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Emergency management in China: towards a comprehensive model?

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ABSTRACT

The institutional structures and processes of emergency management have been infused with ideas of Comprehensive Emergency Management (CEM) and the so-called all-hazard approach in various countries since the mid-1980s. China's new emergency management system has moved to the direction of a more CEM-like system, though some experts advocate an even more comprehensive system. This article examines the applicability of three popular CEM principles in the Chinese context: all-hazard, all-phase and all-stakeholder involvement. We argue that (1) an all-hazard coordinating ministry was established for a different reason; (2) integrating all-phase management (especially mitigation phase) should not only be applied in post-catastrophes reconstructions, but also in prior disaster mitigation phases; (3) too much stake has been imposed on individual leaders in vertical governmental relations which hinders opportunities on trial and error learning after an emergency. Finally, we try to contribute to the extensions of the CEM concept after comparing applications in different political and administrative contexts.

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Comprehensive emergency management (CEM); all hazards approach; China; emergency management system; comparison; applicability

Introduction

The emergency management field has been infused with ideas of Comprehensive Emergency Management (CEM) and the so-called all-hazard approach in the different countries since the mid-1980s (Wilson and Oyola-Yemaiel 2001; Roberts 2006; Boin et al. 2014; Thorvaldsdottir and Sigbjornsson 2014).[1] In the USA, originating in the basic idea that 'different hazards agents make similar demands on the emergency response organization', the Federal Emergency Management Agency (FEMA) was established to coordinate the federal emergency management in 1979 (Lindell, Perry, and Prater 2007: 117). The principles on CEM have been written into the national emergency plan, the Federal Response Plan, as the dominant doctrines of American emergency management since 1992 (Roberts 2004; Haddow, Bullock, and Coppola 2010 Roberts 2013).[2] Australia adopts similar policy pillars in its emergency management system (Peters and Mcentire 2010). In Europe, most countries claimed their adoptions of all-hazard approach in civil protection,[3] such as 'comprehensive security provision' (Austria), 'total defense' (Sweden), 'Integrated Emergency Management' (UK) and 'integrated system for the protection of the population' (Switzerland) (Boin et al. 2014; Brazova, Matczak, and Takacs 2014; Kuipers et al. 2015).

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In China, experts advocated to adopt the CEM (whether learning from the US literature or inspired by their practices) after the 2003 Severe Acute Respiratory Syndromes (SARS) crisis. For instance, Zhang (2003) called for learning from the international experience and building up a Comprehensive Integrated Emergency Management System. In an interview after the 2008 Snow Storm catastrophe, Mo Jihong, a professor from the Chinese Academy of Social Science who contributed to the draft of the Emergency Response Law (ERL), the Law on Preventions against Earthquakes and Relief of Disasters (LPERD), and the National Defense Mobilization Law, advocated to set up a ministry-level emergency management organization for all-hazard response in order to overcome deficiencies of the fragmented single disaster based emergency management system that was exposed by the response to the catastrophe (Su 2008). In Xue and Zhong (2009: 190)'s book chapter on the development of China's emergency management system, they argued that China aimed to build 'a risk-based, all-hazard, and integrated national system for emergency management'.[4] In an interview, Gao Xiaoping, a member from the expert's group of emergency management for the State Council, advised a broader civil participation of individuals and organizations from the public, private and non-governmental sectors in emergency management (Jia 2011).

In practice, the Chinese government has upgraded the single disaster agent based emergency management system with new contingency plans, an upgraded institutional structure and response mechanism, and a new legal institution since 2003, which will be elaborated in the third section of this article (Gao 2008; Xue and Zhong 2009; Shan and Huang 2010). In 2006, a national level emergency management office was established under the state council to collect intelligence and assist coordination in emergency management. After that, local governments followed the central government to set up their CEM offices. After drafting the master national contingency plan, national disaster agent based plans and local comprehensive emergency plans have been created or revised. Command headquarters and daily preparedness offices, and supporting agencies have been identified for handling both the single agent disaster and complex crises. In preparing for, responding to and recovering from an emergency, the operational mechanism has been reclaimed with more horizontal cooperation and upscaling principles (Lu and Xue 2016). The ERL of People's Republic of China has been in use since 1 November 2007, which serves as the legal framework of emergency management in China.

To ensure effective emergency management service delivery, different countries have been exploring whether principles or mechanisms like CEM are universal or specific to cultures or governance styles (Drabek 1986; Tierney, Lindell, and Perry 2001; Britton 2006). This article fills the gap by examining the Chinese experience of (partly) adopting CEM, which might carry potential lessons for other countries alike in establishing or reforming their emergency management systems.

Theoretically, there still lacks research to examine the goodness of fit of designing institutions that manage crises (Boin and Lodge 2016). However, existing institutional design thesis provides insights to assist the inquiry in this research (Douglas 1986; Goodin 1996; Pierson 2000; Boin and Goodin 2007; Lu 2017). The determinants of goodness of fit of an institutional design include both the internal and external elements. The former refers to the degree to which NEMS' relevant organizations and its members value the new institutional design. The latter focuses on to what extent the new institutional design accommodates with the system's environment, such as administrative structures, attitudes, culture, norms and preoccupations.

To address the questions, at first, this article presents the concept of CEM. Second, we will examine the functional and structural developmentof emergency management in China and map the recent development toward CEM. Third, we will carefully consider whether the comprehensive model of emergency management fits China's governmental structures and policy contexts from institutional design perspective. Finally, I will extend the concept of CEM with an integration of its applications in China, and respond to the debates of global and domestic factors influencing the adoption of CEM in the Chinese contemporary reform.

Data sources

The data of this article are collected in the following ways,

1. interviews with emergency management experts during the author's field research in Beijing, Shanghai, Sichuan, Guangdong, Shandong and Heilongjiang ranging from 2008 until 2015 (a descriptive result of the distribution is shown in Table 1);
2. observation in responding to a typhoon in Wenzhou city and its subordinated counties, Cangnan County and its subordinated townships, and Duqiao town in Linhai County, Zhejiang Province in China in 2008 and 2009, and observations of disaster relief and recovery efforts in Ya'an prefecture and its subordinated counties in 2013 and 2014;
3. policy documents collected from ministries responsible for emergency management;
4. survey data on Province X's general emergencies management offices (EMOs) at the prefectural and county levels. We sent questionnaires to all EMOs at the prefectural and county levels government, and received all nine prefectural samples and 86 out of 88 county samples. Each questionnaire is requested to be filled in by EMO leaders;
5. survey data on the current situation of general EMOs, which was collected from 126 county-level emergency offices spreading in six provinces (as shown in Table 2). We selected the five provinces according to its geographical location, the east, the middle and western parts of China. In each province, we requested a senior official at the provincial EMO to assign three prefectures as the samples with different perceived performances, a prefectural EMO with very high-perceived performance, a medium one, and an EMO with low perceived performance. In each sampled prefecture, we requested each county EMOs' directors or associate directors to fill in our questionnaires. Based on the whole population data from Province X, we selected three prefectures with different performance levels perceived by a provincial EMO leader, and subsequently put all their subordinated county-level data into the samples.

Defining CEM and its three key dimensions

CEM is an idea widely embedded in various countries' emergency management systems. CEM consists of three major dimensions, which will be elaborated in this section.

Table 1. The distribution of interviewees across different hierarchies and regions (2008–2015).

	Ministry controlled agency	Provincial	Prefectural	County	Total
Heilongjiang	0	1	11	12	24
Sichuan	0	9	21	30	60
Shandong	2	0	9	9	20
Shanghai	0	3	2	0	5
Beijing	0	2	3	0	5
Guangdong	0	0	7	1	8
Total	2	15	53	52	122

Table 2. The national sample distribution in the six provinces.

Province	County samples	County population	Percentage
A	30	105	28.6
B	15	38	39.5
X	33	88	37.5
Y	22	102	21.6
Z	23	181	12.7
C	8	16	50.0

All-hazard management

The all-hazard principle emphasizes common skills and preparedness required to manage different types of disasters, so that there is no need to prepare separately for different types of natural disasters regarding these common elements (McLoughlin 1985; Franklin 1995; Wilson and Oyola-Yemaiel 2001; Roberts 2004; Lewis 2008). In the USA, FEMA was born with the idea of integrating different emergency management programs under one umbrella.[5] Before the birth of FEMA, the tasks of federal disaster management scattered in over 100 different federal agencies,[6] which increased the complexity of assisting local communities. When a disaster overwhelms state capacities, governors have to communicate with different federal agencies for disaster aid (Bosner 2011). The ideas of CEM have been embedded in FEMA's history. The identified common skills consist transportation, communication; public works and engineering, firefighting, information and planning, mass care, resource support, health and medical services, urban search and rescue, hazardous materials, food and energy.

All-phase management

The all-phase principle connects activities before, during and after an emergency, particularly the ignored mitigation phase. The short-term preparedness, response and recovery have been converged by administrators, policymakers, media and the public, while long-term mitigation has been ignored (Fritz and Mathewson 1957; Birkland 1997). The CEM approach paid more attention to long-term mitigation efforts. In activating the mitigation phase, the task of emergency management organizations is not constrained to the short-term preparedness, response and recovery. Instead, emergency management organizations could play a pro-active role in normal times through mobilizing other organizations and communities in preventing potential disasters and mitigating impacts caused by disasters and thus reducing the costs of disasters response and recovery.

In the USA, the well-known program *Project Impact* was designed to improve community resilience.[7] FEMA helped individuals, business and community leaders to identify potential disaster hazards in their community and organizations, set priorities and allocate resources to prevent or mitigate and prepare identified disasters in a cost-effective way (Bosner 2011). Through this program, FEMA built solid relationships with local governments' leaders, volunteer groups, private business and individual citizens in the community. Moreover, mitigation programs helped break the vicious circle of disaster aid, 'damage-repair, damage-repair' again, and reduce damages in future disasters, which proved to save money for emergency response.

International organizations and countries like UK, New Zealand and Australia have similar efforts to identity potential risks and vulnerabilities and to improve resilience. The UK government launched its National Resilience Capabilities Program, and has regularly released its report on the National Risk Register of Civil Emergencies, which identified risks that might occur in the next five years. The United Nations Office for Disaster Risk Reduction has attracted more than 3000 cities from different countries participating its initiative 'Making Cities Resilient'.[8]

All-stakeholder management

The all-stakeholder dimension encourages a broader participation of individuals, organizations and local governments and communities, which assumes that no single agency has sufficient skills and resources to handle an emergency. In the USA, various stakeholders were mobilized to participate in disaster mitigations and risk reductions through economic incentives provided by FEMA (Sylves and Cumming 2004; Waugh 2006; Sylves 2008). For instance, in the Hazard Mitigation Grant Program, local governments were encouraged to apply for this funding under a presidential declared disaster, which specifies that up to 15% of the costs of disasters can be

used for mitigation purposes. The percentage of funding from the federal government was raised to 75% from 50% under the Volkmer Amendment in 1993. Under this program, local communities and governments were motivated to put their migration efforts in the post-disaster recovery phase.

China's development along the path of CEM: progress and challenge

Since the SARS crisis in 2003, China has begun to upgrade its National Emergency Management System (NEMS) (Xue and Zhong 2009; Shan and Huang 2010; Lu and Xue 2016). The core components of the upgrading, named 'Yi An San Zhi' in Chinese, include (1) creating contingency plans; (2) restructuring the institutional structure; (3) clarifying mechanisms in emergency management process and (4) drafting emergency management related laws and regulations. This section will describe these developments along CEM's three identified dimensions.

All-hazard management

Before 2003, China's emergency management system scattered in various single disaster agent based response systems. These systems were managed solely by the vertical lines of command with limited horizontal coordination (Shi, Liu et al. 2007; Xue and Zhong 2009; Jia 2011). In this era, there had been separated command centers to cope with single type of disaster events. Some command headquarters were directly led by a vice premier or even jointly cooperated with the military forces. For instance, the Headquarter of Flood Control and Drought Relief (HFCDR),[9] the command center responsible for flooding response, was based in the Ministry of Water Resource and led by a vice premier ever since the 1950s. HFCDR could lead and coordinate headquarters in the provincial level during a disaster response.

The traditional system, however, was constrained strictly by the vertical administrative sector lines, which was reluctant in responding to emergencies cross the sectorial or regional boundaries, or so-called transboundary crises[10] (Ansell, Boin, and Keller 2010). The weakness of this traditional vertical based system was exposed in the response to the 2003 SARS crisis. In the impending phase, the seriousness of the SARS was not taken much attention. The Ministry of Public Health and local governments, such as Beijing and Guangdong, even covered up the number of the infectious cases in their jurisdictions in order not to impact their local attractiveness of tourism and investments. In coping with the SARS crisis, other governmental departments did not provide sufficient support in cutting off transmission channels of virus until a temporary unified coordinating command was set up.

The new emergency management system identifies the responsibility of managing (1) the single trigger agent emergency and (2) the transboundary crisis. For single trigger agent disasters, coordinating headquarters consisting of leaders from different supporting ministries lead the response. Usually, the coordinating headquarter is based in one specific ministry which has already dealt with this type of emergency in history. For instance, the Headquarter for Flood Control has been hosted by the Ministry of Water Resource,[11] while the coordinating Headquarter for industrial accident (named as the State Council Committee on Working Safety) is in the State Administration of Work Safety. For the transboundary crisis, the State Council plays a leading role directly. A newly created National Emergency Management Office (NEMO) under the State Council is responsible for collecting and monitoring information, and helps with coordination. As shown in Figure 1, most county/district level governments established emergency management offices following the central government, within which 2008 is the peak year of founding EMO.

Disaster agent based coordinating headquarters vary regarding power structures. Some coordinating headquarters are ranked as national level commands, while some others are still

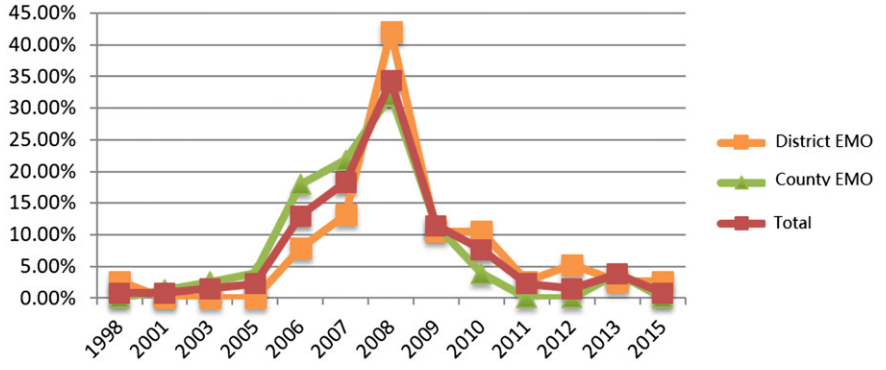

Figure 1. Founding year distribution of county-level EMOs.

ministry level headquarters. For instance, the National Committee for Disaster Relief based in the Ministry of Civil Affairs (MCA) is on the national level mainly responsible for mitigating impacts of disasters to communities, preparing and providing disaster aids to disaster-stricken communities.[12] This committee is led by a vice premier and assisted by a standing working office affiliated to MCA. When it comes to railway accidents, the former Ministry of Railways has to set up temporary national incident commands after authorizations of the State Council (upon request).[13] Some temporary coordinating headquarters evolved into regular standing coordinating committees as some crises become more salient. For instance, the food safety emergency plan specifies the coordinating headquarter will be activated when a food crisis unfolds. Facing increasing food safety problems, the State Council's Commission on Food Safety was founded in 2010 consisting of the executing vice premier and two vice premiers, and leaders from other supporting agencies (for an illustration of different kinds of national coordinating commands, see Table 3).

In reality, NEMO cannot serve as an all-hazard agency to manage a trans-boundary crisis due to its limited capacity. During trans-boundary crises, temporary national level commands have been set up under the State Council to coordinate the large-scale response and recovery efforts. For instance, in the 2008 Snow Storm catastrophe, a temporary emergency command center for disaster relief and coal, power, oil, and transportation assurance based in the National Development and Reform Commission led to manage the response to the unexpected ice storm and the breakdown of electronic grids and transportation infrastructure in the southern areas of China (Lu and Xue 2016).[14]

According to our survey on county emergency management offices (as shown in Table 4), more than 90% of local EMOs still maintain their core functions in 'on-duty shift and information reporting', 'coordination' and 'law enforcement'. Only 48% of emergency management office leaders report that they have risk and assessment evaluation functions. Around 50% EMO leaders claim that their offices are responsible for 'recovery management'.

All-phase management

In the Chinese emergency management system, there is no clear division between the mitigation phase and preparedness phase. Most mitigation efforts are mentioned in the current national emergency plan as improving the public awareness of hazards and hazards mitigation practices through social education campaigns, risk identification and analysis, and early warning. Ministry of Civil Affairs initiated a campaign of 1000 Pilot Communities on Integrated Disaster Reduction from 2007 until the end of the 11th Five Year Guideline (Interview #2011-2) (Civil Affairs Ministry 2009). In 2010, the National Committee for Disaster Relief released a national standard for becoming such a pilot disaster reduction community (Civil Affairs Ministry 2010). In 2009, the

Table 3. A list of the national coordinating commands.

Types of coordination commands	Responsibility	Examples
The State Council	Transboundary crises, catastrophes	
Temporary State Council's command	Single/multiple type of emergency; activated under the State Council to coordinate transboundary crises and catastrophes response based in one specific ministry and supported by other ministries	Emergency Command Center for Disaster Relief and Coal, Power, Oil, and Transportation Assurance
Standing National Coordinating Commission	Single/multiple type of emergency	The Headquarter of State Flood Control and Drought Relief; National Committee for Disaster Relief
Standing State Council's Commission	Single type of emergency	State Council's Commission on Working Safety; State Council's Commission on Food Safety
Standing Ministry Coordinating Commission	Single type of emergency	Leading Group of National Communication Assurance; National Headquarter of Forest Fire Prevention

Table 4. Function distribution of county emergency management offices in China.

Functions	Percentage
Emergency on-duty shift and information reporting	100.0
Coordination	98.4
Law enforcement	92.8
Assist executives on emergency response	89.6
Training and drilling	86.3
Public education	84.0
Contingency plan	77.6
Information releasing	76.8
ICT systems and platform	70.4
Monitoring and early warning	60.8
Recovery management	49.6
Risk assessment and evaluation	48.0

Information Office of the State Council published a white paper on China's Actions for Disaster Prevention and Reduction (Information Office of the State Council 2009). The white paper covers the preparedness and risk identification in terms of mitigation and prevention efforts.

Most substantial mitigation efforts in China are placed in the post-catastrophe reconstruction phase. In the reconstruction of the 2006 Typhoon Saomai, the hardest stricken Heweiyang Village was relocated to a new site under substantial support from local and national governments (Interview #2008-5). The new community was built to tolerate impacts of super typhoons. The 2008 Wenchuan Earthquake drove more institutional changes in the national level regarding measures on earthquake mitigations. The *LPERD* was revised after learning lessons from the Wenchuan Earthquake. In the newly released version, the long-term plan on earthquake prevention and mitigation is formalized; public buildings such as schools and hospitals will implement higher quake-proof standards than common buildings; schools are required to give instructions on mandatory emergency rescue training; and rural communities are going to build under stronger building codes in earthquake-prone areas (Xinhua Reporter 2008). In the reconstruction plan of the Wenchuan Earthquake, new resettlements were examined to prevent hazards for communities (the State Council 2008). Funding from both the central and local governments was subsidized to reconstructions of new quake-proof buildings.

In the prior-disaster mitigation, there are only a few initiatives in the recent few years. For instance, in early 2010, a tentative program, named the Geo-Hazard Migrant program, has been initiated in Shaanxi province. Under this program, Shaanxi province planned to relocate 2.8 million residents from communities vulnerable to flash floods, landslides and mudslides in the

next decade (Meng 2010; Shaanxi Daily Reporter 2010; Wang 2011). Shandong Province announced a similar plan of relocating geo-hazard vulnerable communities as well (Jinan Daily Reporter 2011). Shandong proposed to relocate communities in forty-six identified areas with a high potentiality for geology disasters in the next two years.[15] Different from the buyout program in the USA, these programs are integrated with other policy agendas, such as industrial development, urbanization and poverty alleviation.

After decade efforts in developing emergency response capacity, the Chinese central government began to promote more risk identification and governance policies. Two important policy documents were jointly released by the CPC central committee and State Council in October 2016, the *Guidance on Reforming the Disaster Risk Reduction System and Mechanism* and the *Guideline on Promoting the Reform and Development in Work Safety*. The former highlighted the role of risk reduction in natural disaster management, while the later specified future reform direction of risk governance in reducing industrial accidents. The latter is the only policy document on safety regulation which is released jointly by the CPC central committee or the State Council since 1949.

Acknowledging the release of the two important policies at the national level, the challenges remain ahead in terms of implementation risk governance measures. In other emergency phases, such as emergency response, post-disaster recovery and post-industrial accidents inspection, China has demonstrated its powerful mobilization of multiple governmental agencies and other stakeholders (Lu and Xue 2016; Lu 2017). These mobilizations are often triggered by shocks of major disasters, and can hardly draw long-term attention after major disasters. Usually, risk identification and management occurred in normal situations, which can hardly attract participation of stakeholders.[16]Moreover, there are a few risk evaluation efforts in different cities which have been initiated by single governmental department. Their implementation of risk evaluation were found either hard to moblize particiation of different stakeholders or short of funding.[i]

[i] Based on interview #20180421001 & #20180421002.

All-stakeholder management

Known for its strong state whereas weak society, government is the dominant player in emergency management. At the onset of the 2008 Wenchuan earthquake, China's emergency management system began to embrace NGO's participation. Even though there are substantial development of NGO's professionalization and participation in emergency preparedness, response and recovery, NGO is still in its infancy phase (Zhang et al. 2015). Market began to emerge as as an increasingly important force in supplying equipment and faclities and providing service after the release of the *Opinions of the General Office of the State Council on Accelerating Development of Emergency Industries* in August 2014. Military has been identified as a dominant stakeholder in emergency response. Within the governmental system, the Chinese central government could mobilize governments along the hierarchies in an efficient manner to respond to and recover from a major disaster, as shown in the 2008 Wenchuan earthquake.

Different with most western democracies, the Chinese military sector has long been active in disaster and emergency response, often performing heroic deeds against very unfavorable odds. According to the ERL, 'The People's Liberation Army of China (PLA), People's Armed Police Force and militia organizations shall participate in the emergency response rescue and operations in accordance with the provisions of this Law and other relevant laws, administrative regulations and military regulations as well as orders of the State Council and the Central Military Commission [Article 14].' Regulation on the Army's Participation in Disaster Rescue released in 2005 further defined the role of military in emergency response (Xu et al. 2014; Lu and Xue 2016).

In recent years, the military increased its professionalization, became more important in the specialized inter-agency committee and institutionalized its assistance to emergency response.

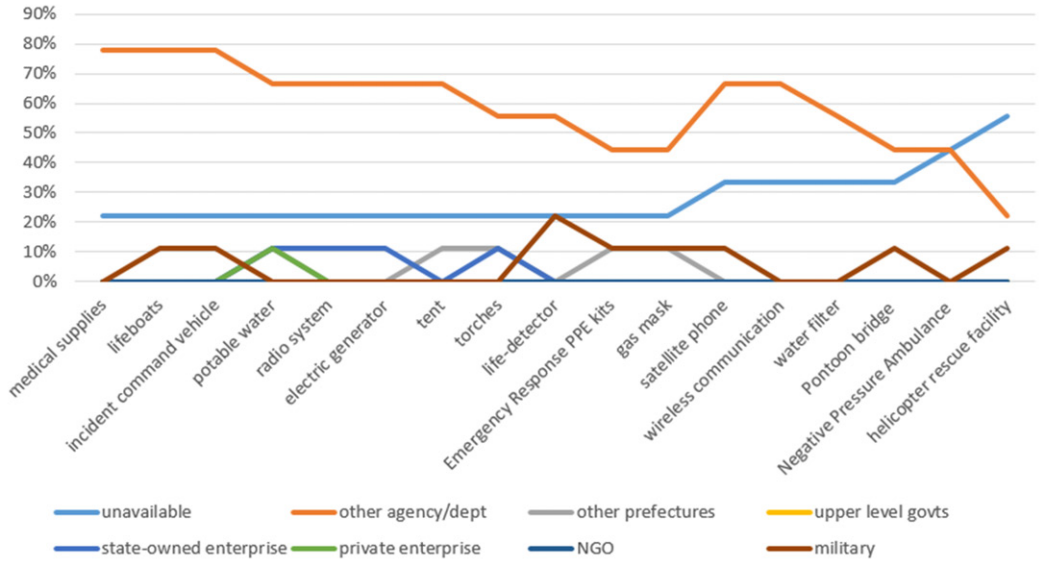

Figure 2. The distribution of Prefectural EMO leaders' quick access to equipment and supplies and its origin in Province X.

Following the responding to catastrophes in the past few years,[17] the Chinese military reviewed its crisis management capabilities in the context of 'military operations other than war' (MOOTW), and formed in May 2009, eight specialized emergency response units with 50,000 professional soldiers to assist the civil response to emergencies, such as floods, earthquakes, chemical, biological, radiological and nuclear incidents, major transportation accidents, and international disaster response and peacekeeping assignments. In the recent adjustment of specialized inter-agency committee members in the spring of 2013, the Deputy Chief of staff of PLA has become the vice commander of the Earthquake Relief Headquarters of the State Council and the National Flood Control and Drought Relief Headquarters. In order to buffer the coordination between different hierarchies from the military and local governments, temporary Party committees were set up widely at the county and township levels to make joint decisions during the response to the 2013 Lushan Earthquake.

On the vertical dimension in government, China is similar with most countries, which has moved toward a graduated scheme that ties the scale of emergency to the appropriate level of jurisdiction. In the plans, the emergency is classified as four scales. Each scale requires a different response hierarchy. Although Tiao/Kuai authority system[18] still exists, local administrators (instead of vertical sector leaders) have leading roles in responding to emergencies in their jurisdictions[19] (Zhou 2009). Different from the American model based on a decentralized administration, high-level intervention into response in lower level does not require requests by local administrators in China. In those more predictable routine emergencies, such as typhoons, once HFCDR activates their response, HFCDR set up teleconference with potential province and cities to learn their preparedness and response. Sometimes, HFCDR activates their response even earlier than local governments.[20]

In reality, our survey in Province X shows that the perceived coordination is still limited between different stakeholders in terms of acquiring resource for response. As shown in Figure 2 and Figure 3, EMOs in both the prefectural and county levels have almost no coordination with private organizations or NGOs to acquire the 17 types listed resources and supplies. For most resources and supplies, EMO leaders tend to access from other agencies or departments in horizontal coordination within the same prefecture or county government.

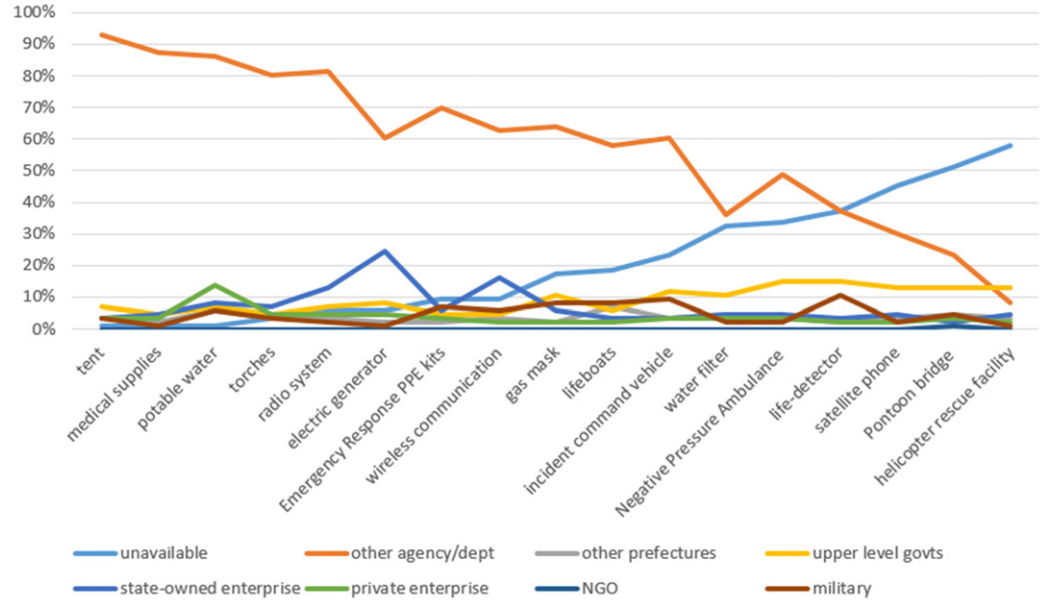

Figure 3. The distribution of county/district EMO leaders' quick access to equipment and supplies and its origin in Province X.

Examining the goodness of fit of CEM principles in China

This section examines the goodness of fit of CEM as a new idea infusing with the institutional design of NEMS in China on the three key dimensions.

Toward all-hazard management?

China has established a ministry to manage natural disasters and industrial accidents. . We examine the fitness of the all-hazard dimension based on the reasons for creating such an all-hazard agency.

The reason that establishing an all-hazard unified agency does not sufficiently exist in the Chinese context. Here we take the USA as an example. The aim of founding FEMA as an all-hazard coordinating agency was to reduce the complexity of Governor's requests toward different federal agencies in an emergency on the vertical dimension while this problem does not exist in China due to a different administrative system. We illustrate the difference regarding disaster assistance in Figures 4 and 5. As can be seen from Figure 4, the current formal authority in the US disaster requests relies on interactions between the governor and FEMA. Before FEMA was founded, Governors had to contact different federal agencies to request federal assistance. State agencies under the governor had limited connections with federal agencies and limited authority to request disaster assistance from federal government. By contrast, Chinese governmental sector agencies at the local level are not only accountable to their mayors or governors but also to functional departments in their upper levels under the Tiao/Kuai division authority system (see Figure 5) (Zhou 2009). Connections widely exist between functional departments among different hierarchies in the same vertical sector in both normal and emergency situations.[21] Therefore, the reasons for creating one centralized all-hazard organization to coordinate disaster response in the USA carry less weight in the Chinese context.

There is not a substantial difference regarding emergency support functions between China and the US. Those emergency support functions are provided by various governmental agencies both in China and the USA. In the USA, FEMA was described as a 'broker within the federal

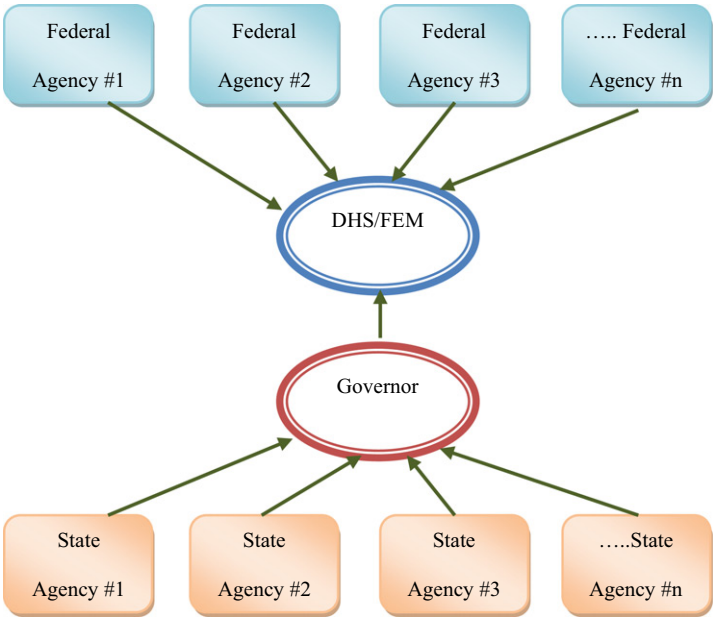

Figure 4. A simplified model of US emergency management structure.

government' to coordinate federal emergency response (Brown and Schwarz 2011: 6). FEMA does not possess vast resources, but relies on the assistance by other federal and private partners. In China, the Ministry of Emergency Mangement seems to maintain more professional rescue forces. Literaterally, over 200 thousand fire fighters (armed police force) were transferred to the newly created organizations from the Ministry of Public Security under a new wave of reforming the armed police force.[i] Moreover, establishing the new ministry is aim to address the long-existing horizontal coordination problems.

[i] Interview #20180325008.

In summary, the problems that motivate the establishment of an all-hazard unified agency in the USA do not exist in the Chinese context because of the difference on administrative structure of disaster assistance requests. To be short, However, China's recent development towards an all-hazard agency is mostly addressing its internal horizontal coordination and reform issues.

Toward all-phase management?

Integrating long-term mitigation efforts with the other three phases is highly advocated by emergency management professionals globally. In theory, China's disaster agent based coordinating system to some extent should provide a better opportunity to integrate mitigation with the daily operation of each sector. Disaster agent-based coordination puts response and mitigation under the same roof, which should be easier in motivating mitigation efforts. However, Chinese government seems to focus more on the short-term preparedness, response, and recovery, instead of promoting prior-disaster mitigation (Zhong 2009; Lu and Ma 2011). We will take the management of a routine disaster typhoon as an example to illustrate less attention paid to mitigation phase in China, and it is not surprising that the mitigation efforts for some rare emergencies are even worse. When a typhoon approaches Chinese coastal cities, mayors in these cities tend to respond in an active way. After the response, the attention of those leaders quickly

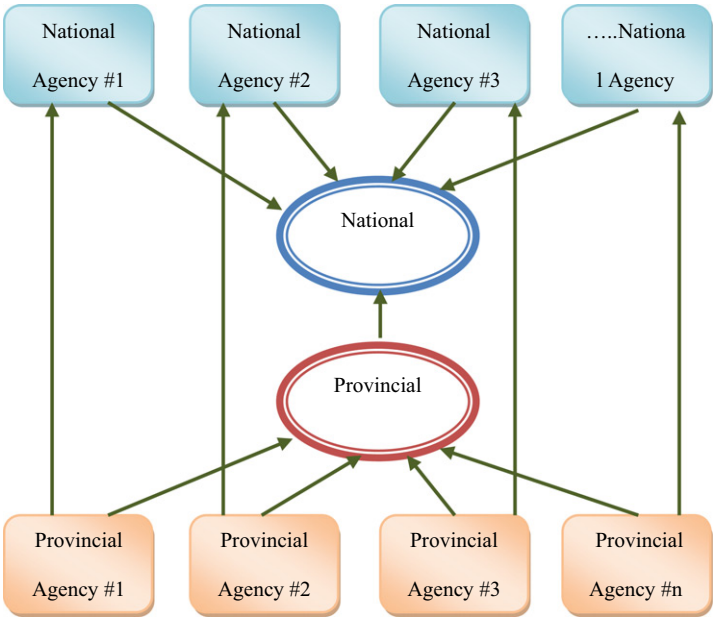

Figure 5. A simplified model of Chinese emergency management structure.

shifted to other affairs instead of the long-term mitigation. The daily preparedness offices affiliated to the Department of Water Resources can hardly mobilize mitigation efforts, given a lack of sufficient budgets or regulation authority.[22]

As demonstrated in the previous section, mitigation efforts have been implemented more sufficiently in post-catastrophe reconstructions. After a catastrophe, disaster stricken areas usually draw much attention from leaders in the upper-level governments, and special budgets from different levels of governments are allocated for catastrophe reconstructions. Better mitigation efforts are guaranteed with the focus of leaders from upper level and relatively sufficient funding in the reconstruction after a catastrophe.

Therefore, all-phase efforts have only been limited applied in the Chinese context. To be specific, integrating mitigation with the other three-phase mostly happens in a post-catastrophe reconstruction, but rarely can be seen in a prior-disaster phase.

Toward all-stakeholder management?

The emergency management policy domain appears the feature of "no natural constituency until an emergency or disaster occurs" due to the low probability and high consequence character of an emergency (NAPA 1993; Wamsley and Aaron 1996: 242; Schroeder, Wamsley, and Ward 2001; Sylves and Cumming 2004; Perrow 2007). When a disaster strikes, it usually draws heavy attention from media, non-governmental organizations, and private organizations. When a disaster fades from people's memory, social and governmental attention diminishes. All these apply to China as well[23] (Lu 2009).

When it comes to the vertical central-local governmental relations during an emergency response, the system appears to be slow in detecting an impending emergency through the top-down authority system, especially for those conflict-type emergencies and trans-boundary crises. For those conflict-type emergencies, local governments may cover up information on a crisis on purpose because the crisis might expose their deficiency of governance. For instance, in the 2008 Sanlu milk powder scandal, Shijiazhuang municipal failed to report to their upper-

level government until one month after confirming the contamination, which violated the National Contingency Plan on Food Safety.[24] For those transboundary crises, detection and reporting usually go beyond jurisdictions of single departments or regional governments. For instance, in the 2005 Songhua River spill, the Environmental Protection Department of Jilin Province failed to provide timely information on the Songhua River pollution to the public. Timely information was not diffused to Heilongjiang Province in the downstream of the river, either.

In order to speed up early detection of a transboundary crisis or conflict-type emergency, central and local governments tend to impose regulations and accountability upon individual administrators which mandate them to report timely information. In 2009, the Central Committee of the Chinese Communist Party and the State Council issued the Interim Provisions on the Implementation of the Accountability System for the Leaders of the Party and Government to specify occasions of individual leadership accountability.[25] Before the release of this national provision, local governments had already created their own individual leadership accountability systems. These accountability systems impose too many responsibilities to individual leaders, but fail to help leaders organize relevant stakeholders to improve hazards detection institutionally. The accountability system has caused resignations of many individual leaders, but ignores careful investigations of causes of disasters (an interview of Xue Lan by Gao and Gao 2011).

When it comes to those transboundary crises or conflict-type crises, central government still feels reluctant in determining the right occasion to intervene because situation awareness mostly relies on bottom-up reporting mechanism. Sometimes the reporting mechanism does not work due to intentional cover-ups of local administrators. For instance, in the 2008 baby milk powder scandal and coal mine disasters in Shanxi province, central government and regulatory ministries did not find any cues until crises unfolded.

Conclusion and future recommendations

This article starts with a review of the concept CEM. Then, we map the key development along the CEM path in China since 2003. Finally, we examine the CEM in the Chinese context China's recent development. This section discusses to what extent the principles of CEM are shared in different political and administrative contexts and which are not.

1. Not all the principles of CEM fit the Chinese context for the same reason. In examining the origin of all-hazard unified emergency management agency in the USA, we find that the problems faced by the USA do not match the status quo of China. The adoption of all-hazard unified coordinating model is to a large extent addressing different challenges.
2. Although some principles fit for China, similar and new problems still challenge the implementation process. On the all-phase dimension, efforts in integrating mitigation with the other three phases are still reactive which mostly happen after a catastrophe. In the all-stakeholder dimension, stakeholders are convergent to short-term disaster preparedness, response and recovery, and ignore the long-term mitigation phase. In the vertical governmental relations, Chinese government puts too much stake on accountability system of individual leaders but ignores opportunities for investigating causes of disasters and trial-and error-learning after disasters (Sagan 1994).[26]
3. The application of CEM in China extends some principles of CEM at least in two ways:

    1. On the all-phase dimension, mitigation efforts could be implemented in integrating with other local policy agenda, such as poverty alleviation. The integration could better

solve the problem of lacking natural constituencies for the policy domain of emergency management.

2. Our findings in this article are consistent with existing research by adding an examination of the China case, and we maintain that there is no universal or uniform CEM model for different countries (Boin et al. 2014; Alexander 2015; Christensen et al. 2016). To what extent, the CEM idea can be uniqueness or generality according to a country's context is still left open for further exploration.

The following section will provide tentative directions for China's emergency management system along the path of CEM.

1. Reduce the complexity of emergency supporting functions assigned by incident commands of different types of emergencies, even though a new ministry has been set up. China needs to review each organizations' emergency supporting functions assigned by emergency plans of different types of disasters, and identify common functions and special functions required by each type of disaster response. This will help to avoid coordination complexities caused by demands from the new ministry and other incident commands.
2. Initiate a national risk governance campaign and institutionalize risk identification, communication and management practice in routine situations. Given that an initial risk assessment demands big budgets and large scale of participation of multiple stakeholders, it will be hard for local governments or any single agency to implement it, instead, a campaign trigger by the central government seems to be necessary.
3. Look more into organizational causes of disasters in the post-disaster learning. Current accountability system imposes too much responsibilities to individual leaders, which symbolically makes administrators resign from their positions. However, less effort has been made to investigate organizational causes of disasters. Without carefully investigation of these disasters, lessons can hardly be learned. Governments are vulnerable to fall into a vicious circle 'disaster-leader resignation-new leader appointment-disaster again'.

Notes

1. According to Roberts (2006), the term 'all hazards' currently refers to both the all-phase management and all-hazard management in the USA. In this article, all-hazard dimension only defines integrating the management of all types of hazards.
2. The idea on CEM was also reflected in the two revised plan following the Federal Response Plan, the Nation Response Plan and the National Response Framework.
3. Civil protection is the concept used widely in official documents of European Union.
4. Xue Lan is also a member of the Emergency Management Expert Group at the State Council.
5. Although using a different term at that time, the basic idea is similar, which emphasizes the common features in managing different types of disaster. The term Comprehensive Emergency Management was firstly referred by the National Governors' Association in 1978.
6. See the history section on FEMA's website (accessed on 27 August 2011): http://www.fema.gov/about/history.shtm
7. This program was cancelled by the Bush Administration.
8. https://www.unisdr.org/we/campaign/cities (last accessed on 31 January 2017).
9. For an introduction on the short history of HFCDR, please see http://fxkh.mwr.gov.cn/zzjg/
10. According to Ansell, Boin and Keller (2010), we speaks a transboundary crisis when the functioning of multiple, life-sustaining systems or critical infrastructures is acutely threatened and the causes of failure remain unclear.
11. For more on the decision structure of flood and typhoon response in China, please read Lu (2009).
12. Although some scholars claimed that National Committee for Disaster Relief is responsible for managing all types of natural disasters, in practice disaster agent based coordinating headquarters still take leading roles in managing that type of disasters (according to #2011-1).

13. One of the tentative reasons received in an interview for the difference is due to the frequency of this type of incident (interview #2011-2).
14. http://news.xinhuanet.com/english/2008-02/01/content_7544691.htm (accessed on 23 September 2011).
15. Again, this program is still in an early age, and the effects of the program still needs to be examined.
16. Based on interviews #20151010001 and #20151106008.
17. Over 130 thousand military forces have been mobilized to respond to the Wenchuan Earthquake in 2008.
18. For the audience not familiar with the administrative system of China, Tiao means the vertical sector system such as water resource department in different level of governments, while Kuai means the regional administration, such as the county government. Here we the water resource department as an example, the city level water resource department is directed by both the Mayor and the provincial level water resource department. This joint direction persists in every governmental level in China. Currently, directions from vertical sector are weakened but still widely exist. For more on the historical development of horizontal and vertical authority division, please see Zhou 2009.
19. For a complete version of Emergency Response Law of PRC, please see http://www.gov.cn/flfg/2007-08/30/content_732593.htm (accessed on September 20, 2011).
20. Personal observation in 2008 in Wenzhou. Interview #2008-3, #2008-7 and #2008-9.
21. Although the current trends on putting these agencies under the leadership of local administrator, vertical instruction from higher sector agencies still influenced these local agencies.
22. Interview #2008-2, #2008-7 and #2011-1
23. Interview #2008-2, ##2008-3, and #2008-4.
24. http://www.caijing.com.cn/2008-09-17/110013192.html (accessed on 3 October 2011).
25. http://www.gov.cn/gongbao/content/2009/content_1371343.htm (accessed on 25 September 2011).
26. For more on trial and error learning, please read (Sagan 1994).

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