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# DISASTER MITIGATION COMMUNICATION MODEL AS AN EFFORT TO MANAGE DISASTERS IN SOUTH KALIMANTAN PROVINCE (CASE STUDY ON FLOOD DISASTER IN SOUTH KALIMANTAN PROVINCE)

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## Abstract
*This study aims to understand communication strategies in flood disaster risk mitigation in South Kalimantan Province which has a high level of vulnerability. Using a descriptive qualitative research method, this study analyzes social and cultural phenomena that contribute to community preparedness. The results of the study indicate that effective disaster communication, based on innovation diffusion and active community participation, can improve preparedness and reduce the impact of disaster risk. Areas such as Hulu Sungai Tengah, Barito Kuala, and Banjar Regencies require a special approach that considers geohydrological analysis and local conditions. Jaranih and Jejangkit Villages, for example, require community-based strategies such as strengthening volunteers and building evacuation infrastructure. In addition, strengthening Disaster Resilient Villages (Destana) through training and community empowerment is a significant strategic step. The disaster mitigation communication model led by BPBD and integrated with related agencies shows effectiveness in strengthening coordination between the government and the community, in accordance with Law No. 24 of 2007. With this approach, disaster responses can be carried out quickly, precisely, and efficiently. This study emphasizes the importance of synergy between the government, related institutions, and the community in building a sustainable emergency response culture.*
*Keywords: Disaster Mitigation, Disaster Communication, South Kalimantan Province*

## Abstrak
*Penelitian ini bertujuan untuk memahami strategi komunikasi dalam mitigasi risiko bencana banjir di Provinsi Kalimantan Selatan yang memiliki tingkat kerawanan tinggi. Dengan menggunakan metode penelitian kualitatif deskriptif, penelitian ini menganalisis fenomena sosial dan budaya yang berkontribusi terhadap kesiapsiagaan masyarakat. Hasil penelitian menunjukkan bahwa komunikasi bencana yang efektif, berbasis difusi inovasi dan partisipasi aktif masyarakat, mampu meningkatkan kesiapan dan mengurangi dampak risiko bencana. Wilayah seperti Kabupaten Hulu Sungai Tengah, Barito Kuala, dan Banjar membutuhkan pendekatan khusus yang mempertimbangkan analisis geohidrologi dan kondisi lokal. Desa Jaranih dan Jejangkit, misalnya, memerlukan strategi berbasis komunitas seperti penguatan relawan dan pembangunan infrastruktur pengungsian. Selain itu, penguatan Desa Tangguh Bencana (Destana) melalui pelatihan dan pemberdayaan masyarakat menjadi langkah strategis yang signifikan. Model komunikasi mitigasi bencana yang dipimpin oleh BPBD dan terintegrasi dengan instansi terkait menunjukkan efektivitas dalam memperkuat koordinasi antara pemerintah dan masyarakat, sesuai dengan Undang-Undang No. 24 Tahun 2007. Dengan pendekatan ini, respons terhadap bencana dapat dilakukan secara cepat, tepat, dan efisien. Penelitian ini menegaskan pentingnya sinergi antara pemerintah, lembaga terkait, dan masyarakat dalam membangun budaya tanggap darurat yang berkelanjutan.*
*Kata Kunci: Mitigasi Bencana, Komunikasi Bencana, Provinsi Kalimantan Selatan*

## INTRODUCTION

Indonesia is known as one of the countries that is vulnerable to natural disasters. This is due to its geographical location in the Pacific Ring of Fire, where three major tectonic plates meet, namely the Eurasian, Indo-Australian, and Pacific plates. The Pacific Ring of Fire is a zone with many active faults that stretches for 40 thousand kilometers, covering areas such as Chile, Japan, and Southeast Asia. This geological condition makes Indonesia prone to various natural disasters, including earthquakes, tsunamis, and volcanic eruptions.[1]

Apart from that, the conditions in Indonesia, including the province of South Kalimantan, have a tropical climate.[2]so that it has two seasons. Such conditions can cause the possibility of hydrometeorological threats, such as floods and droughts. South Kalimantan is overshadowed by two disasters every year, namely floods in the rainy season and forest and land fires, as well as droughts in the dry season.

In early 2021, South Kalimantan was hit by a major flood and this was the first time in the last 50 years. This flood was caused by extreme rainfall and a decrease in land cover (high density vegetation/forest), especially in the upstream areas that function as water storage.[3]

According to data from the National Disaster Management Agency (BNPB), heavy rain with high intensity caused major flooding in South Kalimantan, submerging 10 districts/cities, namely Tapin Regency, Banjar Regency, Hulu Sungai Tengah Regency, Hulu Sungai Selatan Regency, Tanah Laut Regency, Balangan Regency, Tabalong Regency, Batola Regency, Banjarbaru City, and Banjarmasin City, with a total area of flooded areas reaching 164,090 hectares.[4]

As a result of this flood, 24,379 houses were submerged in floodwater with 39,549 residents displaced, and this flood also resulted in 15 fatalities. Then the value of the loss based on the estimate of the Rapid Reaction Team of the Center for Regional Resource Development Technology of the Agency for the Assessment and Application of Integrated Technology (BPPT), is very large, which is around Rp1.349 trillion. Details of the estimated value of the loss in several sectors, namely the education sector around Rp30.446 billion, the health and social protection sector around Rp27.605 billion, the infrastructure sector around Rp424.128 billion, the fisheries sector

[1] Kartono Tjandra, *Empat Bencana Geologi yang Paling Mematikan* (Jogjakarta: UGM PRESS, 2018), h. 3-6.

[2] Nur Inayah Syar, *Iklim Tropis dan Uniknya Bentuk Rumah Tradisional Nusantara* (Banjarmasin: Penerbit Duta, 2019), h. 32.

[3] Chandra Gian Asmara, "Jokowi: Ini Kali Pertama dalam 50 Tahun Kalsel Banjir Besar," CNBC Indonesia, diakses 14 Januari 2025, https://www.cnbcindonesia.com/news/20210118143925-4-216867/jokowi-ini-kali-pertama-dalam-50-tahun-kalsel-banjir-besar.

[4] BNPB, "10 Kabupaten/Kota Terdampak Banjir diKalimantan Selatan," 2021, bnpb.go.id%0A/berita/-update-10-kabupaten-kota-terdampak-banjir-di-kalimantan-selatan.

around Rp46.533 billion, the community productivity sector around Rp604.562 billion, and the agricultural sector around Rp216.266 billion.[5]

According to data from the BNPB Indonesian Disaster Geoportal as published in the online media kumparan.com, it states that in the period 2008 to 2021, the South Kalimantan area was hit by several major floods which damaged houses and caused fatalities. The highest number of deaths due to flooding in South Kalimantan occurred in 2010, namely 21 people and 11 people were declared missing, and in that year the floods occurred most often, namely 43 floods. The lowest number occurred in 2015 with 3 floods throughout the year.[6]

In terms of area, Balangan is the district with the most flooding incidents with 42 flood incidents. Next is Banjar Regency with 32 flood incidents, and Banjarmasin is the area with the least flood incidents, which is 6 flood incidents in the last 12 years. In terms of time, January is the month with the most frequent flooding with 54 flood incidents, and the month with the least flooding is October with only 5 flood incidents in the last 12 years.[7]

The flood disaster that routinely occurs every year not only results in material losses, but can also result in loss of life. This certainly must be a serious concern from various parties, including academics with various scientific studies so that they can anticipate flood disasters quickly and accurately, and can minimize losses caused by flood disasters.

One of the studies that must be done is a study in the field of disaster communication. According to Ardianto, et al., communication plays an important role both in the social environment and for individuals in general. Communication also has a function to be able to influence the recipient of the message.[8] In terms of disasters, communication is an inseparable part of disaster management, and is very much needed in disaster situations from pre-disaster, when the disaster occurs and post-disaster, by involving several stakeholders involved including the government, community, media and private parties.[9] According to Haddow, communication is the core of successful disaster mitigation, preparedness, response, and post-disaster recovery.[10]

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[5] BPK, "Banjir di Kalimantan Selatan Akibatkan Kerugian Mencapai Rp1,349 Triliun," t.t., https://kalsel.bpk.go.id/wp-content/uploads/2021/12/5.-Banjir-di-Kalsel-Akibatkan-Kerugian-Mencapai-Rp1349-Triliun.pdf%0A25/4/2024.

[6] kumparan, "Data Banjir Kalsel Periode 2008-2021: Kejadian Tersering Bulan Januari," 2021, https://kumparan.com/kumparannews/data-banjir-kalsel-periode-2008-2021-kejadian-tersering-bulan-januari-1v0ghlmYWsZ.

[7] kumparan.

[8] Muhammad Hilmy Aziz, "Komunikasi Kebencanaan : Peran Dan Manfaat Pada Mitigasi," *Communications* 5, no. 1 (2023): 301–16, https://doi.org/10.21009/communications.5.1.2.

[9] Fetty Arisandi K dan Choirul Umam, "Komunikasi Bencana Sebagai Sebuah Sistem Penanganan Bencana Di Indonesia," *Mediakom : Jurnal Ilmu Komunikasi* 3, no. 1 (27 November 2019): 25–37, https://doi.org/10.35760/mkm.2019.v3i1.1980.

[10] Tjut Afrieda Syahara dkk., "Komunikasi Bencana Melalui Opinion Leader," *Komuniti : Jurnal Komunikasi dan Teknologi Informasi* 13, no. 2 (2021): 102–11, https://doi.org/10.23917/komuniti.v13i2.15652.

In dealing with disasters that occur regularly such as floods, the role of disaster communication is very important. The disaster communication model provides a structured and organized framework for conveying critical and urgent information to the public, as well as for coordinating an effective emergency response. In addition, disaster communication is also very important so that there is no misinformation about the disaster that will be conveyed to the public. In terms of the disaster mitigation process, disaster communication has a role in changing people's behavior or mindset when a disaster is imminent. Therefore, disaster communication must always be prioritized because in addition to educating the public, it can also prepare the mental resilience of the population in dealing with disasters, especially in disaster-prone areas.[11]

According to the Republic of Indonesia Law Number 24 of 2007 concerning Disaster Management, a disaster is an event or series of events that threaten and disrupt the lives and livelihoods of the community caused by natural, non-natural, or human factors resulting in loss of life, environmental damage, loss of property, and psychological impacts.[12]

David Alexander in Özerdem et al.'s research identified six main vulnerabilities of communities in disaster areas, including economic, technological, and social backwardness.[13] In the context of flooding in South Kalimantan, this vulnerability is exacerbated by geographical factors and climate change.

Disaster mitigation is defined as actions taken to reduce or eliminate the long-term risk to human life and property due to a disaster. The mitigation cycle includes: 1) Mitigation, efforts to prevent or reduce the impact of a disaster, 2) Preparedness, actions to prepare communities for a disaster, 3) Emergency Response, Immediate response when a disaster occurs, 4) Recovery: Post-disaster reconstruction and rehabilitation.[14]

Communication in disaster mitigation should be a top priority designed and implemented for communities in disaster-prone areas. The government and related parties need to prepare communities to be ready to face disasters, especially by providing initial information related to geological disasters. The main focus of disaster mitigation communication is to ensure proper evacuation when a disaster occurs.

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[11] Arisandi K dan Umam, "Komunikasi Bencana Sebagai Sebuah Sistem Penanganan Bencana Di Indonesia."

[12] Pemerintah Provinsi Kalimantan Selatan, "Peraturan Gubernur (Pergub) Provinsi Kalimantan Selatan Nomor 87 Tahun 2023 tentang Kajian Risiko Bencana Provinsi Kalimantan Selatan Tahun 2022-2026.," 2023.

[13] Damayanti Wardyaningrum, "Perubahan Komunikasi Masyarakat Dalam Inovasi Mitigasi Bencana di Wilayah Rawan Bencana Gunung Merapi," *Jurnal ASPIKOM* 2, no. 3 (18 Juli 2014): 179–97, https://doi.org/10.24329/aspikom.v2i3.69.

[14] Setio Budi HH, "Komunikasi Bencana: Aspek Sistem (Koordinasi, Informasi dan Kerjasama)," *Jurnal ASPIKOM* 1, no. 4 (21 Januari 2012): 362–72, https://doi.org/10.24329/aspikom.v1i4.36.

As an important tool in supporting various development programs, communication has a strategic role. According to Ely D. Gomez, communication as a resource has great potential in driving social change, especially in increasing community participation. Meanwhile, Sean McBride highlighted the potential of communication in advancing human civilization. Communication is also able to change behavior and create deep understanding and understanding.[15]

Disaster mitigation communication can be categorized as environmental communication. Where according to Cox, environmental communication is a study of how to communicate with the environment, which can influence perceptions of the environment.[16] Environmental communication as part of communication science, has a role in increasing awareness and participation of the community and stakeholders in managing and preserving the environment.[17]

The ability to disseminate accurate information to the public, policy makers and the media can reduce risk, save lives and property and of course speed up recovery. In flood disaster mitigation, communication is as important as other technical matters. Communicating with the community, with technical agencies, and other stakeholders, is an important task carried out by the government in this case BPBD. The role of the government as the spearhead and protector of the community is highly expected to be able to protect the community in dealing with disasters. Planning and management of the flow of information will determine the credibility, trust, authority and effectiveness of government efforts in terms of volcanic eruption disaster mitigation. Leaders in floods in South Kalimantan.

According to Haddow, disaster mitigation communication is a communication effort aimed at preventing disasters from occurring.[18] In the context of mitigation, communication is essential to reduce uncertainty in the community, so that they can act more effectively. In the process of disaster prevention, the community and concerned private institutions need accurate information from stakeholders, especially the government, to minimize casualties and material losses.

The main objective of disaster mitigation communication is to ensure that there are no fatalities. If the government only focuses on the technical aspects of disasters without paying adequate attention to mitigation communication, events such as the 2021 major flood may occur again in the future. The importance of the role of disaster communication in disaster management,

[15] Hafied Cangara, *Perencanaan & Strategi Komunikasi Edisi Revisi* (Jakarta: Rajawali Pers, 2020), h. 10.

[16] Heldi Yunan Ardian, "Kajian Teori Komunikasi Lingkungan dalam Penelitian Pengelolaan Sumber Daya Alam," *Jurnal PERSPEKTIF*, 2019.

[17] Ronianysah Ronianysah dkk., "Model Komunikasi Lingkungan Program Sungai Martapura Asri Di Kabupaten Banjar," *Al Qalam: Jurnal Ilmiah Keagamaan Dan Kemasyarakatan* 17, no. 5 (26 September 2023): 3697–3722, https://doi.org/10.35931/aq.v17i5.2692.

[18] Budi HH, "Komunikasi Bencana."

it is necessary to conduct research on the disaster mitigation communication model as an effort to handle flood disasters in South Kalimantan.

## RESEARCH METHODS

This study uses a descriptive qualitative method, which was developed in social sciences to understand social and cultural phenomena in depth. This method is inductive and aims to explore deeper understanding of individual or group experiences, with a focus on non-numerical data. This method is designed to provide a comprehensive picture and explanation of the phenomenon being studied, as well as to understand the situation from the perspective of the participants.

According to Moleong, qualitative research aims to understand the experiences of research subjects, such as behavior, perception, motivation, and action, holistically through descriptions in the form of words and language. This approach is carried out in a natural context by utilizing various natural methods.[19]

## RESULTS AND DISCUSSION

Disaster communication is very important to increase community preparedness and reduce the risk of disaster impacts. Disaster communication theory is often integrated with the disaster management cycle, which includes pre-disaster, disaster, and post-disaster stages. Each stage requires different communication strategies to ensure that appropriate and accurate information is conveyed to the community.

In disaster communication, it is important to integrate various sources of information and use the concept of diffusion of innovation to spread best practices in disaster mitigation. This helps communities to adopt safer and more responsive behaviors to disaster risks. Effective disaster communication can change community attitudes, opinions, and behaviors towards disasters. This includes raising awareness of risks, facilitating training, and building a culture of preparedness among communities.

From a geohydrological perspective, South Kalimantan is located in the Barito Meratus Groundwater Basin System, which has a multilayer system with the presence of aquifers. The water balance in the hydrological cycle changes according to time (season) and location. In the rainy season, the volume of water flowing into the groundwater system increases, so the groundwater potential is also high. Conversely, in the dry season, the amount of water entering decreases, so the groundwater potential becomes low.

[19] Lexy J. Moleong, *Metodologi Penelitian Kualitatif* (Jakarta: Remadja Karya, 2017), h. 1-10.

In the preparation of the water resources balance, the concept of the River Basin Area (DAS) is used. Some literature refers to this term by other names, such as river basin, drainage basin, or watershed. A DAS is an area with concave topography, where all rainwater falling in the area is considered to flow to one outlet. In this concept, the rocks in the DAS area are assumed to be homogeneous, so that the aquifer structure is ignored.

Assuming that the amount of water entering is equal to the amount of water leaving, the watershed hydrology system is considered as a grey box system. Rainwater is seen as input, runoff as output, while the grey box represents the balance between water use and available water potential.

Based on the Regulation of the Governor of South Kalimantan Number 087 of 2023 concerning the Disaster Risk Assessment of South Kalimantan Province for 2022-2026, a disaster is an event or series of events that threaten and disrupt the lives and livelihoods of the community caused by both natural and/or non-natural factors and human factors resulting in human casualties, environmental damage, property losses, and psychological impacts.[20]

South Kalimantan has a disaster-prone risk based on the National Disaster Risk Assessment Document of South Kalimantan Province, namely flood disaster prone. The total area of flood hazard in South Kalimantan Province as a whole is 1,717,116 Ha and is in the High class. The flood hazard area is detailed into 3 hazard classes, namely the low class hazard area of 30,605 Ha, the medium class area of 658,208 Ha, while the area affected by flood hazard in the high class is 1,028,302 Ha. The district/city with the highest area of flood hazard in the low class is Kotabaru Regency with an area of 8,594 Ha. In the medium class, the highest area of flood hazard is Kotabaru Regency with an area of 148,732 Ha. While for the high class is Barito Kuala Regency with an area of 195,287 Ha.

**Disaster Mitigation Communication Model**

Disaster is an event or series of events that have the potential to threaten and disrupt people's lives, which can be caused by natural, non-natural, or human factors. The consequences of a disaster can be loss of life, environmental damage, material losses, and psychological impacts.[21]This phenomenon cannot be completely avoided by humans and can occur at any time, either suddenly or through a gradual process. Based on data from the United Nations Agency for International

[20] Pemerintah Provinsi Kalimantan Selatan, "Peraturan Gubernur (Pergub) Provinsi Kalimantan Selatan Nomor 87 Tahun 2023 tentang Kajian Risiko Bencana Provinsi Kalimantan Selatan Tahun 2022-2026."

[21] Pemerintah Pusat Republik Indonesia, "Undang-undang Republik Indonesia Nomor 24 Tahun 2007 tentang Penanggulangan Bencana," 2007, 24.

Strategy for Disaster Risk Reduction (UN-ISDR), Indonesia is one of the most disaster-prone countries in the world, ranking third for earthquake risk and sixth for flooding.[22]

Floods are a frequent threat in South Kalimantan, especially during the rainy season. To minimize its impact, the role of communication in disaster mitigation is very important. Through effective communication, the public can receive clear information about disaster risks, preventive measures, and evacuation procedures. In this effort, the local government has established various policies, including Law No. 24 of 2007 concerning Disaster Management. The law emphasizes the importance of coordination between parties in disaster risk management, as well as the need to disseminate information related to disaster risks to the public, such as floods.

Presidential Regulation No. 21 of 2016 concerning the National Disaster Management Plan provides guidelines for local governments to develop mitigation plans that are appropriate to local conditions. This preparation includes emergency plans, clear communication patterns, and community involvement in the mitigation process. Programs such as evacuation simulations and socialization on the use of early detection tools are also carried out to improve community preparedness. By involving the community in every mitigation step, it is hoped that they can be faster and more precise in dealing with emergency situations. Disaster mitigation communication in South Kalimantan Province is not only about conveying information, but also about building collective awareness to act proactively. With support from the government and active participation of the community, it is hoped that the impact of flooding can be minimized, and community safety can be maintained.[23]

The nomenclature of flood disasters in accordance with the Decree of the Minister of Home Affairs Number 900.1.15.5-1317 of 2023 provides a clear framework for the identification and handling of floods as one of the types of disasters that often occur in Indonesia, especially in South Kalimantan Province in 4 (four) regencies/cities in this study, namely Banjarmasin City, Banjar Regency, Barito Kuala Regency, and Hulu Sungai Tengah Regency. The decree defines floods specifically, including various classifications and characteristics related to the causes, impacts, and categories of floods, both natural and due to human activities. The nomenclature in this case can be used for local governments to be expected to be able to prepare more targeted mitigation and response plans, based on a uniform understanding of the flood phenomenon in their respective regions according to the existing community culture.

[22] Bagus Santoso dkk., "Sistem Informasi Geografis Pelaporan Bencana Berbasis Web," *Jurnal SANTI - Sistem Informasi Dan Teknik Informasi* 3, no. 2 (2023): 123–30, https://doi.org/10.58794/santi.v3i2.667.

[23] Presiden Republik Indonesia, "Peraturan Presiden Nomor 21 Tahun 2016 tentang Rencana Penanggulangan Bencana Nasional," 2016.

Disaster mitigation communication is a crucial aspect in dealing with floods. Through effective communication, information related to flood risks, preventive measures, and evacuation procedures can be conveyed clearly to the community. Education and outreach regarding disaster preparedness must be carried out continuously, so that the community has sufficient knowledge to deal with emergency situations. With a clear nomenclature, communication between the government, related institutions, and the community can be better established, allowing for more effective collaboration in flood mitigation and response. The existence of a flood disaster nomenclature in the context of this decision is an important tool in increasing community preparedness and capacity to deal with the risk of recurring floods. The disaster communication model scheme in South Kalimantan Province can be seen in Figure 4.1 below.

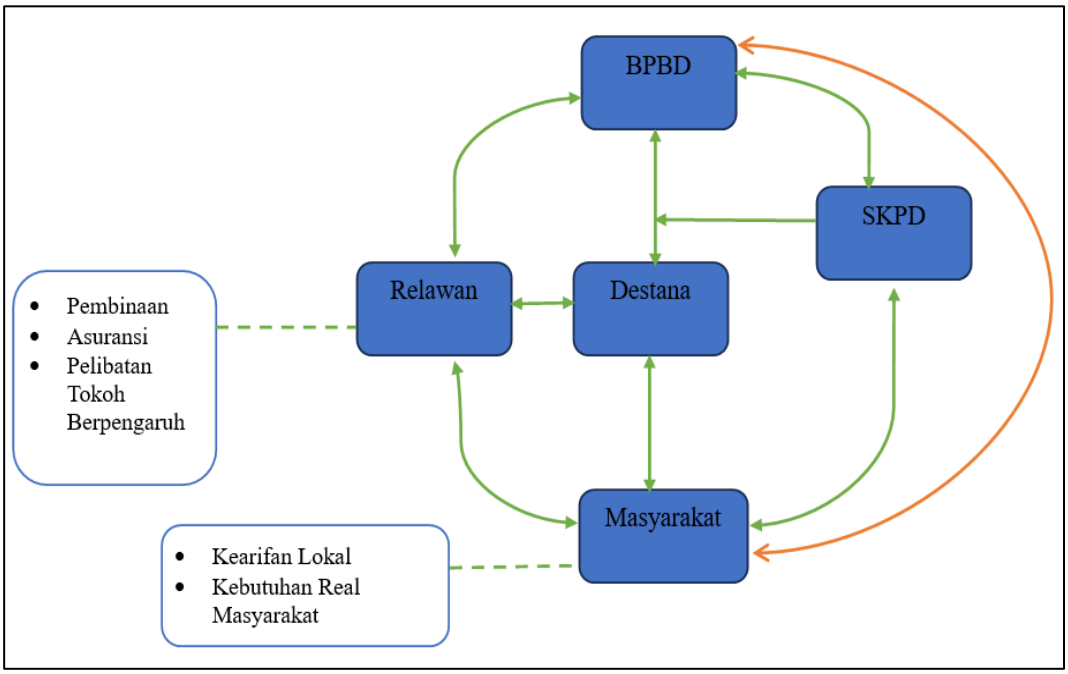



Figure 1 Disaster Communication Model

Based on the image above, it can be explained with several points as follows:

1. BPBD as a coordinating SKPD, has an important role in building disaster mitigation communication, especially with technical SKPDs that also have roles and responsibilities in terms of disaster mitigation. In addition, BPDB also has a role in forming and fostering volunteers and the formation of Disaster Resilient Villages, including Tanggung Disaster Village and Tanggung Disaster District.
2. Hierarchically, in disaster mitigation it is depicted by a green line that is reciprocally related. However, on the other hand, BPBD can also do it directly to the Community but it

has gone through stages/communication with technical SKPD, meaning that technical SKPD does not want to take on that role.

3. In realizing disaster mitigation, BPBD needs to target the establishment of as many Destana as possible, even all villages in South Kalimantan. In this case, regulations are needed for the use of village funds in the establishment of Destana. Furthermore, in terms of development and guidance of Destana, it can be carried out by related SKPDs, such as the Health Service in training on handling Health and First Aid for Accidents/Disasters. There is also self-defense training, as well as other training and development from related SKPDs.
4. Meanwhile, with data/information from the community, we can directly know the conditions faced by the community when a disaster occurs, so that we know what the community needs and what we need to do before, during, and after a disaster occurs.

There are several characteristics of flood disasters in the areas that are the object of research:

1. Hulu Sungai Tengah Regency must form many Destana. This is reflected in Jaranih Village which already has volunteers who are ready to face disasters, but they have not been designated as Destana. Then Jaranih Village is also a regular flood victim every rainy season or flood season. For example, if there is a 3-day flood in the Barabai city area, Jaranaih Village will be flooded for 1 week. With the volunteers they have, as well as the community who already understand how to deal with floods, they need to find a place of refuge in another village, while other villages or those that are the destination have not yet become Destana. For that, in this case, the formation of Destana is needed immediately.
2. Barito Kuala Regency in Jejangkit Village is also one of the areas that is prone to flooding and submerged for quite a long time. In dealing with it, they need a place like a large hall that will be a temporary refugee camp. In addition, this place will also be used for large-scale activities in the village.
3. Banjar Regency needs to strengthen the Disaster Resilient Village, Destana, and volunteers. Like in Murung Keraton Village where this village already has many volunteers, but needs to be fostered and strengthened to be even better. The same is true for Banjarmasin City.

In this disaster mitigation communication, how can we unite a perception related to the importance of disaster mitigation, and become the responsibility of all parties, not only the government, but also the private sector or entrepreneurs, and the community itself. We must be able to unite the perception that "Mitigation is an Investment not a Cost". In this scheme or design, it can be developed in detail regarding the role and function of SKPD in disaster mitigation. In terms

of communication, a convergence communication model or a participatory communication model can be used.

Flood disaster mitigation in South Kalimantan Province is focused on developing a better drainage system to reduce waterlogging during heavy rains. One of the steps taken is the revitalization of riverbank areas which aims to strengthen environmental resilience. This process involves planting vegetation that can absorb water and help reduce surface flow and flood risk. The government also involves the community in educational programs related to flood risks and prevention efforts that include counseling on the importance of maintaining a clean environment. By increasing public awareness, it is hoped that participation in protecting the environment and disaster preparedness will increase so that the impact of flooding can be minimized. This collaborative effort is essential to creating a safer and more resilient environment in the face of future flood threats.

Natural resource management through forest and wetland conservation plays an important role in absorbing water and reducing surface runoff. The implementation of sophisticated early warning systems and public education on flood risks and mitigation measures are also essential to improve preparedness. Clear policies and regulations as well as collaboration between the government, non-governmental organizations, and local communities ensure that all mitigation efforts can be implemented effectively. With these steps, it is hoped that South Kalimantan Province can be better prepared to face flood disasters and minimize the impacts caused.

**Role, Contribution, and Participation of Stakeholders and the Community in Flood Disaster Mitigation in South Kalimantan Province**

The role, contribution, and participation of stakeholders and the community in flood disaster mitigation are very important to increase resilience and reduce disaster risks. Stakeholders such as the government, related agencies, and non-governmental organizations have the responsibility to plan and implement mitigation programs and provide support and resources. The government, as a policy maker, is tasked with formulating strategies and regulations that support disaster preparedness and response. Through good coordination, the government can ensure that resources are allocated appropriately and effectively.

NGOs often act as a bridge between the government and communities. They help convey critical information and provide training and resources to improve community preparedness. They can also identify local needs that may be overlooked by broader policies. Communities play an active role in mitigation efforts through participation in activities such as outreach, mutual cooperation, and infrastructure maintenance. This synergy between various parties creates a more effective system in dealing with disasters, ensuring that all elements of society are involved in

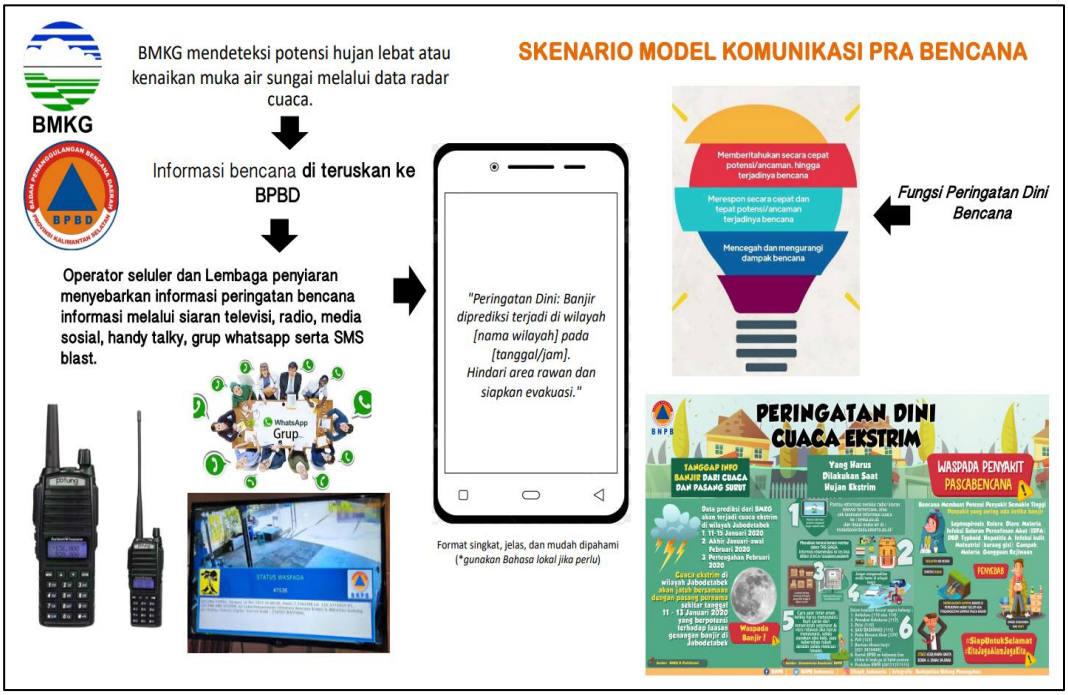
protection and recovery efforts. With good collaboration, flood disaster mitigation can be carried out in a more comprehensive and sustainable manner.

**Flood Disaster Mitigation Communication Model Scenario in South Kalimantan Province**

In overcoming the challenges of flood disasters in South Kalimantan, the development of an effective disaster mitigation communication model is very important. This model must be able to reach all levels of society, utilize the latest technology, and involve various stakeholders. Through three stages of communication from pre-disaster, during disaster, and post-disaster, this model will help all parties including the government, community organizations, and individuals to collaborate in disaster mitigation.

1. **Pre-Disaster Communication Model**

At this stage, the main focus is on increasing public awareness and knowledge about disaster risks and preparing communities and governments to face disasters. Intensive education through seminars, workshops, and distribution of information materials will be carried out to ensure that each individual understands the mitigation steps that must be taken. Training for volunteers and disaster response officers will also be key in building local capacity. Periodic disaster simulations will be conducted to test readiness and strengthen coordination between stakeholders. The pre-disaster communication model scheme is in the following Figure.

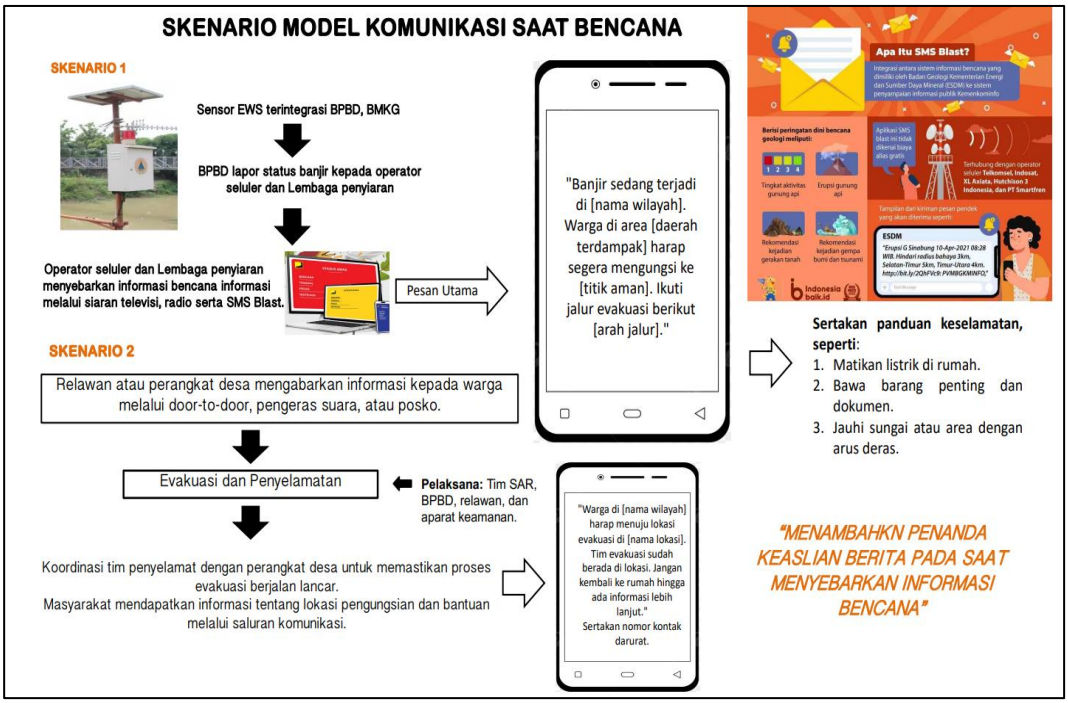



Picture1Pre-Disaster Communication Model Scenario

## 2. Communication Model During Disasters

When a disaster occurs, fast and accurate communication is critical. This communication model will utilize multiple channels, including social media, local radio, and SMS/WhatsApp to disseminate up-to-date information on the situation and steps to be taken. Coordination between stakeholders will be strengthened through face-to-face meetings and the use of location-based applications, so that emergency responses can be carried out effectively.

In this critical situation, the role of mass media is also very vital to reduce the spread of misinformation and ensure that the message delivered is clear and precise. Ensure that the report submitted includes safe locations, evacuation routes, and refugee camps. As for the communication model scheme during a disaster in the following Figure.




Picture2 Communication Model Scenario During Disaster

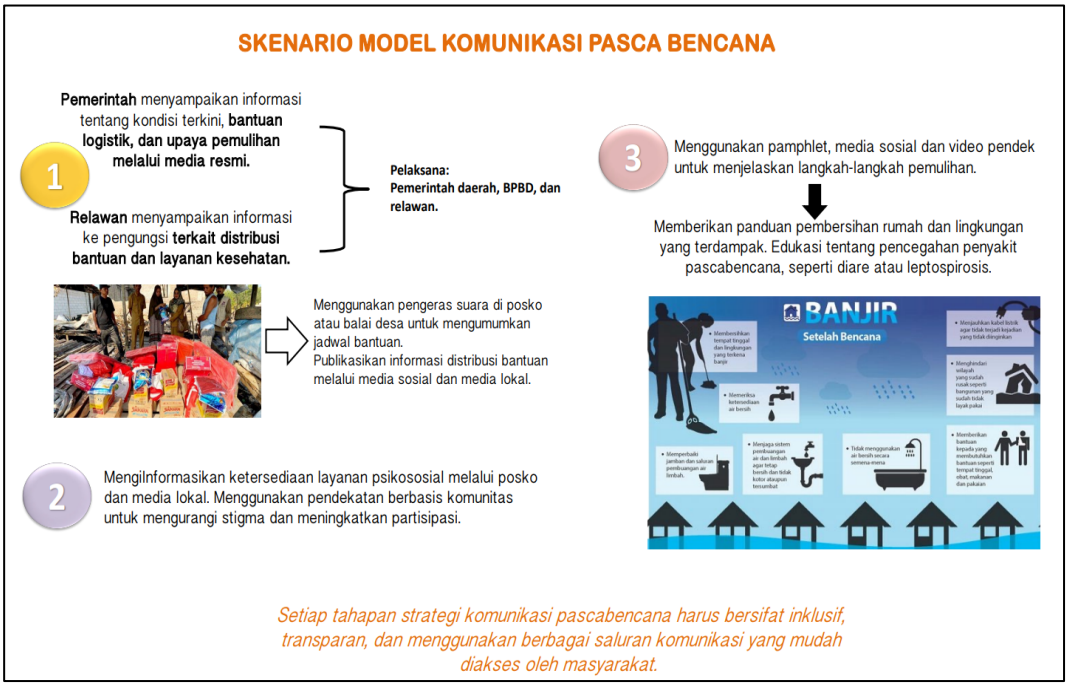
## 3. Post-Disaster Communication Model

After the disaster has passed, attention will turn to recovery and rehabilitation. Disaster impact assessments and data collection will be conducted to understand the effects and to improve existing mitigation systems. Meetings with communities will be held to hear their experiences and to provide information on available assistance and resources.

Recommendations for improving the disaster mitigation and communication system will be prepared based on the evaluation results, so that the learning process from each disaster event can be internalized and applied in the future. In the disaster mitigation

communication model, it is important to provide psychological support, such as counseling sessions and support groups, so that individuals can share experiences and overcome emotional pain.

Education about the signs of trauma and mental health resources should also be disseminated to help communities understand and manage the psychological impacts they experience. As for the communication model scheme during a disaster in the following Figure.




Picture3 Post Disaster Communication Model Scenario

**Flood Mitigation Innovation Based on Local Wisdom**

Local wisdom-based flood mitigation is an approach method to reduce the impact of flooding by utilizing knowledge, practices, and culture in the study area. This strategy integrates methods that are adapted to the local community. Here are some innovations that can be done for flood mitigation in South Kalimantan Province, especially in the study area, namely:

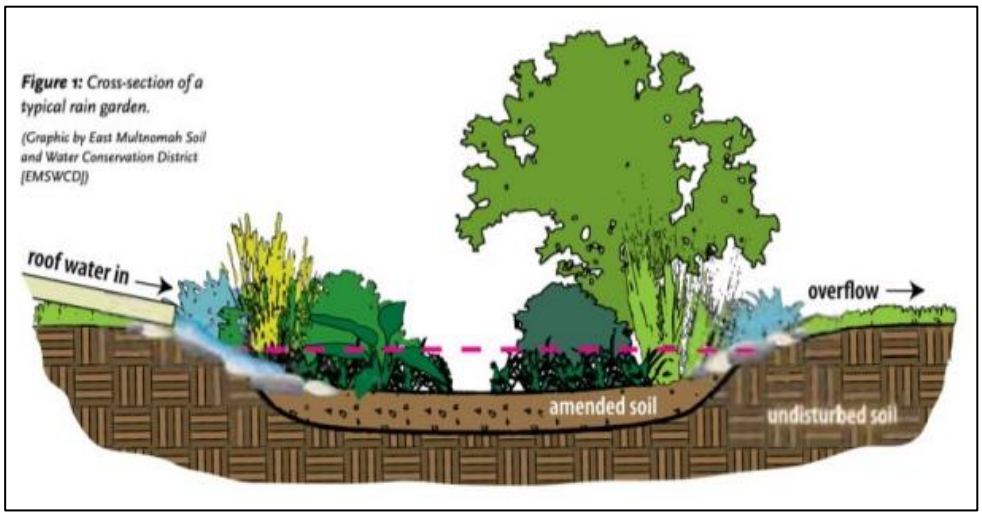
1. **The House of Kalangit**

   This innovation develops a modern stilt house design based on local technology that is resistant to seasonal flooding that occurs in the study area. This house is designed to be able to adapt to changes in weather and environmental conditions including flooding, the use of building materials is also local and sustainable so that it not only reduces environmental impacts but also supports the local economy. A village needs a stilt house (hall) as a place of refuge and village activities can be carried out there.

Figure4 Kalangit House Design

**2. Banua Reservoir Park**

This park is a multifunctional city park development that can be transformed into a small reservoir to collect rainwater during the rainy season. The channel will be made open so that it slows the flow of water and allows infiltration into the soil, then it can be planted with vegetation (local plants) that are already adaptive to regional conditions so that they can absorb water and remove pollutants. The design can be made based on traditional forms and placements that reflect existing water management practices.




Picture5 Tadah Banua Garden Design

**3. The Intelligent and Merciful Pamatang of Banua**

This tool uses Internet of Things (IoT) based sensors to monitor water levels in rivers in real-time. Sensors can be placed at critical points in the river, then the sensor data

can be integrated into an application that is easily accessible by BPBD and local communities.

Picture6 The Ampun Banua Gate

## CONCLUSION

Based on the research results and discussion, the following conclusions can be drawn:

1. Effective disaster communication is a key element in disaster risk mitigation efforts, especially in the flood-prone province of South Kalimantan. Communication strategies involving the concept of innovation diffusion and active community participation can increase preparedness, reduce the impact of risk, and build an emergency response culture by conducting geohydrological analysis and regional vulnerability such as changes in the water balance in South Kalimantan influenced by seasonal cycles that impact groundwater potential and flood risk. Areas such as Hulu Sungai Tengah Regency, Barito Kuala Regency, and Banjar Regency have high levels of flood vulnerability, so they require special handling to reduce their impact. As well as taking a specific approach to local areas that have unique characteristics that affect disaster mitigation needs. For example, Jaranih Village and Jejangkit Village require a community-based approach, such as building evacuation sites and increasing volunteer capacity, to ensure community preparedness in dealing with floods.
2. Strengthening Disaster Resilient Villages (Destana)with the establishment of Disaster Resilient Villages and Disaster Resilient Sub-districts as a strategic step in disaster mitigation. This program involves volunteer training and strengthening the capacity of local communities to improve rapid and effective disaster response.
3. Disaster Mitigation Communication Model through coordination led by BPBD and integration with technical SKPD, the disaster mitigation communication model in South

Kalimantan can strengthen the synergy between the government and the community as the implementation of Law No. 24 of 2007 and other relevant policies provide a strong legal basis for the implementation of mitigation strategies and improving disaster coordination and response with the support of disaster nomenclature and targeted communication strategies, coordination between the government, related institutions, and the community can be improved. This allows for a faster, more precise, and more efficient disaster response.

Overall, this study confirms that integrated disaster mitigation communication, active community participation, and adequate regulatory support are the main pillars in increasing preparedness and reducing the impact of flood disasters in South Kalimantan Province.

## SUGGESTIONS AND RECOMMENDATIONS

The implementation of an effective and inclusive disaster mitigation communication model strategy will greatly contribute to disaster risk reduction and increased community resilience. Communities are not only protected from the impacts of disasters, but are also empowered to actively participate in preserving the ecosystem that is their natural fortress.

Based on the research results, the research team made 10 recommendations involving various technical agencies in terms of implementing a flood disaster mitigation communication model in South Kalimantan Province.

Here are 10 recommendations that were submitted.

1. Forming and fostering disaster response volunteers (BPBD and Social Service). The need to form and foster volunteers considering the extraordinary potential possessed by South Kalimantan, where South Kalimantan has many volunteers. In the formation and fostering of these volunteers, the following things are needed:
    a. Involvement of community figures, who will be role models for volunteers
    b. Insurance provision
    c. Regulations that can protect while on duty (avoid criminalization and criminal acts while on duty)
    d. Uniformity of volunteer costumes (such as colors that indicate the identity of BPBD/BNPB)
2. Establishment of the Disaster Management Disability Inclusion Service Unit (LIDi PB Unit), by creating a Governor Regulation concerning the implementation of the Regional Regulation of the Province of South Kalimantan (Kalsel) Number 4 of 2019 concerning the

Protection and Fulfillment of the Rights of Persons with Disabilities is the Regional Regulation of the Province of South Kalimantan.

3. Addition of Disaster Resilient Village Formation by utilizing village funds (can create a 1,000 Destana Launching Program in South Kalimantan). BPBD needs to collaborate with the PMD Service to create regulations to regulate the use of village funds in disaster prevention and mitigation activities/formation of Destana. In the formation of Destana, it is also necessary to involve or collaborate with other agencies that also have programs in the village, such as the Tourism Service which has a Tourism Village program, especially in the village that has a tourist destination.
4. Education and Training, as well as Periodic Simulations
    a. for volunteer development, LIDi PB Unit, and Destana.
    b. Regular simulations, both in schools, offices, and community environments to help understand how to recognize evacuation routes, safe points, and emergency steps according to local conditions.
    c. Formation of disaster mitigation curriculum, starting from Kindergarten to University level.
5. Disaster Resilient Infrastructure Development:
    a. Kalangit House: Development of modern stilt house design based on local technology that is resistant to seasonal flooding. Kalangit house can also be used as a village hall that can be used as a refugee camp (during flooding) and village activities.
    b. Tadah Banua Park: Developing a multifunctional city park that can be transformed into a small reservoir to collect rainwater during the rainy season.
6. Disaster Mitigation Information System.
    a. Addition of EWS, where the denser the better
    b. Pamatang Cerdas Ampuh Banua (Using Internet of Things (IoT) based sensors to monitor water levels and predict flood events in rivers in real-time)
    c. Emergency Communications
    d. Evacuation signs and maps
    e. Integrated Applications and Information Portals (including social media)
    f. Use of public/traditional media (prayer rooms, mosques, security posts) in disaster mitigation
7. Transportation Contingency (Logistics Transportation), with the aim that if a flood disaster occurs it will not hinder the flow of logistics transportation: Transportation Agency
8. Awarding of awards to communities, volunteers and the business world who actively participate in disaster mitigation and response (BPBD South Kalimantan Awards):

9. Coaching for Disaster Aware Press in the Kalimantan region in general and specifically in areas vulnerable to natural disasters.
10. The use of Nature-Based Solutions (NbS) approach to address environmental-socio-economic challenges by managing ecosystems sustainably. (Environmental Service and Forestry Service).

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