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Literature Study: Mountain Scrubbing as Landslide and Flash Flood Disaster Mitigation Based on Local Wisdom in Java

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Abstract

Indonesia is one of the countries with the highest disaster vulnerability in the world, particularly to flash floods and landslides due to its geographical conditions dominated by hilly areas, high rainfall, and land use changes. In this context, local wisdom plays a crucial role as an adaptive and sustainable community-based mitigation strategy. One form of local wisdom that is often used is Nyabuk Gunung, a technique for managing sloping land by following contour lines to resemble a "belt" encircling the mountain. By breaking water flow, increasing infiltration, slowing surface runoff, and stabilizing soil structure with the support of deeply rooted vegetation, this system has been proven to reduce the risk of erosion, landslides, and peak discharge of flash floods. This literature study aims to examine the application of Nyabuk Gunung in various mountainous areas of Java and comparing other regions such as Bali, Sunda, and even indigenous communities such as the Baduy and Ciptagelar. The results of the study indicate that this practice not only serves to maintain environmental sustainability but also is an integral part of the community's agrarian culture. Although implementation varies across regions, ranging from full terracing to elongated planting patterns, the principles of soil and water conservation remain consistent. The preservation and revitalization of Nyabuk Gunung has become an important urgency amidst modernization to strengthen hydrometeorological disaster resilience in a sustainable manner.

Keywords *Nyabuk gunung, local wisdom, disaster mitigation*

1. INTRODUCTION

Geographically, Indonesia is known as a disaster-prone area such as floods and landslides (Amri et al., 2020). One of them, as happened in North Sumatra, Aceh, and West Sumatra. In North Sumatra, especially in the areas of Central Tapanuli, South Tapanuli, and North Tapanuli, which experienced floods and landslides caused by extreme rains and deforestation in the upper reaches of the river (A. Putri et al., 2022). Disaster mitigation is very important to be implemented in Indonesia because these

geographical and geological conditions make many areas in a high level of vulnerability (Haeril et al., 2021). Effective disaster mitigation must be carried out in an integrated manner, involving the government, the community, and paying attention to local wisdom that has been inherited from generation to generation (Maulana et al., 2024). One of the The knowledge and practices used by the community to anticipate and deal with disasters are often referred to as the local wisdom approach (Ayunda et al., 2024).

Local wisdom can be understood as the identity or cultural identity of a nation that makes the nation able to absorb, assess, and process the influence of external culture as part of its own character and capacity (A. Putri et al., 2021). One of the local wisdom in disaster mitigation efforts is "*Nyabuk Gunung*", this effort is often carried out in hilly or mountainous areas. Nyabuk Gunung is a local wisdom of mountainside communities in Java in the form of a sloping land management system by making terraces follow the contour lines of the slope, so that the land seems to "belt" the mountain. This pattern functions to slow down surface flow, increase water infiltration, reduce erosion, and stabilize hillsides and mountains (Nada, 2023). Ayunda's research (2024) shows that the application of Nyabuk Gunung is consistently able to reduce speed and control the direction of rainwater flow so that it is effective in preventing landslides and debris flows in slope agricultural areas (Ayunda et al., 2024). The role of cultural approaches through local wisdom (*local wisdom*) has been proven to have been successfully applied, for example to the Acehnese people on Simeulue Island who are able to read natural phenomena in coastal areas so as to save thousands of lives from tsunami disasters, as well as to residents around Mount Kelud who pay attention to animal behavior as early signs before volcanic eruptions (Ahmad et al., 2024).

The preservation and revitalization of local wisdom is very important as an effort to maintain cultural heritage while increasing the effectiveness of disaster mitigation in Java. The preservation of local wisdom not only preserves traditions but also strengthens community resilience to natural disasters. In the midst of modernization and changes in people's lifestyles, local wisdom such as Nyabuk Gunung faces serious challenges because it is rarely known and practiced by the younger generation, which leads to the fading of these values. Given that the Java region still faces high hydrometeorological risks and the need for sustainable risk reduction, this local wisdom is an important source of mitigation strategies to be conserved and adapted in local policies (Bagaskoro et al., 2025). Therefore, this literature study research aims to examine the application of Nyabuk Gunung in various mountainous areas of Java and compare it with other regions such as Bali, Sunda, to indigenous communities such as Baduy and Ciptagelar.

2. METHODS

This research is a type of literature study research. Literature studies are carried out through several steps, such as studying and taking notes, compiling reference lists, and managing research materials by relying on journal articles, books, and various other credible sources as study materials (Ayunda et al., 2024). According to (Arvi et al., 2025), this literature study is a way to complete a research by tracing trusted sources. Based on this understanding, it can be concluded that literature study is a research method that is carried out by collecting, reading, and analyzing various written sources that are credible and relevant to the topic being researched.

This research method uses a literature study because it wants to examine the tradition of mountain biking as a form of mitigation of landslides and flash floods based on local wisdom in Java. The data collection process is carried out through the search of various relevant written sources, such as national and international journal articles, books, government reports, seminar proceedings, and other supporting scientific works. Literature searches were conducted using the keywords "mountain belt", "local wisdom", "landslide mitigation", "flash floods", and "Java" through *the Publish or Perish application*. The selected sources meet the inclusion criteria, which are relevant to the topic of disaster mitigation and local wisdom, and were published within the last five years (2020 - 2025). The literature screening process resulted in 21 articles that met the inclusion criteria.

3. RESULTS AND DISCUSSION

The results of the search and literature selection resulted in 21 articles that are worthy of further analysis. Each article is reviewed based on the presence of keywords or discussions about mountain cover and disaster mitigation. This study provides an overview of the implementation of local wisdom "*nyabuk gunung*" in disaster mitigation in Java. A summary of the analysis results is shown in the following table.

Table 1. Literature of Local Wisdom Bukng Mountains as Disaster Mitigation in Java

No.	Research Title	Author and Year	Findings
1.	*Potential Study of Penyaweuyan Terrace System Indonesia to be National Important Agricultural Heritage System: A Qualitative Approach*	Jaka Sulaksana, Dadang Sudirno, Acep Atma Wijaya, Sri	*Panyaweuyan Terrace System* shows that this term is a local symbol in the traditional agriculture of the Sundanese people in Majalengka. Nyabuk Gunung refers to the way people manage land on the mountainside with a terraced system that resembles a bond or belt on the mountain body, as a form of land preservation and respect for nature.

No.	Research Title	Author and Year	Findings
		Umyati (2024)	
2.	The Function of Agroforestry on the Management of OPT (Plant Disrupting Organisms) in Tambaksari Purwodadi Village, Pasuruan	Nurul Fadilah, Intan Nadya Mardyandari, Audrey Cinta Amelia. (2025)	Agroforestry land in Tambaksari is located on a slope with a high slope, so it is very prone to erosion and landslides. Mountain belting is a technique that must be applied to bind the soil and prevent downward movement of the soil (landslide). Mountain scrubbing also ensures that pine, coffee, and banana trees can grow in balance without the threat of soil shift.
3.	Raising Local Culture and Wisdom in Soil and Water Conservation Systems.	Maridi, (2020)	Nyabuk Gunung is a way of farming by making rice terraces shaped according to contour lines. This method is widely carried out on the hillsides of Cleft and Sindoro, to take advantage of the rain while protecting the soil from the threat of erosion and landslides due to rain.
4.	The Role of Institutions and Local Wisdom in the Development of Horticultural Areas in Senden Village, Boyolali Regency	Tyranny Komala Dewi, Eny Lestari, Agung Wibowo (2020)	In the context of agriculture and local wisdom of Senden Village, Nyabuk Gunung refers to the pattern of the planting system following the slope of the mountain slope, this system is carried out because most of the agricultural land is on the steep slope of Merapi-Merbabu. Farmers mostly do not make terraces because they consider terraces to reduce the area of planting land and narrow the plant population, for this reason farmers use the Nyabuk Gunung system (elongated planting pattern) as a form of hereditary traditional knowledge.
5.	Analysis of Environmental Damage Due to Intensive Potato Farming Practices on Tourist Attractions in	Radite Ranggi Anata (2025)	Nyabuk Gunung is part of the old habit of farmers in managing sloping land. The purpose of the implementation of Nyabuk Gunung is to maintain the stability and structure of the slope soil so that it is not easily eroded and landslides, especially because the

No.	Research Title	Author and Year	Findings
	the Dieng Highland Area.		topography of Dieng is steep (up to 45 degrees) and high rainfall.
6.	Disaster Mitigation Based on Local Wisdom Bukng Gunung	Hanifah Sekar Ayunda, Desy Safitri, Sujarwo. 2024.	Nyabuk Gunung is effective in preventing flooding through the terraces of the mountain contours. In addition to the function of controlling water flow, the Nyabuk Gunung terrace also plays a role in maintaining soil fertility by preventing the fertile top soil layer from erosion. The system also allows agricultural productivity to remain high in areas with steep topography and disaster-prone conditions
7	*Literature study of the Nyabuk Gunung tradition in the communities on the slopes of Mount Sumbing as an effort to conserve agricultural lan*	Revani Ayu Nabila, Hertien Koosbandiah Surtika. 2024.	The Mountain Belt farming system reduces erosion by 70% with terraces and retaining plants such as vetiver. Technically, the terrace of the Nyabuk Gunung rice field follows the contour line to form steps (run, kotakan, banjaran, ledokan, nggalengi, bed) that slow down the flow of rainwater, increase infiltration into the soil, and reduce surface runoff. Retaining vegetation such as vetiver grasses, protective trees, and vertical food crops (tea, coffee, vegetables) function to bind soil roots, stabilize slopes, and suppress erosion.
8.	Disaster Mitigation Based on Local Wisdom of the Baduy Community	Suparmini, Sriadi Setyawati, Dyah Respati Suryo Sumunar. 2020	The Mountain Belt serves as a natural "mountain belt" that binds the soil with retaining root vegetation such as vetiver grass and perennials (tea, coffee, vegetables), thus stabilizing steep slopes and maintaining the fertility of the topsoil layer. In volcanic areas, these systems are adaptive to extreme rainfall and volcanic ash, resulting in long-term hydrological resilience with increased rainwater catchment to optimal levels.
9.	*The local knowledge to mitigate the landslide disaster in Beruk village,*	Cahyono, S.A., A Wuryanta,	The main advantage of tillage according to contour lines is the formation of runoff barriers that increase water absorption and prevent soil movement to control erosion.

No.	Research Title	Author and Year	Findings
	Jatiyoso sub-district, Karanganyar regency	A., and Lastiantoro, C.Y. (2021)	Farmers in Beruk Village apply the tillage technique following contour lines and call it "mountain scrub". Farmers know that this technique has been passed down from generation to generation for a long time, so they just need to continue their technique
10.	*Conservation of agriculture land based on local wisdom in Serang Village Purbalingga Regency*	- A Tale of Tristyrene (2021)	Based on the results of the study, data was obtained from 100 farmers in Serang Purbalingga Village who were sampled in this study. Among them, 96% of farmers are still guided by mountain scrubbing in carrying out their agricultural activities.
11.	Management of Local Wisdom Based Landscape Units of the Mount Slamet Slope Community (MLGS) in Paguyangan District, Brebes Regency, Central Java	Nabela Fikriyya, Marina Silalahi, Rizmoon Nurul Z., Nisyawati, Hendra Helmanto, and Adinda K. P. (2023)	The community implements adaptation strategies in the form of a mountain towing system and the construction of bench terraces to reduce the level of erosion. In dry land, the stages of land management include land cultivation, mulching installation, fertilizer application, planting, watering, plant maintenance and care, harvesting, and nursery activities. Meanwhile, in wetlands, management is carried out through the stages of land cultivation, fertilization, planting, maintenance, and ending with harvesting.
12.	Local Wisdom of Agriculture, Problems, and Strategic Directions in Agricultural Management in Sembungan Village	Rika Harini, Dewi N. A., Erdeana C. N., Kurnun H., Laila F., Tania D. (2020)	Sembungan Village, which is located in a mountainous area, implements the Nyabuk Gunung farming system, which is to create terraces that are parallel to the contour lines of the slope to reduce the risk of landslides. However, the implementation of Nyabuk Gunung in Sembungan Village has not been carried out comprehensively. Some farmers consider this method to be less profitable in terms of production, especially in the rainy season, because crops, especially potatoes, rot faster when they are flooded or exposed to water for too long.

No.	Research Title	Author and Year	Findings
13.	Local Wisdom of Farmers as an Economic-Environmental Sustainability Strategy in Kentengsari Village, Candiroto District, Temanggung Regency	Yayuk Rukayah (2022)	Kentengsari Village and the surrounding area are located on the slopes of Mount Sindoro with a slope of approximately 30°. Farmers build plantation terraces that follow the contour lines of the slopes. This technique has been used by the residents of Kentengsari Village since ancient times, and with the support of a strong enough soil structure, agricultural land becomes more resistant to the threat of landslides and is able to maintain the availability of water.
14.	*Integrating Indigenous and Scientific Knowledge for Decision Making of Rice Farming in South Sulawesi, Indonesia*	Syahrul Y. L. Imam M. F., Abdul F., Abdul W. R., Elza Si., Muslimin, Saptana, Haris S., and Kuntoro B. A. (2022).	South Sulawesi Province uses several local agricultural practices, one of which is Nyabuk Gunung (contour planting) which is used as a method of farming as well as mitigation of landslide disasters around the slopes of Mount Sindoro and Sumbing.
15.	Disaster Mitigation Knowledge Reviewed from the Local Wisdom and Scientific Aspects of Kalipagu Hamlet Residents	Agung N., Dedy I., Anggun P. W., (2025)	The local wisdom possessed by the community in interpreting and responding to disasters also has a positive influence in reducing risks and the impacts caused. In the Banyumas region, farmers use the traditional terraced method (mountain belt) when managing land on hillsides, so this practice helps reduce the potential for landslides.
16.	The Potential of Local Wisdom through the Utilization of Social Sciences, Science, and Technology	Siti Zubaidah, Fajar Adinugraha	Local wisdom combined with science can be studied through the branch of natural sciences related to culture (ethnoscience). One example is Nyabuk Gunung, which is hereditary knowledge from ancestors in managing the environment. The practice of Nyabuk Gunung on the

No.	Research Title	Author and Year	Findings
			slopes of Bukit Sumbing and Sindoro functions as a form of land conservation in farming activities.
17.	Local Wisdom of Bukng Mountains as a Form of Soil Conservation to Minimize Landslides in the Hilly Areas of the Javanese People	Hana Naqiyya Nada (2023)	In Gunung Sumbing and Sindoro in the Central Java area, the community preserves Nyabuk Gunung and produces 4.78 - 5.14 tons/ha of rice commodities, higher than land without local wisdom Nyabuk Gunung. This traditional practice not only prevents landslides but also increases agricultural yields. In addition, community efforts in preserving soil are closely related to the inhibition of land erosion, which is 439.57 tons/ha/year.
18.	Land and Water Management Based on Local Wisdom to Prevent Natural Disasters	Andani Putri, Febriyana Putri, Erni Suprihani. (2021)	The people of Gununglurah Village in land and water management, one of which is implementing mountain scrubbing by making rice terraces formed along the contour lines of the mountain and combined with farming can prevent landslides. Soil and water management by means of mountain belting can reduce the speed of surface flow, increase water infiltration into the soil, accommodate and control the direction and speed of surface flow water.
19.	*The Existence of Indigenous Knowledge and Local Landslide Mitigation: A Case Study of Banyumas People in Gununglurah Village, Central Java, Indonesia*	Suwarno, Anang Widhi N, Sutomo, Ismail Demirdag, Esti Sarjanti, Dhi Bramasta. (2022)	The traditional approach *of terracing methods* (Nyabuk Gunung) used by local communities in the Banyumas area includes making horizontal terraces in the direction of the contour or called larikan in between, plots (kotakan) similar to terraces, and preparing water ponds (ledok) for irrigation in the lowest part of agricultural land. Prepare a galengan planted with several types of trees as a barrier with other plants. Beds or make terraces and guludan that are covered using plastic. Despite this, conservation practices adopted by local farming communities through mountain scrubbing have not shown promising results.

No.	Research Title	Author and Year	Findings
20.	Disaster Mitigation Based on Local Wisdom in the Indigenous People of Kasepuhan Ciptagelar.	Nadya Anggara Putri, Sutiyo, Ida Yunari, Agus Supriatna, Irfan Uluputty. (2024)	The people of Sukabumi with the custom of creating titles use a land management pattern that follows the contours of the mountain, this pattern regulates land use so as not to damage the slopes, so that the function of the soil and vegetation is maintained. The community uses geobangs and arranges them in a terraced (bumpy) pattern to prevent erosion and landslides, especially at steep points. The farm system in huma (dry land) was chosen to prevent excess water load on sloping soils.
21.	*Incorporating Traditional Knowledge into Science-Based Sociotechnical Measures in Upper Watershed Management: Theoretical Framework, Existing Practices and the Way Forward*	Hunggul Yudono Setio Hadi Nugroho, Markus Kudeng Sallata, Merryana Kiding Allo (2023)	This study found that the people of Gununglurah, Banyumas, have long used traditional terraces to cultivate steep slopes. This technique is known locally as mountain belting. The goal is to make the slope stable and safe to use for agriculture. In addition, it can also reduce soil erosion, increase water infiltration, stabilize steep slopes.

3.1 The Role of Mountain Belts in Disaster Mitigation

Mountain squatting is referred to as land creation with terraces that are shaped to suit the natural contour lines which are then used for farming (Nabila & Surtikanti, 2024). . Physically, the mountain belt works by reducing the effective slope, and breaking the surface flow into small segments on each terrace, increasing the absorption of water into the soil, thereby reducing the risk of erosion and landslides (A. Putri et al., 2021). Similar findings are shown by a literature review on mountain scrubbing which emphasizes that this system was created by people not only to take advantage of sloping land, but also consciously to prevent erosion and landslides on their farmland (Nabila & Surtikanti, 2024).

Other studies show that soil and water management based on mountain belts has proven to be effective in reducing the potential for flooding, landslides, and even drought because of the system's ability to regulate the direction and speed of water flow (Ayunda et al., 2024). In addition to reducing the potential for floods and landslides, mountain belts also help maintain soil fertility, because they prevent the upsoil layer from being carried away by rainwater, as well as increase water conservation so that the soil remains moist and productive (Dewi et al., 2020). Practice *Nyabuk Gunung* applied by the community in the slope area by building structures, runs, towns, ranges, *Squirrel,* galengan/nggalengi, and beds to regulate water flow and arrange planting fields according to the contours of the hill. Run is the creation of a contour-aligned horizontal terrace to reduce erosion. Kotakan is the division of land into small terrace-shaped plots. Banjaran is a contoured perpendicular mound of soil made as a slope anchor. A pond is a small pond at the bottom of the land to accommodate and regulate the flow of water. Nggalengi is land planted with perennials as a boundary and soil strengthener. Beds are terraces or mounds of plastic-coated soil for cultivation on slopes (Ayunda et al., 2024).

The mountain belt system causes the water load on one slope to be divided into several levels, and the shear force that triggers the landslide becomes smaller so that it can slow down the rate of surface flow (Nada, 2023). At the same time, rainwater does not flow directly downwards, but is temporarily retained on the terrace so that it gives longer time to seep into the ground, or in other words this terrace functions to increase water infiltration (A. Putri et al., 2021). In addition, vegetation planted along the galengan, such as coffee trees, pines, or other ground cover plants, strengthens the soil structure through rooting so that the stability of the slope is further increased.

Mountain scrubbing prevents flooding by slowing down the flow of rainwater that usually flows quickly in sloping areas. When water descends from the top of the slope, the flow is hampered by each step so that its speed decreases and does not immediately gather into a large stream that can trigger flash floods. The flat surface of the terrace also gives time for water to seep into the ground, so that the amount of water flowing downstream is reduced. In addition, the existence of *Düsseldorf* or reservoir ponds help hold water temporarily and slow peak discharge coming out of the land. Through a combination of these mechanisms, mountain belts are able to reduce the speed of surface flow, increase infiltration, and control the direction of water flow, so that the occurrence of flooding can be reduced (Ayunda et al., 2024).

3.2 Implementation and Distribution of Mountain Biking Practice Areas

Geographically, the practice of mountain scrubbing is mostly found in the mountainous areas of Central Java, especially on the slopes of Mount Sumbing and Sindoro (Nabila & Surtikanti, 2024). Various studies show that the term, form of implementation, and intensity of its application can vary

slightly between regions, but the basic principle is the same, namely sloping land management with a pattern that "binds" the mountain body to maintain soil and water stability. Some literature shows that the slopes of Sumbing and Sindoro and the Dieng plateau are important areas of the mountaineering tradition (Maridi, 2020). Mountain scrubbing on the slopes of Sumbing and Sindoro is carried out by making terraces follow contour lines to take advantage of rain while protecting the soil from erosion and landslides (Anata & Ranggi, 2025). However, the same study also addressed the environmental damage caused by intensive potato farming practices, which means that in some areas, traditional conservation principles such as mountain belts are beginning to be replaced by modern intensive farming patterns (Anata & Ranggi, 2025). Mountain-wetting farming systems are spread across various slope villages in Central Java and are able to reduce erosion by up to about 70% when combined with retaining plants such as vetiver (Nabila & Surtikanti, 2024).

In the Senden Village area, Boyolali Regency, Central Java, mountain bushing is defined as a planting system pattern that follows the slope of the mountain slope with an elongated planting pattern following the slope. In contrast to other areas that emphasize contour terraces, in Senden many farmers do not make terraces because they think terraces can reduce the effective area of planting land and narrow the plant population. This suggests that the same term can refer to somewhat different technical forms and depending on the local context (Dewi et al., 2020). In Tambaksari Village, Purwodadi, Pasuruan, mountain belt is applied to land on a slope with a high slope (Fadillah et al., 2023). (Fadillah et al., 2023). In the literature that focuses on RPH Jatiarjo, mountain scrubbing is again referred to as an agroforestry planting pattern that binds slope soil and is effective in preventing landslides. This shows that in the Tambaksari and Jatiarjo areas, mountain scrub is used by almost all farmers/agroforestry land managers on the slopes (Fadillah et al., 2023).

The practice of mountain riding in the Majalengka area is referred to as "penyaweuyan" and is seen as a local symbol of traditional agriculture of the Sundanese people (Sulaksana et al., 2024). Mountain scrubbing is done by cultivating land that forms a belt on the body of the mountain. Terrace landscape *São Paulo* itself as a cultural icon as well as an important heritage of agricultural systems, The mountain belt pattern is applied relatively widely to agricultural lands in the region, not just by a small percentage of farmers (Sulaksana et al., 2024). In the literature of local wisdom of the Baduy people, mountain belting is referred to as a soil conservation technique on volcanic slopes with a traditional terrace system (Suparmini et al., 2020). This indicates that in the area the practice of mountain scrubbing is inherent in almost all traditionally cultivated sloping land, because it is integrated with the customary rules and strict governance of Baduy space (Suparmini et al., 2020).

In Beruk Village and Serang Village, the technique used is to form a contour bed pattern or mountain belt (*mountain belt*), so that it is able to reduce the speed of surface flow and reduce the

potential for erosion and soil movement. Based on research in the village of Beruk, mountain scrub is not a terrace (*bench terrace*) which is in the form of large steps, but rather resembles a row of contour paths that extend horizontally along the height line of the land (Cahyono et al., 2021). The level of implementation of mitigation practices by the community shows a widespread trend. Mountain mowing techniques and other conservation practices such as the use of plastic mulch, planting ground cover grass, and mutual cooperation in checking soil cracks are said to have been widely used by farmers. Even the use of irrigation *sprinkler* It is reported to have been adopted by about 90% of farmers in Beruk Village, signifying that most communities have the concern and ability to implement conservation strategies that support slope stability.

In Serang village, the practice of mountain towing is carried out by 96% of farmers, so it is included in the category of being very broad and almost comprehensive. In other words, the vast majority of people still maintain this practice as the main strategy to preserve land. In addition to mountaining, the community also implements various other conservation practices such as pranoto mongso, sacralization of water sources (Tuk Sikopyah Festival), bero system, the use of traditional tools, and agroforestry patterns. Some of them also have a high level of implementation, for example the use of traditional tools carried out by 99% of farmers, as well as the management of water sources and mountain scrubbing which both reach 96%. This shows that conservation strategies in Serang Village are applied on a very wide scale and have become an integral part of the community's agrarian life (Triastoningtias, 2021).

In Ragatunjung village, in practice, the people of the Mountain Slope cut the slope in the direction of a staircase-like contour. The level of implementation of the practice is quite wide because it is applied intensively by farmers in dry land (wanah, majegan, RHL) and wetlands (sabin). In other words, the practice of mountain clearing is included in the broad category and is the main strategy inherited across generations to preserve land on mountain slopes (Fikriyya et al., 2023). In Sembungan Village in practice, Sembungan farmers apply "mountain bumps" by making terraces parallel to contour lines, although not entirely consistent, especially in the rainy season to avoid potato rot. The level of implementation of the practice, most farmers still apply traditional agricultural systems including mountain scrubbing on hilly land (Harini et al., 2020). In addition to mountain clearing, the community also implements various other conservation practices such as intercropping with strong-rooted plants, mutual cooperation for land clearing and the construction of farm roads, as well as deep ditches to accommodate water and dissolved soil. Some of them are on a wide scale, for example intercropping on the edge of potato fields to prevent erosion and mutual cooperation which is scheduled with fines for those who are absent (Harini et al., 2020).

The practice of mountain biking is also widely applied by the community in Kentengsari Village, Ngadirejo District, Temanggung Regency, which is located on the slopes of Mount Sindoro. In this village, mountain raking is carried out through the construction of terraces that follow contour lines on sloping land. Terraces are shaped to resemble steps that circle the slope so that they function to resist surface flow, reduce erosion, and increase soil stability. The people of Kentengsari Village show high awareness, they use organic fertilizers from livestock manure and regulate the use of chemical fertilizers carefully so as not to damage the soil. Farmer groups such as Argo Lestari help maintain environmental sustainability through mutual cooperation and conservation counseling. Most of the people who farm use sloping land and rely on terraces as the main strategy to maintain productivity and land security. (Rukayah, 2022).

In mountainous areas in Sulawesi, especially in areas with sloping land contours that are prone to erosion. In these areas, people use traditional forms of terraces as part of local wisdom in managing slopes. Terraces are built along contour lines and function to retain water, reduce erosion, and maintain soil fertility (Limpo et al., 2022). As in Kentengsari, its application in Sulawesi is generally carried out widely, because it is hereditary knowledge used to maintain agricultural sustainability on sloping land. Overall, both in Kentengsari Village, Temanggung Regency and in the mountainous areas of Sulawesi, mountain scrubbing is a land conservation strategy based on local wisdom that has been practiced for a long time (Zubaidah & Adinugraha, 2024). This technique shows the harmonious relationship between the community and nature and is an important part of maintaining the sustainability of agricultural production and reducing the risk of landslides in hilly areas.

In Kasepuhan Ciptagelar, which is located in Sirnaresmi Village, Cisolok District, Sukabumi Regency, West Java, precisely on the west side of Mount Halimun in the Mount Halimun National Park area, the community applies practices related to mountain scrubbing through the use of geobangs arranged with a terraced pattern stacked on steep land to prevent erosion and landslides. This practice is carried out at sharp hilly locations with a huma (dry soil) field system to avoid erosion due to long-held water, as part of the zoning of customary lands such as Leuweung Bukaan Garapan. The study did not mention a quantitative percentage, but qualitatively showed a wide scale because at each steep point it is a structural mitigation strategy based on local wisdom that is hereditary and becomes an integral part of mountainous land management. This practice supports resilience to landslides in areas with uphill contours and prone to soil degradation (N. A. Putri et al., 2024).

In Gununglurah Village, Cilongok District, Banyumas Regency, in practice, mountain belt is a technique for making contour-lined terraces that have a typical local structure, namely banjaran (vertical mounds that are perpendicular to the contour), larikan (horizontal terraces parallel to the contours), kotakan (planting plots), and ledok (water basins at the bottom of the land) which function as water

reservoirs for irrigation (A. Nugroho et al., 2025). In addition, farmers also make bogs in the form of soil planted with annual crops such as pine, coffee, or tea as shade as well as soil retainers, as well as beds that in modern practice are sometimes covered with plastic to maintain soil moisture (A. Putri et al., 2021). The combination of mountain belts with other practices such as intercropping, conservation of prohibited forests, and agroecosystem approaches also shows that most communities still rely on traditional cultivation systems that are oriented towards land conservation.

4. CONCLUSION

Nyabuk Gunung is a form of local wisdom of the people in the mountainous areas of Java which has proven to be effective in mitigating landslides and floods. The Mountain Belt System works by creating land with terraces that are formed to adapt to the natural contour lines which are then used for cultivation. This method is believed to slow down the flow of water, increase water filtration, reduce soil erosion, and maintain the stability of slope structures. Although there are variations in terms and implementations in different regions, such as disputes in Bali or Ngais gunung in West Java, the principles of conservation are still the same. The local wisdom of Nyabuk Gunung is not only of ecological value, but also of social and cultural value. Currently, the existence of local wisdom of Nyabuk Gunung is beginning to be threatened by modernization and changes in agricultural patterns. Therefore, a process or way is needed to revive the local wisdom of Nyabuk Gunung through local policies, environmental education, and strengthening the role of the community to ensure that the local wisdom of Nyabuk Gunung remains a culturally based mitigation strategy that is relevant, sustainable, and beneficial for hydrometeorological disaster mitigation in the present and future.

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