Vulnerability of society on earthquake disasters in kayangan north lombok

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Abstract. The earthquake caused severe damage in North Lombok Regency. The impact of the earthquake was that there were many casualties and most of the residents' houses suffered minor to severe damage and caused damage to public facilities available. Kayangan Subdistrict is one of five sub-districts located in North Lombok Regency and has the worst damage. This study aims to analyze the level of vulnerability of the community in Kayangan Subdistrict. The technique of collecting data is by observing, documenting, and interviewing relevant offices and stakeholders in Kayangan Subdistrict. Data analysis using qualitative descriptive. The results of this study show that the categories of household vulnerability in Kayangan Subdistrict can be divided into three groups, namely, among others: (1) Prosperous Groups, (2) Middle Groups, and (3) Poor Groups. Whereas when viewed from vulnerable age groups in Kayangan Subdistrict, the productive age group is more vulnerable when compared to the unproductive age group. The productive age group includes women and men aged between 15-64 years. In addition, if viewed from the socio-economic aspects this is very closely related to vulnerability analysis. When viewed from the socio-economic capital of the population in Kayangan Subdistrict, it has very good social and economic capital in meeting its needs after an earthquake. This greatly helps the community in fulfilling its life so that it can reduce socio-economic vulnerability in society. In addition, the role of the government in providing assistance in the form of earthquake resistant housing options also greatly helped the community in the recovery period following the earthquake.

1. Introduction
Earthquakes are a threat since hundreds of years ago and often occur in developing countries such as Indonesia[1]. The territory of Indonesia is located on three tectonic plates of the world, namely the Indo-Australian plate, Eurasia and the Pacific plate and is a path that is passed by The Pacific Ring of Fire or the Ring of the Pacific Fire [2]. The history of earthquakes in Indonesia is quite long, Indonesia is located in the lane of the earthquake that stretches not less than 5,600 km, starting from Andaman to the East Banda are so that it is an area prone to earthquakes [4]. The three plate zones contribute to 90% of earthquakes and are dominated by large categories of earthquakes [5]. Based on data from BNPB there has been an earthquake in more than a decade that occurred in Indonesia. BNPB data recorded that 191 earthquakes occurred from 2009 to 2019, whether large or small scale that could be detected. Earthquakes cause many casualties and damage to homes and public facilities. So far, during the past decade, BNPB recorded a total of 2,093 dead, 10,701 injured, and 958,568 victims displaced. In addition, there were 288,140 heavily damaged houses, 49,317 units were damaged and 491,591 units were slightly damaged. The earthquake not only caused many casualties and damage to homes, but also damaged public facilities including damage to health facilities by 1,050 units, worship facilities 10,559 units and educational facilities as many as 13,699 units.
Figure 1. Trend Chart of Earthquake Disasters in the Last 10 Years in Indonesia

Source: National Disaster Management Agency

One of the earthquake prone areas is West Nusa Tenggara Province [3]. West Nusa Tenggara is an area that is traversed by the Mediterranean route, so that in this region frequent tectonic and volcanic earthquakes [5]. This province consists of Lombok Island and Sumbawa Island. Geologically, West Nusa Tenggara Province is an active seismic region so that this region has the potential for an earthquake because it is located between two earthquake generators, namely from the south and north [6]. Earthquakes can become disasters if they occur in areas of human occupancy and cause potential losses and become a barrier to the occurrence of economic and social activities. Hazardous natural activities can turn into disasters if these humans do not have strong resistance to deal with them [7]. Disaster management that was previously more focused on post-disaster handling needs to be diverted for vulnerability reduction and capacity building activities [8].

The earthquake that occurred in Lombok in August 2018 identified the still not optimal integration of disaster risk analysis into regional development planning. Therefore, this caused serious damage in North Lombok Regency. The impact of the earthquake was a lot of casualties and most of the residents' homes suffered minor to severe damage and caused damage to the available infrastructure. Visual data shows that most of the damage occurs in built-up environments that develop following the economic, infrastructure and tourism development process.

Kayangan Sub district is one of five sub-districts that suffered the worst damage. Based on data recorded by the North Lombok Regional Disaster Management Agency, the number of victims who died in this sub-district was 175 people, 53 people were seriously injured and minor injuries were 195 people. In addition, there is also damage to the education infrastructure including school damage from the level of PAUD/TK (kindergarten), SD/MI (elementary level), SMP/MTS (junior high school), and SMA/MA (senior high school) which is as many as 80 units. Other damage is in the infrastructure of places of worship, namely as many as 55 units consisting of mosques, prayer rooms and temples. Society as a group of individuals with different characteristics tends to be pragmatic by considering disasters as an unavoidable destiny and prefer to be resigned [9]. Therefore, this is also one of the causes of the many fatalities in Kayangan Sub district.

Based on the results of a review of research conducted by other researchers regarding community vulnerability and earthquake disasters, the study was conducted by [10] with the research title "Disaster based earthquake assessment on the catastrophe progression method: A Sichuan Province case study". This study focuses on assessing the social vulnerability of earthquake disasters in Sichuan Province, China based on the method of disaster development established. The results of this study indicate that the northeast and central regions of Sichuan Province have a high category of social vulnerability; especially Guangyun is the most vulnerable region. These findings will provide a basic scientific policy for policy makers to create disaster risk management strategies for them. Furthermore, the research was conducted by [11] with the research title, "Profiling Informal Settlements for Disaster Risk". The
purpose of this study is to develop a theoretical framework through a literature review that combines the concepts of "disaster hazard", "vulnerability" and "informal settlement". The results of this study, which show that environmental policies (environment/land use planning and communication) have an impact on informal settlement characteristics (demographic, financial, social, and location/environment) are key to managing disaster risk profiles in informal settlements, as well as identifying five theoretical propositions which can help in disaster preparedness.

Research conducted by [12] with the research title "Anticipated behavioral response patterns to earthquake: The role of personal and household characteristics, risk perception, previous experience and preparedness". The purpose of this study is to survey expected behavioral strategies among residents of high vulnerability risk areas in Israel and assess factors that can influence their behavior. The results show that people with low socioeconomic status are more vulnerable. Some personal and socioeconomic characteristics are associated with behavior expected by citizens. The level of preparedness and type of earthquake occupancy are significant predictors of recommended behavioral strategy choices. The implications of these results and possible ways to improve readiness are discussed. In addition, other studies are conducted by [13] entitled "Household Identification of Earthquake Prone Hazards in the Bantul Regency Area in Yogyakarta" which focuses on the impact of disasters in Bantul Yogyakarta disaster prone areas using the Sustainable Livelihood (SLA) method. The conclusion of this study is that there are three (1) richest people who suffer the least amount of disasters because of their ability to reduce the impact of disasters by strengthening their homes and using their assets, (2) suffering makes poor people able to reduce the impact of disasters in the future the front for its survival by maximizing social capital so as to minimize the costs of building houses and (3) the survival groups are the most vulnerable to catastrophic events because their wealth has run out for reconstruction costs and their inability to reduce labor costs. The last research is research conducted by [14] entitled "Marginality and vulnerability". This study focuses on exploring the value of adding data on social marginality to the model of the impact of the Japanese earthquake and incorporating marginalized groups into the disaster planning process. The phenomenon of the growth of homelessness in Tokyo was used as a test. It is said that data on homelessness will improve the performance of systems designed to enhance personal and social protection, while the incorporation of marginal city groups will utilize new knowledge about coping mechanisms and enrich the entire planning process.

Disaster risk occurs due to a meeting between threats/hazards with vulnerability factors and capacity factors. Social perspective sciences take into account various factors and parameters that affect vulnerability, such as physical, economic, social, environmental, and institutional characteristics. In addition, in fact since ancient times in this area have known earthquake resistant houses. This can be seen from the remains of traditional houses that are still left. Previous ancestors built houses by considering natural conditions. Other factors, as well as the progress of the times and the development of technology, there has been a shift in the mindset of the community so that many houses were created that were traditionally modern, even though people in the area knew that the area was prone to earthquakes. Therefore, this is also one of the causes of community vulnerability in the face of earthquake disasters that occur in their area. This study aims to analyze the vulnerability of the community to earthquake risk in Kayangan Sub district, North Lombok.

2. Methods
This research is a qualitative descriptive study (data presentation, data reduction, and conclusions) using a spatial approach. The population in this study were all residents living in Kayangan Sub district. Sampling in this study is by using Purposive sampling. The sample used in this study was 60 households taken from each village with the criteria taken based on the 4 villages most affected by the earthquake disaster. Data collection can be carried out with various settings, various sources, and various ways. Data collection techniques in this study used observation, documentation, and interviews. Qualitatively, the data is collected through in-depth interviews with stakeholders related to disaster issues in the North Lombok region. The data analysis used in this study is using qualitative descriptive.
3. Results and Discussion

When viewed from its history, actually in 1979 an earthquake had occurred, especially in the North West Lombok region. At that time the majority of the people's dwellings still used traditional buildings, namely with bamboo poles and roofs from reeds. Therefore, the earthquake that occurred at that time did not cause many casualties and damage to houses would also be available public facilities. The absence of a program on disaster mitigation by the government so that many people do not understand about saving themselves during a sudden earthquake. Many people forget the events of the earthquake that occurred 40 years ago. In contrast to the current conditions, most of the people in Kayangan Sub district, North Lombok, are shifting from traditional stage houses to modern houses made of bricks, cement and other heavy materials. Then when the earthquake occurred in August 2018 there were many casualties and damage to existing houses and public facilities. The government has not yet thought about disaster mitigation for North Lombok Regency. Disaster Mitigation made by the new Government in 2007. Before, government policies made before 2007 were more towards emergency response. They think about how the state provides assistance to victims of the earthquake. Then in 2007 the government began directing policies in the direction of disaster in order to reduce the risk of earthquake disasters in North Lombok Regency so that it could be used as a guideline up to the regional level.

3.1. Research Sites

This research was conducted in Kayangan Sub district located in North Lombok Regency. Astronomically Kayangan Sub district is located at 08° 15', 657 7'S - 116° 15', 6608'E. This sub district has a regional boundary, namely: the north bordering the Java Sea, on the east bordering on Bayan District, on the south bordering West Lombok Regency, and on the west bordering the Gangga District. The area of Kayangan District is 112.90 km². The sub-district has 8 villages, among others: Santong Village, Pendua Village, Kayangan Village, Dangiang Village, Sesait Village, Gumantar Village, Selengen Village, and Salut Village. Kayangan Subdistrict is one of the sub-districts in North Lombok Regency which suffered the worst damage and most victims due to the earthquake disaster. The villages most affected by the earthquake were Santong Village, Kayangan Village, Dangiang Village, and Gumantar Village. Therefore, the researchers took the four villages as research locations in Kayangan Sub district.

| Number | Village Name | Total Population (people) | Area (km²) | Population Density (people / km²) |
|--------|--------------|---------------------------|------------|----------------------------------|
| 1.     | Santong      | 6138                      | 8.80       | 698                              |
| 2.     | Pendua       | 2205                      | 5.14       | 429                              |
| 3.     | Kayangan     | 5496                      | 11.40      | 482                              |
| 4.     | Dangiang     | 2963                      | 3.46       | 856                              |
| 5.     | Sesait       | 8597                      | 17.10      | 503                              |
| 6.     | Gumantar     | 5697                      | 38.60      | 148                              |
| 7.     | Selengen     | 5551                      | 19.50      | 285                              |
| 8.     | Salut        | 3447                      | 8.90       | 387                              |
|        | Jumlah       | 40,094                    | 112.90     | 355                              |

Source: (Badan Pusat Statistik Kabupaten Lombok Utara, 2017)

Demographically Kayangan Sub district is a densely populated sub-district. The total population in this sub-district is 40,094 people. Based on the sex in this Sub district, the number of women is more than the male population, which is the difference of 792 people. Based on data from [15], it can be seen in Kayangan Sub district which is the most densely populated namely Sesait Village, which is as many as 8,597 people and the least populous is Pendua Village which is 2,205 people. Based on data from census results by the Central Bureau of Statistics in 2010, 2015, 2017, and 2018 the population density in Kayangan sub-district has increased between 2010 and 2015, which initially was 331 people / km² and the density became 394 people / km². Furthermore, in 2017 the population density in this region has
decreased which is to be 355 people / km² and in 2018 the population density is still the same as the previous year.

The livelihoods of residents in Kayangan Sub district mostly work as planters and farmers. There are some of them who work as construction workers, fishermen, and entrepreneurs. In addition, when viewed from land use in Kayangan Sub district can be divided into 4 types, among others: paddy fields, dry land, yards and other land uses. The majority of land use in this sub-district is used as dry land, which is 6,235 Ha and paddy land area is 2,733 Ha.

3.2. Post-Earthquake Conditions in Kayangan Sub district

The earthquake that hit the Kayangan District of North Lombok Regency in August 2018 has proven that the vulnerability of the northern part of Lombok and its surroundings to the threat of an earthquake. The condition of the Kayangan Sub-District after the earthquake was devastated up to now 6 months after the earthquake struck. There are still many houses that have been destroyed and have not been repaired due to the earthquake. The latest North Lombok BPBD data as of March 31, 2019 has recorded that there were 53,477 houses included in the category of severe damage, 7,086 houses in the medium damaged category, and as many as 15,117 houses in the slightly damaged category. In addition there are also many public facilities that were destroyed and then made temporary public facilities such as schools, places of worship, health centers, government offices, public toilets, and so on. The condition of road infrastructure after the earthquake broke out on provincial roads and on local roads and there were several bridges damaged by the earthquake. Overall for roads and bridges only minor damage occurs such as cracks but nothing has been broken due to an earthquake. Based on the recapitulation of data from the North Lombok Regency BPBD for the Kayangan Sub district itself there are a number of damaged public facilities, namely schools from the level of PAUD/TK to the high school/MA level of 80 units. In addition to the damage to places of worship due to the earthquake disaster, namely 21 units of the mosque were severely damaged, 29 units of prayer rooms were severely damaged, and 5 units of the temple were also heavily damaged. After the earthquake occurred, many refugee camps were erected. The point of self-evacuation in Kayangan Sub district was 108 refugee points scattered in each village and accommodating as many as 8,625 households with a population of 33,087 people.

![Figure 1. Damage to Houses in Kayangan](image1)

![Figure 2. Damage to School in Kayangan](image2)
Figure 3. Damage to the village office in Kayangan

Figure 4. Damage to the Mosque in Kayangan

3.3 Vulnerability category in Kayangan Sub district

This article departs from a concept developed by a number of social scientists that the magnitude of the impact of disasters is caused by high vulnerability and that vulnerability is a product of interactions between natural conditions and human activities [16]. Based on the survey conducted on ownership, access, and life capital assets (human, natural, financial / economic, physical and social), it can be analyzed into 3 categories of vulnerability of households, namely the affluent, middle and poor. When data obtained from research is combined with studies conducted in the PRA, categories can be obtained that can represent the conditions of each group, namely gadahah (possession), stress (adequacy), and confusion (poor) [13].

3.4 Prosperous Group

The affluent group is those who belong to the wealthiest group in the village consisting of people who have life capital assets (human, natural, economic, physical and social) that are good for fulfilling their daily needs. Included in this group are civil servants, and government employees. Based on research data this group has characteristics including: highly educated, has extensive knowledge and insight, does not have a history of severe illness even if they have the disease able to finance treatment without having to shake the stability of the household economy, able to meet the needs of daily living with enough, owning a vehicle in the form of a motorbike or car as a means of transportation, owning a house that is strong in structure and resistant to earthquake shocks, has extensive land ownership, has high income and sufficient savings to fulfill long-term life and urgent needs, and occupying an important position socially, having a broad and strong social network both inside and outside the region.

3.4.1 Middle Group

The middle class is a household group that has relatively far adrift conditions with the affluent group. Included in this group are livestock traders, agricultural commodity intermediary traders, small shop owners or small shops. The limited work in the village has caused them to choose non-agricultural jobs. This group consists of people who have life capital assets (human, natural, economic, physical and social) that are sufficient to meet their daily needs. Based on research data, this group has characteristics including: having a sufficient standard house to live in, having uncertain income and depending on market conditions, there is only a very small portion of the income that can be saved. Access to modern banking services is limited to short-term deposits. Savings to fulfill short-term life and follow organizations in their area as members. When needing large funds that cannot be reached by regular income, most of them choose to borrow funds in cooperatives or moneylenders. Meeting other needs for health insurance and strengthening the structure of home buildings tend to be ignored. Whereas if they have critical illness or suffer from illness most of them choose outpatient treatment with consideration of more affordable funds. When there is an emergency situation and requires large
expenditure this group has the potential to experience bankruptcy and it is difficult to recover to a normal life.

3.4.2 Poor Groups

The Poor Group is a household group that has the lowest strata in the community. Included in this group are households that usually depend on irregular and irregular daily income including construction workers, farm laborers, drivers and small fishermen. Some of their income is used to meet daily food needs, electricity bills, and other necessities of life. Most of them do not take high school or even junior high school education. On average, they only finished their education to elementary school. In addition to low education, lack of adequate skills makes it difficult for them to get jobs in the formal sector or clear non-formal work. They are not able to build a decent house and are resistant to earthquake shocks. In addition, they also do not have adequate transportation. Health costs are not something that is too worrying because there is assistance from the government in the form of KIS (Healthy Indonesia Cards). In addition, for those who have school-age children, most of them go to school by relying on government assistance in the form of KIP (Smart Indonesian Card) while most households that do not have a guarantee card from the government choose to send their children to elementary school or even not going to school.

3.4.3 Vulnerable Age Group

Following is the data on the number of deaths in Kayangan Sub district as shown in Table 2 as follows. Based on data on the number of deaths in Kayangan Subdistrict as shown in Table 1, it can be analyzed that when viewed from the age of the population vulnerable to earthquakes in Kayangan Sub district, North Lombok Regency, the productive age group is more vulnerable than the non-productive age group and the age group. Not productive. The productive age group includes women and men aged between 15-64 years. Men who belong to the productive age group can be vulnerable after natural disasters can be caused by loss of residence, social environment conditions, sources of income, loss of employment, reduced savings to meet daily basic needs, besides when they have to evacuate to a place far away and full of uncertainty for a long time.

| Number | Village | Not Productive (people) | Productive Age (people) | No Productive (people) |
|--------|---------|-------------------------|-------------------------|------------------------|
| 1.     | Gumantar| 14                      | 22                      | 8                      |
| 2.     | Dangiang| 3                       | 8                       | 5                      |
| 3.     | Sesait  | 12                      | 16                      | 1                      |
| 4.     | Kayangan| 3                       | 10                      | 6                      |
| 5.     | Pendua  | 1                       | 2                       | 0                      |
| 6.     | Selengan| 10                      | 17                      | 10                     |
| 7.     | Santong | 1                       | 8                       | 3                      |
| 8.     | Salut   | 1                       | 7                       | 7                      |
|       | Jumlah  | 45                      | 90                      | 40                     |

Source: Secondary Data, 2019

Women who belong to this productive age are vulnerable due to the social construction of the people who shape them. In addition, this is because women lack access to resources in the form of social networks and the influence of transportation, information, expertise, literacy rates, control of agricultural land and economic resources, healthy housing and freedom from violence, and control over policy making. Furthermore, women are victims of segregation of labor based on sex and generally the amount is excessive in the agricultural sector, household, and the informal economy which earns under-standard income with little security and lack of health facilities from the union. Viewed from the agricultural sector and the informal economy generally suffers the greatest losses after the disaster, it results in
women who are in excess quantity in this sector losing their source of income. In addition, women whose homes have been damaged by the earthquake and who have to live in refugee camps, still have to endure household chores such as taking care of children, elderly people and disabled people so that they lose their freedom to seek new livelihoods.

Unproductive age groups, namely children aged 0-14 years are part of vulnerable groups after the earthquake, which is due to various conditions, among others, many children experience physical injuries, psychological trauma, disease attacks, and malnutrition. In addition, children are still dependent on parents so they still need adult support to survive. Children are also still in the age of growth so that in its growth is very dependent on adults or parents.

Elderly people who are also part of the unproductive age group, aged 64 years and older, become a vulnerable group after an earthquake, this is caused by various situations. One of them is the majority of the elderly population are often late to register themselves in the handling program after the earthquake disaster. Whereas among them when they are registered, they are often unable to participate in programs or activities held by the government. In addition, the elderly also often experience acute malnutrition, weak physical conditions, forget to take the medicine, some of them experience physical and psychological stress from family members who are also victims of the earthquake. Other factors, namely the elderly also experienced delays in restoring their economic conditions, escaped the attention of their social environment, were less responsive to warnings of disasters, so that most of them had difficulty being able to survive after an earthquake.

3.5 Identification of Vulnerable Earthquake Disaster Groups from the Socio-Economic Aspect

Socio-economic aspects are very closely related to vulnerability analysis. Vulnerability is the inability of an individual or community group to anticipate, cope with, maintain, and save themselves or groups against the effects caused by a natural hazard. Based on the results of research in Kayangan Sub district, North Lombok Regency, there are Sasak tribes who live in areas bordering natural forest, far from the area which is the center of government and the market economic system. Openness of North Lombok Regency as a center of culture Indonesia makes this region an area that has a strong network both at national and international levels. When a disaster occurs, the social capital owned by the community changes to financial assistance and other forms, both from national organizations and from international organizations. In addition, at the community level, relations between community members are very strong, namely they still instill the value of mutual cooperation and strong kinship relations between neighbors. Many family heads reside more than 30 years and this shows if they are born in the same village and they have strong kinship in dealing with the problems that occur. In addition, there are some people from other regions, such as, East Lombok, West Lombok and Bali.

Many communities in the study area come from various kinds of community and institutional organizations including: BPD (Village Management Board), LPM, Karang Taruna, PKK (Family Welfare Empowerment), P3A, GAPOKTAN, BUMDES, Fishermen Groups and POKLAHSAR (Marine Products Management), LKS Friends Sharing, BARNAS PD, PERANTA, FKP LOPANDA, BAJANG MANDIRI, GARDA, CREATIVE ANSES, KOMPAK, OBSESKA, SORAK SIU Association (SEMETIAN PEPADU Association), KWT (Farmer Women Group), KUM (Mandiri Business Group, Livestock Farmers Group For example, each household has a different institution, namely one household and the other is a part of the neighboring neighborhoods, community groups and different hamlets, each of which has a different program for the prosperity of its people. this institution also facilitates relations between the community and the government, through community and institutional organizations that are very helpful for the community in searching and get help when it happens in an emergency. Therefore, this community organization provides a very important role for the community.

If viewed from the economic point of view of the community, the research area is dominated by the natural sector. This can be seen from the majority of the livelihoods owned by the community. The majority of people living in their highlands have livelihoods, namely in agriculture, namely gardening.
The majority of plantation crops planted are coconut, cashew, coffee and banana. Whereas the majority of people living in their lowland areas have a livelihood as farmers, some become fishermen, construction workers and entrepreneurs. Agricultural crops commonly planted by residents include rice, corn, peanuts, chili, and long beans. When viewed from the perspective of rural households, they have been able to make various kinds of livelihoods by selling products from their farms or just to fulfill their daily needs. Many of the study respondents reported that after the earthquake they did not sell their produce and farms but instead they relied on these products to meet basic food needs during an emergency. Among them were sharing agricultural produce during an emergency after an earthquake occurred to fulfill survival. Therefore, they not only rely on government assistance, but they rely on the results of the gardens and farms they have. This greatly helps the community in fulfilling its life so that it can reduce economic vulnerability in society.

The impact of the earthquake in August 2018 was felt differently by each household group, but there was one impact felt by almost all households, namely damage to houses and infrastructure and public facilities. 90% of homes in Kayangan Sub district have been severely damaged and even very few houses can still stand firm after the earthquake occurred. Some destroyed houses are made of construction made of bricks, cement, concrete blocks and other heavy materials. This caused a lot of damage and many victims were crushed by the ruins of their own house. In addition, the collapsed walls and the destroyed roof mostly hit household furniture, electronic equipment, vehicles so that many were damaged by the earthquake. When viewed from the category of vulnerability of household groups suffered and the losses experienced by the rich group are fewer when compared to the middle and poor groups. The high level of economic welfare, high human capital, and good social capital, as well as owning houses with earthquake resistant structures make them able to effectively reduce the risk of the effects of earthquakes. In addition, the greatest losses were experienced by the poor because many of them lost their livelihoods and did not work for months due to earthquakes. Some of them report feeling traumatized and afraid when they have to find work. Even though it is disadvantaged groups of poor people can also get a number of benefits after the disaster, especially when entering the phase of housing reconstruction. Many of them get assistance from the government in the form of earthquake resistant houses so that they will automatically be greatly helped in this matter. In addition to earthquake resistant houses, other assistance they have also received in the form of food, clothing, money, and medicines has helped them to continue their lives after the earthquake. The middle class experiences the worst situation because of the lack of life capital (human, natural, financial / economic, physical and social) that they have. In addition, this group does not have the social security provided by the state not reaching this group so that they have to make ends meet after the earthquake by using their own capital assets to reduce the risk of emergencies.

4. Conclusion
The category of vulnerability of households in Kayangan Sub district can be divided into three groups, namely, among others: (1) Prosperous Groups, (2) Middle Groups, and (3) Poor Groups. Whereas when viewed from vulnerable age groups in Kayangan Sub district, the productive age group is more vulnerable when compared to the unproductive age group and the unproductive age group. The productive age group includes women and men aged between 15-64 years. In addition, if viewed from the socio-economic aspects this is very closely related to vulnerability analysis. When viewed from the socio-economic capital of the population in Kayangan Sub district, it has very good social and economic capital in meeting its needs after an earthquake. This greatly helps the community in fulfilling its life so that it can reduce socio-economic vulnerability in society. In addition, the role of the government in providing assistance in the form of earthquake resistant housing options also greatly helped the community in the recovery period following the earthquake.
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