

EM Hexagon - A New Technological Plus Social and Psychological Disaster Management Processes

H.C.J. Wong*

Professor of Social work and Social Administration, Beijing Normal University - Hong Kong Baptist University United International College, China

Abstract: United Nations through its Disaster Risk Reduction Office has all along endorsed a four phased Disaster Management Cycle with emphasis on prevention and mitigation that are mostly neglected by many countries. On the other hand as the scope of disaster expands to terrorism after the incident of 911, and extends to the large scale of illegal migration caused by civil wars, the important role and contributions of social psychological interventions in disasters is gaining recognition as DDR also advocated for building resilience through empowerment and engagement of the whole community. It is obvious that the Four Phased DM Model cannot take into account of latest development. To supplement and enrich the Model an action framework of 12 areas is proposed which is termed the EM Hexagon.

Keywords: EM Hexagon, Disaster Management Cycle, Emergency Management Mechanisms, China EM Systems.

CONCEPTUALIZATION OF THE DISASTER MANAGEMENT CYCLE

The Yokohama Strategy, adopted by the UN World Conference on Natural Disaster Reduction 1994, affirms that disaster prevention, mitigation, preparedness and relief are four basic elements in risk reduction in line with sustainable development policies. An internationally accepted theory of Disaster Management Cycle among emergency managers is comprised of 4 phases, namely:

1. Preparedness Phase
2. Response Phase
3. Recovery Phase
4. Mitigation Phase



Diagram 1: Disaster Management Cycle (Alexander, 2002) [1].

Studies and debates on the various phases of disasters go back as far back as the 1930s [2]. The work of Prince was probably a pioneer to propose that societal response after a disaster could be structured by phases. The first of these phases was the emergency period when confusion and panic dominated the population affected by a disaster [3]. A transition period followed as most often the army quickly respond to a disaster by providing rescue and relief services. The final phase Prince identified was a rehabilitation period to restore the normal habits and customs of everyday life. Early research after Prince was mainly based in the field of sociology although some studies into phases of disaster were also conducted within the fields of geography, anthropology and psychology [4, 5].

According to Coetzee & Niekerk (2012) [6], who tried to relate the Disaster Management Cycle to the theory of General Systems Theory, variations of the 4 phased cycle have been proposed by different writers a long time ago. One early example proposed by Baird *et al.* (1975) [7] of such cycle was comprised of six different phases, namely, Reconstruction, Mitigation and prediction, Preparedness for relief, Warning, Relief and Rehabilitation. Even within the United Nations, the Disaster Management Cycle initiated by the UN Development Program (UNDP) and the now defunct United Nations Disaster Relief Organization (UNDRO) (1992) was comprised of five phases. The Asia Development Bank in its Disaster Management Handbook has presented a 7 stages of Disaster Management Cycle, comprising Impact, Response, Recovery, Development, Prevention, Mitigation and Preparedness [8]. A more detailed alternative cycle highlighted 10 major activities namely Emergency

*Address correspondence to this author at the Professor of Social work and Social Administration, Beijing Normal University - Hong Kong Baptist University United International College, China; E-mail: johnstonhuang@uic.edu.hk

Response, Restoration, Review, Reconstruction, National Development, Prevention, Mitigation, Preparedness, Warning, Threat and Impact.

Till 2002, Alexander D. [9] put forward his cycle with only four distinct phases. Holloway A. in 2003 [10] again simplified them into two over-arching phases of pre-disaster and post-disaster phases respectively. It is therefore apparent that the exact number of phases, including over-arching and sub-phases, are not the focus of debate. It is the message or the emphasis of activities behind these stages that have been conceptualized, which is important. Inadequacies of the four phased model lie in two major aspects. First it is not detailed enough to provide operational guidelines for emergency managers to plan and implement response and prevention, when disasters become more complex. Second it is too technological in its latent content which cannot take into account of social and psychological interventions.

PARADIGM SHIFT OF INTERNATIONAL DISASTER MANAGEMENT

United Nations Office of Disaster Risk Reduction is an international organization responsible for the implementation of the International Strategy for Disaster Reduction – UNISDR. The Office hosted a number of world conferences on disaster reduction and subsequent recommendations were submitted to the United Nations for adoption. These recommendations include notably the Yokohama Strategy [11] and the Hyogo Framework of Action [12], the former proposed to strengthen Prevention Preparedness and Mitigation, while the latter suggested that participating countries should build the Resilience of Nations and Communities for Disasters from 2005 to 2015. Both the strategy and the action plan call for a paradigm shift in international disaster management efforts from after to before emergencies happen. International experiences tell us that modern emergency management needs to make the following changes:

1. From a single focus on post-disaster responses to multiple foci on disaster prevention and resistance. Prevention so to speak is better than cure;
2. From the traditional emphasis on rescue power to the overall processes of minimizing catastrophe;
3. From the reliance on central government interventions to the enhancement of community self-rescue capabilities.

Although the four-phased disaster management program is relatively simple and easy to understand, it is easy to make the management ignore some key links and forget to implement and monitor the important links in the process. The advantage of to have a more detailed theory will enable the government to allocate resources more effectively and designate responsibility to departments more specifically at different phases. Emergency management is a cross-sectoral work. If responsibilities are not defined clearly and assigned to respective institution or personnel specifically, it is bound to fail in emergency response, especially when key areas of disaster prevention and preparedness are neglected. Every time when a major disaster occurs, the leaders of a city, province, or even a country will intervene nervously. But as soon as the disaster settles down, the promise for prevention and preparedness becomes lip services.

Poterie & Baudoin (2015) [13] in reviewing the international development of community participation since the declaration of the Yokohama Strategy to the Sendai Risk Reduction Framework, pointed out that in contradiction to the urge for more efforts to develop community resilience there were more focus on technology and less emphasis on local knowledge and its importance to disaster risk reduction. In the four phases Disaster Management Cycle community involvement often are reduced to disaster education recipients rather than active players in the entire process.

The idea of community based approach has been presented for example in the 1990's when FEMA of United States launched the Project Impact: Building Disaster Resistant Communities. The issue of vulnerability, repeatedly stressed by international statements, again is not prominently highlighted in the 4 phased Disaster Management Cycle. Particularly after 911 incident in 2001, terrorism became the major concern for emergency management. Terrorism poses a new challenge to emergency managers as it is by nature a psychological threat that require treatment. Many have approached for clinical counselling after 911 incident even though they lived hundred miles away from New York City. The technological emphasis of the traditional disaster cycle cannot describe the needs for social and psychological interventions which is becoming an essential part of crisis management. In short, the need for updating the model for disaster management is apparent.

In the next section the reform of Emergency Management in China will be discussed and from its

latest developments particularly in their new Mechanisms a new model of disaster management cycle of 12 phases is eventually derived.

CHINA EMERGENCY MANAGEMENT REFORM

Wang, Z. Y., 2016, [14] Director of the Public Welfare Research Institute of Beijing normal University and former Director of the Disaster Relief and Charity of the Ministry of Civil Affairs, pointed out that management of natural disaster in China had gone through a major transition in the 1980s, manifested in the following aspects:

1. Objectives of disaster management have been changed from reduction of economic loss to people-oriented concerns;
2. Major activities are no longer limited to post disaster relief but expanded to comprehensive interventions;
3. Operation system has developed from merely reactive measures to better planning and prevention systems;
4. Equipment for disaster rescue has been significantly modernized particularly in areas of information technology [14].

However it is the public health crisis of SARS that happened in 2003 which really brought forward a revamp of the emergency management system of China. In 2006, to cope with the challenges of similar crisis like SARS the State Emergency Management Office (SEMO) was established under the General Office of the State Council. It was charged with the routine work for emergency administration in collecting information and coordinating various departments. Soon under the leadership of SEMO, the "Emergency Response Law of the People's Republic of China" was passed [15]. Centralized leadership, integrated coordination, categorized management, level-based and localized responsibilities are considered to be the four major features of the existing system.

Determined by the type of emergency, specific government ministry will be required to lead the intervention. When natural disaster happened for example, the Ministry of Civil Affairs plays a key role in not only organizing and coordinating disaster relief, but also in collecting and distributing disaster relief resources. Different level of local governments will form the command body to assume emergency response

leadership. In forest and grassland fires, the State Forestry Administration for Forestry will play the leading role. Government departments like that of rural development, public security, education, etc. are all involved in the emergency response system whenever the incident is related to their department's responsibilities. This highly dispersed management on emergency caused inefficiency and wasting of resources. Also, the competency of emergency management differs from regions to regions.

China State Council approved the formation of China National Disaster Reduction Commission (NDRC), formerly called the China International Disaster Reduction, in 2005. Seeing the inadequacies of a Commission which has no administrative power, China set up in March 2018 the Ministry of Emergency Management (MEM). It is a "super ministry" as it combines the roles of were shared by 13 ministerial departments before. The new ministry takes over the responsibilities of the former State Administration of Work Safety, along with functions from other ministries including firefighting from the Ministry of Public Security, disaster relief from the Ministry of Civil Affairs, geological disaster prevention from the Ministry of Land and Resources, drought and flood control from the Ministry of Water Resources and prairie fire control from the Ministry of Agriculture.

The main duties for the new Ministry of Emergency Management can be summarized as follows:

1. Develop the national contingency plans to guide all levels of governments to respond to emergency events and to prepare the local communities in terms of resistance and resilience to disasters;
2. Develop centralized disaster reports and alarm systems while improving rescue and relief work;
3. Oversee the prevention and interventions in fire, floods, and geological disasters, etc. [14].

In the new system, China classifies emergency contingency plans into four types: natural disasters, accidental disasters, public health incidents, and social security incidents. According to the severity of social harm, the extent of repercussions and some other factors caused by disasters, the State Council ranks emergency incidents into 4 levels, they are "especially serious", "serious;", "relatively serious" and "general" disasters [16]. Other than the above 4 types and 4 levels of disasters, the SEMO adopted also a four

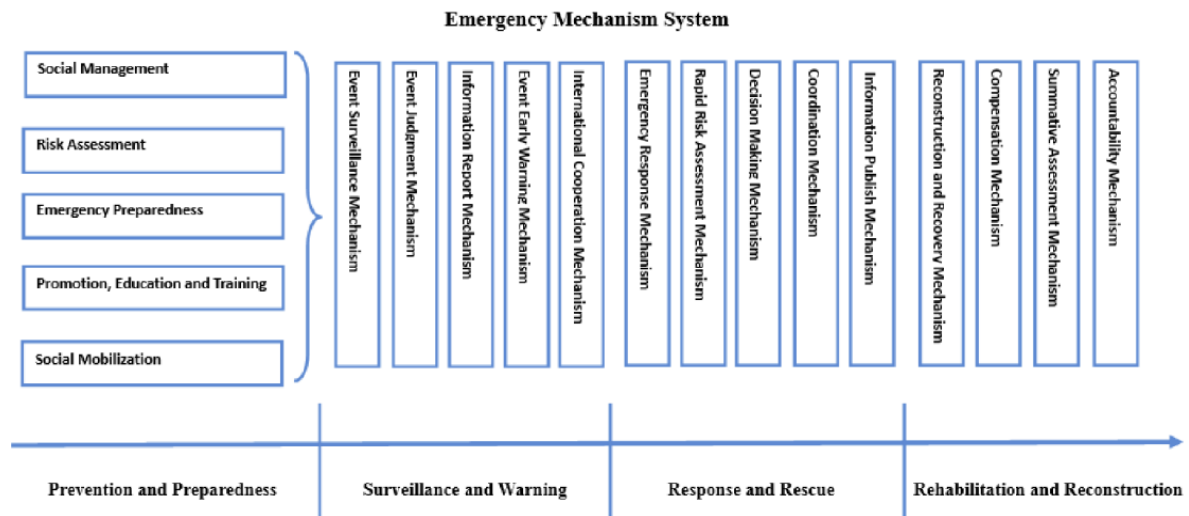


Diagram 2: China's Emergency mechanism System (Shan, Xue & Zhang, 2012) [18].

phased emergency management cycle, namely,

1. Prevention and preparedness;
2. Surveillance and warning;
3. Response and rescue; and
4. Rehabilitation and reconstruction.

As discussed above that the 4 phases Disaster Management Cycle has its vagueness in operation, the Chinese authority added a number of "emergency mechanisms" to the system [17].

The mechanisms include Surveillance, Judgement, Information Reporting, Early Warning, International Cooperation, Response, Rapid Risk Assessment, Decision Making, Coordination, Information Publishing, Reconstruction and Recovery, Compensation, Summative Assessment and Accountability. Most significantly the system also developed 5 mechanisms in the Prevention and Preparedness Phase, they are Social Management, Risk Assessment, Emergency Preparedness, Education and Training, and finally Social Mobilization. In the above Diagram 2, there are altogether 19 Emergency Mechanisms. To summarize the new China Emergency Management is called the "One Plan Three Systems". One Plan refers to the National Disaster Plan. Three systems refer to the Legal system, Coordination System and the Mechanisms System [19].

A REVISED EM HEXAGON

The latest EM Plan of China is unique in emphasizing the relevance of Social Management and

Social Mobilization. The Plan certainly places community involvement in a high priority. However its neglects towards psychological interventions, from prevention to treatment, falls short of providing a comprehensive framework for disaster actions.

Earlier in 2013, the Ministry of Civil Affairs published the "Guiding Principles on Accelerating the Social Work Service for Disasters" (MCA, 2013, No. 214) [20] which stated that there is an active "professional role of social work in pre-disaster prevention, disaster emergency response and post-disaster reconstruction". It recommends that disaster response plans at the municipal level should encourage the establishment of specialized disaster social work institutions which will facilitate the accumulation of experiences in disaster social work. They can be responsible for promoting disaster prevention and avoidance work, and assist in the formulation of disaster response plans of the community. The local social work associations and local civil affairs units could support the "disaster social work teams" through training and financial means.

To incorporate these roles of social workers and psychological counselors in the framework, a list of 12 important mechanisms is presented below:

1. **Safety and Security:** Enact and enforce proper laws and regulations to ensure safety, assess risks and protect lives;
2. **Contingency Plan:** Develop contingency plans on how to reduce harm in the event of a disaster and carry out regular drilling;

3. **Alarm:** Build up effective detection and early warning systems, with efficient disaster information communication;
4. **Command:** Establish clear command chain with top leadership when disasters strike. A command center is desirable;
5. **Rescue:** Form well-trained and well-equipped rescue teams, including the army, public security, fire and medical personnel and other voluntary rescue teams; community volunteers should be trained in self rescue and mutual rescue.
6. **Treatment:** There is a need for a good medical emergency team equipped with reliable and advanced first aid facilities; Certainly Mental Health care experts and social workers should be part of the team.
7. **Resettlement:** Develop and manage proper disaster temporary resettlement center. Encourage participation and self-management.
8. **Care and Comforting:** Effective intervention by professional social workers and psychological counselors to stabilize the social and psychological state of the disaster-affected group so as to avoid the development of psychological crisis;
9. **Empowerment:** Encourage the disaster-affected people to manage their own recovery processes and resources to regain confidence in controlling their environment and way of lives;
10. **Reconstruction:** Rebuild physical, social, cultural and spiritual community by promoting community participation and strengthening community capacity building.
11. **Emergency Education:** Continue to carry out crisis education in schools and communities to train the public to avoid, escape and resist disasters when necessary;
12. **Capacity Building:** Organize volunteers and community self-help groups to face disaster. Involve community groups in identifying and assessing potential risks in community and encourage them to develop contingency plans to combat disasters with local and indigenous knowledge.

The 12 mechanisms are further presented in a visible manner in the form of an EM Hexagon in Diagram 3.

The 12 EM Mechanisms are presented in a Hexagon Mode in order to show their inter-relations. These mechanisms are not independently functioning on their own. Indeed they are mutually dependent and many times overlap. For example social workers can

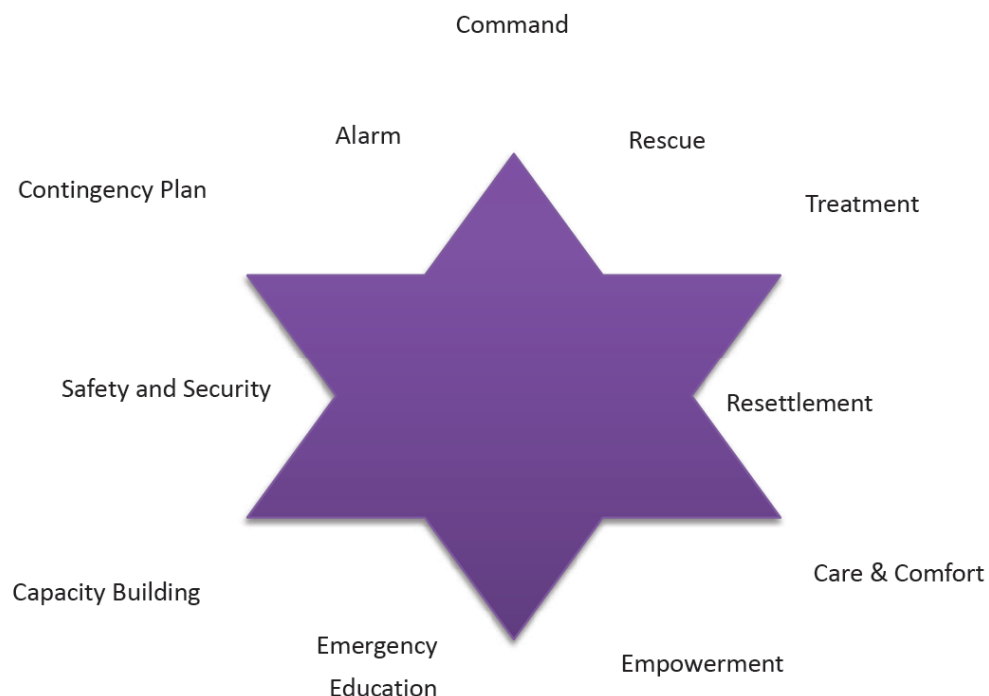


Diagram 3: the EM hexagon of 12 Mechanisms.

be assigned the major duties of care and comforting. However social workers may intervene as early as at the time of medical and mental treatment. Empowerment can be a function shared by government departments and non-governmental organizations, in times of resettlement as well as reconstruction. The Hexagon also shows the mechanisms as a continuum. For example safety measures and alarm warning are closely tied together as part of the contingency plan. The validity of the EM Hexagon can be examined further by case analysis of disastrous events in China as well as in other parts of the world.

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