

2) 2008 年 中国四川地震災害

Item	Sub-item	Information	Data Source
Data on Hazard	Date and Time of Occurrence	2:28PM, May 12, 2008(Beijing Time),	USGS
	Magnitude Depth	Mw. 8.0, 33 km (China National Earthquake Bureau) M.7.9, 19 km (USGS)	CSB USGS
	Epicenter	N31.0, E103.4(Wenchuan County, Southwest Beijing, China) 79 km Off Northwest Chengdu of Sichuan Province, China	CSB
	Intensity of Shaking	Intensity scale:10,	CSB
	Ground Motion	The earthquake occurred as a result of motion on a northeast striking reverse fault or thrust fault on the northwestern margin of the Sichuan Basin. The earthquake's epicenter and focal-mechanism consistent with it have occurred as a result of movement on the Longmenshan fault or a tectonically related fault. The earthquake reflects tectonic stresses resulting from the convergence of crustal material slowly moving from the high Tibetan Plateau, to the west, against strong crust underlying the Sichuan Basin and southeastern China.	USGS
	Tsunami	N/A	
Data on Damages	Major Affected Area	More than 116,700 sq.km, including Sichuan, Gansu and Shannxi provinces	MCA
	Human Damage	Dead: 69,227 Missing: 17,824 Injured: 374,643	MCA, China (Sept.18, 2008)
	Damage of Buildings	Complete destruction: and Partial destruction: 4,140,000 houses	MCA, China (June, 2008)
	Infrastructure/Lifeline Damage	Road - Highway: 21 lines (seriously damaged) - Rural Road: 24,103 km (seriously damaged) Railway - Baoji to Chengdu: 669 km (Stop Operation more than 12 days) Airport: Shuangliu Airport at Chengdu Electricity: millions houses power outages (May 12) Water Supply: 391 reservoirs damaged differently, more than 5 million people need water supply (May13) Sewage System: 39 counties waste water treatment plants and pumping stations stop operation in 3 provinces. Telephone: - Land line 51 counties lines stop operation - Cell phone 2,500 base-station stop operation	China news
	Main Damage Cause	Most of human and physical damages were caused by the earthquake. More than 95% death and missing were killed by the earthquake. After earthquake, lots of mountains collapsed and also killed some people.	
	Characteristics of Damages (Physical/Social Aspects)	Majority of human casualties were caused by the earthquake. The majority of the building damages were also caused by the earthquake while many of collapsed houses were found and certain amount of damages are caused by earthquake. Many of damaged buildings were constructed because of lack of the enforcement of rural building codes. Factories in the disaster area were kept stop operation for a while and it affected the global "supply chain" (especially parts production to car industry), and eventually it affected the global industry and economy.	

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	Direct Economic Loss	Total: about 845.1 billion yuan Buildings (House, Shop, Office, Factory, etc.): 27.4% Lifelines and Infrastructures(Water, Gas, Electricity, Telephone, Road, River, etc.): 21.9% Others (School, Gov office, Hospital, etc.): 20.4% (6.8 yuan = 1 USD)	Stat Council of China
	Lessons Learned	<p><Building codes and disaster reduction are very important> Because the earthquake differed from the assumptions, the earthquake degree height and more than 130,000,sq. km, and the disaster area exceeded expected districts. In China, there are no codes or standards about the rural buildings. Even in Sichuan, the protecting earthquake standard was still below 7 degree which actually can protecting earthquake below M. 5. There are short of the disaster management materials including hazard maps. The evacuation exercise program is not popular in schools and communities. In such situation, 5335 students died, only some school students evacuated to the safer place on their own decisions. The most famous case is Sangzao Middle School, and this shows a good example of disaster education and proper risk evacuation.</p> <p><Damage to structures> Because the structure measures are not so good and also short of systematic procedures, after earthquake, a lot of conflicts happened between local governments and victims parents. The massive victims and colossal damages witnessed during this disaster exposed the limitations of disaster management measures of the ordinary building codes to an excessive degree.</p> <p><Early warning system> In government, the China Earthquake Bureau is very strong, even at the county level, it also has associated with this organization. Chinese tradition believed that the scholars can resolve all problems, so if appointed experts as leaders,then they can do early warning. As a result, reports asked officials why they cannot do early warning. Changing this conception, maybe is very important, so should strengthening communities building including family activities.</p> <p><Disaster Management Measures> Because damages caused by the earthquake greatly exceed the pre-disaster damage estimate, the former policies for disaster relief and reduction need to be fundamentally reviewed and the disaster management measures have to be rebuilt.</p>	
Emergency Response	Rescue activities	Rescue activities were carried out mainly by local governments, army, police, firefighters, volunteers. As for the army case, about 157,000 personnel were dispatched for rescued and other emergency operation activities. As a result of the efforts, about 5,000,000 people were rescued.	MCA
	Medical services	DMAT (Disaster Medical Assistance Team): Total of 65,000 doctors and assistances were dispatched and provided medical service for about 3 months. Other Medical Team: Total of 14950 doctors from other provinces and medical associations, Red Cross, national hospitals, medical volunteers, etc. provided emergency medical services. In addition to the emergency medical care, 200 foreign doctors have being provided mental care for the disaster districts. Sichuan sent 10015 injurers to 340 hospitals in 20 provinces.	CDRC
	Evacuation shelter	Public facilities e.g. schools, community centers, public gymnasium were played as evacuation shelters and most of them were designated as shelters, especially in Mianyang city. 3 days after the disaster event, disaster people kept evacuated got the public buildings.after 30 days, 15,000 thousand people got more than 1,500 thousand tents and other 1,000 thousand shelters.	CDRC

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	Food, water and other relief goods supply	Foods and other relief goods were supplied by the central government, local government and others (NGO, other institutions, etc.) Central government provided 10 yuan and 0.5 kilo rice each day for evacuees during 3 months and after that reduce half, then into the normal assistance system.	CDRC
	Information and communication	To provide the information to the evacuee, the followings were conducted. 1. Handbook - Livelihood support - Livelihood and business reconstruction - Guide for temporary shelter life 2. Flyer 3. Broadcast 4. Each village at least one soldier Handbooks and flyers were distributed through not only official channel but also various channels e.g. volunteers (with explanation) and shops.	CDRC
	Support from Private Companies And NGO	Many private companies and NGO provided food and relief goods to the evacuated people in their areas of expertise. More than 3 millions volunteers to the disasters. Internet service providers, other website operators and private companies who had intention to contribute to assist disaster victims opened the site for donation, and donation through the Internet becomes one of the channels for donation.	Media
	Support from other provinces and cities	Central government arrange 21 provinces and cities such as Beijing, Shanghai, Tianjin and Jiangsu, Zhejiang, Guangdong, etc., support to disaster districts, the framework is one province or one city to one county. This policy established on May 22. In June, central government arrange this framework into recovery.	Media
	Support from abroad	171 countries and territories and 20 int'l agencies stated assistance. Received rescue team (incl. medical assistance team) from 6 counties, territories and agencies. Received relief goods and money totally more than 5 billion yuan. 273 foreign experts into disaster districts involved the rescue.	CDRC
	Lessons Learned	Based on the lessons learned previous large-scale disasters, mobilization of China State Council and other government institutions were rapid. A lot of new policies were created in the rescue process. Especially the policy "one province to one county" made the relief action more efficient. Another policy is "open the door", government encouraged NGO participation, and welcome foreign rescue team into China. While many collaboration activities were made, supply of relief goods to the affected area was in time even the affected areas were so big and roads severely damaged by the earthquake.	
Recovery	Infrastructure/ Lifeline	Roads and highways were opened after earthquake except the section Yingxiu to Wenchuan town, about 80 km, that road was seriously damaged until after more than 3 months. The Highway from Dujiangyan city to Jiuzhaigou was destroyed. All railways were restored in 12 days. Electricity: Repaired the temporary line to the main towns or townships in about 1 week Water Supply: repaired 13649.6 km temporary pipeline to disaster district. Telephone: 100% was restored in 10 days at township. Note: Restoration of lifelines in the areas affected by the earthquake finished after the implementation of reconstruction plan in 2 years.	CDRC
	Other services	Under the framework of "one province to one county", each province established the office at the county, if they find some questions, they would be in charge of resolving them. So, a lot of food supply got from other provinces.	

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	Shelter	After 30 days, 15,000 thousand people got in more than 1,500 thousand tents and other 1,000 thousand shelters.	CDRC
	Disaster Waste/Debris	Because of the rehabilitation' s need, after 6 months, according the reconstruction plan, most disaster waste/debris already cleared.	Media
	Finance	Central government provided more than 50 billion yuan to supply the recovery. Tents and shelters all provided by central government.	Media
	Support from Private Companies and NGO	Whole donation is about 76 billion yuan. Some NGOs participated in the process of recovery.	CDRC
	Support from Abroad	N/A	
	Lessons Learned	After the Wenchuan Earthquake, Chinese central government believed that this national disaster must mobilize whole nation involved the relief and recovery. Different ministries made effort to do early recovery from earthquake damages, and another policy is "one province to one county", this made the risk to be reduced, the recovery is not only just central government's task, but also other provinces' task. Encouraging media to report the recovery process is also important. If the reporters found something was wrong, the government could resolve the problems.	
Reconstruction	Principles	June 8, 2008, The State Council made the regulation of reconstruction of Wenchuan Earthquake. The reconstruction principles include: (1) For disaster districts, the reconstruction should rely on local, especially encourage to do production, but must combine with central government support and the policy of "one province support one county". (2) Government should play the leading role but also encourage NGO's participation; (3) Reconstruction on the original place but combine with the project of moving other places. (4) Reconstruction quality must be ensured, but the efficient also should be combined. (5) The reality must be considered but combine with the designing future. (6) On the one hand, economic and social development should be ensured, on the other hand, must combine with the protection of the ecological environmental resources.	State Council
	Key issues	N/A	
	Organizations	National Level: Reconstruction Committee (established in June 2008) Province level: Reconstruction Committee of three provinces, governors were the director. City/Town Level: Implementing body for reconstruction	
	Finance	Since required amount of fund for reconstruction is too large to bear by the local governments. Therefore, central government allocated 302.6 billion yuan budget for recovery, other budget is provided by other provinces and cities.	State Council
	Support from Private Companies	Some of NGOs such as Wanke Compony established one township building.	
	Support from abroad	Some international companies did the donations about hospitals or schools, etc. Especially Hongkong and Taiwan gave a lot of support.	
	Reconstruction Schedule	As a result, till September, 2010,1908.5 thousand rural houses, 288.3 thousand urban houses, 3839 schools, 2169 hospitals, and more than 5000 projects of infrastructure were established in three provinces including Sichuan, Gansu, Shannxi .	State Council

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	Key Target, featured strategies/ approaches etc.	Because of the policy of "one province to one county", there was competition among different provinces. So the new policy is "3 years task will finish in 2years".	State Council
	Economic Recovery	Economic development recovery was strong. Sichuan, Gansu, and Shannxi provinces got lots of support, and that made the mountain poor district change a lot, and the buildings more modernized. Only in Sichuan, the reconstruction plan included 29692 projects and more than 800 billion yuan investment. Whole reconstruction investment is about 1000 billion yuan.	State Council
	Other Characteristics	Open policy is important, at the process of reconstruction, and the international experience were adopted by the government.	
	Lessons Learned	First the central government must provide the main budget to local government. This is the central government's responsibility. But secondly reconstruction can not be just centralized. It must be combined decentralized projects. Using the policy "one province to one county", it is a very important decision. Actually this is the big reform of the administration management of China. Thirdly reconstruction must combined the economic with social construction. This is the weak in the reconstruction process. Also, the reconstruction law and regulation, especially the overall plan is very important. Opening the process of policy making to the society, it is another experience in the reconstruction process. Some experts send a lot valuable suggestions to central and local governments.	
References	Reports	http://www.xinhuanet.com/xhwenchuan USGS: http://earthquake.usgs.gov/earthquakes/eqinthenews/ http://www.512.gov.cn/ http://www.cea.gov.cn/ http://www.ceic.ac.cn/ http://www.eq-igl.ac.cn/ http://www.mca.gov.cn http://www.jianzai.gov.cn/ http://www.sdpc.gov.cn/ Http://www.scio.gov.cn http://www.audit.gov.cn/n1057/n1072/n258889/ www.sc.gov.cn/10462/10929/11076/11077 Richard A. Kerr. <u>Chinese Quake Likely a Mega-Catastrophe</u> . Daily News. ScienceNow. 2008-05-12	
	Data/photos	UNDP-China Project: Working Report about Relief and Reconstruction of Wenchuan Earthquake, by CDRC.	

3) 2004年 スマトラ沖地震・津波災害

Item	Sub-item	Information	Data Source
Data on Hazard	Date and Time of Occurrence	Aceh : 07:58AM, December 26, 2004 Nias : 11:09PM, March 28, 2005	USGS
	Magnitude (source)	Aceh : M 9.1 Nias : M 8.6	USGS
	Epicenter	Aceh : 250 km South west of ACEH (3.316°N, 95.854°E) Nias : 2.074°N, 97.013°E	USGS