

**SESSION 6: China rescue on emergency management**  
**议程六:中国应急救援**

## 中国甲型流感 H1N1 病毒疫苗接种的补贴政策

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**【摘要】** 本文尝试运用公共经济学的原理和方法来分析 A 型 H1N1 流感疫苗的供需特征。在此基础上计算免费和补贴提供疫苗的数量，在哪个时间需要被提供补贴。希望本文可以作为公共部门的顾问，并能实现公共资源优化配置，以实现社会利益最大化。

**【关键词】** A 型 H1N1 流感疫苗；公共经济学；免费；补贴

## INFLUENZA A H1N1 VACCINATION OF CHINA'S SUBSIDIES POLICY

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### Keywords

Influenza A H1N1 vaccine, Public Economics, free, subsidies

### Abstract

This paper attempts to use of public economics principles and methods to analyze Influenza A H1N1 vaccine supply - demand characteristics. On this basis to calculate the number of vaccines provided free of charge and subsidies and in which time should be provided in China. Hoping this paper could be a consultative for the public sectors, and could achieve the optimal allocation of public resources to achieve maximum benefits of society.

## 1. introduction

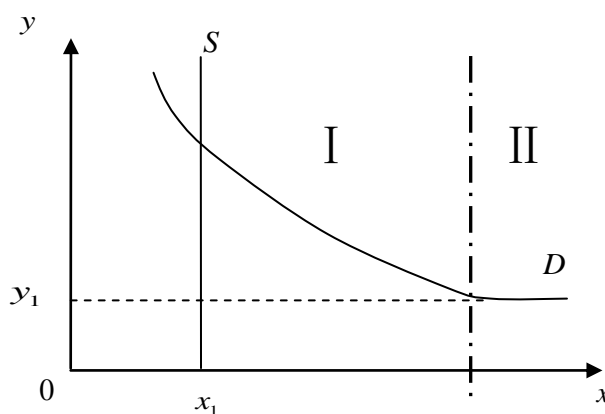
Influenza A H1N1 spreads in the world, every country is dealing with this incident as an emergency public safety, taking an active prevention and controlling measures. In a number of measures, Influenza A H1N1 vaccine production and vaccination is the crucial one. As a national emergency incident which needs a large number of public resources. We must consider using these resources more efficient. From the perspective of public economics rationale, this paper tries to analyze Influenza H1N1 vaccine's supply-demand characteristics. And on this basis to calculate the number of vaccines provided free of charge and subsidies and in which time should be provided. Hoping the paper could provide information related to policy formulation which set by public sector.

## 2. Analysis of the influenza A H1N1 vaccine's demand-supply in China

### 2.1 characteristics of Vaccine supply-demand curve and the current vaccines available free of charge

Influenza A H1N1 vaccine supply - demand curve shows in Figure 1, coordinates the vertical axis, is MPB (Marginal Private Benefits) or price  $P$ , and the horizontal axis indicates the number of vaccination; Only if the marginal private benefits at least equals to the price  $P$ , people would like to be inoculated. Therefore,  $P = MPB$ , the demanding curve  $D$  of the Influenza A H1N1 vaccine. Because the demand of how many vaccines that people need are inversely proportional to the price  $P$  and it showed as a downward-sloping curve.

According to the characteristics of the price which paid by H1N1 vaccination, the demand curve of A H1N1 vaccine can be divided into I、II two sectors. I indicates charging conditions, the vaccine demand curve is subject to the price of vaccine. And this  $P$  is the costs of the occurrence and the risk of adverse reactions, which are offered by private vaccination and the price of the private grounds of market adjustment to composite for the cost of vaccination costs. At this stage, the demand curve is characterized by the vaccine price and demand changes in the relationship of the inverse, that is, the higher demand, the less price, and vice versa. Part II indicates the vaccine available free of charge by the state. And in this condition, demand curve  $D$  at the level  $y_1$  presented as a parallel to the Y-axis horizontal line.  $Y_1$  is the private cost under the condition of free vaccination, and it is made of adverse reaction and private opportunity cost (POC), POC curve is horizontal at this stage, it indicates the level of POC on  $Y_1$ , there are infinite people willing to vaccination or under the condition of free vaccine offered by States (demand curve  $D$  at this stage considers only the Marginal Private Cost (MPC), without considering all of the Marginal Social Cost (MSC). Society's demand for vaccinates is infinite.



**Figure 1.** Curve: vaccination of H1N1 vaccine's supply-demand

On the aspect of A H1N1 vaccine's supply-demand, the current main factors restricting the supply of vaccine are the production capacity. Now for H1N1 vaccination is free, so the vaccine supply and the price have nothing to do. Therefore the supply curve of influenza A H1N1 vaccine is an X-axis perpendicular to the line S.

## 2.2 In china, current private price on the free A H1N1

At present, influenza A H1N1 vaccine is provided free of charge. Based on the above argument, free vaccines' price (P) composed of the following parts:

Firstly, H1N1 vaccination cost of adverse reactions that may occur. This cost is made of two factors: the cost of serious adverse reactions and the general cost.

According to the data which released by the Ministry of Health, to October 31, 2009, the domestic people who accept H1N1 vaccination is accumulated 3, 7878 million. There are more than 300cases of adverse reactions, most of them response to light, such as certain part pain, redness and swelling, mild fever and headache and so on. In addition to the report of 1case of laryngeal edema and 1case of anaphylactic shock (both have effective treatments), has not yet received the report of other serious adverse reactions.

The cost of serious adverse reactions can be calculated by the following: suppose the serious adverse consequences of vaccination are certainly infected with H1N1. Currently, the high-risk populations of H1N1 infection are youth, from 20to 45 years old, take an average age of 32.5, according to retirement age of men 60, female 55, these infected persons still have 22.5to 27.5 years to work. Based on statistics, currently, the mortality rate of H1N1 is 6.7%,then ,infection risk costs is ages of service multiply per capita income multiply 6.7%. In accordance with the per capita disposable income-15,781yuan in 2008, can calculate the private cost for women to 23,789.857 Yuan, male to 29,076/493yuan .This result dose not take into account people's incomes are increasing every year.

Mildly adverse reactions occurred within 12hours, continuous 1 to 2days,howeverthrough rest、 nutrition etc, may has ability to self-recovery. According to 2008,unites in cities and towns ,the average wage of workers is 29,229yuan .If we need to rest 1day,250days a year basis, the cost is 116,916yuan.

Absolutely, for a patient, serious or mild adverse reactions do not occur simultaneously. In accordance with earlier data in this paper, the ratio of serious adverse reactions is 2\3.7878, and the rate is very small, but because of its consequence is particularly severe, this rate should be calculated in consideration.

Secondly, the private opportunity costs occurred on vaccination, including loss of wages, travel expenses, communications charges and so on. Using time-consuming half-day calculation: the average annual income /weekday in a year / 2; still use the data in cities and towns by 2008 units in the average wage of workers is 29,229 Yuan, 250 days a year basis, the PMC is 58.458 Yuan. And PMC constitutes the price of vaccination P.

Here the calculation is the Influenza A H1N1 vaccine available free of charge , without taking into account the marginal cost of the vaccine, the marginal private cost and marginal cost composite the marginal social cost MSC.

### **3 The number of influenza H1N1 vaccine should be provided free of charge**

#### **3.1 Factors of influencing the supply of H1N1 vaccines**

Influenza A H1N1 virus is a new virus, we have taken emergency measures, most of importance is controlling the speed and scale of its spread to minimize its harm to people.

Currently, all countries had not yet fully control. From the perspective of costs and benefits, at present controlling of the epidemic spread's benefit is enormous. Relative to the earnings, the cost of vaccination is very small; so that all countries take the free vaccination policy is reasonable. However, the results probably turn out to be: one is the epidemic out of control, it means that the benefit is zero, and the consequence is serious. Whether offering free of charge vaccines have been meaningless at this time. The other result is: the epidemic is totally under control, influenza A H1N1 is no different from ordinary flu, and this time can be taken to the general influenza vaccination policy. Thus, the number of influenza A H1N1 vaccine should meet the conditions of the epidemic which is under control. Complete controlling of the epidemic is determined by the following two conditions: one is the control number, that is, China now under the present situation, the largest number of infections; second is controllable time, which is based on the current number of infections, the assumption the number of infections is increasing and count out how long uncontrollable.

How many influenza A H1N1 vaccines provided free of charge determined by the number of the quantity and controllable time. Now combining with the specific situation in our country, I measure on these two factors respectively.

#### **3.2 How many free Influenza A H1N1 vaccines should be offered by the government of China**

##### **3.2.1 Calculation of the number of controllable**

Controllable means although the flu broke out, the infection of the population's mortality rate was 6.7%, it also means that these infected people can be cured as long as they get good treatments and the probability of cure is 93.3%. Good treatments depends on China's current hospital capacity, therefore as long as the number of infections in our hospital capacity within the current range, the vast majority of infected people can be discharged from hospital, so we think that can called it controllable. In China, now hospitals' capacity of receiving the number of influenza A H1N1 infections is limited, this limit is China's maximum treatment for curing these influenza H1N1-infected people.

We defined this capacity as the Influenza A H1N1 infection's controllable number. Once the number of Chinese infected over control, will lead to two effects: one is due to infected people so large even beyond the reception capability of China's health care system, would cause to a sharp increase in mortality in those infected just because of the lack of necessary treatment. Second, infected people lacking of the necessary treatment, so that second-generation infections [1] rate of the grow rapidly. And the number of infected at an accelerating increase, in theory, the entire population will eventually lead to disastrous consequences.

On the calculation of Controllable quantities, at first assume that: one, in order to ensure the effective control of viral infections, infected people must be patient about isolation and treatment, so treatment capacity controlled by the country's number of beds; second, assuming that each bed corresponds to an infected person; third, a single reception. So that the total number of beds in medical institutions nationwide as  $B$ , set control number as  $K$ , then the controlled quantity:

$$K = \alpha B \quad (1)$$

$\alpha$  as Beds across the country can be used to treat influenza A H1N1 infection rate. Assumptions in emergency situations, half of the beds can be offered to those infected, then  $\alpha = 0.5$ ; By the end of 2008 the number of beds for hospitals and clinics nationwide was 3.69 million, township hospitals beds was 820,000[2], then  $B = 369 + 82 = 451$  (10000); then controlled the number of  $K = 451 \times 0.5 = 225.5$ . This means that China can control the alpha of the number of H1N1 influenza infection was 2.255 million people. Of course, this result may be different due to  $\alpha$ 's different values; may also be due to the difference of major factors that affect hospital capacity (for example that the hospital beds rather than the reception capacity of employees affected). However, whatever the differences as the factors to be calculated difference, the correctness of its policy implications will not be affected.

Policy implications of this result for our country should also infected with influenza A H1N1 influenza virus within the population controls 2.255 million, exceeding this amount will be faced with patients do not get proper treatment, thus speeding up the spread of influenza A H1N1 influenza virus and eventually spiral out of control dangerous.

### 3.2.2 Computation of time controllable

Now calculate the time controllable, controllability time is defined as the current number of infections, based on the assumption the number of infections increasing amount of time to achieve controllable. Mainly based on the calculation of the H1N1 virus, the World Health Organization released the secondary infection rate of 22% to 33% infection rate in the second set; the number of infections in our country is (November 2, 2009 data), 48748 people, by the At present the number of infections extend to the number of infections in China controlled the number can be calculated as follows:

n shall be the number of infections; to sub report finishing, logarithmic, you can obtain  $n = (13.445, 19.279)$ . Influenza A H1N1 influenza virus, the incubation period is 7 days, from which we can calculate the controllability time for  $n * 7 = (94.115, 134.953)$  days. Of course, the controllable time-based calculations depend on the number of results manageable, this should be the formula (2) the number of equal sign on the right that is controllable can be seen. Computation of time here the number of results only based on one of the controllable method of calculating. But the results did not affect their policy implications.

The policy implications of this result as follows: In accordance with our sense of the current size of the population and the current spread of Influenza A H1N1 influenza rate, the epidemic out of control, we have the shortest 95 days, the longest 135 days of time to achieve the Influenza A H1N1 full control of influenza, more than this time, if still no good treatment and control means to prevent the epidemic spread shift from the contraction will likely exceed the hospital reception capacities, make the epidemic out of control.

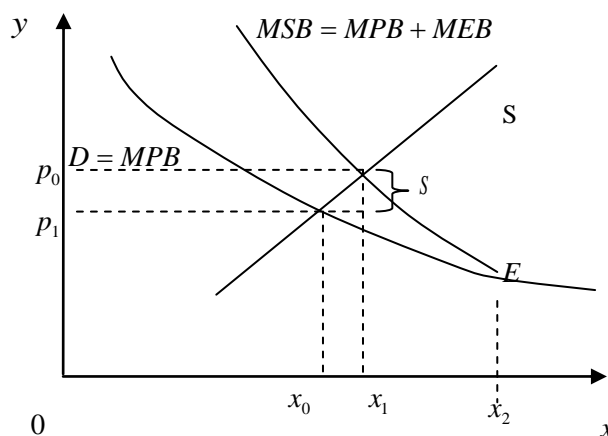
### 3.3 Free Influenza A H1N1 influenza vaccine policy recommendations

The above calculation shows that China should be at least the next 95-135 days in the high-risk populations provide free influenza vaccination for influenza A H1N1, and to simultaneously infect with influenza A H1N1 influenza virus, the number of control less than 2.255 million people.

### 4 the number of vaccines should be subsidized

#### 4.1 Influenza H1N1 vaccine inoculations of external effects

Of Influenza A H1N1 vaccination subsidy policy adopted on the grounds of vaccination exists mainly because of positive externalities. External effects that are not reflected the price of economic transaction costs or



**Figure 2. Curve: vaccination of H1N1 vaccine's marginal social benefit**

benefits. There are positive and negative externalities of the points, positive externalities that the market of the main parties to the transaction in the transaction will bring a third party other than the price does not reflect economic benefits. As the external effect is a situation of market failure, so when there is an external effect of government intervention is required. Influenza A H1N1 influenza vaccine in addition to those infected with influenza vaccine significantly reduced the probability of H1N1 influenza, were also those who were vaccinated around the same time reducing influenza A H1N1 influenza virus infection in the crowd the probability of

These people are not vaccinated and therefore pay a fee; this indicates that vaccination Influenza H1N1 influenza vaccine has positive externalities.

The size of external effects can be expressed in the external marginal benefit. Vaccine produced by the external marginal benefit MEB is decreasing with the increase in the number of injections. That is vaccinated to the community on the benefits of other people is decreasing. The reason is that, with the increase in the number vaccinated, the possibility of the spread of influenza A H1N1 influenza in the reduced, that is, diminishing the external marginal benefit. In a limited population groups, when the number reaches a certain level of vaccination, vaccination caused by the external marginal benefit ultimately tend to zero.

Figure 2 shows, the coordinates of the vertical axis for the income or price, the horizontal axis for the Influenza A H1N1 influenza vaccine size; curve D that influenza A H1N1 influenza vaccine vaccination demand curve, but also the private marginal revenue curve MPB, that is, personal vaccination A type H1N1 influenza vaccine available to marginal revenue; curve MSB is the marginal social benefit curve, that the whole of society from a personal vaccination Influenza H1N1 influenza vaccine to benefit, it is the private marginal revenue MPB and the external marginal revenue, and the MEB. MEB is the result of external diminishing marginal returns, and ultimately to zero,

Therefore, its marginal social benefit curve MSB showed a gradual increase in the number with the inoculation with the private marginal revenue curve near the MPB, and should eventually merged. In public economics, there exists a positive external effects for the products that the government should give subsidies, through subsidies so that the items reflected a positive external benefit, promote consumption, and ultimately the best supply of the goods, that is, the kinds of social resources goods production and consumption on the optimal configuration.

#### **4.2 In China, the number of influenza A H1N1 vaccination should be subsidized**

The first part of the analysis can be for our country Influenza A H1N1 influenza vaccine provides a theoretical basis for free policy. In Figure 2 kinds and government subsidies should be expressed by the number of points. A flow rate of spread of infection is based on the multiplier level, only immunization population to reach the entire population will be infected and that a number of infections in order to make the remaining population security, immunization to reach this population and then the number of people vaccinated A -type H1N1 vaccine has been no external marginal revenue, only the private marginal benefits, i.e. the private marginal revenue MPB is equal to marginal social benefit MSB, which  $MPB = MSB$ . To China's total population of 132,802 million in 2008 as the base?

Can be measured in terms of China, the external marginal revenue MEB zero point. Mentioned above, a stream of secondary infection rate was 22% -33%, was considered prudent that we take 33% of the infection, so is: Can be calculated, million people. This means that China should be for the former 889.49765 million people Influenza A H1N1 vaccine to offer subsidies.

#### **4.3 Conclusion**

Firstly, people are benefit from the current policy---free vaccination for influenza H1N1 vaccines, low cost, unlimited demands; one of the main factor constraints vaccinations is the capacity of immunization.

Secondly, according to China's concrete situation, at least, early in February 2010, China should always take the policy of free vaccination for H1N1vaccines.At best, before the end of March 2010 should still adopt this free policy.

Thirdly, for efficiency of resource allocation considerations, if after 2010, the plague of H1N1influenza has been effectively controlled, free vaccination for H1N1 vaccine should adjust to a subsidy policy, and these subsidies should be long-term implementation vaccination policy.

#### **Thanks**

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#### **References**

- [1] SI Ya Ping. Public Emergency Management Systems analysis[M]. Beijing: Knowledge Property right Press, 2007.10-46.
- [2] Sun Bin, Public Emergency Management [M], Beijing: Meteorologic Press, 2007.10-58.



- [3] Tang Hong, LIU Huai-week. Liu Ricoeur, Xi'an Medicare population cost-effectiveness of influenza vaccination research, drug research, 2008 17 No. 20, P54-55
- [4] <http://news.sohu.com/s2009/zhuliuganyiqing/>
- [5] <http://medicine.people.com.cn/GB/132552/153320/index.html>
- [6] <http://www.gmw.cn/>
- [7] <http://www.gov.cn/ztl/zhuliugan/>
- [8] [http://news.163.com/special/00013BQI/swine\\_flu.html](http://news.163.com/special/00013BQI/swine_flu.html)

## 21 世纪中国气象应急响应系统的展望和案例研究

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**【摘要】**近年来，中国气象灾害频发造成巨大的经济损失，正成为 21 世纪应急管理的严峻挑战。基于这一原因，该问题已受到越来越多的关注。因此，中国气象局（CMA）和各地气象部门已建立各级应急管理办公室和各种相关组织来应对气象应急事件。目前，中国气象局已建立一系列气象灾害相关的综合系统和应急响应程序并开始实施。本文对 2008 年北京奥运会期间的气象应急服务和 2008 年中国南方冰冻雪灾期间的应急响应这两个案例进行研究，进一步阐明了中国的气象应急机制。

通过这些研究，我们得出如下结论：中国的气象应急管理应该遵循科学的应急管理原则，即以预防为主，应急救援相结合的原则。此外，气象应急管理中的各种程序应简洁、可操作。希望通过本文的研究能促进思考，进一步提高中国的气象应急管理水平。

**【关键词】**气象灾害；应急系统；案例研究；响应原则

## CHINA METEOROLOGICAL EMERGENCY RESPONSE SYSTEMS IN THE 21ST CENTURY: PERSPECTIVE AND CASE STUDIES

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## **Key words**

meteorological disasters, emergency system, case study, response principle

## **Abstract:**

In recent years, the frequent meteorological disasters in China have caused enormous economical losses, consequently becoming the big challenge for the emergency management in the 21<sup>st</sup> century. For this reason, this issue has received an increasing amount of attention. China Meteorological Administration (CMA) and the local meteorological bureaus, therefore, have set up various emergency management offices and associated organizations for weather emergency. A suite of relatively comprehensive systems for meteorological disasters and some emergency response programs have also been implemented by CMA. In this contribution, two cases studies were studied involving the weather emergency services in Beijing 2008 Olympic Games and the low-temperature and snowstorm disaster emergency response in Southern China in early 2008 for furthering interpreting the meteorological emergency mechanism in China.

These studies confirm that weather emergency management in China should follow the scientific emergency management principle, as well as the prevention-oriented and emergency rescue-combined rules. In addition, the concise and operational programs are also our concerns in the meteorological emergency management. Hopefully, this study would largely promote the future thinking and further enhance the China meteorological emergency management.

## **1. Introduction**

China is one the countries of the world sustaining significant losses from serious natural meteorological disasters including: typhoon, torrential rain, drought, high temperature (heat wave), sand storm and thunder. In recent years, the global warming and climate change are becoming the greatest treat to our surviving environment, leading to various extreme weather events. Annually, the direct economic loss due to meteorological disasters over the period 1996-2006 has been on average US\$22.8 billion, which accounts for 1-3% of Gross Domestic Product (GDP) of China. The notably increasing meteorological disasters have halted to a large degree the social advancement (Jiao, 2007; Figure.1), thus presenting new challenges for Chinese weather emergency work.

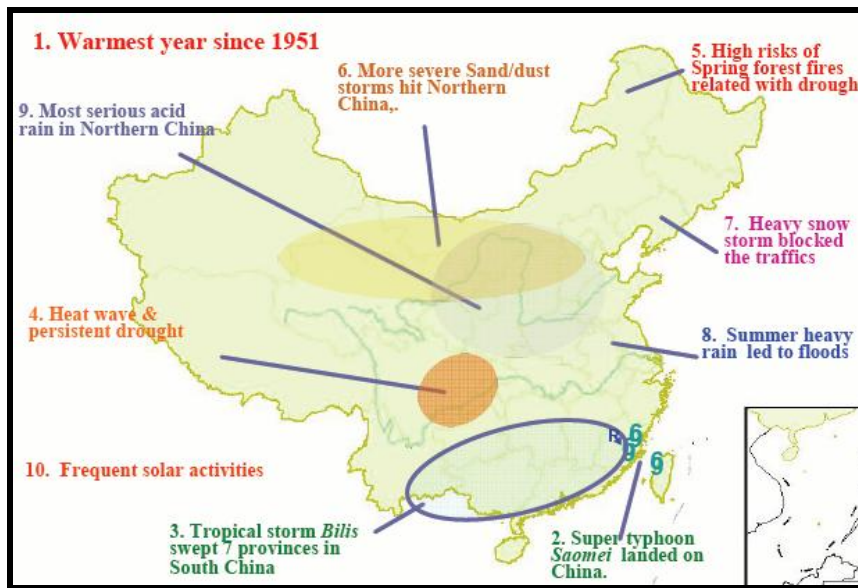


Figure.1 Major meteorological disasters occurred in China

(From Prof. Jiao's report, 2007)

China suffers severely from torrential rain and floods every year, particularly in Yangtze catchment, south and northeast China. Since the 1990s, the flood has accelerated its frequency in Yangtze River basin due principally to the climate variation and intensive anthropogenic disturbances. For instance, the huge floods emerged in the Yangtze River drainage area have caused the direct economic loss of US\$45 billion in 1998 (Yin and Li, 2001; Yu F., Chen Z.Y., Ren X.Y., Yang G.F., 2009).

The coastal areas of China attaching the Pacific Ocean to the east also undergo frequent typhoons each year, causing huge economical losses as well as people deaths. In 2006, for instance, the strong tropical storm "Bilis" killed eight hundred and forty three people and caused a direct economical loss amounting to US\$4.35 billion, whilst the strong typhoon "Saomei" killed four hundred and eighty three people.

In addition, China has to confront the extensive drought disasters across the entire country, though with a relatively uneven distribution. On average, the spring-summer drought primarily appears in most northern areas of China since 2000. As compared, the severe summer drought preferably occurs in northeast China and south Yangtze basin.

## 2. Theory and Method

### 2.1 Emergency Management Organizations of CMA

Emergency management of Chinese government is of great importance for regional sustainable development, particularly after the Severe Acute Respiratory Syndromes (SARS) in 2003. Of great importance, the emergency management agency of CMA has been serving as the key of Chinese entire emergency management system to meet national requirements (Information Office of the Chinese State Council, 2009). Since 2005, following the

establishment of Emergency Management Office in CMA, the local bureaus of meteorology at provincial, municipal or even county levels have also set up corresponding emergency management offices in response to emergency meteorological hazards.

CMA also pays more attention to emergency management mechanisms and standardization processes. The Emergency Management Office of CMA attached great emphasis on coordinating meteorological emergency events involving disaster monitoring, forecasting, warning and assessment. In particular, the office is responsible for meteorological disasters investigation, information collection and statistical analysis. Similarly, the emergency offices within provincial and local meteorological bureaus make great efforts in the relevant research areas.

## 2.2 Meteorological Emergency Response Systems in CMA

Evidently, the laws and institutions are the key factors of meteorological disaster mitigation. *The Meteorological Law of People's Republic of China* issued on January 1<sup>st</sup>, 2000 is the basic guideline for Chinese Meteorological Emergency Response Systems. And *The Emergency Response Law of the People's Republic of China* came into effect on November 1<sup>st</sup>, 2007. CMA has also made and revised sixteen regulations, 4 national standards and over forty industrial principles on meteorological emergency activities and other legal documents in accordance with the two above-mentioned laws. Furthermore, the local legislators and governments have issued over seventy by-laws and regulations for meteorological disaster mitigation.

CMA owns top priority to the development of meteorological emergency response and programs. Based on the *National Overall Emergency Response Program for Emergent Public Events*, CMA therefore issued a series of plans including the following: *Emergency Response Plan for Major Meteorological Disaster Early Warning*, *Measures on Issuing Emergent Meteorological Disaster Early Warning Signals*. These plans are depicted in the following diagram (Figure 2).



**Figure.2 Early warning signals of major meteorological disasters in CMA**

**(From website of CMA: <http://www.cma.gov.cn>)**

On the other hand, CMA also organized and implemented a number of contingency measures and plans for meteorological disasters including: *Major Weather Disaster Warning Contingency Plan*, *Significant Meteorological Disaster Information Submitting Standard and Disposal Methods*, *Emergency Meteorological Support and Services for Public Incidents (Trial Implementation)*, *Survey and Evaluation Rule of Collection on Meteorological Disasters*, *Metropolises Disaster Monitoring and Weather Forecasting Service Program*. Moreover, CMA greatly strengthened safely measurement such as *China Meteorological*

*Administration Anti-terrorism and Plans for Handling Emergency Situations.*

Accordingly, Chinese provincial and local meteorological administrations have formulated emergent meteorological service measures and plans for emergent public events covering nuclear substance dispersion, leakage of hazardous chemicals, geological disasters and so on.

### **2.3. Case Studies**

China is bracing for a higher risk of more extreme weather-related disasters, such as drought, storms and floods, since the 1990s. Here we only present the emergency responses to Beijing 2008 Olympic Games and Southern Freezing Rain and Snowstorm Disaster in China.

#### **2.3.1 Emergency Meteorological Services in Support of Beijing 2008 Olympic Games**

Emergency Meteorological Service for Beijing 2008 Olympic Games was responsible for issuing active and timely weather forecasts and rendering relevant meteorological emergency response for heavy rain, hail, high winds during the Olympic Games. For example, China Meteorological Administration would switch weather modification technology information to track the weather in case of hail, rain and other negative impacts during that period, which is of significance to ensure the complete success of Beijing 2008 Olympic Games. CMA, therefore, continuously updated the weather forecasts in terms of extended forecasts (10-15 days), medium-term forecasts (3-10 days) and short-range forecasts (1-3 days) for both the opening and closing ceremonies. For this reason, CMA has formulated the *Artificial Rain Operations Program for 2008 Olympic Games Opening and Closing Ceremonies*. For smooth sporting competitions, the meteorological departments enhanced efficiency of weather consultation and issued specific weather forecasts on a daily basis during the 2008 Olympic game. To meet these requirements, CMA did successfully eliminate rain exercise in Henan Province and Inner Mongolia Autonomous Region in July and early August of 2008, respectively.

Emergency Meteorological Service in support of Beijing 2008 Olympic Games also included emergency response actions for poisonous pollution (Wu Y.B., Liu W., Feng X.B., 2009). Therefore, China Meteorological Administration has developed *Olympic Environment Conditions Emergency Response Plan* and organized the environmental emergency response. This, evidently, was a successful case of meteorological emergency response to reducing rainfall for successful opening and closing ceremony in Olympic history.

#### **2.3.2 Snowstorm Disaster Response in Southern China**

This is a less successful case of weather emergency. Low-temperature freezing rain and snowstorm in southern and central China is the most serious event after the end of the "SARS" encountered in China. In January 2008, persistent low-temperature freezing rain and snow disaster has struck and severely affected most portions of south and central China, including Hunan, Hubei, Guizhou, Guangxi, Jiangxi, Anhui and other provinces (Lin L.X., Wu N.G., Cai A. Zhuang X.D, 2009).

At the very beginning, this was just considered as a natural disaster due primarily to the global climate variation. However, the low temperature and frozen snowstorm disrupted the normal operation of urban infrastructure, resulting in extensive damage and transportation disruption for several thousand travelers in Guizhou, Hunan, Jiangxi and other places. As a result, the power system of China was also severely affected by the adverse conditions. In particular, the Beijing-Guangzhou Railway, Beijing-Zhuhai Expressway and other major traffic arteries were blocked and many civil airports were forced to shut down. Situation is even worse when a number of urban water supply pipelines have been frost crack and communications were out of work.

On January twenty-first, 2008, the Chinese State Council's Emergency Office issued emergency information for response this strong cooling snowstorm. However, various executive branches took different responses from their own viewpoints, incapable of implementing the integrated decision-making and coordinating the actions of others. The snowstorm and frozen weather event led to communication disruption and train delays.

The infrastructure vulnerability in China South was largely highlighted due to the snowstorm disaster, as reflected by the north-south artery interruption and poor communication. Especially, the traffic information dissemination was chaos, "*someone open, other one turns off*", which made the disaster even worse. For example, the travelers who stood in temporary resettlement sites should be provided with more detailed information and quick guidelines during the weather emergency. Actually, many travelers always went to the railway stations, where the broadcast and display screen is available, to find the latest reports. This however resulted in the high-risk orderless and crowded status in the station square.

The imperfect emergency response largely accelerates the natural disaster to change into technology disaster, and which conversely enlarged the negative impact of natural factors on social life. Many officials in government departments of southern China still had no aware of forthcoming crisis (Sun, 2009). They just thought such considerable cold weather only occur in North China. Therefore, these Southern local governments seldom considered 'snowstorm' issues when formulating the local production plans. For instance, the majority thermal power plants in China just have inventories of ten to twelve days as normal coal inventory, 5 days as the warning line, greatly differing from those of America. On the contrary, in the United States, power plants' coal inventories are maintained at least forty days against the general severe weather. In this regard, the China's disaster resilience is relatively fragile for severe weather emergency.

### **3. Results**

Many notable attempts have been made in the study of emergency meteorological services in China, yet China's legal construction of emergency meteorological disaster is not much satisfactory. For this reason, the future development of weather emergency management should be largely addressed in the following couples of decades.

#### **3.1 Scientific principle**

Meteorology is already a fairly mature science than earthquake prediction. Chinese meteorological emergency response and legal system construction must base on scientific principle. We should take full advantage of meteorological science and technology by attaching more emphasis on disaster monitoring, forecasting and dealing with scientific basis (Wang B., Wang F., Luo J.P., Li Y.Y., 2007).

### **3.2 Prevention-oriented principle in combination with emergency rescue**

Previous studies indicated that good preventive work can significantly reduce the economic losses due to sudden weather disasters. Good prevention makes great sense for disaster mitigation, emergency response and disaster reconstruction work. Therefore, the big challenge of ‘last mile problem’ (which means the information can not reach the objects at the last mile since many reasons) in Chinese meteorological disaster early-warning information dissemination should be entirely resolved for reasonable emergency mitigation (Li Y., Zhang C.H., Liang H.H., Men Z.L., 2009).

### **3.3 Simple and operational principle**

In general, meteorological emergency response plans should be constrained within 500 words or so for facilitating both general people and technical personnel. The basic preparation specifications, including structural framework, reporting procedures, style formats, and relevant annexes should be clearly defined in the meteorological emergency response plans.

In addition, meteorological emergency response plans should propagandize the meteorological disaster prevention knowledge for the enterprise, the rural area, the schools and the communities.

## **4. Discussion**

In the complex settings of global warming, weather disasters and associated sub-disasters, how to strengthen China's meteorological emergency management works is becoming the big current challenge.

First of all, CMA needs further rationalize the functions and responsibilities of organizations at all levels. Chinese government should enhance the role of the weather emergency system in social management and public service, offering novel connotation for emergency management. Meteorological departments at the provincial level must collaborate with other units for approaching the central and local governments' purpose (Jia B., Yi X., Yang S.E., 2008).

Secondly, innovations on weather emergency management mechanism should be performed in the future years. Meteorological Emergency Response Systems involves many fields, covering the defense, military, geology, transportation, water conservancy, agriculture, health, environmental protection, aviation, sports, forestry, safety supervision, tourism, seismic, marine, and other relevant units. All of these sectors should establish and improve emergency incident response coordination mechanism for proper integrated defense and providing timely and efficient weather protection services.



Thirdly, CMA should further promote the construction of weather emergency regulations as soon as possible. It is of significance to establish the sound objective and scientific evaluation indicators and evaluation system for integrated management (Fang, 2007). CMA also need accelerate the establishment of weather warning information members and liaison network to improve the mass prevention and control mechanisms and to enhance mutual self-help capability.

## References:

1. Fang F., 2007. Overview of Meteorological Emergency Mobile (Vehicle-borne) Service System, Electronic Engineer.
2. Information Office of the Chinese State Council, 2009. China's Actions for Disaster Prevention and Reduction, [http: www.China.org.cn](http://www.China.org.cn), May 11, 2009.
3. Jia B., Yi X., Yang S.E., 2008. Construction of Prefecture-Level Monitoring System of Meteorological Emergency Service. Meteorological Science and Technology.
4. Jiao M.Y., 2007. Chinese CMA, Report, National Emergency Management of Meteorological Disasters, Geneva.
5. Lin L.X., Wu N.G., Cai A. Zhuang X.D, 2009. Disaster and Emergency Response of the Cryogenic Freezing Rain and Snow Weather in Guangdong in 2008. Meteorological Monthly.
6. Li Y., Zhang C.H., Liang H.H., Men Z.L., 2009. Emergency Mobile Automotive System in Meteorology and Its Application in Emergency Meteorology Service. Informatization Research.
7. Sun B., 2009. Study on disaster emergency management system in city. Journal of Natural Disasters.
8. Wang B., Wang F., Luo J.P., Li Y.Y., 2007. The Design Based on the Communications System of 3G Network on the Meteorological Emergency Commanding Vehicle. Journal of Meteorological Research and Application.
9. Wu Y.B., Liu W., Feng X.B., 2009. The Application of Atmospheric Diffusion Model in the Emergency Meteorological Service. Guangdong Meteorology.
10. Yin H.F., Li C.A., 2001. Human impact on floods and flood disasters on the Yangtze River. Geomorphology 41, p105 - p110.
11. Yu F., Chen Z.Y., ren X.Y., Yang G.F., 2009. Analysis of historical floods on the Yangtze River, China: Characteristics and explanations. Geomorphology, doi:10.1016/j.geomorph.2009.03.008

## 国际灾害救援的军事合作

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**【摘要】**为防止灾害程度的升级，积极参与国际救灾正在成为世界军队的惯例。通过研究近年来在国际救灾的做法，笔者讨论了在救灾中的国际军事合作。所述内容由四个部分组成。

第一部分是讨论国际救灾军事合作的必要性。不同国家的军队所具备的救灾支持能力各有不同，这种合作能够有利于对救灾效率的提高和促进世界长远的和平与稳定。

第二部分是讨论军事合作中存在的问题。不信任一直是军事合作的主要障碍。另外，救援响应组织之间的协调往往不充分。

第三部分是发展军事合作的原则。虽然国际存在共同应对灾害的问题上国际社会有共识，但是冷战思维的阴影仍很难被削弱。因此，在合作中应该相互承认，且笔者对救灾军事合作提出了建议性原则，包括从易到难、学术交流，官方救灾合作，预防灾害合作，双边到多边的合作原则。

第四部分是建立国际军事救灾合作路标。首先，成立相关组织之间的沟通渠道。其次，发展合作的具体途径，以改善救灾能力。最后，建立救灾的军事合作机制。

**【关键词】** 军事合作；灾害救援

## INTERNATIONAL MILITARY COOPERATION ON DISASTER RELIEF

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### Keywords

military cooperation, disaster relief

### Abstract

Active participation in international disaster relief is becoming the usual practice of the militaries in the world in case the scale of the disaster is extraordinary. By examining

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practices in international disaster relief in recent years, the author addresses the international military cooperation in disaster relief. There will be composed of four parts in the paper.

The first part is to discuss the necessity of the international military cooperation in disaster relief. As the armed forces of different countries have the capability of providing specialized support in disaster relief operations, this kind of cooperation could be conducive to the improvement of the efficiency of disaster relief and further contribute to world peace and stability in a long run.

The second part is to discuss the problems existing in the military cooperation. Distrust has always been the major obstacle to the military cooperation. Besides that, Co-ordination is often insufficient amongst responding relief organizations.

The third part is to develop the principles for military cooperation. Although there is a common sense for international community to respond disaster jointly, the shadow of cold-war mentality is hard to be diminished. Therefore there should be a process of acknowledging each other and the author suggests some principles for the cooperation in disaster relief operations among the militaries, including the principle of from easy to difficult, from academic exchanges to official cooperation, from disaster relief cooperation to disaster prevention cooperation and from bilateral to multilateral.

The fourth part is to develop a roadmap to international military cooperation in disaster relief. Firstly, set up communication channel among related organizations. Secondly, develop concrete ways of cooperation to improve the relief capabilities. Finally, establish the mechanism for military cooperation in disaster relief.

## Introduction

Natural disasters have become grave threats to the human security.<sup>2</sup> The military is one of important powers in disaster relief for every country. Active participation in international disaster relief is becoming the usual practice of the militaries in the world in case the scale of the disaster is extraordinary. If the militaries had cooperated in disaster relief, the relief efforts would have been more effective, more lives and property would have been saved. The author examined the importance and challenges of international military cooperation in disaster relief and then proposed four principals and a roadmap to international military cooperation on disaster relief.

## Part I

### Importance of military cooperation on disaster relief

Natural disasters have become grave threats to the human security. The damage to human society caused by large-scale disasters is no less than that made by war in some way. Indian Ocean Tsunami in 2004 killed more than 225,000 people in eleven countries.<sup>3</sup> Hurricane Katrina in 2005 hit the United States causing widespread devastation, which the economic damage was estimated up to \$50 billion.<sup>4</sup> From 2 to 16 of May in 2008, Cyclone Nargis had been resulted in 77,738 deaths, 55,917 disappearances in Myanmar.<sup>5</sup> 8.0 magnitude the Wenchuan earthquake in China On 12 May 2008 caused more than 69,000 deaths, 374,000

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<sup>2</sup> In general, disasters which need to use the military assert has three characters as bellowing: broke suddenly, caused and to be causing huge destructions, and to response rapidly. There are two kinds of disasters need to use the military assert, one of which is large-scale natural disasters (earthquake, flood, forest fire, cyclones etc.) and another is fatal man-made disasters (technological incident, chemical, biological and radiological attack etc.). This paper only focus on the natural disaster.

<sup>3</sup> See <http://news.sina.com.cn/z/sumatraearthquake/index.shtml>.

<sup>4</sup> See [http://news.xinhuanet.com/video/2006-01/17/content\\_4063418.htm](http://news.xinhuanet.com/video/2006-01/17/content_4063418.htm).

<sup>5</sup> See <http://www.xinhuanet.com/world/zt080506/>.

injured, 18,000 missing and millions homeless.<sup>6</sup> With the increased environmental degradation, global warming and population densities, the impact of hazards will to be worse in future.

### ***The international obligation***

The military is one of important powers in disaster relief for every country. With special capabilities in medical, engineering and technical support, the military can take the following responsibilities in disaster relief operations, such as search and rescue of disaster victims; the transport of personnel, disaster victims, and relief goods; medical services; the prevention of epidemics; and the reconstruction of damaged infrastructures. According to natural disasters happened in China, PLA play the key role in operations of earthquake relief, fighting flood, snow disaster and large-scale epidemic. For example, between the middle of January to early February in 2008, China's southern part has encountered historically rare disaster of sleet and blizzard. China's military forces sent 667,000 men times, 89,500 vehicle trips and 174 aircraft trips to the region. They cleared up a total of 32,000 kilometres of snow-topped roads, transported over 42,000 tons of relief materials and evacuated and relocated 7.217 million person times of stranded victims. After Wenchuan earthquake on 12<sup>th</sup> of May 2008, Military troop of more than 137,000 men were sent to engage in a full scale of relief operations. There were more than 20 professional teams of PLA participated the Wenchuan earthquake disaster relief, such as earthquake rescue team, engineering team, medical team, chemical team, communication team etc..

By the globalization, the people of the whole world are living in the same earth village. The frequent occurrence of natural disasters is a common challenge to international community. The disasters are often of a cross-border nature and require multilateral and coordinated responses. For example, Indian Ocean tsunami affected European tourists as well as the local populations. Just like the comment of European Commissioner Stavros Dimas, who is responsible for the civil protection mechanism: "It is the obligation of the international community to respond swiftly and efficiently" to an unparalleled catastrophe.<sup>7</sup> Therefore, there were armed forces from 21 countries participated tsunami disaster relief.

### ***Improve the effectiveness of disaster relief***

Basically the main role of the armed forces of different countries is to safeguard their national security and resist any foreign military attack. However, they can contribute a lot during peace time to this sort of international obligation by taking over disaster relief operations to protect lives and properties of human beings in front of heavy disaster. Active participation in international disaster relief is becoming the usual practice of the militaries in the world in case the scale of the disaster is extraordinary and also the participation of the military in international disaster relief operation is a symbol of the progress of human civilization.

In the case of the tsunami, 35 countries provided some type of military or civil defence aid, including 75 helicopters, 41 major ships, 43 airplanes and nearly 30,000 troops. In case of earthquake in Haiti this January, rescue specialists have been arriving with teams from China, France, Spain and the United States among the first to fly in. Helicopters from the aircraft carrier USS Carl Vinson delivered supplies to the capital Port-au-Prince. 10,000 more US troops in Haiti helped distribute aid and maintain security. There have been already more than 9,000 UN security personnel in the country and The Security Council voted to dispatch an extra 2,000 troops and 1,500 police to Haiti for a period of six months. As everyone knows, the first 72 hours is the "golden period for rescuing the survivals". During this period, the

<sup>6</sup> Source: Xinhua, China publishes identities of 19,000 dead in May quake,  
[http://english.gov.cn/2008-11/21/content\\_1156146.htm](http://english.gov.cn/2008-11/21/content_1156146.htm).

<sup>7</sup> Commission of the European Communities, Communication on reinforcing the Union's disaster response capacity Brussels, 5.3.2008, p3,  
[http://ec.europa.eu/commission\\_barroso/president/pdf/COM2008\\_130\\_en.pdf](http://ec.europa.eu/commission_barroso/president/pdf/COM2008_130_en.pdf).

multilateral and coordinated cooperation among all parties engaged in disaster relief is urgently needed. More lives could be saved and supplies could be timelier by effective coordination among the militaries from different countries, including assisting countries, assisted countries and transit countries.

### ***Promote confidence-building***

Participation in disaster relief provides a good opportunity to reduce the hostility and enhance mutual understanding, trust and friendship between the two peoples. When 8.0 magnitude earthquake stroke China, Japan's rescue team was the first international rescue team to arrive in China. They searched the trace of life by detectors with Chinese rescuers. A member from Japan's team said: "When I saw the smiling faces of the PLA men, I felt they took us as brothers."<sup>8</sup> When meeting with representatives of Japanese rescue and medical teams, the Chinese President Hu Jintao called for efforts from both sides in such cooperation to further push forward the bilateral ties.<sup>9</sup>

Military cooperation in disaster relief operations will undoubtedly provide a platform for the two sides to build confidence measures. In the disaster relief operations, the two sides will have to carry out a series of exchanges at different levels. These exchanges will not only provide a chance for the two sides to share their experience in disaster relief operations, but also provide different forums for the two sides to enhance the mutual acknowledgement and understanding, which are the most fundamental elements for the mutual confidence and trust. In return, more mutual-trusts accumulated by exchanges, more favourable interactions between the militaries are catalyzed.

## **Part II**

### **Challenges in the international military cooperation on disaster relief**

As the armed forces can be give the main task of providing specialized support in disaster relief operations, the militaries from the world have participated actively in international disaster relief recently. In the case of NATO, the Euro-Atlantic Disaster Response Coordination Centre (EADRCC) stands ready to coordinate the response of NATO and partner countries to natural or man-made disasters within the Euro-Atlantic area. Since its launch, the EADRCC has guided consequence management efforts in more than twenty-five emergencies, including fighting floods and forest fires and dealing with the aftermath of earthquakes. Especially, Pakistan earthquake relief operation was the first example of an EADRCC operation outside the EAPC area for 90 days. Given the gravity of 8.0 magnitude Wenchuan earthquake in 2008, China is open to assistance in disaster relief by foreign armed forces, which had received relief goods such as tents, food, medicine and generators from 14 foreign defense ministries and armed forces, as well as donations in cash from some foreign defense ministries and armed forces. It was the first time for international rescue team to participate in disaster relief in forefront since new People's Republic of China came into existence. Other recent examples of use of international Military include the earthquake in Iran in December 2003, the floods in Bangladesh in July 2004, the Indian Ocean tsunami in December 2004, the hurricane Katrina in September 2005 and so on.

There are two significant challenges posed for the militaries from the affected host nations, for assisting countries and even for the UN. Distrust has always been the major obstacle to the

<sup>8</sup> People's Daily, June 3,2008: The brotherhood between the international rescue teams and the PLA men(人民日报: 国际救援队与解放军结兄弟情 令陪同外交官落泪, 2008-06-03), [http://news.xinhuanet.com/mil/2008-06/03/content\\_8304747.htm](http://news.xinhuanet.com/mil/2008-06/03/content_8304747.htm).

<sup>9</sup> Xinhua, July 8, 2008, President Hu Jintao meeting with the Japanese rescue team and International Medical Team(新华社: 胡锦涛主席会见日本国际救援队、国际医疗队代表, 2008-07-08), <http://www.fmprc.gov.cn/eng/wjdt/wshd/t455356.htm>.

military cooperation. Because of the special nature of the armed forces, the use of them in international disaster relief sometimes violates the sovereign rights and hurt the sentiments of the people. Because of the historical memories, difference in political systems or realistic disputes, the victim countries may be pretty cautious on the issue of accepting foreign armed forces in helping them in disaster relief. Therefore, following scenarios may be witnessed. First, it may take a long time to negotiate the procedures for the entry of the armed forces. In 2008, when Myanmar suffered from the Cyclone Nargis, Myanmar government suspected the real intention of the United States because of the long diplomatic isolation and economic blockade by the western society. Therefore, it rejected the entry of the warships and military helicopters of the United States for delivering disaster relief materials for a while. Second, the affected states may pose restrictions on the size of the rescue forces. The example is that after the tsunami happened in Indian Ocean, the United States, Japan, Australia and some other countries sent their warships, aircraft and troops to perform disaster relief operations in Indonesia. the Sri Lanka government has asked the US government to scale down the size of its military deployment in aid of the relief effort on its territory. India rejected international relief assistance in the Tamilnadu and Nicobar Islands. In addition, the Indonesian government has set a deadline of March 2005 for all foreign military organisations to depart its soil in the Banda Aceh region. Third, there is indeed some country does make use of the opportunity of disaster relief abroad to practice maneuvers and carry out exercises, thus arousing the dissatisfaction of the people of the victim states.

On the other hand, Co-ordination is often insufficient amongst responding relief organizations. In the wake of the major disaster, the military cooperation is conducted in two ways. At multilateral level, the international rescue teams should be coordinated by OSOCC (the On-Site Operations Coordination Centre) of OCHA(United Nations Office for the Coordination Humanitarian Affairs) to rescue survivors, deliver aid goods and cure the injured. At bilateral level, the military relief tasks from assisting country and assisted country can work together after the coordination by foreign affairs ministry of the two states. However, the mechanism for coordinating and integrating relief efforts is not sufficient enough. Besides that, in disaster relief operations, the system and institution of command and control, information sharing and legal support are also realistic issues.

### **Part III**

#### **The principles for military cooperation on disaster relief**

Although there is a common sense for international community to respond disaster jointly, the shadow of cold-war mentality is hard to be diminished, therefore I believe that there should be a process of acknowledging each other and I would suggest some principles for the cooperation in disaster relief operations among the militaries, including the principle of from easy to difficult, from academic exchanges to official cooperation, from disaster relief cooperation to disaster prevention and from bilateral to multilateral.

##### ***The principle of from easy to difficult***

To avoid misunderstanding, the two sides should proceed from easy ones to difficult ones in the cooperation of disaster relief operations. For instance, it can be started from information sharing, providing those civilian materials which are urgently needed in the disaster-struck areas. With the increase on confidence, the related parties can surge forward the cooperation to providing military hard wares and military interactions.

##### ***The principle of from academic exchanges to official cooperation***

Because of lack of practical cooperation in disaster relief operations, the academia of both military and civilian should first of all exchange the views on and experience in the disaster relief operations. This sort of exchanges can pave the way for the practical cooperation in case of a disaster occurring. On the basis knowing each other capabilities and way of behavior in

disaster relief operations, the related parties can advance to practical cooperation in disaster relief.

***The principle of from disaster relief to disaster prevention***

Prevention is much better than the actual disaster relief. The disaster relief cooperation should expand to disaster prevention. Under emergent situation, one can not place his hope on extinguishing a fire nearby with water from afar. Relief should first of all be provided by the disaster-stricken country. The significance of military cooperation in disaster prevention is no smaller than the direct assistance provided immediate after disasters take place.

***The principle of from bilateral to multilateral***

The military cooperation in disaster relief operations can be started from two states bilaterally. With the deep-going of the cooperation, other members in same region can gradually join the process of the cooperation. This will not only help different regions to overcome the difficulties brought by disasters, but also may help to foster regional and international security from the long perspectives.

**Part IV**

**Recommendations: A roadmap to international military cooperation in disaster relief**

From the perspective of a Chinese scholar in active service, I would like to propose a roadmap to international military cooperation on disaster relief. I believe this kind of cooperation could be conducive to improvement of the disaster relief capabilities of the militaries, building trusts and confidence further and thus contributing their part to the maintenance of world peace and stability in a long run.

***Step1: Set up communication channel among related organizations***

It is advisable to set up communication channel among related organizations in charge of disaster relief. In China, PLA set up Emergency Response leading group and it's Office (ERO) on March in 2005. Since then, ERO dealt with all of the emergencies, snow disaster, train crash, Wenchuan earthquake as well as security task in Beijing Olympic Games. ERO is responsible for the command of troops' relief operation and coordination with civilian government. At the national level, In order to make a quick response to disaster, the information sharing mechanism has established between ERO and more than 20 ministries of state, such as Ministry of Earthquake, Ministry of Civil Affairs and Ministry of water conservancy. It is of a great significance for coordination and cooperation in disaster relief operations. If there was a direct communication and contact channel among units from the militaries which are in charge of relief operations, more timely request of assistance and timely implementation of assistance would be made.

***Step2: Develop concrete ways to improve the relief capabilities of militaries***

To improve the disaster relief capabilities, some concrete approaches could be encouraged as following.

***1. Set up the regular platform for experience sharing***

Different countries concerned can make full use of the platforms to learn from the experience of other countries. The experience is very conducive to the improvement of the practice in the disaster relief operations and hence to the efficiency of disaster relief operations. In the past decade or so, China has established a series of platforms for security dialogues and cooperation in non-traditional field either on bilateral basis, or in the framework of multilateral architectures. These dialogues and cooperation have served to improve mutual understanding, increase trust and confidence, thus the security and stability in the region. For

example, the Joint Declaration of ASEAN and China on Cooperation in the Field of Non-Traditional Security Issues published during the 6th China-ASEAN Summit in 2002 initiated the all-round cooperation in this field. The China-ASEAN Dialogue between Senior Defense Scholars (CADSDS) and the Non-traditional Security Forum of the Armed Forces (NSFAF) of ASEAN, China, Japan and ROK have become regular platforms for military experts and scholars of the countries involved to have discussions in non-traditional security cooperation.

### ***2. Develop Standard operating procedure (SOP) for military cooperation in disaster relief***

Standard operating procedure (SOP) for cooperation on disaster relief by armed force may be very conducive to the smooth cooperation, resolution of the problems like language barriers and improving the efficiency of the relief efforts. The SOP should include how the rescue personnel, equipment, installations be sent into the disaster-stricken country. It should also cover the privileges, immunity and other legal issues in form of mutual agreement or multi-lateral agreement. I think the EU has more experience in this field. The EU developed two framework documents on arrangements relating to the possible provision of military support, such as transportation, medical and engineering support to coordinate the efforts among EU-member states. With the practice of disaster relief, the PLA began to realize the problem and has proposed a tentative plan of SOP for cooperation on disaster relief by armed forces of the ASEAN plus China, Japan, the Republic of Korea ("10+3"). Beside that, some joint research could also be launched on other legal issues in form of mutual agreement or multi-lateral agreement.

### ***3. Establish emergency rescue training base***

Under some cases, disaster relief operations need expertise and well trained personnel. The advanced rescue equipment and the professional skills of the international rescue teams and medical teams left very deep impression of the Chinese, those life rescue devices, obstacle clearing equipment, satellite telephones, bendable pinhole cameras and the devices for supervising the leaning buildings, are very professional and very useful in rescue and relief operations. Therefore, it seems necessary to establish emergency rescue training on multilateral level. These bases can not only be used for training of the troops on one side, but can also be used for joint exercises and exchange of troops for training on the bases of the other side, thus laying a foundation for the realistic cooperation in disaster relief. In the bases, we can train their troops in a rotating way. The contents of training should not only include the skills, but also help to formulate the relevant technical standards, and the standards for the prevention and reduction of disasters. There are two kinds of training should be stressed in military cooperation among the related parties, one of which is to provide the joint training of commanders who are tasked for international disaster relief efforts and liaison with all relevant international bodies. The other is to provide annual refresher and training courses for medical staff in order to improve their ability to make rapid and accurate diagnoses in emergency.

### ***Step3: Establish the mechanism for military cooperation in disaster relief***

Sustained cooperation and efficient cooperation need mechanisms. Mechanism is a guarantee for smooth and lasting cooperation between different countries or countries blocs. But to establish the mechanism is not an easy job. What we need to do is first of to start the cooperation. Because of the nature of disasters are different, some of the disasters need the involvement of experts, some need the relief goods, some need involvement of troops. So we can negotiate to formulate a series of agreements to cope with different needs of the different disaster. After that, if the cooperation goes smoothly, these agreements will surely serve as the mechanisms in the military cooperation for disaster relief.

## **References**



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1. proceedings of papers presented on the workshop on International Disaster Relief by armed force of the ASEAN plus China, Japan, the Republic of Korea, 2006, China (《东盟与中日韩武装部队国际救灾研讨会论文集》) .
2. Commission of the European Communities, Communication on reinforcing the Union's disaster response capacity Brussels, 5.3.2008, p3,  
[http://ec.europa.eu/commission\\_barroso/president/pdf/COM2008\\_130\\_en.pdf](http://ec.europa.eu/commission_barroso/president/pdf/COM2008_130_en.pdf).
3. SDA Roundtable report: What Future for a European Disaster Relief Force?, p4,  
[http://www.securitydefenceagenda.org/Portals/7/Documents/Final\\_Report\\_Disaster%20Relief.pdf](http://www.securitydefenceagenda.org/Portals/7/Documents/Final_Report_Disaster%20Relief.pdf).
4. EADRCC: NATO's Role in Disaster Assistance (November 2001),p12,  
<http://www.nato.int/eadrcc/mcda-e.pdf>

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Xu Manshu is an associate professor at the Research Center for Crisis Management at the NDU, PLA. Commander Xu holds a Master's degree in Operations and Doctor's degree in Military Strategy from the graduate school of NDU, PLA. Currently, Commander Xu's research focuses on the early warning of crises, conflict control and non-traditional security. Commander Xu published her monograph *the early warning of international crisis management* and *international crisis management* as co-editor. As a fellow in EastWest Institute's Brussels Center in 2008, she had engaged in policy research on Military Cooperation with China on Conflict Prevention.