Confronting Environmental Risk via Communication

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ABSTRACT

Advances in information technology are able to create avenues to communicate about environmental catastrophes. Mass media development over the years allows dissemination of information to mass audiences quickly and effectively, transcending international and national borders. Although there are now many high-tech means of communication, the devastation caused by natural disasters is not yet to be under human control. Efforts to reduce the destructive effects of natural disasters must be enhanced. Media organizations and the global community are increasingly aware of the importance of mass media in disseminating information on the destructive effects of natural disasters to the public. The potential of the mass media should be fully exploited so that preparations can be made and preventive measures carried out prior to the disaster itself or as soon as possible afterwards. It is the authorities' function to arrive at practical solutions because the environment is for us to preserve and develop, and not as merely to use for short-term purposes. The underlying environmental dilemma is the fact that so much is written about problems and possible solutions, but putting words into actions has been slow. Societies have to achieve economic and social advances and simultaneously afford effective protection to the environment. Thus, this paper seeks to identify the media channels that people prefer to use for information on environmental disasters and the extent to which the government is taking steps to create awareness about the environment and its sustainability to its people.

Keywords: minimize environmental risk, media and communication, actions, strategies, information technology.

Introduction

Environmental communication is the management and usage of strategic communication processes and media products to support the efficiency of policy makers, civil participation and project development toward sustainable development. It is a two-way social interactive process that invites the sensitivity of the society to understand key environmental factors, their relationship to human activities and the symbiotic effect of the environment on human life. The goal is to allow social policies and practices that permit proactive responses to environmental problems. In the 1960s and early 1970s, environmental communication began to be looked at more seriously than in the past. Greater concern was for the environment was shown in the media in the 1980s and reached its peak by 1996. Throughout, there was an increase in public awareness of the importance of social, political and cultural aspects of environmental issues (Hussein & Sarip, 2001). Communication continues to play a crucial role in relaying information to ensure the audience understands its importance and proactively responds to related phenomena.

Communication of environmental risks can be very helpful in times of need and the willingness of institutions and governments to share information should be applauded. There are two major situations where the need to communicate is urgent: events that might occur in the future where

prevention seems critical, and emergency scenarios where an event has occurred and there is a need for immediate notification and deployment of mitigation actions. Moreover, the consequences of these events can produce either acute or chronic effects. Many risk-communication stakeholders, both those providing and receiving risk information, are confronted with the overarching challenge of how best to communicate environmental risk. At issue is the question of what constitutes environmental risk communication as well as how risk-related information can be delivered in a meaningful, cost effective and secure manner.

Recent frequent occurrence of natural disasters has had great physical and psychological consequences for people's live. Natural disasters devastate the lives of individual and communities, stunt economic development and undermine the socio-political stability of a country. Emotionally and medically traumatized victims require a long time to recover, and the replacement of infrastructure and revitalization of social and economic activity requires enormous investment in capital, time and energy. It is vital to study the role and effectiveness of local media in informing their audiences of impending natural disasters occurring either within the country or overseas and to assess the level of acceptance of information distributed by local media on issues and news related to the development of the natural environment and natural disasters. Studies of the effectiveness of mass media in informing audiences regarding natural disasters are also important to teach about the role and importance of the mass media in reducing the destructive aftermath of natural disasters. Natural catastrophes not only destroy properties and residential areas causing economic downturn, but they have also resulted in the catastrophic loss of millions of lives and material destruction if no preparation and prevention measures are taken by the responsible authorities. Increasing effort is needed so that the effects of natural disasters can be controlled more effectively in the future.

Many studies have shown that, although there was often ample time for the victims to perform pre-emptive actions before the great tsunami of 2004 struck and did unimagined damage to countries on the rim of the Indian Ocean, the lack of infrastructure facilities and communication systems in meant that many victims—mainly the poor in coastal countries such as Thailand, India, Bangladesh, Sri Lanka and Somalia—were not given adequate warning of the approaching tsunami. Thus, they did not have the time and opportunity to seek shelter or move to a safer area. Doran (2004) also found that despite fast and early detection of environmental changes made possible by the latest technology advancements, the media execution of its responsibility to disseminate information was not been consistent with the needs of victims. According to his research, most of the information provided about the incident came from a source that has no credibility due to cultural gap and agenda differences within the media organizations. Hence, Doran (2004) suggested that the cooperation between media and disaster management agencies is essential to ensure that all communication operations are executed efficiently and also to ensure that media institutions distribute key information more responsibly and accurately.

Consequently, the United Nations (UN) has taken steps to build an Indian Ocean tsunami warning system in 2005, and this will be extended to the Atlantic Ocean. Construction of a warning system is essential to provide information and warnings to countries around the Pacific Ocean. Most societies realize the disastrous effects of natural calamities only after experiencing disaster. The development process took place at the expense of the environment and the aspects of natural sustainability have been totally neglected. Advances in information technology are able to create avenues to communicate environmental catastrophe. Environmental risks consist of incidents or trends, either man-made or natural in cause, that have potential to inflict harm to human health, life and/or ecosystems, including physical assets or the economy (i.e., business and social disruption).

Confronting environmental disaster

Recently, the importance of mass communications in addressing the destructive effects of natural disasters with scientists, engineers and government policy makers and advisors was emphasized during the World Conference on Natural Disaster Reduction and the Roundtable on the Media, Scientific Information and Disaster. In this conference, 5000 representatives from various countries stressed that sensitive, accurate and current communication is the most effective way to reduce loss of lives and destruction of property, as well as to increase public awareness about climate change and environmental catastrophe. Only by efficient communication, are ordinary people able to take practical action to protect themselves from destruction when natural disasters strike (Wenham, 1994).

Global media and technology have revolutionized the way people are accessing information and news. Communications has experienced a great deal of technological expansion during the last century, which in turn has had an immense impact on the society. Advance communication technology is crucial in addressing the impact of natural disasters. It is a good plan to create a special communication mechanism between journalists with natural disaster prevention authorities so that cooperation between these two parties can happen more systematically. A close relationship between journalists and scientists before and after a natural disaster allows preparation and relief measures to be taken more effectively and comprehensively. Having experienced the aftermath of disasters and possessing feelings of sensitivity and trust, efficient methods of communication between the two groups can contribute to improving the quality of news reporting on the issue of natural disasters (Fred, 1994).

The Indian Ocean tsunami of 2004 was one of the most devastating disasters in recorded history. Tremors at magnitude 9.3 claimed a total of 230 thousand lives in 14 separate countries including Indonesia, Thailand, Sri Lanka and India, though few of Malaysia's immediate neighbours were among the most seriously affected. According to various analyses conducted after the incident, it was found that the length of time for the tsunami to land at the nearest towns was enough for the potential victim to make early preparation to reduce the impact of the tsunami. For example, in Acheh, the time length for tsunami to land is 15 minutes, while in Thailand the tsunami hit within two hours after the tremor in the Indian Ocean. In some countries in Middle Asia, waves as high as 300 feet took more than seven hours before sweeping to the coasts of India, Bangladesh and Sri Lanka.

The Asia tsunami tragedy created awareness among the world's population in general and the people of Malaysia specifically, of on the reality of nature and possibility of natural disasters occurring in the country in the future. A total of 68 people were killed in the tragedy and this is a warning to the government that disaster management should be reviewed and improved to take early preventive measures, such as the construction of early warning systems and increased cooperation between the media and local authorities. In addition, this event also raises the question of the role of local media in informing audience about natural disasters and on the improvement of the system of communication so that mass media in the country are able to operate more effectively to prepare the people as well as outlining security steps during natural disaster, thus alleviating the effects of destruction of property and lives.

News reports by American Cable News Network (CNN) and British Broadcasting Corporation (BBC) on the recent earthquake in Japan in March 2011 saw hundreds of lives taken by a tsunami. Hundreds more people were missing and tens of thousands of people were displaced, according to Japan's Kyodo News Agency. Prime Minister Naoto Kan said the "enormously powerful" earthquake had caused "tremendous damage over a wide area." The quake hit at 14:46

pm (0546 GMT) and lasted about two minutes. It strongly rattled buildings in greater Tokyo, the world's largest urban area and home to some 30 million people. The Pacific Tsunami Warning Centre issued a tsunami warning to Japan, Taiwan, Russia and the Mariana Islands. The churning, dreadful tsunami swept over cities and farmland in the northern part of Japan, and set off warnings as far away the west coast of the United States and South America. It was the most powerful quake ever to hit the country and was recorded as 9.0 on the Richter scale. As the nation struggled with a rescue effort, it also faced the worst nuclear emergency since Chernobyl; explosions and leaks of radioactive gas took place in three reactors at the Fukushima Daiichi Nuclear Power Station that suffered partial meltdowns, while spent fuel rods at another reactor overheated and caught fire, releasing radioactive material directly into the atmosphere.

In a local survey conducted by Chamhuri (2005), it was discovered that the impact of 2004 Asian tsunami disaster has affected the development of the fisheries sector in West Malaysia. Fishermen suffered a serious decline in employment and income due to the destruction of their boats and fishing equipment. Bodies of tsunami victims in the sea have also polluted water sources especially in the northern region. The impact of psychological trauma continued to haunt the victims of the tsunami due to loss of family members and fear of an impending tsunami in the future. The study found that lack of coordination between NGOs, governments and media agencies was the cause for assistance and aids not being channeled effectively. The absence of an early warning system on natural disasters is also a major cause of destruction as there was no systematic measure of prevention and control. Thus, Chamhuri (2005) has formulated recommendations to reduce the destructive effects of natural disasters through cooperation between media and government agencies to provide early education to the public.

Destructive effects of natural disasters causing the loss of many lives and serious property damage has received much attention from individuals and leaders across the world since the 1990s. Subsequently, the UN declared the 1990s as the International Decade for Natural Disaster Reduction as an initial step to address and mitigate the impact of natural disasters. This initial effort is inspired by the belief of Dr. Frank Press of the U.S National Academy of Sciences that human beings have the ability to reduce the destructive effects of natural disasters through effective and efficient communication (Fred, 1994).

Communicating Disaster

Concern for the environment first emerged as an important public issue in the 1960s. Then it was perceived as the problem of industrialized countries because of the effects that their processes of industrialization and urbanization had on the pollution of air and water, the destruction of natural resources and the deterioration in the quality of urban life. The new world order must recognize that environmental crisis is our common problem and needs to be addressed globally. The Stockholm human environmental conference in 1972 took a major turn to the issue which moved the environment issue into the center of the world's political agenda and established as important item on the agenda of the governments throughout the world. This is evidence that global key players are concerned on the issue of environmental disaster and on the conservation of the environment.

Katz et al. (1974) asserted that the functions of the mass media as the "guardian" of the environment expresses humanity's natural reaction or response to gain safety and protection through information wherever media consumers are actively dependent on mass media to obtain latest information on developments around them. In this era of technological advancement and digital gadgets, there is much demand and increased in media usage. Facebook Statistics (2011)

report that there 800 million active users of that one social medium alone. More broadly, total Internet users have climbed to 30.2 percent of the global population—well over two billion people (Internet World Statistics, 2011). Every society, traditional or modern, depends on communication to create relationships amongst them to be able to live together, to continue norms and tradition and also regulations to encounter changes that is happening in the physical environment.

Ball-Rokeach and Defleur (1976) asserted that individual needs on information from media have cognitive and affective effects on human beings. Dependency on mass media will increase when the drive, satisfaction and security are closely related to media system. Based on research conducted by Henke (1985), the need among audience to know about the environment will increase the usage of news media. Media functions as the guardian of humanity by constantly reporting on any impending natural disaster. Media users are said to be active when they depend on media to get information on what is happening around them. Hence, the media are seen as the main news source and play a crucial role in fulfilling people's need to get information.

Figure 1: Media Dependency Network System
(Ball-Rokeach & Defleur, M., 1976)
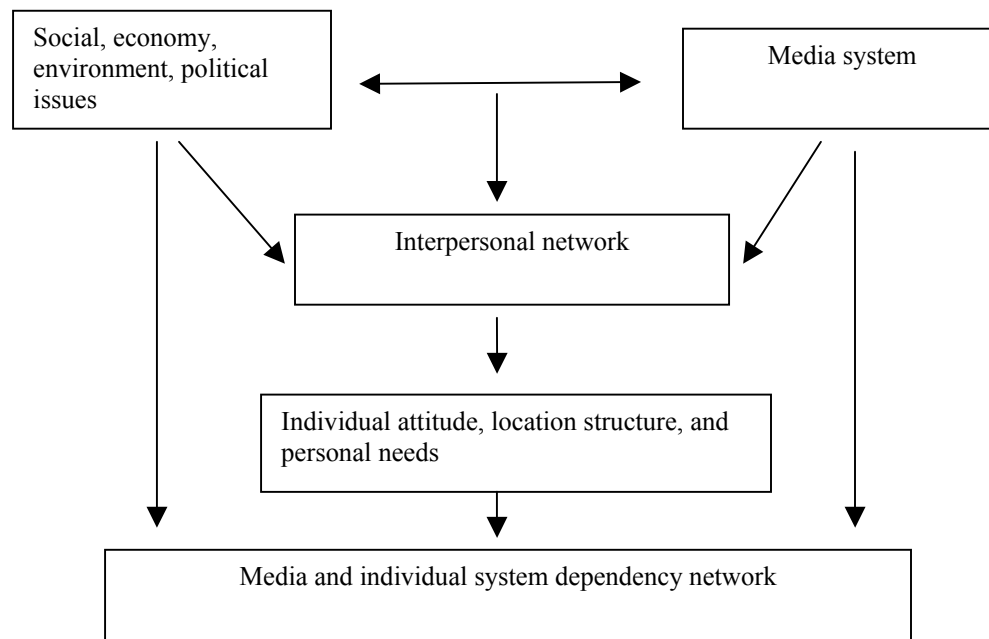
The figure above shows that the system component is dependent on the use of the source to satisfy individual needs. Ball-Rokeach & Defleur (1976) concurred that dependency is a relationship where the satisfaction to achieve something depends on another source. In this context, the audience depends on news from the electronic and print media to get updates on information. The audience is always searching for news through reading, watching and listening to media. That is the main agenda of news; to give information. As the role of media increases, the curiosity of the audience increases at a parallel level. In terms of uses and gratification, media users are assumed to be active users as they will choose to fulfill their daily psychological and social needs. They are pretty much in charge of the gratifications they seek and find through their media choices to get the latest information. Katz et al. (1974) state that the media functions as a surveillance tool as a reaction to the human desire to acquire the safety and protection through information acquisition. Active media users depend on the media to know the happenings in their

environment. Media's multi-modality of audio and visual combinations is more effective and impactful on audiences.

The advent and emergence of social media or "Web 2.0" has created more impact on the reception of news on disaster. The Internet-based applications through user generated content have transformed users to be both content producers and content consumers, supporting the democratization of knowledge and information. Basically, social media come in the form of podcasts, social blogs, weblogs, news portals, internet forums, etc., to create a public sphere to communicate. Having public sphere elements, these forms of social media are very interactive and dynamic that is able to channel news and information. These new and social media allow citizens to access information, to send messages and to offer views and opinions and to deliberate over critical issues. Consumers are able to upload videos, photographs, texts comments and the like by forming a highly interactive cyber-sphere.

The role of media in disseminating information on environmental issues

Democracy depends on accurate, responsible and a credible free flow of information. Reporters are responsible for the news that they release for the audience to get accurate stories. Many theories have emphasized that the audience who often get accurate information are able to build a stable and independent society. In many developing countries, the role of media is shaped to fulfill local needs. In Malaysia, the role of media is shaped not only to disseminate information and as educators as envisaged in the government's policy, but also as a guide to walk hand-in-hand with the government's aspiration and policy in order to survive in the media industry. Communication is a crucial element for human society to exist. Every society, traditional or modern depends on communication to build bridges among people in order to live together, to carry on their cultural legacy and to follow regulations and cope with changes that happen in the physical environment. The business community, the government system and individual households depend on the social media and the Internet.

Research conducted by Lee Kuan Jun (2009) on the effectiveness of media reporting on environmental disaster revealed that the main media audience received news about environmental disaster is from television. TV plays the most important role and is the most effective communicator to the audience, as it obtained the highest mean in timeliness, accuracy of the facts and approaches in providing early awareness. Television is more active and effective in providing information on natural through news coverage, documentaries or talk shows on the station TV3. This study also showed that the average adolescent respondents were informed of natural disasters over the last 3 days in the week through various media channels. In addition, the results of this study affirmed that users are young active audiences capable of selecting, distinguishing and comparing the local media channels to meet the psychological and social needs in their daily life. The usage of more local than foreign media reflect the relevance of local reporting on natural disasters which the youths in the Klang Valley can identify with and this is an important factor in choosing a source of information.

Similar research by Lee Kuan Jun (2009) also showed that 72% of respondents were of the opinion that the media should be enhanced to be more effective in environmental catastrophe's information dissemination to youth. This study found that most respondents proposed that mass media should be more aware and sensitive to the environment to provide information and raise awareness among the public. The respondents also suggested that the quality of information either in television shows or news coverage should be increased from time to time so that the public can obtain clearer and more precise information. Local media should increase the

frequency of information distribution, be it in the written form or broadcasted news TV such as advertisement or public service announcements, in order to increase early education prior to the occurrence of a natural disaster. In terms of mass media content, it is proposed that environmental catastrophe information dissemination should be focused on preparation and preventive measures to be taken either before, during or after the occurrence of a natural disaster. After any disasters, campaigns, charity concerts and talk shows should be done more aggressively. Therefore, this study showed that respondents are not passive receivers of information but active consumers who use media channels to meet their information needs as described by McQuail, Blumler and Brown (1972) in the theory of uses and gratification.

Thus, this paper seeks to identify the media channels that audience prefer to look for information on environmental disaster and to what extent the government is taking steps to create awareness about the environment and its sustainability for its people.

Public sector: Creating awareness on natural disaster

Communication is information-relaying process through a certain medium so that messages intended to be sent to an audience is received accurately and promptly. In this context, environmental communication plays a crucial role to ensure the ideas and concepts of environmental sustainability can be delivered effectively by the authorities that encompass development planners, entrepreneurs and the mass society. Communication process relating to this environmental issue involves the formation and design of messages to ensure it is delivered what it intends to deliver, that is, educating the mass society on the issues of environmental disaster and sustainability. It is a two way process involving policy makers and the mass society to ensure both sides understand their roles and help decision makers to implement policies, to improve and increase effort for the development of the nation.

Studies have shown that the most significant factors that could overcome the terror of natural disaster are public awareness, public concern for the environment and the readiness to bear the cost of the adverse impacts of human activities. Generally, it is common knowledge that the root causes of environmental problems are related to human activities, consumption behaviour and production patterns. Environmental awareness encompasses the recognition of the environmental problems, sources of information on the environment and participation in environmental activities and organization. Thus, the formation and existence of international environmental conferences, international governmental organizations, multilateral environmental agreements, and international environmental non-governmental organizations are all aspects of political globalization in environmental matters. The willingness of these key global players to tackle environmental problems is evidence that the world is facing environmental degradation and resource depletion, but that there are some with the intent to confront and solve the problems. Ways to understand international environmental governance are important because they influence how its social justice dimension is perceived.

Japan has become a leader in having talks and discussion on natural disasters as Japan is the country that is often struck by geological disasters like earthquake, tsunami, cyclones and typhoons. It has successfully minimized risk by educating and creating awareness among its citizens. Indonesia and the Philippines also are often faced with high risk disasters and, like Japan, they seem to have knowledge and experience in managing risk. The World Conference on Disaster Reduction that was held in Japan in 2005 produced the Hyogo Framework for Action (HFA) 2005-2015: International Strategy for Disaster Reduction. The effectiveness evaluation of all countries to minimize risks is important and the conference outlined some strategies to

minimize disaster risks based on the HFA 2005-2015, a ten year plan. It was developed and agreed on with the many partners needed to reduce disaster risk—governments, international agencies, disaster experts and many others, bringing them into a common system of coordination. The HFA outlines five priorities for action, and offers guiding principles and practical means for achieving disaster resilience. Its goal is to substantially reduce disaster losses by 2015 by building the resilience of nations and communities to disasters.

The framework outlines five priorities for action, and offers guiding principles and practical means for achieving disaster resilience. Affected nations should be educated on how to reduce environmental risks and the affected society should be informed about how to preserve the environment. This means reducing loss of lives and social, economic, and environmental assets when disasters strike. The five priorities are creating a reduction risk program as the main agenda/priority for the nation, providing disaster risk information and developing early warning strategies, building a culture of safety and resilience toward disaster, reducing disaster risks in several important sectors and strengthening preparedness to face disasters. In times of disaster, impacts and losses can be substantially reduced if authorities, individuals and communities in hazard-prone areas are well prepared and ready to act and are equipped with the knowledge and capacities for effective disaster management.

The implementation of the HFA requires that countries identify a number of critical issues. Firstly, it is vital to identify critical disasters, risks area, highly affected areas, the history and frequency of past occurrences and, lastly, the effects on society and the environment. In Malaysia, the most frequent natural disasters involve floods caused by heavy downpours of monsoon rain in the months of November through January, while some low-risk disasters are man-made hill slope curves that can cause buildings to collapse. Secondly, natural disaster is a complex issue from the perspectives of management and coordination. When a tsunami hit Langkawi, Kedah and Penang, no one was aware or was ready to face the catastrophe. Malaysian scientists were aware of tsunami disasters, but they never thought that they would hit the shores of Malaysia. When the tsunami came, no one agency declared that the disaster was under their jurisdiction and management, but still the whole nation and almost all government agencies took collective responsibility and took assisted in providing humanitarian aid in the national calamity. Agencies that actually should take a role in handling natural calamities and disasters are the National Security Council, the Meteorology Department that deals with matters of earthquake, the Water and Irrigation Department and the District Offices.

In response to the international agenda for environment, formulations of projects and programs on environmental sustainability have been integrated since under the Third Malaysia Plan (1976-1980). To prove that Malaysia is serious on environmental conservation, the fourth thrust of the Ninth Malaysia Plan (2006-2010) aims to promote environmental protection and sustainable resource management. The National Consumer Policy 1999 has included sustainability consumption as one of their policy statements to ensure the welfare of consumers and to increase sustainable consumption practices. Vision 2020 policy emphasizes that Malaysia's dedication to environmental conservation and sustainability to ensure that the management of the environment and its natural resources is efficient to attain sustainable development.

The Malaysian government has given full commitment to its effort to raise awareness among its people. Although the level of government policies and strategies are ample, factors that affect the behaviour change of its people such as technology, law and regulations, social values and norms within the society still need to be reinforced. Even if they are aware various environmental issues, possess basic environmental knowledge and demonstrate environmental concern, their

sustainable practices are lacking (Norbaya and Samsudin, 2008). People's attitude and behaviour need to be changed for the government to achieve its goals, but it is difficult for people to make these behavioural. The root causes of environmental problems are related to human activities, consumption and production patterns. Thus, the quality of the environment depends critically on the practices its people—specifically their awareness, attitudes and knowledge about sustainability. It is imperative that the people of a country are aware of the mission and vision of their country to be able take a big stride together to achieve their country's ambition.

Stapp (1969) defines environmental education as a process of understanding and clarifying the value of the environment and the relevance of environmental resources with a view to encourage people to use such resources in a more sustainable way. He asserted that the ultimate goal of environmental education is to produce a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems and motivated to work towards their solutions. Talib (2002) asserted that the importance of integrated development has been an important issue in *Agenda 21* (United Nations, 1991). Among other resolutions stated is the dissemination of integrated development through environmental educational programs. Integrated development is a huge modern development idea that should give equal weight to the demands of development and the conservation of the environment. Its main agenda is to orientate environmental educational issues to be more specialized through effective communication so that environmental educators are able to increase skills and attitude towards environmental issues in order to participate to build a healthy, sustainable environment.

In the effort to disseminate information and create awareness, the Ministry of Education seems to be one of the appropriate Ministries to implement this task. The Ministry of Education is and should be responsible for the implementation of environmental education in the national education system. The recognition of the need to create awareness on the environment through environmental education was conceived during the Third Malaysian Plan (1976-1980) and in realizing that education is an important tool to promote sustainability lifestyle. *Agenda 21* (United Nations, 1991), a global action plan for delivering sustainability development proposed some important agendas among others are:

- To establish a process to promote dialogue between the youth community and government at all levels to enable them to present their perspectives on government decisions including the implementation *Agenda 21*;

- To mobilize communities through schools and local health centers so that children and their parents become effective focal points for sensitization of communities to environmental issues; and

- To encourage participation of children and community toward the integrated community management of resources.

The emphasis on environmental education among developed nations such as United Kingdom, Australia, Canada and the United States is vital evidence that there is an increased recognition of the importance of education for sustainable development.

Conclusion

The use of mass media as a solution to overcome natural disasters has garnered support from various scholars from the fields of geography and communications either locally or internationally. Various forms of research have been conducted by academicians in order to strengthen public and media users' understanding of the importance of the role of mass media in addressing the impact of natural disasters. Media play an important part in providing education and early warning related to environmental catastrophe, gathering information about the needs of victims of natural disasters for the government and volunteer organizations as well as being the potential channel for discussion and feedback from the public about natural disasters. Scientists should strive to cooperate with the media so that more accurate and latest information in all stages before, during and after natural calamities can be distributed to the audience quickly.

Efforts to reduce the destructive effects of natural disasters effectively must be enhanced. Media organizations and the global community are increasingly aware of the importance of mass media in disseminating information on the destructive effects of natural disasters to the public. The mass media should be fully utilized so that preventive measures and preparations can be carried out as early as possible.

Communication is crucial in addressing the impact of natural disasters. The existence of special communication mechanisms in the form of collaboration between journalists and natural disaster prevention authorities can be done more systematically. Close relationships between journalists and scientists before and after the occurrence of a natural disaster allow preparation and relief measures to be taken more effectively and comprehensively. Moreover, the experience, sensitivity, trust and efficient method of communication between the two parties can also contribute to improving the quality of news reporting on the issue of natural disasters.

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