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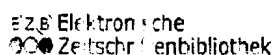
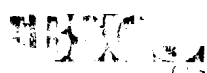
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The Formulation of Natural Disaster-Based

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*Erianjoni, Dedi Hermon, Fatma Wili*

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# The Formulation of Natural Disaster-Based Local Wisdom Values After Tsunami Disaster in Aceh Jaya District, Aceh Province, Indonesia

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## Abstract

Local wisdom plays a role in the management of natural resources and environment. However, it also could not be separated from a great number of challenges, such as: the increase number of population, modern technology and culture, big cost, poverty and inequality. The prospect of local wisdom in the future is highly dependent on knowledge of the society, innovation on technology, market demand, the use and the preservation of biodiversity in the environment, and government policies that are directly related to the management of natural resources and environment as well as the role of the community. Krueng Sabee is one of the areas which is frequently hit by natural disasters in Kabupaten Aceh Jaya Provinsi Aceh. In that area, however, the efforts to adopt local wisdom values to mitigate natural disasters such as floods, earthquakes, tsunamis and forest conservation are almost extinguished. The purpose of this research is to reformulate the values of local wisdom to mitigate natural disasters, ten years after tsunami hit Aceh. This is a case study that applied qualitative approach. The informants were chosen by using purposive sampling technique. The data were gathered through interview, FGD, observation and documentation study. The triangulation done referred to that of sources and method. The data obtained were analyzed by using ethnography qualitative data analysis proposed by James Spradley. In addition, AHP (Analytical Hierarchy Process) was applied. Based on the results of AHP analysis, it is figured out that there are five policies gotten: (a) curriculum, (b) learning evaluation, (c) traditional songs, (d) learning material, and (e) *meunasah* school. The policies are expected to create local-based geography learning process in accordance with nation-based geography education as geography is closely related to human and space. In this research, local wisdom values in the Aceh Jaya including floods, earthquakes, tsunamis and forest conservation are disclosed. The application of traditional culture-based geography education or efforts to realize nation-based geography education would affect the learning process which is meaningful in terms of regional context where the subject is taught.

**Keywords:** formulation, local wisdom values, disaster

## 1. Introduction

A terrifying natural disaster devastating Aceh on December 26<sup>th</sup>, 2004 has taught all of people to prepare for disasters that may happen at any time. The tsunami that hit Aceh and Nias, North Sumatra damaged 800 km of coastal area of Aceh. Around 120.000 houses in Aceh were destroyed leaving 600,000 people homeless. After the disaster, dozens of countries and hundreds of non-governmental organizations (NGOs) both local and overseas institutions including the United Nations (UN), came to rebuild Aceh. They competed to give the best things to the community, and they even opened an office in Aceh. After the rehabilitation and the reconstruction were completed, the community life also began to normal. Most of the foreign institutions, either public or civil organization, returned to their own countries. Nevertheless, the rehabilitation and the reconstruction done have abolished some local wisdoms. A number of heads of villages in the area destroyed by tsunami admitted that, the rehabilitation after the disaster did not take the local wisdoms into account. "After the rehabilitation and reconstruction were done, there are some local wisdoms that are lost. It highly disturbs the development of the village today," said Sulaiman, a head of a village in Kabupaten Aceh Jaya on Tuesday (23/12) (<http://www.sinarharapan.co/news/read/141226008/the-lost-local-wisdom>).

Local wisdom takes a role in the management of natural resources and the environment. Nonetheless, it could not be separated from challenges such as: the increase number of population, modern technology and culture, high expense, poverty and social gaps. The prospect of the local wisdom in the future seems to be influenced by community knowledge, innovation on technology, market demand, the use and the preservation of biodiversity in the environment and government policies that are directly related to the management of natural resources and the environment as well as the role of the community. Local wisdom is the values owned by the local communities that have been inherited from generation to generation which aim to organize the interaction of community activities, to treat and to make use of the natural resources around (Suhartini, 2009).

The values of "Local Wisdom of Indonesia" are applied by our ancestors as they realized that we are dependent on one to the others and so do to the natural surroundings. Our ancestors always concerned on the



relationship of local wisdoms. Essentially, how could the environment provide the best thing for the human beings if they are unkind to the nature itself (Mulyo, 2014). In order to create safe and peaceful environment, a benign interaction between human and human, and between humans and the nature must maintained based on the values of local wisdom of the nation itself. Therefore, our ancestors highly cared of the nature, including those living in the vicinity, such as; animals and plants that are part of the nature itself such as in the area of Krueng Sabee, Aceh Jaya, Provinsi Aceh. This paper then is intended to explain local wisdom values of Aceh people in Aceh Jaya after tsunami disaster.

## 2. Research Method

This research was conducted in Provinsi Aceh Jaya. This is a case study which applied qualitative approach. The data were obtained through observation and interview which were then followed by Focus Group Discussion (FGD) with several speakers representing the various elements, namely; local government, customary figures, religious figures, DAS (watershed) Forum and people living around watershed areas. The data were analyzed by using taxonomic analysis of James Spradley which was done by describing and expressing the taxonomies, classifying and defining the local terms, and formulating the rules of behavior towards the environment in accordance with the community researched. The data obtained from the results of FGD (Forum Group Discussion) were analyzed by using AHP (Analytical Hierarchy Process) application.

## 3. Result and Discussion

Based on the results of the interview and the FGD (Hermon, 2010<sup>a</sup>; Hermon, 2014<sup>c</sup>) with the customary figures, religion figures and Aceh people on the disasters-based local wisdom ten years after tsunami hit Kabupaten Aceh Jaya, it is revealed that 'earthquake' in the Aceh language is *geumpa*. The sign preceding the *geumpa* is the silent atmosphere in which no wind blows, the leaves of the trees are still, the peacocks or *uwe* are raucous, and there are no birds wandering. In Aceh folklore, or according to Aceh people, especially those living in Kreung Sabbe, it is believed that there is a huge buffalo living in the earth beneath us. When he is disrupted, the buffalo would sway and move triggering an earthquake on the surface of the earth. When earthquake takes place, people would run out of the house and take a board as the base point of standing. They worry that the ground would break out due to the shaking and drown them into. The people also need to move away from the buildings and the trees. Tsunami in Aceh language is *leubana* (high tide). The signs preceding the Tsunami are: the sound of explosion from the sea, the receding of seawater, the smell of sulfur, the migration of animals such as wasps, birds, and ants. The wasps and the birds flutter, and the ants climb the trees (coconut and other trees grow on the beach). In addition, the pets such as cats and chickens are gathered around the house. The effort done by the people to rescue from the disaster is fleeing to the higher places (hills and mountains).

The result of the interview done with BPBD of Aceh Jaya reveals that tsunami is preceded by several signs such as black water comes up from the cracks and the ants move towards the highlands. To save from the tsunami, people rely on cypress and coconut trees. The people also hold *tulak bala* on Wednesday *Abis* in which they carry out a party on the beach, make a raft of banana trees, put offerings on the raft, and throw them into the sea. This throwing bad luck (*buang sial*) ceremony is held annually. Based on the interviews done with the people, it is disclosed that the term "flood" in Aceh language is *Ierayaie* meaning very dark cloud. The signs preceding the flood are golden snails spawn on the higher ground, the ants rise to a house or a tree, frog spawn on the higher ground, there is an explosive sound heard from upstream area, and the rain fall for two days and one night. The flood is also caused by the logging done by PT Inti Timbel Aceh in 1976 and PT Lamri Timbel in 1980. It made the forests becomes barren. In addition, the gold mining in the upstream area made the rivers becomes shallow. The efforts done by the community to prevent or reduce the flood are by prohibiting people from poisoning or electrifying the fish, suggesting people to catch the fish by using fishing nets and cam. Those violating the rules would get sanctions from the customary figures. They have to consign certain amount of money or goods pursuant to the agreement made. People bathing in the river should wear a cloth unless they are hunted by crocodiles. The people are also banned from cutting down and planting the trees on both sides of the river. Meanwhile, to save themselves from the flood, the people flee to the places that are not hit by the floods, or to the hills and the mountains.

Forest in Aceh language is *Uetun*. It functions to prevent the flood (Hermon, 2014<sup>d</sup>) and provide the sources of livelihood such as rattan, resin and wood. The forests could be tilled under the control of indigenous people. To preserve or to protect the forests, the people plant mahogany and *Jabon*. The people are not permitted to work and do other activities on Wednesday at the end of Hijri (called as Wednesday *Abis* or the Last Wednesday) because on this day, tigers and elephants go out of the forest. In addition, on Friday, the people may not go to the rice field, or the rice would be eaten by pests. Furthermore, the people are prohibited from cutting down the trees on the riverbanks around 30m from the river. The woods to be felled have to be selected. *Jabon* and mahogany are those that are allowed to be cut down. The result of interview with BPBD of Kabupaten Aceh Jaya reveals that there is also a ban on uttering bad words near the trees, because those speaking dirty words

would get a calamity.

Natural disasters include floods (Hermon, 2010<sup>b</sup>; Hermon, 2012<sup>a</sup>), deluges, earthquakes (Hermon, 2016<sup>a</sup>), volcanic eruptions, hurricanes, droughts, epidemic, insects attack, and so on. Of the disasters, earthquake is the shaking of the earth's surface resulting from the seismic wave in which the earth suddenly releases out energy (Hunt, 1984; Hermon, 2015; Hermon, 2016<sup>a</sup>). When the earthquake takes place the earth trembles. It rocks sideways and upwards. During the earthquake, people do not know from where the quake is coming, so they do not know where to run away from the source of the quake. The term tsunami in Aceh language is *Iebena* meaning high tide. This term is matched to the term used by the Japanese “*tsu*” (harbor) and “*nami*” (wave). It is series of extremely long wave in a long period of time, usually generated from the shocks associated with earthquakes occurring below or near the ocean floor.

The signs believed by the people that precede the occurrence of tsunami, in small portion, are matched to the scientific ones, such as the receding of the seawater. Several signs preceding the tsunami are: (a) a very strong earthquake takes place (over 6 SR), (b) the sea level suddenly drops. (c) terrible smell of the salt is sniffed out, and (d) the suds appear in large quantities. Basically, the traditional concept about the signs preceding tsunami does not contradict to the scientific one that could be seen from the following *smong* (Tempo December 26<sup>th</sup>, 2014; Hermon, 2016<sup>a</sup>).

"*Anga linon ne mali,*  
*Uwek suruik sahuli,*  
*Maheya mihawali*  
*Fano me singa tenggi*  
*Ede smong kahanne"*

which means:

"If a strong earthquake takes place  
Followed by the receding water  
Quickly find the higher place  
We called it a *smong*"

To save from tsunami, the people flee to the higher places (hills or mountain). This effort is proper to the scientific provisions. According to the Ministry of Energy and Mineral Resources in [www.esdm.go.id](http://www.esdm.go.id), mitigations done during the tsunami includes: (a) if you are around the beach when the earthquake takes place, and you see the seawater near the shore recedes suddenly, immediately run to the higher ground (hills or high buildings) while informing other friends; (b) If you are in a boat or a ship in the sea, and you are informed that tsunami has hit the coast, set your boat or ship to the sea, (c) if the first wave has come and receded back, do not immediately go down to the lower area, usually, the next wave will hit, and (d) if the waves have completely slackened, give the first aids on the victims. In Aceh Jaya, when tsunami happens, the people flee to the higher places as it is suggested in the *smong* poem. This effort is very effective in saving thousands people in Semelu island when the tsunami hit that area in 2004. According to Sugito (in [file.upi.edu](http://file.upi.edu)) the mitigations done after the tsunami are; (a) do not enter the damaged areas, except they are proclaimed safe, (b) when you get back home, check all of your relatives, (c) avoid electrical installation, (d) visit the crisis center to get information, and cooperate with the people around you, and (e) be prepared to go back to a normal life. In term of flood, the people believe that it is influenced by the heavy rain, and the river that could not detain the flow of water.

Flood is a condition in which the riverbed could not restrain the water flow. In other words, the amount of water is greater than the capacity of the river. In general, flood is caused by two factors, natural factor and human factor (Hermon, 2014<sup>a</sup>; Hermon, 2014<sup>b</sup>). The natural factor includes: (a) precipitation, (b) physiographical effects, (c) erosion and sedimentation, (d) the capacity of the river, and (e) the influence of the tide, while the human factor covers: (1) changes over the watershed, (2) slum areas, and (3) garbage. In this research, the study of the local wisdom is derived from the term “forest” called “*ugle*” by the people in Aceh Jaya. The functions of forests are stated in an Agreement of Watershed (DAS) Forum of Aceh Jaya signed on February 25<sup>th</sup>, 2001 witnessed by customary leaders and the representatives of local figures. The people and the DAS Forum of Aceh Jaya will manage the forests together by emphasizing on sustainable principles of ecology and economy. Most of the land is critical and located on the river side of Krueng Sabee, Dusun Bate Musyara. In the past, this village was inhabited. The people left the area because of the unsafe condition at that time.

Based on the result of AHP (Analytical Hierarchy Process) analysis, it is revealed that there are five policies getting higher priority including (a) curriculum, (b) learning evaluation, (c) traditional songs, (d) learning material, and (e) *meunasah* school. The policies are expected to create local-based geography learning process that is in accordance with nation-based geography education. In this research, the values of local wisdom of Aceh Jaya people about floods, earthquakes, tsunamis and forest conservation are revealed (Hermon, 2012<sup>b</sup>; Hermon, 2014<sup>c</sup>; Hermon, 2016<sup>b</sup>). Through local-based geography education, or toward nation-based geography education, the learning process would be more meaningful in term of regional context where geography is taught.

## 5. Conclusion

Based on the results of the research, it is concluded that: the term earthquake for the people in Aceh Jaya is *geumpa* in which its occurrence is preceded by silent atmosphere, there is no wind blowing, the trees are still, the peacocks (*uwe*) are clamorous, and there are no birds flying. In Aceh folklore, or according to Aceh people, especially those living in Kreung Sabbe, it is believed that there is a huge buffalo living in the earth beneath us. When he is disrupted, the buffalo would sway and move triggering an earthquake on the surface of the earth. When earthquake takes place, people would run out of the house and take a board as the base point of standing. Regarding to tsunami, it is called *Ieubana* (high tide) in Aceh language. The signs preceding tsunami are: the sound of explosion from the sea, the receding of seawater, the smell of sulfur, the migration of animals such as wasps, birds, and ants. The wasps and the birds flutter, and the ants climb the trees (coconut and other trees grow on the beach). In addition, the pets such as cats and chickens are gathered around the house. The effort done by the people to rescue from the disaster is fleeing to the higher places (hills and mountains). The term "flood" in Aceh language is *Ierayaie* meaning very dark cloud. The signs preceding the flood are golden snails spawn on the higher ground, the ants rise to a house or a tree, frog spawn on the higher ground, there is an explosive sound heard from upstream of the river, and the rain fall for two days and one night. The flood also caused by the logging done by PT Inti Timbel Aceh in 1976 and PT Lamri Timbel in 1980. The efforts done by the community to prevent or reduce the flood are by prohibiting people from cutting down and planting the trees on both sides of the river. Meanwhile, to save themselves from the flood, the people flee to the places that are not hit by the floods, or to the higher ground. Forest in Aceh language is *Uetun*. It functions to prevent the flood and provide the sources of livelihood such as rattan, resin and wood. The forests could be tilled under the control of indigenous people. To preserve or to protect the forests, the people plant mahogany and *Jabon*. The people are not permitted to work and do other activities on Wednesday at the end of Hijri (called as Wednesday *Abis* or the Last Wednesday. Furthermore, there are five policies formulated from the disasters-based local wisdom including (a) curriculum, (b) learning evaluation, (c) traditional songs, (d) learning material, (e) *meunasah* school.

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