

CHAPTER 18

Post-Disaster Waste Management Guidelines in Malaysia

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Abstract

Flood disaster is a global phenomenon and Malaysia is one of the ‘chosen’ developed country that hits by extreme flood in December 2014 recently. Its impacts influenced to environment, social activities and human health are very detrimental. In this case, effectiveness of managing disaster waste is very important to curb this issue. Thus, the main goal of this study was to provide a platform as a best practices in Post-disaster waste management into disaster management guidelines in Malaysia that have been adapted in four countries namely, Malaysia, Japan, North Carolina, and Indonesia. However, disaster waste management initiatives by Japan has a more notable between other countries attributed to their efficiency of technologies, equipment and machineries. Further, the extent of disaster waste affecting to the environment will be investigated; to identify the needs of the waste management to be adopted into disaster management guidelines; in the end, the research intends to propose a post disaster waste management adaption into the existing disaster management guidelines in Malaysia. In fact, there are already an act and policies with regard to waste management have been enacted and developed but none of them are focusing on disaster waste. Hence, the findings may be used in the formulation of implementation government initiative in addressing the disaster waste management issues encounter managing disaster waste in Malaysia and indirectly improving the best practices disaster waste management regarding on disaster management in Malaysia.

Introduction

Malaysia is considered a middle-income country and has emerged as a multi-sector economy. In the past, Malaysia has faced a variety of magnitudes of disasters consisting of structural collapse, earthquakes, biological, landslides and meteorological incidents (Malek, 2005). Additionally, the effects of climate change have resulted in an increasing amount of climate related disasters, resulting in a newfound threat to Malaysia's health and development. But now, the disaster either natural disaster; or man-made disaster, are still happen and became worst from year to other year. Every single days, we're produced a lot of waste and it is one of the 'common phenomena' in Malaysia. As we know, every year our country, Malaysia suffers natural disasters such as flooding and landslides caused by torrential rain ending of the year, 2014. Meanwhile, disaster often create a large of volumes of debris and waste especially in the flooding events and it's exceeding from existing issues of solid waste management capacity. Waste management plan was related on the current planning of post disaster waste management that conducted by the several of agencies and relevant stakeholders which are who are involved directly or indirectly in disaster waste management. Poor management of a clean-up effort can exacerbate these problems, and can result in a slow and costly recovery which is potentially risky to public and environmental health in both the short and long term (Brown & Milke, 2009). So, disaster waste management is very important to curb this issue. The aim of this research to provide a platform as a best practices in Post-disaster waste management into disaster management guidelines in Malaysia that have been adapted in four countries namely, Malaysia, Japan, North Carolina, and Indonesia and how to effectively plan for managing the disaster waste in Malaysia regarding on the existing guidelines (MKN- Policy of Directive 20), act of Solid Waste and Public Cleansing Management Act 2007 (Act 672), and other policies related on post-disaster waste management especially on flooding. The extent of disaster waste affecting to the environment; the needs of the waste management to be adopted into disaster management guidelines; and to propose post disaster waste management adaption into disaster management guidelines in Malaysia has been developed by researcher as a guide in future. Regarding the existing act, guidelines and policies, there are only focus on solid waste management nor on the disaster waste management. In case of that, our country can follow the policies from the other countries as guidelines such as from Japan and Indonesia; and at the same time can adopt from it.

Past and Present Disaster Waste Management

Report on managing disaster debris by Luther (2008) indicated many important issues and challenges in managing disaster waste such as issues associated with managing large volumes of waste, ensuring ability of property owners to return to an area and assist with clean-up, separating hazardous and non-hazardous waste and managing asbestos-contaminated waste. According to Srinivas (2012), disasters can produce million tons of waste that threaten public health, reconstruction of the damaged building and give

negative impact towards the environment.. Table 1 showed the impacts of disaster waste occurred towards the environment.

Table 1
Typical disaster waste issues and its impacts

Waste issues	Impacts
Uncollected building and construction waste	Uncollected building and construction waste has led to impeded access, delay of reconstruction and encourage to the involved area to landfills.
Illegal dumpsites	Illegal dumpsites affect human health, destruction of valuable land, impacts on drinking waste supplies, increase in vector diseases and risk of fire.
Collapse of municipal solid waste services	Lack of collection services and uncontrolled illegal dumping area
Uncontrolled dumping of healthcare wastes	Serious health risk to local residents such as odor.
Mixing of hazardous and toxic wastes such as asbestos in damaged buildings and its reuse	Health risks associated with inhalation and contact

Source : (Srinivas, 2012)

Disaster waste management is very important in disaster response and recovery (Did, 2009). In this respect, it is important to analyse the extent of disaster waste that affect the environment as a guide in the best practices in managing the disaster waste in future. Disaster management (Directive No. 20) in Malaysia more focus on the roles and responsibilities of the agencies involved in handling the disaster only. Following by next, an Act 672 and even though the act did not specify on disaster solid waste but it should be seen as part of controlled solid waste. However, the whole scope of managing the waste is not enough, as compared to the steps given in the waste management hierarchy. Environmental Quality Act 1974 enacted for general environmental problems, such as sludge, odour and others. In fact, this act not focusses on waste but more to environment protection which are related to pollution after disaster. The waste is also interpreted as liquid, solid, gas and radioactive. Additionally, local authorities also one of the important organisations in handling waste either daily activities or occurrences of disaster.

Local authority implemented the Local Government Act 2007 amendments (Act 1311) to maintain and carry out such sanitary services for removal the waste. Referring on Malaysian standard (MS 2547:2014) by SIRIM Malaysia, only by specific on requirements of safe closure landfill for prevention of pollution to the surrounding environment. As conclusion, regarding on statement of legal instruments in Malaysia, even though some policies, programs and legislations were carried out by government sector, but it is still insufficient and no enforcement in handling disaster waste as a guide for present and in the future of our country.

Table 2
Authorities involve in Disaster Waste Management

Authorities	Laws/ Acts/ Standard Policy	Remarks
National Security Division (Prime Minister's Department)	National Security Council Directive No. 20 (The Policy And Mechanism On National Disaster And Relief Management)	Outlines a Policy on Disaster Management and Relief according to the level of disaster. The purpose is determining the roles and responsibilities of the various agencies involved in handling disaster.
Ministry of Urban Wellbeing, Housing and Local Government of Malaysia	Solid Waste and Public Cleansing Management Act 2007 (Act 672)	This act as regulations for the management and regulation of controlled solid waste and public cleansing for the purpose of maintaining proper sanitation. Normally, the act is focuses on household, municipal and hazardous industrial waste/areas.
Ministry of Natural Resources and Environment	Environmental Quality Act 1974 (Act 127) –Part IV Section 24 (2b)	The EQA was enacted in 1974 and applies to the whole of Malaysia. It is related to the prevention, abatement, control of pollution and enhancement of the environment, and for purpose connected therewith.
Local Government Act (Local Authority)	Local Government Act 1976 (Act 171) -Part VII in Section 70 (Pollution of streams) -Part IX which are Food, Markets, Sanitation & Nuisance in Section 72 (1a) ↓ Local Government Act 2007 Amendments (Act 1311)	The Local Government Act was enacted to ensure uniformity of law with respect to local government. Section 70 (Pollution of streams with trade refuse). In Section 72 (1a) to establish, maintain and carry out such sanitary services for the removal and destruction of, or otherwise dealing with, rubbish, litter, dead animals and all kinds of refuse and effluent.
Department of Standards Malaysia/ SIRIM BERHAD	Malaysian Standard Landfill Safe Closure- Requirements (MS 2547:2014)	This Malaysian Standard specifies requirements for landfill safe closure and it is to protect public health and the environment by proper management of such.

Source: (National Security Council Directive No.20, ACT 672, A1313, ACT 127, ACT 171/ACT 1311 and MS 2547:2014 by (SIRIM, 2014)

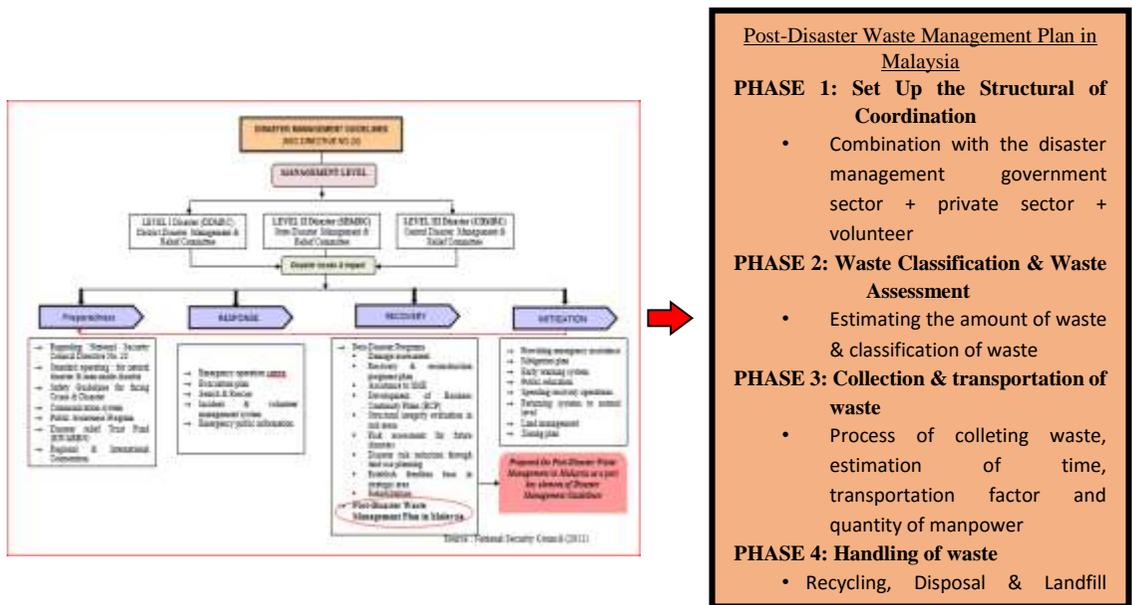


Fig. 1 The flow of the post-disaster waste management plan adaption into the Disaster Management Guidelines in Malaysia

The results of the presented above to provide some insights into the best practices in terms the managing the waste and effective improvement in disaster management guidelines pertaining to waste management in Malaysia in terms of flood preparedness plan either in short terms or in the long-term. In relation to this, there is an opportunity of development to be continued by other researcher in order to give contribution in sharing ideas and solutions towards these issues. In fact, it was not mentioned in the form of post-disaster solid waste management. Thus in that cases, the researcher suggested had a best practices on post-disaster waste management in Malaysia as a platform and guide when disaster happens again. So, regarding on the planning aboves there are five (5) phases to go through in the cycle of post-disaster waste management plan in Malaysia. Firstly, setting up the strcutural of coordination. This phase will seen a combination of government sector cooperation with the private sectors, and also frpm the volunteers. This combination will find a wise and quick solution to overcome the issues of the disaster waste especially post-disaster waste problems after flood disaster happens. Secondly, waste classification and assesment. This phase is essintial and complusory whereby to know the classification of the post-disaster waste such as plastics, clothes, woods and others. Consequently, it will make it easy to the sectors that involved on estimating the amount of the waste. But the most of the waste from flood disaster are mixed waste. Collection and transportation of waste is the next phases involved. Systematic process of collecting the waste results to the less time used. Transportation facilities need to be suitable with the types of waste such as lorries, backhoe and others so it can save a lot of time in terms of time management of handling

the disaster wastes. An independent and high skilled worker/manpower play the crucial roles in this phase so it make the process run smoothly and accordingly. Besides that, recycling, reused, incineration and disposal in landfill which are one of the important phases which are involved in handling the waste. The waste that still can be use, will be recycled especially paper. Disposal and landfill method, are the next advanced process if the waste cannot be recycled anymore in order to safe our nature. Lastly, the final phases which is the most important process is reporting. The preparation and submission of completed reports on the current issues will be used as a references on the lesson learnt in developed countries. From the process above, they need to have at least a general idea and standardized of guidelines on handling extreme cases or disaster to avoid randomness and improve the efficiency. Hence, this is one of contribution and significance in promoting the disaster management in Malaysia.

Conclusion

Disasters are the unusual changes occurring all of a sudden in a certain area, and causing significant damage and loss of life and property, which requires more effort to move back to the normal situation. Moreover, disaster can create large volumes of debris and waste and mismanagement of disaster waste can affect both the response and long term recovery of disaster affected area. Since in Malaysia have implemented an act for solid waste management; Solid Waste and Public Cleansing Management Act 2007 (Act 672), there are still lack of regulations and the government policies are still not effectively taken action by industry practitioners. The policies are not enough to encompass whole concept of sustainability. Hence, the government sector required to enforce initiatives by providing a legislative and regulations to manage disaster waste in Malaysia. Therefore, in Malaysia, there was no time estimation for the recovery phase to end, and in many cases the problems remained unsolved for long time. In fact, Malaysia tend to schedule all the work process and assess their achievements. Thus, in the long term it had offer an economic advantage to the Malaysia and at the same time it had improved disaster management guidelines pertaining to waste management.

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