ZULFAQAR Journal of
Defence Management, Social Science & Humanities

Journal homepage: https://zulfaqarjdmssh.upnm.edu.my/index.php/zjdmssh/index

NATURAL DISASTER: ITS IMPLICATION TO HUMAN SECURITY

Ng Chin Sai[a], Rogis Baker[b*], Noor Azmi Mohd Zainol[c], Haliza Mohd Zahari[d], Nur Surayya Mohd Saudi[e], Zailin Zainal Ariffin[f]

[a,b,c,d,e,f] *Faculty of Defence Studies and Management, Kem Sungai Besi, 57000 Kuala Lumpur, Universiti Pertahanan Nasional Malaysia*

*Corresponding author: *rogis@upnm.edu.my*

ARTICLE INFO

Article history:
Received
08-11-2019
Received in revised
19-09-2020
Accepted
10-02-2021
Available online
30-06-2021

Keywords:
Natural disaster, human security, hazard, flood, vulnerability

e-ISSN: 2773-529X
Type: Article

ABSTRACT

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 pre-planned for human security before the disaster hits.

DOI: https://doi.org/10.58247/jdmssh-2021-0401-03

Introduction

On 26 December 2004, the most devastating natural disaster, the tsunami had struck Aceh, Indonesia. The world was shocked by this catastrophe which had 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 FIg. 1, the natural disaster shown from the 1980s till 2016. From FIg. 1, hydrometeorology is the most frequent disaster affects the globe. Inevitably, it needs mitigating the risk by improving the early-warning mechanisms. It happened with higher frequency especially on the floods. Some massive-scale natural disasters in the past have highlighted on the human costs, needs and global influence of natural events (Victoria, 2002). Therefore, a natural disaster is unexpectable and always happened out of normalcy. This catastrophe has cost human life to suffer enormously. The situation still leaves people helpless and felt 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. Second is the individual (Munro, 2006). However, according to Hobson et al. (2014), it is all about human security.

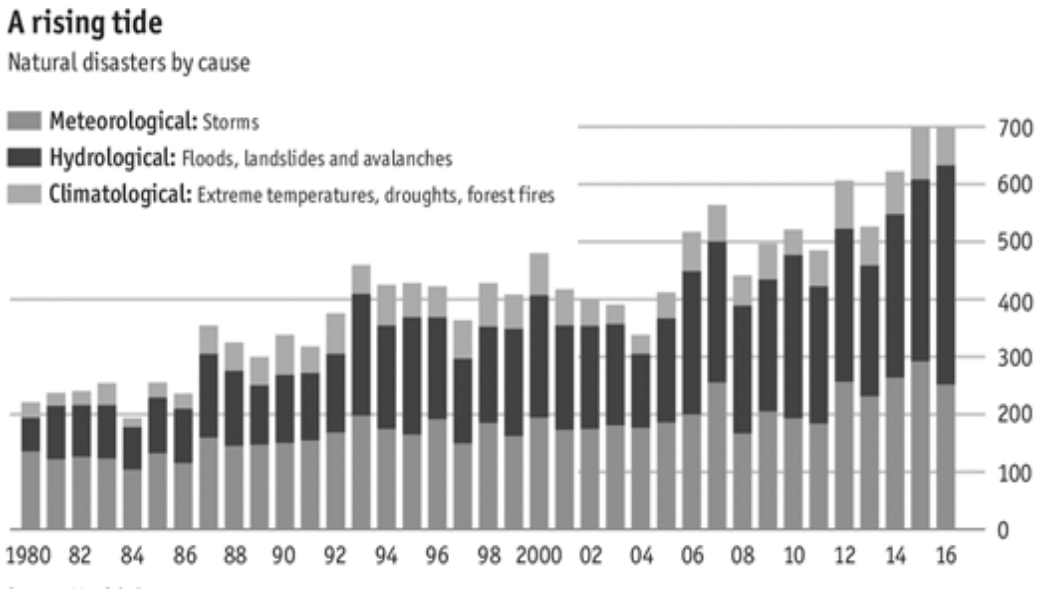

Fig. 1: Frequency and Losses of Millions in Natural Disaster (1980 -2016) (The Economist.Com (2018))

On September 2018, the earthquake with 7.5 magnitudes, then the 20-foot tsunami hit the Sulawesi Island, Palu in Indonesia. The earthquake and tsunami brought about 2,783 deaths. The water was levelling with entire cities and caused more than 330,000 people homeless (Arikawa et al., 2018). Being located in the Ring of Fire, Southeast Asia experienced more natural disaster compared to another world. 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 the regional financial loss for 294 billion of the dollar (Velasquez et. al., 2012). Although Malaysia is out of 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 always suffered extreme rainfall and caused a flash flood. Numerous researchers doubted the effort on 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 haven's mentioned about the Human Security and based on the journal "Perception and Practice of Human Security Malaysia", the understanding of Human Security is shallowed (Teh & Ngu, 2019). Whereas, Japan started to emphasise on human security since 1999 and Canada since 2000 (Edstrom, 2011). As per stated in NSC No. 20, Malaysia's States are the responsibility to set up the command centre first before the other agencies joint the humanitarian operation (Majlis Keselamatan Negara, 1997). However, in November 2017, Penang unable to 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 it owns disaster history and other disaster-prone countries like Indonesia and Japan to protect human security. The gap for understanding the idea of human security in tremendous and distinguish perspective is the critical factors of the accomplishments of this research.

Literature Review

Concept and Theory

It was about 25 years ago that 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 degrees of success, despite differing definitions and ongoing debates over the ethical, political and policy implication of human security (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 both the academic and policy circles. According to the Commission on Human Security, human security involves processes that built on people's strength and aspirations while creating a political, social, environment, economic, military and cultural systems that together 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 disaster and human security is often achieved by layering different fields of information on a shared map. The first layer might focus on the evidence of natural disaster. For example, where do and 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 type 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 taken into account in this study as it impacts on 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 others medical issues.

i. Conservation of Resources Theory (COR)

Conservation of resources theory is a theory that focused 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 per shown in Table 1 which the people strive to achieve and maintain (Hobfoll, 1991).

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

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

Priorities on the Objects classified as items or physical 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 which is an individual trait, behaviour, a habit that assist to distress and achieve resiliency. For example, the robustness, self-efficacy and hardiness. Third priorities are the Conditions

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 are inspiring or lead to acquiring others; for instances the money, time, and knowledge (Morelli, 2010). The loss of four classifications can happen especially during the 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 disastrous, people may lose their homes, water, food, detrimental their health and loss of human needs (Jordan, 2015). In order to minimise victims on the tension, trauma and stress, the Maslow's Theory on human needs studied. Besides that, Abraham Maslow is a well-known scholar to study on human needs. He had written, "A Theory of Human Motivation" demonstrated that all human behaviour is motivated by human needs as shown in the schematic pyramid in FIg. 2 (Maslow, 1943).

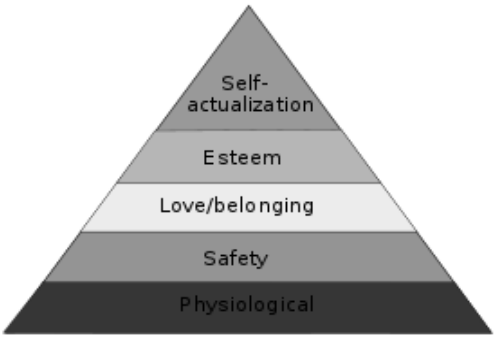

Fig. 2: Maslow's Pyramid of Hierarchical Needs (Maslow Theory (Jordan, 2015)).

Based on the Maslow's pyramid, the self-actualisation based on achieving the individual potential such as problem-solving, creativity, morality, spontaneity, acceptance of facts and lack of prejudice. Whereas, the esteem is the self-esteem including the respect of 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, the safety is the removal of danger which provides the shelter, including the security of body, employment, resources, morality, family, health and property. In this level, it emphasises on 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 on the dependent variable and independent of this paper thoroughly. First, is about human security, then proceed with crucial factors and countermeasures on natural disaster (Maslow, 1943).

Human Security

After the demise of the cold war, in January 1992, the United Nations Security Council (UNSC) meeting for the first time with the heads of government and UN Secretary General. 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, the same year. The term "Human Security" appears once in the report (Paragraph 16). It stated that each state of the UN has a special and indispensable role to play in an integrated approach to human security (Bae & Maruyama, 2014). After that, in 1994, UNDP Report pioneered in 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 to the international community (Kaji, 2015). According to United Nations Development Program (1994), human security defined as safety from disaster threat such as repression, disease and hunger. Besides that, protect from hurtful and sudden disruptions for daily living. According to Kaji (2015), human security is about protection and empowerment, including downward protection, which means not only to develop out of poverty but also to cope with immediate risks of deprivation caused by natural disaster. Human security is people-centred. It is often bottom-up or comprehensive or context specific or prevention oriented on natural disaster.

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 researches 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 disaster. Second, human-made disasters and third, hybrid disasters. However, for the study, it emphasises on natural disaster. A natural disaster is catastrophic incidents that are resulting from natural hazards, such as landslides, volcanic eruptions, tsunamis or earthquake (Oliver-Smith, 1996). Whereas, due to human decisions such as war or conflict it created the human-made disaster. Combination of both on personal decisions and natural forces it created the hybrid disaster (Shaluf, 2007). Besides that, natural disaster usually termed as acts of god where people have no control over the incidents (Shaluf, 2007; Waugh, 2005).

Understanding about the earth, rapid changes of physical system natural disaster later equated with the geophysical phenomena that caused the floods, windstorms, earthquake 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 1990s (Hewitt, 1983; Pelanda, 1981; Wisner & Luce, 1993). Generally, natural hazards do not create natural disaster 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. In this regards, during monsoon season, East Coast of Peninsular Malaysia suffered floods accompanied by loss of lives, properties with significant hazards impact on human security.

Hazards

Hazard defined as the probability of occurrence within a specific timeframe in an area where 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 occurrence of an incident with a certain intensity in a specific location and during a specific period of exposure time. Kelman (2017), found that hazard as a dynamic phenomenon involving communities not only as victims but also as modifiers and contributors. Meanwhile, Mitchell and Cutter (1997) highlighted that society contributes to modify hazards. Therefore, hazards can be categorised by political structure, socioeconomic, race, gender and culture. According to United Nations Office for Disaster Risk Reduction (UNISDR) (2009), hazard 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 hazard characterised by its probabilities, frequency, intensity and location. In this paper, the hazard refers to the meaning of UNISDR (2009), 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 defined by the impact on 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 if there is a vulnerable population but no hazard incidents. As a result, a natural disaster has seen as an interaction of both 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 what is the level to a system to react to the adversary (occurrence of the natural hazardous incident). Besides that, the level of the adverse reaction depended by the resilience of the system. Therefore, a measure is taken on its capability and capacity to recover from the incident. As determined by Correira et al. (1987), 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 individual to face the rapidly changing environment. Apart from that, Intergovernmental Panel on Climate Change (IPCC) Report 2012 claimed that vulnerability as a level of adversary tendency to the affected incident (Reinman, 2012). Meanwhile, UNISDR (2009), defined as situations and characteristics of a society, asset, system that related to the

negativity of a hazard. 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 characteristic, economic, social, and health that make public susceptible to floods disaster.

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 always inhabited lands near lakes and rivers. However, everybody of 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 study of the International Flood Initiative (2003), the most taxing water in terms of natural disaster is flooding. Historically, China suffered the most devastating floods in 1887 and 1931 at Huang Ho which had 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), expressed that the most definitions discovered in literature define the water temporarily covers flood on a piece of land which generally not covered by the water. Despite this, Lavell et al., (2012), defined that the flood is the accumulation of water over the areas that abnormally submerged or overflowing 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' definition to determine the causes of floods. Based on Keith Smith and Roy Ward (1998), summarised FIg. 3, floods-intensifying factors.

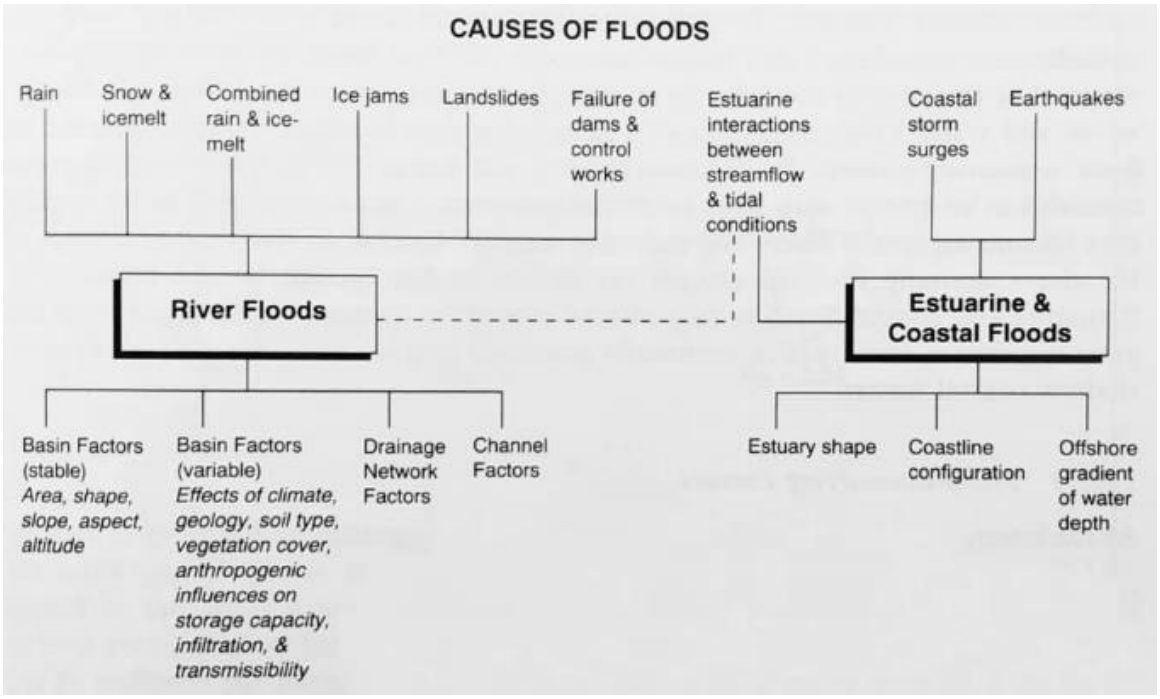

Fig. 3: Causes of Floods (Nott (2006)).

Based on Nott (2006), the causes of floods can be categorised into physical such as climatological force and personal decision such as urban development and deforestation. The most common key factors of floods disasters are climate related because of rainfall. Due to continuous rainfall for days, weeks or months, it causes the world to suffered flooding (Rahman, 2014). Human activities on river catchments influence the behaviour of floods. Exploit, and misuse of land had a direct impact on the behaviour and magnitude of the floods all over the countries. For instance, the 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 resulted 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 regards, flooding had claimed more lives than another natural hazard which have its impact on human security.

Implication to Human Security

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

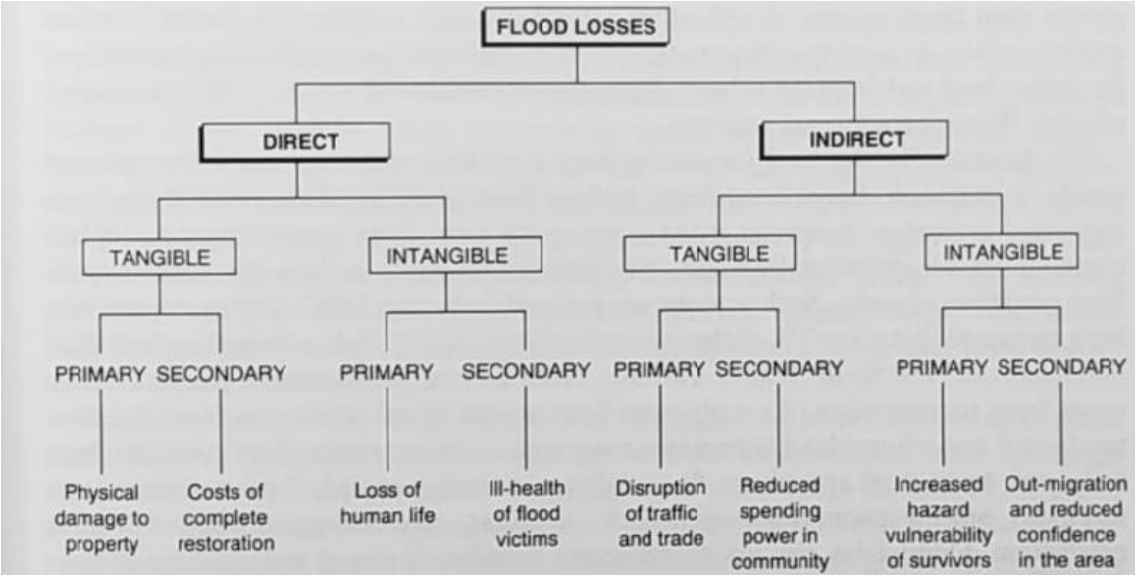

Fig. 4: Implications to Human Security (Brown et al., (2019)).

In particular, attention is given to direct losses which occur immediately after the event as a result of the physical contact of the floodwaters with human and with the damageable property. However, indirect losses, which 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 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).

In 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 caused about 50,000 fatalities and effect 75 million people from over the world annually. Furthermore, at a tropical country such as Bangladesh and India, about 300 million people were prone to flood area and prone to suffer the outbreak of the disease after a disaster such as Malaria and Typhoid. In this regards, its impact on health security. Whereas, Carey (2005) argued that the global populations are vulnerable to the natural catastrophe. In particular, the resident's income level can affect the level of suffering on livelihoods during a disaster. Due to this, Risk (2005) research observed that the economic impact on the developing countries as well which increased the vulnerability and decreased the social growth for decades. In this study, it suggested that social impacts are related to the wellbeing of countries, society, communities and individuals. Some people are more vulnerable to those less privileged in the community (Risk, 2005). In this regards, the 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 located in floodplain area which significantly affects around 4-5 million citizens. The environmental experts FIg.d out a range of risk management on risk to be taken by operating authorities. As demonstrated in FIg. 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 FIg. 5. These involve construction and maintenance of flood defences, creation of flood storage, enhance awareness on flood warning system and emergency planning (Crossman & Horel, 2006).

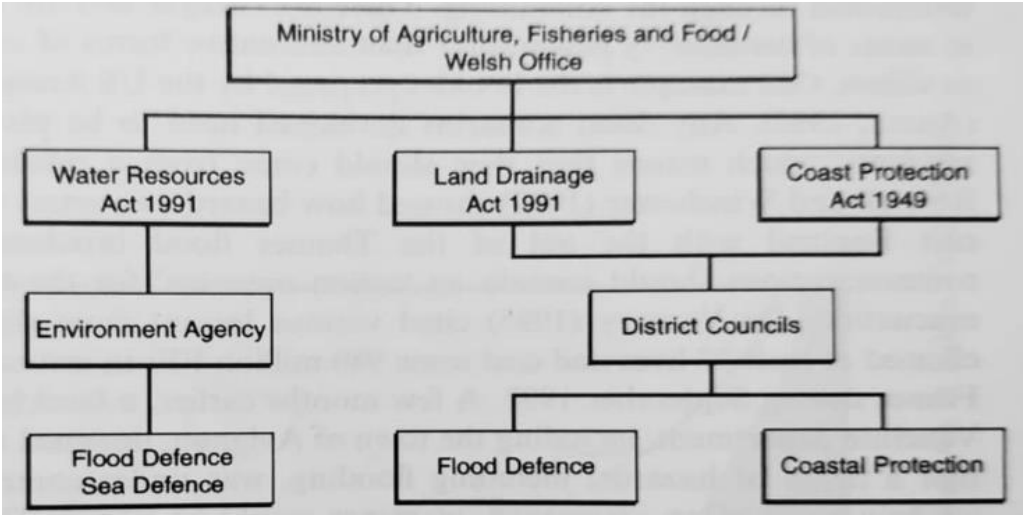

Fig. 5: The Designated Agencies Involved in Flood Reduction in England and Wales

Conceptual Framework

At present, most of the study on human security is using the generic framework as shown in FIg. 6 below which consist of analysis on Hazard, Exposure, Vulnerability, and Risk. The analysis is more detail with the guidance shown. Based on the generic framework and the review of the independent variable, floods 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 the occurrence of floods.

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

$$R = H \times E \times V$$

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 no economic risk if there are no people and no property to be affected. Similarly, Crichton (1999), defined the 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 floods hazard function, expose values and their vulnerabilities. According to the statement above, the occurrence of floods disaster risk as 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 the 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 disaster. FIg. 6, generic framework had the similarity analysis with FIg. 7 which consists of Hazard, Exposure, Vulnerability, and Risk. However, in this study, it will utilise the conceptual framework below as per shown in FIg. 7 for assessing flood disaster implication to human security which is more simple to be applied.

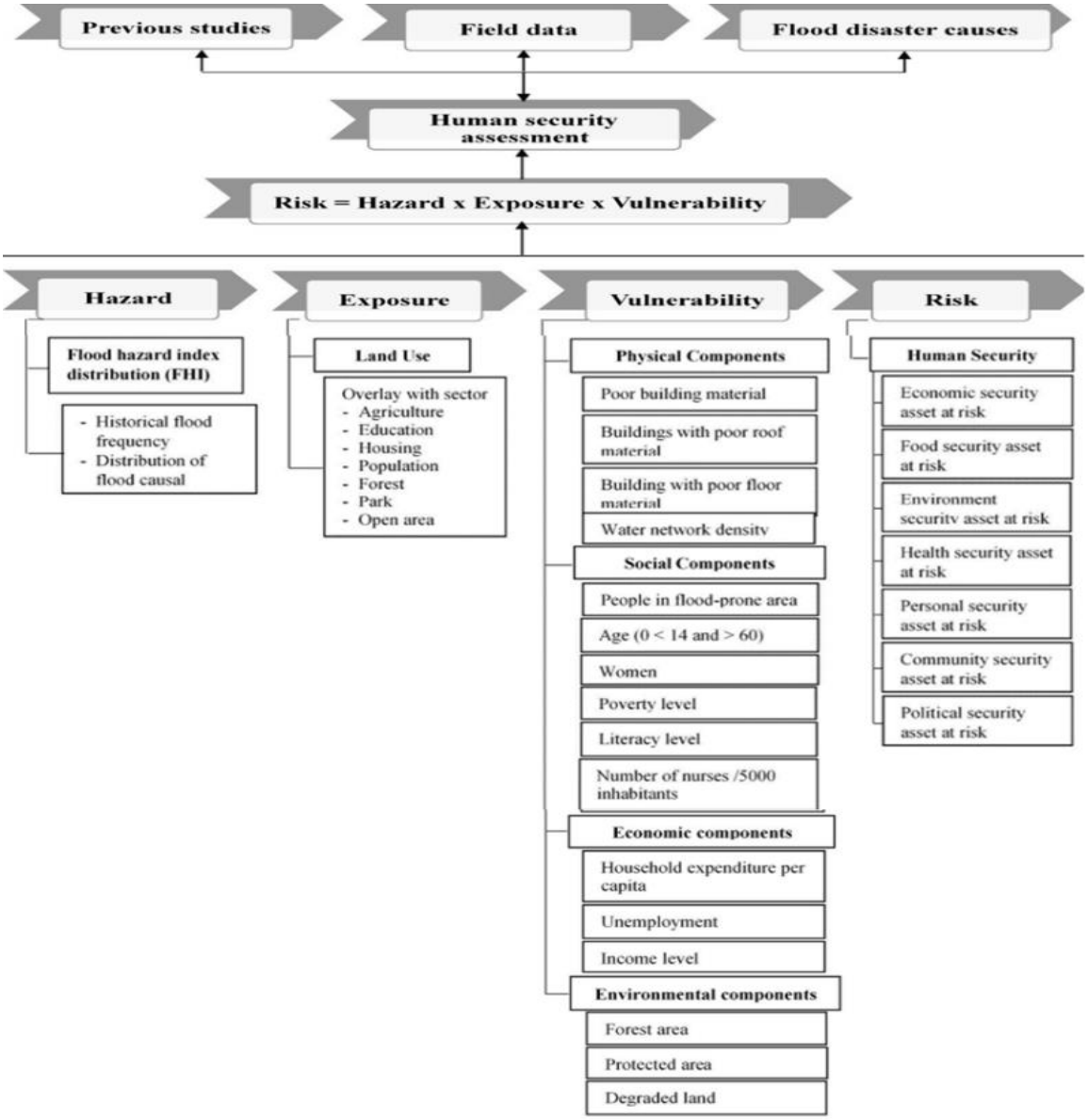

Fig. 6: Generic Framework (UNDRO (1980)).

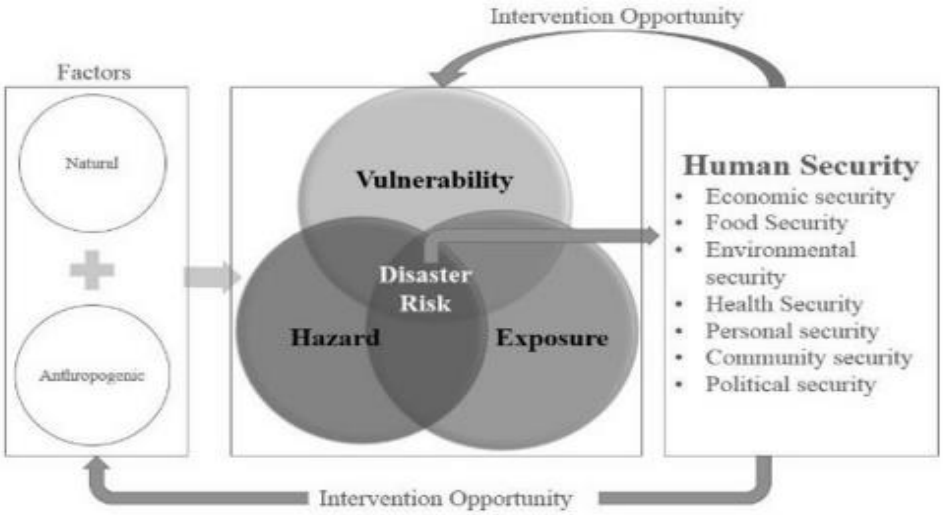

Fig. 7: Framework Assessing Disaster Risk Impact on Human Security.

Conclusion

Natural disaster can happen from below to above and from the grounds to above. The natural disaster such as the drought, storms and floods reminding us to be aware and balance between the elements of development and keeping the earth untouched. In Malaysia, floods are among the natural disaster which caused the deadliest and threatening the human security. Even though humans need water to survive but too much of it will drown the inhabitants, smother the farms, and crush the homes. Therefore, the engineers and scientist had identified the factors and ways to solve the natural disaster to protect human security. The causes for floods are complex and often multitier. The flooding in East Coast in Peninsular Malaysia, 2014 was caused by severe monsoon rain but also by the 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 contributing 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 organizational, 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 organizational evacuations: Disaster planning by managers of tourist-oriented private firms. *International Journal of Mass Emergencies and Disasters*, 9(2), 219-245.

Economist.Com (2018, Jan 11). *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 conceptualizing 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 organizational 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 out 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 livelyhoods 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 ofsociety. A Reviewof Models and Possible Climatic Appli-cations*. Toronto, Canada. Institute for Environmental Studies, University of Toronto.

United Nations Development Program. (1994). Arandomized 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.