

Collaborative Communication in Mitigating Abrasion Disasters Through Community-Based Tourism

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ABSTRACT

Bengkalis Island is one of Indonesia's small islands that faces significant threats from coastal abrasion and land subsidence. These issues are partly caused by limited communication about disaster mitigation among stakeholders and the low level of environmental awareness. This study explores collaborative communication strategies for abrasion mitigation through the development of community-based tourism. Using a case study approach, the research focuses on communication issues related to abrasion disaster mitigation. The IPMPL community plays an important role not only as environmental activists but also as content creators, media users, and key communicators in abrasion mitigation efforts. This community has significantly contributed to the development of the Raja Kecik tourist destination as a way to increase environmental awareness among local residents, tourists, and other stakeholders. In carrying out these efforts, the community collaborates with various stakeholders, including the government, universities, companies, mass media, local communities, social media activist, environmental activists, and tourism activists. The development of Raja Kecik tourism has become an effective communication medium for promoting abrasion disaster mitigation. In addition, tourism-based disaster communication contributes to improving economic income while also strengthening environmental awareness. In the future, this collaborative communication approach should be institutionalized to further enhance public awareness and build stronger community resilience against abrasion disasters.

Keywords: *Abrasion, community-based tourism, disaster communication, environmental communication, mitigation.*

INTRODUCTION

Environmental issues have now become a major concern for the world community. The climate change problems and environmental damage are increasingly apparent, such as forest fires, floods, and extreme weather (Boerman et al., 2022). In addition, Southeast Asia with its large number of islands is also affected by global climate change such as large tidal waves, abrasion, and erosion. Environmental problems basically stem from human behaviour. However, the life experiences of many world citizens have made society collectively aware of the various risks in mitigating climate change and the complexity of the problems that occur (Crosweller, 2022). In this regard, community engagement is a key component in addressing climate change. Rapid social change in response to climate change requires effective communication and community engagement (Kumpu, 2022). Disseminating scientific knowledge to the public is also crucial for encouraging behavioural changes that support climate change mitigation (Degeling & Koolen, 2022).

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Indonesia has more than 17,000 islands, making it one of the largest archipelagic countries in the world. However, many small islands in this country are threatened with sinking due to land erosion and rising sea levels. The coastal areas of Riau, especially Bengkalis Island and its surroundings, have a very high risk of disaster and are affected by abrasion (Wati et al., 2025; Yasir et al., 2024). This abrasion is one of the most detrimental natural disasters in this region because peatlands are very easily eroded. So this area is vulnerable to faster coastal land erosion. Even in certain areas, land eroded into the sea reaches 3 to 10 meters per year. The problem of coastal erosion is closely linked to the impacts of climate change. Coastal ecosystem conservation is crucial as an effective natural blue carbon strategy to mitigate climate change (Kwan et al., 2025). Mangrove forests, in particular, not only absorb and store more carbon but also play a crucial role in protecting coastlines from erosion.

Coastal areas with peat soil, such as Bengkalis Island, are highly susceptible to shoreline damage, commonly referred to as peat bog bursts (Nabilah et al., 2024). This condition is also associated with human activities, particularly the large-scale exploitation of mangrove forests for charcoal production, construction materials, and firewood. In addition, many mangrove areas have been converted into shrimp ponds. Such excessive exploitation, combined with weak law enforcement against those responsible, has accelerated the degradation of mangrove forests. As a result, the region has become highly susceptible to coastal abrasion, largely due to the community's limited environmental awareness regarding the sustainability of coastal ecosystems. Mangrove ecosystems, as blue carbon ecosystems, not only protect against soil erosion caused by tidal waves but also contribute to climate change mitigation. Therefore, mitigation communication to protect and restore coastal ecosystems must be a primary concern. The Indonesian government has implemented several policies to prevent further damage. However, in mitigating abrasion disasters, stakeholders are not yet aware of their roles and have not yet collaborated effectively in addressing abrasion disasters (Yasir et al., 2024). Disaster management programs that integrate communication aspects for coastal community resilience are an important step in improving disaster risk reduction.

Previous studies have shown that climate change communication in rural and other remote areas presents many challenges (Gislason et al., 2021). Communication regarding disaster mitigation and environmental protection is still lacking in coordination and public participation (Charoenthansakul & Natee, 2024; Nkombi & Wentink, 2022). In fact, collaboration is very important to maintain the sustainability of mangrove and coastal ecosystems as well as for human survival. The Bengkalis Regency Government has conducted a mangrove forest conservation campaign by involving the community by making mangroves a tourist attraction, such as Madani Beach in Pambang Village, Raja Kecik Beach in Muntai, Selat Baru Beach and others. However, some programs have failed and their development is not sustainable.

Tourism development contributes to supporting sustainable ecosystem management, particularly through a community-based tourism approach (Sumarmi et al., 2021). In principle, community-based tourism serves as a strategy to achieve development goals because environmental resource management is carried out by community groups themselves. This tourism development model is regulated by Minister of Home Affairs Regulation Number 33 of 2009, which regulates ecotourism development in regional areas (Pemerintah Indonesian, 2009). Environmental preservation and tourism development require strong collaboration among various stakeholders. In this context, the Raja Kecik tourist destination in West Muntai Village was developed through collaboration with several

stakeholders to raise public awareness as an effort to mitigate abrasion disasters. However, communication between the actors involved has not been fully effective, due to various dynamics and even competition. Therefore, this study aims to develop an effective collaborative communication model for abrasion disaster mitigation.

This study attempts to explore collaborative communication in an effort to overcome abrasion disasters. The study is expected to contribute to a community-based abrasion disaster communication model. The collaborative communication model through community-based tourism is important to develop because coastal communities are the most vulnerable to this problem. This paper also strengthens the resilience of fishermen and coastal communities to actively participate in dealing with climate change.

LITERATURE REVIEW

Communication is at the heart of collaboration, and collaboration is at the heart of understanding environmental issues and managing them. Studies on collaborative communication show that this approach is interdisciplinary, strategic communication and produces knowledge that can be applied because it is based on science (McGreavy et al., 2022). Collaborative communication is part of strategic communication that includes deliberate, purposeful, and goal-oriented techniques. Enabling collaborative communication also requires an inclusive 'co-created' strategy (Rice, 2022). Collaborative communication is also related to collaboration between various stakeholders by involving across sectors (Villar, 2021). Therefore, environmental problems, poverty, inequality, and conflict will be difficult to resolve without involving all of them as affected stakeholders.

Collaboration helps address complex issues related to climate change and social inequality in a meaningful way. In addition, this participatory form and co-creation between stakeholders is the right approach to gather local wisdom and create inclusive and empathetic solutions (Villar, 2021). Inclusive communication forms collaboration in identifying problems and changing communication patterns from unfair to more equitable. The communication strategies used by each disaster management actor will always be different because their behavior and management are culturally different (Purworini et al., 2019). These differences are often a barrier, even though they can enrich insights. In fact, to overcome the problems of environmental change and disasters, effective communication must be created because it is the essence of collaborative governance (McGreavy et al., 2022). Therefore, researchers emphasize the importance of context and interaction in understanding collaborative communication based on Communicative Planning Theory (CPT) as the main foundation.

Communicative Planning Theory (CPT)

Communicative planning theory (CPT) plays an important role, especially in planning thinking and practice (Westin, 2022). The concept of CPT refers to the terms: collaborative governance, collaborative planning, deliberative planning, and argumentative planning. CPT places great emphasis on the importance of dialogue, openness, equality, neutralization of power, and fairness in communication (Calderon & Westin, 2021; Westin, 2022). CPT is also a political theory of deliberative democracy, which means that decision-making or policy is obtained through a process of rational debate among citizens who have equal rights. Studies related to collaborative planning practices are used to address problems such as: conflicts of interest, divisions, differences of opinion, and other complex problems in environmental management, city/regional governance, and others (Lin, 2023). Collaborative communication

in the CPT approach emphasizes active and ongoing interaction between various stakeholders, such as states, economic actors, and citizens, or other stakeholder groups. So the CPT approach emphasizes the importance of interactive processes, where various perspectives are taken to seek consensus.

CPT emerged in the late 1980s. This theory later became one of the most discussed themes in planning theory at that time. CPT was inspired by the ideas of philosopher Jürgen Habermas from the Theory of Communicative Action. However, this idea later focused more on studying the field of planning and policy-making practices (Mattila, 2020). The main idea of CPT is that planning can become more democratic and equitable by improving the quality and quantity of communication between planning actors such as planners, politicians, citizens and entrepreneurs (Westin, 2022).

According to Habermas' perspective, communicative rationality is closely linked to the theory of communicative action. This concept refers to collective actions that are coordinated rationally through the alignment of communication and behaviour. However, one common criticism of applying Habermasian philosophy in theoretical planning is that the theory is viewed as overly abstract and insufficiently grounded in practical realities. Originally, this theory was not intended to be applied at a micro level in everyday decision-making or planning practices, but rather at a macro level, such as within the institutional structures of the state and society, particularly in the formulation of laws and regulations. Therefore, CPT is attempted to be able to directly practice CPT theory both on a local and daily micro scale and on a macro scale and in the wider life of society. So communication must be able to form collaborations with various methods and approaches to change unfair communication patterns to be more equitable (McGreavy et al., 2022). Currently, social media should have an impact on decision-making and policy planning because of its more interactive channels. However, social media and big data have not been used to support policy planning optimally. In fact, citizen participation is a primary prerequisite that can be maximized by utilizing social media and using diverse and interactive communication channels (Lin, 2022).

Collaborative approaches to planning are widely used in policy making and determining appropriate practices. Several studies related to this theory show that the context of interaction between stakeholders influences this form of collaborative communication. Effective communication practices require the support of an adaptive, collaborative, and integrative environment (Arevalo et al., 2019). Therefore, the interaction between institutional actors is important to explore. Collaborative communication tends to align on the dialectic of tensions and differences that are inevitable, namely: competing discourses that are formed in and through communication (Rice, 2022). However, collaborative communication requires strengthening the functions of each actor who contributes to communication activities. Social change will always be created together to identify interests and reconcile all actor needs, to achieve positive and realistic goals. So it's not just idealistic. This CPT theory highlights the importance of understanding how economic, social, cultural, political, and institutional factors interact within the local environmental context. From this perspective, emphasis is placed on inclusive and bottom-up strategies as a way to address and adapt to environmental and social challenges. Furthermore, CPT recognizes that people's awareness of temporal and spatial contexts can enhance individual capacity to actively participate in achieving the goals they seek to accomplish (McGreavy et al., 2022).

In this context, communication requires mutual respect and trust among the actors involved. Therefore, each actor needs to possess fundamental communication skills to enable effective collaborative communication, particularly skills related to conflict resolution (Rice, 2022). In addition, CPT as a form of strategic communication practice can produce ideas that can be implemented collaboratively with a scientific basis. However, the communication planning implemented by each institution in disaster management will always be different from each other. Differences in perspectives, values, and behaviors must be respected. Communities will always have different beliefs, cultural norms, and other characteristics, requiring appropriate methods aligned with their values (Purworini et al., 2019).

Environmental Communication and Community-based Disaster Mitigation

Environmental communication refers to the application of communication approaches and principles in the management and conservation of the environment (Flor & Cangara, 2018). It focuses on the study of communication strategies, their impacts, different perspectives, self-concepts, and the relationship between humans and their environment (Pezzullo & Cox, 2018). Environmental communication is not merely about distributing information on environmental issues such as water pollution, forests, or climate change. Instead, it also encompasses the use of language, visual imagery, protests, music, memes, and scientific reports as forms of symbolic expression. These symbols and forms of communication shape how people understand environmental issues, construct meaning, and perceive the broader world. Therefore, communication plays a crucial role in helping humans comprehend the natural environment around them.

The environmental communication approach is applied to examine how environmental information and issues are created, communicated, and interpreted. It also plays a crucial role in addressing environmental challenges by raising public awareness, influencing policy decisions, and encouraging collaboration among various stakeholders. Environmental communication is useful for bridging the gap between scientists, policy makers, and the general public, especially in fostering concern for environmental issues. In this case, environmental communication reflects reciprocal environmental knowledge towards shared understanding between certain parties. Environmental communication should emphasize audience empowerment and the active participation of local communities (Charoenthansakul & Natee, 2024).

Community-based environmental communication as one of the efforts to mitigate abrasion disasters can be synergized with risk communication (Villar, 2021). This community-based disaster mitigation approach is effective if the community has the ability to explore the potential, wisdom, values, and culture of the local community. The resources owned by the community can be utilized for disaster preparedness activities. This study takes the perspective of community-based disaster risk reduction theory. Community-based disaster mitigation means reducing disaster risk through efforts made by the community (Paton & Irons, 2016). This theory explains that disaster risk reduction at the community level can contribute to building disaster resilience. This is effective for disaster management if the local community has a voice in their own development and is actively involved. The ability of communities based on local wisdom to adapt to change, handle problems, and respond to disaster situations is a form of community resilience to disasters. In addition, communication models for disaster mitigation in indigenous communities can also use folk media to increase disaster literacy (Andung et al., 2024).

Today, indigenous and rural communities face significant uncertainties as a result of environmental challenges. They are particularly vulnerable to the impacts of climate change and various extreme disasters. Therefore, indigenous and local communities need to be actively involved as partners in disaster management and environmental conservation initiatives (Bayrak, 2022; Nurzaman et al., 2020). Their participation can help reduce the adverse effects of climate change while also supporting the sustainability of local ecosystems, ultimately strengthening community resilience. This perspective highlights the importance of promoting the involvement of local communities in identifying and addressing environmental problems within their surroundings (Nkombi & Wentink, 2022). One key way to encourage public participation in responding to climate change is through communication (Kumpu, 2022). In this context, communication approaches that aim to enhance people's capacity to understand environmental messages are essential for the long-term sustainability of both human society and the natural environment.

In this case, a key component of disaster mitigation and coastal management efforts is an effective communication strategy by involving the community and raising awareness of stakeholders to behave more environmentally consciously. So environmental communication is not only seen as a means of protecting the environment, but also an integrated part of environmental management itself (Flor & Cangara, 2018). Mitigating environmental disasters and climate change requires integrated communication efforts to align various stakeholders—from governments, companies, NGOs to individuals—to achieve common goals and actions. Therefore, collaborative environmental communication is essential in efforts to achieve sustainable development.

METHODOLOGY

This research was carried out on Bengkalis Island in Bengkalis Regency, Riau Province, Indonesia. Bengkalis is one of the outer islands of the country as it is located near the border with Malaysia. Geographically, Bengkalis Regency lies to the east of Sumatra Island. The area is generally lowland, with an average elevation of approximately 2–6 meters above sea level. The regency consists of two main islands, namely Rupat Island (1,524.84 km²) and Bengkalis Island (938.40 km²). Both Bengkalis and Rupat Islands each have two sub-districts, while the mainland area of Sumatra Island within the regency contains seven sub-districts. These coastal regions are generally prone to coastal abrasion. However, Bengkalis Island experiences more severe abrasion because it is located in the middle of the Malacca Strait and is dominated by peatland areas. The total coastline affected by abrasion in the two sub-districts reaches 72 kilometres, with about 62 kilometres classified as being in a very critical condition.

This study employed a qualitative approach using a case study method. Qualitative research is a comprehensive and complex activity, because the researcher is a subject who is included in the society being studied (Taquette & Souza, 2022). Furthermore, qualitative research is valuable for developing communication strategies related to environmental issues and risk communication (DeLorme et al., 2018). Meanwhile, case studies generally aim to examine phenomena related to a spatial and temporal context. Such research is often used to explore or evaluate specific programs (Baxter & Jack, 2015). In this type of research, the researcher serves as the primary instrument in the data collection and analysis process (Alpi & Evans, 2019). The focus of this study is on communication for abrasion disaster mitigation through community-based tourism in Bengkalis Island. The tourism development initiative carried out by the government in collaboration with the *Ikatan Pemuda Melayu Peduli*

Lingkungan (IPMPL) community presents an interesting case, as it contributes to reducing abrasion risks. Moreover, this group has succeeded in attracting public attention and encouraging other stakeholders to participate in efforts to protect the coastal of Bengkalis.

The subjects of this study were stakeholders involved in abrasion disaster mitigation in Bengkalis Regency. Some of them were used as informants selected purposively. Those who were used as research informants included RI as Head of Bengkalis Bappeda; BR and AS as Head of the Environmental Service and their secretaries; DA as Functional Officer of the Tourism Service; SW as Head of the Communication and Information Service; ER from the Regional Disaster Management Agency (BPBD); IF implementers of the Peat Restoration Agency (BRGM) of the Riau Provincial Environment and Forestry Service; SS the head of the Center for Disaster and Peat Studies University of Riau; and SO as deputy chairman of the Bengkalis Regency DPRD. In addition, informants were also the initiator and chairman of the Raja Kecil Tourism Malay Youth Association (IPMPL), namely SO and one of its managers JU. Then the Head of West Muntai Village, Chairman of the Tourism Awareness Group (Pokdarwis) and several other village figures. Researchers collected primary data through interviews, FGD, and direct observation. In addition, secondary data collection from various sources related to this study. Secondary data were obtained from records of communication activities, website publications, social media content, news releases, as well as relevant laws, regulations, and government policies. The collected data were analysed using the interactive analysis model developed by Miles and Huberman (1994). To ensure the validity of the data, the researchers applied several verification techniques, including source triangulation, peer checking with fellow researchers, and extending the duration of the research.

RESULTS AND DISCUSSION

Disaster communication Using Community-Based Tourism

The Indonesian government has designated several coastal tourism destinations as part of its abrasion disaster mitigation communication program. The Raja Kecil tourist destination in West Muntai Village is one such destination developed by the community in collaboration with the government. Raja Kecil was initiated by IPMPL. Initially, this community only focused on preserving Gerunggung trees (*Cratoxylum arborescens*) to overcome forest fires and also rehabilitate unproductive peatlands. However, this community later became an important factor in tourism development, by collaborating with universities, local and central governments, mass media, and other actors to raise awareness of beaches affected by abrasion. The northern coastal area of Bengkalis Island has experienced quite severe damage. The government made a policy by placing this disaster as a major problem that must be resolved immediately. The Indonesian government has built breakwaters, but this program has not been followed up with good communication. The damaged coastal areas of Bengkalis were repaired and rehabilitated by the government to control abrasion. This coastal rehabilitation program is synergized with developing community-based ecotourism in the area to support coastal resilience while improving the community's economy.

Community-based tourism development is one of the communication methods for disaster mitigation programs. Although only a handful of groups are willing to participate in this program, the government is trying to empower this community for the implementation of sustainable development. In this case, the government does not yet have an intensive and sustainable communication strategy to make the community active and skilled in maintaining the coastal environment. In reality, this program is merely a ceremonial activity. This can be

seen from the implementation of the mangrove rehabilitation program which has minimal guidance or training as a form of sustainable communication. It must be admitted that limited government funds also affect the construction of breakwaters and also affect training or coaching activities so that the area affected by abrasion is getting wider. The Head of Muntai Barat Village explained the effectiveness of this government development program.

Coordination between the central and regional governments, universities, mass media, and the Association of Malay Youth Concerned with the Environment (IMPPL) makes this place a tourist destination and also a form of communication for mitigating abrasion disasters. This community group helps the government program to prevent abrasion from getting worse. Initially, some people were resigned to seeing their gardens affected by abrasion. Then they planted mangroves and developed this Raja Kecik tourism (Interview, SU, April 21, 2023).

The government built a breakwater to overcome the increasingly severe abrasion. Meanwhile, IPMPL and tourism awareness groups developed this area into a tourist attraction and at the same time a means of communication to care about the coastal environment affected by abrasion. This campaign to care about the damage to the Bengkalis coastline is part of the central government program that has designated Bengkalis Regency, Riau Province as one of the priority locations for mangrove rehabilitation. Mangrove rehabilitation in this area is carried out by BRGM, as an institution directly under the President and coordinated with the Ministry of Environment and Forestry of the Republic of Indonesia.

The central government is very active in campaigning for the importance of mangrove rehabilitation to protect Indonesia's outermost islands as an effort to maintain the country's sovereignty. Joko Widodo as president once visited Raja Kecik Beach, symbolically planting mangroves with the community on September 28, 2021. The President conveyed the importance of coastal rehabilitation to prevent more severe abrasion disasters and to maintain community resilience. This coastal tourist attraction is used as an important communication tool to disseminate environmental communication messages so that they get wide coverage both in local and national news media, social media and in discussions among the community. Mitigating natural disasters and climate change was also conveyed by Joko Widodo at the G-20 Summit in Bali on November 15-16, 2022 by involving leaders of other countries to plant mangroves.

Community-based tourism development is being applied collaboratively as a strategy for mitigation communication. This approach has proven effective in increasing public awareness of the importance of maintaining coastal resilience. Moreover, the program positions the community as the main actor, communication channel, and source of messages related to coastal conservation. This tourism initiative has attracted significant media attention, even going viral on social media and becoming widely discussed, which eventually led to a visit from President Joko Widodo. The environmental messages conveyed through this tourism site have also captured public interest, particularly among visitors, as many messages based on local wisdom are displayed at various points throughout the area. However, the tourism development program and its communication processes have not yet been carried out in a fully collaborative and sustainable manner. Despite this, the active involvement of local communities—along with the participation of visitors and the government—has generated media coverage and discussions on social media, reflecting

elements of collaboration (Huber et al., 2022). Community-based tourism activities therefore serve as an effective communication channel for environmental education and protection. Raja Kecik Beach, for example, functions as a tourist destination that educates visitors about the importance of protecting coastal areas from worsening abrasion. In addition to supporting environmental conservation, this tourism initiative also contributes to improving the economic conditions and overall welfare of the local community.

The Datuk Bandar Jamal Bridge, which serves as the main attraction of the tourist site (see Figure 1), symbolizes the importance of protecting the nation while preserving the environment. The bridge also conveys a message to the community about the need to care for the coastline, as it stands as evidence of severe abrasion that has eroded more than one kilometer of land. The name *Raja Kecik* was chosen to reflect the spirit of the founder and first king of the Siak Kingdom, Sultan Abdul Jalil Rakhmat Syah, who was known for his efforts to defend the country.



Figure 1: Datuk Bandar Jamal Bridge as a tourist attraction

The use of symbols and names in the supporting infrastructure also represents the historical values and meanings associated with the Siak Kingdom. These names were inspired by history, cultural values, traditions, and prominent Malay figures. Through communication that incorporates Malay cultural values, the initiative aims to encourage the community to care for the coastal environment while also appreciating the historical significance of Malay culture. In this context, the initiator of the Raja Kecik tourism site stated:

The bridge of Datuk Bandar Jamal is an icon of Raja Kecik Beach tourism. At the end of this bridge passes a stone breakwater made by the government. We built this tourism together with the youth, the community and assisted by other stakeholders to convey the message that the community and visitors must care about Bengkalis Island, some of whose land has been lost due to abrasion. In its construction, we collaborated with many parties, such as universities, provincial and central governments and local communities. In its promotion, we were assisted by the media and social media activists. (Interview, SO, April 20, 2023).

Raja Kecik Tourism was built on community land and managed directly by the local community through tourism awareness groups (Pokdarwis). Some of the community provided their land to be managed according to the agreement. This spirit is an important social capital for sustainable tourism development. Pokdarwis, the local community, and IPMPL manage this tourist destination as a form of abrasion disaster mitigation and collaborate with other stakeholders to preserve the surrounding natural resources. However, the community living on the coast has not been able to do much to overcome it because the problems are complex. This complexity is certainly inseparable from national and global environmental problems such as climate change. Therefore, communication is needed that involves all stakeholders.

The Collaborative Communication Model for Abrasion Disaster Mitigation

Disaster communication management is a key aspect in reducing the impact of abrasion. This disaster communication plays an important role in raising public awareness of disaster risks. Therefore, the problems of abrasion disasters, tourism development, and disaster mitigation itself require support from all stakeholders using collaborative communication strategies. Collaborative communication is not yet effective, but if each stakeholder can carry out their duties according to their functions properly, it will certainly be better. The government is the main actor responsible for making policies to prevent damage to the coastal environment of Bengkulu. The government has a role not only in planning, implementing, and evaluating policies, but also in communicating these policies. The local government bureaucracy of Bengkulu Regency has not played a maximum role in dealing with abrasion disasters. The poor implementation of this policy is due to the suboptimal functions of legislation, budgeting, and control related to handling abrasion.

The government is still lacking in fostering the community, especially those who manage tourism. The communication that is carried out is not continuous. The government does carry out collaborative communication with other stakeholders but not intensively. In fact, this collaboration can facilitate and help accelerate the success of the abrasion disaster mitigation program. The next element is higher education. Higher education and its academics can be relied on by the community because they have the task of tri dharma, namely organizing education, research, and community service based on their respective expertise. Higher education also contributes to producing studies, innovations/ideas, and graduates to help the community solve problems faced based on science. In this case, there are five basic things that help the success of innovation and implementation of the tri dharma of higher education, namely: commitment to university policies; institutionalized; involving the community; utilization of innovation freely and openly; empowering internal and external resources (Halibas et al., 2017). Therefore, in disseminating science and innovation, higher education must also implement collaborative communication that involves other stakeholders, namely: government, society, business world, and mass media.

Table 1: Collaborative Communication Actors and Their Roles

University	Corporate/ CSR	Government	Community, tourism & environmental activists	Mass Media
Carry out research, create innovation, perform community service, and	Implementing CSR, carrying out pro-environmental marketing activities and	Making policies/regulations, making programs oriented towards solving abrasion problems,	Conduct mapping, develop potential, carry out mangrove rehabilitation, spread ecotourism-based	Disseminate information for disaster mitigation, raise public awareness to protect the

develop abrasion disaster mitigation methods	campaigning for environmental sustainability	developing tourism potential, and allocating funds for coastal protection	environmental messages	environment and promote tourist destinations
Collaborate to prepare and strengthen responsible institutions	Collaborate to strengthen the community in mitigating abrasion	Collaborate to foster and train communities, and help build tourism infrastructure and infrastructure	Building relationships with other communities, such as: Genpi, environmental activists, tourism activists, social media influencers, etc.	Collaborate to disseminate and campaign public awareness for coastal resilience
Diffusion based on study publications, in journals, mass media, social media accounts of lecturers or students	Publication through news releases, public relations, advertisements, social media, etc	Abrasion disaster mitigation campaigns through the web, billboards, social media, news releases, etc	Communicate marketing-based creative environments related to tourism products, social media, bulletin boards, etc	Developing an environment-based journalistic model

Source: Data analysis (2025)

The involvement of universities also plays a role in solving the abrasion problem. This involvement is carried out through research activities and community service. These activities help accelerate village development and solve problems faced by the community. Community service programs carried out by lecturers and student real work programs every year are able to bridge the gap between other stakeholders. The existence of universities also helps the implementation and dissemination of new innovations to strengthen community capacity.

Corporations or business institutions are important actors that can contribute to driving regional economic development. In the case of Raja Kecik Tourism development, the role of Corporate Social Responsibility (CSR) remains limited, mainly because there are relatively few companies operating in the surrounding area. Although Raja Kecik Tourism already has a positive image, it also offers opportunities for companies to enhance their own public image through involvement in its development. CSR programs can be implemented through collaboration with various stakeholders, including the government, local communities, universities, mass media, social media activists, and environmental advocates. As the tourism manager, IPMPL can also establish partnerships with travel agencies, hotels, vehicle rental services, retail shops, and culinary businesses. Such CSR-based collaborations enable companies to strengthen their reputation and build a positive image in the eyes of the public.

Another important actor in collaborative communication is the community. Community-based environmental communication tends to be effective when it uses messages, stories, media, and practical examples that reflect local values, preferences, beliefs, norms, and prior experiences. Local communities, as the owners of land affected by abrasion, can work together with tourism managers to carry out coastal rehabilitation based on their local wisdom. The management of Raja Kecik tourism, which promotes narratives rooted in Malay cultural values and environmental education, can also be supported by other community groups such as environmental activists, social media activists, tourism enthusiasts, and other groups that share similar interests. At present, the involvement of social media influencers is particularly important in communicating environmental issues

because of their wide reach and influence. IPMPL, as a non-governmental organization, together with the local community, represents one of the key stakeholders in both abrasion disaster management and tourism development. As primary actors in local development, these communities uphold traditional customs that can serve as a means of protecting the environment while also preserving cultural identity.

Mass media is one of the key components in collaborative communication that can spread messages of environmental awareness and promote tourism. It plays an important role in delivering information about policies or programs related to environmental issues, including abrasion disaster mitigation. Today, conventional media such as newspapers, radio, and television are complemented by internet-based media and social media platforms. These two forms of media increasingly support one another in disseminating disaster communication. Various social media platforms, including Twitter, TikTok, YouTube, Facebook, and Instagram, can rapidly spread messages related to disaster mitigation and environmental issues, while also enabling interactive communication. In modern society, social interaction occurs quickly and easily, with distance and time no longer acting as major barriers. In this context, social media also functions as a medium for spreading information about Raja Kecik tourism through digital word-of-mouth communication.

Collaborative communication, as a form of sustainable communication, is essential to develop in efforts to address environmental problems. This approach aligns with the community-based disaster risk reduction framework, which emphasizes greater involvement of stakeholders—particularly local communities—since they are often the most vulnerable (Nkombi & Wentink, 2022). However, initiatives aimed at strengthening the capacity of local communities in environmental management must also prioritize the improvement and long-term sustainability of communication.

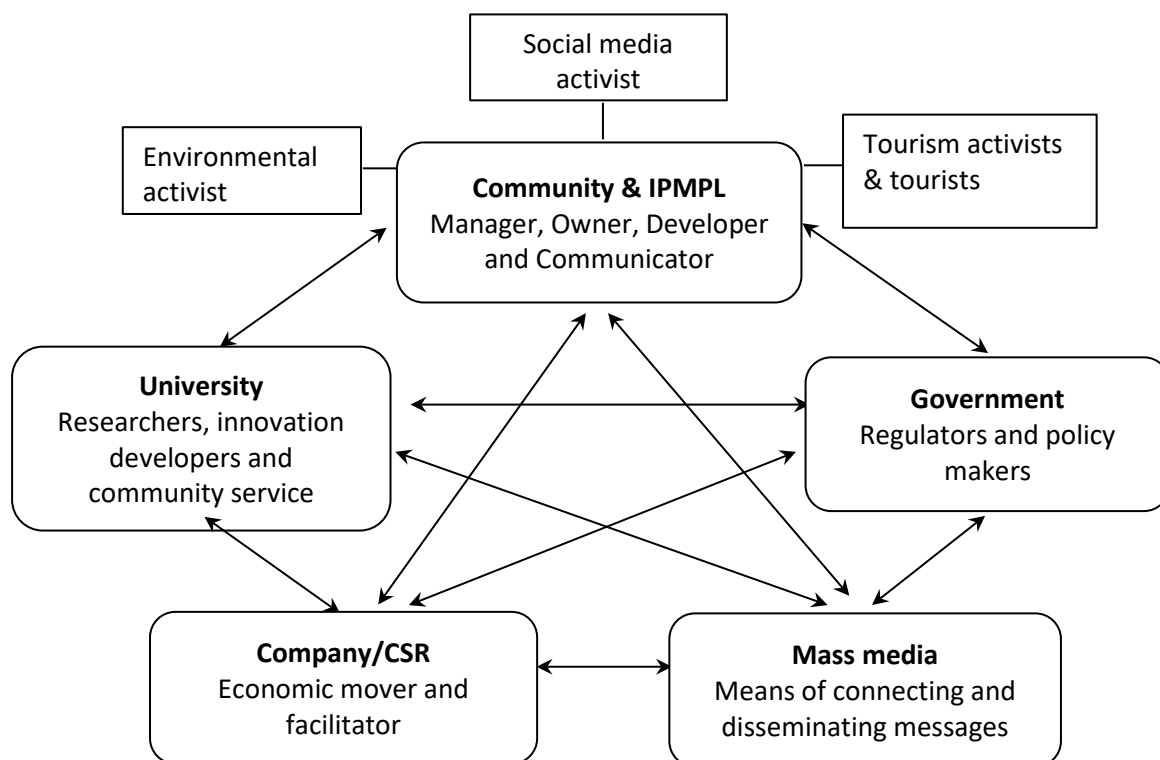


Figure 2: Collaborative communication model for abrasion disaster mitigation

Source: Data analysis, 2025

Discussion

Communication plays a vital role in enhancing stakeholder awareness and encouraging participation in efforts to mitigate abrasion disasters. This highlights that effective collaborative communication should involve various stakeholders working together to solve problems (Lin, 2023). Both central and local governments have engaged multiple stakeholders in the processes of assessing, planning, and addressing abrasion-related issues. Through communication, actors are able to convey problems and mobilize other stakeholders to participate in finding solutions (Calderon & Westin, 2021). In terms of social media use, collaboration among these actors is important for increasing the number of followers and subscribers. In the contemporary era, active participation through social media can broaden public involvement, making it a vital component of collaborative planning. Therefore, combining social media, digital technologies, and conventional participation approaches can help create a more inclusive collaborative planning process (Lin, 2022). Moreover, utilizing multiple communication channels is essential because individuals often differ in their preferences for obtaining disaster-related information (Purworini et al., 2019). Disaster communication strategies must also consider various perspectives due to differences in the sociocultural backgrounds of the actors involved. Ultimately, each stakeholder needs to be innovative and maintain sustainable interactions in the communication process.

Basically, the community gets important lessons about their vulnerability to disasters. So local wisdom values must also be an important characteristic of disaster communication because everyone has an attitude of respect, sincerity, and dignity (Rochim et al., 2020). Therefore, this cross-disciplinary and cross-cultural collaborative communication can help identify and implement more effective coastal resilience strategies based on participatory communication (Charoenthansakul & Natee, 2024; McGreavy et al., 2022). Currently, environmental activists and social media influencers are taking part in overcoming disasters faced by the community. In addition, they help monitor issues such as: environmental issues, low government performance, lack of coordination between stakeholders, and even poor tourism strategies. In this case, environmental rehabilitation and preservation require support from various stakeholder actors, but the most important is the role of the local community itself. However, the government is the main element that can invite all elements to work together (Chamidah et al., 2020; Yasir et al., 2021).

Collaborative communication strategies for abrasion disaster mitigation by the government must consider the needs and habits of local communities. Disaster mitigation communication facilities can be effectively improved through optimization of popular media as an efficient means of disseminating information (Andung et al., 2024). Currently, because social media is the most widely used communication channel, it is important to develop social relationships through social media to increase the effectiveness of the disaster communication process. Therefore, collaborative communication on social media can be done by posting the activities of the affected community as content as well as communicators. People generally use various different sources to get information, such as; traditional news coverage, websites, blogs, and social media platforms. This is done to gain relevance as a source of information on sustainability and to engage in environmental issues, such as the use of social media influencers in communicating environmental issues (Boerman et al., 2022). Disaster communication strategies by creating narratives based on beliefs or folklore can also increase public awareness of disaster hazards. This narrative communication approach can be expressed in news, social media posts, or disaster reports that are integrated

into visual and video forms to create a story about the dangers of the impact of the disaster (Mazzoglio et al., 2021).

This communication model involving various stakeholders can facilitate the resolution of complex environmental problems. Therefore, this collaboration can encourage effective communication for social change and environmental conservation. Social innovation related to this collaboration is known as the penta helix communication model. This collaboration is important to develop because it aims to influence the attitudes of the community and stakeholders regarding climate change and disaster mitigation behavior. However, environmental communication is not only about conveying environmental knowledge, increasing environmental awareness and conserving natural resources, but more importantly is being an integral part of community development and taking sustainable actions (Degeling & Koolen, 2022). In the context of coastal areas, the development of disaster communication between stakeholders aims to fill the gaps or deficiencies of each stakeholder.

This study shows the importance of building sustainable collaborative communication between stakeholders for the resilience of coastal communities in the face of abrasion disasters. This collaboration is important not only for mitigating abrasion disasters, but also for addressing environmental and other issues. Actors must have the problem knowledge and communication skills, be able to align differences, and respect each other without demeaning other groups. The communication carried out must also avoid repressive power and abuse of power. Therefore, this collaborative communication model can be practiced by every actor or stakeholder in overcoming environmental disasters, increasing community resilience, and at the same time as an effort to increase involvement.

CONCLUSION

Collaborative communication through community-based tourism has an important contribution in increasing environmental awareness and mitigating abrasion disasters. The collaborative communication model between the government as an actor, local communities, universities, companies, and mass media plays a role in increasing community resilience in dealing with abrasion disasters. The involvement of environmental activists, tourism activists, and social media influencers also contributes to campaigning for environmental awareness and providing input to stakeholders. Each actor in collaborative communication has carried out its role even though it has not been implemented optimally. Communication on abrasion disasters still tends to be elitist, ceremonial, and has not taken root in the community. Abrasion mitigation policies have also been made, but their implementation has not been supported by sustainable communication.

The government, both central and regional, as the main communicators must be responsible for implementing this abrasion prevention communication program. In this case, the government must be able to build intensive and continuous collaborative communication with other stakeholders so that abrasion does not get worse. Collaboration between actors must be based on understanding, openness, empathy and a common goal to overcome the abrasion disaster. In addition, sustainable communication management requires the development of social and technological innovations, as well as institutional strengthening in each communicator. In addition, the government needs to budget appropriate funds to address this issue, increase skilled communication resources, and improve routine and ongoing training programs for target groups and those affected by abrasion disasters. Government cooperation and support are very important in strengthening community groups in helping to control abrasion and maintain the sustainability of the coastal environment. This

research should be further developed using other approaches such as ethnography or other cultural approaches to gain a deeper understanding to support appropriate policies based on local culture. In addition, studies on the impact of tourism-based communication also need to be conducted to minimize the possible impacts on both society and the environment.

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