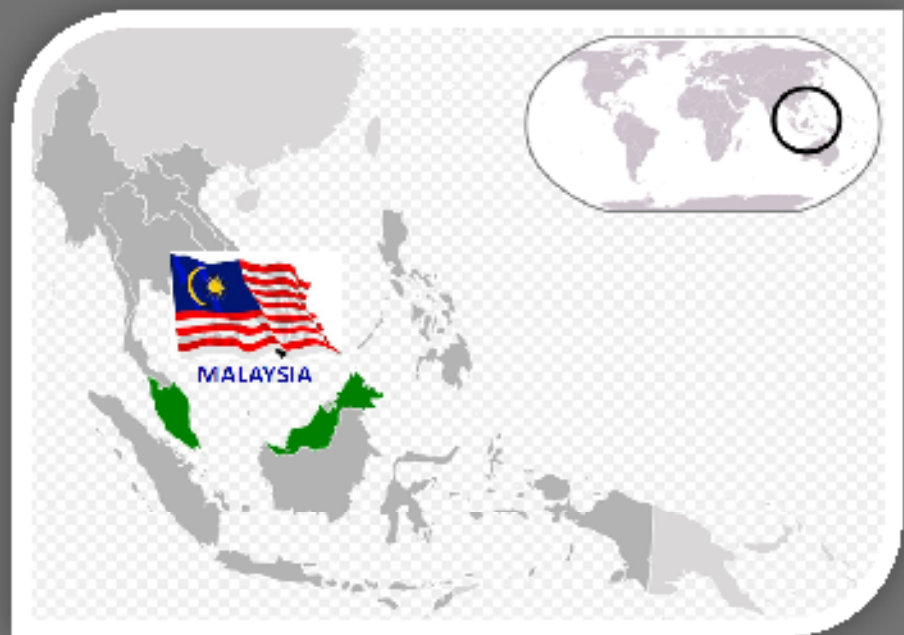


2010

# MALAYSIA

## COUNTRY PROFILE



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3/10/2010



## COUNTRY PROFILE

### 1. GENERAL INFORMATION



**Area:** 329,758 sq km (127,317 sq miles)

**Population:** 27.5m (2008)

**Capital City:** Kuala Lumpur (population: 1.5m); Putrajaya (Administrative Capital).

**People:** Bumiputra (mostly Malays) (66%), Chinese (25%), Indians (8%), Others (1%)

**Languages:** Bahasa Malaysia (Malay) is the national language. Other languages include Chinese, Tamil and Iban. English is widely used.

**Religions:** 55% Muslim, 17% Buddhist, 12% Taoist, 7% Christian, 7% Hindu, 2% Animist/Other.

**Geography:** Malaysia has two geographically distinct areas. 11 of its 13 states are in Peninsular Malaysia, bordering Thailand and Singapore. Sabah and Sarawak, as well as the federal territory of Labuan, form East Malaysia on the north of Borneo, bordering Indonesia and Brunei.

**Topography:** The topography of Peninsular Malaysia, Sabah, and Sarawak is generally coastal plains with hills and mountains in the interior. Malaysia's lowest elevation is sea level along the coasts,

and the highest is Mount Kinabalu in northern Sabah at 4,100 meters. In 2005 forests covered approximately 64 percent of the country's total land area.

**Climate:** The characteristic features of the climate of Malaysia are uniform temperature (maximum: 33°C, minimum: 23°C), high humidity and the mean monthly relative humidity is between 70 to 90% and copious rainfall. The average annual rainfall is 2,400 mm for Peninsular Malaysia, 3,800 mm for Sarawak and 2,600 mm for Sabah. Winds are generally light. Situated in the equatorial doldrums area, it is extremely rare to have a full day with completely clear sky even during periods of severe drought. On the other hand, it is also rare to have a stretch of a few days with completely no sunshine except during the northeast monsoon seasons.

The seasonal variation of rainfall in Peninsular Malaysia is of three main types:

(a) Over the east coast states, November, December and January are the months with maximum rainfall, while June and July are the driest months in most districts.

(b) Over the rest of the Peninsula with the exception of the southwest coastal area, the monthly rainfall pattern shows two periods of maximum rainfall separated by two periods of minimum rainfall. The primary maximum generally occurs in October - November while the secondary maximum generally occurs in April - May. Over the northwestern region, the primary minimum occurs in January - February with the secondary minimum in June - July while elsewhere the primary minimum occurs in June - July with the secondary minimum in February.

(c) The rainfall pattern over the southwest coastal area is much affected by early morning "Sumatras" from May to August with the result that the double maxima and minima pattern is no longer distinguishable. October and November are the months with maximum rainfalls and February the month with the minimum rainfall. The March - April - May maximum and the June -July minimum rainfalls are absent or indistinct.

**Currency:** Ringgit Malaysia (RM)

**Time Zone:** Malaysia is eight hours ahead of Greenwich Mean Time (GMT).

**Education and Literacy:** From 1991 to 2000, the literacy rate for persons aged 10 to 64 years of age increased from 88.6 percent to 93.5 percent. Government-assisted schools provide free education for children between ages six and 18, but only primary education (ages six to 12) is compulsory. In 2003

Malaysia operated 7,498 primary schools and 1,916 secondary schools and also funded specialized schools for religious education and special education. Primary education schools in lieu of the final four years of secondary education. Private schools receive no government funds but are subject to government regulation.

Bahasa Malaysia is the principal language of instruction. Chinese and Tamil are used only in primary education. English is taught as a second language. In 1994 English-language instruction was introduced to promote multiethnic socialization and to improve science and mathematics education. By 2003 legislation required that all mathematics and science courses be taught in English.

**Government:** Malaysia is a constitutional monarchy and is governed under the constitution of 1957 as amended. The sovereign (the Yang di-Pertuan Agong) is a largely ceremonial head of state, and is elected every five years by and from the nine hereditary rulers of Perlis, Kedah, Perak, Kelantan, Terengganu, Pahang, Selangor, Negeri Sembilan, and Johor. The current sovereign is Sultan Mizan Zainal Abidin of Terengganu. The prime minister is head of government and must be a member and have the confidence of the House of Representatives (Dewan Rakyat). The cabinet is chosen by the prime minister with the consent of the sovereign. There is a bicameral Parliament. The House of Representatives consists of 219 members, all elected by popular vote in single-member districts. The House sits for a maximum of five years but may be dissolved by the sovereign. The Senate (Dewan Negara) consists of 70 members chosen for three-year terms; each state legislature elects two and the sovereign appoint the remaining 44. There is a high court for each half of Malaysia and a supreme court. Administratively, the country is divided into 13 states and three federal territories.

**Independence:** Peninsular Malaysia attained independence as the Federation of Malaya on August 31, 1957. Later, two states on the island of Borneo—Sabah and Sarawak—joined the federation to form Malaysia on September 16, 1963.

**Flag:** Fourteen alternating red and white horizontal stripes of equal width, representing equal membership in the Federation of Malaysia, which is composed of 13 states and the federal government. In the upper left quadrant, a yellow crescent and star, which represent Islam, are centered in a solid blue rectangle.

**International relations:** Malaysia is an active player on the world stage. Its main foreign policy focus is on ASEAN. Malaysia, the past chair of NAM and of the OIC, also sees itself as a leader in the Islamic and developing world. It has made a valuable contribution to UN Peacekeeping Forces in various countries including Lebanon, Bosnia, Angola, Kuwait, Western Sahara, Liberia and East Timor and as part of the Aceh Monitoring Mission working with the EU. Malaysia runs an active

program of technical assistance from which a number of countries now benefit. Malaysia has been generous in providing humanitarian assistance to those affected by a number of recent disasters.

## 2. NATURAL HAZARDS IN MALAYSIA

### 2-2 NATURAL HAZARDS LIKELY TO AFFECT THE COUNTRY

Geographically, Malaysia is located just outside the “Pacific Rim of Fire” and is generally free from severe natural disasters such as earthquake, volcanic eruption and typhoon. Although we are fortunate to be spared from the threats of severe natural disasters and calamities, we are nonetheless not spared from other disasters such as flood, man-made disaster, landslides and severe haze. For Malaysia, the fact that the tsunami had affected us came as a national shock. As one of the countries affected by the unprecedented global natural disaster in recent history, Malaysia is however, gratified by the swift and overwhelming responses of and assistance from the international community.



**FLOOD**



**SEVERE HAZE**



**LANDSLIDE**



**TSUNAMI**

### MAJOR DISASTER FROM YEAR 2005 UNTIL JANUARY 2009

Year	Disaster	Killed	Injured	Total affected	Damage (USD)
2009(Jan)	Flood			8470	
2008	Flood			10210	
2008	Landslide	11	15	1422	
2007	Flood	33		158000	225 million
2006	Flood	19		138000	343 million
2005	Flood	17		100000	66 million
2005	Mud flood	3		2793	

## 2-2 RECENT MAJOR DISASTERS FOR PAST FEW YEARS

### LANDSLIDE AT BUKIT ANTARABANGSA 2008



Malaysia was shocked by landslide occurred at Bukit Antarabangsa suburban of Kuala Lumpur about 3.30am 6th December 2008. The landslide claimed 4 lives and one still missing. It also destroyed 14 houses and cut off the access road to the residential area, trapped hundreds of people at Bukit Antarabangsa. The location of this landslide was about a kilometer away from the collapsed Highland Towers that occurred 15 years ago which claimed 48 lives. A search and rescue operation had been launched by various of government agencies, involving more than 600 personnel such as the military, Royal Malaysian Police, Civil Defence Department, Special Malaysia Disaster Assistance and Rescue (Smart) team, Fire & Rescue Unit, Red Crescent, hospitals and Local Municipal Council. The government had distributed and allocated fund from National Disaster Relief Trust Fund (NDRTF) to the victims. Besides, many organizations such as government sector, private sector, NGOs, foundations and mass media launched special campaign to raise donation from the Malaysian to ease the victim's burden. All these efforts were organized smoothly because the lesson that we learned from few disasters that occurred in recent years.



### **INDIAN OCEAN TSUNAMI 2004**

At 0059 GMT on 26 December 2004, a magnitude 9.3 earthquake ripped apart the seafloor off the coast of northwest Sumatra, Indonesia with the epicenter at latitude 3.10N and longitude 95.50E. The earthquake occurred 680 kilometers from Kuala Lumpur. This unprecedented tsunami had killed hundred thousands of people and destroyed massive value of properties in several countries bordering the Indian Ocean including Malaysia. In Malaysia, the number of deaths currently stands at 68 with 52 in Penang, 12 in Kedah, 3 in Perak and 1 in Selangor. Relief efforts were deployed by various government agencies such as Royal Malaysian Police,

Malaysian Fire and Rescue Department, Malaysian Armed Forces, Social Welfare Department as well as Non Governmental Organizations (NGOs), among others. During this period, the government collected up to RM78.95 million from generous people of Malaysia (from the government sector, private sector, non-government bodies and individual) for National Disaster Relief Fund (NDRF). From the NDRF, the government spent RM51.3 million for post tsunami recovery and reconstruction exercise.







### MONSOON FLOODS

The country experiences monsoonal floods annually with variations in terms of severity, place and time of occurrences. The recent flood, which happened in the late 2006 and lasted until February 2007, was among the worst flood ever experienced since hundred years ago. The most affected state was Johor where more than 65,000 families had to be evacuated to evacuation centers. The total economic loss was estimated at RM1.2 billion. 19 casualties were reported and 4 of them were foreign workers. The financial burden on the government was enormous. In the recent flood for example, the loss and damage was estimated at RM1.2 billion.

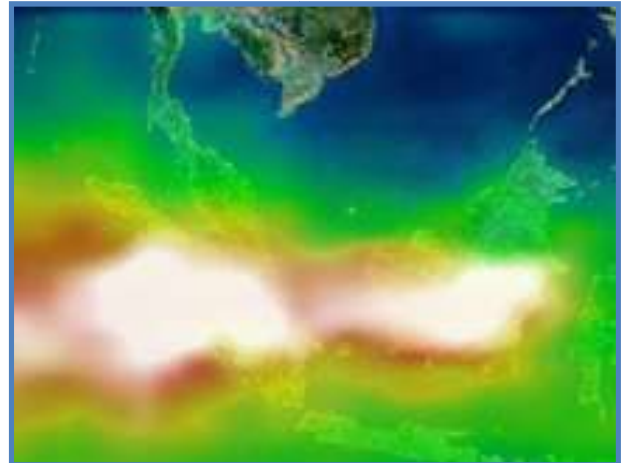


### SEVERE HAZE

Severe haze had struck Peninsular Malaysia in August 2005. Although the phenomena happens every year but it was the worst since 1997. Forest fires in peat soil forest in the state of Selangor and Pahang since early August 2005 were causing the Air Pollution Index (API) to deteriorate to the dangerous level. The government had declared the state of emergency from 11 to 13 August 2006 at Port Klang and Kuala Selangor, both in the state of Selangor, as the Air Pollution Index (API) had increased up to 500. The API was frequently publicized by the government through the mass media to inform people on the level of air pollution. Cloud seedings worth RM900,000 were also done to instigate the clouds to pour rain. The inhaling of these thick hazy smoke poses as a health hazard to the community living

in the haze affected area. On the other hand, the deterioration of health had caused economic losses especially in the industrial sector.

This image shows the pollution over Indonesia, Malaysia and Singapore on October 22, 1997. White represents the aerosols (smoke) that remained in the vicinity of the fires. Green, yellow, and red pixels represent increasing amounts of tropospheric ozone (smog) being carried to the west by high-altitude winds. Researchers tracked the pollution using data from NASA's Earth Probe Total Ozone Mapping Spectrometer (TOMS) satellite instrument.



### 3. DISASTER MANAGEMENT SYSTEM

#### 3-1 ADMINISTRATIVE SYSTEM IN MALAYSIA

Malaysia has three (3) administrative levels of Disaster Management; namely national/federal, state and district. Each level of governments has its own disaster management organizations, policy frameworks and budgets. When disasters occur, district responds first. In case disasters are large in scale beyond their capacity, national and state level provides every possible support.

#### 3-2 LEGAL SYSTEM AND FRAMEWORK

##### 1. THE NATIONAL SECURITY COUNCIL (NSC) DIRECTIVE NO. 20

The National Security Council (NSC) Directive No. 20 states the mechanism on the management of disasters including the responsibilities and functions of the various agencies under an integrated emergency management system. The directive states that when a disaster occurs, The Disaster Management and Relief Committee have to be established at three different



levels depending on the severity of the disaster, i.e. at the Federal, State and District. The committee at the Federal level is chaired by the Deputy Prime Minister. The State level is chaired by State Secretary while the District level is chaired by District Officer, whereby the NSD is the secretariat at each level. Being the Secretariat, NSD is responsible in coordinating all forms of disaster relief efforts as well as monitoring the progress and development of these efforts.

## 2. STANDARD OPERATING PROCEDURES



The government has developed contingency plans for hazardous man-made as well as natural disasters in terms of standard operational procedures (S.O.P.), namely:

- S.O.P. for industrial disaster;
- S.O.P. for forest fire/open burning and haze;
- S.O.P. for oil, gas and petrochemical disasters; and
- S.O.P. for flood.

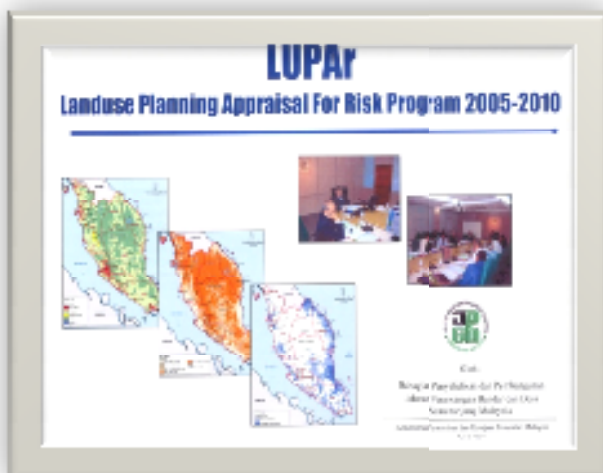
In recent times, Malaysia is working out the S.O.P. for earthquake and tsunami disasters as it feels the need had arisen after the 2004 Asian Tsunami struck the west coast of Peninsular Malaysia.

### 3. ENVIRONMENTAL QUALITY ACT 1974

In managing haze, the Environmental Quality Act 1974 was amended in 1998 to provide more stringent penalty for open burning offences that could contribute to degradation of air quality and haze. Maximum fines of RM50,000.00 or to a term of imprisonment not exceeding five (5) years or both was imposed. The Environmental Quality (Declared Activities) (Open Burning) 2003 came into force on the 1<sup>st</sup> January 2004 that prohibits open burning for certain activities and in certain designated sensitive areas such as peat lands. Besides that, the National Haze Action Plan has been established since 1997 that spells out actions to be taken by relevant agencies at different alert levels based on the status of the quality air (Air Pollutant Index). The National Haze Committee is chaired by the Minister of Natural Resources and Environment with representation from various agencies. Fire prevention plan is also developed to prevent open burning activities. The components of the plan include mapping out fire prone areas and conducting enforcement and monitoring program.



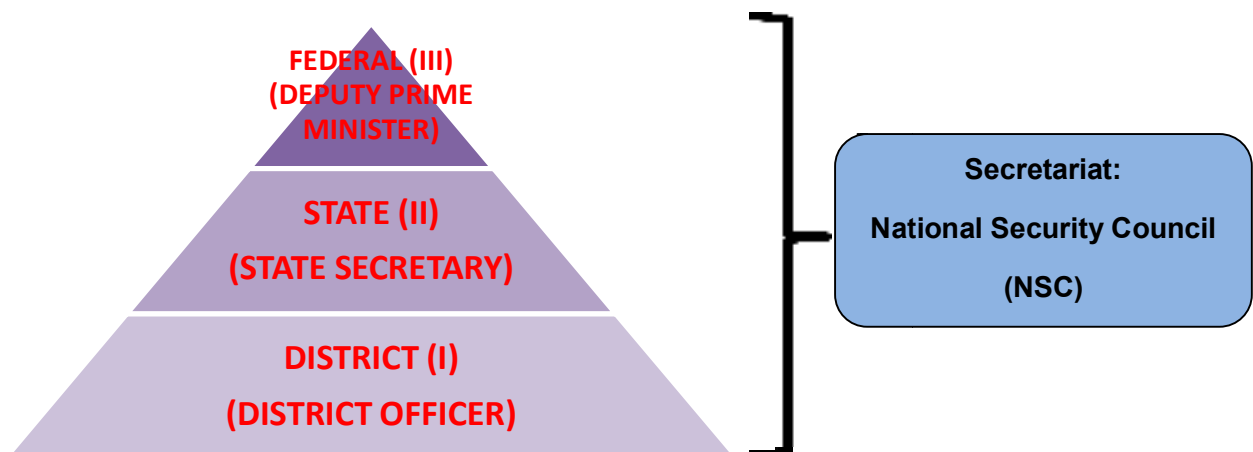
### 4. TOWN AND COUNTRY PLANNING ACT 1976



Town and Country Planning Act 1976 (Act 172) was introduced to regulate land use planning in Malaysia. Under the Act, disaster risk reduction measures have been promoted through several provisions related to siting and zoning if human settlements, identification of environmentally sensitive areas through development plan preparation and planning guidelines. Three basic elements of the Act include planning administrative system, development plan system and development control system.

### 3-3 STRUCTURE OF DISASTER MANAGEMENT

#### a) NATIONAL PLATFORM FOR DISASTER RISK REDUCTION



#### Policy and Strategic Planning

- The District Disaster Management and Relief Committee (Level I)
- The State Disaster Management and Relief Committee (Level II)
- The National Disaster Management and Relief Committee (level III)

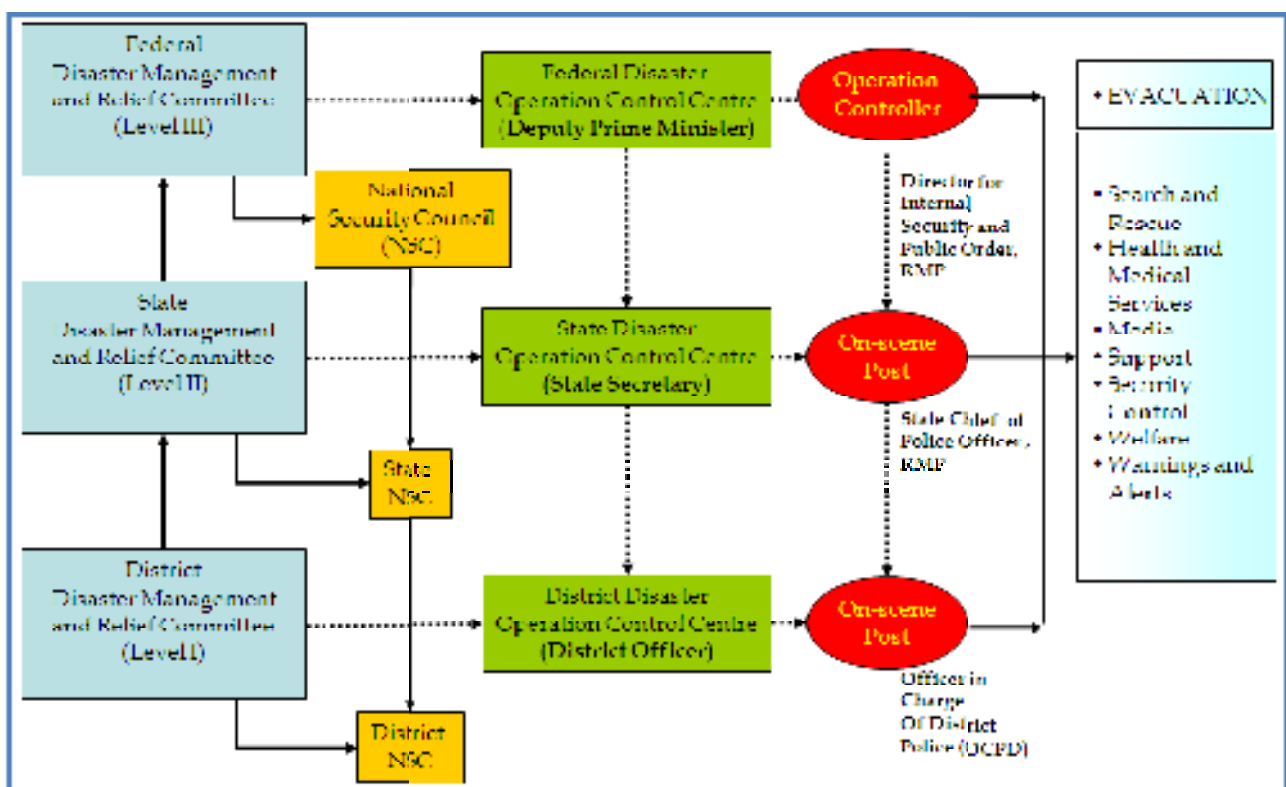
#### Disaster Management and Relief Committee

The **National Security Division (NSD)** in the Prime Minister's Department is responsible for coordination of all activities related to disaster. **Disaster Management and Relief Committee** carries out the responsibilities of the NSC in coordinating all the activities related to disaster management. The Disaster Management and Relief Committee were established at three different levels, i.e. at the Federal, State and District levels, whereby the NSD is the Secretariat. The main functions of the Disaster Management and Relief Committee (DMRC) are as follows:

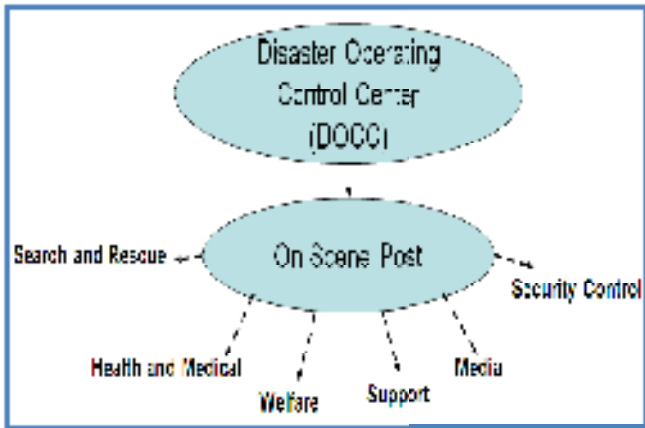
Federal level, DMRC is responsible in the formulation of national policies and strategies regarding the alertness and the preparation of various agencies involved in the handling of disasters.

DMRCs at the State and District levels are required to implement policies and strategies as follows:

- Ensure sound coordination among the agencies involved in the handling of disasters and determines the roles of the principal emergency services (Police, Medical and Fire Department) and other supporting services;
- Activate the Disaster Operation Control Centre at District, State or Federal Level whenever required;
- Coordinate and mobilize resources and logistics available from Government agencies and if necessary also from the private sector;
- Coordinate assistance and rehabilitation to disaster victims; and
- Carry out “post mortem” and report upon completion of the disaster operations for the purpose of recording and performance evaluation for future reference and planning.



**Disaster Mechanism: Organization Structure**



### On-Scene Control Post (OSCP)

An On-Scene Control Post (OSCP) will be opened immediately as soon as disaster has occurred. The On-Scene Commander will be the OCPD, CPO, or the Director, Internal Security and Public Order Royal Malaysia Police, depending on the level of disaster.

### Subsystem for organization structure

The main functions of the On-Scene Commander are as follows:

- To make an early assessment at the scene of potential or actual disaster and immediately activate OSCP if deemed necessary.
- To identify the equipment and logistic requirement in handling the disaster.
- To coordinate the functions of various agencies involved in search and rescue operation.
- To report and advise the Disaster Management and Relief Committee at their respective level.



**On-Scene Control Post (OSCP)**

## **b) NATIONAL ORGANIZATION FOR DISASTER RISK REDUCTION**

### **NATIONAL DISASTER MANAGEMENT AND RELIEF COMMITTEE**

#### **MEMBERSHIP:**

Chairman: Honorable Minister appointed by Prime Minister.

Members:

- 1) Minister of Finance
- 2) Minister of National Unity and Community Development
- 3) Chief Secretary of State
- 4) Commander of the Armed Forces
- 5) General Director of Police Department
- 6) General Director of Health
- 7) General Director of National Security Division
- 8) General Director of Fire Brigade and Rescue Malaysia
- 9) General Director of Atomic Energy Licensing Board
- 10) General Director of Broadcasting
- 11) General Director of Information
- 12) General Director of Transportation Department
- 13) General Director of Public Work Department
- 14) General Director of Environmental Department
- 15) General Director of Social Welfare Department
- 16) General Director of Working and Health Security Department
- 17) General Director of Meteorology Service Department
- 18) General Director of Civil Aviation Department
- 19) General Director of Geology Research Department
- 20) General Director of Irrigation and Drainage
- 21) Secretary: Director of Crisis and Disaster Management Unit, National Security Division(BKN)
- 22) Prime Minister Department.



## **c) LOCAL ORGANIZATION FOR DISASTER RISK REDUCTION**

### **STATE DISASTER MANAGEMENT AND RELIEF COMMITTEE**

#### **MEMBERSHIP :**

Chairman: State Secretary

Members:

- 1) State Police Officer Chief
  - 2) Brigade Commander(Armed Forces)
  - 3) Director of State Fire and Rescue Department.
  - 4) Director of State Health Department.
  - 5) Director of State Public Works Department.
  - 6) Director of State Social Welfare Department.
  - 7) Director of State Information Department.
  - 8) Director of State Broadcasting Department.
  - 9) Director of State Civil Defense Department.
  - 10) Director of State Environment Department.
  - 11) Director of State Workers Security and Health Department.
  - 12) Director of State Meteorology Department.
  - 13) Director of Civil Aviation Department.
  - 14) Director of State Irrigation and Drainage Department.
  - 15) Director of State Geological Survey Department.
  - 16) Director of Transport Department.
  - 17) Director of Malaysian People Voluntary Alliance (RELA).
  - 18) Manager of State STMB (Malaysia National Telecommunication Agency).
  - 19) Manager of State TNB (Malaysia Electrical Power Agency).
  - 20) Secretary: Director of National Security State Division (BKN).
- Note: (For Federal Territory of Kuala Lumpur, the Mayor is appointed as Chairman, while for Federal Territory of Labuan the Director of Labuan Administration is the Chairman).

## **DISTRICT DISASTER MANAGEMENT AND RELIEF COMMITTEE (LEVEL I)**

### **MEMBERSHIP:**

Chairman: District Officer

Members:

- 1) Chief of District Police Officer
  - 2) District Fire and Rescue Officer
  - 3) District Health Officer
  - 4) District Engineer, Public Works Department.
  - 5) Representative from Malaysian Armed Forces (ATM).
  - 6) District Council Secretary.
  - 7) District Social Welfare Officer.
  - 8) Officer of District Civil Defense Corporation.
  - 9) District Information Officer.
  - 10) District Engineer, Irrigation and Drainage Department.
  - 11) District RELA Officer.
  - 12) District TNB Officer.
  - 13) District STMB Officer.
  - 14) Secretary: Assistant Director, National Security Division (BKN), District.
- Note: Any district without National Security Division Assistant Director, Assistant District Officer (Security) will take over the place.

## **4. DISASTER MANAGEMENT STRATEGY, POLICY AND PLAN**

In order to enhance Malaysia's capability in the future course and direction of our disaster management, the country has adopted the following strategies:

1. To integrate mitigation planning into the overall national development plans and projects for sustainable development.

2. To develop risk assessment capabilities, in order to reduce disaster vulnerability which can be translated into mitigation policies and measures.
3. To form Working Committees involving Lead Agencies in risk analysis and assessment for specific sectors of disaster prevention.
4. To develop an integrated database management system for disaster planning and prevention.
5. To strengthen the existing laws and regulations on the aspect of safety, licensing and enforcement for the protection of public safety, properties and the environment in disaster preparedness and prevention.
6. To conduct regular educational and community awareness programs in disaster prevention measures, particularly for risk mitigation strategies.
7. To involve the District and State Disaster Management Committees and authorities in the development, testing and implementation of the overall emergency response plans, especially on the Industrial Disaster Management System of the respective industries.
8. To introduce standard safety control at the installations in order to have zero-threat during the occurrence of any industrial incident, which could affect the nearby population?
9. To promote and develop regional cooperation and networking for exchanging, sharing and training on disaster management, as well as cooperation in rendering and receiving of disaster assistance, be it in the form of humanitarian assistance or the dispatch of search and rescue teams.

## **5. BUDGET SIZE ON NATIONAL LEVEL**

Although, there is no specific budget that was allocated for any particular disaster risk reduction, nevertheless, disaster risk reduction efforts are done by respective agencies within the government's machinery where they are experts at. For example, Malaysian Centre for Remote Sensing (MACRES) had established the National Disaster Data and Information Management (NADDI) while the National Tsunami Early Warning System was commissioned by the Malaysian Meteorological Department and the Stormwater Management and Road Tunnel (SMART) project, which functions as a Flood Diversion Channel or Tunnel, was developed by Malaysian Drainage and Irrigation Department. On

the other hand, National Disaster Relief Fund under the NSD has been set up by the government in channeling the funds needed in disaster relief efforts. The Malaysian government has set aside a sum of RM50 million per year for this fund.

## **6. PROGRESS AND SITUATIONS OF THE HYOGO FRAMEWORK FOR ACTION (HFA)**

“Hyogo Framework for Action (HFA) 2005-2015: Building the Resilience of Nations and Communities to Disasters” has been documented in UN World Conference on Disaster Reduction (WCDR) at Hyogo Japan on January 2005. Asian Conference on Disaster Reduction had been held in Beijing, China on September 2005 to facilitate the implementation of HFA among Asian regions. Malaysia has just adopted the HFA in the National Disaster and Fund Management Committee Meeting on November 2005 during the National Disaster and Relief Management Committee Meeting chaired by the Deputy Prime Minister. Malaysia is still in the phase of restructuring, reorganizing the disaster management system to fit in the HFA. Malaysia is also in the phase of enhancing the coordination of responsibility between the government bodies in terms of disaster management system by taking the following actions:

1. To ensure that disaster risk reduction is a national and local priority with a strong institutional basis for implementation.
2. To identify, assess and monitor disaster risks and enhance early warning.
3. Use knowledge, innovation and education to build a culture of safety and resilience at all levels.
4. To reduce the underlying risk factors.
5. To strengthen disaster preparedness for effective response at all levels

## **7. RECENT MAJOR PROJECT ON DISASTER RISK REDUCTION**

### **7-1 THE NATIONAL DISASTER DATA AND INFORMATION MANAGEMENT SYSTEM (NADDI)**

The National Disaster Data and Information Management System (NADDI) is coordinated by NSD and MACRES. The objective of NADDI is to establish a central system for collecting, storing,

processing, analyzing, and disseminating value-added data and information to support the relevant agencies in the mitigation and relief activities of disaster management in the country. NADDI emphasizes on the utilization of remote sensing technologies, Geographical Information System (GIS) and Global Positioning System (GPS) technologies to provide up-to-date and reliable data to support the three components of disaster management, that are :

- (i) early warning,
- (ii) detection and monitoring, and
- (iii) mitigation and relief for pre, during and post disaster management activities coordinated by NSD and implemented by relevant authorities.



The National Disaster Data and Information Management System (NADDI)

## 7-2 MALAYSIAN NATIONAL TSUNAMI EARLY WARNING SYSTEM

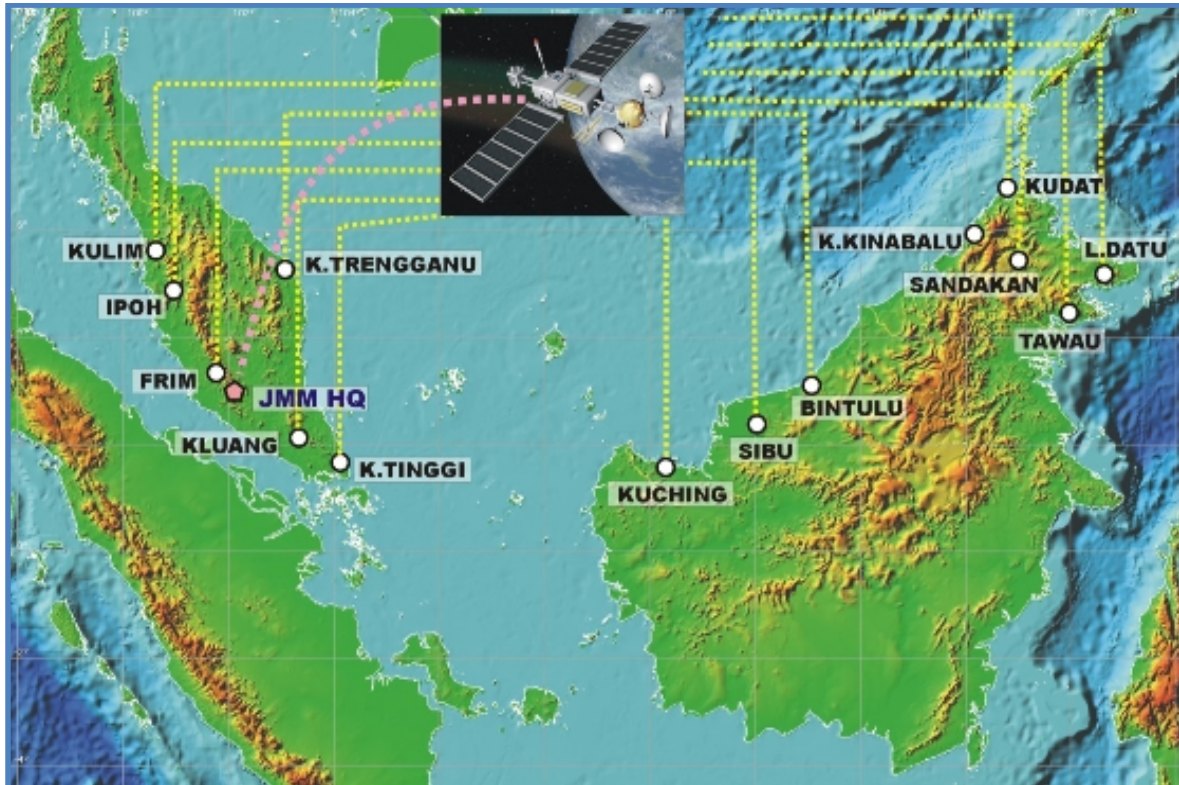


### Deep Ocean Buoy Installation

After the Asian Tsunami in Dec 2004, Malaysian Tsunami Early Warning System was developed by Malaysian Meteorological Department. It involves three technologically advanced weather water buoys to be deployed at locations around Malaysia. All in all, including the equipments, tsunami analysis modeling system and dissemination components will cost about RM19 million. Malaysia National Tsunami Early Warning System (MNTEWS) may provide early warning on tsunami that may affect Malaysia. The system comprises of a few networks:

- National Seismic Network comprising 14 seismic stations, 5 are broadband-sensor stations and 9 are short-period sensor;
- The Deep Ocean Buoy Network comprises three buoys. The first and second buoys were installed near Rondo Island, Sumatra and Layang-Layang Island waters in the South China Sea. While the third buoy is expected to be installed in the Sulu Sea in 2007;
- The Tidal Gauge Network comprising 6 new sea level gauges are located in the Northwest and Northeast part of Peninsular Malaysia as well as in Sabah.

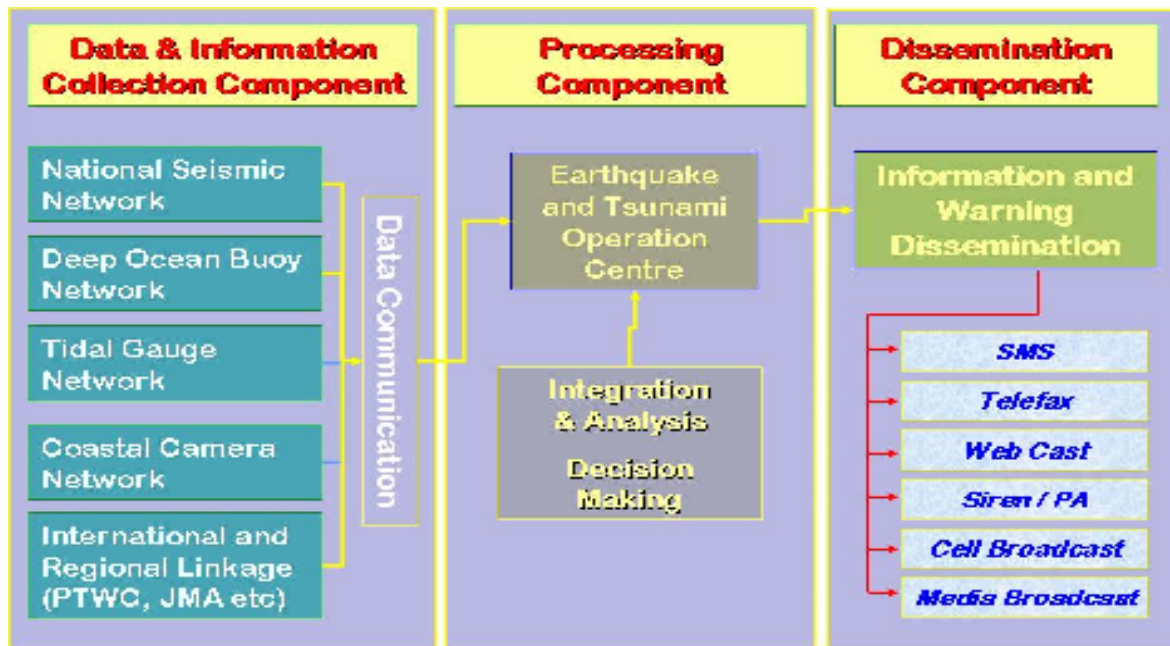
- The coastal cameras are also installed to monitor sea conditions.



**National Seismic Network**

The National Tsunami Early Warning System incorporates the following key features:

- ❖ maintain real-time continuous monitoring of earthquake occurrences and tsunami on a 24-hour basis throughout the year;
- ❖ tsunami prediction modeling ;
- ❖ seismicity maps and tsunami inundation (hazard) maps;
- ❖ issuance of information, advisory, notice, early warning and warning on the occurrence of earthquake and tsunami that threaten the security and safety of Malaysia;
- ❖ the system is an integral part of the Indian Ocean Tsunami Warning System and Northwest Pacific Tsunami System coordinated by the Intergovernmental Oceanographic Commission (IOC), UNESCO. As part of IOC Tsunami network, Malaysia has established the linkage with Pacific Tsunami Warning Centre (PTWC), Honolulu and Japan Meteorological Agency (JMA), Tokyo.



**Malaysia National Tsunami Early Warning System**

The dissemination of tsunami warning to alert the general public is done via short messaging system (SMS), telefax, web pages, media broadcast and public announcement such as sirens at specially chosen sites in Peninsular Malaysia and Sabah.

A fixed line disaster alert system (FLDAS) is being developed by the government and Telekom Malaysia (TM). Pre-recorded emergency later voice messages on the early warning of potential catastrophic disasters such as tsunami can be broadcasted to TM's fixed line subscribers.

### **7-3 THE STORMWATER AND ROAD TUNNEL (SMART)**

The Stormwater Management and Road Tunnel or also known as SMART Project is being developed to alleviate the flooding program in the city centre of Kuala Lumpur. The 9.7 kilometers and 11.83 meters' in diameter tunnel integrates both stormwater management and motorway in the same tunnel. The project is implemented through a joint venture pact between MMC Berhad and Gamuda Berhad with DID and the Malaysia Highway Authority as the executing government agencies.

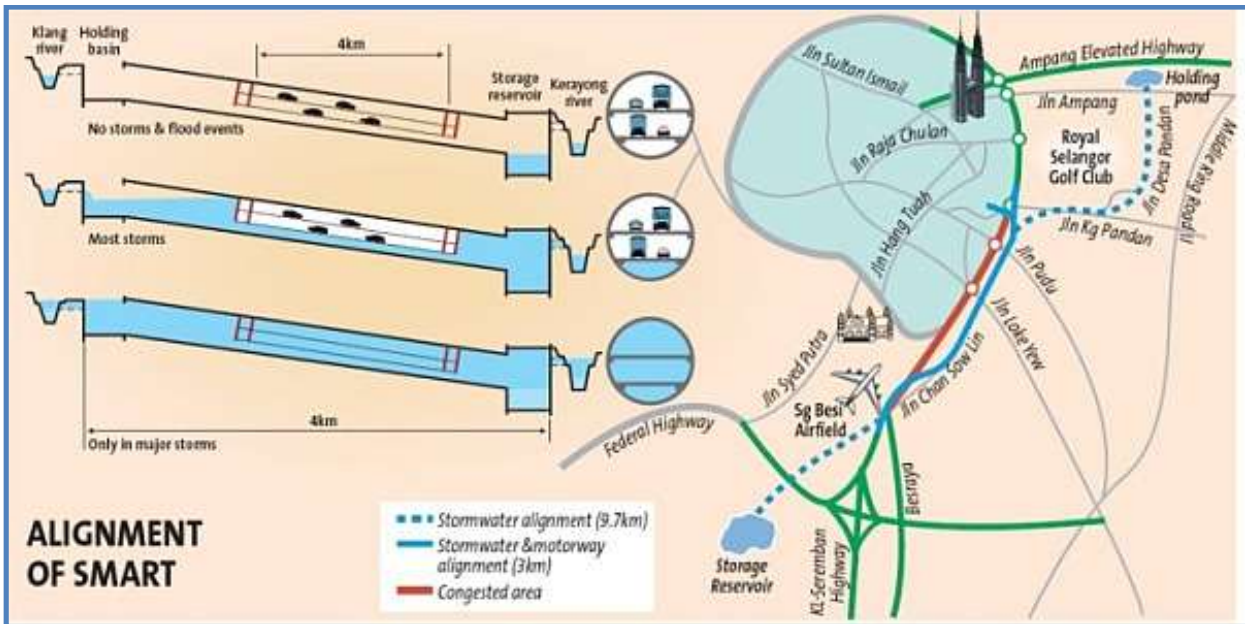


Studies had indicated that the critical stretch of Sungai Klang between Sg Klang /Sg Ampang confluence and Sg Gombak/ Sg Klang confluence to be flood prone areas and the fact that the river is further constrained by the Jalan Tun Perak Bridge (near Masjid Jamek) which is low, has resulted in the surrounding areas to experience flash floods. The SMART system will be able to divert large volumes of flood water from entering this critical stretch via a holding pond, bypass tunnel and storage reservoir. This will reduce the flood water level at the Jalan Tun Perak Bridge, preventing spillover.

However, at the design stage of SMART, the dual purpose concept was born from the ingenuity of the project proponents and the motorway tunnel was integrated into the system to relieve traffic congestion at the main Southern Gateway to the city centre.

The motorway tunnel will provide an alternative route for motorists from the Southern Gateway, i.e. KL-Seremban Highway, Federal Highway, Besraya and East-West Link entering and exiting the city centre. This will reduce traffic congestion at the Southern Gateway leading to the city centre. The travel time will be reduced significantly. For example from the Jalan Istana Interchange-Kampung Pandan the expected travel time is a mere four minutes compared to ten to fifteen minutes using the existing roads.





**8. ADCR COUNTERPART**

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 National Security Division Prime Minister's Department  
 Level G, West Wing, Complex A, Prime Minister's Department  
 62502 Putrajaya, Selangor