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# **Natural Disaster and Strategy of Disaster Reduction**

## **through Insurance in China**

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**Abstract:** In China, natural disasters occur very frequently, and do great harm to people's properties and life every year. In recent years, both the disaster intensity and losses from them show the increasing tendency. Thus, it becomes more and more urgent and important to reduce natural disaster. Insurance has done a lot of work and so play an important role in disaster reduction and prevention. We point out that there are kinds of different natural disasters in China and they occur continually, seasonally and regionally. The research result indicates that the disaster loss is increasing in recent 20 years and that in China, flood and earthquake are the main natural disasters. This paper also presents some primary countermeasures and suggestions for natural disaster reduction, based on the natural disaster insurance actuality of China.

**Key Words:** Natural disaster Insurance strategy of disaster reduction China

### **1 Survey of Natural Disasters in China**

China is so large that the climate and physical geography conditions vary greatly. All kinds of the natural disasters occur frequently because of the influence of monsoon climate as well as the damage of ecological environment caused by the long-term unreasonable exploitation of human. These disasters often occur in the areas with dense population and developed economy, leading great loss in national economy and people normal life, especially in 1990's when the loss from natural disaster has increased apparently and become the important factor affecting economy and social stability.

#### **1.1 The Natural Disasters in China Occur Diversely, Continually, Seasonally and Regionally<sup>[1]</sup>**

##### **1.1.1 Natural disasters in the air circle and water circle**

Flood, drought, typhoon, windstorm, sand wind as well as hail, snowstorm, freezing, tsunami belong to this kind of disasters. The area flooded every year is more than 10,000,000 ha., of which more than 5,000,000 ha. areas are affected by natural disaster, usually occurring in summer and autumn (see Table 1). And drought mainly takes place in spring and summer, annually affecting more than 2,000,000 ha. Typhoons mainly land on southeastern coast for about 7 times every year. Windstorms are the fiercest sea disaster that threatens China, and there was a record of 10,000 death in the most serious one in history. Losses for sand wind, hail, snowstorm and freezing are also quite great.

##### **1.1.2 Earthquake and geological disaster**

This kind of disasters mainly include earthquake, collapse, landslide, mud-rock flow, surface, subsidence, desertification. Earthquake occurs frequently in China. Since 1949, about 300,000 people died and millions of people were injured from earthquake. In addition, 10,000,000 houses collapsed. For example, the 7.8 scale earthquake at Tangshan in 1976 frightened the whole world,

Table 1 Status of Flood in Hunan, Hubei and Jiangxi Prov.in 1998 (Till July 30, 1998)

Province Unit	Counties Affected	Area Affect-ed	Perish	Persons Transfe-red	Land Dama-ged	Rooms Collaps-ed	Crops Dama-ged	Crops Loss	Livest-ock Death	Direct economi-c loss
		10,000 ha	Persons	10,000 persons	10,000 ha	10,000 rooms	10,000 ha	10,000 ha	10,000	US\$ billion
Hubei	58	2070.0	94	127.0		42.8	138.6	28.6		US\$ 1.53 billion
Hunan	32	884.0	120	86.1	5.1	37.5	52.0	14.0	3.17	US\$ 1.83 billion
Jiangxi	39	790.4	14	84.3		23.8	82.6	54.2		US\$ 1.43 billion
Summary	129	3744.0	228	297.4	5.1	104.1	273.2	96.8	3.17	US\$ 4.79 billion

which brought 242,000 people to death and injured 164,000 People. There are more than 410,000 sites all over the country, where collapse, landslide, and mud-rock flow may occur, and about one thousand people die from them.

### 1.1.3 Biological disasters

There are more than 1400 kinds of disease and insect mice in China. About 50,000,000 tons grain and more than 1,000,000 tons cotton are lost from them. The areas of prairie and forest infested by insect and disease are more than 20,000,000 ha. and 8,000,000 ha. respectably.

### 1.1.4 Fire in forest and prairie

Since 1950, forest fire as a disaster takes place 16,000 times every year, and about one million ha. has been threatened by fire. The area of prairie threatened by fire is over 2,000,000,000 ha., of which about 100,000,000 ha. caught fire frequently.

## 1.2 Natural Disasters are Diversely in Different Areas

At present, China is divided into 6 areas according to the characters of natural disaster and major experiences in disaster management (see Table 2).

Table 2 Regionalization Plan of Natural Disaster in China

Natural disaster belts		Natural disaster region		
South-east coast		Su Hu coast	Zhe Min coast	
		Yue Gui coast	Haina coast	Taiwan coast
East mainland		Northeast plain	Bohai-Huanghai plain	
		Huang-Huai hai plain	Yangze-Huaihe plain	
		South Yangze river hills		
Central		Daxinganling-Yanshan mountains	Inner mongolia plateau	
		Loess hills	Southwest mountains hills	
		South of Yunan , Guangxi hills total		
North-west mainland		Inner mongolia-Ningxia-Gansu plateau-mountains		
		South of Xinjiang Gobi-deserts		
		North of Xinjiang mountains-deserts total		
Qinghai-Xizang plateau		Qinghai plateau-basins		
		West Sichuan & Southeast Xizang vallies		
		South Xizang mountains-vallies		
		North Xizang plateaus total		

### 1.3 The Loss from Natural Disaster is Great and Increasing

China is one of a few countries that suffer from heavy losses by natural disasters. In average year, about 200,000,000 people in China are affected by natural disasters, of whom thousands of people died and 3,000,000 people had to resettle. Furthermore, more than 40,000,000 ha. cropland is infested and 3,000,000 houses collapsed. The loss from natural disaster is increasing with the continuous and rapid development of national economy, the expansion of production scale and the accumulation of social wealth, partly because facilities for natural disaster reduction can not meet the needs of rapid economic development. If calculated according to the invariable price of 1990,

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the annual losses directly from natural disasters are as follows: 48,000,000,000 yuan in the 1950's, 57,000,000,000 yuan in the 1960's, 59,000,000,000 yuan in the 1970's, 69,000,000,000 yuan in the 1980's, and more than 100,000,000,000 yuan in the 1990's.

The area of cropland infested by drought, flood, typhoon and hail is about 40,000,000 -47,000,000 ha., and 20,000,000,000 kilogram of grain is lost every year, and nearly 60 percent of the natural disasters is meteorological ones (see Table 2).

## 2. Insurance of Natural Disaster in China

### 2.1 Development of Natural Disasters' Insurance in China

With the implementation of open policy and reform, China's insurance has made great progress. First, the income of insurance premium increases greatly. In 1996 the total premium income in the country was 108.3 billion yuan. Second, insurance indemnity was 16.99 billion yuan, which was 22 times as much as the sum of 0.77 1 billion yuan in 1981. Third, the Chinese insurance market with the group companies playing major roles is in its originating state. At present, there are 27 insurance companies in China, of which foreign or joint-venture companies are thirteen. They include 16 companies of property insurance, 8 companies of life insurance and one special reinsurance company. In addition there are more than 60 representative offices of foreign companies in China. Fourth, a complete set of regulations are basically formed and the governmental administration agencies strengthen the supervision and control. So the insurance enterprises of China are developing quickly (see Table 3) under the great supporting of government and society<sup>[3]</sup>.

Table 3 Statistical Data of The People's Insurance Company of China (1980-1997)

Unit: 108Yuan RMB, %

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988
Premium	2.9	5.4	7.6	10.0	14.1	21.2	31.1	42.1	57.4
Compensation	0.06	1.54	2.62	4.01	5.85	11.80	15.94	20.71	26.13
Compensation rate	2.1	28.3	34.7	40.0	41.5	55.7	51.3	49.2	45.5
Year	1989	1990	1991	1992	1993	1994	1995	1996	1997
Premium	74.3	94.0	130.2	199.5	267.2	275.0	307.0	350.0	380.0
Compensation	35.38	46.08	77.74	100.77	153.11	192.00	165.00	221.00	216.00
Compensation rate	47.6	49.0	59.7	50.5	57.3	69.8	53.8	63.1	56.8

Data source: The People's Insurance Company of China, 1997.

Although the insurance in China has made big progress, the insurance market of China also need to develop greatly and it has a big potential that much society property should be insured.

### 2.2 The Main Problem of Natural Disaster Insurance in China

Generally speaking, the problems existing in the insurance of natural disaster in China are as follows: Earthquake insurance is very difficult. There are lots disaster affecting people in flood areas, but the insurance buyers among them are limited. The amount of compensation for natural disaster is large, but the insurance premium is low and the dissension after disaster always occurs, but the agreement of them is difficult to agreed on.

The main reasons of these problems are that: many enterprises and families pay little attention and that it is important for them to regard the insurance premium as a necessary expending, and it must obey its equation of insurance premium; and the policy conditions of this don't match well at present.

## 3 Strategy of Disaster Reduction through Insurance in China

### 3.1 The Research on Some Questions about Disaster Reduction in Natural Disaster Insurance

Developing the insurance business quickly is still an important work for us to do with the natural

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disaster. For that, there are several questions which should be solved through research: Enhance the propaganda about the necessary expending of insurance to all the fields of society; the insurance institution should provide society with the safe and cheap insurance service; insurance institutions should provide the society with the system of insurance service, which should have variety of disaster, complete directions and distinct gradation, completely elaborate the role of insurance in disaster reduction and disaster prevention. As the function of insurance, it is the economic compensation after the disaster. But since the insurance is a work of economy it must adhere to the law of lower costs and higher efficiency. Every insurance institution must stick to the equation of the premium income =the expend of compensation + expedition. But the limited income of premium, the absolute stability of the business expenditure, and how to reduce the expenditure of compensation is the crux of equation. Therefore, from double angles of the society and the benefit of itself, the insurance institutions have to attend the work of disaster reduction or disaster prevention. This work includes three links in general.

First, the insurance should take the measures of security and prevention which are required for them to do when they are insured. Second, when there is a loss of disaster, it should be encouraged or attended to take some methods of disaster reduction and prompt saving. Third, it is important to generalize the cause of loss and find the law, which could provide the evidence for the later measures of disaster prevention and disaster reduction.

### **3.2 Set up the Consciousness of Insurance in the Process of Market Economy**

The insurance for disaster reduction is one of the most important parts of administration of regional risk management. All the producers must realize that safe production and sustainable development couldn't be independent on insurance. Insurance should be regarded as the guarantee during the course of the development of enterprise, even a necessary investment, as a part of production cost. In the meantime, insurance business should be cooperated tightly with disaster prevention and insurance development, embodying not only the economic benefit of the enterprise but also the social benefit. Whether insurance business or disaster reduction and disaster prevention need to cooperate tightly with local government and all kinds of related function departments, take the most initiative of governments and make most of the present resource for the enterprise development and accumulate funds for the heave disaster years.

### **3.3 Give Free Rein to the Role of Reinsurance in Disaster Reduction**

For any insurance department, there is a contradiction between the balance of income and limited premium and the sudden natural disaster. So, any insurance department will meet many difficulties to bring its compensation into play inevitably if only department will itself, and reinsurance renounce the world. The characteristic of reinsurance is that many insurance companies will share the premium of any natural disaster beyond the bounders of companies, the bounders of regions, and even the bounders of countries. The acceptor of reinsurance will raise all kinds of request to the conditions of sharing insurance, including lots of contents of guarding against disaster and damage, which will promote insurance buyer to carry out all measures he can do to decrease the damage when the disaster takes place .The natural phenomena are an integer and they interact each other though any large natural disaster only takes place in a certain region of the earth .And the reinsurance company will give a basis to study the principle of natural disaster and measures taken, with the broadening of the reinsurance companies' business, the strengthening of the reinsurance companies' economic strength, and the accumulation of natural disaster's material.

### **3.4 Pay Attention to the Principle of Regional Natural Disaster Distinction and Make the**

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### **Risk Regionalization**

There is an obvious different disaster situation among different regions as the distinction of economic level. So, the disaster regionalization must be made in the light of the natural and social economic difference in certain region and history disaster information. Thus it is necessary for insurance company to carry out regional insurance rate according to different natural disasters, extend its business, disperse risk, and reduce the compensation rate.

### **3.5 Build up a Perfect Calculation System of Insurance Rate and Loss Menstruation**

The assessment of regional disaster risk is a basis of insurance rate calculation. As a statistical method, enough time series data are needed, so we have to build up a system of insurance technical records, and handle each case carefully to set up the insurance case database, and stretch the construction of disaster reduction through insurance. And all of these will work as the basis of insurance rate determination. Building up the technology of quick measurement of disaster loss is also an important measurement to accomplish an insurance technological team.

### **3.6 Make a Full Use of Disaster Inspection Departments' Information on Disasters, Work out Emergency Preparative Plan of Disaster Reduction in Insurance, and Work Hard on the Research of Natural Disaster Insurance and Measurements of Loss Surveying Technology**

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