

A Review of Emergency Management Governance at Construction Sites in Malaysia

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ABSTRACT

The construction industry is one of the biggest industries in Malaysia which contribute to a significant growth towards the country's economy. Accidents, disasters, or crisis events originating either from internal or external of the construction site can cause delays to the project and impact the continuity and productivity of the overall project, hence there is a need for emergency management capability to be available for each construction site. Hence, it is the objective of this research is to identify and review current emergency management governance in construction industries in Malaysia and indicate the compliance of the governance towards Malaysia's disaster management environment. In understanding disaster governance of emergency management in Malaysia at the construction site and in the construction industry, a systematic procedure for reviewing and evaluating documents which include both printed and electronic materials was conducted. This study concentrates on both the content validity method and face validity method. Identify significant documents were studied and recorded to acknowledge the contribution and support that the document provides towards disaster management and validation of findings from subject matter experts in the industry. Findings indicate that there is still a huge gap in the construction industry emergency management and governance in emergency management is greatly needed in ensuring the high productivity and sustainability of the construction industry.

Keywords: Construction; Emergency Management; Disaster; MNSC20

INTRODUCTION

Disasters can be put into three categories: natural, man-made, and hybrid. A hybrid disaster is a natural disaster that leads to a technological disaster. When dealing with the disaster, a process cycle was created that has been used all over the world. This cycle includes prevention, preparation, response, and recovery. Disasters can be prevented or minimised if proper preparation and prevention are in place (Samsudin, Mohd Yassin et al. 2020). Over the course of the last several decades, Malaysia has been witnessing more than its fair share of catastrophic natural disasters. As a result, the country has become relatively resilient and better prepared to deal with the aftermath of natural disasters.

Malaysia issued its first disaster management policy in 1997, which was published as Malaysia National Security Council Directive 20 (MNSC 20): Policy and Mechanism on National Disaster and Relief Management (The Policy and Mechanism on National Disaster and Relief Management 1997). The policy serves as both a framework and a directory of instructions that pertain to the administration of disaster assistance and preparedness in Malaysia. However, the earlier generated documents mainly focused on the

response process after catastrophes, only causing obstacles to the government in enforcing the need for disaster risk reduction as outlined in the international framework. The framework outlines the coordinated response of government agencies and the chain of command between the district, state, and federal governments. The framework also outlines the chain of command between the district, state, and federal governments (UNISDR 2005; Wahab 2012). The Asia Pacific Economic Cooperation Emergency Preparedness Working Group, or APEC-EPWG, was established in the Asian region in conjunction with the formulation and execution of the Hyogo Framework for Action (HFA) 2005-2015 as an international disaster management framework (OCHA, 2013). Not only did both texts explain the reaction effort, but they also presented the notion of disaster risk reduction by means of the disaster process cycle, which consists of prevention, preparation, response, and recovery (Hussin et al. 2018).

As a result, with the establishment of the worldwide framework for disaster management—namely, the HFA and APEC-EPWG—the MNSC 20 underwent significant revisions and was subsequently published in accordance with the international framework (Khairilmizal, Hussin,

Mohd Yassin et al. 2016). Among other things, the amended MNSC 20 detailed the disaster management process cycle, improved the description of disastrous situations, introduced the requirement for an early warning system, improved the disaster management mechanism, integrated an integrated communication network, and provided new directives requiring all government agencies, statutory and voluntary entities, and the private sector participating in disaster management to collaborate and work independently (Khairilmizal, Hussin & Mohd Yassin et al. 2016; Policy and Mechanism of Disaster in Malaysia 2012).

CONSTRUCTION INDUSTRY IN MALAYSIA

Recently, the global Covid-19 pandemic has given a lasting impact on the construction business in Malaysia, in addition to other industrialised countries. It was discovered that the construction business had the greatest drop in 2020, which was equal to 44.5% (Akman et al. 2021; WHO 2021). The government of Malaysia has issued a number of Movement Control Orders in an effort to halt the progression of the Covid-19 illnesses (MCOs). The construction industry in this country has suffered massive losses in a very short period of time as a direct result of the extreme action that was taken. In the first month of MCO implementation, which occurred between March 18 and April 28, 2020, the overall loss amounted to \$18.5 billion (Harian 2020). The most major effects were financial concerns, project delivery delays, and labour shortages, as the pandemic affects the entire material supply chain's cash flow (Akman et al. 2021; Alenezi, 2020; Hossain, 2021). The Construction Industry Development Board (CIDB) revealed that out of a total of 7590 construction sites, 149 still had not resumed their operations as of the 20th of April, 2020. 45 out of the 149 locations were still unavailable because they were unable to resolve their financial problems (Harun & Razak 2020).

In addition to this unforeseen circumstance, the development of the construction industry in Malaysia also requires contributions of efficiency, productivity, environmental friendliness, and competitive pricing (Akman et al. 2021; Hatem et al. 2022; Mustaffa et al. 2018; Nurhendi et al. 2022). CIDB Malaysia is a statutory agency within the Ministry of Works, Malaysia with the mandate to lead and create construction projects that are cost-effective and sensitive to customer sentiment regarding construction performance (Act 520 - Lembaga Pembangunan Industri Pembinaan Malaysia, 2015). The agency was formed under the ACT 520 (Lembaga Pembangunan Industri Pembinaan Malaysia) as a governing body tasked with the responsibility of providing effective leadership and coordination to Malaysian industry players. CIDB is the agency that discovered the main cause of any price increase on construction materials, which is closely tied to their origin, whether it is locally made or imported (Dwikojulardi 2016).

ACCIDENT RATE IN THE CONSTRUCTION INDUSTRY AND ITS IMPACT

In addition to the Construction Industry Development Board (CIDB), the Department of Occupational Safety and Health (DOSH), Malaysia is another government agency that is responsible for ensuring the safety, health, and welfare of workers in ten different industries, one of which is the construction industry. DOSH, on the other hand, reports directly to the Ministry of Human Resources, in contrast to CIDB. The Department of Occupational Safety and Health (DOSH) says that construction sites always have different kinds of activities with different risks. Activities can be separated into two major areas, namely building operations and engineering construction work. Essentially, the major objective of these two agencies is to ensure that the degree of safety at the workplace is not exposed to any danger or risk in order to carry out all connected operations while preserving the welfare of employees, particularly in terms of their health. As a result of the construction industry's hazardous working conditions and the complexity of its work procedures, safety and health concerns remain paramount. (Halim et al. 2020) listed six main categories of Malaysian construction accidents based on the data from DOSH. These categories include falling from heights (43%), being struck by (objects, vehicles, or building structures) (34%), being caught in between (7%), being electrocuted (5%), environmental factors (3%), and others (8%).

Accidents that take place on construction sites can typically result in a disability that is not permanent (NPD). Nevertheless, these unplanned incidents can also inflict damage, such as a permanent disability (PD), and in the worst cases, they can result in death. DOSH stated that the Social Security Organisation reported an increase in the number of accidents in the construction business from 2011 to 2016, with 4,330 and 7,338 instances, respectively, and that 160 NPD, 4 PD, and 58 fatalities were documented in the construction industry in 2020 (DOSH 2020).

In general, each industry will have some kind of effect, either directly or indirectly, on the economy of the country. Similarly, the construction industry has a significant influence in defining the country's rate of economic growth based on GDP value and socioeconomic growth (Hatem et al. 2022). It is generally acknowledged that the construction industry contributes to the generating of revenue, the formation of capital, and the production of employment opportunities. Unfortunately, the construction business has both a beneficial and a bad impact on the country's growth, depending on the number of incidents of NPD, PD, and fatal accidents it is involved with (DOSH 2020). The recovery phase that followed the massive amount of construction that was developed many years ago may be responsible for the reduction in the rate of mortality cases. Based on research (Halim et al. 2020), it is expected that the rapid growth of Malaysia will lead to more deaths starting in 2018 if the right steps are not taken right away.

If nothing is done to enhance the inadequate safety and health management system, this scenario will only get worse. Inadequate management systems are one of the examples that are associated with non-compliance to reporting accidents that occur at construction sites. This non-compliance can have serious consequences (Kamilah Makhtar et al. 2019). The actions of the employer to not report the damage suffered by the employee are caused by a lack of awareness, negligence, and the attempt to minimise compensation by presuming that the occurrence did not involve a major injury. Therefore, in order to reduce the frequency of accidents in the construction industry, all stakeholders, including the government and research organisations, must work together and be committed to occupational safety and health (OSH) in order to prevent any emergency circumstances on construction sites.

EMERGENCY MANAGEMENT PROGRAM FOR CONSTRUCTION SITES

Effective emergency management necessitates the implementation of a command structure, planning and information management, communication, situational awareness, resources, and logistics in a timely manner (Hussin et al. 2018). These principles shall serve as the foundation of emergency planning for communities as they prepare for any potential disasters. A group of individuals who live in the same location or region is referred to as a community. Businesses, industrial regions, housing areas, public gathering locations, schools, colleges, and many other types of institutions can all be components of a community (Ainul Husna et al. 2016). This includes the construction industry, which must be prepared to respond to emergencies based on the records of previous accidents mentioned earlier. In order to do this, uniformity is crucial in the development of emergency management strategies for each construction site.

The MNSC 20 is only a policy for disaster management in Malaysia, indicating that other communities and sectors must be prepared for emergency or disaster scenarios (Policy and Mechanism of Disaster in Malaysia 2012). But a policy needs to be backed up by clear documents and programmes from other government agencies and professional groups. This research found that this wasn't always the case. Consequently, the purpose of this study is to identify and evaluate the current emergency management governance in Malaysia's construction sectors, as well as to assess the governance's compliance with Malaysia's disaster management environment.

FRAMEWORK

The current research employs a descriptive and analytic technique based on a case study to a compilation of written and digital materials on construction sector emergency management in Malaysia. The purpose of this study is

to conduct an analysis of the legislative framework in Malaysia to determine how well it meets the requirements for emergency management at construction sites.

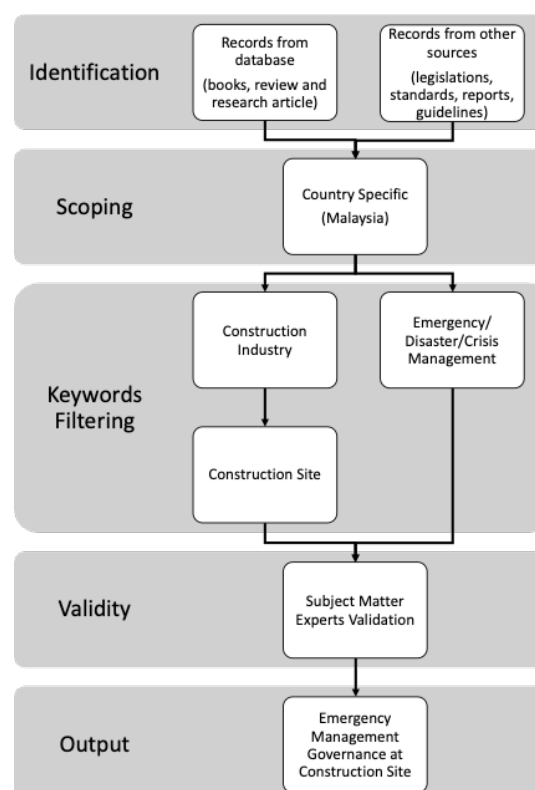


FIGURE 1. Framework for Governance of Emergency Management at construction site

Understanding the challenges is the first step in distinguishing disaster management in Malaysia and the governance of emergency management in the construction industry. Methods of document analysis were implemented with the goal of conducting a comprehensive study and assessment of the resources at hand, regardless of whether they were in printed or digital form (Pinsker 2020; Samsudin, Hussin et al. 2020). The researcher will have the ability to develop empirical knowledge on the topic that is necessary by extracting meaning from the documents and obtaining an understanding of the subjects as a whole through the use of the methodologies of document analysis (Bowen 2009a; Kassem et al. 2020). According to (Pinsker 2020), the first step in the process of document analysis is the discovery and selection of particular keywords and subjects, which will ultimately lead to the identification of relevant documents. The facts contained within these documents have been defined and analysed so that they can be arranged according to the primary topics and classifications that were discussed. This was then backed up by specific case examples that were found throughout the content that was evaluated. Even though the document analysis approach has disadvantages, such as the lack of clarity in real-world implementations, it has always been utilised as a stand-alone method by a large number of researchers since it may serve a variety of scientific

needs (Bowen, 2009b; Kassem et al. 2020; Khairilmizal, Hussin, Husna, et al. 2017; Kusumasari et al. 2010; Witlox et al. 2018). The variation covers the diverse acquisition of data and information for research, information and insights that can be valuable additions to a knowledge base and have been the basis of the development of hypotheses or even new theory, information or indications that propose certain questions or circumstances that need to be observed as part of the research, and most critically validating findings or related evidence from other sources, particularly when validating physical oblique evidence (Cooper et al. 2018; Pinsker 2020).

The content validity approach was utilised in the process of providing support for the document analysis methods. This support was achieved through the validation of research tools that were based on reputable resources (Cooper et al. 2018; Khan, 2019). It was determined that the official papers and records of the federal government of Malaysia needed to be evaluated since these documents and records contain significant information that is essential to the governance of emergency management. These documents and records include acts, legislation, standard operating procedures (SOP), guidelines, directives, orders, and many others. Aside from that, standards from professional bodies in Malaysia will also be looked at to make sure that no information is left out.

There are many considerations that went into selecting the aforementioned documents. The first factor is the existence of the document and the ease with which it can be obtained. The document can be obtained in both printed and electronic formats. Documents and records that are considered official by the government of Malaysia can now be obtained in digital form from the relevant ministries for the purpose of being used by the general public. However, in order to access some archives, you will first need to register. In the second place, the genuineness of the documents as well as their practicality is evaluated and taken into account. The level of trustworthiness of the information is exceptionally high due to the fact that the documents and records came from reputable sources and were compiled by the federal government agencies themselves. Finally, the original goal of the document itself, as well as the documents that will be cited later in this study, are aimed at the construction industries in Malaysia or are at least mentioned during the building phase. Identified key papers were reviewed and recorded in order to investigate the components of emergency management contained within the construction industry and the construction site as well as the implementations of these components. The researcher was able to gain an understanding of the governance that governs emergency management in the construction sectors as a result of this.

The results were validated by using the face validity method in order to ensure the validity and reliability of the findings that were presented before. This approach is characterised as a test that appears valid or is approved by researchers or specialists in the field (Asilian-Mahabadi et

al. 2020; Hussin et al. 2012). As a result, the face validity methods were utilised to discuss the knowledge and experience of disaster management and construction industry experts to acquire their perspectives and understanding in validating the findings of the governance of emergency management in construction sites and the construction industry via the identified key documents. This approach has been shown to be effective, as evidenced by the numerous studies in which it has been utilised (Hashim et al. 2016; Hussin et al. 2012; Khairilmizal, Hussin, Yassin et al. 2017; Pezirkianidis et al. 2018; Samsudin, Mohd Yassin, et al. 2020). The same questionnaires were adapted where Six (6) specialists in emergency management and the construction sector went through the results and reviewed the areas where they agreed with the findings of this study. All subject matter experts agree on all study findings. Even though there are possibilities of experts taking their knowledge for granted as well as having different interpretations of the findings, the researchers believe that this can be ignored as all significant findings are in line with local regulation and standards availability.

CURRENT GOVERNANCE

When it comes to matters of health and safety, everything begins with risk, which is the probability and severity of an action that has been determined to be hazardous (Kassem et al. 2020). When an uncontrolled risk or a risk that is only partially controlled leads to an incident that, as a result of the occurrence, disrupts the normal operations or activities of an entity, the entity is faced with an emergency situation (Haddow et al. 2017; Kassem et al. 2020). Thus, by definition, an emergency is an unanticipated combination of circumstances or the consequent situation that necessitates quick action or an urgent need for assistance or relief (Merriam-Webster.com, 2018). When an emergency happens, the effects may not be clear yet because they could affect people, the environment, assets and finances, the reputation or the long-term viability of the entity, which in this case is a construction site. Therefore, depending on the intensity of the incidents, an emergency can be broken down into one of three distinct results: accidents, catastrophes, or crises. These three possibilities are listed below.

Emergencies can be caused by either internal or external occurrences, and as a result, construction sites will have delays. These delays will, in turn, have an impact on the productivity and continuity of the project itself. Researchers have looked into the causes of construction delays in Malaysia in great detail (Afshar et al. 2016; Nurhendi et al. 2022). According to the studies, construction delays can be caused by a number of things, including: the contractor's lack of experience with different construction sites or projects; the contractor's poor site management, which can lead to accidents; mistakes made during construction that affect major designs; a lack of materials, especially a specific type of material (Mustaffa et al. 2018); and the

contractor's poor planning, which often leads to spending more than expected. Problems with the subcontractors, issues with the supply of labour, challenges with both the availability and the performance of the equipment, and a lack of communication between the parties involved. For instance, in the year 2020, the advent of the Covid-19 pandemic sent shockwaves throughout the whole planet. Due to the movement control orders and the application of new standards, one of the effects that Covid-19 has had on the country is a delay in the completion of construction projects (Alenezi, 2020). The researcher predicts that based on the basic delay factors mentioned earlier, situations such as COVID-19, or catastrophic incidents such as building collapse or crane collapse, will result in many delay factors (Afshar et al. 2016; Muhamad Zaini et al. 2020). A construction delay hurts the success of a project, and studies show that delays are a common problem in the construction industry, where they affect not only productivity but also the growth and economy of the country (Hatem et al. 2022; Nurhendi et al. 2022). As a result, delays caused by emergencies at construction sites will always lead to time overruns, cost overruns, disputes, arbitrations, lawsuits, and the total abandonment of the project (Afshar et al. 2016).

The good news is that having a thorough process in place for emergency management can significantly mitigate both the impact and the severity of the effect that construction delays have. Having an efficient emergency management system is one of the pillars of Malaysia's disaster management strategy (Khairilmizal, Hussin, Ainul Husna, Yassin, et al. 2016). Despite this, an exhaustive literature search turned up no direct mentions of emergency management requirements in the construction sectors in Malaysia. A significant portion of this body of material, which includes laws and regulations, focuses on construction safety and management in addition to compliance with general occupational health and safety standards. Following the methods outlined above, the researchers will present the governance of Malaysian construction sites' emergency management.

MALAYSIA NATIONAL SECURITY COUNCIL DIRECTIVE NO. 20 (MNSC20)

The MNSC 20 serves as the nation of Malaysia's disaster management framework. MNSC directive 20's effectiveness is evaluated based on the capability and capacity of developing a unified command structure during the management of disasters. This structure must be able to accomplish the following goals: the establishment of a management mechanism for managing disasters; the reduction of casualties and the minimization of damages to assets and the preservation of environments; the elaboration of the roles and responsibilities of government agencies, statutory bodies, voluntary bodies, and private sector organisations in relation to the protection of man and the environment (Policy and Mechanism of Disaster in Malaysia 2012). Structures and procedures for MNSC 20 have been outlined based on three (3) different levels of

emergency, with each disaster level having its own level of complexity, amount of authority, and level of competence requirements (Khairilmizal et al. 2018). Disasters are managed by either the District, the State, or the Federal government, and are differentiated as Level 1 through Level 3 according to various levels of emergency. It is found to be a local issue that is under control and does not have the potential to spread when a disaster is rated as a Level 1 (District) emergency. This emergency is controlled by the District Level Authority. Incidents of greater seriousness, covering a vast region or exceeding two (2) districts with the potential to expand further, are classified as level 2 (state) disasters, which are led by state-level authorities and encompass a wide territory. Finally, disasters classified as Level 3 (Federal) are handled by the Central Authority. These disasters are more complicated in nature and have an impact across a larger region than two states alone.

Even though the level of disaster in MNSC 20 is classified based on the level of disaster in the affected districts, states, and the federal government, the implementation of the levels are not based on the number of districts or states that have been affected, as was previously outlined in an earlier version of MNSC 20. (Khairilmizal et al. 2018; Khairilmizal, Hussin, Mohd Yassin, et al. 2016). MNSC 20 clearly outlined the factors where it should be based in order to ensure better disaster management at all three (3) levels. These factors include the complexity and magnitude of the disaster, the requirements of resources and logistical capability needed in managing the disaster, especially a more technical type of events, the expertise of professionals needed in managing a specific type of disaster events, the current and expected loss and damage caused by the disaster events, and the estimated cost of the disaster (Khairilmizal et al. 2018; Policy and Mechanism of Disaster in Malaysia, 2012).

The updated version of MNSC 20, which included several important amendments to the earlier directives, was made available for publication (Khairilmizal, Hussin, Ainul Husna, Hussain et al. 2016). The investigators discovered that a number of the factors mentioned the requirement for emergency management on a community level, which includes the commercial development sector. Among them is the need for cooperation and coordination in preventing and reducing disasters, being ready for disasters, which includes raising public awareness and educating people about disasters and disaster management, and responding to disasters by assessing damage and losses, recovering from them, and rebuilding (Khairilmizal, Hussin, Mohd Yassin, et al. 2016). In light of this, the Malaysian disaster management framework stipulates that the construction industry must implement emergency management efforts.

OCCUPATIONAL SAFETY AND HEALTH ACT 1994

'The Occupational Safety and Health Act (OSHA) was passed in 1994 and is enforced by the Department of Occupational Safety and Health. The main goal of OSHA

is to protect everyone's safety, health, and welfare at all workplaces, including construction sites (Affandi & Chia, 2013; Awang & I.M.Kamil, 2014).

Statistics from the Department of Workplace Safety and Health (DOSH) Malaysia indicate that the construction industry poses the highest risk of occupational accidents and fatalities (Affandi & Chia, 2013). This is supported by annual reports of over 200 impairments and deaths (Muhamad Zaini et al. 2020). This is reinforced by research indicating that the high figures are a result of the current methods of safety and health management in the construction industry, which are deemed to be inadequate in terms of commitment from middle and top management, an inadequate workforce, and budget allocations (Affandi & Chia, 2013). Additionally, it was also stated that the impact of low and limited budget allocation on safety and health practices has resulted in a lack of enforcement, monitoring, and safety audits of mandatory safety and health regulations. The aforementioned factors, which have also been seen in a number of studies, have been shown to have the same effect of contributing to poor site management in terms of occupational safety and health practices (Hashim et al. 2016; Muhamad Zaini et al. 2020; Rajendran, 2020). These findings bolster evidence of the construction sector and its associated building sites have a poor track record in safety management.

Through the studies mentioned, it's clear that construction sites have a lot of emergencies every year, even though the severity of the emergencies varies. This is important since emergencies reduce or stop construction site production (Afshar et al. 2016). Effective emergency management can mitigate this impact. Regrettably, OSHA 1994 and its regulations did not highlight the necessity of emergency management at construction sites in any precise way (Affandi & Chia 2013).

Despite the fact that emergency management contexts were not directly mentioned in the Occupational Health and Safety Act of 1994, the necessity of providing emergency response management at work is obliquely mentioned in the legislation under Part IV, Section 15 to Section 17 where it describes an arrangement to ensure the safety of people at the workplace. This legislation was passed in 1994 (OSHA, 1994). Employers, including contractors, are responsible for ensuring compliance with the rules and regulations established in the Act by ensuring that the construction site is safe and free from health hazards (Ayob et al. 2018). In addition, it is the responsibility of the contractors to take all precautions that are reasonable to design comprehensive safety plans and to correctly follow those plans until the completion of the construction activities (Affandi & Chia 2013; Awang & I.M.Kamil 2014; Hashim et al. 2016). This includes the process of ensuring site entry security and safety, comprehensive and effective hazard communications in displaying harmful substances or hazardous events that include safety signs that can be read by the different levels of workers, and finally providing reasonable instructions to visitors, sub-contractors, and workers before they enter and while they are working within the construction sites, which

includes following the rules in the safety plan when they are required to do so (Awang & I.M.Kamil, 2014; Ayob et al. 2018).

Under OSHA 1994 Sections 15 to 17, it highlights the need for emergency management to make sure the safety of workers at construction sites during emergencies. In addition, thorough emergency management can ensure the successful management of emergencies, which contributes to the rapid recovery and continuity of operations at construction sites.

GUIDELINES AND BEST PRACTICES ON OCCUPATIONAL SAFETY AND HEALTH IN THE CONSTRUCTION INDUSTRY

The Department of Safety and Health in Malaysia has developed several guidelines and best practices for construction, including the Guidelines and Best Practices on Occupational Safety and Health in the Construction Industry, despite the fact that there is no supporting regulation towards the act on the need for emergency management (DOSH, 2017, 2019). The guidelines and best practices offer the client, the designer, and the contractor practical direction on the management of safety, health, and welfare when carrying out construction projects of a structure. These guidelines and best practices are in support of OSHA 1994.

In terms of responding to and managing emergencies, the document only mentions the need for Emergency Response Plans (DOSH, 2019) and emergency response necessities like emergency facilities, emergency routes, and exits (DOSH, 2017). The provision that employees should be provided with the information and instructions that they need to carry out during emergencies is designed to support the requirements outlined above. Even though words like "emergency arrangements" and "emergency procedures" are used, the researchers found that this mainly refers to the immediate response to an emergency and not how the emergency is managed as a whole. This is shown by the fact that the documents focus more on first aid, firefighting, and evacuation at construction sites than on the need for good emergency management, which includes the organisation structure, information management, situational awareness, communication matrix, and resources and logistics.

EMERGENCY MANAGEMENT GOVERNANCE AT CONSTRUCTION SITES THROUGH THE OCCUPATIONAL SAFETY AND HEALTH REGULATIONS

Through the analysis conducted, the researchers believe that both the Occupational Safety and Health Act of 1994 (OSHA) and the Guidelines and Best Practices on Occupational Safety and Health in the Construction Industry (Guidelines and Best Practices on Occupational Safety and Health in the Construction Industry) summarise the following challenges to ensure the effective management of emergencies:

1. Since the documents themselves serve simply as suggestions or best practices, the majority of construction sites will focus on meeting the bare minimum criteria rather than developing an all-encompassing emergency

management procedure. Even though the guidelines are based on OSHA 1994, as was mentioned earlier, there is no indication in the Act that there is a need for an emergency or disaster management procedure.

2. There is a lack of standardisation of the potentially developed emergency response plan (ERP), as the documents only give a brief outline. Due to the varied contexts and vocabulary usages, this could subsequently end up becoming an issue with the agencies that respond to emergencies (Hamzah, 2006).
3. Since a competent person to develop ERP documentation or procedures is not indicated, the researcher came to the conclusion that it shall come under the duty and responsibility of the safety officer, who, regrettably, is not a competent subject matter expert on emergency management.
4. The legislation and operational expertise of multinational contractors often pertain to their parent organisations in the countries of origin. This is because some projects may entail the usage of international contractors. As a result, there is a lack of understanding regarding the Malaysian disaster management environment, which will make it difficult to dovetail it with Malaysia's policy regarding disaster management;
5. Emergency procedures developed based on the given guidelines are not being guided by the lead responding agency in Malaysia as defined in MNSC 20, which means that there is a possibility of a process or procedure that could put construction workers in danger, or even worse, the responding agencies themselves.

The researchers also believe that not all construction industries may have the resources to develop a full emergency or disaster management plan. However, it is expected that standardizations will help both large and small construction sites prepare for any adverse event.

INCIDENT MANAGEMENT SYSTEM (IMS), IN THE PROCEDURE IN APPLYING CERTIFICATE OF COMPLETION AND COMPLIANCE (CCC) FROM THE FIRE AND RESCUE DEPARTMENT OF MALAYSIA (FRDM)

It is necessary to provide a specific level of guidelines for the construction and inspection of a structure in order to guarantee the safety of buildings and other man-made structures. As a result, building codes and regulations came into existence with the purpose of safeguarding the general populace by laying down a set of prerequisite criteria. Certificate of Fitness (CF) is one of the ways that local authorities, including the FRDM, use to ensure that a building has been erected in line with UBBL and regulations. CF is one of the acronyms that stands for "Certificate of Fitness" (Uniform Building By-Laws, 1984). CF is enforced for the occupation of a building through the subsidiary legislation issued under section 133 of the Street, Drainage and Building Act 1974, which is the Malaysia Uniform Building By-Laws (UBBL) 1984. This legislation is accessed through the Malaysia Uniform Building By-Laws website. For this reason, the FRDM is going to demand that the building owner provide

them with a copy of the fire operation manual as well as the emergency protocols. These documents include the overall as-built Fire Protection System as well as the Emergency Response Plan (ERP) and the requirements for having an Emergency Response Team (ERT) (Hamzah 2006).

In 2007, the Certificate of Completion and Compliance (CCC) is a new word created by the Street, Drainage and Building (Amendment) Act 2007 (Amendment Act) to increase the effectiveness of the system and transfer the obligations to the specific subject matter experts. It is based on self-regulation and is granted by the private sector rather than the certificate of fitness for occupation (CFO), which it has replaced. The Fire and Rescue Department of Malaysia is considered one of the six essential services that must be provided before a CCC can be issued (FRDM). The Incident Management System (IMS), in the Procedure for applying CCC from FRDM, provides a complete explanation of the required ERP Documentation requirements (FRDM, 2008). This document has a number of advantages, one of which is the possibility to implement other internationally recognised standards.

The researcher believes that the document points out that the ERP needs to be made by a qualified and experienced person, that each facility or structure in Malaysia needs its own ERP documentation, and that the ERP should be made based on the locals' disaster management environments while implementing the right international standards, and that the ERP Documents should be sent to FRDM for review and perusal before it is endorsed by them as the lead responding agency during emergencies. One of the most significant drawbacks of the document is that it is not designed to be used during the construction period of the facility or structure; rather, its purpose is to be utilised only after the facility or structure has been completed. As a result, it is not possible to employ the technique itself for the purpose of managing emergencies on construction sites.

ENVIRONMENTAL QUALITY ACT 1974 AND THE ENVIRONMENTAL IMPACT ASSESSMENTS GUIDELINES

An Environmental Impact Assessment (EIA) is a study that identifies, predicts, evaluates, and communicates information about the impacts (both beneficial and adverse) on the environment of the proposed development activity. This study is required for the development of a project that may contribute to the impact that is had on the environment as a whole (DOE 2016). Before the project can be approved, the developer of the development will need to provide a comprehensive EIA that details the mitigation measures. The process will analyse the anticipated interaction with the physical, biological, and constructed environments based on the established principles. The process will also include an investigation of the characteristics of the environment in which the development will be placed. This process was created in the nation with the primary intention of assisting with the environmental planning of new development projects or the expansion of existing development projects.

As a result of the authorities delegated to it by the provision of Section 34(A) of the Environmental Quality Act of 1974, the Department of Environment (DOE) bears the overall responsibility for the EIA process (Act 127). According to the provisions of Section 34A (2) of the Act, any person who has the intention of engaging in any of the prescribed activities is required to make an appointment with a Qualified Person who will then carry out an EIA and submit a report to the Director-General of Environment. This appointment is mandatory. The Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015 details the activities that must undergo EIA and makes them mandatory. The Department of Energy (DOE) in Malaysia released the Environmental Impact Assessment Guidelines in Malaysia, in 2016 as a guidance document on the development of the EIA report for the project proponent and EIA qualified person. Through EIA, the study will identify the potential impact of the proposed projects on the environment, socioeconomics, and human health, and recommend mitigation measures that can be adopted to minimize the anticipated consequences. This should be taken into consideration at each stage of the proposed project, including not only the operational and abandonment stages but also the pre-construction and building stages as well.

One of the components of EIA is the requirement to prepare an Environmental Management Plan (EMP) and an Emergency Response Plan (ERP). These plans must include the land Disturbing Pollution Prevention and Mitigation Measures that are recommended in the EIA report and the approval conditions that must be met in order for the project activities to be approved. It is essential to have this document in order to effectively manage environmental impacts that may result from any phase of the project activities, including the construction phase. The EMP document outlines a methodical strategy for the reduction of anticipated consequences, with the goals of environmental monitoring and assessment. Information on water pollution control, air pollution control, and noise control, waste management, abandonment and closure plan and environmental response plan are some of the environmental standards that must be included in the EMP (ERP).

However, it is the researcher believes that the EIA faces the following obstacles in assuring the efficient management of crises during the construction phase. The ERP's intended usage is during the operational phase of the project in question, and it does not cover the construction phase of the project itself. This poses a problem for EIA since it prevents the company from effectively managing emergencies during the construction phase. As a result, the researchers have come to the conclusion that the aforementioned ERP's practicality during the construction phase is uncertain.

OTHER REGULATORY GOVERNANCE

There is another regulatory governance of construction sites which worth mentioning in this paper. This includes the

Social Security Organization (SOCSO) and CIDB. SOCSO was initially established in 1971 to equip non-government employers with socioeconomic security (Muhamad Zaini et al. 2020). The Employees Social Security Act 1969 instructs all employers to provide assistance to their employees in case of job-related accidental injuries and diseases by subscribing to SOCSO. Hence the intended usage of SOCSO is not to manage the emergency, but more towards the aftereffects of job-related injuries and diseases (Ayob et al. 2018).

CIDB on the other hand has taken the initiative to ensure that all workers in the construction sector possess a Green Card which required workers to have a safety training certificate before they start working. With these efforts, it shall not just ensure construction workers are aware of the importance of workplace safety, the green card program also provides significant pieces of information on the legal requirements and welfare of the construction workers at the construction site (Hamid et al. 2019). However, the content of emergency management is not comprehensively covered as the elements of emergency management not just involved contractors at the site, but also involve middle management and top management managing the company who is responsible for the site (Hussin et al. 2018).

INTEGRATION OF DOCUMENTS TOWARDS IMPLEMENTATION OF MNSC 20

MNSC 20 governs the disaster management environment in Malaysia. This is supported by the fact that the level of disaster started at the district level and goes up to the states and federal levels. Unfortunately, based on the given level of disaster, it is clear that the MNSC 20 did not elucidate stages before the district level of disasters, this includes incipient stages of emergencies within a community which includes construction sites. Even though MNSC 20 provide specific guidance for the government agencies, statutory bodies, voluntary bodies, the private sector, and including individuals in prevention, preparedness, response, and recovery from disaster, in order to manage incipient stages of emergency before the activation of the directives, an Emergency Response Plan (ERP) needs to be developed within the community and this includes for the construction site.

Through extensive literature search and document reviews, it is summarized that the governance of emergency management at the construction site in Malaysia is not available. The researchers came to the conclusion due to the following reasons:

1. OSHA 1994 vaguely mentioned the need for emergency management based on the role of employers toward employees in providing a safe workplace.
2. Support guidelines and best practices on Occupational Safety and Health in the Construction Industry which even though based on OSHA 1994 is only a recommendation and suggestion and can't be considered for governance towards emergency management at the construction site.

3. The development of ERP as mentioned in the Procedure in Applying Certificate of Completion and Compliance (CCC) from the Fire and Rescue Department of Malaysia (FRDM) and the Environmental Impact Assessment Guideline is intended for the use in operational phase and not during construction. Hence, the document itself is not viable during the construction phase.
4. The EQA 1974 outline the need for emergency documentation, however, no standardizations and referral elements are mentioned
5. CIDB green card program is intended for workers to understand workplace safety and SOSCO is intended to equip non-government employers with socioeconomic security however, minimal attention was given towards emergency management

CONCLUSION

All of the documents mentioned in this study indicate the proactive effort toward workplace safety through strict governance and guidelines. The advantages of these efforts are the proactive efforts in preventing any incident from ever happening, but unfortunately, an accident can happen in any type of situation and condition, making the construction sites prone to more severe impact during any emergencies. Hence, there is a need to be prepared for emergencies via effective management of emergencies. The currently available documents on the need for emergency management in construction sites just vaguely mention the process of emergency response and others mainly act as a reference which can be ignored. Through extensive literature research, the researcher belief that there is no clear governance on the need for emergency management for the construction site. Hence, the researcher's belief is that in ensuring the implementation of emergency management in construction sites, it should start with clear governance of emergency management which is later then supported with clear guidelines and best practices. This will ensure the best protection, not just towards the construction sites, but also towards the overall continuity and productivity of the project including the country's economy as well.

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DECLARATION OF COMPETING INTEREST

None

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