Judy Chao

Professor Zoë Brigley Thompson

English 1110.01

03 December 2023

Taiwan's Capacity to Address Natural Disasters

After more than 50 years of hard work, Taiwan announced the implementation of the "Disaster Prevention and Protection Act" on July 19, 2000, which clearly divided disaster prevention organizations and plans at each level of the three-level disaster prevention and protection system, and also clearly defined the disaster prevention and rescue work. Content key items and command and coordination matters to strengthen disaster prevention and response capabilities and related measures. In view of the impact of global climate change in recent years, the frequency and scale of disasters in various countries have increased. Taiwan is often threatened by natural disasters such as typhoons and earthquakes (Lee). In order to promote disaster prevention laws and improve systems, and enhance the national disaster prevention awareness and disaster Adaptability has been revised 10 times so far, with the latest revision announced on June 15, 2022 (2022). At this stage, Taiwan has clear regulations on the

disaster prevention and rescue organization system. It has established the Central Disaster Prevention and Protection Committee and the Executive Yuan Disaster Prevention and Protection Office, which are responsible for executing various disaster prevention and rescue services approved by the Central Disaster Prevention and Protection Council. In addition, local governments should also set up dedicated units to handle county and city government disaster prevention and rescue reporting affairs, with the purpose of mitigating natural disaster losses and reducing the occurrence of man-made disasters. According to a report from the *Natural Disaster Hotspots: A Global Risk Analysis*, a collaborative effort by the World Bank, Columbia University, and the Norwegian Geotechnical Institute in 2005, Taiwan may be the place on Earth most vulnerable to natural hazards, with 73 percent of its land and population exposed to three or more hazards (Lamont-Doherty Earth Observatory). Since the mid-1990s, Taiwan has experienced significant disasters, including the flooding in New Taipei City (Taipei County) caused by Typhoon Herb (1996), the devastating Chi-Chi earthquake (as known as 921 earthquake) in central Taiwan (1999), extensive flooding in the upstream areas of the Keelung River due to Typhoon Xangsane (2000), unprecedented floods in Greater Taipei caused by Typhoon Nari (2001), and the severe flooding in southern Taiwan caused by Typhoon Morakot (2009), and more recent events such as Typhoon Soudelor in 2015 (Wang 82), the 2016 southern

Taiwan earthquake, and the 2018 Hualien earthquake. Frequent typhoons and earthquakes have severely damaged scenic facilities and transportation infrastructure, as well as natural disasters and earth changes over the years, posing severe challenges to the disaster prevention and relief system. Every disaster arouses public concern about Taiwan's disaster prevention, but public opinion's enthusiasm for disaster prevention measures will fade away after a few months. Faced with the threat of natural disasters, the indifferent attitude of Taiwanese people and governments at all levels is worrying. Society still lacks personal experience in preventing the above-mentioned wide-area major disasters. Therefore, it is the government's unshirkable responsibility to continue to build awareness of disaster prevention, strategically promote the reduction of natural disaster threats, and engage society and enterprises in joint cooperation. In the future, issues such as Taiwan's disaster management work, response strategies, resource allocation, disaster prevention education, and disaster types need to be further strengthened to improve the effectiveness of Taiwan's disaster management.

First of all, Taiwan’s education system has not fully cultivated students’ awareness of disaster prevention. Disaster prevention education is generally implemented in schools, including emergency evacuation drills and the teaching of related knowledge. Integrate disaster prevention-related content into textbooks to

improve students' understanding of disaster risks. However, in the current stage of education, although the scientific knowledge involved in textbooks has no problem in connection, it can be carried out step by step and step by step. However, there is a lack of corresponding training methods in terms of attitudes and resilience skills in facing disasters. This is also a problem in Taiwan's education and culture. We have learned the causes of typhoons, the wind power standards for typhoon classification, and even the structure and wind distribution of typhoons since we were young. We have also learned basic typhoon prevention measures. But in fact, when a typhoon strikes, we only care about whether the head of the local government declares a shutdown. Classes are suspended, but I lack the ability to judge the risks of going to work because "the teacher didn't teach" and "I can't take the exam." The same is true for earthquakes. Hsin-Yu Shan, associate professor of the Department of Civil Engineering at National Yang-Ming Chiao Tung University and supervisor of the Taiwan Disaster Prevention Industry Association, pointed out in an article in 921 earthquake 20th anniversary: “Even if most schools conduct drills, ordinary teachers and staff can cope with it, and students They were laughing and joking, not taking it seriously, and even the teacher took the lead in complaining that the disaster was not going to happen, so why should it interfere with the class? The administrators did not start the drill of the emergency response team. Everyone just went to the playground

to take a roll call and hurried back to the classroom. Many schools are afraid Teachers, students and parents protested that most of them used morning self-study time to conduct drills, without taking into account the need to test the resilience of school staff and students when disasters occur at different times such as after class, lunch break, and going to and from school" (Shan). We have been doing this since we were young in Taiwan. Earthquake disaster prevention drills are conducted, but as the grades grow, the frequency of drills begins to decrease significantly. In elementary school, the school held disaster prevention drills almost every month, and even had students communicate with Japanese students via video chat about the 311 earthquake. However, in high school, there were only a handful of drills. It seemed that the importance of admission rates far outweighed the importance of disaster prevention. While parents in Taiwan generally attach great importance to further education, the education sector will not do the opposite because they attach importance to disaster prevention. This dynamic underscores a critical need for a paradigm shift in educational priorities and societal values to address the apparent inadequacies in disaster awareness cultivation within Taiwan's education system.

Furthermore, Even though Taiwan continues to upgrade its Disaster Prevention and Protection Act, Taiwan still lacks a disaster prevention strategy. Comprehensive thinking disaster prevention and relief architecture: All-hazard design. Facing the

countermeasure needs of disasters and emergencies, most advanced countries have different levels of planning from strategy to tactics to promote implementation step by step. Taking the U.S. Department of Homeland Security as an example, it inherited the consistent management thinking of the U.S. federal government system and promulgated the principles of the National Planning System (National Planning System) in 2016, dividing all government countermeasures into strategic levels, cross-domain operational levels, and tactics. level, so in the five mission areas (Mission Areas) of disaster prevention, such as Prevention, Protection, Mitigation, Response, and Recovery, specific issues in each mission area will have the above response strategies, cross-department operations, and departmental tactics. plan, and it is applicable not only to governments at all levels, but also to important enterprises. ("National Planning System" 1) That is, scenarios and strategies, cross-department integration, specific countermeasure execution plans, etc., are gradually implemented through different levels of planning. (Figure 1)

Figure 1: National Planning System Architecture source: “National Planning System.” FEMA.gov, Federal Emergency Management Agency, February 2016, https://www.fema.gov/sites/default/files/2020-04/National_Planning_System_20151029.pdf .

In addition, the management structure of disaster prevention and relief is often based on the concept of "all-hazard approach" to integrate disaster prevention and relief affairs. The world's advanced countries all adopt the "all-hazard" management model (Li). The all-hazard design has three levels: First, regardless of the type of disaster, on-site command systems and mobilization procedures are all based on similar structures and agreements; second, Government agencies must have a unit that is responsible for responding to all types of disasters, designing common coordination and command specifications, and integrating emergency procedures for the joint operation of various departments; third, regardless of various agencies or critical

infrastructure and resource operating companies, You must be fully prepared for all types of disasters that may occur within your area of responsibility (Maa). However, Taiwan's disaster prevention and rescue system has a fragmented division of labor due to its "disaster management orientation." Article 3 of the current Disaster Prevention Act allocates various disaster management authorities to the Ministry of the Interior, the Ministry of Economic Affairs, the Ministry of Transportation and Communications, the Council of Agriculture, The seven ministries and councils of the Environmental Protection Administration, the Ministry of Health and Welfare, and the Atomic Energy Council serve as the central regulating authorities for the disaster prevention and protection (" Disaster Prevention and Protection Act"), there is almost no three-level structure of strategy, operations, and tactics that a specific disaster prevention agency should have. For example, although earthquakes are under the jurisdiction of the Ministry of the Interior, as long as they involve important policies such as campus disaster prevention, earthquake prevention of key infrastructure, continued operation, evacuation and resettlement of people, post-disaster communication, water, electricity and energy recovery, etc., they are not under the jurisdiction of the Ministry of the Interior. So what? Can the national strategy, cross-department operations and execution plans of each department be standardized at the same time in the so-called "Earthquake (including soil liquefaction) disaster

prevention and relief business plan"? Another example is that the Ministry of Health and Welfare is responsible for the dispatch of domestic medical resources, but the Disaster Prevention and Protection Law only specifies biological pathogenic disasters in the infectious disease control system, making it difficult for the Ministry of Health and Welfare's medical system to integrate into the business division of disaster prevention and relief. The most famous example is the Eight Immortals Incident (New Taipei water park fire), the core issue is the medical issue of burns and scalds. However, due to the disaster management design, which department must open a response center according to the law has become an excuse for each other to pass the buck; the Kaohsiung gas explosion incident was precisely because of the lack of disaster prevention laws. The clear definition of disaster has led to the Ministry of Interior and the Ministry of Economic Affairs holding each other accountable; another example is that air accidents are under the jurisdiction of the Ministry of Transportation, but only flight safety issues are actually in charge of the Ministry of Transportation. When accidents occur, such as the Keelung River TransAsia Airways Flight 235, The actual disaster relief units are firefighting and maritime patrol systems, and the Ministry of Transportation is completely unable to direct them. Various cases have repeatedly shown that the improper design of Article 3 of the Disaster Prevention and Protection Act is the main source of chaos in the operation of

Taiwan's disaster preparedness and response system. In addition to Article 3 of the Disaster Prevention and Protection Act, there is a serious shortage of manpower, resulting in a long-term lack of effective coordination and progress control on cross-ministerial and cross-domain important disaster prevention issues, such as the Japan Cabinet Office Disaster Prevention Office, the U.S. Department of Homeland Security, etc. There is no mechanism capable of promoting nationwide disaster prevention countermeasures in Taiwan. Recently, China established the "Ministry of Emergency Management of the People's Republic of China" (Su) to coordinate and integrate national disaster prevention, preparation and response operations. If Taiwan repeatedly ignores global trends, its ability to face major disasters will continue to decline in the future.

The disaster prevention manual "TOKYO BOSAI: A MANUAL FOR DISASTER PREPAREDNESS" issued to residents by the Tokyo Metropolitan Government in Japan begins with: "It is predicted that there is a 70 percent possibility of an earthquake directly hitting Tokyo within the next 30 years. Are you prepared?" (Thomas). In fact, since the Great Hanshin Earthquake, Japan has been trying to simultaneously strengthen the disaster prevention preparedness of the government and the people year by year. After the Great East Japan Earthquake, it has systematically promoted the implementation of various earthquake disaster prevention strategies. For

example, the Tokyo Metropolitan Government has given priority to The buildings on both sides of the "emergency traffic road" required for disaster relief will undergo seismic structural reinforcement and renovation, and are expected to be completed before 2020. Regarding the difficulties in material transportation caused by the heavy snow in the capital area at the beginning of the year, we also tried to establish an agreement with the private logistics system related to disaster transportation and warehousing, and cooperated with the control of the emergency transportation network to plan in advance the material transportation plan in the event of a major earthquake. This also shows that the details of post-disaster operations are not completed by the government alone, but require the overall cooperation of private enterprises. According to calculations by Professor Chyi-Tyi Lee of National Central University, "Taiwan, which is as threatened by earthquakes as Japan (especially the northern region with the highest vulnerability), will experience at least one magnitude 6 earthquake in the greater Taipei area in the next 20 years. The probability is 93.38%" (Maa). Taiwan's disaster prevention countermeasures, from education to national strategies, lack planning. Over the years, disaster prevention and relief plans of governments at all levels have only included narrative disaster prevention work projects, and there is a lack of structure for cross-administrative region and cross-department cooperation. For the different time sequences after the disaster, the

government, enterprises and the public lack the concept of advance preparations for various contingency actions.

In conclusion, the arrival of typhoons and heavy rainfall are unpredictable. They are purely random events and full of uncertainty. However, through scientific research and observation, we try to help people avoid disasters; some people are more active, some are indifferent, and some human factors do have an impact on the results. However, we should not look at excessive causality as to whether people can survive such an event safely. After all, in every disaster, some people will be killed or injured regardless of whether precautionary measures and appropriate responses are taken; there will also be some people who will remain unharmed regardless of whether preventive measures and appropriate responses are taken. For disaster reduction and preparation for natural disasters such as earthquakes and tsunamis, the cost of denying uncertainty is extremely high, which will lead to people being unwilling to invest resources in the prevention of natural disasters themselves or through society (the government). But on the other hand, the public must also understand that our disaster prevention and relief efforts are based on limited knowledge and skills. We cannot overemphasize cause and effect, and we cannot judge people's behavior with moral arguments. Otherwise, in fact, we have really only invested limited resources in disaster management that have been identified and evaluated as high risks, but we

cannot use moral arguments for those parts that we have neglected or exceeded the scope of our scientific and engineering knowledge. To judge whether we have done enough and done a good job. From a school perspective, it is not necessarily teachers who have experienced major disasters who will pay attention to disaster prevention. There are also many teachers who, through knowledge learning, understanding and thinking, believe that disaster prevention education and campus disaster management are extremely important tasks. For the teachers and commanders, putting aside the requirements of the law and believing in and fearing the uncertainty of disasters is just their chosen attitude. From another perspective, the attitude and degree of action in the face of disasters are also the teacher's own choice. As long as the basic requirements of laws and regulations can be met, we must respect it, and there is no need or should be given a moral evaluation.

Bibliography

Disaster Prevention and Protection Act. Laws & Regulations Database of The Republic of China (Taiwan), Ministry of the Interior, 15 June 2022, https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=D0120014 .

Lamont-Doherty Earth Observatory. *Risk Analysis Reports Over Half of World's Population Exposed To One Or More Major Natural Hazards*. ScienceDaily. ScienceDaily, 3 May 2005, www.sciencedaily.com/releases/2005/04/050428180528.htm.

Lee, Wan-Lin. "Ethical Challenges for Sustainable Tourism in Taiwan - a Case Study of Kenting National Park." 2006, https://core.ac.uk/download/60676155.pdf .

Li, Yi-hsin. "冤有頭債有主的「災因」管理，下場是各部門互推責任 *The management of "disaster causes" in which no debts without creditors, no hatred without cause, ends up with various departments passing the blame on each other*." 願景青年 Vision, 24 June 2016,

https://sdgs.udn.com/627/dust/story/9163/1780535.

Maa, Shyh-Yuan. “台灣建構全災型事故應變體系之探討 *Discussion on Taiwan's construction of a total disaster accident response system*.” YouTube, 24 November 2016, https://youtu.be/G7g3S5GPdfA?si=Dv9eTqF5XEkVfzwZ.

Maa, Shyh-Yuan. “容易遺忘的教訓：臺灣地震防災對策何去何從 Easily Forgotten Lessons: Where to Go for Taiwan’s Earthquake Disaster Prevention Countermeasures.” 科學月刊 Science monthly, 2018, https://www.scimonth.com.tw/archives/473 .

National Planning System. FEMA, Federal Emergency Management Agency, Febuary 2016, https://www.fema.gov/sites/default/files/2020-04/National_Planning_System_20151029.pdf.

Shan, Hsin-Yu. “九二一 20 年（三）：防災訓練浪費時間？學校參與意願低落的

成因 *20 years since "921" (3): Is disaster prevention training a waste of time? Reasons for low willingness to participate in schools*." *鳴人堂 Opinion udn*, 19 September 2019, https://opinion.udn.com/opinion/story/9449/4054261.

Su, Ying. "我国应急管理工作基本概况的发展历程 Basic overview of China's emergency management work and its development history." 中国应急信息网 China emergency information, 10 October 2019, https://www.emerinfo.cn/2019-10/10/c_1210306687.htm .

Thomas, Benjamin. "Tokyo Bosai - A Manual for Disaster Preparedness." *Design Made in Japan*, 1 August 2016, https://designmadeinjapan.com/magazine/graphic-design/tokyo-bosai-a-manual-for-disaster-preparedness/

Wang, Wen-Jiun. *Disaster Response After Extreme Events in Taiwan: The Influence of Formal Institutions on Inter-Organizational Interaction*. Risk, Hazards & Crisis in Public Policy, vol. 10, 2019, pp. 74-101,

https://eds.p.ebscohost.com/eds/pdfviewer/pdfviewer?vid=0&sid=64411f1e-8e9d-4766-8043-7966ac30d4e3%40redis.

"震災（含土壌液化） 災害防救業務計畫 *Earthquake (including soil liquefaction) disaster prevention and relief business plan*." The National Fire Agency, Ministry of the Interior, Ministry of the Interior, 29 June 2023, https://www.nfa.gov.tw/pro/index.php?act=download&ids=18518 .