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The Issues and Challenges of Flood-related Agencies in Malaysia

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Abstract

Objectives of this study is to identify the real issues and challenges of flood related agencies in Malaysia. By using qualitative thematic analysis, this study found that limited authorities, lack of enforcement power, lack of cooperation among agencies, lack of man-power and assets for logistics, insufficient funding for flood risk management and communication problems are the issues faced by the flood-related agencies. The government needs to solve the issues and challenges in order to strengthen the flood-related agencies capacities.

Keywords: flood risk management; flood-related agencies; issues; authority

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1.0 Introduction

Floods are a major disaster affecting Malaysia annually. Geographically, Malaysia experiences seasonal monsoon winds that bring heavy monsoon rains to the North and East Coast of Malaysia. Other than that, rainfall intensity is very high all year round, and the urban areas are affected by flash flooding (Chan, 2012b). Specifically, two types of flooding usually occur in Malaysia, which is the monsoon flood and flash flood. Monsoon flood happens typically around May until August (Southwest Monsoon) and around November until February (Northeast Monsoon) (Austin & Baharuddin, 2012; Tan et al., 2015; Yusoff et al., 2018). On the other hand, flash flood usually happens in a busy city. It is caused by the uncontrolled human activities such as infrastructure development near the river areas and uncontrolled littering causing clogged drains and waterways (Othman et al., 2014; Sipon et al., 2015; Yusoff et al., 2018).

Then and now, flood risk management in Malaysia has been a top-down government responsibility, and the Malaysians are heavily reliant on a top-down government-controlled techno-centric approach to flood management (Chan, 2012a). That is why in Malaysia, flood risk management is not merely about flood risks, but also comprises of a specific government system that encapsulates management perspective that combines prevention, mitigation, preparedness and response.

In Malaysia, flood risk management is divided by the management of the Federal Government, State Government and District Government (CFE-DM, 2016; Chan, 1995, 2012; Chong and Kamarudin, 2017). In each of this division, flood risk management is thus subject to the different legal framework, rules, policies, the standard of procedure and work practice. However, primary coordination, disaster funding, order and responsibilities on crisis management have remained at the federal level. This makes Malaysia a valuable case study in investigating the issues and challenges faced by flood-related agencies. This paper argues that there are many hidden challenges in flood-related government agencies, such as National Disaster Management Agency (NADMA), Local Authority, Land and

District Office, PLAN Malaysia, Department of Irrigation and Drainage (DID), Malaysia Civil Defence Force (APM), Fire and Rescue and the Police Department, National Hydraulic Research Institute of Malaysia (NAHRIM).

1.1 Objective

The objective of this study is to identify the real issues and challenges of flood agencies in Malaysia. Why is it crucial to identify the issues and challenges of these agencies? This is because the analysis of the flood-related agencies itself will make a crucial contribution to assessing and strengthening the agencies capacities needed for better and comprehensive flood risk management. The weaknesses or strengths of related agencies will either threaten or favour the whole flood risk management process.

2.0 Literature Review

In Malaysia, management of flood risks is regulated by Directive No. 20 under the auspices of the NADMA. Directive No. 20 is an executive order by the Prime Minister Office consists of disaster management mechanisms for before disaster, during the disaster and after the disaster. Every government agency involved with disaster must act according to what written in the executive order (in this case flood is categorized as 'disaster' in Directive No. 20). Under Directive No. 20, there are five stages in the disaster management cycle, consisting prevention, mitigation, preparedness, response and recovery.

As stated in Directive No. 20, flood risk management requires coordination, corporation and commitment between flood-related agencies. However, Shahid, Xinhai et al., 2014 claims that inter-agency coordination challenges during disasters are a well-known area, but a neglected area of research. In 2011, Salmon et al. stated that the challenges of disaster agencies are due to unpredictable outcomes, massive casualties, shortages of resources, lingering side effects, disruption of public service, collapsed infrastructures, great time pressures, high stakes, highly interdependent tasks and communication breakdowns. These conditions are further aggravated by personal or organizational conflicts in authorities, interest or motives.

Furthermore, disaster management agencies in Sri Lanka faced the issues of inadequate legal framework, limited authority, outdated ordinances to support disaster risk reduction, lack of adequate tools, techniques and guidelines, human resource constraints, funding constraints and weaknesses in the internal and external systems (Chamindi et al., 2016).

For Malaysia, a study by Chong and Kamarudin (2017), identified three main challenges faced by disaster agencies in Malaysia. The challenges are unproportioned disaster management planning between top-down and bottom-up approaches, lack of coordination in the entire disaster management cycle and greater focus on the disaster emergency response stage, and insufficient planning for a long-term recovery (post-disaster) process that results in lack of community and stakeholder resilience towards disasters.

3.0 Methodology

3.1 Data collection

This study used primary and secondary data to identify issues and challenges of flood-related agencies in Malaysia. By employing a qualitative approach, the primary data was collected through the in-depth interview in January 2020 to 27 government officials of flood-related government agencies in Malaysia. Agencies involved in this interview were DID (federal, state and district level), Local Authorities, NADMA, Police Department, District Councils, Malaysia Civil Defence Force, Land and District Offices, Fire and Rescue Department, PLANMalaysia, NAHRIM and Stormwater Management and Road Tunnel (SMART). Secondary data were gathered through a systematic literature review on government reports, research papers, journals and books.

3.2 Data analysis

Data gathered were analysed using a qualitative thematic analysis. It is a method for determining, analysis and reporting themes within the text and useful for theorising across many cases and finding common patterns across the research participants (Fereday & Muir-Cochrane, 2006; Riessman, 2005; Mohamed and Ragab, 2016). This technique permits the researcher to combine meanings behind respondents' statement within their particular context (Joffe and Yardley, 2004; Mohamed and Ragab, 2016). For this study, data collected during the interviews were analysed, classified, and appropriately coded to determine the relevant themes for further discussion. The themes identified were authority, cooperation, man-power, logistics, funding and communication.

4.0 Results

There are various issues and challenges faced by flood-related government agencies in Malaysia. Table 1 summarises the issues and challenges:

Table 1. Issues and challenges of flood-related agencies	
Issues and challenges	Agencies
Limited authorities	DID, NADMA
Lack of enforcement power	DID, NADMA, PLANMalaysia
Lack of cooperation among agencies	Civil Defence, Fire and Rescue, DID,

Lack of man-power and assets for logistics	Local Authority, Land and District Office Civil Defence, Fire and Rescue, Police Department, DID, NADMA
Insufficient funding	DID, NADMA, Civil Defence, Fire and Rescue, Police Department
Communication problems	All agencies involved in flood operation

4.1 Limited authorities and lack of enforcement power

The term 'authority' is used to indicate which public authorities have been given the responsibility for the implementation of Floods Directive and which institutions have the power to undertake, to fund, to regulate or otherwise influence flood risk management interventions (Hegger et al., 2013; Burger and Christen, 2011)

In this case, the Department of Irrigation and Drainage Malaysia (DID) is the main agency responsible for flood management. This role is well regulated in the Ministerial Functions Act 1969 (amendment 2008) P.U. (A) 170. In the act, the role of DID is limited to water resources but includes planning and development of flood, management of hydrology data, management of national water resources, planning and management of river basins, planning and development of infrastructure water management for agriculture, planning and management of flood mitigation, development and management of coastal zone to reduce coastal erosion and problems related to river mouth deposition and National Water Council.

However, DID has limited authority and enforcement power to steer the flood risk management, especially in terms of flood mitigation for every new development. Every development in Malaysia must get Planning Permission (*Kebenaran Merancang*) before the developer can start any new development. Firstly, this Planning Permission must be submitted to the One Stop Centre (OSC) in Local Authority. Secondly, OSC will alert all technical agencies involved to give a technical review, and DID is one of the technical agencies responsible for giving a technical review on the development proposal. Thirdly, the Planning Department will access technical reviews by technical agencies. Fourthly, technical meeting by local authority followed by meeting from OSC. Lastly, the Planning Permission application will either be granted or rejected. Based on the interview to government officials from DID, this study found that Local Authority usually will overrule any technical review and decision by DID. This is because DID can only give technical advice, but DID has no authority to reject the development. In the flood-prone area or development that could lead to flood, DID will endorse an official letter to reject the development application or approve with conditions. Usually, the condition consists of a specific size of a retention pond, protecting river reserves or specific ground level for development in flood-prone area. Nevertheless, due to the limitation of power, there is nothing DID can do other than giving advice. This study found that DID headquarters (federal level) supported by DID State and District requested for law amendment, to give more enforcement power to DID so that they can stop development in the flood-prone area or enforce strict conditions, but the request was never granted and never pass in the parliament.

NADMA works at a federal level for disaster management. This agency has the overall responsibility for the implementation of Directive No. 20, and in this function, cooperates closely with other flood-related agencies. However, as stated by Elias et al., (2013) and Yusoff et al., (2018), Directive No. 20 is just a document that provides guidelines on disaster management, and does not include comprehensive flood risk management. There is no specific law for NADMA to influence flood risk management. NADMA too is not listed as one of the agencies to review development plans, and have no say in any urban or rural development, even though the development will lead to a higher risk of flood. As for now, NADMA requested to the government for more authority so that NADMA can overrule Local Authority decision in every development that is prone to flooding. To be more specific, NADMA requests for authority to involve in the Planning Department and sit in OSC so that every development will comply with 'Disaster Risk Reduction'. This agency requested law amendment to give them more power and requests for amendment of Directive. No. 20 to Directive NADMA No. 1.

4.2 Cooperation among agencies

NAHRIM made complete research on climate change downscaling application for flood risk management and other research about floods. NAHRIM's function is providing expert consultancy services on water and environment to the public and private sector, and researching on water, climate change and environment. However, none of the other flood-related government agencies uses findings from NAHRIM for flood risk management in Malaysia. The same case as PLANMalaysia (formerly known as Town and Country Planning Malaysia), they have a detailed study and reports on disaster mitigation such as 'action plan for land use of Pahang River' (*Laporan Pelan Tindakan Pembangunan Bersepadu Guna Tanah di Lembangan Sungai Pahang*), land adjustment based on risk study, and other studies. However, when the non-structural mitigation plans were submitted to the Local Authority, PLANMalaysia did not receive cooperation from the Local Authority (LA) to implement nor considers the content in future development. PLANMalaysia is hoping for partnership and cooperation so that new development approved by LA will be more sustainable and towards disaster risk reduction. As stated in 4.1, other than authority issue, DID did not receive cooperation from LA (specifically the planning department) and Land and District Council for flood mitigation. Furthermore, during flood response, the Civil Defence Force (APM) have to work together with the Fire and Rescue Department during rescue session. Nevertheless, they are having issues to get cooperation from Fire and Rescue

Department, and this problem occurs due to 'ranking' in the uniform units, as Fire and Rescue Department usually holds higher rank in the uniform bodies.

4.3 Lack of man-power, assets for logistics

All interviewed flood-related agencies have stated the issue of not having enough staff, especially during disaster response. For State and District level, all flood-related agencies are compulsory to be on duty during flood response; however, usually, the staff involved are flood victims too, especially in the district area. In addition, the Civil Defence Force and Fire and Rescue Department do not have enough man-power to perform their response and rescue duty well. The relevant agencies do not have enough assets for logistics (transportation). The agencies highlighted this issue as one of the main challenges to perform their duty in flood risk management, especially during the preparedness and response phase. This problem remains to be unsolved because the relevant agencies did not get approval for additional logistics assets from the federal government.

4.4 Insufficient funding

All flood-related agencies stated that insufficient funding is one of the challenges in flood risk management, especially to DID that needs bigger funding for the structural measure of flood mitigation. They also stated that it is hard to get funding from the federal government and the scale of previous year disaster and public interest does influence the amount of funding received. Other than that, the timeline provided by the federal government to state and district government to use the funding is limited from March to November every year. Since disaster-related projects take time to plan and developed, the timeline of nine months given is not enough. Another issue is, there is no fund given for maintenance. Therefore, the relevant agencies have a hard time to maintain assets used for flood response and maintain the existing built flood structural measures. There is also limited funding provided for non-structural measures. This could be the results of the new government aim of lower spending and lower budget (Reuters, 2019).

4.5 Communication

Once a year all related agencies will have a meeting as a preparation for flooding season. Other than that, the involved government officials in federal, state and district are using 'WhatsApp' as a form of government-to-government communication. However, 'WhatsApp' requires an internet connection to send and receive messages and based on interviews, officers on duty for flood in Pahang were having a hard time to communicate with each other due to the internet slow down when it rains. In this case, 'WhatsApp' is not the best medium for government-to-government communication. The second communication medium is Government Integrated Radio Network (GIRN). All government agency involved with 'response' phase will use GIRN to communicate with each other. However, this study found that GIRN usually jammed during flood response when many officers are using it.

5.0 Discussion

Flood risk management in Malaysia is a top-down government responsibility, and the Malaysians are heavily reliant to the flood-related government agencies to manage flood. However, very few studies have previously examined the real issues and challenges of flood-related agencies in Malaysia. This study started with an assumption that there are hidden challenges faced by these agencies to better managed flood. To our knowledge, the main problems are lack of flood management-related legislation to control flood occurrences which lead to lack of authority and enforcement capability. The Land Conservation Act 1960 (aimed at protecting soil erosion and silting hence preventing downstream flooding), Town and Country Planning Act 1976, Environmental Quality Act 1974, Environmental Quality Order 1987, National Land Code 1965, Irrigation Areas Act 1953 amendment 1989, Water Acts 1920, the Drainage Works Ordinance 1954, Street, Drainage and Building Act 1974, Irrigation Areas Ordinance, and the Housing Development Act (Licensing and Control) 1965, none of it deals directly with flood protection or flood control. There is, a need to pass a new Flood Act, Flood Enactment or River Law dealing directly with flood protection and flood control (Keizrul Abdullah, 2002 in Chan 2012). The government need to adjust executive action, legislation and flood control policy in order to manage the flood risks well. The government, the members of Cabinet, need to take proactive measures and gives relevant authority and enforcement power to DID and NADMA to overrule any development proposal that is not sustainable and will lead the nation to a greater risk of disaster. Malaysia is far behind in 'Disaster Risk Reduction', and it is important to get Federal, State, District Government on the same aim, which is to reduce the disaster. Based on the status quo, the success of flood risk management rests upon State Government and Local Authority and upon individual property owners in flood-prone areas. In this case, it is important to issue an executive order directing the State, District Government and Local Authority to consider flood hazard in all development. By doing that, cooperation among flood-related agencies will form directly and indirectly.

Good communication is a key part of disaster response. Therefore, there is a necessity to find another communication medium among agencies. By looking at the current issues faced by the agencies, the use of GIRN and WhatsApp are not safe. Moreover, in 2013, major floods and non-stop rain in Pahang, leads to major blackout with no electricity, because the responsible body for electricity in Malaysia will shut down the electric supply when water reaches a dangerous level (Ong, 2013). Since WhatsApp highly depends on internet and mobile phone that needs to be charged with electric, another medium of communication is needed. Relevant agencies too faced many problems with the use of GIRN that usually jammed during a major flood. It is unacceptable to think that the government is doing nothing to solve the issues even though Malaysia is experiencing major floods annually.

Agencies involved in rescuing flood victims faced many challenges in transporting victims to a safe place due to lack of logistics assets. This clearly shows how the federal government overlooked the issue of preparing well-maintained assets, and how logistics are essential in flood preparedness and response. In addition, it is important to have dedicated funding for the reduction of flood risk and

the whole flood risk management. Without sufficient funding, relevant agencies will not be able to perform the mitigation, preparedness, response and recovery phases in flood risk management well. The lack of investment funding for floods is key to what appears to be limited success in flood risk management Malaysia.

This study has several strengths. First, we were able to identify the current challenges and issues faced by the agencies. Second, we were able to prove how lack of legislation and authority resulted in under-performing flood-related agencies. Third, our findings on insufficient funding, lack of logistic assets and lack of cooperation from Local Authority shows lack of efforts from the government to boost resilience. Fourth, these findings able to contribute in assessing areas needed for comprehensive and effective flood risk management. The in-depth interview enabled us to explore more on the challenges. However, the important limitation of this study is the number of interviewees was relatively small, which might limit the transferability of the results to a more complex context.

Our results are consistent with the study by Chamindi et al., (2016) in Sri Lanka. The study by Chong and Kamarudin (2017) is an only published article indicating the issues and challenges from the perspective of disaster-related agencies in Malaysia. However, their study was not specific on flood-related agencies. Therefore, our study adds to the knowledge in understanding weaknesses that will threaten the risk flood management process.

6.0 Conclusion & recommendations

This paper has identified the issues and challenges of flood agencies in Malaysia. The challenges that we have identified, therefore assists in our understanding of the hindrance faced by the agencies. However, further work needs to be done to urge the government, specifically the ministers as the nation decision-maker to consider and solve the issues and challenges faced by the flood-related agencies in order to strengthen the agencies capacities for better and comprehensive flood risk management. A new authority distribution supported by law should be regulated to avoid overlapping and overrule of decisions that does not favour flood resilient development. The role of NADMA should be well regulated as the sole coordinator to solve the lack of cooperation among agencies. Specific flood policies and flood act should be formulated and taken into serious considerations by the government to overcome current shortcomings.

It is very important to solve the issues and challenges faced in order to strengthen the agencies capacities for finer and comprehensive flood risk management in Malaysia. New research should examine on how we can solve the issues of these agencies and examine how to reach a good flood risk governance in Malaysia. This is because, a successful legitimate flood governance will establish a comprehensive distribution of authority, responsibility and resources for flood risk management that will directly create better and reliable flood-related agencies.

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