

Preserving Local Wisdom for Disaster Risk Reduction in West Sumatera: the Role of Library in Managing Indigenous Knowledge

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ABSTRACT

This study investigated the role of library in managing local wisdom about natural disasters among two tribes in West Sumatera, Indonesia. Natural disasters such as floods, landslides, earthquakes and even tsunamis often occur in West Sumatera due to its location on the equator and on the Sumatran Fault and Mentawai Fault lines. The region is inhabited by several tribes, two of the better-known ones being the Minangkabau and Mentawai tribes. These tribes have their local wisdom on the characteristics, hazards, and impact of the disasters, which can act as an early warning system, in disaster management, and even in post-disaster mitigation. The study was carried out using observations and analysis of documents to investigate some of the local wisdom among the Mentawai Tribe on their settlement policy practices and the Teteu Amusiast Loga song, as well as Minangkabau Tribe with its proverbs, earthquake resistant buildings (Rumah Gadang) and Rangkang. Local wisdom has existed since ancient times, but it has begun to fade and may not be applied in everyday life. As such, Library as the institution that can facilitate lifelong learning to society hoped to be able to manage these knowledge.

Keywords: Local Wisdom; Disasters; Minangkabau tribe; Mentawai tribe; West Sumatera; Indonesia

INTRODUCTION

Indonesia is an archipelago that is vulnerable to various disasters. As one of the countries located in the ring of fire, Indonesia always threat earthquakes and tsunamis. The location of Indonesia, which is astronomically located in the equator line, makes Indonesia has a tropical climate. There are only two seasons, the rainy season and dry season. Indonesia often experiences floods due to high annual rainfall of around 200mm per year. Unlike the rainy season, drought will occur during the dry season due to high temperatures. Geographically, three large plates; the Indo-Australian plate, the Eurasian plate, and the Pacific plate flank Indonesia's location. Additionally, the location of Indonesia is also between the Mediterranean circum and the Pacific circum, which causes Indonesia has a high potential of tectonic and volcanic earthquakes.

One of the provinces in Indonesia that often faces disasters is West Sumatera. West Sumatera is at the zero point of the equator line. High rainfall intensity often causes flood in some areas. This province has around 28 volcanoes and some of them are active. This means, volcanic earthquakes can occur anytime. From the land area, West Sumatera is also confronted with earthquakes originating from a large fault called the Sumateran Fault System (SFS), Mentawai Fault System (MFS). From the sea area, the tectonic earthquakes are triggered by a collision between two world plates, namely the Indo-Australian oceanic plate and the Eurasia plate (located in Megathrust Mentawai)(BPBD, 2016). Database of the National Geophysical Data Center America noted that, a large earthquake has occurred in 1797, 1833, 1926, 2004, 2005, 2007, 2009, and 2010; some of them caused tsunamis (Zed, 2012).

Several tribes inhabit West Sumatera. The two biggest tribes are Minangkabau and Mentawai tribes. People in Aceh have the term "Smong" as a form of local wisdom created by ancestors, Smong serves as an early warning system for earthquake and tsunami disasters. These two tribes also have local wisdoms, which is unwittingly a form of early warning system, in disaster management, and even in post-disaster mitigation. The Mentawai tribe has a song called *Teteu Amusiat Loga* as warning to the earthquake while the Minangkabau tribe has *Pepatah* (proverbs), *Rumah Gadang*, and *Rangkiang*. *Pepatah* contains advice on how to deal with nature in order to avoid and reduce the risk of disasters. *Rumah Gadang* is a traditional house proven resistant to earthquake and *Rangkiang* is a building to keep post-disaster food sources.

Human cannot predict when and where disasters occur. Human can study natural signs scientifically and learn from experiences. Early warning of disasters is expected to reduce risk and the number of victims. Ancestors had experienced disasters and they created various local wisdoms. However, it is unfortunate that these local wisdoms are starting to fade in society due to some factors. The purpose of this paper is to explain how local wisdoms of the Mentawai and the Minangkabau tribe can be applied as advice, warnings, and anticipation of disasters that are predicted to keep continue in the future, and to suggest how library can have a role to manage this knowledge.

LITERATURE REVIEW

Indigenous Knowledge

The term of indigenous knowledge is also called traditional knowledge, local knowledge, indigenous skill, indigenous technical knowledge, folk knowledge, peoples' science, rural people's knowledge, ethno science, and cultural knowledge. IK concerns some feature; IK is local, based on experiences and historical, the owner of the knowledge often use it without understand the causes, it developed independently, transmitted orally or by imitation and it is shared (Chisenga, 2002). Indigenous refers to people or things or primary from certain places, while knowledge contain information, practice, technology, biological resources, material and tools (Bar-On, 2015). In line with Bar-on, Morris called Indigenous Knowledge as Folk Knowledge. It is the knowledge owned by people of their local environment or the knowledge which is around us, can be natural or cultural, as it is expressed by local community. It is shared among people in the community, based on

experiences, and practical. It is informal knowledge transmitted orally and in an informal manner, may or may not involve a conservation ethic (Morris, 2010).

Indigenous Knowledge is an understanding, ability, and philosopher developed by the community with a long history that comes from interaction with the surrounding environment (UNESCO, n.d.). It covers all fields of science. (World Bank, 1998) said IK is basis for local decision making in agricultural, health, natural resource management and other activities. World Bank emphasized that five reasons why IK is worth, two of them are IK is an important part of global knowledge related to development issues, it can be used to improve their understanding of the local condition, sometimes helps to provide a productive context for some activities. By sharing IK helps to expand the cross-cultural understanding and raise the development of cultural dimension.

(IIRR, 1996) as cited in (Chisenga, 2002) determine that IK continue to develop. It is based on experience often tested over centuries of use, adapted to environment and local culture dynamic and changing. Some implementation of using IK as the sign of disaster:

- Smong owned by Aceh as the early warning system to earthquake and Tsunami (Suciani, Islami, Zainal, Sofiyani, & Bukhari, 2018)
- IK practices in disaster mitigation in Zimbabwe (Lunga & Musarurwa, 2016)
- The use of indigenous plants to overcome bank and gully erosion in Nigeria (Iloka, 2016)
- IK practice to minimize the effects of flood in Nepal (Dhungel, 2011)
- Local knowledge about warning sign to predict volcanic eruption in Mayon, Philipines (Cerdena, 2008)
- etc.

Cultural Heritage

Cultural heritage has historical value, science, and technology, containing art owned by the community that has been passed down from generation to generation in a tradition. Furthermore, cultural heritage can be form of tangible and intangible. Along with the times, these cultural heritages will be lost if does not preserved. According to the UNESCO Convention for the safeguarding of Intangible Cultural Heritage explains that Intangible Cultural Heritage is taught from generation to generation that includes practices, representations, expressions, knowledge, skills and instruments, objects, artifacts and cultural spaces associated with it. Community, group, or individual are part of the cultural heritage (UNESCO, 2005). Then from the explanation above, it can be assumed that traditional songs, rhymes, proverbs, and traditional houses are examples of cultural heritage that developed in each region. It has values that are beneficial to the community.

METHODOLOGY

This research used qualitative approach. The qualitative research in this study supports to see and identify how the preservation of indigenous knowledge about disasters exists in the communities.

This research used observation and simple document analysis. The type of observation, which was selected, is a non-participant observation. Non-participant observation is an observation in which the researcher just doing observe without interacting with all activities carried out by the research object (Williams, 2008). This non-participant observation was conducted in October 2018, where the researchers observe places or areas where how land was used in accordance or otherwise with the proverb.

The data that was obtained from documents was collected through reference material such as newspapers, book, previous studies, and from other documents on the internet. They were examined for information about local wisdom in the Minangkabau and Mentawai tribes. The data was taken from trusted online newspapers in Indonesia. The validity of the site was checked through the list of verified media through dewanpers.or.id. *Dewan Pers* or The Press Council is an independent institution in Indonesia that has legal force under Law No. 40 of 1999 (Undang-Undang No. 40 Tahun 1999).

The book were obtained from the collection of the National Library Of Indonesia and UI Library. The data from previous studies were taken from some publication. The previous studies were obtained from e-journal of Universities such as study about the local wisdom that integrated with the geography subject at school, and also a study taken from the seminar proceeding about disaster research TDMRC-Syiah Kuala University, Aceh, Indonesia. They also available online in the internet. The various documents were examines for information about local knowledge and disaster occurrence or management. Other site sources were sites managed officially by the government, and in cooperation with the government. All documented data and observations connected and support this research. Therefore these data is considered valid as sources.

DISCUSSION

The Mentawai Island is separated from the island of Sumatera by the Mentawai Strait. It is inhabited by a tribe called Mentawai Tribe. Its oral tradition appealed to the people to live in a high altitude, the watershed area, with livelihoods as cultivators. However, due to government policy in the old order era forced them to move to the shore (Suprpto, 2018). This policy must be followed that made many society live in the coastal area that automatically change their livelihood to be angler. It was noted that during the earthquakes and tsunami that occurred on October 25, 2010, swept more than 20 villages, with 448 bands and 100 people declared missing (Muhari, 2016). It is unfortunate that public aware with the value of this local wisdom after a disaster occurs.

From a research conducted after Tsunami 2010 in Mentawai, it was found that the rural spatial layout in one of villages in the Mentawai Islands, Sabeugunggung, located only 20

meters from the shoreline and far from the highland. At the time of the Tsunami, it was difficult to escape. This study also examined people's knowledge about tsunami. It was found that 40% know about Tsunami, 32.31% did not know until it happened, and 27.69% having heard about but did not understand (Syamsidik,et.al, 2011)

Mentawai also has a song titled "*Teteu Amusiat Loga*" This song is often sung by Mentawai children as a song accompanying game without knowing the meaning of this song, even the adults also did not understand the meaning of this song before it was explored (Viva, 2010). This song is actually an early warning system for the community, because there are signs of earthquakes.

Here are the *Teteu Amusiat Loga* lyrics;

Teteu (Grandfather of the earthquake)

Teteu Amusiat Loga (Grandfather of the Earthquake, the Screaming Squirrel)

Tetu Katinambu Leleu (Grandfather of the Earthquake, roar coming from above the hills)

Teteu girisit nyau'nyau (Grandfather of the Earthquake, there are landslides and destruction)

Amagolu 'teteu tai pelebuk (grandfather of the earthquake, from the spirit of sea shells being angry)

Aratodeake baikona (Because the tree has been cut down)

Pai-pai gou'gou shrine (swaying chicken)

Lei-lei gou'gou (chickens are running around)

Barasita teteu (because there the earthquake has come over there)

Lalalak paguru sailet (people are running around)

Teteu or the ruler's grandfather, interpreted as an earthquake, the Mentawai local community believe that *Teteu* is a local ruler and if the ruler is angry, earthquake and tsunami will happen. It is also mention the signs of the earthquake from the behavior of squirrels and chickens. Not only as a sign of an earthquake, this song also intended as advise the community to maintain the balance of nature to avoid disasters (VIVA, 2010).

The Minangkabau Tribe - Minangkabau community has thousands of messages and advices called the *pepatah* (proverb). They hold a philosophy of life called "*Alam Takambang Jadi Guru* (the nature as its teacher)". This philosophy implies that nature and the environment around humans can be exploited as life lessons for the future. Ancestors read natural signs and implement them in life. This philosophy was developed into various forms of customs, culture, and traditions of local communities. The Minangkabau community believes that by studying nature and the environment well will provide good benefits for humans.

Not only earthquakes, other disasters such as floods and landslides are also the concerns, especially when the rainy season comes. The local wisdom of the Minangkabau ancestors is conveyed into the saying:

Nan lurah tanami bambu (chasm planted with bamboo trees)

Nan lereang tanami tabu (slope area planted with sugar cane)

Nan padek kaparumahan (solid land for housing)

Nan gurun buek ka parak (dry / barren land for plantations)
Nan bancah dibuek sawah (watery soil for rice fields)
Nan munggu ka pakuburan (small hill for burial)
Nan gauang ka tabek ikan (clay ground for fishpond)
Nan padang kapaimpauan (large area for shepherds)
Nan Lambah kubangan kabau (valley for farm / buffalo puddle)
Nan rawang payo kaparanangan itiak (swamp area where ducks are raised)
Sources : (Aliman, 2017) and (Damsar and Indrayani, 2016)

Minangkabau ancestors have given messages about land management. This knowledge is transferred from generation to generation verbally through the proverb. The meaning of the proverbs implies that humans should not be greedy in using nature. One example *Nan lurah tanami bambu* (chasm planted with bamboo trees). Bamboo has strong and sturdy roots that can be a shield against landslides. *Nan padek kaparumahan* (solid land for housing), areas that have dense land will be very suitable for residential areas. The 2009 earthquake in West Sumatera caused many houses and buildings being destroyed. One reason is that the construction of housing on land that has an unstable, soft, and not dense soil structure (Aliman, 2017). Lots of land clearing for housing development was currently paying less attention to these natural aspects, so that many housing were built in swamp areas, rice fields, flood areas etc.

Rumah Gadang and Rangkang as Local Wisdom

Rumah Gadang is not just a symbol or a large house. However, it is a reflection of the maternal system contains the values of togetherness, cooperation and democracy. It shows the identity of the people (Syafwan, 2016). *Rumah Gadang* is a tangible cultural heritage of the *Minangkabau* people that contains philosophical values. *Rumah Gadang* was built with through preparation from the start of planning, site selection, space arrangement, and selection of building materials. The existence has begun to be rarely found in West Sumatera. Modern society tends to build concrete houses with modern architecture. The cost for build a *Rumah Gadang*, the difficulty of the material sources, and the difficulty of workers who are able to build a proper *Rumah Gadang*, are the factors of the existence (bpcbsumar, 2017). The rarer the existence of *Rumah Gadang*, the less knowledge and expertise to build this house.

Rumah Gadang was proven tough for the earthquake because the construction has a strong and solidity against earthquake up to 8 Richter scale. The design of the *Rumah Gadang* is made of wood resembling a boat with two platforms on the right and left. The pavilion is made without support poles, so that this makes the wooden frame get a load downward making the frame of this house stand firm. The *Rumah Gadang* does not use any nails as a binder, only pegs so that the pegs always adjust when earthquake occurs. The building's feet do not step on the earth, but uses stones on the base. The function is as a vibration wave damper from the ground. One proof of the resilience of *Rumah Gadang* to the earthquake is the Adityawarman Museum in Padang. This *Rumah Gadang* was built in 1974. Even if the earthquake had been rocked the area of West Sumatera, there was no damage to this building (Novio, 2012).

The existence of this *Rankiang* is in line with the existence of a *Rumah Gadang*. *Rangkiang* is a building located in the courtyard of the *Rumah Gadang*. In the past, *Rangkiang* was a symbol of the socio-economic status of the people who owned the building. The function is as a rice storage barn. *Rangkiang* has various forms and functions. There are 4 types of *Rangkiang*; The first is *Sitinjau Lauik*, which is a barn for buying household needs. Its slim shape stands on four pillars. Second is *Sibayau-bayau* that is a barn used for daily meals. The shape of this building is large. Third is *Sitenggang Lapa*, which is barn that will be used in the peak season times. Fourth is *Rangkiang Kaciak*, which is barn to store seeds and the cost of working on rice fields. The building shape is smaller and lower (Navis, 1984). Between the cages, it is allowed to build some additional *Rankiang* until the number of them become seven pieces (Soeroto, 2005). It is *Rangkiang Sitenggang Lapa* that has functions as a food source during the cyclic in the rainy and dry seasons or during disasters. The concept of *Rankiang Sitenggang Lapa* is similar for disaster mitigation (Adri, n.d.).

Nowadays, a similar building concept is also found in Svalbard Islands, Norway was named Svalbard Global Seed Vault in anticipation of the disaster. This dome has function as the seed dome (Adri, n.d.). In Indonesia, the concept of *Rangkiang* is similar to Community Food Barn (*LPM*). This government concept was successfully considered in realizing resilience to the community in the disaster suffer area. Since 2009, the development of the Community Food Barn in the Food Security Agency (*Badan Ketahanan Pangan*) has begun to be implemented and strengthened by Law number 18 of 2012 (*Undang-undang No 18 Tahun 2012*) concerning food. The Government establishes National Food Reserves ("*Pengembangan Lumbung Pangan Masyarakat - Badan Ketahanan Pangan,*" n.d.)

The Role of Library in Managing Indigenous Knowledge

Library as an institution that manages the information is hoped to be a strategic place to society in getting information. In Indonesia, every region has at least one public library. These libraries have local content collections that serve certain community. The Local collection contains local wisdom, local knowledge, and cultures. Library also needs to do documentation for capture local wisdom because some of them spread orally. Disseminating thus information to the society is the main target. Library could hold some community discussion by providing the local contents and making them practice that local wisdom.

Library has librarians as electors, organizers, and information disseminators. Local content, which is a cultural inheritance owned by a certain area, must have historical value and certain cultural values. Librarians should play an active role in documenting to disseminate it to be consumed and preserved by the community. This is a treasure trove of cultural information that can later be used as a story and lesson for the cultural region.

A Library manages the local content. This collection is socialized to the public without exception. The library can open cultural classes free of charge for the community. The library can hold traditional art and cultural performances. The communication process in

the activities will influence everyone involved. Beside as entertainment, they have meanings. Art performances can be in the form of traditional dance, music performances, and theater performances of regional folklore come with the delivery of meanings from each art performances. The library can serve screenings of films or videos that contain local content regularly. Therefore, the function of library is needed in managing indigenous knowledge.

CONCLUSION

An understanding of the knowledge and appropriate practice must complement transfer of knowledge. This implies the knowledge is well applied and not just a mere talk. The ancestors have created a variety of valuable local wisdom that is able to prepare disaster resilient communities, long before science developed disaster mitigation practices. These two tribes in West Sumatera – The Minangkabau and the Mentawai – are evidence of it. Both have their own traditions and cultural practices. The Mentawai tribe has *Teteu Amusiat Loga* song, as earthquake warnings, and oral traditions about safe living areas whereas Minangkabau people also have proverbs about the management of land, houses and building as a form of disaster mitigation.

Cultural traditions that are considered unique and its characteristic of a community, implied messages from ancestors in safeguarding the next generation. It is unfortunate that the existence of that local wisdom is fading in society. Their ignorance of the meaning of the song *Teteu Amusiat Loga* that is often used as a daily song causes them to be unaware of earthquake. Communities also should not be greedy in using nature. Proper land management can avoid disaster risk. Learning from the local wisdom of both tribes can reduce the impact of the disaster and become a resilient community. In life nowadays, library can play a role in the acquisition, management and dissemination of this knowledge to society since it is the closest lifelong learning institution.

Acknowledgement

This study was supported by Faculty of Humanities, University of Indonesia. The author and co-author specially would like to thanks Dr. Diljit Singh for his continuous and effort in giving insight and comments in finishing this article. This research received no specific grant from any funding agency in the public, commercial or not-profit sectors. There are no conflicts of interest involving either of the authors of this paper.

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