

## Building Resilience through Sustainable Tourism: A Case Study of Lembang and Greater Bandung Area

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### Abstract

Owing to frequent tectonic activities, the Lembang Fault area in Java Island is highly vulnerable to disasters. Encompassing 51 villages along the fault, this region has witnessed rapid economic growth, transforming it into a sought-after tourist destination. The objective of this research is to map the levels of economic activity in the area and offer recommendations for sustainable economic development. The methodology employed encompasses data collection, in-depth interviews with agencies, business stakeholders, and developers, literature review, and research analysis. The findings of this study indicate that the areas situated along the fault corridor face significant disaster risks while exhibiting substantial economic activity. By utilizing recommendation maps and insights gleaned from interviews, it is determined that the most suitable area for further development lies on the north side of the Lembang Fault corridor. This research strives to provide valuable recommendations for future studies concerning economic sustainability in disaster-prone areas, specifically focusing on the Lembang Fault area. It contributes to enhancing our understanding of economic resilience in vulnerable regions and emphasizes the critical role of sustainable economic development in mitigating disaster risks.

**Keywords:** Lembang fault, Bandung basin, tourism, earthquake risk, Indonesia

### 1. Introduction

Java Island is located on the edge of an active plate, which makes it prone to frequent tectonic activities, such as earthquakes. These tectonic activities are closely connected to the Sunda Orogenesis, a geological process that has been shaping the Indonesian archipelago for millions of years (Simanjuntak, 2004). The meeting zone between the two plates that form Java Island is situated in its southern region, creating a trough that ranges in depth from 4,500 to 7,000 meters and is referred to as the collision zone or subduction zone. While subduction zones are the primary sources of earthquakes on the island, active faults on land also contribute to seismic activity. (Supartoyo et al., 2014).

The collision of plates that form Java Island has caused the formation of different faults. These faults generally have orientations in a west-east, northwest-southeast, and north-south direction. Among these faults, the ones that are actively involved in generating earthquakes

pose a specific and heightened risk. Earthquakes that occur on land due to the movements of these active faults, even if they are not extremely powerful, can cause severe damage. This is because they originate at shallow depths and are often close to populated areas and places with high human activity (Supartoyo et al., 2014).

The Lembang Fault, which is one of the active faults on Java Island, runs along the north side of Bandung city, passing through Maribaya to the east and Cisarua to the west. This fault is classified as a cut fault with a cliff wall that faces north, with an estimated height of 450 meters. However, the height of the fault is lower in the western part of Cisarua, measuring around 40 meters. (Wira & Sedayo, 2010). The research with GPS that has been carried out recently (Meilano, 2009) shows that the Lembang fault is an active fault, and according to GPS research the slip rate of the Lembang fault is 3 mm/year (Wira & Sedayo, 2010).

The Bandung Basin Urban Area, which was initially designated as a National Strategic Area for economic purposes, has since been upgraded to a Metropolitan Area. The Metropolitan Area is composed of two main regions: the Urban Core Area, consisting of Bandung City and Cimahi City, and the Surrounding Areas, which include West Bandung Regency, Bandung Regency, and Sumedang Regency. This division was established in accordance with Presidential Regulation Number 45 of 2018, which outlines the urban spatial planning in the Bandung Basin region (Rismawati, 2019). Referring to Regulation No. 24 issued by the Minister of Agriculture and Regional Planning in 2020 on the management of urban areas in the Bandung Basin, the area intersected by the Lembang Fault has been designated for multiple purposes including a cultural center, a tourist hub, a service center, and a hub for creative economy activities (Article 4 of Chapter II) (Regulation of the Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency of the Republic of Indonesia Number 24, 2020 concerning Management of Urban Areas in the Bandung Basin, 2020).

Building resilience through sustainable tourism is crucial for destinations' long-term well-being, communities, and the environment. Sustainable tourism involves promoting responsible tourism practices that maximise the positive impacts of tourism while minimising the negative ones. Building resilience through sustainable tourism means developing tourism activities and infrastructure to support a destination's long-term social, economic, and environmental sustainability. Building resilience through sustainable tourism practice is one way to boost economic resilience.

Economic resilience can be defined as the ability of an economy or a region to withstand and recover from adverse events such as economic recession, natural disasters, or other disruptions, while still maintaining a certain level of production and consumption over an extended period (Perrels, 2005). Economic sustainability can be defined as a form of development that has the capacity to generate goods and services consistently, ensuring the sustainability of government operations and preventing sectoral imbalances that may jeopardize agricultural and industrial production (Haris (2000) in Arida, 2018). There are three main reasons why economic development must be sustainable, as highlighted by Fauzi (2004) in Arida (2018). There are several key factors that make sustainability an important consideration in economic activities:

1. Moral reasons: The current generation benefits from the goods and services produced from natural resources and the environment. As such, it is important to ensure the availability of these resources for future generations. There is a moral obligation to

refrain from extracting natural resources that could harm the environment, as this could deprive future generations of the same benefits and opportunities.

2. Ecological reasons: It is crucial that economic activities do not threaten the ecological functions of the environment by overusing or damaging natural resources. The sustainability of economic development should not come at the cost of environmental degradation, which can ultimately undermine the economic benefits in the long run.
3. Economic reasons: The sustainability of economic activities is a complex and often debated issue. It is still unclear whether current economic practices meet the criteria for sustainability. Nevertheless, sustainability is increasingly recognized as a key aspect of economic development, and assessing intergenerational welfare is an important way to evaluate sustainability from an economic perspective. In other words, sustainable economic development must not only generate short-term economic gains but also ensure that economic benefits are shared across generations and that environmental resources are conserved for the future.

A sustainable economy is a vital aspect of a region's sustainable development system, as it contributes to the overall well-being of its residents. Haryadi and Setiawan (2002) have classified indicators of sustainable development in a city into three critical groups: economic, social, and environmental indicators. Economic indicators aim to measure the level of economic activity or productivity in the relevant city, which is crucial for achieving sustainable development goals. These indicators include the types of occupations of the population, the amount and distribution of income, and expenditures on areas such as health, housing, energy, and community investment. By monitoring and improving economic indicators, policymakers can ensure that the economic growth of a city is sustainable and inclusive, benefiting all its residents. A sustainable economy can create jobs, improve access to services, and reduce poverty, leading to greater social cohesion and environmental sustainability. Therefore, a focus on economic indicators is essential to achieve a balanced and sustainable development system that promotes the well-being of communities, protects the environment, and fosters economic growth.

The purpose of this study is to provide a comprehensive analysis and investigation of economic activities in disaster-prone areas such as the Lembang Fault. The study aims to identify the economic activities that contribute to the region's economic growth and resilience, as well as those that pose risks to the population and the environment. The results of the study can serve as a model and guide for management, including planning, implementation, and control activities, and spatial planning that aligns with disaster management and mitigation efforts. By analyzing and examining economic activities in disaster-prone areas, this study can inform policymakers and stakeholders about the economic risks and opportunities in these regions. The study's findings can be used to develop strategies to promote sustainable economic development and reduce disaster risks. The results can also support decision-making processes related to disaster management and mitigation efforts. Overall, this study aims to provide valuable insights into the economic activities of disaster-prone areas and contribute to the sustainable development of these regions.

## **2. Literature Review**

The escalating frequency of natural disasters is having a detrimental effect on the economic progress of developing countries in Asia. These countries are particularly vulnerable to various

natural hazards, including hurricanes, floods, droughts, earthquakes, and tsunamis. As a consequence, their economies suffer significant setbacks.

Natural disasters inflict extensive damage to infrastructure, including roads, bridges, power plants, and communication networks. This disruption hampers transportation, slows down trade, and impedes the movement of goods and services. It also hinders access to vital resources and services, such as healthcare and education, thereby affecting the overall productivity and well-being of the population.

Currently, many small and medium-sized businesses are growing in disaster-prone areas such as the Lembang Fault. However, as noted by Aini et al. (2020), the increasing frequency of natural disasters in developing countries in Asia hinders economic development. To mitigate the impact of disasters, it is the responsibility of business actors in disaster-prone areas to develop business continuity plans. A business continuity plan is a process whereby a business operator or company establishes a special prevention and recovery system to address potential disaster threats. Having a business continuity plan in place can help protect business assets and prevent losses by ensuring business continuity in the long run.

In a study conducted by Lin (2015) titled "Land Suitability Assessment for Relocating Villages in Disaster-Prone Areas," GIS concepts and technology were used to identify villages in disaster-prone areas and assess land suitability for relocation as a measure of land relocation safety. The steps taken in this study are similar to those of this final project, which involved compiling a disaster risk map to identify villages in disaster-prone areas, followed by analyzing the suitability of local land for relocation migration. A field survey was then conducted to improve the accuracy of the assessment from the villagers' perspective. One crucial aspect of this project is the use of GIS data, which is essential for determining appropriate areas and preparing for disasters. However, a significant problem and challenge in Indonesia is the lack of a complete and organized GIS database. The availability of such data would greatly aid the government in policy and program development.

A notable case study illustrating the relocation of communities living in disaster-prone areas is Lu Jia, China, as elucidated by Chiu (2017). China has undertaken an ambitious initiative to relocate a staggering 250 million individuals residing in high-risk zones. This colossal relocation program forms a crucial component of China's comprehensive disaster preparedness strategy, aiming not only to safeguard lives but also to enhance the quality of living for affected residents. By transferring inhabitants from remote areas to urban centers, the program seeks to provide them with improved access to essential services, infrastructure, and economic opportunities. This strategic shift in relocation approach ensures that vulnerable populations are better equipped to withstand and recover from potential disasters while simultaneously bolstering their overall well-being and resilience.

In the context of Yogyakarta, where the presence of Mount Merapi creates a perpetual risk of disasters, an exemplary initiative known as the REKOMPAK (Rehabilitation and Reconstruction of Community and Community-Based Settlement) program was introduced to aid the reconstruction endeavors subsequent to the 2006 eruption. Extensive research by Iuchi and Mutter (2020) showcases the effectiveness of this program, as emphasized by the World Bank (2015), which highlights the distinctive advantage of its mechanism. Operating through a well-coordinated framework, the program leverages the strengths of multiple stakeholders: the central government formulates policies and guidelines, international donors contribute

essential funding, and local governments assume the responsibility of diligently monitoring and managing the progress of the projects. This collaborative approach ensures efficient resource allocation, promotes transparency, and empowers local authorities to actively engage in the reconstruction process, thereby fostering a sense of ownership and sustainability within the affected communities.

In an article entitled "Why People Choose to Stay in Areas Vulnerable to Natural Disasters," Reichel (2018) sheds light on the United States' situation, where government programs provide subsidized insurance in environmentally vulnerable regions, creating a distortion in the cost of living. This intriguing program holds potential for implementation in Indonesia, particularly in the disaster-prone areas like the Lembang Fault. As noted by Akbar et al. (2020), numerous small and medium-sized enterprises (MSMEs) operating in the Lembang Fault region lack sufficient insurance coverage, often perceiving insurance as an expense rather than a wise investment. Introducing a similar subsidized insurance program in this context could bring about significant benefits. By offering accessible and affordable insurance options tailored to the needs of MSMEs in disaster-prone regions, it can mitigate financial risks, foster a culture of preparedness, and ultimately incentivize proactive measures to safeguard businesses and promote long-term resilience.

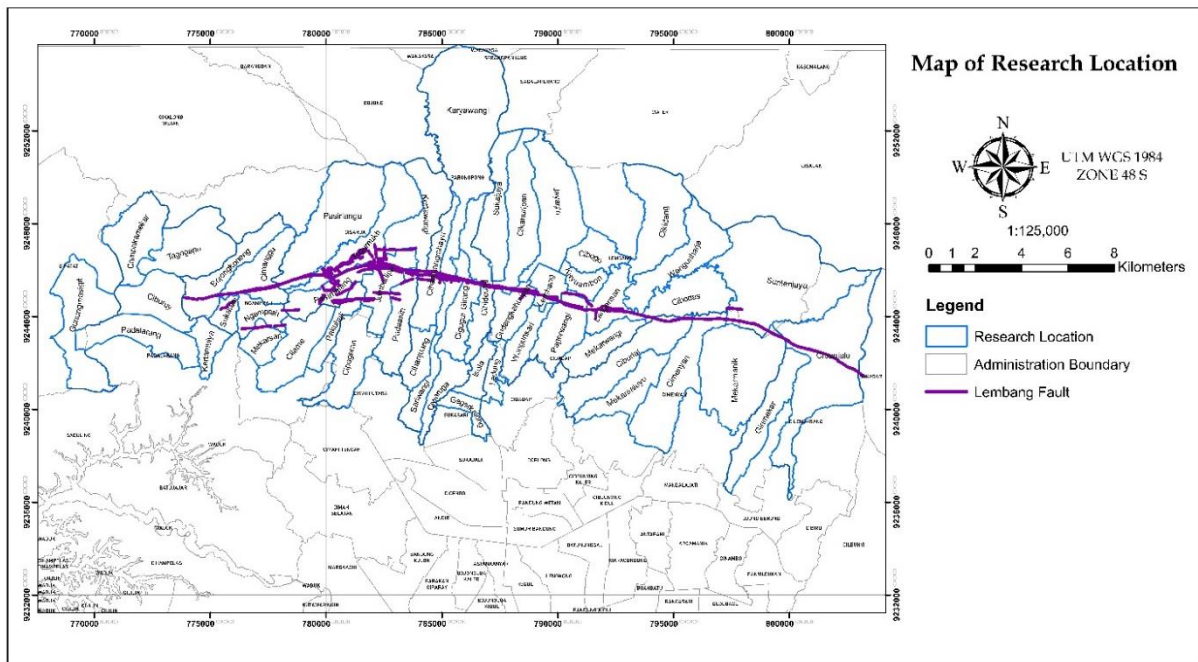
Stock (2020) proposes a noteworthy strategy employed by the government in the United States to relocate individuals from flood-prone areas, which involves relocating them in cohesive groups, thereby enabling them to retain their existing neighbors. This particular approach holds considerable promise for the relocation efforts in the Lembang Fault area. It aligns harmoniously with the rural culture prevalent in the region, where one of the foremost challenges of relocation lies in preserving social activities with neighbors. These social activities often foster community engagement and reliance on neighbors. Without the group relocation strategy, individuals would be compelled to adapt to an entirely new set of neighbors, potentially disrupting the social fabric. In an intriguing case highlighted by Stock (2020), this approach was successfully implemented in Kinston, where an entire community was relocated while concurrently preserving its social cohesion and environmental structure. This exemplifies the positive outcomes that can be achieved when relocation strategies prioritize the preservation of community bonds and cultural nuances.

### **3. Methodology**

#### **Data and Study Area**

This study utilizes a range of economic activity indicators, including the enumeration of tourism establishments, hotels, and restaurants. While these indicators provide valuable insights, it is important to acknowledge that the reliance on this limited scope of economic data is also a constraint of the study. Data collection was conducted using an open street map platform, with the village/kelurahan serving as the unit of analysis. While this approach offers a comprehensive overview, it is crucial to recognize its inherent limitations. To supplement the findings, the study incorporates data from additional sources, such as the 2015 BNPB earthquake risk map, the Tsasalatsa earthquake risk map from 2021, and in-depth interview data. By integrating multiple data sources, the study aims to provide a more comprehensive and nuanced understanding of the economic dynamics and seismic risks within the research area.

The study encompasses a comprehensive area comprising 51 villages situated along the Lembang Fault corridor. These villages are distributed across 11 sub-districts spanning 4 districts/cities. Specifically, the villages/kelurahan are located within Cilengkrang District, Cimenyan District (in Bandung Regency), Cipatat District, Cisarua District, Lembang District, Ngamprah District, Padalarang District, and Parongpong District (in West Bandung Regency), as well as Cidadap District, Sukasari District (in the City of Bandung), and North Cimahi Sub-district (in Cimahi City). A visual representation of the study area can be observed in Figure 1, which depicts the study area map.



**Figure 1. Research study area**

The economic landscape of each district/city, can be comprehensively assessed by analyzing their respective Gross Regional Domestic Product (GRDP) values. The GRDP serves as a key indicator that encapsulates a region's capacity to generate value-added contributions within a specific timeframe. The GRDP is further segmented into 17 distinct business sectors, encompassing a wide array of industries. These sectors include agriculture, forestry, and fishery; mining and excavation; manufacturing industry; electricity and gas procurement; water supply, waste management, waste, and recycling; construction; wholesale and retail trade, repair of cars and motorcycles; transportation and warehousing; accommodation and food and beverage services; information and communication; financial and insurance services; real estate; corporate services, government administration, land, and compulsory social security; education services; and other social activities and services (BPS, 2022). By analyzing the GRDP and its sectoral breakdown, a comprehensive understanding of the economic profile of each district/city can be gained, enabling targeted assessments and policy considerations.

## Method

The data processing stages can be divided into several steps as described below:

- a. Processing of hotel, restaurant, and tourism data into a map of the level of economic activity in the Lembang Fault area.

To collect economic activity data, the OSM (Open Street Map) over-pass turbo platform was utilized, and the resulting data was tabulated using Microsoft Excel. The village served as the unit for data collection, yielding economic activity data for 51 villages/kelurahan within the Lembang Fault area. In Microsoft Excel, the data was inputted for the number of tourism establishments, hotels, and restaurants, with the summation of these sectors to obtain a comprehensive measure of economic activity. Subsequently, the data was combined with village administration data in ArcGIS, which contained attributes such as id, village name, sub-district name, district/city name, and province name. The two datasets were merged using the join table tool based on the village name.

Following the data combination, the economic activity data underwent classification using the natural breaks method, employing a total of 5 classification classes. The selection of this method was based on its ability to group data using natural breakpoints that consider the data's inherent nature, resulting in minimal variation within each class. This approach proved advantageous for the classification of economic activity, particularly when the data exhibited non-normal distribution, as indicated by the J-shaped left peak histogram type observed in the economic activity data. After classification, a map layout was created to visually represent the levels of economic activity across the Lembang Fault area.

- b. Overlaying the earthquake risk map with a map of the level of economic activity in the Lembang Fault area involves the following steps.

To begin with, the economic activity level map obtained in the previous step is superimposed with an earthquake risk map. This involves utilizing two specific maps: the BNPB disaster risk map and the disaster risk map derived from M. Taufik T.'s research. The raster calculator tool within the algebra map menu is employed to perform the overlay, as the disaster risk map is in raster format. However, since the economic activity map remains in vector format, it must first be converted to raster format using the polygon to raster tool found in the conversion tools menu. Once both maps are in the same format, the overlay process can be executed.

The outcome of this overlay process is a merged map depicting the combination of economic activity and disaster risk. To visualize the recommended areas for sustainable economic development in the Lembang Fault area, a layout is generated. These areas should demonstrate a medium to very low level of economic activity while being situated in regions with a medium to very low earthquake risk. The resulting map and layout serve to highlight suitable zones for promoting sustainable economic growth within the Lembang Fault area.

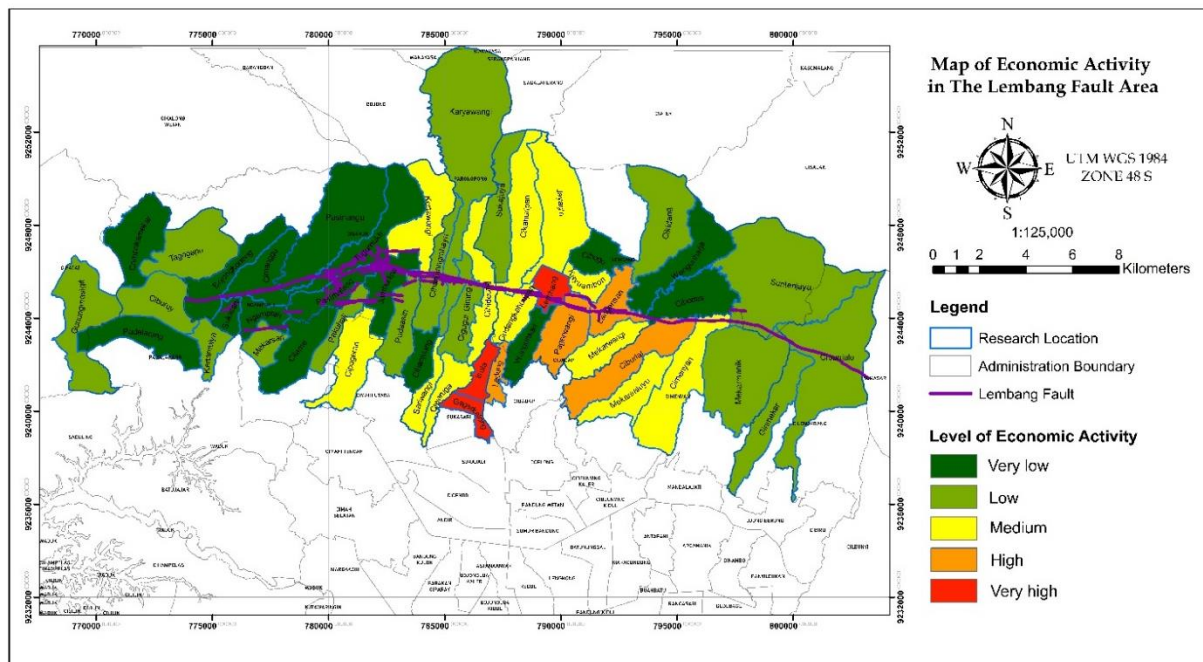
- c. Analyzing the map overlay results

Analyzing the overlay of maps, along with the outcomes of deep interviews and legislative considerations, becomes crucial in identifying areas suitable for sustainable economic development in the Lembang Fault area, building upon the results obtained from the previous mapping process. As two distinct maps were generated based on the earthquake risk map employed, further analysis is required, incorporating insights from deep interviews and the relevant legislation, with a particular focus on the Bandung Basin and KBU (Kawasan Bandung Utara) areas. This comprehensive analysis ensures a holistic evaluation of the suitability of specific areas for sustainable economic growth, taking into account multiple factors and stakeholders' perspectives. By integrating map data, interview findings, and legislative guidelines, informed decisions can be made regarding the identification and prioritization of

areas conducive to long-term economic development while considering the inherent risks associated with the Lembang Fault area.

#### 4. Results

Figure 2 depicts a map illustrating the varying levels of economic activity within the Lembang Fault area. Economic activity is categorized into five distinct levels: very low, low, medium, high, and very high. The classification of these economic activity levels was determined using the natural breaks classification method. This approach facilitates the grouping of data based on inherent breakpoints, resulting in meaningful and discernible distinctions between the different levels of economic activity observed in the region. By employing this classification method, the map provides a visual representation of the distribution and intensity of economic activity across the Lembang Fault area.



**Figure 2. Map of economic activity in the Lembang Fault area**

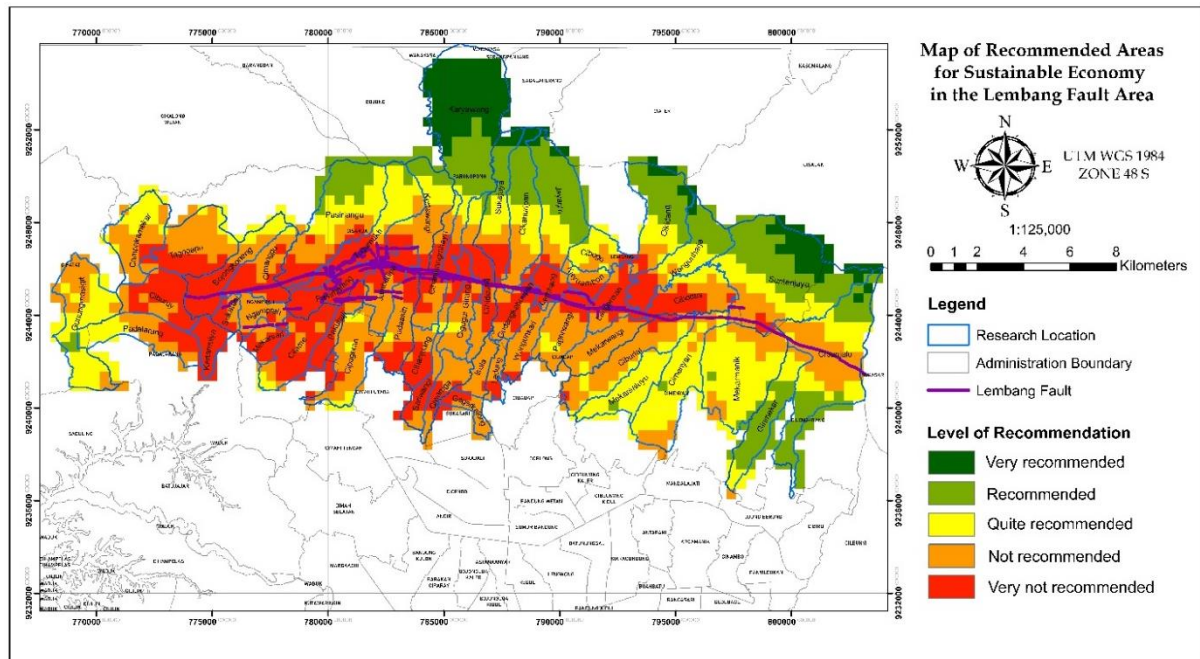
After applying the natural breaks classification method to categorize the level of economic activity in the Lembang Fault area, notable findings emerged. Lembang Village, Isola Village, and Gegerkalong Village were identified as having a significantly high economic density. Conversely, the villages situated to the west and east of Lembang Village predominantly exhibited low to very low levels of economic activity. Based on insights from deep interviews, it was determined that these areas, including Suntenjaya Village, Cibodas Village, Cimanggu Village, Jambudipa Village, and their surrounding counterparts, fall within the North Bandung Area (KBU). The KBU holds strategic importance owing to its socio-economic and physical characteristics, being located in the Bandung Basin, the capital of West Java Province, and a National Activity Center in West Java (West Java Provincial Regulation No. 1 of 2008 concerning Control of Regional Spatial Utilization in North Bandung Area, 2008).

Next, an overlay analysis was conducted by combining the economic activity map with the earthquake risk map specific to the Lembang Fault area. This process facilitated the examination of the relationship between economic activity density and earthquake risk levels



within the region. The resulting overlay map displays areas highlighted in red (strongly not recommended class), signifying high earthquake risk levels and a range of economic activity densities from very high to low.

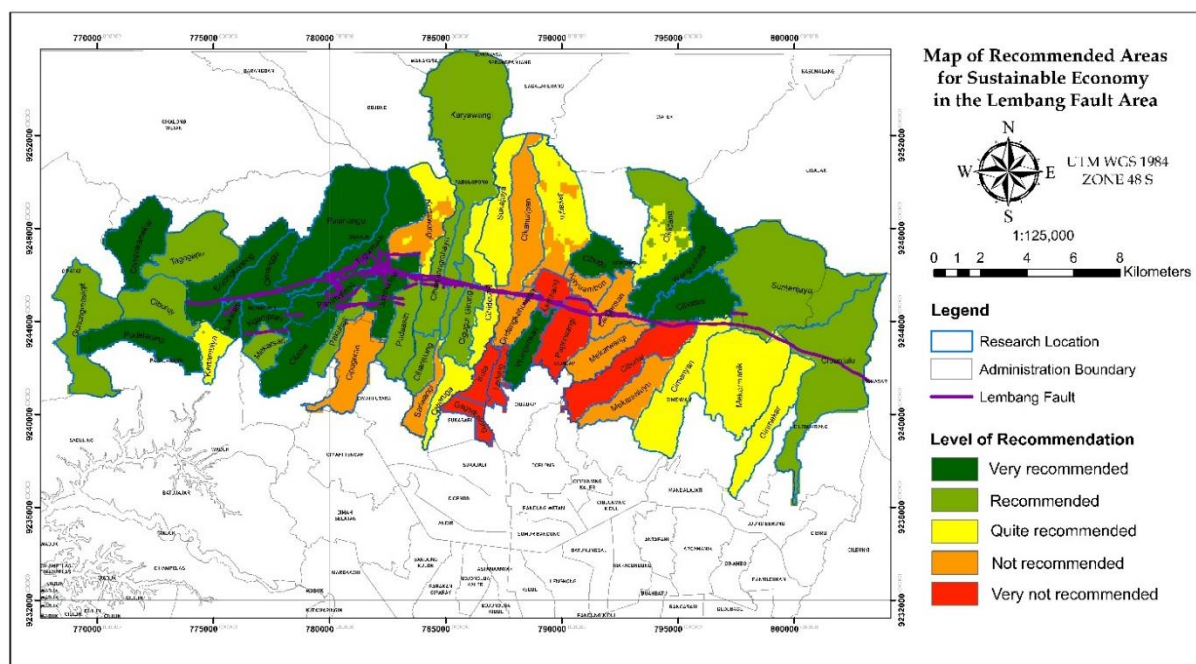
Figure 3 exhibits the overlay map, demonstrating the intersection of the economic activity map with the Tsasalatsa 2021 disaster risk map, further enhancing our understanding of the relationship between economic activity and disaster risk within the Lembang Fault area.



**Figure 3. Map of recommended areas for sustainable economy in the Lembang Fault area (overlay with Tsasalatsa disaster risk map, 2021)**

The presented map in Figure 3 reveals a noticeable decline in the recommended and highly recommended classes when compared to the earthquake risk class. It is crucial to highlight that this specific area portrayed on the map is positioned 4 km north of the Lembang Fault line. However, for areas within a distance less than 4 km from the Lembang Fault, the overlay of the economic activity map and the disaster risk map led to a classification ranging from very not recommended to not recommended.

Figure 4 provides an overlay map showcasing the intersection between the economic activity map and the BNPB's 2015 disaster risk map. This additional overlay contributes to a comprehensive understanding of the relationship between economic activity and disaster risk within the Lembang Fault area, offering insights into the spatial distribution and potential vulnerabilities associated with economic activities in relation to the identified disaster risks.



**Figure 4. Map of recommended areas for sustainable economy in the Lembang Fault area (overlay with BNPB disaster risk map)**

Figure 4 illustrates the distribution of recommended and highly recommended regional recommendation levels among the villages located on the west side of the Lembang Fault (at a distance of 5 km from Lembang Village) and the villages on the east side of the fault (at a distance of 4 km from Lembang Village). In contrast, the central portion of the Lembang Fault corridor, encompassing Lembang Village and its surrounding areas, exhibits a regional recommendation level ranging from moderately recommended to highly not recommended, with a few exceptions where villages have a low risk level. The overlay results depicted in Figure 4 showcase a diverse range of recommendations, which are not solely influenced by the distance of a village from the Lembang Fault.

When comparing the two maps presented in Figures 3 and 4, discrepancies in the findings become apparent. Figure 3 suggests that the distance between a village and the Lembang Fault significantly influences the overlay results between the level of economic activity and the disaster risk map. According to Figure 3, suitable and recommended areas for economic development lie on the east side of the Lembang Fault area (at a distance of 4 km from Lembang Village) and the northern side of the Lembang Fault, with a minimum distance of 4 km from Lembang Village. Conversely, Figure 4 proposes that the potential areas for economic development are located on the west side (at a distance of 5 km from Lembang Village) and the east side (at a distance of 4 km from Lembang Village). These differences highlight the complexity of the relationship between economic activity, disaster risk, and the spatial characteristics of the Lembang Fault area.

Considering the disparity in the outcomes of the two earthquake risk maps utilized, the earthquake risk map employed to determine the recommended area is the one presented in the Tsasalatsa study conducted in 2021. This choice is based on the fact that the Tsasalatsa map belongs to the same research series as this final project, and it incorporates parameters essential for this study's earthquake risk assessment, such as the distance parameter from the fault, which

is absent in the earthquake risk map compiled by BNPB. Furthermore, the BNPB's earthquake risk map was compiled in 2015, and since then, there have been modifications in the parameters used.

To bolster the recommendations for sustainable economic development, further studies are warranted to identify specific areas within the region that hold the potential for such purposes, while also considering relevant laws and regulations. Despite being situated in a disaster-prone zone due to the Lembang Fault, the area can still be effectively managed and harnessed, fostering resilience to disaster risks.

## **5. Discussion**

Based on the previous findings, the areas with potential for sustainable economic development are legally designated as part of the North Bandung Area, referred to as KBU. This hilly region significantly influences the water system of its surrounding areas and offers picturesque landscapes, making it an ideal location for the establishment of five-star hotels, restaurants, recreational areas, and residential settlements (West Java Provincial Regulation No. 1 of 2008 concerning Control of Spatial Utilization in the North Bandung Area, 2008).

Under the Regional Regulation of West Java Province No. 2 of 2016, which provides guidelines for controlling the North Bandung Area as a strategic area of West Java Province, various development activities have begun to flourish in this region, ranging from residential houses and villas to resorts, housing complexes, and apartments. The area also features a range of tourist attractions, hotels, and guesthouses. However, the uncontrolled and rapid growth of urban areas in KBU has resulted in adverse effects such as landslides and reduced water catchment areas (West Java Provincial Regulation No. 2 of 2016 concerning Guidelines for Controlling the North Bandung Area as a Strategic Area of West Java Province, 2016).

If the current trend of economic activities continues, with illegal developments persisting in the disaster-prone areas along the Lembang Fault, the region will not foster a sustainable economy but rather a fragile one. Deep interviews conducted with village officials, business actors, and developers involved in developments along the Lembang Fault reveal that most of the infrastructure and commercial developments in the area have paid little attention to the risk of earthquake disasters associated with the fault.

While the potential earthquake risk posed by the Lembang Fault is a threat to economic development in the area, it is not the sole determining factor. Focusing solely on this risk would impede economic progress in the Lembang Fault area. Therefore, considering the outcomes of the deep interviews, the overlay of economic activity with the earthquake risk associated with the Lembang Fault, and the relevant laws and regulations governing the Bandung Basin and KBU, it can be concluded that areas suitable for sustainable economic development in the Lembang Fault area are situated on the northern side of the Lembang Fault corridor, with a minimum distance of 4 km from the fault. This area exhibits a relatively low level of economic activity and holds potential for the development of eco-tourism.

Based on the outcomes of in-depth interviews and relevant laws and regulations, the conservation area on the west side, located 5 km away from Lembang Village, as well as the east side of the Lembang Fault, situated 4 km away from Lembang Village, are managed in collaboration with relevant institutions or agencies, such as PERHUTANI. This collaborative effort is necessary due to the hilly terrain and forested areas of these regions. Consequently, the

government needs to actively monitor the use of space within this area. The natural beauty and ecological potential of this region make it highly suitable for eco-tourism development. However, any plans for regional development aimed at fostering a sustainable economy must be accompanied by a comprehensive resilience plan. This plan should encompass mitigation strategies, insurance measures, and development planning that prioritizes economic sustainability. Such an approach ensures that any economic progress in the area is not only enduring but also environmentally sustainable.

## 6. Conclusion

Lembang Village, the administrative center of Lembang District, exhibits the highest level of economic activity within the Lembang Fault area, followed by Isola Village and Gegerkalong Village. Figure 14, illustrating a map of economic activity in the Lembang Fault area, demonstrates that the majority of the remaining 48 villages experience low or very low levels of economic activity. This indicates that there is still considerable room for further economic development in these villages to foster a sustainable economy in accordance with relevant legislation.

the Lembang Fault area exhibits substantial economic potential; however, certain regions face restrictions due to their designation as protected forest areas (KBU). To ensure safe and sustainable economic development, it is recommended to focus on areas with a moderate to very low risk of earthquakes from a disaster perspective. Consequently, the area situated on the north side, approximately 4 km away from the Lembang Fault corridor, emerges as a favorable opportunity for economic growth and development. By prioritizing this region, stakeholders can capitalize on its economic potential while minimizing the risks associated with seismic activities, thereby fostering a resilient and prosperous economy in the Lembang Fault area.

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