

Government Influence on the Quality of Disaster Risk Communication in Developing Nations: A Comparative Analysis of the Philippines, Bangladesh, And Indonesia

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ABSTRACT: The study analyzes how government policies influence disaster risk communication in developing countries, focusing on the Philippines, Bangladesh, and Indonesia. Using Risk Communication Theory's five dimensions—timeliness, accuracy, accessibility, transparency, and participation—the research employed qualitative comparative policy analysis. Findings indicate that governmental policies and structures significantly impact disaster risk communication quality. The Philippines excels in timeliness, accuracy, and transparency due to advanced communication systems, while Bangladesh leads in participation through community-based programs. Indonesia shows balanced performance across all dimensions. The study concludes that effective disaster risk communication requires sound governance, information sharing systems, and public engagement, contributing to knowledge on disaster governance and guiding policymakers in improving disaster preparedness and community resilience.

KEYWORDS: Disaster Risk Communication; Disaster Governance; Risk Communication Theory; Comparative Policy Analysis; Disaster Risk Reduction; Developing Countries.

I. INTRODUCTION

Throughout history, disasters have posed significant threats to human life. It can occur at any time and at any place, but the severity of disaster impacts depends on a country's vulnerability. Developing countries are much more vulnerable to disasters because of accumulating factors such as poverty, substandard infrastructure, and limited resources. With this, they often experience a repeated cycle of destruction affecting every aspect of human life.

Because developing countries are deemed to be the most vulnerable during disasters, there is a growing need to develop a sound and more effective disaster risk communication. Failing to communicate about risks effectively can reduce trust, hinder solutions, and even increase vulnerability (UNDRR 2024). For disaster risk communication to be effective, it must be understood and clearly comprehended by the intended audience for them to be able to translate it into protective measures.

Moreover, governments play a central role in ensuring the effectiveness of disaster risk communication, especially in developing countries. They must listen and build strong relationships with the communities in order to build an effective framework and to mitigate the risks caused by a disaster (UN DESA 2023).

Despite having advancements in technology, disaster risk communication remains ineffective and still not sufficient to mitigate the risks if the individuals lack adequate situational awareness. This limits the effectiveness in preventing, preparing for, responding to, and recovering from disasters (UNDRR 2025).

The study focuses on the Philippines, Bangladesh, and Indonesia, three developing countries that are highly vulnerable to natural hazards yet possess different disaster management systems and communication strategies. Examining these countries, it provides an opportunity to compare how different governmental approaches influence the quality of disaster risk communication.

Existing studies largely focus on disaster risk communication within individual countries or specific disaster events. There is still limited comparative research that has examined how government policies and practices influence the quality of disaster risk communication across developing countries through the following variables: timeliness, accuracy, accessibility, transparency, and public participation. Addressing this gap is important for identifying policy approaches that contribute to more effective disaster preparedness and response. This study seeks to answer the following question: How do government policies and practices influence the quality of disaster risk communication in selected developing countries? This question will be addressed through the Risk Communication Theory.

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A. Risk Communication Theory

The study is anchored in Risk Communication Theory as it explains how the information about hazards and risks can be communicated and disseminated effectively to aid individuals in making informed decisions and protective actions. Risk communication involves the exchange of information about risks, hazards, warnings, and protective measures among governments, organizations, and the public (Sheppard et al. 2012).

Moreover, it was argued by Covello & Sandman (2001) that risk communication arises from the growing need for governments and institutions to exchange dialogues and ideas regarding environmental and societal risks. They further highlighted that the public's concern about a hazard does not always equate to the actual danger. Instead, the public's reactions are influenced by the sole characteristic of a hazard mixed with their perceptions, emotions, and level of trust in the institutions. With this, effective risk communication must also address public concerns and expectations (Covello & Sandman 2001).

In this study, the theory serves as the foundation for examining how government policies and practices influence the quality of disaster risk communication in developing countries – the Philippines, Bangladesh, and Indonesia. The quality of disaster risk communication will be assessed through the principles and dimensions of the theory: timeliness, accuracy, accessibility, transparency, and public participation

II. METHODOLOGY

A. Research Design

This study adopts a qualitative comparative policy analysis design to examine how government policies and practices influence the quality of disaster risk communication in the Philippines, Bangladesh, and Indonesia. The design suits the study best since it allows a systematic examination of policies and practices of the different countries, while taking into consideration the political, institutional, and social factors that shape their implementation and effectiveness.

Steiner-Khamsi and Morais (2024) have emphasized the importance of understanding disaster management policies to analyze them systematically across multiple countries. In this study, the authors will conduct a systematic analysis of disaster policies by using the frameworks of Risk Communication Theory to compare disaster risk communication efforts in three different developing nations. Additionally, there is an emphasis on how governments implement strategies to successfully communicate information about the risks associated with disasters.

B. Case Selection

The three selected nations, such as the Philippines, Bangladesh, and Indonesia, are developing and are the top 3 disaster risk countries out of 13 total disaster risk countries in Asia (Disaster Risk Index-2010).

The Philippines has a long history of being a disaster-prone country, experiencing various forms of natural disasters such as typhoons, floods, earthquakes, volcanic eruptions, etc. To address this, Republic Act No. 10121 (Philippine Disaster Risk Reduction Management Act of 2010) was enacted in order to improve the country's preparedness and response to natural disasters.

Like the Philippines, Bangladesh also experiences natural disasters such as cyclones, floods, storm surges, and many other hazards that impact society. In response, the country created the Disaster Management Act (2012), which was designed to increase disaster governance and risk reduction (Bangladesh Gazette 2012).

Similar to Bangladesh, Indonesia has been affected by many different types of natural hazards such as earthquakes, tsunamis, volcanic eruptions, and floods. Indonesia has adopted Law No. 24 of 2007 on Disaster Management as a cohesive set of laws to establish a framework for disaster management in Indonesia (National Agency for Disaster Management 2007).

The units of analysis in this case are three digital Disaster Risk Communication Frameworks developed by the three countries, respectively. The frameworks will allow for the comparison of the methods by which the governments of the three countries communicate disaster risk and maintain disaster risk communication to the communities impacted by these disasters, especially as regards developing countries and the perception that they may be at higher risk of experiencing disasters than developed countries.

C. Data Sources

The literature reviewed for this research study includes a broad range of pertinent literature on laws pertaining to national disaster management, along with government reports and supporting documents. The principal pieces of disaster management legislation are Republic Act 10121, the Philippines Disaster Risk Reduction Management Act of 2010 (The LawPhil Project 2010); The Disaster Management Act of Bangladesh 2012 (Bangladesh Gazette 2012); and Indonesian Law No. 24 of 2007 relating to the Disaster Management of Indonesia (The National Agency for Disaster Management of Indonesia 2007). These laws provide the foundation for the country's strategies to reduce disaster risk and serve as the framework for disaster preparedness, disaster response, and disaster communication.

Additional secondary sources were also included within this research paper. These sources consist of scholarly publications, institutional reports, and disaster management-related literature, which will assist in building a contextual basis for each country's

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vulnerability to disasters and how they implement their own disaster management policies, including the way in which they communicate about principles regarding disaster mitigation and disaster recovery.

Through a comparative analysis of government policy and practice, this research enables to develop a comparative analysis of the effect of governmental policy and practices on the quality of disaster risk communication.

D. Variables and Indicators

The study will be operationalized through the following variables and indicators grounded in the Risk Communication Theory:

Table 1: This table shows the variables and indicators to be used for each country's within-case analysis.

Variable	Indicators
Timeliness	Early warning systems, speed of communication, and emergency notification procedures.
Accuracy	Verification processes, and information sources.
Accessibility	Multiple communication channels, language used, and proximity to vulnerable populations.
Transparency	Public access to disaster risk information, and information-sharing mechanisms.
Participation	Community involvement, stakeholder consultations, local participation in communication planning.

Table 2: This table shows the rating and interpretation to be used in the comparative case matrix section among the countries.

Rating	Interpretation
Very Strong	All indicators are evident across the policies and practices.
Strong	Most of the indicators are evident with minor gaps.
Moderate	Some indicators are evident but with notable gaps.
Weak	Limited evidence across indicators.
Very Weak	Little to no evidence across indicators.

E. Data Analysis

The study will be analyzed through the following steps:

1. **Descriptive Analysis** – This will be conducted to provide an overview of each country's disaster context.
2. **Within-Case Analysis** – Analyzed through the five dimensions derived from the Risk Communication Theory. Evidence gathered from various academic literatures and other credible sources will be examined to determine the extent to which each dimension is reflected in national disaster risk communication policies and practices
3. **Comparative Analysis** – Findings from the within-case analysis will be compared to identify similarities, differences, strengths, and weaknesses of the countries. Drawing from a qualitative data analysis procedures, patterns and themes from the dimensions will be compared (Miles, Huberman, and Saldaña 2014). Consistent with comparative policy analysis, the study will examine how the policies operate within different political, institutional, and social contexts and how these differences influence the quality of disaster risk communication (Steiner-Khamsi and Morais 2024). The dimensions will be qualitatively categorized as Very Strong, Strong, Moderate, Weak or Very Weak – based on the extent to which the indicators are reflected in government policies and documented practices.

III. RESULTS AND DISCUSSIONS

A. The Philippines

The Philippines is geographically situated along the Pacific Ring of Fire and within the Western Pacific typhoon belt, making it one of the most disaster-prone countries globally. Frequently facing a wide range of hazards such as typhoons, floods, storm surges, earthquakes, volcanic eruptions, and the like. This multiple exposure is also paired with population concentration in vulnerable areas which significantly contributes to its disaster risk profile. These cycle of disasters pose a substantial threat to public safety, economic development, and community resilience, making disaster risk reduction management a priority (Morath et al. 2021).

With this, the Philippines developed a disaster risk reduction management framework aimed at emphasizing preparedness, prevention, mitigation, response, and recovery. In this framework, disaster risk communication is an important component as it allows for the dissemination of hazard information, warnings, and protective measures to the communities at risk. The National Research Council of the Philippines (NRCP) argued that the effectiveness of disaster risk communication is based on whether or not the public understands the risks and how well they respond to it. Furthermore, the agency emphasized that the importance of community engagement, localized communication strategies, and the use of understandable language is necessary to enhance the public's preparedness and resilience (NRCP 2023). These initiatives show that the Philippine government's acknowledges disaster risk communication as a critical mechanism in reducing vulnerability and strengthening disaster preparedness.

1. Timeliness

The Philippines showcases a strong capacity for timely disaster risk communication through its warning systems and coordinated emergency alert mechanisms. The Philippine Atmospheric, Geophysical, and Astronomical Services Administration (PAGASA), is the country's primary weather agency that provides advisories, rainfall warning, tropical cyclone bulletins, and other hazard-related updates. Through these warning systems, it provides the public an advance notice of potential threats and facilitate early preparedness measures. This is also complemented by the National Disaster Risk Reduction and Management Council's (NDRRMC) Emergency Alert and Warning Message System, which allows government agencies to spread emergency warnings directly to mobile phone users. Taken together, these mechanisms support the rapid dissemination of disaster-related information and contribute to the timely delivery of warnings before a disaster strikes (Magno Ranara 2025; Leon 2025; Cañete 2021).

The timeliness of disaster communication is further reinforced by the monitoring of early warning systems of the Philippine Institute of Volcanology and Seismology (PHIVOLCS) – a government agency that oversees the detection and monitoring of earthquakes, volcanic activity, and tsunami threats. The agency has advocated for the expansion of monitoring infrastructure and early warning systems to improve hazard detection and increase public notification processes (Kabagani 2024). These mechanisms demonstrate the Philippine government's continued effort and commitment to enhance risk communication. Through real-time monitoring, standardized warning protocols, and multi-channel alert systems, the country showed a significant development of communication practices – supporting early preparedness and timely response to the vulnerable communities. With this, timeliness is indeed a strength of the country's disaster risk communication framework.

2. Accuracy

The accuracy of a disaster risk communication system in the Philippines is backed up by the country's specific monitoring systems and interagency coordination. PHIVOLCS developed the Handa Pilipinas platform, consolidating hazard monitoring, early warning, and disaster information from various government agencies into a single unified system. Integrating the geophysical, hydrometeorological, and disaster-related data, the program improves the consistency and reliability of information spread to government agencies and the public. With this integration, it significantly reduces the fragmentation of information and further strengthens the dissemination of evidence-based and verified hazard information (PHIVOLCS 2026).

The country's commitment to maintaining the accuracy of disaster communication is further mirrored in the multi-hazard early warning initiatives and the use of digital technologies for the spread of risk information. The Multi-Hazard Early Warning Center (MHEWC) showed the effort of the Philippines to strengthen hazard monitoring, forecasting, and warning systems through coordinated institutional arrangements (MHEWC 2025). Moreover, the GSMA reports that the Philippine government uses mobile and digital technologies to support early warning systems and disseminate official disaster information to affected populations. These initiatives it helps ensure that risk information is drawn from authorized sources – one that is verified through scientific and institutional processes. Collectively, these mechanisms show that the Philippine government remains committed to maintaining the accuracy and credibility of disaster risk communication (Aranda and Humeau 2022; GSMA 2023). With this, the Philippine government's investment in upgrading its monitoring systems and coordinated warning mechanisms positively influences the accuracy of disaster risk communication – ensuring that all the information disseminated is verified, consistent, and evidence-based.

3. Accessibility

In terms of disaster risk communication's accessibility in the Philippines, it is supported by the government's use of various media and efforts to ensure that the message will reach a broader scope, especially to the communities deemed vulnerable before a disaster occurs. PAGASA disseminates weather advisories and warnings through multiple channels – radio, TV, social media, and other digital platforms – allowing a broader scope of audience to access relevant weather information. The advisories from PAGASA are designed to be comprehended easily by the public, which allows communities to prepare for potential hazards and reduce disaster impacts (Reyes 2025). This multi-channel strategy of information dissemination significantly increases the probability that disaster information reaches individuals regardless of their preferred source of information.

However, accessibility is not sufficient if the public does not understand clearly what the warnings mean. Studies on communities in Northern Philippines show that communication channels, local context, language, and community engagement play a crucial role in influencing the accessibility and actionability of disaster risk reduction measures (Yanquiling 2024). Similarly, Lor (2025) emphasizes the importance of communication strategies that transcend warning dissemination by making it understandable, relevant, and responsive to community needs. These findings suggest that while the Philippines demonstrated its commitment to disaster risk reduction, the effectiveness of disaster communication lies in the government's ability to deliver information through inclusive, understandable, and people-centered approaches – one that can help people be prepared for the risks brought by disasters. Through these continued government efforts to utilize multiple communication channels and localized messaging, it positively influences the accessibility of disaster risk communication.

4. Transparency

The Philippines remains committed to making disaster risk communication transparent through public dissemination of hazard information and the expansion of open-access disaster information systems. A prominent example would be the GeoRiskPH, a platform initiated by the government that provides hazard, exposure, and risk information to government agencies and the public. Recent upgrades of the platform improve access to real-time hazard information and risk assessments. This allows the citizens to make informed decisions before and during disasters (Villanueva 2024). Also, the Department of Science and Technology (DOST) strengthen their efforts to expand access to disaster-related technologies and data, which reinforces the government's commitment to making hazard information more available to the public (Ogerio 2025).

Furthermore, transparency is also mirrored in the government's efforts to intensify information sharing and interagency coordination, especially during disaster response operations. HANDA Pilipinas, a government-led initiative, emphasizes the importance of enhanced data sharing to improve situational awareness and decision-making during disasters and emergencies (PDRF 2025). Moreover, Moaje (2024) reported that government disaster information platforms are framed to provide accessible and reliable risk information to the citizens, whether to the authorities or to communities. With this, it supports informed participation in disaster preparedness and response activities. Collectively, these initiatives show the Philippine government's commitment to transparency – ensuring that disaster-related information is openly communicated and accessible to the public, which directly influences the quality of disaster risk communication.

5. Participation

Public participation in the Philippines is one of the key elements of disaster risk communication, as demonstrated in a focus on collaborative governance and community engagement. In the study of disaster risk reduction and management between 2016 and 2020, Amil (2024) identified the need for collaborative governance among government agencies, local government units, civil society, and others in order to support collaborative decision-making processes that address disaster-related issues. In addition to serving as an effective framework for shared responsibility, collaborative governance supports the incorporation of community perspectives and local knowledge as part of the disaster preparedness and communication efforts.

The commitment of the Philippine government to participation is further reflected through community engagement strategies that emphasize two-way communication – from the authorities to the affected populations and vice versa. According to the United Nations Office for the Coordination of Humanitarian Affairs (OCHA), community engagement involves ensuring that the communities have access to information, opportunities to give feedback, and avenues to participate in making decisions that affect them during disaster preparedness and response activities. Through dialogue promotion, feedback opportunities, and community involvement, these initiatives allow the communities to be more active than passive recipients of disaster information. Moreover, government policies and practices that encourage collaboration and community engagement significantly influence the quality of disaster risk communication by fostering trust, inclusivity, and shared understanding between the authorities and the public (OCHA 2018).

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B. Bangladesh

Bangladesh is a country widely recognized as one of the most disaster-vulnerable countries in the world because of its geographic location, dense population, and frequent exposure to multiple hazards. Because of its location, the country experiences floods, cyclones, storm surges, riverbank erosion, droughts, and other climate-related disasters that threaten almost all aspects of human life. Bangladesh also faces exposure to hydrometeorological and climate-induced hazards, making disaster risk reduction a national priority (MRVA 2024). Similarly, reports indicate that the country belongs to the highest levels of disaster risk globally because of its vulnerability to extreme weather conditions and climate-related threats (Nahr 2024). These cycles of hazards continue to serve as the country's challenge to social and economic development while increasing the vulnerability of communities, especially those located in coastal and flood-prone areas.

To address these challenges, Bangladesh developed a comprehensive disaster management framework – emphasizing risk reduction, preparedness, resilience building, and community engagement. The United Nations Office for Coordination of Humanitarian Affairs (UNOCHA) highlights that Bangladesh made a significant development in strengthening disaster management institutions and preparedness mechanisms through coordination and collaboration between the government and the stakeholders (UNOCHA 2026). Similarly, the United Nations Office for Disaster Risk Reduction (UNDRR) acknowledges Bangladesh as a country that has increasingly adopted comprehensive risk management approaches to support resilience building and disaster preparedness (UNDRR 2024). Disaster risk communication is a critical function in communicating rapid and reliable information regarding hazards to at-risk populations as well as providing them with adequate warning and preparedness advice. By recognizing the value of disaster risk communication as part of the overall strategy for reducing disaster risk and building community resilience, the government of Bangladesh acknowledges the role of disaster risk communication in achieving disaster risk reduction and increasing community resilience.

1. Timeliness

Disaster risk communication improved significantly and more quickly in Bangladesh as a result of the establishment of national early warning systems and national preparedness initiatives. The establishment of the Early Warnings for All (EW4All) initiative by Bangladesh ensures every citizen receives timely and usable warnings before disaster strikes. To enable sufficient response time for community members before disaster occurrences, Bangladesh is developing a more effective early warning system with enhanced forecasting and monitoring systems and improved collaboration between agencies responsible for disseminating hazard information (UNDRR 2025). The Government of Bangladesh has also created a national roadmap for EW4All, as referenced in WMO (2025). An extensive network of organizations, including the Bangladesh Meteorological Department (BMD), Flood Forecasting & Warning Centre (FFWC), and Cyclone Preparedness Program (CPP), develops and distributes information concerning hazards. These agencies work in conjunction with one another, enabling warnings about hazards to be sent out quickly to local people at risk. Studies concerning disaster risk communication in Bangladesh demonstrate that these agencies have played a significant role in communicating warnings from national authorities to local communities (Shome 2019).

Through continuous improvements in early warning systems and institutional coordination for the dissemination of early warning messages, Bangladesh has improved the timeliness of disaster risk communication, thereby enhancing communities' ability to take preventive actions prior to disasters occurring.

2. Accuracy

In order to achieve an accurate disaster risk communication system, Bangladesh has worked to develop a National Disaster Risk Reduction and Management (DRRM) Communication System that integrates all hazard and response data into one central database. The National Spatial Data Infrastructure (NSDI) Disaster Portal is a key tool for having a complete and cohesive body of knowledge on all things related to disasters. By aggregating all relevant data into one place, users cannot only make better-informed decisions when dealing with disasters based on facts rather than assumptions, but are also provided with a single location for finding, accessing, and using information related to disaster management (DDM 2021). All of these programs and efforts play a major role in helping to decrease the fragmentation of disaster communication by providing users with verified, reliable, and authoritative data sources for all disaster communications.

Furthermore, the accuracy of disaster communication is reflected through Bangladesh's vertically integrated disaster risk reduction framework. According to the UNDRR, the country has successfully linked national disaster risk reduction strategies with local-level implementation through coordinated institutional arrangements and multi-level governance. This link allows the flow of verified information from one point to another – national agencies and local authorities. With this, it ensures that hazard information, warnings, and preparedness advisories are consistent across different levels of government (UNDRR 2025). Altogether, these mechanisms show that the Bangladeshi government is committed to maintaining an accurate and credible disaster risk communication by promoting data-driven decision-making, institutional coordination, and the dissemination of information through authorized channels.

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3. *Accessibility*

The accessibility of disaster risk communication in Bangladesh is strengthened by the government's commitment to having people-centered disaster management. According to UNDRR, the country adopted a comprehensive approach to disaster risk management, one that emphasizes community preparedness, public awareness, and local-level engagement in disaster risk reduction efforts. These initiatives aim to ensure that disaster-related information reaches vulnerable populations and is communicated in a manner that is understandable and relevant to local contexts. These efforts significantly improve the public's access to hazard information and preparedness measures, especially in communities with high exposure to recurring climate-related hazards and natural disasters (UNDRR 2024).

Furthermore, accessibility is supported by the country's use of multiple communication channels and community-based information-sharing strategies. Studies show that disaster communication in Bangladesh relies on various media – radios, TVs, mobile phones, and the internet – to communicate hazard information and warnings to the public. Other studies also highlight the role of institutions such as the CPP, FFWC, and other disaster management organizations in disseminating warning information across different levels of society (Shome 2019). Similarly, strategic disaster management initiatives emphasize the public's awareness, preparedness, and communication systems that enhance the communities' ability to receive and act upon disaster-related information (Barua and Mitra 2021; Chisty et al. 2022). Also, the importance of effective last-mile communication has been highlighted in ensuring that the warnings reach the most vulnerable and hard-to-reach populations (Chisty et al. 2022). Altogether, these efforts show how government policies and practices positively influence the accessibility of disaster risk communication by expanding its scope, inclusiveness, and usability of disaster information among at-risk communities.

4. *Transparency*

For the transparency aspect in Bangladesh's disaster risk communication framework, it is reflected in the government's effort to improve its information sharing, risk information dissemination, and public access to disaster-related data. Under the EW4All initiative, the country has strengthened its early warning systems through its improved intergovernmental agencies coordination and investments in risk information management. These efforts collectively aim to make hazard information and warning messages accessible to the public, enhancing their decision-making skills under the threat of disaster (UNDRR 2025). Moreover, the establishment and strengthening of Disaster Management Information Centers (DMICs) further improved the collection, management, and dissemination of disaster-related information. This supports more transparent communication between government institutions and communities (Langton 2025).

Nevertheless, there are concerns regarding how to develop transparent disaster governance in Bangladesh, given the progress made in various areas. For example, the Disaster Accountability Framework indicates that Bangladesh lacks effective mechanisms for holding individuals accountable for the mismanagement of disasters, and that the lack of reliable mechanisms for monitoring and sharing information will hinder transparency and access to disaster-related information for citizens (Islam 2025); likewise, the most recent report of the State of Public Data indicated that there are still significant issues surrounding the amount, quality, and availability of public data, all of which impede citizens' ability to access reliable information during times of crisis (Sadia and Khondoker 2025); moreover, analyses of government governance highlight that improved accountability and transparency in disaster risk management are essential for rebuilding public confidence in government communication systems (Islam 2025). As noted by Shome (2019), making sure that the information regarding risks is transparent is critical to successful disaster risk communication, as it provides relevant stakeholders with clear and easy-to-understand information to assist them in making informed decisions and preparing for any potential disasters. Therefore, despite having established institutional mechanisms, Bangladesh clearly requires improvements in the areas of accountability, access to public data, and information governance in order to enhance the overall quality of disaster risk communications within the country.

5. *Participation*

In comparison to any other country, Bangladesh makes a clear commitment to involving the community in disaster risk communication through Community-Based Disaster Management (CBDM) and extensive networks of volunteers who are part of the CBDM program. In terms of being able to prepare for and respond to disasters, the involvement of the community has proven to be a critical component in hazard-prone and vulnerable sections of the community, using local-level information as well as social networks to disseminate risk information. Various organizations such as the Cyclone Preparedness Program (CPP), Disaster Management Information Centre (DMIC), and various local Disaster Management Committees have played a major role in enabling the communication of disaster risks by creating opportunities for the dissemination of information and engaging in preparedness activities on a local level (Shome 2019). The engagement of local stakeholders has enabled them to engage in disaster risk reduction activities and participate in disaster risk reduction processes instead of simply being recipients of warnings.

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The findings of recent research have underscored the role of a participatory approach in increasing the resilience of the community to disasters in Bangladesh. Engaging the community is important in ensuring that disaster-related messages are understood, accepted, and acted upon by the general population, particularly in at-risk areas (Azad et al. 2019; Mohammad Abdul Quader et al. 2023). While the government provides institutional support for the engagement of the community, there still exist barriers to complete engagement throughout the country. Earlier evaluations of the Bangladesh disaster risk communication system have revealed that disaster education and programming for community preparedness have not been applied consistently or comprehensively within the country. The limited application of these programs has resulted in limited opportunities for meaningful participation in the disaster risk communication process for all communities (Shome 2019). While the reliance on community-based programs and volunteer-based communication models indicates the continued importance of community participation in the disaster risk communication infrastructure in Bangladesh.

C. Indonesia

Due to its position along the Pacific Ring of Fire, where many tectonic plates meet, Indonesia has become one of the world's most disaster-prone nations. Yearly, millions of its citizens experience a variety of natural disasters, including volcanic eruptions, earthquakes, floods, landslides, drought conditions, and other weather-related hazards. As such, natural disasters pose ongoing challenges for the economic progress of Indonesia, as well as for public safety (IFRC 2024; WBG 2025). Recognizing the impact of changing climate conditions to increase and worsen climate-related hazards and subsequently increase community vulnerability within multiple regions across Indonesia's archipelago (IFRC 2024; WBG 2025).

To respond to these risks, the country established a comprehensive disaster management framework through Law No. 24 of 2007 on Disaster Management. The law institutionalized disaster risk reduction as a national priority, establishing mechanisms for preparedness, mitigation, response, and recovery. Furthermore, it emphasizes the responsibility of government institutions to provide disaster information, conduct public awareness activities, and strengthen community preparedness. Through the implementation of the law and the activities of the National Disaster Management Agency, Indonesia developed disaster risk communication mechanisms aimed at improving public awareness and resilience against various hazards (UNEP-LEAP 2007). These institutional arrangements provide the foundation for Indonesia's disaster risk communication system, that is further examined through the dimensions of the Risk Communication Theory.

1. Timeliness

Indonesia shows a strong capacity for timely disaster risk communication through its extensive early warning infrastructure and continued efforts to strengthen hazard monitoring and warning dissemination systems. According to ASEAN Magazine, the country invested a huge amount to early warning technologies after major disaster events like earthquakes and tsunamis. These systems integrate hazard monitoring, data collection, and warning dissemination mechanisms to make sure that risk information can be communicated rapidly and instantly to authorities and at-risk communities. These efforts aim to provide sufficient time for preparedness and evacuation measures before disasters occur (The ASEAN Admin 2024).

Efforts are being taken in Indonesia, as indicated by Perdinan et al. (2026), to convert early warning signals into proactive action through methods involving the integration of forecast systems and predictive action with collaborative inter-agency cooperation. The findings of this study confirm that forecast-based methods assist in preparing government agencies with the necessary tools to mitigate the potential impact of disasters and prevent hazards from developing into disasters regarding other vulnerable populations. The integration of early warning systems and capabilities within the same organizations for preparing for and responding to disasters will further improve Indonesia's ability to provide timely risk information to at-risk populations, thus enabling them to engage in protective behaviors against impending threats (Perdinan et al. 2026). As such, the demonstration of leveraging timely information to support overall efforts demonstrates the value of a robust disaster risk communication system within Indonesia.

2. Accuracy

For the accuracy of the country's disaster risk communication, it is backed up by the country's dependence on scientific data, hazard monitoring systems, and evidence-based disaster management practices. According to Geoscience Australia, Indonesia has strengthened its disaster management capabilities through the use of scientific research, hazard mapping, and geospatial technologies that makes risk assessments and hazard information more reliable. These practices support government agencies in generating more accurate disaster-related information and enhancing the quality of risk warnings spread to the public (Geoscience Australia 2020). Moreover, this integration of scientific knowledge into disaster planning allowed the occurrence of a more informed decision-making, which reduces the probability of disseminating inaccurate or inconsistent risk information.

Also, Indonesia adopted digital technologies and integrated information systems to improve the accuracy of disaster communication. According to Dharmaraj (2024), the government invested in smart disaster preparedness initiatives that

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uses data integration, monitoring technologies, and digital platforms to strengthen disaster forecasting and information dissemination processes. Moreover, assessments of Indonesia's disaster management system emphasize the importance of institutional coordination and evidence-based approaches in ensuring that disaster information is grounded in a reliable and credible source (Bright 2014). Altogether, the efforts of the country indicates that the accuracy of disaster risk communication framework is grounded by scientific monitoring, technological innovation, and coordinated information management systems, supporting the dissemination of verified and credible hazard information.

3. Accessibility

In terms of accessibility, the disaster risk communication of the country is supported by the government's rampant use of digital technologies and communication platforms to spread disaster-related information. Through smart disaster preparedness initiatives, the country integrated digital systems, monitoring technologies, and information-sharing platforms to improve public access to hazard information and early warnings. These advancements, it allows disaster-related information to be disseminated through multiple channels, which increases the chances that the warnings reach communities across the country's geographically fragmented archipelago (Dharmaraj 2024). These efforts contribute to make disaster information more available and accessible to a broader segment of the population.

Accessibility also transcends the availability of information as it also relies on whether disaster communication reaches vulnerable groups. According to Rizal et al. (2025), the importance of effective communication strategies was highlighted, ones that ensure communities can understand and act upon disaster-related information. Similarly, Plan Indonesia emphasizes the need to actively involve women, children, persons with disabilities, and other vulnerable populations in disaster risk reduction efforts to ensure that the communication systems are inclusive and responsive to diverse community needs (Plan Indonesia 2024; Rizal et al. 2025). With these initiatives, it suggests that Indonesia's disaster risk communication framework increasingly recognizes accessibility not just as the spread of information but also the ability to promote inclusivity in society, utilizing risk information effectively.

4. Transparency

Transparency in the country's disaster risk communication framework is mirrored in the government's use of digital information systems and public communication platforms to spread disaster-related information. Recent developments in disaster information management allowed the government agencies to improve the accessibility of hazard data, risk assessments, and disaster updates through technology. These practices support more open disaster governance by including stakeholders and communities in accessing the information needed for preparedness and decision-making (Ginting 2026).

Studies assessing Indonesia's disaster management system also highlighted the importance of transparent communication and information sharing in strengthening disaster resilience. For disaster governance to work effectively, it must have access to all relevant hazard-related information, risk assessments, and current methods of response (Tjandra et al., 2024). These three elements must be clear and consistently communicated to the public, therefore generating accountability and developing public trust. Indonesia has made some progress toward improving disaster governance and disseminating information related to disasters; however, enhancing transparency related to disaster risk communication will still require continuing efforts to better coordinate institutions that provide information to the public, as well as increase the availability of accurate information for the general population (Andjar Prasetyo et al., 2024). Therefore, the continued emphasis on transparency in Indonesia's disaster communication framework will continue to be supported through advancements in technology and ongoing government reforms.

5. Participation

Community participation is critical in the disaster risk communications framework in Indonesia through local disaster preparedness programs and the community-based disaster risk reduction approach. Community participation in Disaster Management has been emphasized by Nurjanah et al. (2025), stating that involvement of local communities will improve preparedness, raise awareness, and improve the efficacy of communication regarding risk at the community level. The ability of communities to participate in making preparedness plans for disasters and responding to Disasters by the Government of Indonesia creates an opportunity for increased community involvement in disaster preparedness.

Additionally, Indonesia has sought to promote expanded participation by including vulnerable and marginalized groups in disaster governance. To meet this need, Plan Indonesia (2024) has stated that it's important for women, children, persons with disabilities, and other at-risk populations to be included in Disaster Risk Reduction efforts; consequently, disaster communication will adequately address the diverse needs of the communities. Furthermore, Vasileiou et al. (2022) state that their research supports the need for greater community-based efforts and increased Stakeholder engagement to build resilience and improve the effectiveness of disaster management strategies; these examples of the above indicate that Indonesia's disaster risk communication framework considers participation to be a major aspect of disaster preparedness and therefore encourages collaboration among government agencies and communities as well as with civil society.

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D. Comparative Case Matrix

E. Table 3: Comparative case matrix summary – basis for comparison.

Variable	Philippines	Bangladesh	Indonesia
Timeliness	Very Strong	Strong	Strong
Accuracy	Very Strong	Strong	Strong
Accessibility	Strong	Strong	Strong
Transparency	Very Strong	Moderate	Strong
Participation	Strong	Very Strong	Strong

F. Analysis

1. Timeliness

- Philippines:** *Very Strong* – PAGASA, PHIVOLCS, NDRRMC, Emergency Alerts, and extensive monitoring systems which provide strong evidence across all indicators.
- Bangladesh:** *Strong* – EW4ALL, BMD, FFWC, and CPP show a resilient system through discussions that emphasize institutional coordination more than technological sophistication.
- Indonesia:** *Strong* – Early warning systems and forecast-based action mechanisms remain strong, but less evidence on nationwide communication speed compared to the Philippines.

2. Accuracy

- Philippines:** *Very Strong* – Handa Pilipinas, PHIVOLCS, MHEWC, and digital verification systems provide extensive evidence of verification and official information sources.
- Bangladesh:** *Strong* – NSDI portal and vertically integrated governance and digital platforms support the accuracy of information.
- Indonesia:** *Strong* – Hazard mapping, geospatial technologies, scientific monitoring, and digital platform support reliable information.

3. Accessibility

- Philippines:** *Strong* – Multiple channels exist, and localized communication is evident, although some studies identify comprehension and understanding as a persistent challenge.
- Bangladesh:** *Strong* – Multiple communication channels and strong last-mile communication efforts.
- Indonesia:** *Strong* – The use of digital technologies and inclusive communication efforts is evident, but geographic fragmentation remains a challenge.

4. Transparency

- Philippines:** *Very Strong* – GeoRiskPH, HANDA Pilipinas, DOST initiatives, and open-access information systems support transparency indicators.
- Bangladesh:** *Moderate* – Transparency mechanisms exist, but multiple sources identified gaps in accountability, public data quality, and information governance.
- Indonesia:** *Strong* – Digital information systems and public communication platforms support transparency, but studies consistently call for stronger institutional coordination and public access.

5. Participation

- Philippines:** *Strong* – Collaborative governance, stakeholder engagement, and OCHA's community engagement framework provide substantial evidence.
- Bangladesh:** *Very Strong* – CPP, DMIC, and local disaster committees, volunteer networks, and community-based approaches exist.
- Indonesia:** *Strong* – Community-based DRR, local preparedness programs, and inclusion of vulnerable groups provide strong evidence.

G. Comparative Pattern

- The disaster communication systems in the Philippines are implemented using technology and institutionalized processes that produce timely, accurate, and transparent communication with stakeholders on disasters.

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2. Bangladesh is highlighted with participation through its vast network of volunteers, Community-based disaster management initiatives, and multiple mechanisms to engage community members in local disaster preparedness and response.
3. Indonesia has provided balanced performance across all areas and takes advantage of innovations in technology and community-based efforts, but does not demonstrate significant strength in any one of these areas.
4. Access to disaster communication channels is a critical strength for all three countries. All countries have multiple ways to communicate and have made deliberate efforts to communicate with vulnerable or marginalized groups.
5. There is a significant difference between the levels of Transparency for these three countries. The Philippines ranked the highest, followed by Indonesia with moderate to high levels of Transparency. In contrast, Bangladesh experienced considerable governance gaps and a lack of access to public data.

IV. CONCLUSION

The objective of this study is to examine how the actions and policies of governments determine the quality of risk messaging during disasters as experienced in three developing countries (the Philippines, Bangladesh and Indonesia) based on five aspects establishing the standards of Disaster Risk Communication Theory, namely: (1) timeliness, (2) accuracy, (3) accessibility, (4) transparency, and (5) participation.

In summary, the results of this study suggest that the quality of government actions and policies greatly influences the effectiveness of disaster risk messaging. Governments establish legal frameworks for disaster risk management; establish disaster risk communication systems; provide coordination among various organizations; and facilitate public engagement.

The results of the comparative analysis indicate that the Philippines has superior timeliness, accuracy, and transparency; the Philippines' timeliness and accuracy scores are a function of its institutional disaster management framework, extensive disaster monitoring system, and use of technology for communications, while Bangladesh excels in participation due to community-based disaster management programs, volunteer networks, and local engagement. Indonesia demonstrated balanced performance across all five items due to a combination of its use of technology and community-centered approaches to reducing disaster risk.

While the three countries vary widely in their access to disaster information (accessibility), they have developed numerous communication channels, as well as their ability to contact vulnerable populations, which supports the overall development of their disaster risk information communication systems. Accessibility is a common strength across the three countries; however, the level of transparency varies significantly due to differing types of information governance, data access, and accountability methods in each country, leading to an overall variation in the level of transparency.

This study concludes that the delivery of effective disaster communication relies on how well governments provide accurate and timely information to their citizens, create and enforce a framework for transparency, develop processes for facilitating inclusive participation, and establish access to disaster information for all citizens. Strengthening these areas could ultimately create public confidence, increase preparedness, and develop resilient communities in developing countries experiencing natural disasters.

Future research may expand the analysis of risk communication outcomes by incorporating other developing countries and implementing a greater variety of methods for collecting primary data in order to further explore the relationship between disaster governance and risk communication outcomes.

REFERENCES

- 1) Amil, Alinor C. 2024. "Collaborative Governance Mechanisms In Disaster Risk Reduction and Management in the Philippines: A..." ResearchGate 1 (1): 145–69.
https://www.researchgate.net/publication/389392997_COLLABORATIVE_GOVERNANCE_MECHANISMS_IN_DISASTER_RISK_REDUCTION_AND_MANAGEMENT_IN_THE_PHILIPPINES_A_SYSTEMATIC_REVIEW.
- 2) Andjar Prasetyo, Setyo Sumarno, Achmadi Jayaputra, Mujiyadi Benedictus, Ruaida Murni, Togiaratua Nainggolan, Dian Purwasantana, et al. 2024. "Critical Communication of Disaster Preparedness Areas for Informational Strategies in Disaster Management in Indonesia." Progress in Disaster Science 24 (September): 100368–68.
<https://doi.org/10.1016/j.pdisas.2024.100368>.
- 3) Aranda, Clara, and Eugenie Humeau. 2022. "Early Warning Systems in the Philippines: Building Resilience through Mobile and Digital Technologies." Mobile for Development. June 17, 2022. https://www.gsma.com/solutions-and-impact/connectivity-for-good/mobile-for-development/gsma_resources/ews-philippines-mobile-and-digital-technologies/.
- 4) Azad, M. Abul Kalam, M. Salim Uddin, Sabrina Zaman, and Mirza Ali Ashraf. 2019. "Community-Based Disaster Management and Its Salient Features: A Policy Approach to People-Centred Risk Reduction in Bangladesh." Asia-Pacific Journal of Rural Development 29 (2): 135–60. <https://doi.org/10.1177/1018529119898036>.

Government Influence on the Quality of Disaster Risk Communication in Developing Nations: A Comparative Analysis of the Philippines, Bangladesh, And Indonesia

- 5) Bangladesh Gazette. 2012. "Disaster Management Act, 2012 | UNEP Law and Environment Assistance Platform." Unep.org. 2012. <https://leap.unep.org/en/akn/bd/act/2012/34/eng%402012-09-24>.
- 6) Barua, Prabal, and Abhijit Mitra. 2021. "Disaster Management in Bangladesh - Strategic Steps.pdf." ResearchGate. September 18, 2021. https://www.researchgate.net/publication/372390871_Disaster_Management_in_Bangladesh_-_Strategic_stepspdf.
- 7) Bright, Ffion. 2014. "Vanguard Think Tank." Vanguard Think Tank. 2014. <https://vanguardthinktank.org/an-assessment-of-indonesias-response-to-natural-disasters>.
- 8) Caecilia Ega Sanjaya. 2025. "Indonesia's Proneness to Disaster and Its Little-To-No-Effort to It." Modern Diplomacy. March 6, 2025. <https://moderndiplomacy.eu/2025/03/06/indonesias-proneness-to-disaster-and-its-little-to-no-effort-to-it/>.
- 9) Cañete, Patrick. 2021. "NDRRMC Emergency Alerts: Everything You Need to Know." NoypiGeeks. November 19, 2021. <https://www.noypiGeeks.com/government/ndrrmc-emergency-alerts/>.
- 10) Chisty, Musabber Ali, Maliha Muhtasim, Fariha Jahin Biva, Syeda Erena Alam Dola, and Nesar Ahmed Khan. 2022. "Sendai Framework for Disaster Risk Reduction (SFDRR) and Disaster Management Policies in Bangladesh: How Far We Have Come to Make Communities Resilient?" International Journal of Disaster Risk Reduction 76 (May): 103039. <https://doi.org/10.1016/j.ijdr.2022.103039>.
- 11) Covello, Vincent, and Peter Sandman. 2001. "Risk Communication: Evolution and Revolution (Peter M. Sandman Website)." WwW.psandman.com. August 2001. <https://www.psandman.com/articles/covello.htm>.
- 12) DDM. 2021. "Disaster Management in Bangladesh." Nsdi.gov.bd. 2021. <https://new.nsdi.gov.bd/disaster/>.
- 13) Dharmaraj, Samaya. 2024. "Indonesia's Approach to Smart Disaster Preparedness – OpenGov Asia." Opengovasia.com. September 25, 2024. <https://archive.opengovasia.com/2024/09/25/indonesias-approach-to-smart-disaster-preparedness/>.
- 14) Geoscience Australia. 2020. "Better Science Supports Better Disaster Management in Indonesia." Geoscience Australia. July 9, 2020. <https://www.ga.gov.au/scientific-topics/community-safety/case-studies/better-science-supports-better-disaster-management-in-indonesia>.
- 15) Ginting, Selamat. 2026. "Public Communication of the Indonesian Government in Handling Flash Flood Disaster in Sumatra." Jurnal JTIK (Jurnal Teknologi Informasi Dan Komunikasi) 10 (3): 1173–78. <https://doi.org/10.35870/jtik.v10i3.6323>.
- 16) Hernando-Malipot, Merlina. 2025. "Philippines Tops WorldRiskIndex 2025 as World's Most Disaster-Prone Country." Mb.com.ph. 2025. <https://mb.com.ph/2025/09/26/philippines-tops-worldriskindex-2025-as-worlds-most-disaster-prone-country>.
- 17) IFRC. 2024. "IFRC GO." Ifrc.org. 2024. <https://go.ifrc.org/countries/85/profile/risk-watch>.
- 18) Islam, Mohammad Tarikul. 2025. "Development, Governance, and Disaster Nexus: Bangladesh Viewpoint | Harvard Humanitarian Initiative." Harvard.edu. September 30, 2025. <https://hhi.harvard.edu/news/2025/09/development-governance-and-disaster-nexus-bangladesh-viewpoint>.
- 19) Kabagani, Lade Jean. 2024. "PHIVOLCS Seeks More Monitoring, Early Warning Systems." Daily Tribune. February 12, 2024. <https://tribune.net.ph/2024/02/12/phivolcs-seeks-more-monitoring-early-warning-systems>.
- 20) Kamal, A S M Maksud, S. M. Kamrul Hassan, Abu Hossain Muhammad Ahsan, and Nazma Ahmed. 2022. "Disaster Accountability Framework of Bangladesh: An Analysis of Strengths and Gaps." ResearchGate. November 1, 2022. https://www.researchgate.net/publication/367982765_Disaster_Accountability_Framework_of_Bangladesh_An_Analysis_of_Strengths_and_Gaps.
- 21) Langton, James Gerard. 2025. "Strengthening Disaster Management Information Centers (Dmics) in Bangladesh." April 2025. <https://app.adpc.net/wp-content/uploads/2025/10/Strengthening-DMICs-Report-31Aug25.pdf>.
- 22) Leon. 2025. "EXPLAINER: How Do PAGASA's Rainfall Warnings and Weather Advisories Work?" Varsitarian.net. July 24, 2025. <https://varsitarian.net/sci-tech/20250724/explainer-how-do-pagasas-rainfall-warnings-and-weather-advisories-work>.
- 23) Lor, Daniel. 2025. "Beyond Warnings: A Perspective on Disaster Response and Preparedness in the Philippines." Pantao (International Journal of the Humanities and Social Sciences) 4 (4). <https://doi.org/10.69651/pijhss0403486>.
- 24) Magno Ranara, John Patrick. 2025. "EXPLAINER: Breaking down PAGASA's Weather Terms and Alerts." Philstar Life. 2025. <https://philstarlife.com/news-and-views/528122-explainer-pagasa-weather-terms-alerts>.
- 25) MHEWC. 2025. "Philippines – Multi-Hazard Early Warning System Design & Implementation Center (MHEWC)." Mhewc.org. 2025. <https://www.mhewc.org/philippines/>.
- 26) Miles, Matthew, Michael Huberman, and Johnny Saldaña. 2014. "Qualitative Data Analysis: A Methods Sourcebook." 2014. <https://www.metodos.work/wp-content/uploads/2024/01/Qualitative-Data-Analysis.pdf>. Steiner-Khamsi, Gita, and Michelle Morais. 2024. "Qualitative Comparative Policy Studies: An Introduction from the Special Section Editors." Journal of Comparative Policy Analysis Research and Practice, August, 1–11.

Government Influence on the Quality of Disaster Risk Communication in Developing Nations: A Comparative Analysis of the Philippines, Bangladesh, And Indonesia

<https://doi.org/10.1080/13876988.2024.2383061>.

- 27) Moaje, Marita. 2024. "PCO Works to Improve Communication Protocols during Disasters." August 17, 2024. <https://www.pna.gov.ph/articles/1231404>.
- 28) Mohammad Abdul Quader, Amanat Ullah Khan, Md. Abdul Malak, and Matthieu Kervyn. 2023. "Mainstreaming Decentralization and Collaboration in Disaster Risk Management: Insights from Coastal Bangladesh." *International Journal of Disaster Risk Science* 14 (3): 382–97. <https://doi.org/10.1007/s13753-023-00495-w>.
- 29) Morath, Dan, Julie Greenly, Irmak Renda-Tanali, Annie Collopy, Malyn Tumonong, Taylor Tomita, and Jared Batzel. 2021. "A Data-Driven Tool for Assessing Risk and Building Lasting Resilience Philippines National Disaster Preparedness Baseline Assessment." https://www.pdc.org/wp-content/uploads/ndpba_phl_final_report.pdf.
- 30) MRVA. 2024. "Bangladesh Hazard & Risk Map." Cern.ch. 2024. <https://unosat-geodrr.cern.ch/apps/BGD/hazard-risk/>.
- 31) Nahr, Samin Sajid . 2024. "Bangladesh Remains World's 9th Most Natural Disaster Risk Country." *The Business Standard*. September 9, 2024. <https://www.tbsnews.net/bangladesh/environment/bangladesh-remains-worlds-9th-most-natural-disaster-risk-country-937461>.
- 32) National Agency Disaster Management. 2007. "Law of the Republic of Indonesia Number 24 of 2007 Concerning Disaster Management National Agency Disaster Management (BNPB)." https://www.rcrc-resilience-southeastasia.org/wp-content/uploads/2017/12/2007_disaster_management_law.pdf.
- 33) Natural Hazards Center. 2020. "Principles of Risk Communication: A Guide to Communicating with Socially Vulnerable Populations across the Disaster Lifecycle." https://hazards.colorado.edu/uploads/freeform/Risk%20Communication%20Guide_FINAL_508_Ed%20Feb%202021.pdf.
- 34) NRCF. 2023. "Communicating the Language of Disasters to the People." Home. July 11, 2023. <https://nrcf.dost.gov.ph/communicating-the-language-of-disasters-to-the-people/>.
- 35) Nurjanah, Adhianty, Riski Apriliani, and Abbyan Dafa Ulla. 2025. "An Analysis of the Role of Public Communication and Collaborative Strategies in Disaster Management." *IOP Conference Series: Earth and Environmental Science* 1566 (1): 012021. <https://doi.org/10.1088/1755-1315/1566/1/012021>.
- 36) Ogerio, Bless Aubrey. 2025. "DOST Ramps up Disaster Tech and Data Access." June 23, 2025. <https://businessmirror.com.ph/2025/06/23/dost-ramps-up-disaster-tech-and-data-access/>.
- 37) PDRF. 2025. "PDRF Pushes for Enhanced Data Sharing during Disaster Response; Highlights HANDA." March 6, 2025. <https://reliefweb.int/report/philippines/pdrf-pushes-enhanced-data-sharing-during-disaster-response-highlights-handa>.
- 38) Perdinan, Rycio F. Adi, Syafararisa D. Pratiwi, Atik Ambarwati, Suvanny Aprilia, and Raynaldi Rachmat. 2026. "Translating Early Warning towards Early Action in Indonesia." *Global Sustainability*, 1–26. <https://doi.org/10.1017/sus.2026.10062>.
- 39) PHIVOLCS. 2026. "PRESS RELEASE: Handa: Empowering Disaster Preparedness, Early Warning and Response in the Philippines | PHIVOLCS." Dost.gov.ph. 2026. <https://www.phivolcs.dost.gov.ph/press-release-handa-empowering-disaster-preparedness-early-warning-and-response-in-the-philippines/>.
- 40) Plan Indonesia. 2024. "Plan Indonesia Calls for Involvement of Vulnerable Groups in Disaster Risk Reduction Efforts - Plan Indonesia." Plan Indonesia. October 10, 2024. <https://planindonesia.org/en/plan-indonesia-calls-for-involvement-of-vulnerable-groups-in-disaster-risk-reduction-efforts/>.
- 41) Reyes, Anthony Ian. 2025. "How PAGASA's Early Weather Advisories, Warnings Save Lives." July 14, 2025. <https://pia.gov.ph/features/how-pagasas-early-weather-advisories-warnings-save-lives/>.
- 42) Reyes, Anthony Ian. 2025. "How PAGASA's Early Weather Advisories, Warnings Save Lives - Philippine Information Agency." Philippine Information Agency. July 14, 2025. <https://pia.gov.ph/features/how-pagasas-early-weather-advisories-warnings-save-lives/>.
- 43) Rizal, Edwin, Yunus Winoto, Toto Sugito, Catur Nugroho, and Falih I Septian. 2025. "Disaster Communication in the Digital Age: A Community-Based Case Study of Media, Education, and Local Knowledge in Pangandaran, Indonesia." *Frontiers in Communication* 10 (October). <https://doi.org/10.3389/fcomm.2025.1632436>.
- 44) Sadia, Wasima, and Zarine Anan Khondoker. 2025. "Report on the State of Public Data in Bangladesh." January 2025. https://bigd.bracu.ac.bd/wp-content/uploads/2025/01/Report-on-the-State-of-Public-Data-in-Bangladesh_20.1.2025.pdf.
- 45) Sajid Nahr, M Samin. 2024. "Bangladesh Remains World's 9th Most Natural Disaster Risk Country." *The Business Standard*. September 9, 2024. <https://www.tbsnews.net/bangladesh/environment/bangladesh-remains-worlds-9th-most-natural-disaster-risk-country-937461>.
- 46) Sheppard, Ben, Melissa Janoske, and Brooke Liu. 2012. "National Consortium for the Study of Terrorism and Responses to Terrorism Understanding Risk Communication Theory: A Guide for Emergency Managers and Communicators." <https://www.start.umd.edu/pubs/UnderstandingRiskCommunicationTheory.pdf>.

Government Influence on the Quality of Disaster Risk Communication in Developing Nations: A Comparative Analysis of the Philippines, Bangladesh, And Indonesia

- 47) Shome, Paromita. 2019. "Disaster Risk Communication System in Urban Areas of Bangladesh: Current Practices, Prospects and Comparison with Other Countries ." Journal of Environmental Engineering and Its Scope 2 (3).
- 48) Steiner-Khamisi, Gita, and Michelle Morais. 2024. "Qualitative Comparative Policy Studies: An Introduction from the Special Section Editors." Journal of Comparative Policy Analysis Research and Practice, August, 1–11. <https://doi.org/10.1080/13876988.2024.2383061>.
- 49) Steiner-Khamisi, Gita, and Michelle Morais. 2024. "Qualitative Comparative Policy Studies: An Introduction from the Special Section Editors." Journal of Comparative Policy Analysis Research and Practice, August, 1–11. <https://doi.org/10.1080/13876988.2024.2383061>.
- 50) The ASEAN Admin. 2024. "Indonesia's Early Warning System - the ASEAN Magazine." The ASEAN Magazine. October 8, 2024. <https://theaseanmagazine.asean.org/article/indonesias-early-warning-system/>.
- 51) The LawPhil Project. 2010. "R.A. No. 10121." Lawphil.net. 2010. https://lawphil.net/statutes/repacts/ra2010/ra_10121_2010.html.
- 52) UN DESA. 2023. "UN DESA Policy Brief No. 156: Enhancing Public Institutions' Risk-Informed Communication to Address Multifaceted Crises for Disaster Risk Reduction, Resilience and Climate Action." UN DESA Publications. 2023. <https://desapublications.un.org/policy-briefs/un-desa-policy-brief-no-156-enhancing-public-institutions-risk-informed-communication>.
- 53) UNDRR. 2024. "Risk Communication." Undrr.org. July 24, 2024. <https://www.undrr.org/risk-communication>.
- 54) UNDRR. 2024. "Visionary Leadership for Comprehensive Risk Management Is Supporting Resilience Building in Bangladesh." Undrr.org. June 28, 2024. <https://www.undrr.org/news/visionary-leadership-comprehensive-risk-management-supporting-resilience-building-bangladesh>.
- 55) UNDRR. 2025. "Bangladesh: Advancing Early Warnings for All." Undrr.org. December 18, 2025. <https://www.undrr.org/implementing-sendai-framework/sendai-framework-action/early-warnings-for-all/bangladesh>.
- 56) UNDRR. 2025a. "Global Platform Elevates Risk Communication as Essential for Disaster Risk Reduction." Undrr.org. June 6, 2025. <https://www.undrr.org/news/global-platform-elevates-risk-communication-essential-disaster-risk-reduction>.
- 57) UNDRR. 2025b. "Bangladesh: Advancing Early Warnings for All: 2025 Updates." Undrr.org. December 18, 2025. <https://www.undrr.org/news/bangladesh-advancing-early-warnings-all-2025-updates>.
- 58) UNDRR. 2025c. "Bridging National Strategy and Local Action: Bangladesh's Success in Vertical DRR Integration." Undrr.org. May 30, 2025. <https://www.undrr.org/resource/case-study/bridging-national-strategy-and-local-action-bangladeshs-success-vertical-drr>.
- 59) UNEP-LEAP. 2007. "Law of the Republic of Indonesia No. 24/2007 Concerning Disaster Management. | UNEP Law and Environment Assistance Platform." Leap.unep.org. April 26, 2007. <https://leap.unep.org/en/countries/id/national-legislation/law-republic-indonesia-no-242007-concerning-disaster-management>.
- 60) United Nations Climate Change. 2020. "Synthesis Report by the Adaptation Committee in the Context of the Recognition of Adaptation Efforts of Developing Countries: How Developing Countries Are Addressing Hazards, Focusing on Relevant Lessons Learned and Good Practices." https://unfccc.int/sites/default/files/resource/ac_synthesis_report_hazards.pdf.
- 61) UNOCHA. 2018. "Philippines: Community Engagement Strategy." Unocha.org. May 4, 2018. <https://www.unocha.org/publications/report/philippines/philippines-community-engagement-strategy>.
- 62) UNOCHA. 2026. "Bangladesh Country Profile - March 2026." Unocha.org. March 27, 2026. <https://www.unocha.org/publications/report/bangladesh/bangladesh-country-profile>.
- 63) Vasileiou, Konstantina, Julie Barnett, and Danaë Stanton Fraser. 2022. "Integrating Local and Scientific Knowledge in Disaster Risk Reduction: A Systematic Review of Motivations, Processes, and Outcomes." International Journal of Disaster Risk Reduction 81 (August): 103255. <https://doi.org/10.1016/j.ijdr.2022.103255>.
- 64) Villanueva, Gillian. 2024. "Upgraded GeoRiskPH Apps to Boost Disaster Response." INQUIRER.net. September 2024. <https://newsinfo.inquirer.net/1983834/upgraded-georiskph-apps-to-boost-disaster-response>.
- 65) WBG. 2025. "Climate Risk Country Profile: Indonesia." 2025. https://climateknowledgeportal.worldbank.org/sites/default/files/country-profiles/17254-WB_Indonesia-Country%20Profile-WEB.pdf.
- 66) Why Developing Countries Are More Vulnerable to Disasters • Disaster. Shiksha. 2025. Study Disaster Management. January 30, 2025. <https://disaster.shiksha/risk-assessment-vulnerability-analysis/developing-countries-vulnerable-to-disasters/>.
- 67) WMO. 2025. "Bangladesh Adopts Early Warnings for All National Roadmap." World Meteorological Organization. December 3, 2025. <https://wmo.int/media/news/bangladesh-adopts-early-warnings-all-national-roadmap>.

Government Influence on the Quality of Disaster Risk Communication in Developing Nations: A Comparative Analysis of the Philippines, Bangladesh, And Indonesia

- 68) Yanquiling, Rhomir. 2024. "Factors Influencing Accessibility and Actionability of Risk Reduction Measures in Last Mile Communities: Insights from the Northern Philippines Rhomir Yanquiling 2 Acknowledgment." <https://preparecenter.org/wp-content/uploads/2024/09/Research-Paper-Factors-Influencing-Accessibility-and-Actionability-of-Risk-Reduction-Measures-in-Last-Mile-Communities-Insights-from-the-Northern-Philippines-.pdf>.



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