

Flood Disaster Handling in Malaysia and Indonesia

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Abstract

Indonesia and Malaysia which are located at the equator have some the same issues in disaster management. Disasters such as flood, eruption of volcanoes, earthquake, tsunami, drought, landslide, forest fires (environmental pollution), plane crash or plane lost, train (transportation) accident, hurricane, conflict, terrorism, storm, disease outbreak, often happen in these two countries. The territories have geographical, geological, hydrological and demographic condition with potential disaster due to natural factors, non-natural factors as well as human factors which result in fatal damage to the environment, loss of material processing with psychological impact and consequently hinder national development. These countries shall bear the responsibilities to protect their citizens as well as the whole homeland with the aim of providing protection for the lives and livelihood including protection against disaster. In Malaysia, the National Security Council (NSC) Directive 20 (NSC No. 20) established under the National Security Council of Prime Minister's Department provides guidelines for disaster management while Indonesia has its own legislation, namely the Law Number 24 of 2007 Concerning Disaster Management that is overseen by its National Agency Disaster Management (BNPB). Hence, this paper aims to discuss on flood management handling in these countries, before, during and after the occurrence of the disaster as well as the protection and welfare of the victims.

1.0 Introduction

Disaster can be defined as a serious disruption of the functioning of society causing widespread human, material, financial, and environmental losses which exceed the ability of the society to cope using its own resource, or a sudden or great misfortune, calamity, or sudden calamitous event producing great material damage, loss, and distress. (Heru Susetyo 2011). Hazards of flood disaster, potentially damaging physical event, phenomenon, or human activity caused the loss of life or injury, property damages, social and economic disruption, or environmental degradation in the country of event. Hazards of flood disaster can include latent condition that may represent future threats and can have different origins, namely the natural origin (geological, hydro meteorological, and biological) or induced by human processes (environmental degradation and technological hazards).

Since 1971, Malaysia and Indonesia have experienced flood disaster due to the climate change, influenced by the northeast and southwest monsoons. In 2013, a big flood has been reported to occur in the east coast area of Peninsula Malaysia and West Indonesia, bearing over 65 ,000 evacuees from affected areas in some districts of the state of Pahang, Terengganu, Kelantan and Johor. In December 2013 until January 2014, the Local Authority had evacuated 63.958 in Jakarta with fatalities of 11 victims in the first week died 11, 23 in the second week while the rest who stayed in the evacuation centers were reported to be 38.079 victims. In North of Sulawesi 40.000 victims were evacuated to higher places. In Indonesia, many provinces were damaged by flood disaster that happens every year, for example in Jakarta, West Java, Central Java, East Java, North Sulawesi, Papua, Aceh, and North Sumatera, Heavy and continuous rainfall is the main cause of flood, but Chia (n.d) identifies several other reasons why flood occurs in Malaysia and Indonesia. There are:

- i. Loss of flood storage as a result of development extending into and taking over flood plains and drainage corridors;
- ii. Increased runoff rates due turbanisation;
- iii. Inadequate drainage systems or failure of localized drainage improvement works, extended in sufficiently downstream;
- iv. Construction of bridges and culverts that are either undersized or partially blocked by debris build-up or from other causes;
- v. Situation in waterway channels from indiscriminate land clearing operations;
- vi. Localized continuous heavy rainfall;
- vii. Tidal backwater effect;
- viii. Inadequate river capacity;

The protection issues and plans for the victims of floods that need to be addressed effectively by these two governments are:

- Access to humanitarian aid
- Discrimination
- Involuntary relocation to, or exclusion from settlements and camps
- Camp security and military presence
- Protection of women and children
- Family reunion
- Access to education

- Loss of documentation
- Participation of internally displaced persons
- Voluntary return and resettlement
- Proverty issues

As vulnerability to disasters are unavoidable, greater attention has to be directed to reducing risks associated with its occurrence through the introduction of planning to improve operational capabilities and mitigation measures that are aimed at reducing disaster impacts (A. Rahman, 2012). The government has taken several measures to deal with flood problems in Malaysia such as the establishment of the Permanent Flood Control Commission, establishment of flood disaster relief machinery, implementation of structural measures, implementation of non structural measures, setting up of flood forecasting and warning systems, carrying out of river basin studies and preparation of drainage master plans for major towns, setting up of a nation wide network of hydrological and flood data collection stations (Chia, n.d.). While this structural and non-structural measures are important for handling the issue of flood, the strategies that address the issues of the psychosocial effects of the flood victims are equally as important (Salleh, Mustafa and Ariffin, 2013). Ismail (Berita Harian, January 4th, 2014) reports that Malaysian government needs to improve and strengthen disaster management in Malaysia, specifically on flood disaster in the future. This includes improving victim's need:

- Early warning system in order to ensure that the warning is efficiently spread,
- To improve settlement centers particularly on additional facilities
- Place for cooking,
- Clean water supply,
- Food supply, including special food and milk for baby
- Sanitation,
- Place to sleep and to perform prayers, permanent or temporary shelter, tents
- Cloths including special clothes for woman and baby
- Clinic and medicine
- Education
- Coping with trauma / Post Traumatic Stress Disorder (PTSD)
- Attention, Affection, love.

2.0 National Security Council Directive No. 20 in Malaysia.

In Malaysia, the National Security Division (NSD) in the Prime Minister's Department is responsible for the coordination of all activities related to disaster. The National Security Council (NSC) was established under this Division and became the principal policy making and coordinating body for disaster management. The NSC coordinates and plans all activities related to preparedness, prevention, response/relief operations and recovery/rehabilitation of disaster management. The National Security Council (NSC) Directive 20 (NSC No. 20) on Policy and Mechanism on National Disaster Management was issued to provide guidelines on the management of disasters, including the responsibilities and functions of related agencies under an integrated emergency management system. The directive is supported by other Standard Operating Procedures which outline the mechanism as well as the roles and responsibility of various agencies for specific disasters, i.e. flood; open burning, forest fire, haze, industrial disasters etc. (NSC, 1997). The Disaster Management and Relief

Committee (DMRC) was established to carry out the responsibilities of the NSC in coordinating all the activities related to disaster management. The DMRC is established at three different levels, i.e. at the Federal, State and District levels, whereby the NSD is the Secretariat. At the 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.

The role and duty of relief and rehabilitation agencies and voluntary bodies in the works of relief and rehabilitation at the scene of disaster as indicated in Appendix M of the Directive No.20 are:

- i. Public Works Department (JKR)
 - Providing stores, transportation and workforce from JKR to do the jobs of cleaning up the scene of the incident and transportation.
 - Providing temporary shelter as canopy or tent.
 - Supplying water and to raise water pressure at places where such services are needed (where water supply is under the supervision of JKR/Water Supply Department (JBA).
 - Providing technical and skill services in the field of forensic, Geotechnics, structures and etc. as in landslide or structure failure cases.
- ii. Social Welfare Department
 - Prepare and maintain the evacuation centers.
 - To make an arrangement and distributing food, clothing and other necessities.
 - To carry out the registration on the victim for the purpose of rehabilitation.
 - To offer guidance, advice/counseling to victims.
- iii. Malaysian People Voluntary Alliance (RELA)
 - To assist with the evacuation of victims.
 - To assist with preparing /distributing food to victims/duty officers.
 - To assist with providing places of evacuation.
 - To assist with distributing of clothes and other necessity to the victims.
 - To assist with crowd control at the scene of the incident.
 - To assist with traffic control.
 - To assist with the construction of control centers.
- iv. National Electrical Power Agency (TNB)
 - To assure the continued supply of safe energy at the scene of the incident in order to smoothen the search and rescue operation.
 - To ensure the electrical power should be supplied again as soon as the situation is back to normal.
 - To stop the electric supply in the area of incident temporarily for security reasons.
 - To provide with lights and electrical equipment during search and rescue operation at the scene of the incident.
 - To supply with electricity through a mobile generator temporarily during search and rescue operation.
 - To offer counseling services, needed at the scene of the incident.
 - To provide extra manpower (if necessary).

- v. Malaysia National Telecommunications Agency(STMB)
 - To ensure that telephone and telecommunication services, maintenance and control are not interrupted throughout the time when disaster management and search and rescue operation is being carried out.
 - To extend the telephone direct line/self-circuit services needed by Disaster Operation Room.
 - To provide other telecommunication services needed for the operation by the relevant agencies.
 - To place enough officers and staffs to give counseling services and maintenance services on the telecommunication lines and other equipment being used.

- vi. Malaysia Red Crescent Society (PBSM)
 - To assist the Social Welfare Department with maintaining evacuation centers, cooking and serving food, distributing clothes, blankets and doing registration and rehabilitation works for the victims.
 - To assist other agencies with rescuing and evacuating victims.
 - To assist Emergency Medical Service (Hospital) with offering first aid and other emergency relief and health care at the evacuation centers.

- vii. St. John Ambulance Malaysia
 - To assist with humanitarian works, including emergency medical services and emergency aid to the disaster victims.
 - To assist with giving emergency aid to the disaster victims together with the other agencies.

3.0 Standard Operating Procedure (SOP)

The Standard Operating Procedures (SOPs) for Public Health Response that are available for minor or mass casualties include:

- a. Search and rescue
- b. Treatment and care of victims (i.e. Dispose of the dead, render first aid, identification and tagging of casualties, assessment and identified medical treatment, hospitalization and medical evacuation).
- c. Evacuations from stricken areas, immediately or when the need arises later.
- d. Provide shelter for victims, whose houses have been destroyed or rendered unusable, such as making urgent repairs, issuing tents for temporary shelter, and accommodating groups of the homeless in community halls or schools.
- e. Food distribution to victims and emergency workers, and estimate damage to crops and food stocks, and available food reserves.
- f. Communications, such as radio, telephone, telex, and facsimile need to be established.
- g. Clearance and access to key roads, airfields, and ports to allow access for vehicles, aircraft, helicopters, and ships.
- h. Water and power supply to be reestablished or make temporary arrangements for their supply.

- i. Subsistence supplies (clothing, disaster kits, cooking utensils, plastic sheets, etc.).
- j. Health and medical services for victims (treatments for cough and cold, fever, diarrhea, etc.).
- k. Sanitation and hygiene (community kitchen, temporary shelter, toilets, water supplies, and solid-waste disposal, etc.).
- l. Public information on self-help information about hygiene, and missing relatives.
- m. Security to prevent looting and unnecessary damage.
- n. Construction equipment for building repair.
- o. Welfare inquiry concerning the welfare of citizens and residents, including tracing missing persons.
- p. Maintenance of public morale, such as provision of counseling and spiritual support.
- q. Other requirement that will be identified later.

4.0 Flood Management in Malaysia

Disaster management operation covers four phases of disaster management, namely mitigation, preparation, response and recovery. Mitigation is actions taken to reduce the effects of a disaster on a nation or community. The prevention and mitigation phase involve preventing damage caused by floods by avoiding construction of houses, properties and industries in present and future flood-prone areas, by adapting future developments to the risk of flooding, and by promoting appropriate land-use, agricultural and forestry practices (Husaini, 2007). Disaster preparedness is an initiative that is intended to increase the awareness and knowledge among the various stakeholders regarding the risks, related agencies, preventive measures and other disaster related information (Dorasamy et.al, 2010). It is a “continuous cycle of planning, organizing, training, equipping, exercising, evaluation and improvement activities to ensure effective coordination and the enhancement of capabilities to prevent, protect against, respond to, recover from, and mitigate the effects of natural disasters” (Almohaifer et.al, 2011). This consists of the provision of warning systems, emergency communication or siren, public education, awareness, and training programs, including exercises and testing plans (Singh & Subramaniam, 2009).

4.1 Preparedness: Flood forecasting and early warning system

Flood forecasting and early warning system are put in place to disseminate early warning to the public. This integrated system comprised of hundreds of rainfall and water level stations, manual stick gauges, boards and sirens installed at strategic locations all over the country. Early warnings are disseminated through sirens, short messaging system (SMS), telephone, telefax, web page, mass media broadcasting system and public announcements. The dissemination of information in a timely manner is crucial to ensure that the vulnerable communities and responders are promptly informed to enable them to take necessary actions. The ICT is also utilized to promote awareness and disseminate early warnings to the public via a Fixed-Line Disaster Alert System (FLAS). A separate system known as the Government Integrated Radio Network (GIRN) provides radio communication between responders during emergency or disaster. Disaster reporting is now more efficient with the centralized Malaysia Emergency Response System (MERS) emergency hotline: “999”. The mass media is an effective platform to disaster preparedness among the public. To fully realize this potential, the Ministry of Information, Communication

and Culture has established a Disaster unit in the Department of Broadcasting Malaysia (AIPA Caucus Report, 2011).

4.2 Preparedness at community level

To strengthen preparedness for disaster on the community level is to create functional groups and to develop organizational capacities and thus enabling them to link with the national disaster management mechanisms in the country. The knowledge of risk and appropriate response are shared through public information and education systems. Training courses, workshops, and extension programs for at-risk groups, disaster responders, and volunteers are all conducted to increase capacity and promote self-reliance. Drills increase awareness about preparedness and thus contribute to its sustainability. Public information (radio, television) and school systems are used to share knowledge about hazards and risks, and the appropriate response to emergencies (Singh & Subramaniam, 2009).

National Disaster Management Strategy (NDMS) of Malaysia is the backbone strategy to advance effective coordination and integrated approach in the building of a culture of prevention, Protection/public safety in the community. Its vision is to create a safe environment for the community through disaster management and sustainable development in the 21st century. One of NDMS' main components is Community Awareness. This component outlines the aim to develop a national approach to fostering and enhancing the community's awareness of risks, and encourage involvement in prevention /mitigation, preparedness, response and recovery strategy (Almohefier, 2011).

For the awareness of disaster management in the community, the National Security Council (NSC) has been organizing Community-Based Disaster Management programs in collaboration with other agencies such as the Malaysian Meteorological Department (MMD), the Department of Town and Country Planning Peninsular Malaysia, the Ministry of Health and the Department of Irrigation and Drainage throughout the country. The program is aligned with the slogan: "Community Resilience through Disaster Awareness" (AIPA Causus Report, 2011).

4.3 Response

Response measures are usually actions that are taken immediately prior to and following the disaster. It is also called "emergency response," which implies that it involves a relatively short time and deals with the immediate effects and needs of affected population when the disaster or a state of emergency has been declared by the government. The efficacy of an emergency response indicates the preparedness level of a nation and its contributing organizations. When a disastrous event occurs the Disaster Management and Relief Committee (DMRC) will be responsible for initiating the following actions (A. Rahman):-

- i. To evaluate the situation and determining the disaster level and scope.
- ii. To formulate action plan for managing disaster.
- iii. To determine capability in disaster management.
- iv. To determine the types of assistance required from higher or outside authorities.

The response mechanisms include evacuation procedures and shelters, search and rescue teams, needs assessment teams, activation of emergency lifeline systems, reception centers, and shelters for displaced people.

4.4 Recovery, relief and rehabilitation

The aim of the recovery and relief phase is to restore the affected area to its previous state immediately following the occurrence of the disaster. Recovery efforts are primarily concerned with actions that involve rebuilding destroyed property, re-employment, and the repair of other essential infrastructure. Rehabilitation on the other hand, refers to the interventions taken after a disaster with a view to restoring a stricken community to its normal living conditions (DID Manual, n.d). The Government of Malaysia has established the National Disaster Relief Fund to provide financial assistance to disaster victims. The types of financial assistance provided are for eventualities, such as, loss of income, damaged/ demolished house; agricultural damage; livestock and aquaculture damage; and burial cost of fatalities due to disasters.

5.0 Flood management in Indonesia

According to article 5 and 6 Act no 24 year 2007, Government and regional government shall bear responsibility and authority for disaster management:

- i. Disaster risk reduction and integration thereof into development programmes
- ii. Protection for community against disaster impact
- iii. Guarantee of fulfillment of disaster-affected community members and refugees' rights in a fair manner and in accordance with the minimum service standard
- iv. Recovery from disaster impact
- v. Sufficient disaster management budget allocation in National Budget.
- vi. Disaster management budget allocation in the form of ready fund,
- vii. The safeguard of authentic files/documents against disaster threat and impact. The Authority of the government over disaster management encompass
 - i. Stipulation of disaster management policy in line with national development policy
 - ii. Development planning that includes elements of disaster management policy
 - iii. Decision on status and level of national and regional disasters
 - iv. Policy option for cooperation with other countries, agencies, or other international parties in disaster management
 - v. Formulation of policy on using technologies with potential disaster threat or danger
 - vi. Formulation of policy on preventing natural resources and depletion beyond nature's ability of recovery
 - vii. Check on money or good collection and channeling on a national scale.

Decision on status and level of national and local disaster referred to the following indicators:

- i. Number of victims

- ii. Loss of material possession
- iii. Damage of facilities and infrastructure
- iv. Coverage of disaster-affected area
- v. Socioeconomic impacts.

National Disaster Management Agency shall have the tasks of:

- i. Providing guidelines and directions for disaster management, which include disaster prevention, emergency response, rehabilitation, and reconstruction in a fair and equitable manner
- ii. Setting disaster management standardization and requirements by virtue of Legislation
- iii. Communicating information on activities with the community
- iv. Reporting on disaster management to the President once a month, in normal condition, and at any time in disaster emergency condition
- v. Using and giving account for international and national contribution/aid
- vi. Giving an account for use budget received from the State Budget
- vii. Carrying out other obligations in accordance with Legislation
- viii. Preparing guidelines on establishment of a Regional Disaster Management Agency.

In Indonesia, In December 2013 until March 2014, there were many flood disaster occurrences reported in Jakarta, Banten, Surakarta, North Sumatera, Aceh and Manado. The victims of the flood disaster in Jakarta were reported to be about 104,891 evacuees involving 124 villages. 23 persons were reported dead from the disaster and almost 23,110 persons were in need of medical support and care. The height of the flood was between 30cm and 300cm. The material loss reported include the damage to the vehicles, houses, schools, mosques, furniture and equipments.

In Jakarta, the flood management handling is divided into three phases, namely pre-disaster period, emergency response and post-disaster period. The local National Agency Disaster Management under the Law Number 24 of 2007 Concerning Disaster Management will evaluate the situation of disaster and determine the number of victims, loss of material procession, damage of facilities and infrastructure, coverage of disasters and socioeconomic impacts.

5.1 Pre-disaster period

- i. To make the Standard Operating Procedure for flood management handling;
- ii. Warning System
- iii. River cleaning and management of garbage;
- iv. Training for persons involved in flood disaster protection;
- v. Socialization of early warning system to the community in the potentially affected areas;
- vi. Keeping stocks of food and beverages;
- vii. Preparation for communication devices;
- viii. Water pump;
- ix. Preparing electrical power/generator,
- x. Boats, floats
- xi. Tents,

- xii. Clinic and medicine.

5.2 Emergency response

- i. Food and drinks supply;
- ii. Ambulance and clinic;
- iii. Evacuation centers, including tents;
- iv. Toilet and mobile toilet;
- v. Blankets, clothing, sanitation for women and infants.

5.3 Post disaster period

- i. Fork lift and tractors for garbage and mud cleaning, plastic bag;
- ii. Bulldozer;
- iii. Sanitation liquid for property cleaning and relevant equipments;
- iv. Construction materials for house, street renovation;
- v. Reconstruction of damaged properties; communication and electrical wire.
- vi. School renovation; learning equipment;
- vii. Religious building renovation;
- viii. Hospital for Consulting, Clinic and Medicine with Psychiatrist and Psychologist.
- ix. Repairing the lifelines.
- x. Distributing the seeds for plantation, breeding the cattle
- xi. Normalize the livestock

The agencies involved during the flood disaster in Jakarta includes:

- i. Fire Brigade,
- ii. Safe and Rescue Team,
- iii. Arm Forces, Police,
- iv. Medical teams, Indonesian Red Cross, Moslem Red Crescent Red Crescent
- v. Local governments,
- vi. NGO's,
- vii. Company Social Responsibility (CSR),
- viii. Political parties and the community as a whole.

During flood victims handling since 2002 in Indonesia, the lesson learned from Jakarta flood disasters damage are:

- i. Human casualties
- ii. Animal and plants
- iii. Environmental damages
- iv. Lifelines damages
- v. Infrastructure damages
- vi. Economical damages
- vii. Legal and Social problems
- viii. Political problems

Problem in Rehabilitation and Reconstruction (especially for housing)

- i. Unequal disbursement of financial assistance
- ii. Discrimination
- iii. Wrong allocation in providing reconstruction funds
- iv. Data not available
- v. Corruption.

In general, flood management handling in Indonesia is quite similar to flood disaster management handling in Malaysia. Government and Local Authority gave many kinds of policy to help the victims included:

- i. Moving the victims to another place. Local Authority of Jakarta moved 2.000 victims along the riverside in an apartment room without cost / free of charge, the victims built a new house by Local Government in Jakarta.
- ii. Give adequate amount of money to renovate the damage house, school, and mosques.
- iii. Give adequate school uniform cloth to all the pupils in the damage area
- iv. Give computer set to the school, laboratory equipments, also gave the personal computer to all students in the damage area.
- v. One month after the flood Central Government makes many programs to rebuild again the damage area, for example, make a new theme, water door etc.
- vi. Compensation money for many kinds of thing that damage along the flood.
- vii. Build a new Health Clinic near the affected area.
- viii. Post disaster Evaluation and Coordination among the caregivers and stakeholders

6.0 Conclusion

Flood disaster handling in Indonesia and Malaysia has been implemented according to the National Security Council (NSC) Directive 20 (NSC No. 20) established under the National Security Council of Prime Minister's Department provides the guidelines for disaster management in the country and the Indonesian Law Number 24 of 2007 Concerning Disaster Management oversee by its National Agency Disaster Management (BNPB) as well as the coordination and cooperation of various agencies in flood disaster. There is a need for more financial aid for both governments in handling the victims of flood disaster and the damage to the facilities and infrastructures as well as other material and non material damage affected by the disaster.

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