CPPS Policy Fact Sheet: Malaysia's Flood Management

This factsheet reviews existing disaster management mechanisms and readiness for follow up response by the various Malaysian authorities.

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

Background

Malaysia is prone to annual flooding while experiencing a major flooding event at least once every five years where multiple states are affected. Towards the end of the year, northeast monsoons cause massive heavy downpours of rain, particularly in the eastern states. Such is the frequency of floods that traditional stilt houses are often constructed along coastlines and rivers.

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

Despite various preparations, present countermeasures remain insufficient as experienced during the December 2014 – January 2015 flood crisis, where close to 250,000 residents were displaced. It is in the general interest of all stakeholders to minimise the effects floods inflict on Malaysian residents, not only due to its disruptiveness to the livelihood of its victims, adverse environment and health effects, and various causes to individual victims suffering from the catastrophe, but also due to the massive cost involved in the redevelopment of infrastructure. Therefore, minimising flood occurrences would ultimately be more cost efficient for all stakeholders, primarily the taxpayers, especially in areas where floods occur on a consistent basis.

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.

Flash Points

- Floods occur on a consistent basis due to the northeast monsoons and typhoons which affect both Peninsula and East Malaysia.
- There are three flood types, (1) flash floods, (2) river floods, and (3) coastal floods.
- Floods damages have cost up to an average of RM100 million annually.
- At least 476 deaths since 1996 – an average of 60 deaths per year.
- Government assistance – a victim receives RM500 in flood relief assistance. This amount could be reviewed to RM2,000 in light of the December 2014 floods.
- Floods have a negative impact on economies and general society.

Causes

Natural:

- Heavier than usual downpours of monsoon rains
- The perigean spring tide (caused by the proximity of the moon to Earth)
- La Nina Effect

Man-made:

- Poor drainage and/or clogging due to foreign debris
- Lack of adequate infrastructure to moderate the flow of water
- Settlement on floodplains
- Urbanisation
- Uncontrolled logging and lack of land management
- Accumulation of sand along rivers and/or at water mouth due to agricultural or construction

Photo credits: The Star

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 Lumpur. 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 systems.

(Photo and image credits: National Security Division, Chris Vincent, Seow & Ariffin, Free Malaysia Today, & Pradhan)

Key Stakeholders

National Security Council (NSC)	• 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)	• 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	• 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	• Responsible for providing the public with weather reports, predictions, and adequate warnings

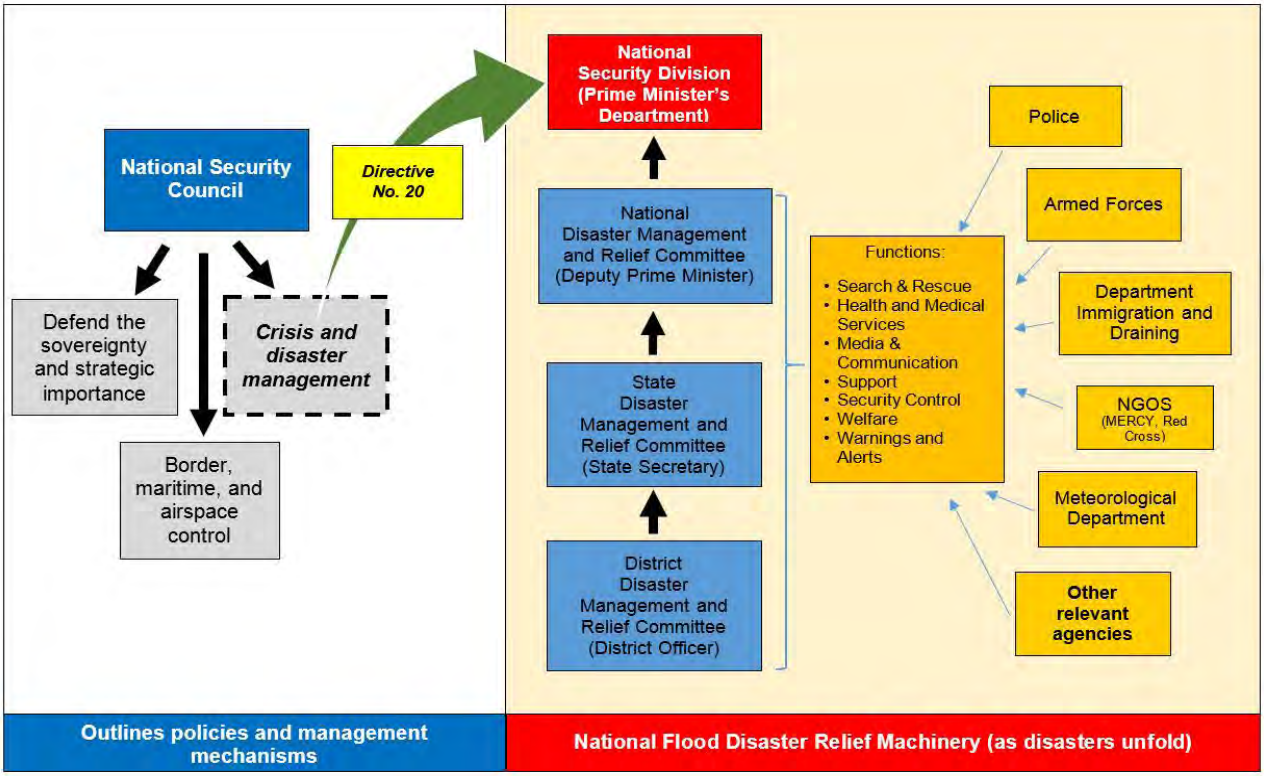
Malaysian Remote Sensing Agency (MRSA)	• Operates satellites via National Disaster Data and Information management system (NADDI).

Law and Legislation for Flood Mitigation

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

- **National Land Code 1965** enables the National Land Council to ensure States comply with the Land Code which includes flood mitigation, whereby water bodies (rivers, drains, or ponds) must be provided with reserves through a land acquisition process.
- **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.

Malaysian Flood Relief Management Mechanism



Adapted from: National Security Council (2015)

Malaysian Flood Crisis December 2014 – January 2015

Note: Focus will be given on Kelantan due to the wide availability of information of the event in the state.

- Confirmed by NSC to be worst floods experienced in Kelantan (in-terms of destructive force).
- Water levels exceed record heights - Sungai Kelantan at Tambatan DiRaja reached 34.17 metres compared to 29.70 metres in 2004 and 33.61 metres in 1967,
- Levels in Tangga Krai reached 7.03 metres compared to 6.70 metres in 2004 and 6.22 metres in 1967 (Azlee, The Malay Mail, 2015).
- At its height, 232,912 victims were evacuated, approximately 160,000 from Kelantan alone.
- Estimated repair cost expected to exceed several billion ringgit in expenses, more than 10 times more than the usual amount.
- Prime Minister Najib Tun Razak accused the Kelantan government's poverty eradication programme "Ladang Rakyat" of which 5960 hectares were cleared as the primary cause of the state's woes.
- The NSC attribute the flooding to changing climatic patters and adverse weather effects and uncontrolled land management.
- Kelantan Menteri Besar Ahmad Yakob blames illegal logging and land clearing.
- Climatologist deny overdevelopment as the cause of floods noting that affected states were bit as developed as the western states. Instead, they attribute floods to natural causes such as the perigean spring tide caused by the moon's gravitational pull which prevent river waters to flow into the sea, and the La Nina Effect.

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Weaknesses in current system

The flood situation revealed several shortcomings with the present flood relief management mechanism:

Lack of Focus

- NSC's functions are too broad, as it also focuses on defence and national security
- NDMRC (and its state and district level bodies) is a temporary committee which only convenes before the monsoon season to coordinate flood preparedness.
- Coordinating various agencies is a good start, but is insufficient as committee members of NSC and NDMRC, in practice, would not be focusing on a deliberate effort to improve flood relief mechanics and responses.
- Current measures are reactionary, rather than preventive.
- Current mechanism functions as a top-down approach, but relies on its on-site district agencies to relay real-time data to the NSD before the NDMRC is activated.
- Result: Oversight in readiness - lack of relief materials and equipment. (ie. Inability to provide clean drinking water or generate electricity for healthcare services.)

Lack of Coordination

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.

Dissemination of Information

- NSC website at http://portalbencana.mkn.gov.my/Portal should have been the central source of disaster information – but ineffective in relaying meaningful information. I was outdated, overly brief, irrelevant, complicated layout.
- In contrast: Public Works Department website at http://bencanaalam.jkr.gov.my has effective real-time solution public – ie. specific road closures info and alternative route info.
- General lack of information - leading to unnecessary delays and gaps in communication, slowing down transfer of support and relief items to affected victims in remote areas.
- Recommendation: Assessment teams should be sent to all inhabitant areas to survey the needs of all affected victims and relaying to a central portal.

Inadequate Standard Operation Procedures

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.

Ineffective Flood Forecasting and Warning Systems (FFWS) and delayed evacuation response

- Despite relatively quick rescue response as the floods unfold, early warning has failed to evacuate victims beforehand.
- 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.
- Shows lack of communication between FFWS and agencies conducting rescue efforts.
- Comparison: Philippines predicted Typhoon Ruby trajectory based on satellite images and issued early evacuation notices before Ruby made landfall.
- Review of effectively utilisation of forecasting assets must be conducted by NSC.
- However, the slow response also due to the unwillingness of residents to abandon homes and belongings.

Politicisation of Relief Efforts

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

Lack of Post-Recovery Plans and Infrastructure

The system is also ill-prepared to handle post-flooding catastrophes. Although budgets have been allocated and plans devised, actual preparations have not been made until after the disaster occurs. Ultimately, flood victims are left stranded and will suffer the long-term effects, particularly those whose homes and business have been destroyed.

Role of NGO's and Supporting Actors

The disaster demonstrated the invaluable role NGOs can play in disaster situations. Most Malaysians are sympathetic towards affected victims and would like to play a part in relief efforts. Hence, NGOs provide an effective means to channel the support. The crisis also saw participation of non-NGO groups such as associations and societies (ie. university student bodies, sports groups), religious institutions, business', and political-based organisations.

The NSC or NDMRC could come up with ingenious, or even creative ways to integrate on-the-ground data from volunteers and NGO groups, such as using the means of social media, which has undoubted played a major role in publicity and appeal efforts. Various agencies particularly the NSC must further enhance coordination and collaborative efforts with NGOs to facilitate more effective means of assistance for future floods as well as to minimises competition, confusion, and conflict.


Photo credit: MRCS

A sample of organisations which provided assistance during the floods were :

Organisation	Assistance Rendered	Type of Organisation
Red Crescent	Fund Raising, In-Kind, Delivery/ Distribution, Clean up & Support	Aid and Welfare NGO
Mercy Malaysia	Fund Raising & In-Kind	Aid and Welfare NGO
INSAF Malaysia	Healthcare Assistance	Aid and Welfare NGO
Malaysian Integrated Medical Professionals Association (MIMPA)	Healthcare Assistance	Aid and Welfare NGO
Dapur Jalanan	In-Kind	Aid and Welfare NGO
Crisis Relief Services & Training	Fund Raising	Aid and Welfare NGO
Angkatan Belia Islam Malaysia (Abim)	Fund Raising & In-Kind	Faith-based NGO
Ikram	Fund Raising & In-Kind	Faith-based NGO
HIS Team	Fund Raising & In-Kind	Faith-based NGO
Sathya Sai Council Malaysia	Blood drive	Faith-based NGO
Jaringan Orang Asal SeMalaysia (JOAS)	Fund Raising & Packing	Community/Interest-based NGO
Kelab Peminat Kereta Mini Malaysia	Fund Raising	Community/Interest-based NGO
Centre For A Better Tomorrow	Fund Raising, In-Kind, Delivery/ Distribution, Clean up & Support	Community/Interest-based NGO
CCM Pharmaceuticals Sdn Bhd	MEDICAL SUPPLIES	Business
Firefly Airlines	Airlift – Donated seats & cargo transfer	Business
Weststar Group of Companies	Airlift – Provided helicopters	Business
National Blood Bank	Blood drive	Business
Universiti Malaya	Healthcare Assistance	Student Body
Universiti Kebangsaan Malaysia	Fund Raising, In-Kind, Delivery/ Distribution, Clean up & Support	Student Body
Universiti Malaysia Perlis	Clean up & Support	Student Body
Malaysian Universities Volunteers Council (Maskum)	Clean up & Support	Student Body
Bersatu Demi Johor	In-Kind	Sports Association

NGOs have also shown the potential of generating wider international attention – international chapters appealing to members in other countries, such as the case of the International Red Cross and Red Crescent Societies which were able to easily mobilise financial assistance internationally.

The disaster demonstrated the invaluable role NGOs can play in disaster situations. Most Malaysians are sympathetic towards affected victims and would like to play a part in relief efforts. Hence, NGOs provide an effective means to channel the support. Such groups include Mercy Malaysia, Red Crescent, IKHLAS, Yayasan Sukarelawa Siswa (YSS), Malaysian Medical Relief Society, WorldVision, and countless others. Participation of non-NGO groups such as associations and societies (ie. university student bodies), religious institutions, corporations, and political-based groups were also actively involved.

Flood Relief Items Typically Requested

- Common items requested were the following:
- Infant care: Baby formula and diapers
- Hygiene: Soap, toothbrush, toothpaste, toilet paper, Dettol, etc.
- Medication: Paracetamol (tablets and syrup), cough mixture
- General food items: Rice, flour, cooking oil, salt, sugar, etc.
- Canned food: Sardines, baked beans, curry chicken, etc.
- Cooking utensils: pots, pans, wok, ladles, portable gas stoves, etc.
- Reconstruction items: Nails, hammers, parang (machetes), saws, etc.
- Clothing, blanket and towels
- Financial donations

Note: List adapted from various sources.

Recommendations

Prevention

- 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).
- 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.
- Collaborative efforts between these agencies must go under review, namely:
  - Meteorological Department
  - Department of Irrigation and Drainage
  - Malaysian Remote Sensing Agency
- A centralised agency is needed to monitor data from the above three agencies to determining an appropriate responses which require NSC's action.
- In essence, there is a need to translate data from the three agencies into meaningful action.
- State Governments should 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.

Photo credit: Saw Siow Feng & Malaysian Insider

Photo: NSTP/ASWADI ALIAS

During Flood

The Malaysian government is in need of a 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, such as water purifying units (which Malaysia did not have and borrowed from Singapore), ensuring food stocks in relief centres can last at least several months, providing sufficient fuel to generate electricity, acquire helicopters and other amphibious means of transport to transferring crucial supplies and personnel, and other needed functions which will eliminate any oversights made by the NSC or the NDMRC.

A review of existing flood mitigation mechanisms and effectiveness of such infrastructure must be carried out on an annual basis. It is also recommended that relevant agencies test their preparedness by conducting regular flood drills months before the start of the monsoons.

Post-Flood

After floods, efforts move towards the recovery and reconstruction of the lives of victims. In the short-term, a BNTP-like agency would be more appropriately 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. Such an agency will also be responsible for the construction and procurement of temporary housing for affected victims whose homes were destroyed until a more permanent arrangement can be found. 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. This will allow the NSC to focus on more crucial matters, such as assessing the amount of damage and appropriating funds for crucial repairs to key infrastructures such as to roads, power plants, schools, hospitals, and other public installations in order to enable the situation to return to normal in the long-term. Overall, the above recommendations will better facilitate the realisations of the aims set forth in Direction 20.

Other Recommendations

Allegations of malpractice, particularly on illegal logging and other land clearing activities must be investigated by the relevant authorities to discourage such practices from continuing. Despite approvals from the various departments on agricultural and urbanisation works, a reassessment is much required as it is evident that presents works may have contributed to increase flooding instances. Such assessments also need to examine if laws and legislations have been breached by local, state, or even federal authorities, of which appropriate and harsh action must be taken against such malpractice.