CHALLENGES IN FLOOD DISASTERS MANAGEMENT IN MALAYSIA

By

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(1) Introduction: Overview on Disasters in Malaysia

Malaysia is a very fortunate country because:

- It lies geographically just outside the “Pacific Rim of Fire”. Hence, it is free from volcanic eruptions and earthquakes
- It also lies too far South of the major typhoon paths, although tail-ends of tropical storms have occasionally hit it
- However, that does not mean Malaysia is totally “Free” from natural disasters and calamities, as it is often hit by the following:
- (i) flood
- (ii) drought
- (iii) landslide
- (iv) haze
- (v) tsunami
- (vi) human-made disaster

Recent Occurrence of disasters

- Increase in extreme weather and climatic events, ranging from freak thunderstorms to monsoonal floods in recent decades have caused severe losses in the country
- Monsoonal floods are an annual occurrence which varies in terms of severity, place and time of occurrences with a recent 2010 flood in Kedah and Perlis being among the worst flood ever experienced by the country. The total economic loss and the financial burden on the government were enormous.
- Haze in 1997/98 also caused significant losses due to loss of tourist income, health effects, mitigation losses.
- Tsunami in 2004 was very severely felt.
- Landslides also caused significant loss of life, property and infrastructure damage and anxiety
- Man-made Disasters - The country is also hit by some man-made disasters, which caused considerable damage to properties and loss of lives.

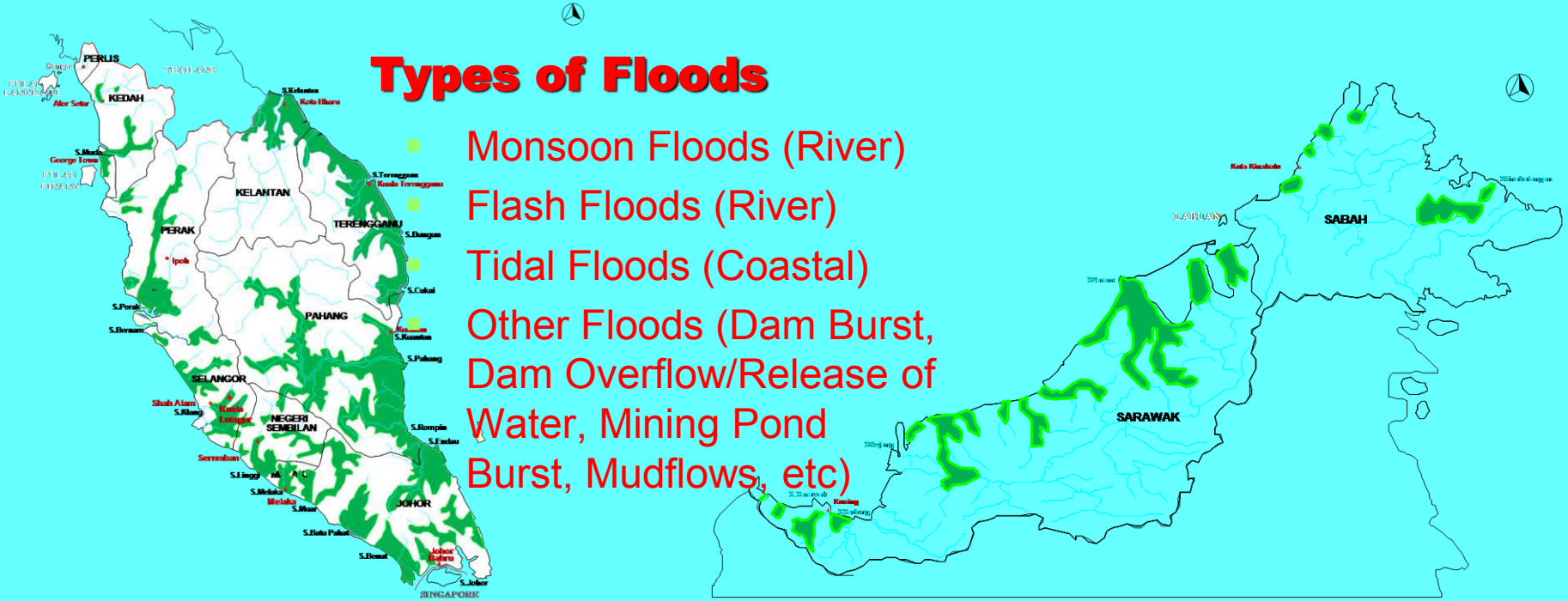
Table 1: Disaster Incidents in Malaysia

Date/Year	Incident	Natural, Human-made or Combination	Property, Material, Crop or Other Losses (Ringgit)	Number of Deaths
1926	Flood known as "The storm forest flood"	Natural	Thousands of hectares of forests destroyed	NA
19 October 1968	Collapse of Four-Story Building – The Raja Laut Tragedy	Human-made		
1988	Sultan Abdul Halim Ferry Terminal Collapse–Royal Inquiry	Human-made	Millions	32 (1674 Injured)
1991	Bright Sparklers-1991Fire (Royal Inquiry)	Human-made	Millions	22 (103 Injured)
21 June 1992	Choon Hong III oil tanker explodes and burns (Royal Inquiry)	Human-made	Millions	10
1992	Fire and explosions at South Port Klang	Human-made	Millions	10
December 1993	Collapse of Highland Towers apartments	Human-made	Tens of Millions	48
June 1993	Genting Highlands Landslide	Combination	Millions	20
29 August 1996	Pos Dipang landslide-mudslide/Floods	Combination	NA	49
December 1996	Floods brought by Tropical Storm Greg in Keningau (Sabah State)	Combination	300 million (4925 Houses destroyed)	241
1997	El Nino in 1997 which led to severe droughts, forest fires & haze	Combination	Millions in lost tourist revenue, health costs & business losses	
June 1999	Japanese Encephalitis Virus Outbreak	Combination	Millions (Culled Pigs)	NA
February 1999	Landslide at Sandakan, Sabah	Combination	Millions	17
2000	Floods caused by heavy rains in Kelantan and Terengganu	Combination	Millions	15
December 2004	Asian Tsunami	Natural	Millions in Lost Revenues	
November 2002	A luxury home collapsed in Ulu Kelang area	Combination	Millions	8
November 2002-May 2003	Severe Acute Respiratory Syndrome (SARS)	Combination		
2003-2007	Avian Influenza 2003 -2007	Combination	NA	NA
2005	Haze	Combination	NA	NA
December 2006 & January 2007	Floods in Johor State	Combination	1.5 Billion	18
2008	Floods in Johor State		65 Million	28
2010	Floods in Kedah and Perlis	Combination	26 Million (Aid alone)	4
2011 & 2012	La Nina in 2011 and 2012 (which brought floods)	Natural	NA	-
Dec 2014	Severe Floods in East Coast States of Kelantan, Pahang, Terengganu	Combination	MYR2.9bil	200,000 people affected while 21 killed on the flood

Flood Disaster Risk in Malaysia

- Flood-prone Country: Malaysia is very prone to flood risks, mostly by nature of its physical geography (e.g. topography and drainage) & human geography (e.g. settlement and land use).
- Various Flood Types: A combination of natural & human factors produced Monsoon, Flash & Tidal floods (Chan, 1998b).
- Riverine People: Malaysians are historically a riverine people as early settlements grew on the banks of major rivers.
- Floods is a Way of Life: Heavy monsoon rains, convection rain storms, poor drainage and other local factors have made floods a common feature in the lives of most Malaysians.
- Flood is a Major National Disaster: Monsoon and flash floods are the most severe climate-related natural disasters in Malaysia, with a flood-prone area of about 29,000 km^2 affecting more than 4.82 million people (22% of the population) and inflicting annual damage of RM 915 million

Flood-prone Areas in Malaysia



Types of Floods

- Monsoon Floods (River)
- Flash Floods (River)
- Tidal Floods (Coastal)
- Other Floods (Dam Burst, Dam Overflow/Release of Water, Mining Pond Burst, Mudflows, etc)

History of Major Floods

- Historically, Malaysia experienced major floods in the years of 1926, 1963, 1965, 1967, 1969, 1971, 1973, 1979, 1983, 1988, 1993, 1998, 2005 and most recently in December 2006/January 2007(Johor) & 2014 (Kelantan, Terengganu & Pahang). The years 2009 & 2010 also saw major floods occurring in Kedah and Perlis, two northern Peninsular Malaysia states that are considered relatively dry.

Flood Causes

- Natural causes such as heavy intense rainfall (monsoon or convective) and low-lying flat terrain are the main causes of flooding – Recently La Nina & Climate Change
- Deforestation reduces the role of forests as natural flood attenuation sources (Chan, 2003; Chan et. al., 2002b).
- Increase in Impervious Surfaces especially in Urban Areas
- Drainage of Wetlands/Swamps for Agriculture
- Loss of Storage Capacity (e.g. change of padi fields to housing/industrial areas)
- Sedimentation of rivers reduces river capacity
- Straightening & Channelisation of Rivers
- Climate Change.

Effect of Urbanisation on Storm Runoff

Increase In Development Area

0 - 40 %

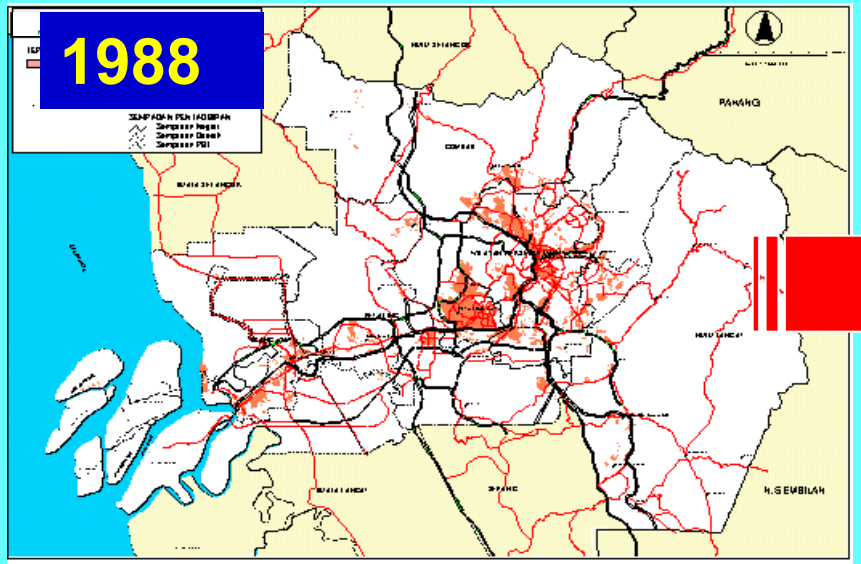
Runoff Quantity

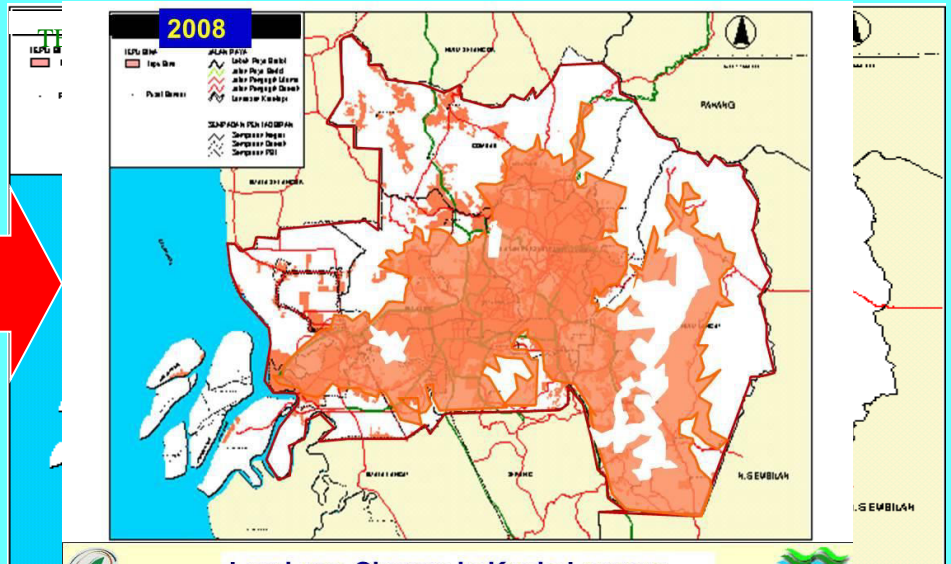
Q ⇒ Increase 190 %

Velocity

V ⇒ Increase 2x

Tc ⇒ 50 % decrease





(2) Methodology

- Secondary Data: (i) Literature Review of Secondary data (ii) Data from relevant government departments & NGOs (iii) Other Documents/Archives
- Primary Data: (i) Interview with Key Informants (ii) The Researcher as a Cultural Insider (iii) Focus Group Discussion

(3) Socioeconomic Impacts of Flood Disasters

2012 ESTIMATES OF FLOOD EXPENDITURE NEEDED

RM40bil needed to check floods

Uggah: Funds and mitigation projects lacking

By **REGINA LEE**
regina@thestar.com.my

PETALING JAYA: A staggering RM40bil is needed to remedy all the flood problems in the country, said Natural Resources and Environment Minister Datuk Seri Douglas Uggah Embas.

However, the Government was still short in flood mitigation projects with only RM2.4bil allocated so far under the 10th Malaysia Plan.

"So, we have to be creative and innovative when dealing with floods," he told reporters after opening a seminar on "Climate Change: Adaptation or Mitigation, Do We Have a Choice?" organised by Centre for Environment, Technology and Development, Malaysia (Cetdem) here yesterday.

The RM40bil estimated cost is supposed to cover the 29,000 sq km flood prone areas throughout Malaysia. That size, which is based on a 2003 study, is only slightly smaller than the total land mass of Kedah and Perak put together.

"But in 2006, 2007 and even last year, we found new areas which flooded easily as the sea level rises every year," he said.

Despite that, Uggah was upbeat about receiving a fair allocation in dealing with floods.

In the second rolling plan, projects have been implemented in parts of Johor, Perak, Kedah, Kelantan, Perlis, Terengganu and Penang.

Parts of Selangor have been identified for flood mitigation projects in the next phase.

Cetdem chairman Gurmit Singh said not all floods were caused by climate change.

"Sometimes the floods are caused by non-functioning drainage system," he said.

On another matter, Uggah said Malaysia was well on the way to achieving a 40% reduction of carbon emissions by 2020 as pledged by Prime Minister Datuk Seri Najib Tun Razak at the 15th Conference of Parties in Copenhagen in 2009.

The Star, 6 June 2012

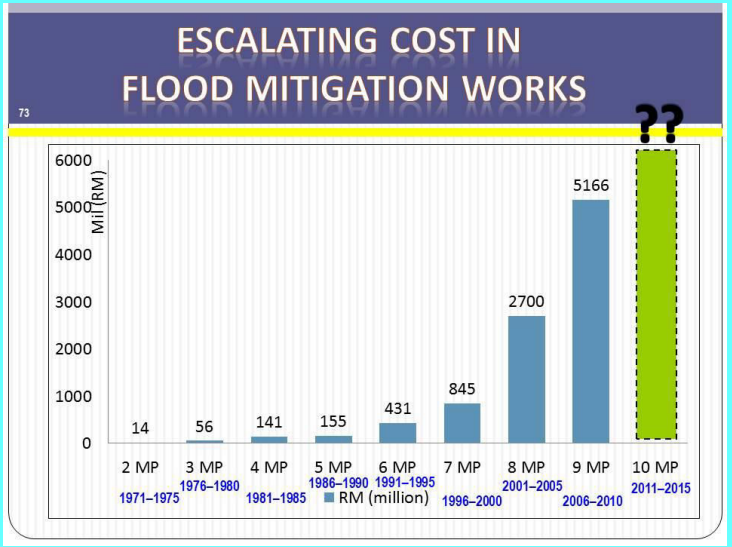
Socioeconomic Impacts of Flood Disasters

- Annual Flood Damage (1982 = RM 100 million (US$26.3 million) But in 2010 = RM915 million)

High Flood Risk & High Exposure = High Spending in Flood Management

Under Malaysia's five-yearly Malaysia Plans for development, the allocations for design and construction of flood mitigation projects account for:

- 1st Malaysia Plan 1966-1970)=RM14 million
- 2nd Malaysian Plan 1971-1975)=RM30 million
- 3rd Malaysia Plan 1976-1980)=RM100 million
- 4th Malaysia Plan 1981-1985)=RM200 million
- 5th Malaysia Plan 1986-1990)=RM300 million
- 6th Malaysia Plan 1991-1995)=RM700 million
- 7th Malaysia Plan 1996-2000)=RM940 million
- 8th Malaysia Plan 2001-2005)=RM2.17 billion
- 9th Malaysia Plan 2006-2010)=RM3.834 billion
- 10th Malaysia Plan 2011-2015)=RM3.6 billion.



Flood Event (Year)	(Place)	Damage (RM million at 1996 prices)	Deaths	No.of Victims Evacuated
1886	Kelantan & Besut Rivers (“Storm Forest Flood”)	Several hundred square kilometers of forest destroyed	NA	NA
1926	Most of Peninsular Malaysia	Damage to natural environment	NA	NA
1954	Johor, Terengganu	Hundreds of acres of padi	2	Thousands
1957	Klang Valley, Selangor	NA	NA	4,000
1965/66	Besut, Kelantan-Terengganu	>30,000 acres of padi destroyed	NA	Thousands
1966	Perlis	NA	1	NA
1967	Kelantan River Basin	221.8	38	320,000
1967	Perak River Basin	171.9	0	280,000
1967	Terengganu River Basin	44.7	17	78,000
1971(December)	Kuala Lumpur	94.2	24	NA
1971(December)	Pahang River Basin	103.6	24	153,000
1979	Peninsular Malaysia	NA	7	23,898
1981	Kelantan State	NA	8	2,740
1982	Peninsular Malaysia	NA	8	9,893
1983	Penang State	0.6	0	NA
1983	Other Peninsular Malaysia	NA	14	60,807
1984	Batu Pahat River Basin	22.6	0	8,400
1984	Kelantan dan Terengganu States	NA	0	Thousands
Dec. 1987	Georgetown, Penang	0	0	Hundreds
1986	Peninsular Malaysia	36.7	0	40,698
1988	Kelantan River Basin	NA	19	36,800
1988	Other Peninsular Malaysia	NA	37	100,755
1989	Johor State	NA	1	Thousands
1989	Kuala Lumpur/Petaling Jaya	0.1	0	220
1991	Other Peninsular Malaysia	NA	11	NA
1992	Peninsular Malaysia	NA*	12	NA
1993	Peninsular	NA	22	17,000
1993	Sabah State	222.6	5	5,000
1995	Shah Alam/Kelang Valley	5.4	1	8,970
1995	Penang State	NA	0	0
1995	Klang Selangor	NA	3	0
1995	Other Peninsular Malaysia	NA	4	14,900
1996	Sahab (June)	>100 houses destroyed	1	9,000
29.8.1996	Pos Dipang, Perak	300.0**	44	Hundreds
1996	Sahab (December)	NA	241***	23,000
30.12.98	Kuala Lumpur	NA	5	0
5-9.1.99	Penampang, Sabah	NA	6	4,481
11.1.99	Sandakan Sabah	NA	3	0
23.11.2000	Kg. La	NA	6	0
Dec. 2001	Kelantan, Pahang, Terengganu	Crop loss & property damage amounting to tens of millions RM; RM2 million texts destroyed	6	>10,000
27.12.2001	Gunung Pulai, Johor	Mudslide swept away 4 houses	5	4 families
31.12.2001	Benut Marang, Terengganu	Crop loss & property damage	4	Thousands
Dec 2006 – Jan 2007	Johor State Kelantan State	1.5 Billion Property Damage 53 Million Damage to Infrastructures	18	110,000
2008	Johor State	65 (Relief Costs)	28	34,000
2009	Kelantan & Terengganu States	NA	NA	12,000

Table 2: Official flood loss estimates for major flood events in Malaysia

Table 2: (Continue)

Date/Year	Incident	Natural, Human-made or Combination	Property, Material, Crop or Other Losses (Ringgit)	Number of Deaths
1926	Flood known as “The storm forest flood”	Natural	Thousands of hectares of forests destroyed	NA
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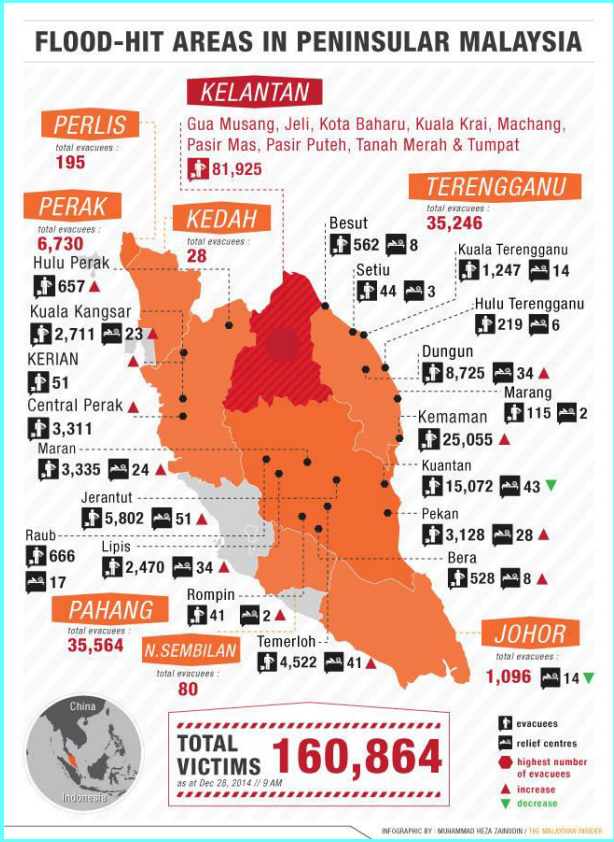


TYPES OF FLOOD LOSSES GO BEYOND DIRECT & TANGIBLE LOSSES

		TYPE OF LOSS	
		TANGIBLE LOSS	INTANGIBLE LOSS
TYPE OF LOSS	DIRECT LOSSES	DESTRUCTION TO BUILDING & CONTENTS	STRESS & LOSS OF LIFE
	INDIRECT LOSSES	LOSS OF WORK & PRODUCTION	DISCOMFORT & SUFFERING DUE TO DISASTER

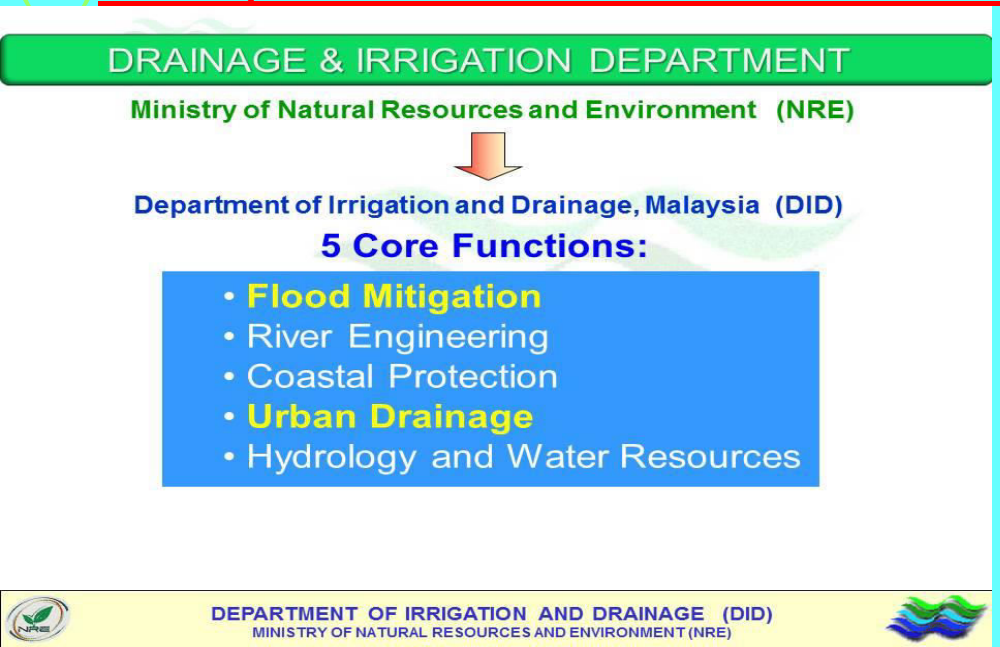
(4) Current Flood Disaster Risk Management in Malaysia

- The Drainage and Irrigation Department's Flood Mitigation Policy and Strategy consists largely of:

(i) Structural measures (e.g. dams and embankments to control flood flows); and

(ii) Non-structural measures (e.g. land use planning and flood forecasting and warning systems to mitigate flood impacts)

(iii) Malaysian Flood Disaster Relief and Preparedness Machinery.



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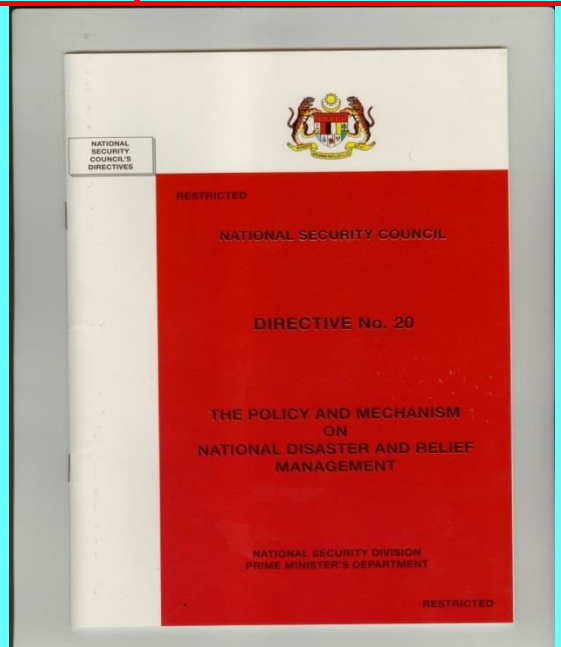


The Malaysian (National) Flood Disaster Relief and Preparedness Machinery

- The Malaysian Flood Disaster Relief and Preparedness Machinery was set up after the disastrous flood of 1971 when the National Disasters and Relief Committee was formed. This committee was entrusted with the responsibility for planning, coordinating and supervising relief operations during floods.

MECHANISM OF DISASTER MANAGEMENT

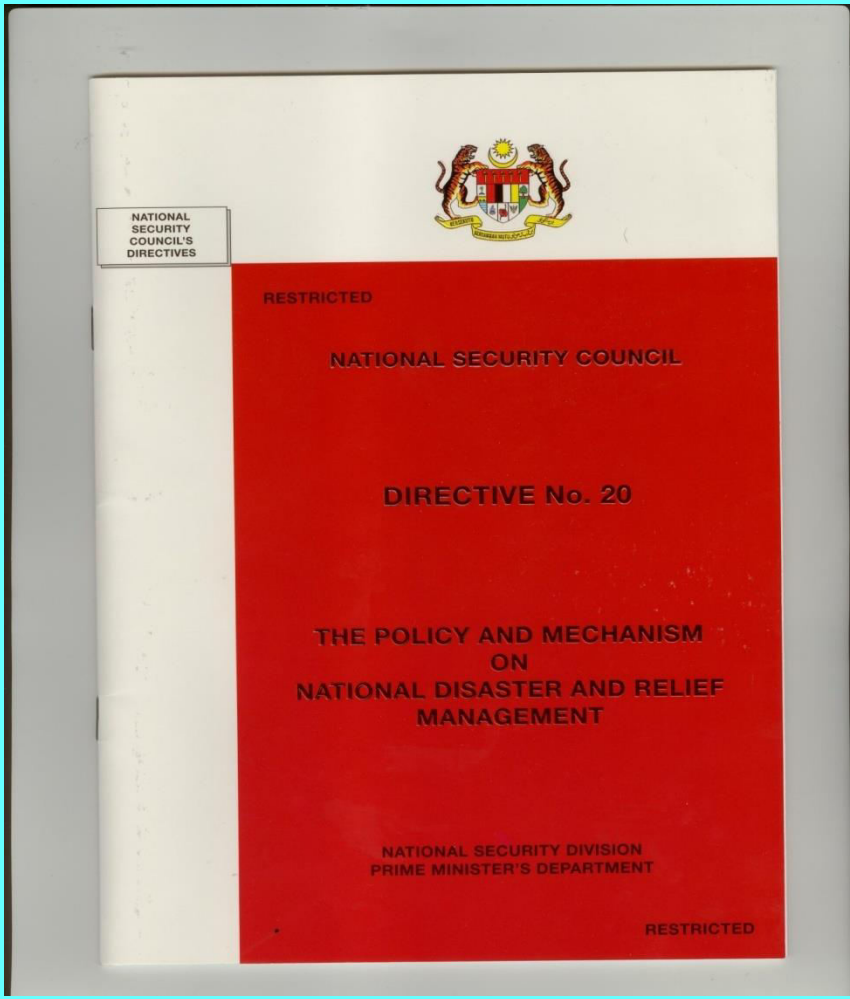
Rescue, Evacuation & Post-Disaster Recovery

- Through the nationwide State Security Committee, police, the armed forces, social and welfare departments and various voluntary organizations, the task of rescuing and evacuation of flood victims to predetermined relief centers could be organized effectively.

Flood Forecasting & Warning System

- The Flood Forecasting and Warning Systems have been upgraded. By 2007, the following infrastructures for flood forecasting and warning systems have been installed: 233 telemetric rainfall stations; 190 telemetric water level stations; 256 manual stick gauges; 84 flood warning boards; 217 flood sirens; real-time flood forecasting and warning systems in nine river basins.

POLICY AND MECHANISM IN THE MANAGEMENT OF NATIONAL DISASTER AND RELIEF IN MALAYSIA IS LARGELY BASED ON: (NSC DIRECTIVE NO. 20)



AIM OF NSC DIRECTIVE NO. 20

NSC DIRECTIVES NO. 20

EXECUTIVE ORDERS BY PRIME MINISTERS

The reduce casualties and minimise damage to properties.

To prevent disasters from spreading.

To coordinate relief and rehabilitation to victims.

To coordinate relief and rehabilitation to victims.

To outline a Policy on Disaster Management and Relief on LAND according to the level of disaster.

To preserve the environment.

To immediately bring back the situation to normalcy.

To establish a Management Mechanism with the purpose of determining the roles and responsibilities of the various agencies involved in handling disaster.

POLICY OF FLOOD DISASTER MANAGEMENT

- To have an integrated system of flood disaster management with emphasis on the concerted and coordinated actions.
- Integrated flood disaster management system means “a combined and coordinated response of the various agencies in the management of flood disaster”.
- Coordinated and concerted actions means “the harmonious integration of all agencies involved with the objective to handle the flood disaster efficiently and bringing the situation back to normalcy”.

a) In order to handle a flood disaster more effectively, **A <u>Flood isaster Management and Relief Committee</u> (FDMRC)** is established at the Federal, State and District Level.

b) The membership of FDMRC is thus extended to include many agencies in order to effectively handle all types of flood disasters - (inter agency and inter sectoral approach in Flood Disaster Management).

Member of FDMRC At Federal Level

Chairman	:	The Honourable Deputy Prime Minister
Deputy	:	Minister of Information.
Members	:	Minister of Finance. Minister of National Unity and Community Development. Chief Secretary to the Government. Chief of the Armed Forces. Inspector General of Police. Director General of Health. Director General National Security Division. Director General Fire and Rescue Department. Director General of Atomic Energy Licencing Board. Director General of Broadcasting. Director General of Information. Director General of Road Transport Department. Director General of Civil Defence Department. Director General of Public Works Department. Director General of Department of Environment. Director General of Social Welfare. Director General of Department of Occupational Safety and Health. Director General of Meteorological Department. Director General of Department of Civil Aviation. Director General of Geological Survey Department. Director General of Drainage and Irrigation Department. Representative of Attorney General. Director of Budget, Ministry of Finance. Director of RELA.
Also Present	:	Other related officers.
Secretariat	:	Director of Crisis and Disaster Management Unit National Security Division Prime Minister's Department.

Member of SDMRC At State Level

Chairman :	**State Secretary.**
Members :	**State Chief Police Officer.**
	Brigade Commander of Armed Forces.
	State Director of Fire and Rescue Department.
	State Director of Health.
	Other Directors of Various Agencies at State Level.
Secretariat:	**Director of State NSD.**

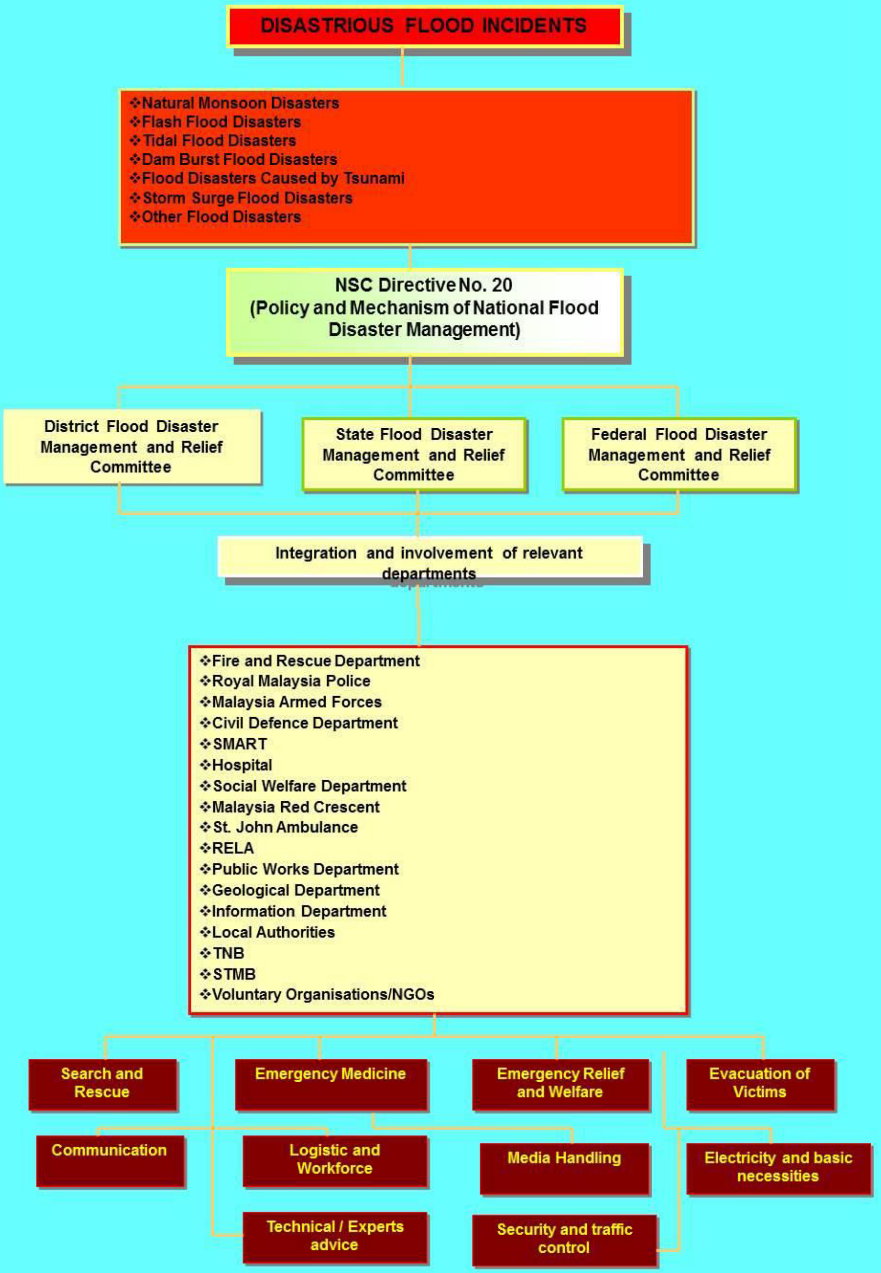
Member of DDMRC At District Level

Chairman	:	District Officer.
Members	:	Officer in Charge of Police District (OCPD).
		District Fire and Rescue Department Officer.
		Representatives from Various Government Departments and Agencies at District Level.
Secretariat	**:**	**Assistant Director of District NSD.**

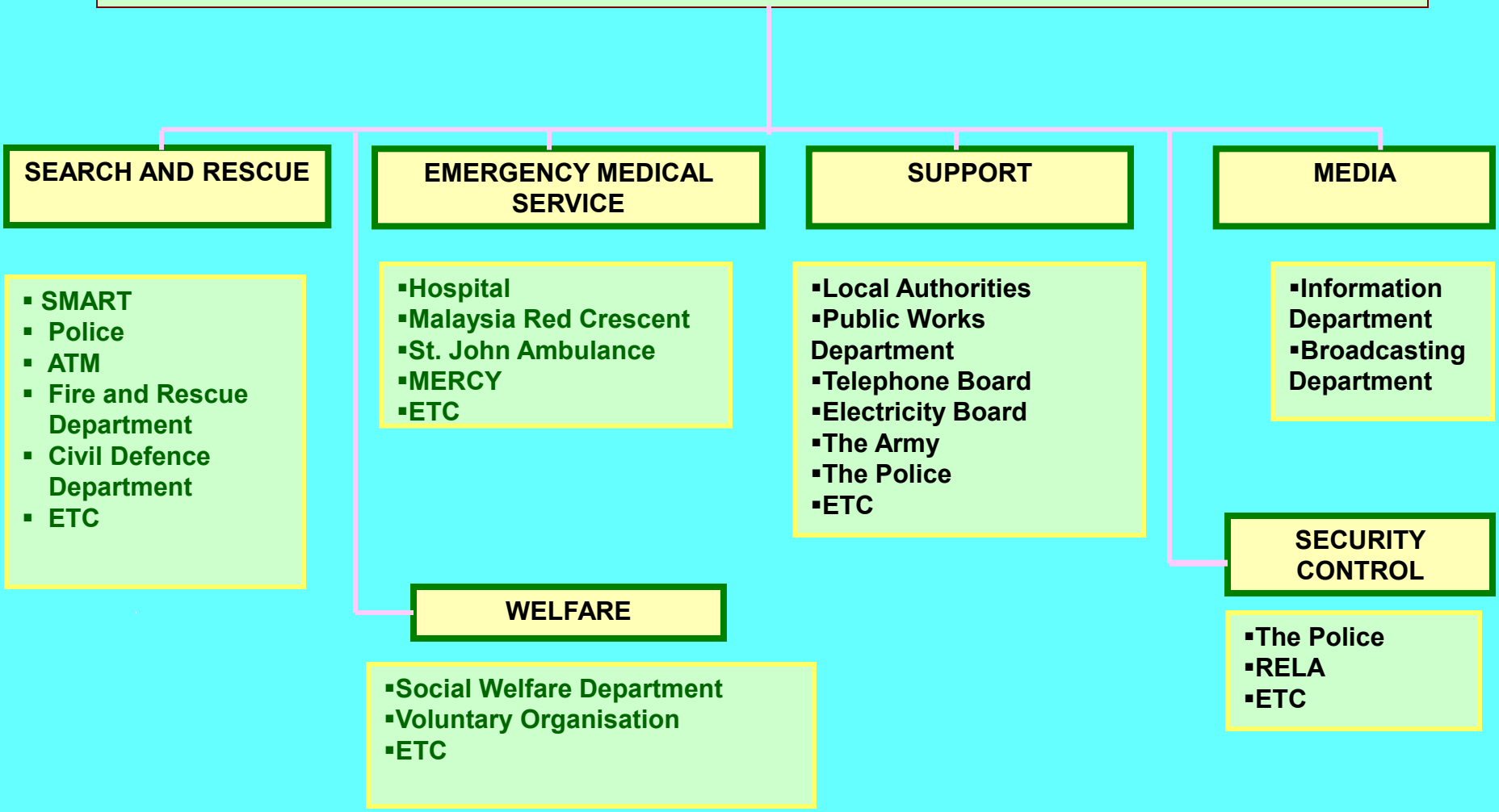
FUNCTIONS OF FDMRC

- **At Federal Level :** To formulate policies and strategies of national flood disaster management.
- **At State and District Level :** To ensure that procedures and plans of actions in flood disaster management are implemented.
- To coordinate the activities of flood disaster mitigation.
- To coordinate and mobilise logistic requirements from Government and private sectors for flood disaster operation.
- To formulate and implement flood disaster awareness and education.
- To coordinate flood disaster drill and exercise.

HANDLING OF FLOOD DISASTERS



AGENCIES' ROLES AT FLOOD DISASTER SITE



(5) Challenges in Flood Disaster Management

(i) "The Politisation of Flood Disasters".

- In Malaysia, almost everything is linked to politics. Flood disaster management is also closely linked to politics. Flood disasters are depicted as a context of framing and blaming as politicians with some skill turn flood disasters from a threat into an political opportunity(Boin et. al., 2009).

EXAMPLES

- 12 April 2012, an opposition party leader led some 200 Klang residents to stage a protest in front of the Selangor State Secretariat building, demanding that their flood damage compensation money to be increased to RM800. The group claimed that the RM500 received from the Selangor government was inadequate.

- In 2007 when Johor was ravaged by floods, Johor Mentri Besar Datuk Abdul Ghani Othman blamed the devastating floods on Singapore's land reclamation at Singapore's Pulau Tekong island, but Singapore's Ministry of National Development responded with the statement "The comments are unfounded" as results from technical studies commissioned separately by both the Malaysian government and the Singapore government had not proven this claim.
- 1 April 2012 - Selangor United Malays National Organisation (UMNO) deputy chief Datuk Seri Noh Omar blamed the Selangor State's ruling Pakatan Rakyat's (PR) poor flood mitigation works for floods in the state (Utusan Malaysia, 1 April 2012).

2014 Kelantan flood – PM Najib promises to give Aid

Intervention By HRH Kedah's Sultan Abdul Halim

- 5 Nov 2010 - Federal Minister for Housing and Local Government and Alor Setar MP criticised the Kedah State government (led by the opposition Pan-Malaysian Islamic Party) for its slow response to the floods (Bernama, 5 November 2010).
- In response, Kedah's Chief Minister Azizan argued that his government's response had been "quick" and that 300,000 ringgit in aid had been committed to the affected areas (New Straits Times, 2010).
- Royal Intervention - Kedah's Sultan Abdul Halim called publicly for politics to be set aside for the purposes of dealing with the floods (The Star, 2010).

Selective Flood Aid

- A study by Chan (1995) showed that political parties had their own agendas as they helped only those flood victims (in their constituencies).
- It is not uncommon to find Malay Political parties chaneling their aid into Malay areas, Chinese political parties focussing their efforts in Chinese majority areas & Indian political parties targetting the affected Indian areas.
- Choosing to help victims by their political convictions or support goes against all the rules in disaster management, but thankfully the Disastrous 2014 Kelantan flood saw all parties helping all victims irrespective of the politics.

(ii) Mediasation of Floods

- The media is a potent force in disaster management. The media can either help address a disaster or make it worse.
- According to the Thomas Theorem: “If the media define a situation as a disaster or a crisis, be sure that it will indeed be a disaster or a crisis in all its consequences” (Thomas and Thomas, 1928).
- In Malaysia, mediasation, the media can either use a disaster for outright sensationalism, or it can self-impose censorship making it “unimportant”.
- The media can also apply pressure on politicians and decision makers to explain and justify the occurrence and impacts of the disaster to the public.

(iii) Public Apathy & Lack of Awareness

- Lack of awareness towards donating and volunteering to flood disasters is another constraint that impedes advancement of disaster management, especially towards engaging the public and giving the public a more active role.
- Government's Problem: Malaysians have developed this conception that disasters are the responsibility of the government.
- Lack of Volunteerism: Few Malaysians would volunteer in social work. This is a constraint that limits the effectiveness of volunteer groups such as MERCY, Red Cross and Red Crescent. Asking Malaysians to donate money or even clothes/food to disaster organizations is a difficult task.
- Apathy: Malaysians hardly donate towards flood disaster aid simply because they feel that is not their responsibility. They feel that it is the responsibility of the government.

(iv) Erosion of Social Capital

- In the past, social capital as manifested by kinships and family bonds have been a strong factor in helping victims cope with and recover from flood disasters. This factor is all the more important when government aid is not forthcoming to the victims.
- However, out-migration from families due to the search for jobs in cities has, among other reasons, broken down the extended families. Consequently, families have lost the one thing that protects them from being totally devastated by flood disasters, i.e. the social bonding and self-reliance that has made them resilient all these years.

(v) Poor Capacity & Resilience

- Over-relience on Aid has weakened communities rendering them unable to respond rapidly/effectively to flood disasters and to cope with them.
- Vulnerability – Victims are highly vulnerable and are unable to protect family and property, and to deal with the immediate damage and effects caused by floods.
- Slow Rehabilitation – Results in interventions needed at local level and outside Initiatives after a disaster to restore a stricken community to normal living conditions.

(vi) Empower NGOs Via a Horizontal Approach

- Give Non Government Organization (NGOs) a greater role. The example of MERCY, Red Cross and Red Crescent are exemplary in helping the Malaysian government address floods & other disasters, especially in the emergency, rescue and recovery phases of a disaster.

(vii) Emergence of Compound Disasters

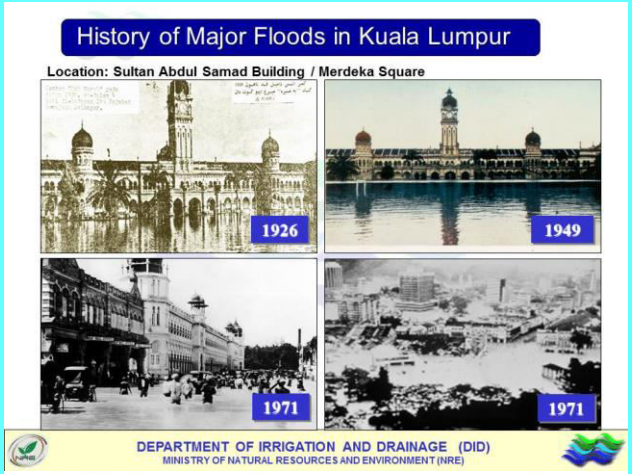
- Alarmingly, disasters in the modern world is a complex mixture of natural and human-made inputs. Often, when two or more disasters collide, they change into "Compound Disasters" or can evolved into a totally different category of disasters. A good example is when the Asian Tsunami not only flooded the west coast of Penang but also caused contamination of water supply. This is a challenge that the Malaysian Government needs to be aware of. Related to this is the mutation of disasters, as if disasters were something "alive". Disasters mutate in form in response to population growth and urbanization, economic growth, globalization of commerce, and technological advancement. The challenge is how to contain individual disasters and stop them from becoming "Compound Disasters".

(viii) Global Warming Exacerbate Floods

Escalation of Flood Frequency in Kuala Lumpur

Period	Year of Occurrence	Number of Occurrence
Before 1950	1926, 1949	2
1970s	1971	1
1980s	1982, 1986, 1988	3
1990s	1993, 1995, 1996, 1997	4
2000 to date	2000, 2001 (2x), 2002, 2003, 2006, 2007 (2x).	8

DEPARTMENT OF IRRIGATION AND DRAINAGE (DID)
MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT (NRE)



- Global warming will change the hydrological regime. What a 100-year flood in the past may be in fact only a 1:50 year flood in the future.
- Mega-flood is a distinct possibility in the near future as temperature rises, evaporation rates increase and storms get bigger, and monsoons get stronger.
- Rapid Urban Sprawl - growth of cities and population will see the emergence of mega cities and mega-populations. These are the conditions that will foster the emergence of a mega-flood.

NEED TO IMPROVE FLOOD PREPAREDNESS

- ✓ Flood Disaster Management Agencies should have Standard Operating Procedures (SOPs) that should be reviewed and updated from time to time.
- ✓ Enhancement of Flood Forecasting Systems & Flood Warning Systems.
- ✓ Improvement in communication systems for effective Flood disaster handling.
- ✓ Improve and Update Flood Database on resources/ equipment & continuously upgrade them.
- ✓ Increase Flood Awareness & Education.

IMPROVE FLOOD RESPONSE

- ✓ To mobilise search and rescue teams and supporting personnel and relief resources to disaster scene immediately.
- ✓ To Provide International SPHERE Standard Services

STRENGTHEN RECOVERY

- ✓ Reconstruction of essential utilities, services, relief centres and houses.
- ✓ Enhance Medical and health care for victims.
- ✓ Flood Insurance to be developed.
- ✓ Relief Assistance/Aid to victims Versus Social Capital.

- STOP THE POLITISATION OF FLOODS
- STOP THE MEDIASATION OF FLOODS
- EMPOWER NGOS VIA ENGAGEMENT OF ALL RELEVANT STAKEHOLDERS
- **Flood Management in the Context of Sustainable Development**
  - Floods are manifestations of Unsustainable Development
  - All Development must consider flood management as an integral part of any development plan
  - Flood management must be given high priority in the government's development agenda

THANK YOU

By

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