest impact and the results, and never give up with the limitations of existing tools.

Dariah and Nurzakiah (2014) show the resilience of the community, "That farmers in Kalimantan have a traditional way to conserve water with multilevel blocks. The block is made by taking mineral soil and wooden planks to serve as water retaining embankments so that water from the flowing top can be held for a certain time. A block is made at the end of the rainy season. "

According to NoorGINAYUWATI *et al.* (2007); Prayoga (2017) farmers have a local wisdom, that "Making handil is also done to maintain the thickness of peat. To maintain peat thickness, a worm canal is made in the middle of the land to divide the land into four sections. One of the channels is made elongated which empties into a large channel in front of the house. This perimeter channel was never closed so that during heavy rains the land would not be flooded. Closing is only done on the worm channel so that the land remains moist. Not only reliable, the people in Kalimantan also have a variety of other local wisdom in order to conserve peatlands. "(Prayoga, 2017).

In choosing land to be used as a place of cultivation, the community has local wisdom, "They will choose based on the depth of the mud and the smell of the soil. The depth of the mud indicates the effective depth that is suitable for planting. If the soil emits a fragrant odor, according to the community the land is suitable for cultivation due to high levels of pyrite. In addition, farmers also see vegetation that develops on the land surface as an indicator of whether or not the area is used or planted. "(Noor, 2008; Prayoga, 2017).

The current government always conducts counseling and assistance with rice seeds and adequate farming equipment, so that rice plants in peatlands can flourish and self-sufficiency in rice in Palangkaraya City can be realized. As it is known that, "Peat soils were initially very difficult to be able to plant rice and even if there was something rare. Therefore, at this time it is proper to develop rice plants to meet food needs in Palangkaraya City, so that they are no longer dependent on supplies from other regions." (Suroso, 2017).

## **5. DISCUSSION**

So the value of local wisdom that can be internalized to children who live in peat areas are the values that have been practiced by the community in interacting with nature, such as land, forests, water, plants, peat, fire, and various related matters.

Seeing the importance of protecting the ecosystem, their ancestors have made various taboos related to nature. Thus, various taboos made by the community, aimed at caring for nature that exists. Ancestors as native people will try to make various restrictions that are believed to be able to maintain the existing balance, and shocks to nature are reduced.

All the people who live in peatland locations, so far have been very obedient to the existing local wisdom, because if it violates the existing local wisdom, then in addition to getting social sanctions will also get nature will be damaged, ecology will be disrupted, and the balance of nature is not maintained.

At present, community leaders, religious leaders, traditional leaders, youth, parents, teachers, PKK mothers, Dharma Wanita, and the whole community in general, are very obedient to their local wisdom, even they are the most important parties in take care of existing wisdom.

The community including parents, as speakers as well as perpetrators of various local wisdoms owned by the community, will always try to instill a variety of wisdom that has been owned, so far it has been practiced from generation to generation, with the hope that all existing local wisdom can be inherited to the next generation.

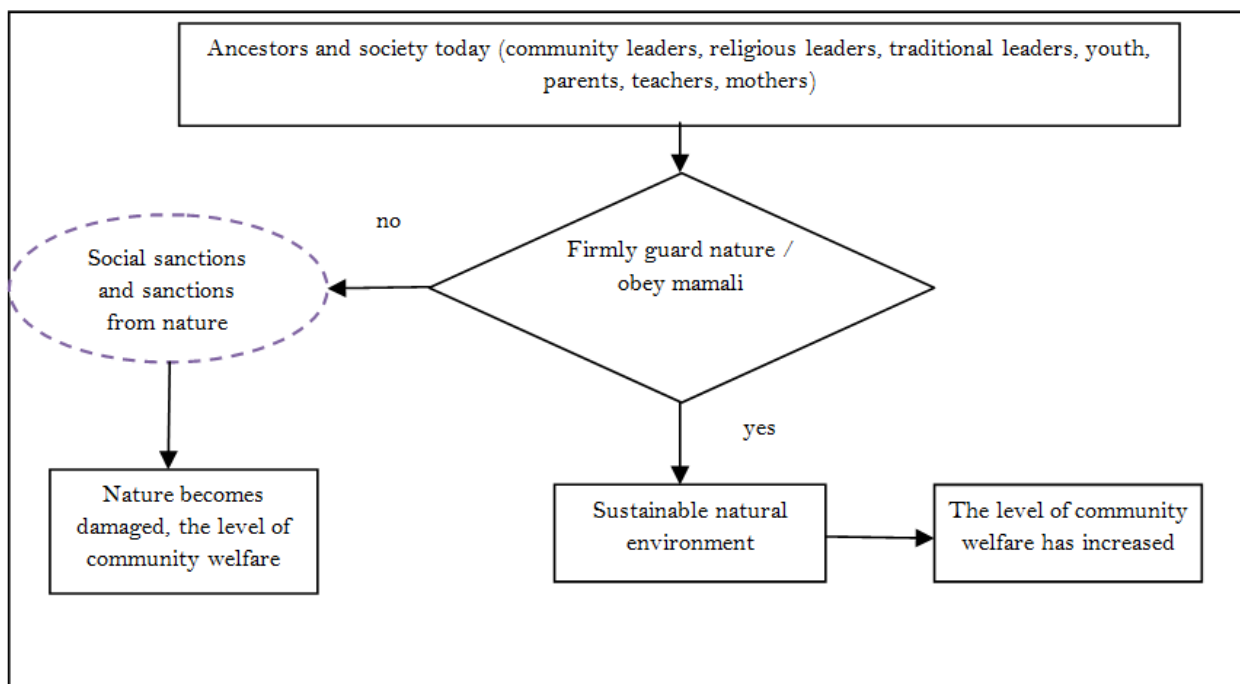


Figure-1. Diagram of environmental conservation efforts.

Reading the Figure 1, an effort to protect the natural environment is very important to do when protecting the natural environment sustainably, and avoiding various damages. Peatlands that are sustainable, fertile and able to provide prosperity can be passed on to future generations.

The present generation all have the belief that, when nature is damaged, the ecosystem will be disrupted, and natural disasters will come, and the ability of nature to bring fortune will be reduced. A further impact is that their welfare and their children's children are reduced or even completely gone.

The results of this study are basically in accordance with the findings of Noorginayuwati *et al.* (2007) in their research stating that farmers in lebak land, have local wisdom who think that, "New cleared land and near forests are generally considered to be very fertile and not sour, but if a lot grows galam the sign of the land is sour. If the stems of plants are left with a yellowish color that has been submerged in water (hashtagbanyu) is a sign of acid soil. If the land is overgrown with babulukumpai and the water is yellow is a characteristic of acid soil. This acidic land can still be planted with state sweet potatoes, or if they want to be planted with watermelons they make calcification first. If it has been planted several times the acidity will decrease because according to them the remnants of grass that grows and dies becomes humus. If the acidity of the land cannot be increased they will leave it and consider it to be unproductive land (Bangkir land). "

The results of this study are also in accordance with the findings put forward by Firmansyah and Mokhtar (2011) that in understanding farmers already have a lot of local wisdom, such as "There are some farmers in Kalimantan who do not burn land. They make natural vegetation that grows on peat soils as mulch. The aim is to

protect the fruit of plants from direct contact with the soil. If it touches directly on the wet / moist peat, the fruit will decay. The natural vegetation used is the babulukumpai (hairy swamp grass). "

Various local skills were also discovered by Noor (2007) who explains that, "The application of ash to the land takes into account the condition of the peat layer, although it is generally given at a rate of 6 kg / m<sup>2</sup>. Land is ready for planting when the red peat layer changes color to yellowish gray after being given ash. For new openings that are rather good, it is usually sufficient to provide as much as 4 kg / m<sup>2</sup> of ash the color will change to yellowish gray and ready for planting. Still in the same study, in Central Kalimantan vegetable farmers were given ashes and manure for sebananyak leaves vegetables 2 times. Manure and ash are directly sown in the field of planting in the rainy season, but in the dry season it is usually thawed first. Other organic materials considered the best according to local wisdom in increasing peatland fertility are fish meal and shrimp head flour. "

This study also corroborates the findings of Noor (2008) who found local wisdom that, "Land use is intended if farmers want to diversify crops. Land structuring is done by making support which is a process to raise some of the land. Annual seedlings are planted on support. The support height is usually made 5-10 cm higher than the maximum height of the water level so that the plant is not submerged or wet.

## 6. CONCLUSION

The results of data analysis show that:

1. A lot of local parish can be internalized to elementary school-age children in preserving peatlands, such as not burning peat, not hurting peat soil, using peat wisely, and keeping peat friendly.
2. The values of local wisdom that can be learned by elementary school children are, the value of independence living in peat areas is, the value of creativity, the value of love for the environment, cultural values, the value of togetherness or the value of mutual cooperation, the values never give up with circumstances natural environment, and the value of independence.

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