

A REVIEW OF FLOOD DISASTER MANAGEMENT IN MALAYSIA



INTRODUCTION

Malaysia is vulnerable to annual floods while enduring a massive flooding incident at least once in five years, involving multiple states. By the end of the year, northeast monsoons cause heavy rainfall, particularly in the eastern states.¹

Due to its relative regularity, flood mitigation, forecasting and warning system efforts have been undertaken by various agencies to minimize impacts brought forth by floods². Such an event scrutinizes Malaysia's ability to respond to floods in the area of readiness, relief, and rebuilding.

Definition: According to the United Nations, floods occur when surface water covers land that is normally dry or when water overflows normal confinements.

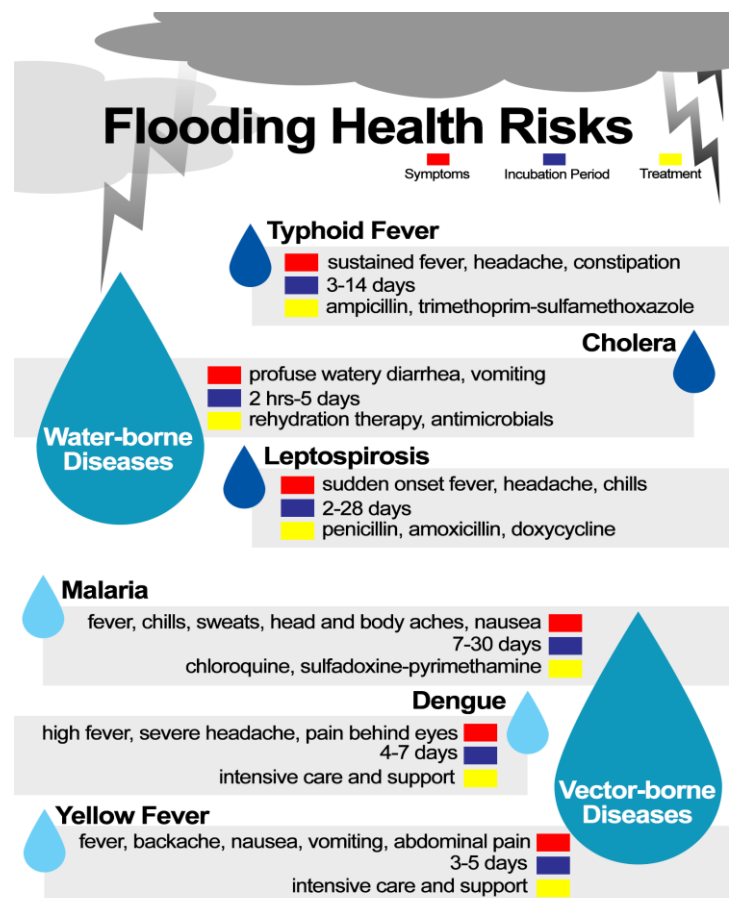
Though in some instances natural disasters cannot be avoided due to its intensity and scale, such disasters can and should be managed effectively, resulting in adequate preparations and response helping those affected.

A LESSON FROM THE PAST

Despite various preparations, present countermeasures remain insufficient as experienced during the December 2014 – January 2015 flood crisis, where close to 250,000 residents were displaced³. This flood has been described as the worst floods in decades⁴. Some victims have accused the government of being slow to provide assistance^{3,5}.

It is in the general interest of all stakeholders to minimize the impact of floods on Malaysian people, not only due to their disruption to their victims' livelihood, adverse environmental and health effects, and multiple consequences to individual victims suffering from the disaster, but also due to the huge costs involved in redeveloping infrastructure.

Therefore, minimizing flood occurrences would ultimately be more cost efficient for all stakeholders, primarily the taxpayers, especially in areas where floods occur on a consistent basis⁶.



Source: American Journal of Clinical Medicine



EFFORTS UNDERTAKEN

Several flood mitigation initiatives have been undertaken by the various agencies, particularly the Department of Irrigation and Drainage, under the Ministry of Natural Resources and Environment. Among such projects are the construction of flood plains, cantilever walls, tidal barrages, tidal gates, river channels and levees, pumping stations, debris removal systems, monsoon drains, retention and detention ponds, and dams. The most high-profile mega project was the Stormwater Management and Road Tunnel (SMART) in Kuala Lumpur².

Several forecasting warning system also exist to predict flooding instances, such as flood maps, telemetric rainfall stations, telemetric water level stations, manual stick gauges, flood warning boards, flood sirens, weather radar, satellites, and real-time flood forecasting warning systems⁷.

MALYSIAN FLOOD DISASTER MANAGEMENT MECHANISM²

Basically, a common and comprehensive approach of flood management should involve four phases as stated in Figure 1 which are (i) **prevention/mitigation**, (ii) **preparedness**, (iii) **response** and (iv) **recovery**.

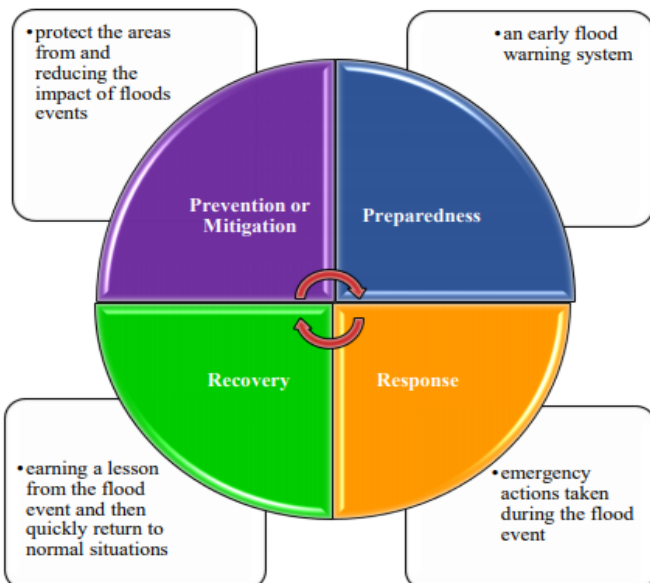


Figure 1. Flood disaster management phases

LAW AND LEGISLATION FOR FLOOD MITIGATION⁸

Several federal and state level legislations and enactments have been devised in response to minimise flooding occurrences⁹:

National Land Code 1965 - enables the National Land Council to ensure States comply with the Land Code which includes flood mitigation.

Water Act 1920 - ensures provision for river conservancy and flood mitigation such as imposing licensing requirements for water abstraction, effluent discharge, felling of trees and building of structures.

Drainage Works Act 1954 – Enables the DID to build, operate, and maintain designate drainage schemes to prevent flooding.

Other legislations - include the Local Government Act 1976 which allows state governments to impose and collect drainage contributions used for the maintenance of draining facilities (i.e. widening, deepening, and cleaning of drains), the Land Conservation Act, Environmental Quality Act 1974, and Uniform Building By-Laws.

KEY STAKEHOLDERS⁹

This table shows list of stakeholders or agencies involve during flood disaster management.

National Security Council (NSC)	<ul style="list-style-type: none"> A secretarial division under the Prime Minister's Department. Its function is to defend the sovereignty and strategic importance of the country, crisis and disaster management, and border, maritime, and airspace control. NSC's Directive 20 enables the council to determine appropriate policies and mechanisms to prepare for an event of flooding and to coordinate national relief efforts as the disaster unfolds. Other functions include prevention and mitigation, preparedness, response, recovery and reconstruction. This involves coordination and creating public awareness of the risk of natural disasters.
The National Disasters Management and Relief Committee (NDMRC)	<ul style="list-style-type: none"> The NDMRC and its various state and district level committees, coordinates various government agencies and NGOs to manage a disaster. During December 2014 floods, the committee was chaired by Deputy Prime Minister Tan Sri Muhyiddin Yassin. The committee activates the National Flood Crisis and Disaster Relief Machinery (NFDRM) under the National Crisis and Disaster Management Mechanism (MCDMM), which reacts to an event of flooding.
The Department of Irrigation and Drainage	<ul style="list-style-type: none"> The agency responsible for national flood mitigation programs but is not meant to handle the actual crisis as it unfolds. Plays a supporting role by providing real-time updates on flood occurrence via http://infobanjir.water.gov.my.
Department of Meteorology	<ul style="list-style-type: none"> Responsible for providing the public with weather reports, predictions, and adequate warnings

WEAKNESSES IN CURRENT SYSTEM

i. Lack of Focus^{2,9-11}

Current measures are reactionary, rather than preventive. Present mechanism functions as a top-down approach but relies on its on-site district agencies to relay real-time data to the NSC* before the NDMRC** is activated. As a result, there is oversight in readiness as well as lack of relief materials and equipment. (ie. Inability to provide clean drinking water or generate electricity for healthcare services).

*NSC – National Security Council

**NDMRC – The National Disasters Management and Relief Committee

ii. Inadequate Standard Operation

Procedures^{8,9,11-13}

Certain agencies were ill prepared and unsure of what to do. A more detailed flow map must be devised to ensure all stakeholder know exactly what roles and responsibilities they play, as well as their scopes and limitations.

iii. Ineffective Flood Forecasting and Warning Systems (FFWS) and delayed evacuation response^{8,12,13}

Despite availability of various flood forecasting instruments and high-tech equipment (ie. weather radar and satellites) the evacuation process was sluggish. Many victims caught by rapid rising water levels. It shows lack of communication between FFWS and agencies conducting rescue efforts.

iv. Lack of Coordination^{11,14}

Agencies and NGOs duplicating relief efforts. The NDMRC should play its role more effectively as the authorised committee to manage and coordinate all stakeholders involved.

v. Politicisation of Relief Efforts^{2,11,14}

Aid relief efforts must not be politicised. This includes non-cooperation between certain areas due to political differences, such as not allowing relief items to reach victims because it came from another party.

vi. Lack of Post-Recovery Plans and Infrastructure^{10,11}

Improve flood forecasting and warning systems to enable stakeholders to prepare for floods before they occur. Review current infrastructure to assess its capability, particularly early warning weather satellites and radar, which received little to no exposure of contribution to forewarn the public of floods. Possible that data is available, but not been effectively communicated amongst the various agencies (Meteorological Department, Department of Irrigation and Drainage, and Malaysian Remote Sensing Agency)

State Governments should also form a body for Integrated River Basin Management (IRBM). A local example is Selangor's Waters Management Authority (LUAS). The objectives of such a body is to provide overall guidance, establish priorities, and be a focal point management to concerns of all stakeholders.

ii. During Flood

Establishment of specialised agency to deal specifically with natural disasters. A nearby example would be Indonesia's National Agency for Disaster Management (BNTP). Such an agency can focus on emergency and relief preparation, procurement, and housing of needed assets (food stocks, electricity, fresh water), and other needed functions which will eliminate any oversights made by the NSC or the NDMRC. Also, it is necessary to review of existing flood mitigation mechanisms and effectiveness of such infrastructure must be carried out on an annual basis.

iii. Post Flood

After floods, efforts move towards the recovery and reconstruction of the lives of victims. It is recommended for establishment of an agency tasked to determine the distribution of relief materials to affected victims rather than the non-permanent committee members of the NSC, which can also act as the "governing body" for the NGOs and supporting actors involved, rather than having each running on their own. This will enable speedier recovery efforts for the otherwise homeless victims who can focus on rebuilding their lives, rather than needing to worry about accommodation and security.

RECOMMENDATIONS^{7,8,12,15-17}

i. Preventions

Numerous studies have been undertaken by local and international organisations to mitigate and manage flood occurrences, such as the Sphere Standards - a comprehensive plan for preparation, prevention, early warning, evacuation, and post-flood recovery. Also see Introduction to Hazards by U.N.'s Disaster Management Training Programme's (DMTP).

CONCLUSION

In conclusion, the best path forward for future management is clearly disaster prevention/mitigation and preparedness, because if these two stages are successfully managed, the burden of the next stages will be minimized.

In addition, various agencies responsible for the flood management and their collaboration are essential to ensure each phase will be carried out in the best possible way.

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