THE HISTORICAL OVERVIEW OF QUAKE MANAGEMENT POLICY IN CHINA: FROM TANGSHAN, SICHUAN, TO YUNNAN

Sejarah Kebijakan Penanganan Gempa di Cina: Studi Tangshan Sichuan dan Yunnan

Devi Riskianingrum
Research Center for Regional Resources - Indonesian Institute of Sciences
praise_d@yahoo.com

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ABSTRAK

Gempa bumi merupakan bencana alam yang kerap memakan banyak korban jiwa dan memperlambat laju perekonomian di Tiongkok. Dua bencana gempa terbesar yang menimpa Tiongkok di abad ke-20 adalah Tangshan di tahun 1976 dan Sichuan di tahun 2008. Namun demikian, paling tidak terdapat empat gempa besar yang menimpa Tiongkok dalam lima tahun terakhir. Terkait dengan hal tersebut, manajemen penanganan bencana menjadi hal terpenting yang harus dikelola secara profesional oleh Pemerintah Tiongkok dalam rangka meminimalisir dampak dari bencana yang terjadi. Fokus dalam penelitian ini ialah berbagai kebijakan yang dikeluarkan oleh Pemerintah Tiongkok terkait dengan penanganan bencana gempa bumi dan efektifitas pelaksanaannya di lapangan. Beberapa penelitian mengenai manajemen bencana di Tiongkok telah dilakukan oleh Divisi Asia Pasifik, Pusat Penelitian Sumberdaya Regional LIPI sejak tahun 2010 sampai dengan tahun 2015. Beberapa hasil penelitian mengenai kebencanaan di Tingkok di antaranya adalah Disaster Management in China: History and Institutional Networks pada tahun 2010 dan the Representation of Sichuan Earthquake: State Control, Museum, and The Role of the Army pada tahun 2011. Selanjutnya, melalui wawancara mendalam dan studi literatur, artikel ini mendiskusikan dua pertanyaan utama, yaitu bagaimana sejarah pembentukan kebijakan terkait penanganan gempa di Tiongkok, dan bagaimana efektifitas pelaksanaan kebijakan tersebut pada empat gempa yang terjadi di Tiongkok, yaitu Tangshan (1976), Sichuan (2008), Qinghai (2010) dan Yunnan (2014). Tulisan ini mengklaim bahwa kebijakan dan aturan yang dikeluarkan pemerintah terkait dengan manajemen bencana di Tiongkok tergolong efektif dan sukses, namun demikian masih terdapat gap informasi dan minimnya koordinasi antar-institusi yang terkait di dalamnya.

Kata Kunci: *gempa Tangshan, gempa Sichuan, manajemen bencana, Tiongkok*

ABSTRACT

The earthquake is one of the deadliest natural disasters that hinder economic progress in China. The two biggest 20th century catastrophic quakes occurred in China are Tangshan in 1976 and Sichuan in 2008. Additionally, there are at least four massive earthquakes that struck China in the last five years. Hence, the disaster management is one of the main factor to be seriously administered by the Chinese government, both in the central level as well as to the regional and local level. Therefore, this paper aims to examine some policies issued by the Chinese government in the context of earthquake management and its effectiveness. The discussions on disaster management in China have been deeply explored by Asia Pacific Research Team at The Research Center for Regional Resources LIPI and published under the title of Disaster Management in China: History and Institutional Networks in 2010. Furthermore, the research team also conducted a research on the Sichuan earthquake and published a monograph entitled The Representation of Sichuan Earthquake: State Control, Museum, and The Role of the Army. We conduct both some in-depth interview and literature review concerning the historical process of initiating some earthquake policies, and its practical effectiveness. This paper discusses the disaster management based on various policies and responses of two contemporary deadliest quake in Tangshan (1976) and Sichuan (2008), and two recent earthquakes occurred in Qinghai (2010) and Yunnan (2014). The paper claims that policies and regulations issued by the government in disaster management in China are successful to some extent though there is a lack of coordination, and some informational gaps in the existing institutions.

Keywords*: Tangshan earthquake, Sichuan earthquake, disaster management, China.*

INTRODUCTION

China suffers from various types of a high frequency's natural disasters. In particular, since the 1990s, the impact of material losses from natural disasters are increasing, and indeed it turns into one major factor that hinder economic progress in China (UNISDR 2005). The earthquake is one among those various factors. Since 1949, the earthquake has claimed more than 300,000 lives, caused 1 million injured and physical disabilities, and destroyed 10 million homes, government buildings and public facilities. The two deadliest China's catastrophic quakes in the 20th century are Tangshan in 1976 and Sichuan in 2008. The magnitude of Tangshan earthquake was 7.8 on the Richter scale, where 242,000 people are killed and 164,000 people are wounded. Meanwhile, the Sichuan earthquake, which occurred three months prior to the Olympic Games in 2008, caused a deep sorrow to most Chinese. The disaster killed approximately 69.197 people, injured nearly 374.176 persons, and causing 18.263 people are missing (Zhang, 2008, 6). Additionally, more than 15 million homes destroyed, implying 10 million homeless citizens, 1.5 million individuals are displaced, and entailing more than US$ 20 billion material loss. It is the worst natural disaster striking China since the Tangshan earthquake in 1976.

Furthermore, the world has been witnessed five massive earthquakes that struck China in the last five years. Firstly, it was on August 30, 2008 in which case the southwestern region of Sichuan are struck off by the 6.1 Richter scale earthquake, and killing 38 people. In 2010, the earthquake shook the area of Yushu, Qinghai, with the magnitude of 7.1 on the Richter scales. 1,944 people are killed as a consequence of the disaster. On September 7, 2012, an earthquake hit the region of southwest China, mainly in the border between Yunnan and Guizho provinces. Although the victims are not as many as in 2010, namely around 43 people are death, but more than 100,000 people homeless and economic losses are quite serious. Subsequently, on April 20, 2013, an earthquake measuring 7.0 on the Richter scale jolted Sichuan, mainly in the city of Ya'an, southwest of Beijing. The death toll was nearly 200 people and 2,600 people are injured. In 2014, Ludian region, in Yunnan province, rocked once again by the 6.1 magnitude quake. The quake took 410 life and harmed 2,373 people (Tempo, 2013).

THE FORMATION OF MANAGEMENT AND MONITORING EARTHQUAKE POLICIES IN CHINA: A HISTORICAL OVERVIEW

Actually, the earthquakes that arise, either as a result of the movement of tectonic plates, as well as due to volcanic influence, do not harm humans. However, the earthquake ignites further damages, either in terms of infrastructural destruction or tsunami waves by which triggering many casualties. Stallings (2005, 263) as cited by Perry (2005, 8) conceives a disaster as a "social situation" caused by the destruction of non-routine due to the forces of nature. Therefore, the natural forces that caused the disaster eventually ruining normal activities, and furthermore, collapsing the social order that has been established. Therefore, some destructive earthquakes challenge the social system of affected society. This is as happened on Tangshan earthquake. Due to the hit, the city was falling apart and all social activities were collapsed. The city requires more than five years to restores its social order. As well as Tangshan, the Beichuan city, as a center of the quake epicenter, also faced a similar situation in which case all of its social activities are ruinous. The government decided to replace the city into a new area and left behind the previous spot. It took three years for the government to relocate and to re-establish the social order in a new Beichuan city. As a means of lesson learned and memorial site, the ruined city is then transformed by the central government into a living museum (Carbonneau, 2011; Liangen, 2010). Since the earthquake hits China repeatedly, an alert system to cope with the quake itself should be constructed and well prepared. As Jan Smith says "they are part of

nature, have happened in the past and will happen again…" (Smith, 2003).

An academic explanation of the fragile China is the intra-plate tectonic energy which could be understood as an after-effect of the collision between the Eurasian plate and the Indo-Australian plate in the Himalayas (Ross, 1984, 774). Therefore, the disaster management is the main factor to be administered comprehensively by the Chinese government.

The discussions on disaster management in China have been explored by the Asia Pacific Research Team at the Research Center for Regional Resources LIPI in the project of *Disaster Management in China: History and Institutional Networks* in 2010. Furthermore, the research team also conducted a research on the Sichuan earthquake in the project of *the Representation of Sichuan Earthquake: State Control, Museum, and The Role of the Army*. Riskianingrum (2011) explains, that as a response of the tragedy, the Chinese government and the private entrepreneurs initiated the earthquake museum Anren and Beichuan in order to commemorating the catastrophe as well as for the lesson learns to the whole country. Therefore, this paper pays attention to the historical development of policies made by the Chinese government in the context of earthquake management and its effectiveness in coping them. The questions are: what is the historical process of initiating policies concerning earthquakes in China? Did those policies apply effectively? This paper discusses two deadliest quakes in modern time, namely Tangshan (1976) and Sichuan (2008) and examines two latest earthquakes occurred in China, Qinghai (2010) and Yunnan (2014) based on some literature reviews, several in-depth interviews, and an on-site visit to Sichuan.

Col (2007) explains that in 1976, prior to the Tangshan earthquake occurred, the government has set up an office for the earthquake monitoring, in charge of designing the proper procedures for rescuing people, training government officials, as well as simulating the earthquake mitigation to the local community. Furthermore, two weeks prior to the Tangshan earthquake, the local seismologists detect an abnormal signal in the Beijing-Tianjin-Bohai-Zhangjiakou regions that they thought as a possible earthquake. Accordingly, on July 24, 1976, the Qinglong party officials responded to the presentation of the seismologists, and held a preparatory meeting. Furthermore, the party officials strengthened the coordination system, information, and leadership among relevant agencies in order to monitor the situation. They also disseminated information to the public in the area of Qinglong about the probability of an earthquake, and placing medical devices in some spots. On 25 and 26 July, with the assistance from volunteers, the local government held an emergency meeting involving the local communities in the region to teach them how to escape if an earthquake occurs, including encouraging people not to close and lock their doors at night so that they could easily save themselves whenever they felt the tremor. As a result, when the earthquake struck Tangshan on July 28, 1976 at 3:42 AM, there was only one victim died in this region due to a heart attack despite 180,000 flattened buildings although the area was quite close to the epicenter of the quake (Col, 2007; Lo, 2014, xiii-xv).

This condition shows the responsive action of Qinglong's government, as they are aware with the potential earthquake, has saved many lives. Beside providing counseling and education on how to deal with earthquakes, the Qinglong's government actions ranged from conducting the geological data collection to predict the strength of earthquake, establishing some seismology offices in the region in order to monitor the movement of the earth, and publishing some regulations on the rescue and evacuation activities during the earthquake. Moreover, the existence of public awareness about the earthquake, in which case they followed the instructions given by the local government, has saved them from deathly earthquake (Lo, 2014). Therefore, it could be concluded that the positive cooperation between

the local government, society and geologists is effective in coping the locals with the earthquake, and reducing the number of victims.

At the beginning of its establishment in 1949, the Chinese government mostly focused on the welfare of its people. Under the reign of Mao, the Chinese government tried to align themselves with other developed countries through various economic policies, such as land reform, Anti-Movement Three (San Fan) and Anti-Movement Five (Wu Fan). Those policies are essentially against corruption and bureaucratic inefficiency, and suppressing the five kinds of crimes, namely bribery, not paying taxes, stealing the state funds, deceiving contracts with the government, and misusing the economic information of state property. Furthermore, Mao also focused on developing heavy industry in order to generate the Chinese economy through massive industrialization and exploiting the cheap labor. This is well known by the people as the Great Leap Forward (Meisner, 1998 p. 80-90). Despite the success of these programs, the economic and political issues still be the main purpose of Mao's administration. Unfortunately, research and disaster management are put as the subordinate subjects compared to those two previous issues. Such thing is obviously shown by the small effort to study natural disasters, particularly earthquakes, in Mao's administration (Ross, 1984).

At the early decades of the PRC establishment, the Chinese government paid attention to the disastrous policy mainly focusing on prevention and protection. The issue of post-disaster relief and reconstruction are neglected by the government at the time. On the one hand, as a token of protective and preventing policies, the Chinese government relied on its military forces, in which case they are much more prepared to tackle the political and economic problems instead of natural disasters. On the other hand, as a token of post-disaster management, the central government provided tax incentives and increased the food supply from the central to the affected area (Ross, 1984, 776).

The central government did not provide sufficient support to the study and research on earthquake including its disaster management. A token of their effort was founding some seismological observation stations in some earthquake-prone areas. Indeed, Mao's administration rapidly developed such stations from two stations in 1949 up to 24 stations in 1958 (Ross, 1984). Furthermore, the government also developed a measurement method based on the Chinese traditional calculation. This is well known by the people as the scale of twelve degrees. This calculation applies in the architecture and engineering as well. Twelve degrees scale is a way of measuring the intensity of the shock at some certain points. This causes the shock scale of the earthquake varies from one region to another, depending on the distance and other factors. By contrast, the international community uses the Richter scale for the earthquakes measurement. For example, the Tangshan earthquake in 1976 showed 7.8 on the Richter scale, while according to the twelve degree scale of Chinese, the earthquake in Tangshan is XI and it is VIII in Beijing. Different figures of the same earthquake are caused by the distance between Tangshan and Beijing. Both cities are far enough so that the shaking is smaller in Beijing (Ross, 1984).

The application of twelve degree scale in architecture and industry shows the development of research and observational activities of the government in adjusting with their own natural condition. Unfortunately, this effort did not work smoothly due to inadequate financial support and the strong political control in China. Consequently, no significant improvement of awareness to anticipate the threats of earthquake in China. It is obviously shown by the lack of seismological data and its classification in both planning and developing buildings. This is proven by a total destruction of some buildings in Tangshan right after the earthquake (Ross, 1984).

In the period of 1966 to 1976, China

is rocked by 14 times earthquakes where the averages were above 7.0 on the Richter scale. These particular facts attracted the central government's attention about the necessity to take preventive measures by establishing institutions that work on how to anticipate earthquakes.

The first earthquake observation institution in China is established under the auspices of the Chinese Academy of Sciences. Then, following the earthquake in Xingtai in 1966, Mao's government established the seismic maintenance agency under the supervision of the National Commission on Science and Technology and the Chinese Academy of Sciences. The new task force established and named as the Central Task Force of Earthquake of the Chinese Communist Party, right after China is rocked by a 7.4 magnitude earthquake hitting Bohai Bay region on July 18, 1969. Based on the earthquake coming in a row, the central government decided to establish a national specialized agency on earthquake management namely the National Earthquake Bureau. The agency was officially under the coordination of central government in 1975. At that time, China is the only country that established the administrative institutions of seismicity under a central coordination. This bureau is renamed in 1998 as the China Earthquake Administration (Bai, 2010).

In addition, the government's attention to the earthquake is also shown by their effort in making seismic intensity maps or the *Seismic Intensity Zoning Map* at the end of the 1950s. Thus, the second and the third edition of the maps were published in 1977 and 1992 with some improvements in various aspects. While the Chinese seismology department was developing the scientific method of earthquake prediction, community members are encouraged by the government to predict earthquakes based on their experiences. Through this method, the Chinese managed to conduct a precise prediction of several earthquakes, such as the Haicheng earthquake in 1975, Longlin earthquake in 1976, and Songpan earthquake in 1976 (Yi, et.al. 2012, p. 297). Actually the Tangshan earthquake has predicted though the Chinese government was wrong in measuring its strength. It is estimated to be only V of twelve degrees scale but it reached the value VIII-XI (Lo, xv).

Currently, all Chinese local governments as well as all earthquake-prone areas have their own local offices of Earthquake Administration. The expansion of tasks is carried out by the agency in order to strengthen the local government readiness against earthquakes. There are 11 main tasks of the bureau, namely (i) to formulate and to implement national strategies, guidelines, regulations, and laws which are relevant to the earthquake disaster readiness and mitigation; (ii) to organize and to plan a national program for disaster preparation and the earthquake mitigation, and making the emergency response plan against some destructive earthquakes, as well as setting up a registration system and guidelines related to the readiness and earthquake prediction; (iii) formulating a national seismic intensity zone map as well as a map of the strong ground motion zone parameters, running the seismic safety evaluation, and determining the level of seismic fortification (seismic fortification levels); (iv) providing supervisions and doing inspections of the tasks related to the earthquake disaster preparedness in accordance with the regulation in the *Law of the People's Republic of China on Protecting Against and mitigating Earthquake Disasters*; (v) implementing a dual-government system, be centered on the CEA, in the provincial and municipal earthquake and building management systems and financial plans, and guiding staff in the city and local level; (vi) monitoring nationally and periodically, and regulating various activities concerning earthquake predictions, and capturing and reporting the tendency of seismic conditions, proposing some necessary actions to the central government, and in return, applying those actions insofar as they are approved by the central government; (vii) serving as the command center of the earthquake disaster relief, and reporting the actual condition to the central government;

(viii) to conduct research and collaboration with various national and international institutions associated with the earthquake; (ix) providing guidance for educating the locals and publishing all information about earthquakes ranged from the locals readiness to face earthquakes and mitigation; (x) to control and to administer the use of the earthquake disaster relief funds, both infrastructure and other projects; (xi) carry out all tasks ordered by the central government. (English1, 2005).

Furthermore, each CEA office is equipped with a monitoring system and earthquake prediction. The system consists of digital seismic observation networks, which ranged from 48 seismic stations, 23 digital seismic telematics at the provincial level, and 25 sustained observations, as well as more than 400 observation stations at the local level (Yi, et.al., 2012). In order to socialize the new requirements of seismic fortification, in 2001, China released the fourth edition of the *Seismic Ground Motion Parameter Zoning Map* with the scale of 1: 4 million. This edition adopts a probabilistic seismic hazard analysis and prefers the risk probability level exceeding 10% in the 50 years as a criterion to the seismic zoning fortification map. The fourth edition of seismic zoning map, which is prone to be more academic and advanced, shows that the theory and application of seismic zoning in China has been conformed to the international standards (Yi, et.al., 2012).

In 2011, the office of China Earthquake Administration (CEA) issued a guideline to cope the earthquake with its basic principle, to wit, to reduce casualties and property losses caused by the earthquake at maximum level. The purpose of these guidelines is to improve the ability of the country to predict earthquakes and mitigate its effects through some fancy technology and innovation, as well as comprehensive training for rescuing workers and the improvement of social management. The government through all CEA calls for increasing professionalism in the rescue efforts, and promoting the scientific and technical innovations to improve their abilities in prognosticating earthquakes and the response management (Ma, 2013). Associated with the policy, the Chinese government since 1949 to 2010 have issued at least 100 laws and decrees related to the prevention and mitigation of disasters, including earthquakes. One aspect of those regulations is the law and regulations of geological disasters. These laws ranged from the *Law of the PRC on Protecting Against and mitigating Earthquake Disasters; Rapid Report Regulation of the Situation of the Earthquake*; *Work Rules of Seismic Losses Assessment*; *Work System of Earthquake Emergency Inspections*; *Emergency Ordinance of Destructive Earthquake*; *Management Regulation of Earthquake Predictions*; *Protection Ordinance of Facilities for Earthquake Monitoring and Environment for Seismicity Observations*; and *Management Methods of Geological Disaster Prevention* (Yi et. al., 302).

The implementation of earthquake risk reduction and prevention is officially governed by a regulation adopted by the Chinese government in 1988. Later in 1994, the government issued some regulations supporting the improvement of seismic monitoring facilities by issuing specific a regulation called the *Act for Facilities of Earthquake Monitoring and Environmental Conditions of Earthquake Observation*. The step is taken in order to comprehensively and continuously conduct the seismic observation activities as a benchmark for the prevention and mitigation activities. Upon the occurrence of a large earthquake in Kobe, Japan in 1995, the Chinese government responded by issuing a regulation called as the *Emergency Response Act for Destructive Earthquake*. The action is based on the alertness that a similar earthquake could occur in China. Moreover, the government made a regulation named as the *Law of the People's Republic of China on Earthquake Prevention and Disaster Reduction* where it officially came into effect on December 29, 1997 and be applied

in March 1998. This regulation provides a legal certainty for protecting the CEA from various interventions that may interrupt the earthquake disaster management tasks (www.earthquake.tier.org.tw/document/sedmess/s11.pdf).

Entering a new millennium, China reformed once again the rules related to the management of the earthquake by which the government issued *Regulations on the Prevention and Control of Geological Disasters* in 2003. This is followed by another rule called *Regulations on the Handling of Destructive Earthquake Emergencies* in 2005. However, during the Wenchuan earthquake in 2008, the government re-issued a new regulation for handling of the impacts of such particular earthquake, namely the *Regulations on Post-Wenchuan Earthquake Restoration and Reconstruction*. In particular, this regulation is issued by the government in order to accelerate the recovery of communities and infrastructure right after the Wenchuan earthquake (Pandey, 2012, 47-48).

SEVERAL CASES ON EARTHQUAKE MANAGEMENT RESCUE: FROM TANGSHAN TO LUDIAN

Related to disaster management in China, in November 2003, the Chinese government endorsed the "Emergency Law" but it has not been widely publicized. Then, these rules are amended in March 2004 by shifting the terminology of 'martial law' to 'emergency law.' Next, in December 2005, China established the *Emergency Management Office* (EMO) and start developing a new EM system. Subsequently, the central government issued a *Master State Plan for Rapid Response to Public Emergencies* in January 2006. The law was finally passed into *The Law of the People's Republic of China on Emergency Responses* on August 30, 2007, and came into effect on November 1, 2007. This law is a major milestone in China's systemic emergency management. Along with this regulation, the emergency management in China enjoys a legal support from all levels of authority, from the central government to the local level. Ever since then, the Chinese government began to establish various forms of emergency plans based on this framework. In March 2009, there are approximately 51 national-level emergency plans have been developed. In addition, both 138 nationally owned companies and all mining and chemical related companies have developed emergency plans (Bai, 2010).

The operational mechanism of disaster management in China could be summarized as follows: a unified leadership, tiered responses and functional divisions, based on the local government and central government supports. Unified leadership means the government issued a policy, some regulations and planning, and then make decisions, orders, supervisions and coordination in order to implement the benchmark of disaster mitigation (Yi et.al., 2012. 296). Related to this, the Chinese government through the Ministry of Civil Affairs issued the National Comprehensive Disaster Prevention and Mitigation Twelfth Five-Year Plan (2011-2015) in 2011 where the earthquake response, relief and preparedness are included into such plan.

Tangshan 1976

The 1976 Tangshan's disaster relief is inevitably slow due to President Mao decided to close the information and the region from foreign aid, and encouraging his fellow citizens to hold the principle of *Bai no date* or independence. Therefore, Tangshan disaster relief depends only on the Chinese People's Liberation Army (PLA) and medical forces being set up by the government. The first aid provided by the central government through the Central Disaster Relief is sending 100,000 troops and 20,000 medical staff to work hand in hand in the affected areas. At that time, medical forces are divided into three parts. Firstly, medical staff who are responsible to provide the first aid needed by victims. Secondly, they who served as a mobile medical staff readily to conduct some medical treatments on the spot, such as surgeries. Thirdly, they who worked

at hospitals and in some regions around the earthquake (Amri, 2010).

Tangshan's rescue and relief acts showed up China's unpreparedness both in regulations and its actions while dealing with the quake. Actually, at the beginning of 1976 there has been a signal indicating the occurrence of a potential large earthquake, but the Tangshan government preferred to wait for a clearer sign indication, such as what have happened in Haicheng earthquake. Unfortunately, it was not a sign that appear but rather a massive earthquake that occurred on the first place; hence there was not any warning to society from the government. At that time, the government was hesitate to issue a warning because at that time Tangshan was the center of industry and economy, which if there were a fake alarm, then it could affect their economy. This indicated that China's policies and regulations are totally based on observation, and the early warning of earthquakes was still incomplete, and not fully supported by the local government (Ross, 1984, 783-784).

Another point concerning the quake was the weakness of building construction in Tangshan. Consequently, most of existing buildings, including a new building less than a year prior to the quake, are demolished by the earthquake. In fact, the government clearly issuing regulations and policies regarding the building safety standards related to the earthquake disaster alerts. In reality, many of these buildings did not meet the criterion of building security. This suggests that the availability of regulation in China is not obeyed yet by various sectors (Ross, 1984, 785).

Wenchuan 2008

Wenchuan earthquake in 2008 was one of the great disasters in the 20th century that hit China. Actually, China's quake measurement tools were classified fancy at that time. During this period, China already equipped with a network of Early Warning System (ESW); Network Disaster Remote-sensing Monitoring System (DRMS) that uses small satellites named Constellation A and B; and has Earthquake Monitoring and Forecasting System (EMFs) that collected and analyzed data provided by 937 permanent seismic stations and 1,000 seismic stations located throughout the region. In addition, China has also established approximately 1,300 earthquake precursor observation stations throughout the region. According to a source, the Chinese ESW station previously showed a blink signal in a couple of weeks prior to the earthquake. However, it appeared to be an oversight so that this earthquake implied approximately 80,000 deaths and economic losses of up to 85 million US dollars (Pandey, 2012. 45).

CEA received information about the Wenchuan earthquake from the China Earthquake Network Center shortly after the earthquake, and immediately run the pre-disaster regulations. CEA sent the first wave of rescue forces and medical teams to the affected area and work closely with the head office of disaster management. They immediately conducted a small team to take necessary steps for supporting the disaster management. Along with the assistances of military forces, the central government led by Prime Minister Wen Jiabao formed 8 working committees consists of rescue and assistance units, monitoring and forecast units, medical and health services, housing reconstruction teams, infrastructure rehabilitation units, public order units, and news and publications teams. All government sectors mutually cooperated such as the interior ministry, the ministry of finance, the ministry of transportation and other ministries to executed the pre-disaster regulations, to established working committee, and to coordinated with their counterparts in the disaster management. Given the magnitude of the disaster, the government categorized the disaster management at level II, where the provincial governments of the affected region led all rescue activities, and CEA organized and coordinated all assistances under the control of central government.

Previously, only the military and the

Chinese Red Cross are given the access to the worst affected areas. As well as managing of Tangshan, the government forbade both the local and foreign non-governmental organizations to approach the area even though they already have a lot of resources, either volunteers or logistics. In contrast to Tangshan, both local and international NGOs could entered the worst hit areas in Wenchuan right after a research group called the Chengdu Urban Rivers conducted some lobby and intensive discussions with the central government, and ensuring that foreign donors would not interfere the political stability in China. As a result of this incident, the Chinese government had increasingly opened its door to foreigners and foreign donors since Deng Xiaoping administration (Amri, 2010).

Yushu, Qinghai 2010

On 14 April 2010, quake rocked China once again, where this time it struck the area of Yushu in Qinghai Province. The quake struck at 7:46 am with a magnitude of 7.1 on the Richter scale. Yushu is located in the mountainous area where it is the main hurdle against the government's rescue and aid operations. Forty minutes after the disaster, the government and the Chinese Qinghai Earthquake Administration issued a preplanned Earthquake Response Plan. Based on the *National Comprehensive Plan for Public Emergencies,* the Ministry of Home Affairs (Ministry of Civil Affairs or MCA) and the CEA preceded the level IV disaster management at 8:30 local time. However, due to the increasing number of deaths, the regulation is raised to the level I at noon that is approved by the deputy Prime Minister, Huiliangyu. National rescue team arrived at the epicenter of the quake eleven hours after the first shock. The local government immediately established seven working groups, and initiated disaster office which operates 24 hours ever since then. Fortunately, electricity and airports, located 30 minutes from the location, were still operating well so that all rescued efforts could reach the epicenter. MCA through CEA immediately allocated 20,000 tents and 50,000 coats and blankets, as well as 500 sets of toilets to be sent to the worst affected areas.

In the process of disaster mitigation in Yushu there were some technical obstacles. For instance, extreme temperature in the area between day and night, causing many rescue forces suffered some illness. Furthermore, since most of the epicenter was in the region of Tibet, which 93% were Tibetan ethnic; the language was another hurdle to the rescue team. The rescue team spoke Mandarin but local Tibet residents spoke Tibetan. Hence they sometimes faced difficulties to communicate one another.

Several ministries that involved in the process of rescue and reconstruction on Yushu earthquake are the Ministry of Railways, Ministry of Education, Ministry of Finance and Trade and the Chinese Red Cross. Furthermore, the Ministry of Interior immediately initiated a policy related to the short-term and long-term reconstruction for the areas affected by the earthquake, including the provision of temporary shelters, daily assistance funds, and apparels. A regulation governing the procedure for fund-raising and assistance for victims of Yushu is issued by China's Ministry of Home Affairs (MCA). This is done in order to prevent the misuse of public funds by irresponsible actors as be happened in the case of mitigating the Sichuan earthquake in 2008. In addition, it is also done in order to ensure that any incoming aid could be directly delivered to the beneficiary in disaster locations through a strict supervision, as well as prohibiting the entry of unauthorized persons into the disaster sites (Tao and Van de Welle, 2013).

Ludian, Yunnan 2014

An earthquake measuring 6.1 magnitudes struck the southwest Yunnan Province, China, on Sunday, August 3, 2014. According to the USGS (US Geological Survey), the earthquake occurred at 16:30 local time. The earthquake is centered in 1 mile northwest town Wenping at a depth of 10 kilometers. The epicenter was in Longtoushan

Township in Ludian County. This region has a fairly difficult terrain with steep hills and narrow streets. The latest news said that the earthquake has caused 617 people died, and more than 240 people were injured, and more than 80,000 houses were destroyed (DMCDD, 2014).

The Chinese premier, Li Keqiang, immediately flew to the location and personally coordinated with the CEA and the local military. Rescue forces are sent directly from nearby provinces in order to save thousands of lives from the risky effects of earthquake such as the overflow of Kraal River. Under the coordination of Prime Minister, 2,825 special forces, 1,500 policemen, and 937 firefighters are deployed to the epicenter in order to assist the rescue operation. By the local CEA, the earthquake is considered as the level IV. However, regarding the death tolls was increased; weather conditions were getting worse; Kraal River would potentially drown the city; the disaster management level is raised to level III by the CEA (Earthquake-Report, 2014).

President Xi Jinping ordered to prioritize injured people, helped the establishment of shelters, and fulfilled their basic needs. 18,000 troops and rescue teams deployed to seek victims trapped on debris. Yunnan Red Cross allocated 50 folding beds, 50 blankets and 10 tents. Chinese Red Cross provided 200 blankets, 200 coats and 20 tents, while Hong Kong Red Cross distributed 100 emergency relief kits. All of these aids are provided by the government within 24 hours right after the earthquake is fitted with high-tech equipment and well-educated rescue forces. The rapid response of central government has earned positive appreciation from the international communities By now, the responsive system of disaster management in China is regarded as one of the best in the world, whereby the government is responsive to handle disasters, providing information to the public continuously in every single hour, and regulating the influx of donations for earthquake victims. This is also evidenced by the influx of donations from Indonesia to Ludian residents through Dompet Dhuafa as a token of solidarity given by the Indonesians (Earthquake-Report, 2014). It could be summarized that the single-style policies be applied by the Chinese government on disaster management is proven to be quite effective in dealing with disasters and disaster risk reduction, particularly in the case of mitigation.

CONCLUSION

After series of significant efforts, the Chinese government is finally able to build a system that is relatively comprehensive and integrated into the disaster management, especially after endorsing the policy of the State Emergency Plan System, and enacted various laws relating to disaster management. Furthermore, the government also established various institutions and organizations as well as making the working mechanism that is used for monitoring, preventing, mitigating, responding, and to do the disaster recovery. However, the disaster emergency management system in China still faces up many challenges, namely the disharmonious coordination among agencies and institutions. This is triggered by different orientations and priorities among those institutions. Most institutions are responsible to proceed the disaster management that has been designed to suffice various needs, and to deliver different policies. Hence, it is difficult for them to coordinating the agenda and the existing strategies. Furthermore, the presence of various organizations and institutions turn into barriers in accessing and communicating information effectively and timely. Instead, information is the main key of success for a disaster management especially in making some precise decisions. Thus, if there is a gap in the dissemination of information, it would hinder the work of an institution. Therefore, a commitment between each institution to share information and to work together in order to carry out the disaster management policies set by the government is inevitably needed.

Considering the effectiveness of earthquake mitigation in China, it could be

said that policies and regulations issued by the government in disaster management in China was a success. Although it was full of political intrigues during the Tangshan mitigation, the Wenchuan mitigation has a different story in which case the information disclosure occurred in China to some extent. Furthermore, two years gap between the Wenchuan and Yushu earthquakes showed some positive developments in implementing policies and accelerating responses to the latter disaster. The Chinese Government appeared to learn something from the management of Wenchuan earthquake. Afterwards, they already owned some standardized and institutionalized rules whenever they mitigated Yushu and Ludian earthquakes, where it was much more efficient and structured in facing a critical moment of future disasters. In addition, the government also put sufficient investment for developing the disaster management as shown by the latest high-tech rescue equipment. The combination between fancy technology and professional rescued forces is obviously seen on the mitigation of Yushu and Ludian earthquakes. In addition, the government was also implementing the rules relating to assistance for victims of Yushu and Ludian earthquake, including the rules of storage and logistics. This is done by the government right after the occurrence of a mess and some frauds concerning logistic assistance during the Wenchuan earthquake mitigation. In a nutshell, the policy and regulatory disaster management in China, in terms of rescue and the disaster aids, has integrated well although there is a lack of coordination and some information gaps in the existing institutions.

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