

# China Country Report 1999

## China National Committee for International Decade for Natural Disaster Reduction

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#### Preface

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Since 1990, the international society has made unremitting efforts to carry out the decade-long activities in natural disaster reduction, and thus made remarkable achievements. However, the impacts of natural disasters are serious on the human society, on the developing countries in particular. The economic losses due to natural disasters have been on rise. How to reduce the threat of natural disaster to human beings and create a safer world is a still a very urgent task that challenges the international community.

In the last decade, China suffered from several severe natural disasters. The annual direct economic losses due to natural disasters range from 3% to 6% of its GNP, with a death toll of thousands of people. China is a large developing country with big population, less cultivatable land and relatively weak economy. Its enduring capacity against natural disaster is not yet strong. For a relatively long period in the future, the pressure from its population and poverty will still limit its further capacity development in disaster reduction work. The Chinese Government regards disaster reduction work as an important guarantee for realizing its overall goal for sustainable development of national economy and progress of the society. The Government also points out that disaster reduction should serve the national social and economic development and progress of society, and that it is necessary to deal well the relations between economic development and disaster reduction. The government emphasizes that national capacity for natural disaster reduction can be further increased by ensuring the sustainable socio-economic development; strengthening the national comprehensive capacity; eliminating poverty; implementing the policy of developing the nation by science and education, and encouraging the application of advanced sciences and technology in the process of disaster reduction.

To reduce natural disaster must enhance the environmental protection and improve ecological environments, which promotes the realization of the strategy of sustainable development. After 1992 International Conference on Environment and Development, Chinese Government formulated "China 21st Century Agenda" for coordinating environment and development. In this Agenda, it clearly states that disaster reduction is an indispensable component of national strategy for sustainable development. After 1998, the Chinese Government has further established a set of comprehensive principles to direct the natural disaster reduction for flood control and drought relief. These principles are strictly preserving the farmland, forest vegetation and water resources; sticking on comprehensive planning, overall consideration and comprehensive arrangements and coping with symptoms and roots simultaneously; raising benefits and eliminating harm; locating more resources and reducing expenditure. In these principles, the emphasis is to strengthen the ability to reduce the harassment of big rivers.

The achievements in disaster reduction reflected that disaster reduction work has placed an important role in ensuring social and economic development. To deal with problems existed in the work of disaster reduction, we shall further manage well the relations between natural disaster reduction and population, resources, and environment; enhance the role of disaster reduction work in social and economic development; and further reduce the human and economic losses caused by disasters.

The activities of IDNDR are a concerted action taken by human to face the threat of natural disasters, which has made inspiring progress in promoting disaster reduction work worldwide and international exchanges and cooperation. The achievements in our disaster reduction work are not only the results of the self-reliance and unremitting struggle of Chinese people, but also the important component of the achievements made by the IDNDR.

In future, a country should continue to rely on its own efforts to develop its disaster reduction work. Well, at the same time, it is necessary to further strengthen exchanges and cooperation among countries and regions. The developed countries and international organizations have the capacity as well as the obligation to provide necessary support to developing countries in their disaster reduction efforts, which includes enhancing disaster reduction aid and technology transfer, assisting developing countries in capacity-building in disaster reduction so as to reduce the losses due to natural disasters. We shall continue to enhance our cooperation with the United Nations and international community, and support the follow-ups of IDNDR. We hope that UN will play a greater role in organizing and coordinating disaster reduction work worldwide.

## I . Important Actions of China in International Decade for Natural Disaster Reduction

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### 1. Increasing the National Comprehensive Capacity of Disaster Reduction

#### 1) Establishment of China National Committee for IDNDR

In April 1989, the Chinese Government, responding actively to UN's call, established "China National Committee for IDNDR" (CNCIDNDR). The committee consists of twenty-eight agencies, including ministries, commissions and bureaus, army and NGOs. CNCIDNDR is an inter-ministerial coordinating institution led by the high-level official from the State Council. It is responsible for drawing national disaster reduction plan, formulating general and specific policies of disaster reduction, coordinating relevant departments and NGOs to carry out disaster reduction activities, and supervising disaster reduction work of the local governments.

#### 2) Formulation of "China 21st Century Agenda" for Coordination of the Environment and Development

In March 1994, the Chinese Government issued "China 21st Century Agenda", clarifying the important position of disaster reduction in sustainable development. Namely, disaster reduction is one of the basic conditions to guarantee the sustainable development in China; disaster reduction is an important guarantee for improving people's living standards; and disaster reduction also stimulates the environment protection due to rational exploitation of resources. Thus the "China 21st Century Agenda" clarified the relations between disaster reduction and ecological and environmental protections at the national level.

#### 3) Formulation of "National Disaster Reduction Plan of the People's Republic of China (1998-2010)"

In April 1998, the Chinese Government issued "National Disaster Reduction Plan of the People's Republic of China (1998-2010)" (NDRP). The NDRP is the first one at national level formulated on the basis of the general tasks and policies set in "The 9th Five Year Plan for National Economic and Social Development, and 2010 Prospective Target Outline", in consideration of experiences accumulated in disaster reduction work. The formulation of the plan received great support and assistance from UNDP.

The NDRP made it clear that the guiding policy of disaster reduction in China is to: 1) serve the national economic and social development; 2) adhere to the principle of giving top priority to disaster prevention and combining it with disaster fighting and relief efforts; 3) focus on key issues in the disaster reduction work; 4) deal well with all important issues with the consideration of the overall situation; 5) giving full play to the role of science, technology and education in disaster reduction; 6) encourage all initiatives from the Central and local Governments and from all trades and professions so as to work together in disaster reduction work; and 7) strengthen the international exchanges and cooperation of disaster reduction.

The Main objectives of the disaster reduction work are to: 1) develop a set of projects which are of great importance to the social and economic development in China; 2) popularize the application of scientific and technical achievements in disaster reduction work; 3) increase public knowledge and awareness of disaster reduction; 4) establish comprehensive operating mechanism for disaster reduction work; 5) reduce the impact of natural disasters on national economy and social development, with an obvious drop of the direct economic loss caused by natural disasters. The NDRP has also put forward the tasks, measures and important actions in disaster reduction work. After the promulgation of NDRP, its application has been carried out nationwide. Some governmental departments and regions are working arduously to formulate and enforce relevant disaster reduction plan and implementation details.

#### 4) Promulgation and Implementation of a Series of Disaster Reduction Laws and Regulations

Under the guidance of rule-by-law policy, China has promulgated and implemented a series of laws and regulations regarding natural disasters. Laws and legal regulations thus govern the disaster reduction work. Since 1980s, thirty laws and regulations relevant to disaster reduction have been made. In 1990s, the following state laws have been enacted: "Water and Soil Preservation Law of the People's Republic of China", "Earthquake Prevention and Disaster Reduction Law of the People's Republic of China", "Law of Fire Prevention and Control of the People's Republic of China", and "Flood Prevention Law of the People's Republic of China" etc. During the 1998 unprecedented floods, Jiangxi, Hunan, Hubei, Jiangsu and Anhui Provinces and Harbin, Qiqihaer and Daqin cities in Heilongjiang Province announced one after another to be in the serious flood prevention season according to the regulations of the "Flood Prevention Law of the People's Republic of China". Flood prevention headquarters at different levels, based on the law, requisitioned materials and communication instruments for flood fighting. During the rescue work of Jiujiang dyke, vehicles, boats, and different materials were urgently allocated according to the law, ensuring a quick and effective accomplishment of the flood fighting and rescue work.

#### 5) Establishment and Improvement of Disaster Monitoring and Early Warning System

For years, China has gradually established and continuously improved the disaster monitoring and early warning system. In addition to the application of normal monitoring means, China has widely used advanced technology in disaster monitoring and early warning of satellite remote sensing, mathematical and physical modes and modern communications technology. National Networks are formed for meteorological monitoring and forecasting, hydrology monitoring, earthquake monitoring and earthquake precursor observation system, crops and forest diseases and insect pests early warning system, oceanic environment and disaster monitoring, forest and grasslands fire monitoring, geological disaster survey and disaster reporting system etc. It has also preliminarily set up a broadcasting network for disaster early warning information by using telephone, radio communication, television, which guarantees the government officials to organize disaster prevention and relief work timely.

#### 6) Establishment of China National Center for Natural Disaster Reduction

To strengthen the construction of a comprehensive information system for disaster reduction, and to enhance information-sharing and technology-sharing on disaster reduction, the Central Government has approved the establishment of China National Center for Natural Disaster Reduction. The Center will be equipped with the disaster information system serving the State Council, ministries and commissions; the disaster information system linking the Central Government with provinces and municipalities; satellite remote sensing system; comprehensive management and display system of disaster information; disaster assessment system; disaster reduction policy and decision-making service system and disaster emergency relief information system etc. This Center will make full use of the disaster reduction information and achievements of the relevant ministries, commissions, research institutions and social groups to provide the state with comprehensive disaster reduction information services and suggestions on decision-making services.

## 2. Developing Comprehensive Natural Disaster Reduction Actions

### 1) Well-planned Organization and Mass Participation in the Fight Against the 1998 Floods

In 1998, severe floods rarely seen in history occurred along the Yangtze River, Nenjiang River and Songhuajiang River. In the spring of 1998, natural disaster management department concerned forecasted that a serious flood would occur along the valley of the Yangtze River in the summer. The central and local governments then made arrangements for flood prevention, organized the modification of the plan for flood management of the big rivers, carried out the various pre-plan for flood prevention, increased the investment before the flood occurrence, organized the flood fighting teams, strengthened and heightened the dykes and reserved more materials for flood prevention and resistance. During the flood, the state core leadership directly organized and conducted the flood fighting and relief operations. Several hundred thousand personnel from People's Liberation Army (PLA) and the armed police, together with 8 million civilians, were in the frontline to fight against flood and carry out relief operations, whose efforts had brought the dangerous situations more than 9 thousand and 6 thousand points along the main dykes of the Yangtze River and Songhuajiang River respectively, thus ensuring the safety of major dykes, key cities and communication lines, industry and mine enterprises as well as people's lives and property.

During the several months fighting against flood, the governments at all levels strictly carried out the responsibility system of the executive leaders and coordination at various levels with a due division of labour. The departments of water resources and meteorology provided timely rainfall and water level data, prediction and early warning information and formulated flood management plan. The departments of information industry guaranteed the smooth transmission of disaster information. The civil affairs departments and finance departments allocated funds and materials for disaster relief to make appropriate arrangements for the food, clothing and shelters of the people affected by floods. The audit departments strengthened the supervision to ensure relief funds and materials be fully used in disaster areas. The agriculture departments actively organized the farmers to develop agricultural production themselves and to reinforce the monitoring, prediction and cure of crop disease and pests and animal and poultry epidemics. The departments of land resources strengthened the monitoring and prevention of geological disasters during the period of flood. The department of public health dispatched medical teams from central and local levels and provided the flooded areas for the prevention of epidemic diseases. State Economy and Trade Commission organized and coordinated relevant departments to produce and transport relief materials and guaranteed the supply of foods, tents and electricity, and ensured a safety in production in the flood stricken areas as well as increased the input in restoring enterprises production. The departments of transportation, public security and supervision guaranteed the smooth transportation of flood fighting personnel and relief materials. They also strengthened the supervision and inspection of and seriously dealt with conduct of various kinds against laws and disciplines, and severely punished criminals who committed crimes in flood fighting and relief work. The departments of science and technology carried out relief operations via the application of science and technology. The departments of planning, water resources and construction greatly increased the investment in the construction of water conservancy infrastructures and in the post-disaster rehabilitation. People of the whole country were highly concerned with flood fighting and relief operations and carried out the donation activities on a large scale. Under the leadership of the Central Government, the people of the entire country demonstrated the great spirit of "unity of will and strength, dauntlessness and tenacity, indomitableness and victoriousness" and achieved a great victory over the floods.

### 2) Taking the Interests of the Whole into Account while Preventing and Fighting the 1991 Flood

From later May to the middle of July 1991, the valleys of the Hual River and the Tai Lake and the middle and lower reaches of the Yangtze River suffered severe floods. Governments of different levels mobilized a large quantity of funds and materials and organized local people and stationed army to fight against floods. In June, when the flood water level of the main trunk went on rising and threatened the major cities, industrial and agricultural production bases and key railway lines, the State Headquarters for Flood Control and Drought Relief decided to sacrifice partial and local interests to the overall interests according to the pre-plan for flood control. In June, flood water was discharged into Mengwa areas in the South of Fuyang, Qiujia Lake, Miaotaiji and Liulitai in Yingshang County. The taipu sluice gate in Taihu was opened to weaken the flood peak. In July, it decided to open the Hongqitang dyke in Tai Lake and Qiansen Lake and Wangyuhokou embankment in Shanghai City to lower the water level. The local governments and people in those areas gave more attention to the whole interests by immediately implemented the decision though facing losses in different extents. Due to the rational management and utilization of the flood diversion and storage areas, 60%-90% of the water flow volume of the flood peak in the Hual River was reduced and none of the embankment in 5300 of large, middle and small reservoirs in the Huai River valley collapsed and 500 of large, middle and small sluice gates remained undamaged. There was no breach in the main embankment of the entire valley as long as 4,000 kilometers. Eight hundred thousand people in the flood storage area were all evacuated in a planned way and resettled in the safe area. Nobody was drowned because of flood storage and diversion. The flood water was managed from the beginning to the end according to the pre-plan. During the post-disaster period, the Chinese Government started the comprehensive dredge project of the Huai River and Tai Lake, laying a solid foundation firm basis for the future flood control.

### 3) Response and Emergent Rescue and Relief in Zhangbei Earthquake

At 11:50, January 10, 1998, an earthquake (M6.2) occurred in the bordering area between Zhangbei County and Shangyi County in Hebei Province and four counties were affected. 136,000 houses collapsed, 49 were dead, 11,479 people injured. ~0,000 people became homeless. Some facilities for livelihood and production were seriously damaged. Within 5 minutes upon earthquake occurrence, the key staff members responsible for emergency response, earthquake analysis and forecast in China Seismological Bureau (CSB) were in their posts. The epic-center was located within 20 minutes after the tremors. It was announced after two and half hours by CSB that aftershocks would not yield serious effect on Beijing. The local governments and disaster reduction departments immediately implemented the emergency response pre-plan for earthquake and entered into the working situation after 20 minutes of the tremors. Hundreds of cadres were immediately divided into 6 groups and rushed into the disaster areas to conduct rescue and disaster relief operations, resettle victims and popularize the knowledge for earthquake prevention and resistance. In the afternoon of the earthquake day, Hebei Provincial Government sent work and medical teams to the disaster area. 2,000 PLA personnel rushed into the disaster stricken areas for carrying out rescue work. Tens of media agencies sent reporters to the disaster areas to make timely report of the disaster combat and rescue works. At 18 O'clock of the very day, the first lots of winter clothes were dispatched to the victims. Before 12 O'clock on January 11, the relief materials from Beijing, Tianjin, Zhangjiakou and Langfang arrived in the disaster areas one after another. On January 14, all the disaster victims had got winter clothes, food, temporary frost-proof shelters and the medical services. From January 15, about 3,000 PLA officers and soldiers were urgently sent to help more than forty thousand disaster victims to build houses for winter, the work was completed in February. Because of the timely response and effective measures, nobody died of frost and hungry under a temperature of 20-30 C (below zero).

#### 4) Rebuilding Homes with Measures Suitable to Local Conditions after Lijiang Earthquake

At 19:14, February 3, 1996, a strong earthquake of Ms7.0 occurred within Lijiang area, Yunnan Province, affecting 9 counties and 92 towns and villages. 170 thousand households with more than one million people became victims, of whom, 320 thousand people were homeless, 309 people died and 17 thousands people were injured. With less than 24 hours after the earthquake, the Central Government sent a group to convey sympathy and solicitude to the victims, and allotted relief funds and materials in time to the stricken area. The people in the disaster area lived a stable life, the social order was maintained and people of ethnic groups started the relief work well and self-help through production in an orderly way. Before February 18, 60 thousand resistant shelters were built and 3 thousand tents were set up. All victims were well resettled. Before March 5, all schools in the disaster stricken area were re-opened on time. In the course of rehabilitation, the local government insisted that the reconstruction measures fit local financial and material resources as well as customs, and local materials be used. The local authority also recognized that reconstruction should be combined with poverty relief programs, developing local economy and tourist industry and priorities should be given to restore projects and infrastructures closely related with people's livelihood. With the aid of international community, different kinds of buildings were constructed not only in accordance with traditional styles and features, but also with the needs of seismic resistance and development. Through arduous work of more than one year, Lijiang City restored her beauty. In 1997, UNESCO listed it as world human heritage.

#### 5) Extinguishing the 1998 Forest Fire In Inner Mongolian by Careful Planning

At 13:50, May 13, 1998, an extraordinary large-scale forest fire triggered by lightning occurred in Inner Mongolia. The fire covered 12,000 hectares of which 6,750 ha were covered with trees. Due to the adverse weather condition, intricate topography and the excessing load of the combustible materials, the fire spreaded rapidly. Without effective measures, more serious disaster would have happened. The relevant departments urgently took actions. The all round monitoring system made up of airplane cruise, ground inspection tour and satellite monitoring, found the fire condition on time, and precisely monitored and followed the fire to provide the scientific basis for decision making. The relevant leaders of the State Bureau of Forestry carefully and thoroughly arranged fire fighting in the frontline, dispatched on time the forest police forces from the other part of the country and allotted a number of wind extinguishing machines, fire extinguishing water devices. The leaders concerned in the Inner Mongolia Autonomous Region also actively organized forces to help the extinguishing work. The extinguishing force of sprinkling in the air and artificial precipitation, which consisted of 12 helicopters, 3 artificial precipitation airplanes and 4 cruising airplanes, closely coordinated together with the ground fire fighting force, consisting of 2700 forest policemen, 300 military people, 3500 forest fire fighters and forestry workers, thoroughly extinguished the forest fire on May 22 after indomitable struggle of 9 days and nights, preventing the occurrence of a more serious disaster.

#### 6) Relying on Science and Technology to Control the Bollworm Pest in Northern China between 1992 and 1995

During 1992-1995, bollworm pest occurred in cotton area of Northern China, affecting 12 million ha of crops, such as peanut, maize, wheat and pulse, and vegetables were also affected to different degrees. The losses of various crops exceeded 10 billion Yuan. Under the guidance of agricultural experts, farmers adopted the synthetic prevention methods by combining the physical, biological and chemical measures together, effectively suppressing the impact of bollworm. From 1992 to 1995, a total of 5 billion kgs of cotton was prevented from danger.

### 3. Enhancing the Construction of Natural Disaster Reduction Projects to Control Big Rivers

#### 1) Raising the Disaster Prevention Capability and Promoting the Regional Economic Development-The Three-Gorge Project of the Yangtze River

The area along middle and lower reaches of the Yangtze River is a comparatively developed one in China, it is also one of the areas worst. affected by flood disaster. The former embankment could only prevent a normal flood of once 10-20 years; therefore the flood disaster seriously threatened the safety of people's lives and property in this area. To prevent and control the flood disaster in the middle and lower reaches of the Yangtze River is of prominent importance in the disaster reduction work of China. In 1994, the Chinese Government decided to start the construction of the Great Three-Gorge project of the Yangtze River. The project of intersecting the river was completed in 1997. After the completion of the project, flood prevention standard of the Jinjiang section of the Yangtze River can be able to resist flood occurring once a hundred-year  $\bar{x}$  preventing the occurrence of destructive disaster in the lower reaches. At the same time, the project will increase the annual generated electricity by 84.7 billion-kilowatt hour, thus fundamentally improving the shipping condition from Yichang to Chongqing and greatly promoting the economic development along the Yangtze River valley.

#### 2) Raising the Level of Flood Prevention in the Middle and Lower Reaches of the Yellow River-The Xiaolangdi Project

The Yellow River is silting more and more seriously and the ability to discharge flood of the river course is sharply lowering. Furthermore the rapid economic development in the area, constant increasing of population and the rise in the number of industrial and mine enterprises, the possibility of severe flood occurrence in the middle and lower reaches of the River is increasing. The Chinese Government decided to construct the large key water control project in Xiaolangdi to hold back and store flood water so that the flood menace can be reduced in the lower reach of the Yellow River. Using the World Bank loan, 1.8 billion US Dollars are being invested to build a reservoir with a total storage capacity of 12.56 billion cubic meters. The main function of the Xiaolangdi reservoir is not only to prevent flood water and to reduce the menace of ice run and silt but also supply water, irrigating and generating electricity (total installed capacity 1.8 million kw). In the process of building the project, the world experience in project construction for harnessing flood disaster has been constantly drawn upon and the advanced project technique adopted, thus raising the economic benefit and technical level of the whole world. The project of intersecting the river was completed in 1997. Now the construction is still under way.

#### 3) Coordinating the Relationship between Human and Nature in the Projects of Ecological and Environmental Protection

After careful analysis of the causes resulting in the severe flood disaster, the Chinese Government has adopted the following measures: To improve reforestation by prohibiting hunting and grazing on mountains and returning farmland to forests. To reinforce water and soil conservation to improve ecological environment. To fully protect the natural forest in the middle and upper reaches of the Yangtze and Yellow Rivers. To do a good job of removing some bankments to discharge flood water and return some farmland reclaimed from lakes back to the original state. the capability in flood discharge and storage is restored by removing sand bars and embankments affecting flood diversion built by local people.

To put emphasis on heightening and consolidating the embankment so as to harness rivers and lakes. Through implementing comprehensive measures, the embankments of big rivers and lakes will be able to resist the biggest flood water since 1949.

To speed up the building of control projects of main rivers and lakes, and to complete as soon as possible the work of eradicating danger in reservoirs:

To strengthen the control of water flowing in the river course and the harness of embankment burst in the lower reaches of rivers and lakes.

To accelerate the safety construction of flood storage area, and organize victims to help themselves by engaging in production. To make good arrangements for inhabitants in the flood storage and discharge areas by constructing safety area suited to local conditions, building terraces separated from water, migrating and establishing new towns. Through these methods inhabitants in the flood water storage area will be well resettled;

The purpose of these measures is to effectively control the ever-worsening situation of flood and drought disasters and to combine disaster reduction with the ecological environment construction and with the socio-economic development. In 1998--China formulated "National Plan for Ecological and environmental Construction" and started the construction of 103 model eco-environment projects in the whole country. We have increased investment in various ways and strengthen the comprehensive control, and striven to coordinate gradually the relationship between human and nature through long term efforts.

#### 4. Enhancing the Study and Application of Science and Technology in Natural Disaster Reduction

The Chinese Government has fully recognized the importance of science and technology in Natural disaster reduction. While further enhancing the capability of more than 100 science and technology institutes in developing technology for disaster prevention, the Chinese Government has also carried out a large number of significant projects in the areas, such as disaster pregnancy and occurrence mechanism, disaster monitoring and early warning, disaster prevention and resistance technology, and comprehensive disaster reduction strategy. These researches have helped us to have a deep understanding of the formation and developing law of meteorological and seismic disasters. The Chinese Government has made remarkable progress in such fields as disaster monitoring, seismic resistance, wind and fire prevention, construction and restoration of water conservancy works, synthetic prevention and management for desertification, integrated prevention of pests and insects, prevention of geological hazards, and quick assessment of the disaster impact. These technologies have been widely used in disaster reduction and prevention, greatly enhancing China's ability to reduce the impact of disaster, and helping attain great achievements. In the field of earthquake monitoring and forecasting, we have made breakthrough in digital earthquake observation technology and progress in digital earthquake precursor observation technology. We have greatly improved our ability to make middle-term and long-term earthquake prediction, the correct rate of middle-term prediction increasing from 25% to about 35%. We have successfully predicted Mengliang Earthquake (M7.3) occurred in Yunnan Province, serial Jiashi Earthquakes (M6.0-6.6) in Xinjiang and Ninlang Earthquake (M6.2) in Yunnan Province. In the field of meteorological disaster reduction, we have prominently improved the correct rate of 24 hour and 48 hour prediction of regional heavy rain by 10-15%, shortened the time needed for predicting typhoon by 2-3 days and made progress in short-term climatological disaster forecast. High technologies such as remote sensing, GIS, GPS and network communication have been widely applied in quick assessment of the disaster impact and exerted pivotal function in emergency management. For example, through applying remote sensing real time transmission technology, we have made quick assessment of the flood and waterlogging in the southern area in 1996 and of the overall water shed floods in the Yangtze River in 1998, attaining the information about affected areas, intensity and evolution trend, which helped government formulate effective and feasible countermeasures for flood fighting and disaster relief, thus greatly reducing the losses caused by the Great Flood 1998. In the field of comprehensive disaster reduction, we have studied the relations among all kinds of natural disasters, between disaster and eco-environment, and between disaster and economic development, based on which a comprehensive strategy for natural disaster prevention and reduction has been formulated, providing scientific basis for the government in natural disaster reduction.

#### 5. Increasing the Awareness of Natural Disaster Reduction Nationwide

China has positively made use of publications, media and publicity to raise the awareness of the whole nation in disaster reduction. In the past decade, more than 300 kinds of books on disaster reduction have been published and more than 20 kinds of newspapers and periodicals and magazines issued, and the "Stop Disasters" edited by the Secretariat of UN International Decade for Natural Disaster Reduction and various documents have been translated and published in Chinese. The principle and policy and major activities of the Chinese Government on disaster reduction as well as the resolution and program for action have been widely publicized; the latest achievements of scientific research on disaster reduction published, the experience of disaster reduction exchanged, and the knowledge of disaster reduction popularized.

We have utilized such multi-media as TM broadcasting and newspapers and periodicals to make a timely report in the forms loved by the people of the calamities already occurred and the appropriate activities to reduce disasters and give various courses on the knowledge and special programs and items on disaster reduction. Charity shows, scientific summer camps for middle school students and knowledge competition on disaster reduction nationwide were held throughout the country. According to the subject of International Disaster Reduction Day, various activities of extensive publicity on disaster reduction were held, thus giving rise to the upsurge of publicity on disaster reduction once every year.

The educational department has added new contents to curriculum relating to disaster reduction in the middle and primary schools, thus enabling teenagers to understand the cause and universal law governing the occurrence of disasters and the preventives taken when disasters occur. Institutions of higher education have carried out education on disaster reduction at all levels, all these education combined with disaster reduction, and brought up a number of backbones in disaster reduction.

The local governments at all levels and the various professional departments have also run training courses of disaster reduction at various levels according to their own specific circumstances and conditions, for instance, Changyang county of Hubei Province has conducted seven terms of training courses on geological disaster prevention in the past few years, with the participation of more than 150 people and carried out over 120 activities in the publicity of scientific popularization with 18 thousand people being educated. We have also cooperated with UNDP, countries concerned and international organizations in running a whole series of training courses on disaster reduction, for instance, from 1993 to 1999, various training courses on disasters management had been held successively in Beijing, Hefei of Anhui Province, Jinhong of Yunnan Province, Changsha of Hunan Province and Jinan of Shandong Province etc, thus heightening the level of disaster management of cadres at all levels.

#### 6. Bring the Important Role of Insurance into Natural Disaster Reduction Work

More and more attention has been given to natural disaster insurance. In the past decade, through the opening and trial operation of insurance in various forms, compensations have been made to the losses of property caused by serious natural disasters which affected our country, playing the role of guaranteeing the restoration of production in the aftermath of calamities and the rehabilitation of development of the individuals and gained beneficial experience. In 1998--the insurers paid approximately 3 billion Yuan as compensation to the insured enterprises and families suffered from floods. In the same year, China made major adjustments to the insurance agencies, established respectively special supervisory agencies of insurance, national reinsurance companies and the new China People's insurance companies, perfected the insurance mechanism and enhanced the role of insurance in disaster reduction.

#### 7. Mobilizing the Whole Society to participate in Natural Disaster Reduction Work

China Red Cross Society has done a lot of work in the field of publicizing disaster reduction knowledge, improving disaster preparedness, mobilizing humanitarian aid both from home and overseas, prevention taking against and healing of epidemic diseases in the aftermath of disasters, and established regional disaster preparedness centers with the multi-purpose of storing materials, processing facilities, delivering materials, training personnel, and rendering service to the regional relief and medical work. With its principle of helping those in danger and relieving those in need, China Charity Federation has raised large amounts of disaster relief funds and goods to help the victims through various

donating activities. China Association for Natural Disaster Relief has put particular emphasis on relief donations, training courses of disaster reduction and works of restoration and reconstruction. China Association for Science and Technology mobilized broad masses of scientific and technological personnel to take part in decision-making consulting services in disaster reduction; carried out comprehensive academic exchanges, made important scientific investigation on disaster reduction, promoted contacts and cooperation between departments concerned and different branches of learning, carried out international exchanges on disaster reduction and the popularization and publicity of sciences and technologies. China Association for Disaster Preparedness has done many a good job in the publicity of disaster reduction and in other areas. More and more non-governmental organizations are involved in the work of disaster reduction, playing an increasingly important role.

## 8. Promoting International Cooperation and Exchange in Disaster Reduction

We have been actively engaged in activities relating to international disaster reduction and attached great importance to the international exchange and cooperation in disaster reduction. During the International Decade for Natural Disaster Reduction, China has sponsored or participated in over 50 meetings on international disaster reduction with more than 1,200 participants. Chinese Government has organized and held a series of international conferences on disaster reduction and training activities. In 1992 China held a "Knowledge Competition on International Disaster Reduction", which was broadcast through Radio and TV in different languages; In June 1993 and June 1997, Chinese Government and UNDP jointly held two "International Workshop on Natural Disaster Management"; In 1996, we conducted "The Third Training Course of Seismology of the Developing Countries and Seismological Works" and in November 1997, held "China/USA Seminar on Natural Disaster Mitigation" jointly with United States Government. We also carried out cooperation with countries and regions concerned to develop scientific research and engineering programs on disaster reduction. In February 1998, Zigong in Sichuan Province was selected by IDNDR Secretariat as one of the 9 cities for the case study program of RADIUS.

The fact that UN conferred the "Sasakawa Award" on a senior Chinese official and a scientist in 1998 showed that the international community fully recognized China's achievements in disaster reduction, which also won extensive support and great assistance from the international community. In 1991, Jiangsu and Anhui provinces suffered serious flood, and we received foreign aid equal to US\$ 40 million.

Since then, once China suffered from severe disasters, many friendly countries, organizations and individuals have offered generous assistance to China. We also gave within our power assistance to those countries and regions suffering from serious disasters.

## 9. Further Improving China's Operational Mechanisms for Comprehensive Natural Disaster Reduction

Our country's major action of disaster reduction embodies the operational mechanism of disaster reduction with the guiding principle of "overall decision-making and coordination at various levels with a due division of labor, well-planned organization and mass participation by the whole nation, guiding by science and technology and stress on prevention, promoting beneficial measures to remove disaster risks and ensure development". The main points are as follows:

Overall Decision-Making and Coordination at Various Levels With a due Division of Labor:

To implement according to the central overall decision-making; leaders of the local governments shoulder the whole responsibility and are responsible for the system of personnel at various levels, and strictly follow the leadership of government at higher level or of decision making from command organizations; there have a clear-cut division of labor and mechanism of coordination, and the government should give priority to the arrangement of different kinds of requirements for combating disasters on the frontline, and the local governments and the broad masses should consciously submit themselves to the interests of the overall situation, guaranteeing the unified coordination of action in major disaster reduction;

Well-planned Organization and Mass Participation by the Whole Nation

Once serious disasters occur, the administrative system should throw itself into a state of emergency swiftly and orderly, the different kinds of forces directly involved in combating disasters got themselves well organized in anti-disaster formations, vigorously enforcing the system of rewards and penalties, the communication network of the government and the professional departments and the press media should promptly provide a great deal of disaster information for decision making in disaster reduction and participation by the broad masses, the leaders of the Central Government should personally command and direct the anti-disaster action, the officers and soldiers of the armed forces play a pivotal role in actions against disasters and people from all walks of life join in the anti-disasters actions in different forms;

Guiding by Science and Technology and Stress on Prevention.

We have attached great importance to the application of sciences and technologies in the disaster reduction and pursued the principle of taking prevention as the main measure, combining prevention with resistance and relief; set up systems for monitoring, forecasting and assessing all kinds of disasters, raising continuously the level of modernization of these systems; constructed a great number of engineering projects for disaster reduction in a scientific way and strengthened the system for ensuring their quality;

Promoting Beneficial Measures to Remove Disaster Risks and Ensure Development

While realizing the objective of removing the disaster risks, the disaster reduction engineering works should, as far as possible, promote economic construction and ensure the sustainable, stable and healthy development of national economy and society.

The core of this operational mechanism lies in the powerful government leadership and the broad participation by the whole nation; the way is to utilize advanced science and technology, stress on prevention, and combine prevention with resistance and relief; the aim is to remove the disaster risks and promote the beneficial, ensuring the sustainable development of national economy and society. This mechanism has played a great role in China International Decade for Natural Disaster Reduction.

## II. Prospect of China's Disaster Reduction Work in the Next Decade

At present, China is at a stage of an all round development of society and economy, and the disaster reduction work is an important measure guaranteeing the development of national economy and society. In the 21st century, China will still be faced with the threat of all kinds of natural disasters, especially, with the development of society and economy and with the increment of social wealth, the economic losses caused by disasters will further increase, and the impact on society imposed by natural disasters will become more conspicuous.

China is a big agricultural country and agriculture constitutes the foundation of national economy with 80% of the population living in the countryside; agriculture and the disaster reduction work in the rural area have the great bearing on the lives of the people and the stability of the society. China's industries are flourishing, the trend of urbanization has become even more evident, and the threat of disasters imposed on cities is becoming increasingly serious. From a regional point of view, the eastern part of China is a region with relatively developed economy and dense population. The mid-western area has accelerated its social and economic development, and many energy bases have been gradually exploited, and its disaster reduction has presented regional characteristics. According to the disaster characteristics in different regions, the work of prevention against disaster and disaster reduction must be carried out with the key points emphasized. In addition, with the efforts made in the past 50 years and since the reform and the opening up to the outside world, the levels of China's science and technology and education have made great progress, the science and technology for disaster reduction have gradually become matured, and the public awareness on disaster reduction throughout the country is continuously heightened, thus laying a solid foundation for social disaster reduction and the application of fruits in scientific and technological research. In the future, the work of disaster reduction will center on the implementation of the "Natural Disaster Reduction Plan of People's Republic of China" and carry out step by step in a planned way the optional projects of disaster reduction, speed up urban and rural construction; while pushing forward the continued rapid and healthy development of economy, suppress the deteriorating trend of ecological environment and reduce distinctively the losses caused by disasters.

We shall adopt the following main measures:

## 1. Strengthening Natural Disaster Reduction in Agriculture and Rural Areas

To strengthen the harnessing of big rivers and lakes; carry out the construction of agricultural infrastructure focusing on irrigation and water conservancy, popularize vigorously the technology of dry farmland agriculture with the saving of water and preservation of soil moisture as its main contents, and raise the ability to prevent flood, relieve drought, and release waterlogging; focusing on water and soil conservation and on improving eco-environment, continue to implement such project as the construction of shelter forest in northern Shaanxi, the mid and upper reaches of Yangtze River and along the coastal lines & afforestation in Taihang Mountain, and prevention and harness of sand; strengthen the comprehensive prevention and treatment of biological disaster, dust-storm disaster, forest and grassland fire as well as epidemic diseases of husbandry and snowstorm disaster; construct comprehensive disaster reduction engineering in the districts with better economic conditions where township and township enterprises are concentrated.

Complete the National Disaster Reduction Plan in Agriculture and zone the comprehensive disaster reduction areas in agriculture; build up a number of exemplary districts of agricultural and township disaster reduction which have popularized and used practical technology in disaster reduction; strengthen the work of monitoring and forecast and comprehensive prevention and harnessing against disastrous weather, serious plant diseases and insect pests and plague in agriculture and forest, epidemic situation in animal husbandry, forest and grassland fire, establish and perfect the systems for monitoring and forecasting and assessment of disaster situation in agriculture.

## 2. Strengthening Natural Disaster Reduction Work in Industry and Cities

To do a fine job to a number of key engineering construction for disaster reduction; enhance effectively the level of prevention and combat against disasters in the big and medium size industrial bases, the key lines of communication, important infrastructures and engineering works of lifeline; perfect the system of disaster reduction of the enterprises; strengthen the disaster reduction engineering construction of the enterprises and the control of dangerous sources, and hold in check the re-occurrence of disasters; the cities and their buildings and engineering facilities should reach the standard set forth by the State for combating and preventing disasters; the key cities responsible for flood control throughout the country should accomplish the construction requirements for flood control works, and the other cities charged with the responsibility for preventing flood should also raise their capability of preventing flood in an unambiguous term.

Formulate plans for disaster reduction according to the subdivision of industry and the city comprehensive disaster reduction plan, strengthen the guarantee system for city lifeline and the construction of disaster reduction for emergency system, and raise the fire control level of modernized construction and installations.

## 3. Strengthening Natural Disaster Reduction Work in Key Regions and Areas

To do well of the natural disaster reduction works in key areas. To strengthen thoroughly the engineering construction of disaster reduction in the eastern region, turn the regional engineering work of disaster reduction into an important infrastructure, putting the emphasis on the engineering construction of disaster reduction within the capital circle, the economic developed areas, densely populated areas and the main areas growing grain and cotton; to make a good job of the key production basis of industry and agriculture and the disaster reduction engineering works in cities in the mid region; to make a good job of the engineering of disaster reduction for the key foundation of industry and that of agriculture and animal husbandry in the western region so as to protect the environment for existence and development.

Select some of the highly risky areas which have considerable influence on regional economic and social development and where the agriculture and industrial productions are highly developed, and turn them into demonstration areas for comprehensive disaster reduction; coordinate with the national strategy of poverty alleviation, make great efforts to push forward the work of comprehensive disaster reduction and speed up the process of getting rid of poverty.

## 4. Strengthening National Comprehensive Development in Natural Disaster Reduction

To strengthen State macro control over disaster reduction and accelerate the process of legislation for disaster reduction; work out comprehensive plan for disaster reduction for various provinces, autonomous regions and cities under the jurisdiction of the central government; draw up regionalization of disasters; enhance the level of collecting, handling, using and sharing the disaster information and data, perfect the monitoring and early warning system for severe disasters; strengthen the ability to coordinate the comprehensive disaster reduction action; draw up emergency plan for serious natural calamities, and perfect the systems for emergency command, dispatch and communication against calamities; establish a sound material reserve system for disaster reduction; carry out the work of comprehensive assessment on disaster and set up scientific assessment system on disasters.

Through educational training and publicity of disaster reduction, further increase the public awareness of disaster reduction of the whole nation, strengthen the basic education of disaster reduction, carry out professional education on disaster reduction at various levels and nurture prevention culture against disasters.

Set up insurance mechanism against disasters, encourage enterprises and individual to join in the disaster insurance, increase the ability of the society to endure disasters; actively promote the work of donation for disaster relief so that the donation action will become a regular and socialized practice, promote the activities of mutual support among the local people and encourage social organization to broadly take part in the disaster reduction work; adopt practical measures and help the aged, women and children and the disabled from the special social organizations raise their ability to combat disasters; perfect the medical system against disasters in the central government and the localities, and enhance the disaster relief and emergency response capability of the medical organizations.

## 5. Promoting the Application of Science and Technology in Natural Disaster Reduction Work

Chinese Government has always attached great attention to the research of basic theories such as the pregnancy and occurrence mechanism of disaster, the spatial temporal distribution pattern of disaster, the interacts between disaster and environment, society and economy; further fostering the research and development of digital observation technology, and applying the technology to renovate the serious natural disaster monitoring framework; advancing the research and development of disaster early warning and forecasting technology such as middle-term and short-term earthquake prediction, short-term climatological prediction and propelling their application; reinforcing the research and development of technology for disaster resistance, disaster relief and facility, and enhancing the efficiency of disaster resistance and disaster relief; expanding the application of high-tech such as remote sensing technology, GIS, GPS in the field of disaster reduction and establishing disaster quick assessment system and emergency management system.

## 6. Increasing Investment in Natural Disaster Reduction Work through Multi-ways

Encourage the investment of funds and introduce advanced technology in the construction works for serious disaster reduction through all kinds of cooperation, set up various kinds of demonstration engineering works for disaster reduction, actively promote with the help of the government in disaster reduction international cooperation in the fields of construction, information exchange, publicity, education, training of personnel, scientific research and the exploration of technology as well as international humanitarianism.

## 7. Enhancing International Cooperation in Natural Disaster Reduction Work

Strengthening of international cooperation in disaster reduction constitutes the main contents of China's disaster reduction. We welcome international organizations, governments of various countries, NGOs and individuals to be involved in the disaster reduction of our country, and vigorously carry out international exchange and cooperation in the fields of personnel training, fund raising, technology research.

### III. Proposals and Recommendations for the Follow-ups of IDNDR

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Based on the International Decade for Natural Disaster Reduction, the international community should take an active step to follow up the international disaster reduction, set up worldwide network system on disaster reduction, jointly share the information on disaster reduction and achievements of technology, strengthen the non-engineering measures for disaster reduction and the popularization of the technology and further heighten the level of disaster reduction throughout the world.

#### 1. Establishing a UN Special Department to Follow-up the IDNDR's Work

The initiatives of IDNDR taken by the UN has created a fine environment for enhancing international cooperation for disaster reduction and played a positive role in alleviating the losses caused by the natural disasters. At the end of IDNDR, the UN should establish a special department for continuously promoting and coordinating international action on disaster reduction.

#### 2. Formulating an Information-sharing Plan for the International Disaster Reduction

It is to formulate an information-sharing plan for the international disaster reduction, fully utilize science and technology at the present stage, set up information network of international disaster reduction and realize step by step the sharing of information for disaster reduction on the global scale.

#### 3. Establishing UN Funds for the International Natural Disaster Reduction

It is to establish an 'UN Funds for the International Natural Disaster Reduction' aiming at raising the ability to reduce the impact of disasters on human. As UN reserve funds for the emergency response of major disasters, it will support the severe disaster reduction projects and actions, education and training initiatives in a global scale. The key point is to bring up personnel on disaster reduction in the developing countries so as to enable them to raise distinctively the level of disaster emergency management and reduction and thus improve their ability to master the technology for disaster reduction.

#### 4. Establishing Monitoring and Early Warning Systems for Serious Natural Disasters Worldwide

In the activities of international disaster reduction in the 21st century, the UN should pay more attention to the coordination of the departments concerned, develop new methods and technical means on the basis of using the existing achievements and establish monitoring and early warning system for serious disaster worldwide.

#### 5. Establishing an Effective Mechanism for the Liaison and Coordination of Experts Specialized in Natural Disaster Reduction

It is to establish a mechanism for more extensive cooperation and liaison of experts specialized in natural disaster reduction. To establish experts databank in the key fields of disaster reduction, build up expert working teams and contact network in the main fields of disaster reduction with a view to translating the cooperation and exchange among experts into a regular practice.

In the long process of history, the relations between human and nature have gone through different historical stages. The level of cognizance of human has undergone a qualitative leap from the primitive stage of paragenesis of primitive society when "the anthropoid apes made a bow with hands folded in front as signs of solute toward each other" to the industrialized era of unlimited exploitation and pillage of resources and to the stage of paragenesis when human entered into harmonious development of human and nature. At the turn of the century, we deeply feel the burden is heavy and the road is long. Although we have already achieved some successes, when compared with the tasks facing us in the new era, it is only the first step in a long march of ten thousand miles; the road ahead of us is much longer and the task much heavier. China is willing to work together with the UN member countries and the international organizations concerned to make contributions to the 21st century for a harmonious development of human and nature.