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NATURAL DISASTER: ITS IMPLICATION TO HUMAN SECURITY

ABSTRACT

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Introduction

On 26 December 2004, the most devastating natural disaster, the tsunami had struck Aceh, Indonesia. This catastrophe shocked the world, which claimed millions of lives and properties (Koesoema et al., 2019). Due to this, it opened the eyes of a statesman, environmental researcher, and geologist. Do questions arise whether it is the end of the world? Are we ready to face the unexpected disaster? Moreover, what is the future? Is it even worse? (Birkmann et al., 2010). Based on Figure 1, the natural disaster was shown from the 1980s till 2016. From Figure 1, hydrometeorology is the most frequent disaster affecting the globe. Inevitably, it needs to mitigate the risk by improving the early-warning mechanisms. It happened with a higher frequency, especially in the floods. Some massive-scale natural disasters in the past have highlighted the human costs, needs and global influence of natural events (Victoria, 2002). Therefore, a natural disaster is unexpected and always happens out of normalcy. This catastrophe has cost human life to suffer enormously. The situation still leaves people helpless and insecure due to the natural disaster (Hobson et al., 2014). Recently, the impact of natural disasters illustrated the two possibilities of contemporary security thinking. First is the state to the global level. The second is the individual (Munro, 2006). However, according to Hobson et al. (2014), it is all about human security.

This study is intended to provide an overview of a natural disaster that significantly affects human security, especially in Malaysia. Furthermore, it enhances the understanding of natural disaster determinant factors and improves the knowledge about the risk, vulnerability, and consequences of a natural disaster. Despite the complexity of human security, this conceptual study can provide the platform for the Malaysian Government to assess the implication of natural disasters and protect human security. Therefore, it is crucial in handling human needs. Such approaches require well-coordinated and quick responses from government and non-government agencies. Furthermore, safety measures or precautions should be preplanned for human security before the disaster hits.

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Fig. 1: Frequency and Losses of Millions in Natural Disaster (1980 -2016) (The Economist.Com (2018))

In September 2018, the earthquake with 7.5 magnitudes, the 20-foot tsunami hit the Sulawesi Island, Palu, in Indonesia. The earthquake and tsunami brought about 2,783 deaths. The water levelled with entire cities and caused more than 330,000 people to be homeless (Arikawa et al., 2018). Being located in the Ring of Fire, Southeast Asia experienced more natural disasters compared to other worlds. The Asia-Pacific Disaster Report 2012 from The United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) and The United Nations Office for Disaster Risk Reduction (UNDRR) evaluated that in 2011, the natural disaster caused 80% of the world economy. Peculiarly, the earthquake subsequently tsunamis and nuclear disaster in 2011, Japan significantly contributed to 294 billion dollars (Velasquez et al., 2012). Although Malaysia is out of the Ring of Fire, the climate change from warm to warmer caused the devastating flood that happened occasionally (Benevolenza & DeRigne, 2019). In 2006, the catastrophic floods struck Johor with the highest record of 2.75-meter height. It was recorded as the highest level since 1950 and caused more than 100,000 residents to evacuate and 18 deaths (Ministry of Natural Resources and Environment, 2007). According to Shafie (2007) and Badrul Hisham (2010), it was a return of 50 years of average rainfall in 2006, whereas it was a return of 100 years of rain in 2007. As a result, the floods in 2006 lasted for 13 days, from 19 till 31 December. Meanwhile, in 2007, it continued for seven days from 12 till 17 January.

According to Syafrina et al. (2015), Malaysia suffered extreme rainfall and caused a flash flood. Numerous researchers doubted the effort of Malaysian Agencies on Humanitarian Assistance Disaster Relieve (HADR) operation. Besides that, plenty of challenges lead to the poor conduct of HADR operation such as unclear policy on National Security Council (NSC) No. 20, coordination of logistics, public support and integration between Public Agency (Aida, 2015). Until now, NSC No. 20 have not mentioned Human Security and based on the journal "Perception and Practice of Human Security Malaysia", the understanding of Human Security is shallowed (Teh & Ngu, 2019). At the same time, Japan started to emphasise human security in 1999 and Canada in 2000 (Edstrom, 2011). As stated in NSC No. 20, Malaysia's States are responsible for setting up the command centre first before the other agencies join the humanitarian operation (Majlis Keselamatan Negara, 1997). However, in November 2017, Penang could not set up their HADR command centre and directly request Armed forces for HADR assistance (Chong & Lee, 2018). It appears that even the statesman faced ambiguities when the natural disaster struck their state. What even more on understanding human security? Therefore, Malaysian should take the lesson learned from its disaster history and other disaster-prone countries like Indonesia and Japan to protect human security. The gap for understanding the idea of human security from a tremendous and distinguished perspective is the critical factor in this research's accomplishments.

Literature Review

Concept and Theory

About 25 years ago, the United Nations Development Program (UNDP) first defined and articulated the concept of human security in its 1994 publication of the Human Development Report and brought it to international attention. Since then, our understanding of human security has taken a significant leap forward, spurring new fields of academic research. There has been a proliferation of scholars and actors who champion the concept of human security, of tools for promoting human security. Work in the field of human security has helped to reconceptualise the existing idea of security, both broadening and deepening it. Some countries have attempted their versions of human security policies with varying success, despite differing definitions and ongoing debates over human security's ethical, political, and policy implications (Bae & Maruyama, 2014). Buzan (1983) further provided a conceptual cornerstone for the evolution and expansion of security theory. However, the concept of human security is still new, as it only appeared after the cold war and the principles of human security became the attention in academic and policy circles. According to the Commission on Human Security, human security involves processes built on people's strength and aspirations while creating a political, social, environment, economic, military, and cultural systems that give people the building blocks of survival, livelihood, and dignity. Human security is the protection of people" from critical (severe) and pervasive (widespread) threats and situations" (Commission on Human Security, 2003). The concept of human security is often attributed to Dr Mahbub ul Haq, an economist whose career included positions at the University of Karachi, the World Bank, the Pakistani government, and the UNDP. The UNDP report also identified seven areas in which human security plays out: economic, food, health, environmental, personal, community and political (Alkire, 2003).

Understanding the links between natural disasters and human security is often achieved by layering different information fields on a shared map. The first layer might focus on the evidence of natural disasters. For example, where will the severe floods, droughts and storms associated with climate change occur on the planet's surface? The second layer might add measures of sensitivity to these types of events. Not surprisingly, the poor and marginalised are likely to be eking out their existence in flood plains or regions with heightened vulnerability to drought or heat waves. The third layer of data might add information about existing human security problems such as population displacement, disease outbreaks, and economic crises (Matthew, 2015). The third layer of data should be considered in this study as it impacts psychosocial distress. According to Norris et al. (2002), the psychosocial effect due to the disasters can cause some psychological problems, such as Major Depressive Disorder (MDD), Post Traumatic Stress Disorder (PTSD), feelings of anxiety, depressions and other medical issues.

i. Conservation of Resources Theory (COR)

Conservation of resources theory is a theory that focuses on dealing with stress. COR states that communities at all times "strive hard to preserve, protect, strengthen and establish resources', and the loss of resources or threat on its resources is what causes stress (Hobfoll, 1989). As described by Hobfoll, there are four primary classifications, as shown in Table 1, which the people strive to achieve and maintain (Hobfoll, 1991).

Priorities	Resources Classification	Example
First	Objects	Material possessions
Second	Personal Characteristic	Social Skills
Third	Conditions	Stable relationship
Fourth	Energies	Knowledge

Table 1: Resources Classification (Derived from COR Theory (Morelli, 2010))

Priorities on the Objects are classified as items or biological material which have values because of the usage, symbolism, rarity or utility such as housing and transportation. Whereas, the second priorities are the Personal Characteristic, an individual trait, behaviour, and a habit that assists distress and achieves resiliency. For example, robustness, self-efficacy, and hardiness. The third priorities are the Conditions that occur when their minds state have good value due to their maturity, friendship, love, and wisdom - for example, seniority and marriage to achieve a stable relationship. Moreover, the last priorities are the

Energies. Energies are the valued resources that inspire or lead to acquiring others; for instance, money, time, and knowledge (Morelli, 2010). The loss of four classifications can happen, especially during a natural disaster, and Hobfoll (2018) mentioned that it triggered plenty of traumatic stress. Therefore, to minimise stress concerning this theory, one shall minimise resources loss and optimise resources safety (Hobfoll et al., 2018). Subsequently, protect human security.

ii. Maslow's Theory

During the calamity or disaster, people may lose their homes, water, food, detrimental health, and loss of human needs (Jordan, 2015). In order to minimise victims of tension, trauma and stress, Maslow's Theory on human needs was studied. Besides that, Abraham Maslow is a well-known scholar to study human needs. He wrote "A Theory of Human Motivation" and demonstrated that all human behaviour is motivated by human needs, as shown in the schematic pyramid in Figure 2 (Maslow, 1943).



Fig. 2: Maslow's Pyramid of Hierarchical Needs (Maslow Theory (Jordan, 2015)).

Based on Maslow's pyramid, self-actualisation is based on achieving individual potentials such as problem-solving, creativity, morality, spontaneity, acceptance of facts and lack of prejudice. Whereas esteem is self-esteem, including respecting others, respect by others, achievement, and confidence. Belonging is the affection, love or felt being part of groups such as friendship, family, and sexual intimacy (Maslow, 1943). Meanwhile, safety removes the danger that provides shelter, including the security of body, employment, resources, morality, family, health, and property. At this level, it emphasises human protection and human security. Lastly, the physiological is the basic need for food, sleep, sex, breathing and health. Due to the concept and theory mentioned above, it is vital to review the dependent variable and independent of this paper thoroughly. First is about human security, then proceed with crucial factors and countermeasures on natural disasters (Maslow, 1943).

Human Security

After the Cold War's demise, in January 1992, the United Nations Security Council (UNSC) met with the heads of government and UN Secretary General for the first time. The purpose is to report on the effectiveness of the UN in the new era. In response, Secretary-General Boutros-Ghali submitted a report entitled" An Agenda for Peace" (A/47/277, S/24111) in June of the same year. The term "Human Security" appears once in the report (Paragraph 16). It stated that each state of the UN has a unique and indispensable role in an integrated approach to human security (Bae & Maruyama, 2014). After that, in 1994, UNDP Report pioneered the call for "Human Security" to induce peace dividends to be channelled to Human Security projects and research. Japan was one of the countries that swiftly picked up the term, sponsored an intellectual exercise to articulate the concept and attempted to promote it to the international community (Kaji, 2015). According to the United Nations Development Program (1994), human security is safety from disaster threats such as repression, disease, and hunger. Besides that, protect from severe and sudden disruptions to daily living. According to Kaji (2015), human security is about protection and empowerment, including downward protection, which means developing out of poverty and coping with immediate risks of deprivation caused by natural disasters. Human security is people-centred. It is often bottom-up or comprehensive or context-specific, or prevention-oriented on natural disasters.

Natural Disaster

In the late 1980s and early 1990s, the questions raised on defining the term disaster (Drabek, 1991; Quarantelli, 1988) and still trouble the environment research such as Smith, Quarantelli, Perry, Cutter and Alexander, who were discussing the published book entitled "What is a disaster?" (Perry & Quarantelli, 2005). Though there is no accepted definition from universal yet (Shaluf & Said, 2003), it is typically accepted to differentiate three types of disaster (Shaluf, 2007). First, natural disasters. Second, human-made disasters and third, hybrid disasters. However, the study emphasises natural disasters. A natural disaster is a catastrophic incident resulting from natural hazards, such as landslides, volcanic eruptions, tsunamis, or earthquakes (Oliver-Smith, 1996). Whereas, due to human decisions such as war or conflict, it created a human-made disaster. A combination of both personal decisions and natural forces created the hybrid disaster (Shaluf, 2007). Besides that, natural disasters are usually termed as acts of god where people have no control over the incidents (Shaluf, 2007; Waugh, 2005).

Understanding the earth, rapid changes of physical system natural disaster later equated with the geophysical phenomena that caused floods, windstorms, earthquakes, and others. However, this perspective ignored the role of the public in the disaster context (Cardona, 2004; McEntire, 2001). Due to that, a vulnerability approach to disastrous had emerged as a critical concept. Shifting from hazard to vulnerability analysis began in the 1980s and gradually gained academic research in the 1990s (Hewitt, 1983; Pelanda, 1981; Wisner & Luce, 1993). Generally, natural hazards do not create natural disasters instantly. However, a natural disaster is the disaster impact on society resulting from natural hazards (Shaluf, 2007). Based on the United Nations Office for Disaster Risk Reduction (UNISDR) (2006), a disaster is defined as a critical disruption of the functioning of a society or community and wide spreading of environmental impacts, economic losses, human insecurity, which crossed over the ability of the affected public to cope with its means or resources. During monsoon season, the East Coast of Peninsular Malaysia suffered floods accompanied by loss of lives, properties with significant hazards impact human security.

Hazards

Hazard is defined as the probability of occurrence within a specific timeframe in an area that is potentially damaging by the natural phenomenon (United Nations Disaster Relief Organization (UNDRO), 1980). Similarly, Cardona et al. (2003) revealed that hazards are the probability of an incident with a certain intensity in a specific location and during a specific period of exposure time. Kelman (2017) found that hazard is a dynamic phenomenon involving communities as victims and as modifiers and contributors. Meanwhile, Mitchell and Cutter (1997) highlighted that society contributes to modifying hazards. Therefore, hazards can be categorised by political structure, socio-economic, race, gender, and culture. According to United Nations Office for Disaster Risk Reduction (UNISDR) (2009), a hazard is defined as a dangerous phenomenon or human activity that may cause loss of life, injury, health impacts, loss of livelihoods and property, socio-economic disruption, or environmental damage. Each of the hazards is characterised by its probabilities, frequency, intensity, and location. In this paper, the hazard refers to UNISDR (2009) meaning, which covered both the social and natural constructed hazards. In contrast, the definition of disaster considers opposite to a hazard, which posts the potential to bring about disruption and loss. A disaster is defined by the impact on the community and loss occurring, which depend on the degree of vulnerability (Bradshaw, 2013). Wisner et al. (2004) emphasised that no disaster occurs if there are hazards, but vulnerability is nil or a vulnerable population with no hazard incidents. As a result, a natural disaster has been seen as an interaction of human activities and natural forces.

Vulnerability

According to UNDRO (1980), vulnerability is the level of loss to the risk of natural phenomenon occurrence and can be measured on a scale from zero (No damage=0) to one (total loss=1). Meanwhile, Timmerman (1981) defines vulnerability as the level to a system to react to the adversary (occurrence of the natural hazardous incident). Besides that, the level of the adverse reaction depends on the resilience of the system. Therefore, a measure is taken on its capability and capacity to recover from the incident. Correira et al. (1987) determined that vulnerability is the severity of failure about its consequences. Furthermore, the concern is what the cost is? Whereas Moser (1996) expressed vulnerability as the unsafety of humans, societies, communities, households and individuals to face the rapidly changing environment. Apart from that, Intergovernmental Panel on Climate Change (IPCC) Report 2012 claimed that vulnerability is a level of adversary tendency to the affected incident (Reinman, 2012). Meanwhile, UNISDR (2009) defined it as situations and characteristics of a society, asset, or system related to a hazard's negativity. Due to the different thoughts of the scholar above, there are different definitions of vulnerabilities. However, in this paper, vulnerability is meant as conditions, environmental characteristics, economic, social, and health that make the public susceptible to flood disasters.

Floods

In a model of the solar system, our planet jumps right out. Three-quarters of it are bright blue. Water is essential for life, which is why humans have permanently inhabited lands near lakes and rivers. However, everybody in the water is capable of breaking its bound. Among natural disasters, floods are both the most ubiquitous and deadliest. Human needs water to survive, but too much in the wrong place will crush homes, smother farms, and drown inhabitants (Christine Gibson, 2007). Besides that, from the International Flood Initiative (2003) study, the most taxing water in terms of natural disasters is flooding. Historically, China suffered the most devastating floods in 1887 and 1931 at Huang Ho, which claimed 900,000 and 3.7 million lives, respectively, although such estimates are notoriously unreliable (Burton & Hicks, 2005). In 1911, flooding on the Chang Chiang (Yangtze) claimed 100,000 deaths (Smith & Ward, 1998).

According to Opolot (2013), most definitions discovered in literature define the water temporarily covers flood on a piece of land generally not covered by the water. Despite this, Lavell et al. (2012) defined the flood as the accumulation of water over the areas that abnormally submerged or overflowed of the usual confines of a stream or other body of water. In this context of the study, the definition of flood follows the IPCC's definition to determine floods' causes. Based on Keith Smith and Roy Ward (1998) summarised in Figure 3, floods-intensifying factors.



Fig. 3: Causes of Floods (Nott (2006)).

Based on Nott (2006), the causes of floods can be categorised into physical such as climatological forces and personal decisions such as urban development and deforestation. The most common key factors of floods disasters are climate-related because of rainfall. Continuous rainfall for days, weeks or months causes the world to suffer flooding (Rahman, 2014). Human activities on river catchments influence the behaviour of floods. Exploit and misuse of land directly impacted the behaviour and magnitude of the floods all over the countries. For instance, deforestation caused water run-off and decreased sedimentary rates to the ground. (Restrepo & Escobar, 2018). According to Nott (2006), the most vulnerable to floods are small basins resulting in flash floods, low-lying parts of floodplain, low-lying deltas and coast. He expressed that floods can become a significant hazard due to the density of population. In this regard, flooding had claimed more lives than another natural hazard that impacted human security.

The implication to Human Security

Most floods studies emphasise the negative impact of flooding, which is summarised in Figure 4, floods implications (Brown et al., 2019).



Fig. 4: Implications to Human Security (Brown et al., (2019)).

In particular, attention is given to direct losses that occur immediately after the event due to the physical contact of the floodwaters with humans and with the damageable property. However, indirect losses are less easily connected to the flood disaster and often operate on long time scales. Whereas tangible is something that can be measured, and intangible is something that cannot be measured. Tangible and intangible losses are also divided into primary and secondary categories. Primary losses result from the event itself, while secondary losses at least one causal step removed from the flood. (Ten Veldhuis & Clemens, 2010).

From 1986 till 1995, thirty-one per cent suffered global economic loss and fifty-five per cent fatalities (Borrows & De Bruin, 2006). Besides that, based on the study of Nott (2006), floods are the costliest disaster which causes about 50,000 fatalities and affects 75 million people from over the world annually. Furthermore, in tropical countries such as Bangladesh and India, about 300 million people were prone to flood areas and prone to suffer the outbreak of the disease after a disaster such as Malaria and Typhoid. In this regard, its impact on health security. Whereas Carey (2005) argued that the global populations are vulnerable to natural catastrophes. In particular, the resident's income level can affect suffering on livelihoods during a disaster. Due to this, Risk (2005) research observed that the economic impact on developing countries increased vulnerability and decreased social growth for decades. This study suggested that social impacts are related to the well-being of countries, society, communities, and individuals. Some people are more vulnerable to those less privileged in the community (Risk, 2005). In this regard, countermeasures should be taken to mitigate the risk.

In the United Kingdom, about 1.8 million households and 140,000 commercial properties in Wales and England are located in floodplain areas which significantly affects around 4-5 million citizens. The environmental experts figured out a range of risk management on risk to be taken by operating authorities. As demonstrated in Figure 5, the designated agencies involved in flood reduction in England and Wales (Abel et al., 1993). The effectiveness of preparedness depends on organisational arrangements, community preparation and disaster management, as shown in Figure 5. These involve construction and maintenance of flood defences, creation of flood storage, enhanced awareness on flood warning systems and emergency planning (Crossman & Horel, 2006).



Fig. 5: The Designated Agencies Involved in Flood Reduction in England and Wales

Conceptual Framework

At present, most of the studies on human security use the generic framework as shown in Figure 6 below, which consists of analysis on Hazard, Exposure, Vulnerability, and Risk. The analysis is more detailed with the guidance shown. Based on the generic framework and the independent variable review, floods are influenced by geomorphology, geographic location, and natural factors such as climatology. However, anthropogenic factors such as urban development, deforestation, inefficacy at drainage or water catchment, and misuse of land have resulted in floods.

As shown below, disaster risk is equal to three elements: a hazard, the element at risk, and vulnerability (UNDRO, 1980).

R = H x E x V

with, H = Hazard E = Element at Risk V = Vulnerability

The risk depends on the exposure of different elements in hazardous areas and their vulnerabilities. In this case, no social and economic risk if there are no people and no property to be affected. Similarly, Crichton (1999) defined risk as to the probability of loss. It depends on three elements which are a hazard, exposure and vulnerability. In like manner, Kron (2003) stated that flood risk, as a combination of the flood hazard function, exposes values and vulnerabilities. According to the statement above, floods disaster risk is a result of anthropogenic and natural factors.

Flooding affects many components of human security such as individual, food security, health security, and social security by jeopardising livelihoods (Gain et al., 2015). In other words, floods impact all aspects of human security. Therefore, human decisions on human insecurity reduction may act as vulnerability and exposure reduction. Equally, sustaining human development and improving human security may decrease the anthropogenic causative factors of flood disasters. Figure 6, generic framework had a similarity analysis with Figure 7, consisting of Hazard, Exposure, Vulnerability, and Risk. However, this study will utilise the conceptual framework below, as shown in Figure 7, to assess flood disaster implication to human security, which is simpler to apply.



Fig. 6: Generic Framework (UNDRO (1980)).



Fig. 7: Framework Assessing Disaster Risk Impact on Human Security.

Conclusion

A natural disaster can happen from below to above and from the grounds to above. Natural disasters such as drought, storms, and floods remind us to balance development elements and keep the earth untouched. In Malaysia, floods are among the natural disaster which causes the deadliest and threaten human security. Even though humans need water to survive, too much of it will drown the inhabitants, smother the farms, and crush homes. Therefore, the engineers and scientists had identified the factors and ways to solve the natural disaster to protect human security. The causes of floods are complex and often multitier. The flooding on East Coast in Peninsular Malaysia, 2014 was caused by severe monsoon rain and deforestation and human modifications to the natural drainage systems of the rivers. However, environmentalists claimed that massive, unplanned cutting of trees on the slopes also contributed to the cause of floods.

References

- Abel, M. E., Rosen, L., Kodner, I. J., Fleshman, J. W., Hicks, T., Kennedy, H. L., ... & Roberts, P. L. (1993). Practice parameters for the treatment of rectal-carcinoma-supporting documentation. *Diseases of the colon & rectum*, 36(11), 991-1006.
- Alkire, S. (2003). Concepts of human security. Human insecurity in a global world, 15-40.
- Aida, A. B. (2015). *National security policy during humanitarian assistance disaster relief operations* (Unpublished master's thesis). University Malaya.
- Badrul Hisham A. S., M.I. Marzukhi & A.R. Daud. (2010). The worst flood in 100 years: Johor experience. *Community Health Journal*, 15: 1-14.
- Bae, S., & Maruyama, M. (Eds.). (2014). *Human Security, Changing States and Global Responses: Institutions and Practices*. Routledge.
- Benevolenza, M. A., & DeRigne, L. A. (2019). The impact of climate change and natural disasters on vulnerable populations: A systematic review of literature. *Journal of Human Behavior in the Social Environment.* 29(2), 266-281.
- Birkmann, J., Buckle, P., Jaeger, J., Pelling, M., Setiadi, N., Garschagen, M., ... & Kropp, J. (2010). Extreme events and disasters: a window of opportunity for change? Analysis of organisational, institutional and political changes, formal and informal responses after mega-disasters. *Natural hazards*, 55(3), 637-655.
- Borrows, P., & De Bruin, D. (2006). The management of riverine flood risk. *Irrigation and Drainage: The Journal of the International Commission on Irrigation and Drainage*, 55(S1), S151-S157.
- Bradshaw, S. (2013). Gender, development and disasters. Edward Elgar Publishing.
- Brown, N. A., Rovins, J. E., Feldmann-Jensen, S., Orchiston, C., & Johnston, D. (2019). Measuring disaster resilience within the hotel sector: An exploratory survey of Wellington and Hawke's Bay, New Zealand hotel staff and managers. *International Journal of Disaster Risk Reduction*, 33, 108-121.
- Burton, M. L., & Hicks, M. J. (2005). *Hurricane Katrina: preliminary estimates of commercial and public sector damages*. Marshall University: Center for Business and Economic Research.
- Buzan, B. (1983). *People, states, and fear: The national security problem in international relations.* Wheatsheaf Books.
- Cardona, O. D. (2004). The need for rethinking the concepts of vulnerability and risk from a holistic perspective: a necessary review and criticism for effective risk management. *Mapping vulnerability: Disasters, development and people,* 17, 37-51.
- Cardona, O. D., Hurtado, J. E., Duque, G., Moreno, A., Chardon, A. C., Velasquez, L. S., & Prieto, S. D. (2003). The notions of disaster risk: conceptual framework for integrated management. Information and indicators program for disaster risk management. *Inter-American Development Bank, Manizales.*
- Carey, M. (2005). Living and dying with glaciers: people's historical vulnerability to avalanches and outburst floods in Peru. *Global and planetary change*, 47(2-4), 122-134.

- Chong, A., & Lee, I. W. (2018). Asia's Security Competition by Proxy: Competitive HADR as a Respectable Arena? In International Security in the Asia-Pacific (pp. 377-400). Palgrave Macmillan, Cham.
- Commission on Human Security. (2003). Human security now. United Nations Publications.
- Correira, F., Santos, M. & Rodrigues, R. (1987). *Engineering risk in regional drought studies*. In: Duckstein L, Plate EJ (eds) Engineering reliability and risk in water resources. Nijhoff M, Dordrecht, pp 61–86.
- Crichton, D. (1999). The risk triangle. *Natural disaster management*, 102(3).
- Crosman, E. T., & Horel, J. D. (2010). Sea and lake breezes: A review of numerical studies. Boundary-layer meteorology, 137(1), 1-29.
- Drabek, T. E. (1991). Anticipating organisational evacuations: Disaster planning by managers of touristoriented private firms. *International Journal of Mass Emergencies and Disasters*, 9(2), 219-245.
- Economist.Com (2018, 11 January). *The likelihood of floods is changing with the climate*. Retrieved (2019, Mac 30) from: https://www.economist.com/briefing/2017/08/31/the-likelihood-of-floods-is-changing-with the-climate.
- Edstrom, B. (2011). *Japan and human security: The derailing of a foreign policy vision*. Stockholm: Institute for Security and Development Policy.
- Gain, A. K., Mojtahed, V., Biscaro, C., Balbi, S., & Giupponi, C. (2015). An integrated approach of flood risk assessment in the eastern part of Dhaka City. *Natural Hazards*, 79(3), 1499-1530.
- Gibson, C. (2007). Extreme Natural Disasters. Harper Collins.
- Hewitt, K. (1983). Interpretations of calamity, the risk & hazard series: 1. Routledge Library Editions: Ecology.
- Hobson, C., Bacon, P., & Cameron, R. (Eds.). (2014). Human security and natural disasters. Routledge.
- Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualising stress. *American psychologist*, 44(3), 513.
- Hobfoll, S. E. (1991). Traumatic stress: A theory based on rapid loss of resources. *Anxiety Research*, 4(3), 187-197.
- Hobfoll, S. E., Halbesleben, J., Neveu, J. P., & Westman, M. (2018). Conservation of resources in the organisational context: The reality of resources and their consequences. *Annual Review of Organizational Psychology and Organizational Behavior*, 5, 103-128.
- International Flood Initiative. (2003). *International Flood Initiative: Concept paper*. Retrieved on the; 10/09/2019 from; www.If-home.info.
- Jordan, K. (2015). The Disaster Survivor's Hierarchy of Needs: *What Every Disaster Mental Health Worker Should Know*, 7. Retrieved from http://www.counseling.org/knowledge-center/vistas.
- Kaji, M. (2015). Why human security, why Japan? *Human security, changing states and global responses: Institutions and practices*, 48-65.
- Kelman, I. (2017). How can island communities deal with environmental hazards and hazard drivers, including climate change? *Environmental Conservation*, 44(3), 244-253.
- Koesoema, A. A., Sugiyama, Y., Sriwong, K. T., Xu, Z., Verina, S., Standley, D. M., ... & Matsuda, T. (2019). Reversible control of enantioselectivity by the length of ketone substituent in biocatalytic reduction. *Applied Microbiology and Biotechnology*, 103(23-24), 9529-9541.
- Kron, W. (2003, February). *Flood catastrophes: causes-losses-prevention from an international re-insurer's viewpoint.* In Intl. Workshop on Precautionary Flood Protection in Europe, Bonn.
- Lavell, A., Oppenheimer, M., Diop, C., Hess, J., Lempert, R., Li, J., ... & Cardona, O. D. (2012). *Climate change: new dimensions in disaster risk, exposure, vulnerability, and resilience*. In Managing the risks of extreme events and disasters to advance climate change adaptation: Special report of the Intergovernmental Panel on Climate Change (pp. 25-64). Cambridge University Press.
- Majlis Keselamatan Negara. (1997). Arahan No. 20: Dasar dan Mekanisme Pengurusan Bencana Negara, Majlis Keselamatan Negara.
- Maslow, A. H. (1943). Preface to motivation theory. Psychosomatic medicine.

Matthew, R. A. (Ed.). (2015). Environmental security. SAGE Publications.

- McEntire, D. A. (2001). Triggering agents, vulnerabilities and disaster reduction: towards a holistic paradigm. *Disaster Prevention and Management: An International Journal*. 10 (3).
- Ministry of Natural Resources and Environment. (2007). 100-year flood damages Johor's National Parks. Retrieved (2019, Mac 30) from http//www.nre.gov.my/malay/pusatmedia/penerbitan/ malaysian20parks20newsletter20issue20120 march202007.pdf (retrieved 2 July 2011).
- Mitchell, J. T., & Cutter, S. L. (1997). Global change and environmental hazards: Is the world becoming more disastrous? Hands-On! Developing Active Learning Modules on the Human Dimensions of Global Change. Association of American Geographers, 1710 Sixteenth Street NW, Washington, DC 20009-3198.
- Morelli, N. (2010). Furthering conservation of resources theory: how our values influence our stress response. Negara, M. K. (1997). ARAHAN No. 20: Dasar dan Mekanisme Pengurusan Bencana Negara, 20(20), 50.
- Moser, C. O. (1996). *Confronting crisis: A comparative study of household responses to poverty and vulnerability in four poor urban communities.* The World Bank.
- Munro, M. (2006). Writing Disaster: Trauma, Memory, and History in Edwidge Danticat's The Farming of Bones. *Ethnologies*, 28(1), 81-98.
- Norris, F. H., Friedman, M. J., Watson, P. J., Byrne, C. M., Diaz, E., & Kaniasty, K. (2002). 60,000 disaster victims speak: Part I. An empirical review of the empirical literature, 1981–2001. *Psychiatry: Interpersonal and biological processes*, 65(3), 207-239.
- Nott, J. (2006). Extreme events: A physical reconstruction and risk assessment. Cambridge University Press.
- Oliver-Smith, A. (1996). Anthropological research on hazards and disasters. *Annual Review of Anthropology*, 25(1), 303-328.
- Opolot, E. (2013). Application of remote sensing and geographical information systems in flood management: A review. *Research journal of applied sciences engineering and technology*, 6(10), 1884-1894.
- Pelanda, C., & Gabor, T. (1981). Assessing Local Differences in Chemical Disaster Proneness: The Community Chemical Hazard Vulnerability Inventory.
- Perry, R. W., & Quarantelli, E. L. (2005). What is a disaster? New answers to old questions. Xlibris Corporation.
- Quarantelli, E. L. (1988). Disaster crisis management: A summary of research findings. *Journal of management studies*, 25(4), 373-385.
- Rahman, S. U. (2014). Impacts of flood on the lives and livelihoods of people in Bangladesh: A case study of a village in Manikganj district. Doctoral dissertation, BRAC University.
- Reinman, S. L. (2012). Intergovernmental panel on climate change (IPCC). Reference Reviews.
- Restrepo, J. D., & Escobar, H. A. (2018). Sediment load trends in the Magdalena River basin (1980–2010): Anthropogenic and climate-induced causes. *Geomorphology*, 302, 76-91.
- Risk, K. (2005). United Nations. Geneva, Switzerland.
- Shafie A., (2007). *Technical report extreme flood*. A case study on floods of 2006 and 2007 in Johor, Malaysia. Retrieved from: https://www.engr.colostate.edu/~pierre/ce_old/Projects/linkfiles/ Atikah%20Shafie%20Johor_final_121009.pdf.
- Shaluf, I. M. (2007). Disaster types. Disaster Prevention and Management: An International Journal. 6(5).
- Shaluf, I. M., & Said, A. M. (2003). A review of disaster and crisis. Disaster Prevention and Management: *An International Journal.* 12 (1).
- Smith, K., & Ward, R. (1998). Floods: Physical processes and human impacts. John Wiley and Sons Ltd.
- Syafrina, A. H., Zalina, M. D., & Juneng, L. (2015). Historical trend of hourly extreme rainfall in Peninsular Malaysia. *Theoretical and Applied Climatology*, 120(1-2), 259-285.
- Ten Veldhuis, J. A. E., & Clemens, F. H. L. R. (2010). Flood risk modelling based on tangible and intangible urban flood damage quantification. *Water science and technology*, 62(1), 189-195.

- Teh, B. C. G., & Ngu, I. T. (2019). *Perceptions and practice of human security in Malaysia*. In Human Security Norms in East Asia (pp. 113-133). Palgrave Macmillan, Cham.
- Timmerman, P. (1981). Vulnerability resilience and collapse of society. A Review of Models and Possible *Climatic Applications*. Toronto, Canada. Institute for Environmental Studies, University of Toronto.
- United Nations Development Program. (1994). A randomized multicentre trial of the Multiload 375 and TCu380A lUDs in parous women: three-year results. *Contraception*, 49(6), 543-549.
- United Nations Disaster Relief Organization (UNDRO). (1980). *Vulnerability Analysis. In Report of Experts Group Meeting*, UNDRO, Geneva.
- United Nations Office for Disaster Risk Reduction (UNISDR). (2006). *Global survey of early warning systems:* An assessment of capacities, gaps and opportunities toward building a comprehensive global early warning system for all-natural hazards. Platf Promot Early Warn UNISDR—PPEW UN, 2006.
- United Nations Office for Disaster Risk Reduction (UNISDR). (2009). *Making Disaster Risk Reduction Gender* Sensitive: Policy and Practical Guidelines. Geneva.
- Velasquez, J., Sirimanne, S., Bonapace, T., Srivastava, S.K., & Mohanty, S. (2012). *Reducing vulnerability and exposure to disasters: Asia-Pacific disaster report 2012*. UNDRR publications: Geneva, Switzerland.
- Victoria, L. P. (2002). Community-based approaches to disaster mitigation. In: *Regional Workshop on Best Practices in Disaster Mitigation*, 2001, ADPC, pp.269-290.
- Waugh, W.Jr. (2007). Public administration, emergency management, and disaster policy. Chapter 11, Disciplines, disasters and emergency management, McEntire, D. A., ed., Federal Emergency Management Agency, Emergency Management Institute, Washington, DC, 161–169.
- Wisner, B., Blaikie, P., & Cannon, T. I. D. (2004). At-Risk: Natural Hazards, People's Vulnerability and Disasters. Aufl., London.
- Wisner, B., & Luce, H. R. (1993). Disaster vulnerability: scale, power and daily life. *GeoJournal*, 30(2), 127-140.