



TECHNIUM
SOCIAL SCIENCES JOURNAL

Vol. 29, 2022

**A new decade
for social changes**

www.techniumscience.com

ISSN 2668-7798



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Socio-Geospatial Characteristic of Communities Affected by Contemporary Hydrometeorological Disaster During The Covid-19 Pandemic in Cimanggung Sub-District, Sumedang District, West Java Province

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Abstract. Hydrometeorological disasters has dominated the list of disasters in Indonesia in recent years. Cimanggung Sub-District in Sumedang District which located in West Java Province is one of the areas experiencing hydrometeorological disasters, namely landslides and floods in January 2021. This disaster event is an example of an interesting phenomenon to conduct innovative research in the context of disaster management that occurred in the Covid-19 pandemic era. Thus, this research aims to analyze the socio-geospatial characteristics of the affected community so that it can explore the level of survival capacity of the community affected by the contemporary hydrometeorological disaster through the identification of its socio-geospatial characteristics in Cimanggung Sub-District, Sumedang District. This study uses an

exploratory survey method for social and geospatial parameters and will be analyzed quantitative qualitative sequential with the GIS-Overlay technique based on observation data and field surveys and the results of interviews with affected communities. The results showed that: 1). The characteristics possessed by the people of Cimanggung Sub-District and the landslide disaster during the Covid-19 pandemic that occurred influenced each other both positively and negatively; 2). Geospatial characteristics in Cimanggung Sub-District basically place the local community's livelihood at risk of landslide hazard; and 3). Landslides and floods during the Covid-19 pandemic that occurred in Cimanggung Sub-District had a domino impact on the community which greatly affected the dimensions of human security. Morphological conditions affect the characteristics of people who have community attachment to fellow communities and their environment. However, this characteristic is also an obstacle in the housing relocation process that will be carried out by the government. On the other hand, the community attachment has the nature of mutual cooperation helps the disaster emergency response process so that it is carried out more effectively.

Keywords. Hydrometeorological disaster, flood, landslide, socio-geospatial characteristic, Covid-19 pandemic.

1. Introduction

On Saturday, January 9th 2021, floods and landslides occurred in several areas in Sumedang District. At 14.00 local time, there was a flood in Cisempur Village and Cikeruh Village, Jatinangor Sub-District and in Cimanggung Sub-District. Later at 15.30 local time, a landslide occurred in Cihanjuang Village, Cimanggung Sub-District and another landslide occurred at night at 19.00 local time. The worst disaster conditions occurred in the Cimanggung Sub-District, especially in Cihanjuang Village. The victims of this disaster amounted to 65 people, of which 3 people were seriously injured, 22 people were lightly injured, and 40 people died. While the total damage that occurred included 26 heavily damaged houses and 3 moderately damaged houses [1]. Data on the number of refugees obtained were 1,126 people (314 families) which were divided into 3 zones, namely Zone 1 as many as 465 people, Zone 2 as many as 513 people, and Zone 3 as many as 148 people [2].

Based on the analysis of the Meteorology, Climatology and Geophysics Agency (*Badan Meteorologi Klimatologi dan Geofisika-BMKG*), landslides disaster occurred when conditions were quite heavy in the area [3]. In addition, the Head of the Central Land Movement Mitigation, Volcanology and Geological Hazard Mitigation, Agus Budiarto explained, landslides were also inseparable from the geological conditions of the area. The results of the study conducted by his team, the Cimanggung Sub-District was a vulnerability zone for soil movement in the medium to high category (bnpb.go.id, 2021). National Disaster Management Agency (*Badan Nasional Penanggulangan Bencana – BNPB*) also stated that the area affected by the landslide in Cimanggung was included in the Citarum watershed. The results of monitoring by the National Aeronautics and Space Agency (*Lembaga Penerbangan dan Antariksa Nasional*) showed that until 2020 there have been changes in land ranging from dry fields, wetlands to settlements in Cimanggung Sub-District [4].

Based on the satellite imagery, in 2003 the affected area was a dry field and green areas. However, in 2017 it appeared that the land clearing for new housing has begun, not only at the landslide location, but also around the affected area [5]. There were several houses on the cliff and there was a village on the downstream of the cliff, with a very steep slope then gentler below. Moreover, the horseshoe-shaped cliff structure in Cimanggung Sub-District is actually very easy to absorb water and then landslides hit the settlements downstream [6]. Meanwhile, the

social condition of the community showed that Cimanggung Sub-District has a population of 84,260 people with an average density of 1,517 people/km² [7]. Based on the data, Cimanggung Sub-District has the third largest population of total 26 sub-district in Sumedang District [8]. The location of the landslide disaster was precisely in Cihanjuang Village. The people of Cihanjuang Village have a rural character, even though they are located in the Bandung City buffer area. Figure 1 below shows a map of the location of the incident and Figure 2 shows the condition of the area affected by the landslide.



Figure 1. Landslide Incident Location.

Source: Local Disaster Management Agency (*Badan Penanggulangan Bencana Daerah – BPBD*) West Java Province, 2021.



Figure 2. Area Affected by Landslide in Cimanggung Sub-District.

Source: Local Disaster Management Agency (*Badan Penanggulangan Bencana Daerah – BPBD*) West Java Province, 2021.

Cihanjuang Village, Cimanggung Sub-District was the area with the most landslide in a series of floods and landslides in various areas in West Java. Based on the results of a survey and mapping of landslide-prone areas with a percentage of 15.95% or 7.44 hectares of landslide-prone areas. According to the morphological map of Cimanggung Sub-District, most of the areas that experienced landslides have a wavy morphology with slopes ranging from slightly steep to very steep, which is in the range of 15° to 85° . If seen from the distribution, the disaster location is in the medium to high landslide zone, this can be interpreted that the triggering factor, in this case rainfall, has a very important role in the occurrence of landslides. Landslides will easily occur if some vulnerable areas, such as river valleys, escarpments, and road cliffs are flooded with above-normal rainfall.

The socio-geospatial interaction during the Covid-19 pandemic in responding to the landslide disaster that occurred in January 2021 was interesting to be an object of research on disaster management in the perspective of national security. The main problem in this study is how to identify the socio-geospatial characteristics of disaster-affected communities and their natural environment based on contemporary disaster phenomena in Cimanggung Sub-District, in order to explore the level of survival capacity based on risk impact observations and contemporary socio-geospatial characteristics, namely hazard and vulnerability [9]. Hazard (H) is a function of the characteristics of location (l), intensity (i), frequency (o), and possibility (p). Meanwhile, V is a function of the characteristic of physical infrastructure (r), social (s), economy (e), and environment (a). Contemporary risk impacts was being observed and explored socio-geospatially in the post landslide and flood disaster, alongside with the identification of hazard and vulnerability in Cimanggung Sub-District, Sumedang District.

There are seven characteristics that exist in rural communities, namely homogeneous, primary relationships, strict social control, mutual cooperation, social ties, magical-religious, and monotonous life patterns [10]. Furthermore, there are ten parameters that can be used to assess the geospatial characteristics of an area, namely location, distance, morphology, affordability, pattern, agglomeration, usability value, interaction and interdependence, area differentiation, and spatial interrelationship [11]. The two assessments (community characteristics and geospatial characteristics) are interrelated so as to produce a comprehensive analysis of the characteristics of the Cihanjuang Village, Cimanggung Sub-District community. Thus, this research will discuss socio-geospatial characteristics of the community affected by the contemporary hidrometeorological disaster during the Covid-19 pandemic in Sumedang District in the perspective of national security.

2. Research Methods

The research method used by researchers in this study is a quantitative qualitative sequential with the GIS-Overlay technique based on observation data and field surveys and the results of interviews with affected communities. There are two kinds of data collection techniques used, namely qualitative data collection and geospatial data collection. Qualitative data collection techniques are carried out through observation, interviews, and documentation studies [12]. Whilst, geospatial data collection techniques are carried out on a desktop through observation, measurement, recording, and digital calculation using SainSIG.

3. Result and Discussion

3.1. Social Condition in Cihanjuang Village, Cimanggung Sub-District, Sumedang District.
The people of Cihanjuang Village in Cimanggung Sub-District have a rural character, even

though they are located in the buffer zones of the cities of Bandung and Sumedang. From an economic point of view, according to the results of interviews conducted, the livelihoods of the majority of the people of Cihanjuang Village are farmers and industrial workers, so that the landslide disaster that occurred in early 2021 had a huge impact on the economic aspects of the community. However, not a few people who become traders outside the city such as Sumedang and Bandung. According to one of the informants, the community feels that the land they currently occupy is their ancestral land.

From a social perspective, based on the results of interviews and observations while in the field, the Cihanjuang Village community has an attachment between each other and with their environment. The community also has a strong sense of togetherness and mutual cooperation. This can be seen when disaster occurred, the community helped each other in providing logistical support to other affected communities when aid from the government had not been able to enter Cihanjuang Village due to road access being cut off. In terms of the environment, the community has the nature of mutual cooperation due to the proximity of their residences. The people of Cihanjuang Village live communally due to the geographical conditions of their environment. Based on the results of interviews with the Head of the Emergency and Logistics Section of Local Disaster Management Agency Sumedang District, the sense of togetherness between the community and the community's attachment to the environment were the reasons for refusing the housing relocation of the Cihanjuang Village community.

Referring to Burn's theory as described in the background above, there are seven characteristics of rural communities, namely: homogeneous, primary relationships, strict social control, mutual cooperation, social ties, magical-religious, and monotonous life patterns. This theory will be used to analyze the characteristics of the Cihanjuang Village community. The first characteristic is social homogeneity, where the results of research in the field show the same public view in dealing with problems after the landslide disaster. The settlements of the Cihanjuang Village community themselves tend to be in groups because they adjust to the morphological conditions of Cihanjuang Village. Regarding the housing sector relocation problem, the people of Cihanjuang Village wish a simultaneous relocation to one of their villages. The relocation of the permanent housing sector for the people of Cihanjuang Village who were affected by the disaster amounted to 132 families. In choosing the location for the construction of permanent housing, the land itself is narrow, making it difficult to relocate all villages in one area. In addition, from geological studies, there are still many areas in Cimanggung Sub-District which are in the red zone of landslide disasters. The government has emphasized that relocation must be carried out and it is impossible for the affected people to be replaced in the location of their homes that were affected by the landslide. On the other hand, the community considers the red zone determination for all villages in Cihanjuang Village to be too generalized.

The second characteristic is the primary relationship, where all activities are carried out by deliberation. After the landslide that occurred in Cihanjuang Village until the time this research was made, the community had not been involved in deliberation activities related to disaster management. The third characteristic is strict social control, where the people of Cihanjuang Village have very close kinship relationships. This also makes it difficult to relocate people to safer places. Until the time of this research, the relocation will be carried out in the first quarter of 2022. The fourth characteristic is mutual cooperation. After the landslide that occurred in Cimanggung Sub-District, access to villages was closed so that it was not possible for the government and volunteers to provide assistance to the people of Cihanjuang Village.

Thus, in order for them to survive, the community helps each other and cross-subsidizes the fulfillment of the people's daily basic needs. Basically, the people of Cihanjuang Village already have mutual cooperation characteristics so that they can help each other during disaster emergency response. The common fate felt by the people of Cihanjuang Village, whose livelihoods rely on the agricultural sector and industrial workers, made them feel they had to help each other.

The fifth characteristic is social ties, where the community obeys the prescribed rules. After the landslide disaster, when the people of Cihanjuang Village were evacuated to a rented house whose payment was paid for by the government each month of 600,000 rupiah, people tend to obey and do not violate the rules of the government. Even because of the community's sense of togetherness that has been integrated with the environment in which they live. Moreover, the people feel that the land they currently occupy is their ancestral land, so they need to work on it to earn a living here. The people of Cihanjuang Village indeed depend on plantation land and rice fields in the neighborhood where they live. The sixth characteristic is magical-religious, namely belief in God Almighty. The people of Cihanjuang Village are all Muslim. Recitation activities are also routinely carried out by the community 1-2 times a week. Judging from the geological aspect, the level of religiosity of this community is also influenced by community settlements that are close to places of worship. Seeing this phenomenon, the researcher argues that the religious magical aspect can be used as a government approach to the Cihanjuang Village community to provide socialization and disaster management training as a non-structural mitigation.

The seventh characteristic is a monotonous life pattern, where the people of Cihanjuang Village make a living in the agricultural sector, both agriculture and plantations and industrial sector. The impact of the landslide that occurred left only 40% of rice fields that could still be used by the community, while the rest was no longer possible. This is because the geographical condition of the Cihanjuang Village environment is fertile so it is very supportive for plantations and rice fields. Thus, the landslide that occurred had an impact on the economy of the community where they lost their livelihood. Based on the data obtained, Cihanjuang Village is indeed a highland with undulating hills morphology making it suitable for gardening and farming. This condition is certainly an obstacle in post-disaster housing relocation. When the community is relocated to a new residential area, the government must also establish a strategy for changing the community's profession.

The landslide disaster in Cihanjuang Village, Cimanggung Sub-District brought the impact of changes in the surrounding environment, and socio-economic losses for the local community. The changes in the surrounding environment and the socio-economic losses of the community are clear evidence of the magnitude of the level of disaster insecurity that occurred. Although there were no casualties due to being buried by landslides and washed away by the floods that occurred, material and social losses have resulted in socio-economic vulnerability for the community. Damage to the surrounding environment describes a condition of the level of vulnerability of the natural environment and the community in facing the threat of disaster. Based on the analysis above, the following conclusions can be obtained as follows:

- a. Community preparedness in landslide disaster areas shows that the characteristics of the Cihanjuang Village community have a positive effect on the disaster emergency response process.
- b. The characteristics of the Cihanjuang Village community have a negative effect on the community relocation process.

- c. The characteristics of the Cihanjuang Village community can be used as a basis for disaster mitigation and disaster management training to deal with the threat of landslides.
- d. Characteristics of the Cihanjuang Village community and landslides have an effect on each other.

3.2. *Geospatial Condition in Cihanjuang Village, Cimanggung Sub-District, Sumedang District.* Data on the distribution of disaster risk studies shows that about 67% of the total area of Cimanggung Sub-District is prone to floods and landslides, of which 74.55% of KRB is a high landslide-prone area; 12.2% moderate landslide prone; and 13.25% prone to high floods [13]. From the mapping that has been carried out, it was found that some areas no longer function according to their ecological functions, such as Cihanjuang Village where most of the area should function as a water catchment area, designated for cultivation areas, including settlements. In addition, the results of aerial photos also show that there is a lot of land clearing for residential areas. From this condition, people need to be more aware of potential disasters in the future, especially people who occupy locations around and on a fairly steep slope. If overlaid with a disaster-prone area map, the land use in Cihanjuang Village which has the largest landslide area is the type of rare forest land use with a percentage of 84.30% or around 372.79 hectares, while only 0.24% of rural settlements are affected by landslide. Figure 3 below shows the landslide area map compare to land use in Cihanjuang Village in 2021.

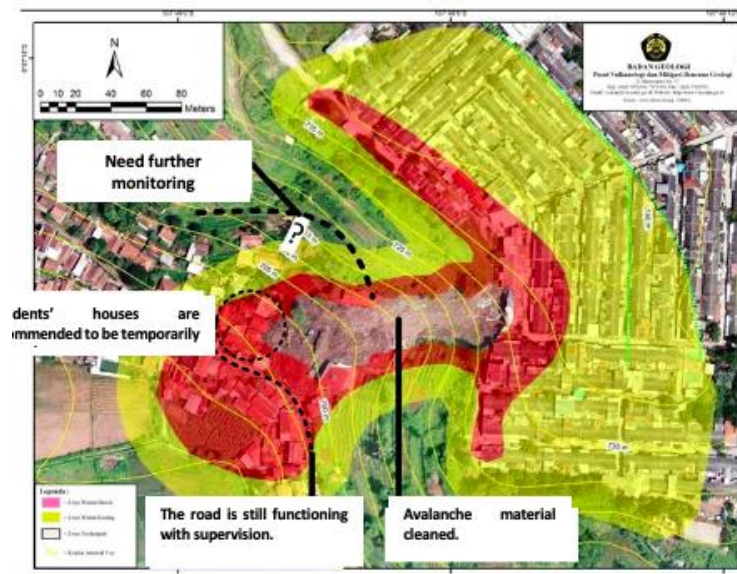


Figure 3. Landslide Area Map Compared To Land Use in Cihanjuang Village in 2021.
Source: Researcher, 2021.

Changes in land use can affect the ability of infiltration and surface water accumulation which can directly trigger flooding in the rainy season and drought in the dry season. Moreover, the geological conditions in Cimanggung Sub-District generally have a fairly deep layer of weathered soil and have soil characteristics that are shaft but dry quickly, making it easier for floods and landslides to occur. The groundwater content in the forest can reach 0.46 cubic meters per cubic meter if it rains with an intensity of 151 mm/hour for 6 hours, but if the rainfall reaches 301.6 mm/hour and occurs for more than 6 hours as shown occurred in early 2021, it will automatically cause overland flow and cause landslides in several critical places, such as plantations, upper cliffs and near roads [14]. Cihanjuang Village, with a population of 15,284

people consisting of 4,321 households [15] heavily depends on one access road that is directly connected to Sukadana Village and Cikahuripan Village. The 11.5 kilometer long road in Cihanjuang Village is the only road used for community mobility to and from their livelihoods. Moreover, Cihanjuang Village is the location of the Cimanggung Sub-District Office where the coordination function of government administration and public services is centralized.

Road damage caused by landslides, in general, is caused by morphological factors/slope slope. Currently, over time, the industries in Sumedang District, both home industries and factories, are growing more and more. The implication is that it is now very easy to find that industrial activities will trigger the growth of settlements and population density. Cutting hills for road construction and rural settlement areas basically has a fairly high level of risk, especially if the area has a fairly steep slope. Soil with a steep slope when triggered by rainwater will cause the slope to become unstable, causing landslides. The geospatial characteristics of Cihanjuang Village can be seen from ten characteristics as mentioned on the background. First characteristic is location, based on the results of mapping in the field by a designated task force after the landslide occurred, the landslide point in Cihanjuang Village is located in Pondok Daud Housing and Satria Bumintara Gemilang Housing with a landslide flow that is 250 meters long and 50 meters wide. Cihanjuang village itself is located at an elevation of 160 dpl/mdl above sea level.

Second characteristic is distance, where the variable distance from one location to another is very important to know because it is needed by officers and the public to access information and services provided by the government. Based on the geospatial interpretation, it is obtained as follows: (a) the distance of the closest landslide point from the Village Office is less than 1000 meters; (b) the distance from the shelter to the sub-district office is 2500 meters, (c) the shelter to the Military District Command Sector office is 884 meters away, and (d) the shelter to health access in this case the sub-district health centre is approximately 1500 km. The determinant of the distance variable in this study is related to rescue actions and logistical support. The third characteristic is morphology, in general the disaster area is undulating hills located at an altitude between 735 to 778 meters above sea level [16]. With a slope angle ranging from 35° – 40° , the disaster area is a steep hilly area that forms a U or V-shaped horseshoe morphology [17]. Figure 4 below shows the Digital Elevation Model (DEM) which shows the morphology of the disaster site in the form of a horseshoe or U/V shape, is one indicator of a disaster area which is a local rain catchment area and water flow.

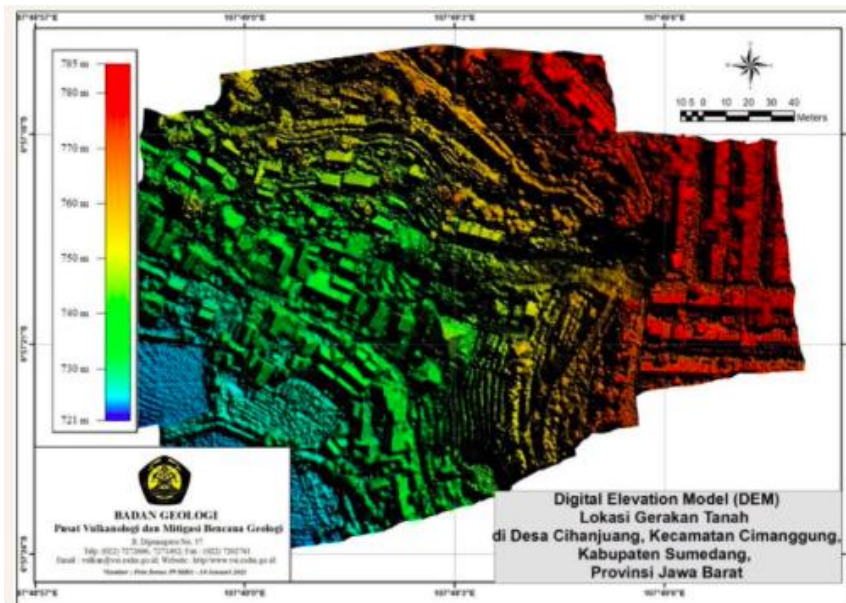


Figure 4. Digital Elevation Model (DEM) Ground Motion Location in Cihanjuang Village
Source: Centre for Volcanology and Geological Disaster Mitigation, 2021.

The fourth characteristic is affordability, where based on the results of interviews with the community, Cihanjuang Village is not passed by public transportation, people use private vehicles for mobilization. The status of the main road that is the only one it has is a district road. Based on the results of field observations and interviews, the water sources used by the community come from springs, pumps, public hydrants, dug wells, and rivers. The fifth is the pattern, there are 8 types of land use in Cihanjuang Village, including: shrubs, dense and sparse forests, mixed gardens, open land, settlements, irrigated and rainfed rice fields. From the results of spatial data observations, the type of land use most affected by landslides is hilly areas with a percentage of 84.3% of the total area, while rural settlements that are directly affected by landslides are only around 0.24%

The sixth characteristic is agglomeration, which is based on the results of observations that settlements in Cihanjuang Village live in groups because they adjust to their morphological conditions and the community does not show symptoms of living or gathering based on certain characteristics. Cihanjuang Village has public facilities that are quite good and are not concentrated in one village, but are spread across various villages. The seventh is usability value, where Cihanjuang Village has a residential area of 62.61 ha, rice field area 54 ha, plantation area, grave area 0.73 ha, yard area, garden area, office area, public infrastructure area 1.44 ha, with a total area of 164.43 ha. The eighth characteristic is interaction and interdependence, where Cihanjuang Village is directly adjacent to other sub-districts and is located at the midpoint of Cimanggung Sub-District. The ninth is area differentiation, where the hilly area which should be a water catchment area is built housing which is a development by Pondok Daud Housing and Satria Bumintara Gemilang Housing has a conflict of interest that is a trade-off between the interests of the community who use hilly areas for water absorption and plantations for economic needs. Furthermore, the last one is the spatial relationship, where based on field observations and the results of interviews with various sources, some road facilities in Cihanjuang Village were buried by landslides, causing access to neighbouring villages to be cut off.

Based on the configuration of the slopes reflected through the contour lines, there are several landslide points in Cihanjuang Village, scattered throughout the area. Referring to the relief configuration, concave slopes are generally found in the southern hills of Cihanjuang Village, which are estimated to be prone to landslides because rainwater is easy to fall into the ground with a concave plane, which saturates water more quickly and causes shear movements around a parallel axis with the ground surface. The cause of landslides in Cihanjuang Village is due to the use of built-up land such as settlements or housing built by developers who build housing without paying attention to regional spatial plans, because certain types of land use have a certain level of risk of hazard vulnerability, this is also reinforced by the lack of vegetation on slope or slope land. Based on the analysis above, the landslide hazard occupies the highest priority scale, especially in Cihanjuang Village, based on the following considerations:

- a. Even though landslides are not periodic or seasonal in nature, they have never happened before, the material losses caused are very large;
- b. It is a type of hazard that cannot be avoided because of its natural condition; and
- c. Triggering factors such as rainfall that causes landslides are highly dependent on global climatic conditions.

3.3. Synthesis and Analysis of Socio-Geospatial Conditions in Cihanjuang Village, Cimanggung Sub-District, Sumedang District. Field studies show that several landslides in Cimanggung Sub-District occurred in areas with steep slopes so that areas affected by landslides could reach village settlement areas. Landslides that occur in several locations in Cimanggung Sub-District, especially in Cihanjuang Village, have the potential to move again, especially if the rainfall is high. This is because activities that exceed the carrying capacity of the environment so that the soil is very easy to subside. The results of a quick disaster assessment conducted by central agencies indicate that Cihanjuang Village is ecologically unfit for settlement because it is an upstream part of the Cipeles watershed.

In other words, in-situ relocation for community affected by landslides cannot be carried out in order to avoid the potential for the same disaster to occur again. The development of permanent housing or temporary shelters, is therefore recommended to other areas that have a gentler topography. The government gives the option to relocate to several areas that are relatively safe from disasters. The decision to designate an area as a red zone for settlements needs to involve the results of an analysis of various factors, including disaster risk studies zoning, mapping of disaster areas, and mapping of land use conversion. Disaster area mapping (quick assessment) is very important to use in evaluating spatial planning documents and revising disaster risk studies maps for regional development planning, while land use conversion data needs to be updated regularly to control the pace of development. Areas that are included in the zoning of disaster risk studies and are also located in landslide areas need to be subject to restrictions or avoidance of development. Thus, it does not mean that the zoning of the disaster risk assessment is given the flexibility to close access to development and settlements in an area as a whole, but on a certain scale this is done to reduce the percentage of use of built-up land.

Land use is any form of human intervention (interference) on land in order to fulfill their material and spiritual needs [18]. The use or utilization of land by the community in the form of gardens, rice fields, settlements and so on must look at the aspects of the main functions of

the land. Another consideration is that the use of land that is not in accordance with the ability of the land will increase the potential for damage to the land itself. Cimanggung Sub-District itself is a red zone of landslides and floods due to geological factors where the contours of the land in Cimanggung Sub-District are sloping and do not have plants to bind the soil. This condition is exacerbated by the conversion of land for settlement and agriculture. The decision to build a residence or shelter in a vulnerable area is a portrait of the community's inability to obtain decent housing as well as a portrait of the government's absence from supervising the implementation of the development plan. Efforts to reduce disaster risk in development policies have basically been stated in the spatial planning regulations of each district/city as well as the stipulations of river and road demarcation lines. Disaster risk studies zoning should be a legal tool used to control development at a certain scale and it needs to be tested first to determine the effectiveness of the planned disaster mitigation efforts.

In a sociological perspective, regulation is one of the political factors that influence how people perceive and evaluate their environment. Deviations can occur, either because of the presence or absence of choice [19]. Economic factors are one of the drivers that cause an individual or community as a community not to follow development directions, it can be caused by the inability of the community to find a safe and decent location, or other incentives such as the proximity of the location to sources of livelihood. In the case that occurred in Cihanjuang Village, the community in general did not know if the area they occupied was an area prone to landslide hazards. According to one of the people who served as Village Secretary at the Cihanjuang Village Office, the landslide incident in Cihanjuang Village in early 2021 was the first incident he had experienced since decades of living in the village. The natural characteristics possessed by Cihanjuang Village are considered as something that has been given and is a nature that has always been a source of livelihood for the local community.

Thus, the landslide that occurred in Cihanjuang Village itself could disrupt the stability of national security if not handled properly. Disaster mitigation, both structural and non-structural mitigation, must be carried out in order to reduce the risks and impacts of disasters. Although the social characteristics of the Cihanjuang Village community were not affected by the landslide disaster, from the economic aspect the Cihanjuang Village community was greatly affected. This can be seen in the majority of the people of Cihanjuang Village who lost their livelihoods due to landslides. The rice fields and plantations of the Cihanjuang Village community that cannot be reused also increase the vulnerability of the community in the future. When viewed from the geospatial characteristics, Cihanjuang Village is in the red zone of the landslide disaster due to the morphological condition of their hilly soil. Based on the results of the geospatial assessment, the land contour of Cihanjuang Village is relatively vulnerable which can cause landslides to easily occur in massive quantities. Based on the results of the analysis of the combination of community characteristics and geospatial characteristics of Cihanjuang Village, the level of insecurity of the people of Cihanjuang Village faced with the threat of landslides is relatively high.

The relationship between national security and natural disasters is directly proportional, meaning that if the disaster risk is high, the insecurity is also high, and the survival rate is low. So by reducing the risk means reducing insecurity and the survival value is becoming high. Thus the disaster risk (R) based on geospatial characteristics and the community affected by the landslide disaster in Cihanjuang Village involves two main parameters, namely hazard (H) and vulnerability (V). So based on the formula $R = H \times V$, it can be interpreted that the magnitude of the risk of landslides in Cihanjuang Village is influenced by the level of hazard and vulnerability. The vulnerability of the community is strongly influenced by environmental

factors and the geographical conditions of Cihanjuang Village itself. However, the lack of knowledge and education of the community is one of the factors in the vulnerability of the community. The majority of Cihanjuang Village communities have completed 9 (nine) years of compulsory education, but related to the disaster, the Cihanjuang Village community has not been given socialization or knowledge about disaster vulnerability. In addition, the Disaster Resilient Village or *Desa Tangguh Bencana* (Destana) has not yet been formed in Cihanjuang Village. The vulnerability of this community will have an impact on human security which is an aspect of national security.

Human security is the protection of the core of human life, which includes seven dimensions, namely economy, health, individual, politics, food, environment, and community [20]. When viewed from the human security theory, the landslide disaster in Cihanjuang Village had an impact on almost all dimensions in the human security. The first dimension is economic security, where as a result of this landslide, people are no longer able to use their rice fields and plantations. Whereas the results of the rice fields and gardens of Cihanjuang Village are the main livelihoods of the Cihanjuang Village community. Thus, the people of Cihanjuang Village do not have access to work, especially the rice fields and community gardens affected by the landslide can no longer be used. The second dimension includes the threat of malnutrition, disease outbreaks, and the lack of access to basic health needs. Based on data in the field, people living in the temporary housing do not have a proper place to live, so the threat to disease is even higher during Covid-19 pandemic.

The third dimension, namely personal or individual security which includes threats to physical violence, terrorism, child labor, and other crimes against humanity. This dimension is a dimension that is not affected by the landslide that occurred in Cihanjuang Village. The fourth dimension, namely political security, is also not directly affected by this landslide. However, the political aspect is indirectly affected in post-disaster activities. This can be seen in the number of government officials who visited the community affected in Cihanjuang Village. This condition is political considering that disasters can become a political commodity for government officials.

The fifth dimension, namely food security, is also not affected where the Cihanjuang Village Community can still access their basic needs. Based on the results of interviews with community representatives, even though during the emergency response access to the area was closed. The sixth dimension, namely environmental safety, is a dimension that is one of the causes of landslides. Environmental degradation that occurs due to land conversion is one of the causes of landslides in Cihanjuang Village. In addition, due to landslides, many rice fields and plantations are no longer usable. The last dimension is that community security which is not affected by the disaster. Human security will have an impact on maintaining national security. Individual security as a part of national security must ensure protection from threats that can impact public safety, including natural disasters. The responsibility of the government itself to provide a sense of security for every citizen, including a sense of security from the threat of disaster has been enshrined in the Law of the Republic of Indonesia Number 24 of 2007 concerning Disaster Management.

4. Conclusions And Suggestions

4.1. Conclusion. Based on the socio-geospatial analysis and synthesis described above, the following are important conclusion drawn from this research:

- a. Social Condition

The characteristics possessed by the Cihanjuang Village community and the landslide disaster during the Covid-19 pandemic had a positive and negative impact on each other. The positive impact is when the characteristics of the Cihanjuang Village community can help smooth the disaster emergency response process that occurs, such as logistics distribution, community evacuation, and cross subsidies carried out by the community when the area is still isolated. But on the other hand, the Covid-19 disaster had a double impact because apart from the impact due to the landslide, the impact that occurred due to Covid-19 was also affecting the entire structure of life, namely economic, social, health, education and others. Thus, it has to be a government's concern in implementing double track disaster management during Covid-19 pandemic.

b. Geospatial Condition

Referring to the relief configuration, concave slopes are generally found in the hills to the east and south of Cihanjuang Village, which are estimated to be prone to landslides because rainwater is easy to fall or enter the ground with concave planes, which saturate water more quickly and cause shear movements around an axis parallel to the ground. Geospatial characteristics in Cihanjuang Village basically place the local community's livelihood at risk of landslide hazard. The community still needs to be vigilant considering that landslides can occur repeatedly because the dominant factor that affects landslides is the nature of the morphology and geology of Cihanjuang Village itself.

c. Social-Geospatial Synthesis

The landslide disaster during the Covid-19 pandemic that occurred in Cihanjuang Village had a domino impact on the community which greatly affected the dimensions of human security and national security. Morphological conditions and community characteristics influence each other, so that disaster management must pay attention to these two aspects. Morphological conditions affect the characteristics of people who have closeness and community attachment to fellow communities and their environment. However, this characteristic is also an obstacle in the housing relocation process that will be carried out by the government. On the other hand, the closeness of the community that has the nature of mutual cooperation helps the disaster emergency response process so that it is carried out more effectively. In addition, the characteristics of people who have a high level of religiosity can be used as a reference for the government in providing education and socialization for the community.

4.2. *Suggestion.* Suggestions that can be given by researchers are:

- a. The Government of Sumedang District needs to make a land-use map, in order to find out how significant the influence of land conversion on the level of landslide risk can be.
- b. Provide training and socialization with a religion approach to make it easier for the people of Cihanjuang Village to understand. The religious approach can also be used as a strategy in persuading communities to be relocated to new areas.
- c. Establish and provide training for Disaster Resilient Villages (*Desa Tangguh Bencana – DESTANA*) in Cihanjuang Village.
- d. Develop a creative economy strategy in Cihanjuang Village by utilizing local wisdom.

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