Resilient Taiwan: Disaster Administration

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Taiwan, located in the Pacific Ring of Fire and the Northwest Pacific region, faces various natural disaster risks, including earthquakes, typhoons, and floods. According to statistics from the National Fire Agency, Ministry of the Interior and the National Science and Technology Center for Disaster Reduction, Taiwan experiences more than one natural disaster annually on average, with the frequency of disasters increasing year by year. Statistics show that typhoon disasters account for 66% of all disaster events, followed by floods (22%) and earthquakes (8%). These natural disasters not only pose significant threats to people's lives and property but also present substantial challenges to the country's economy and infrastructure.

The 1999 Chi-Chi earthquake, one of the most severe natural disasters in Taiwan's history, caused over 2,400 deaths, more than 11,000 injuries, and the collapse of tens of thousands of buildings. This event triggered significant reforms in Taiwan's disaster management and emergency response, promoting the establishment and improvement of the disaster response system. After the Chi-Chi earthquake, the Taiwanese government strengthened the formulation and enforcement of disaster prevention and relief regulations, established a more systematic disaster response mechanism, and enhanced disaster awareness and response capabilities across society.

In recent years, Taiwan has followed international trends in striving to build resilient cities and enhance disaster prevention and relief capabilities at all societal levels. The concept of resilient cities encompasses the ability to withstand future shocks and maintain functional stability in social, economic, technological systems, and infrastructure. Common challenges in large-scale disaster response include the disruption of emergency response command chains, the expansion of initial disaster relief capacities, the enhancement of public risk awareness, and the improvement of basic disaster preparedness. To address these issues, the National Fire Agency of the Ministry of the Interior has proposed specific directions, including: establishing a legal and systematic framework for disaster prevention and relief, forming national specialized rescue teams, setting up fire and rescue training centers, building emergency communication and round-the-clock response mechanisms, and fostering public self-reliance in disaster prevention and relief. The following a brief overview of these specific initiatives.

Legal and Systematic Framework

Taiwan's disaster prevention and relief legal system has undergone multiple stages of development. Before 1965, it mainly relied on local governments' spontaneous prevention and relief efforts. From 1965 to 1993, relevant laws and regulations began to be formulated to enhance the disaster prevention and relief system. Between 1994 and 1999, a more comprehensive disaster response mechanism was established, and nationwide disaster drills began to be implemented. Since

2000, following the Chi-Chi earthquake, the legal framework has been further strengthened, covering from initial disaster prevention to mid-term emergency response and later recovery and reconstruction, comprehensively enhancing disaster prevention and relief capabilities. Among them, the promotion of relevant basic laws, such as the *Disaster Prevention and Protection Act* (《災害防救法》) and related regulations, more clearly defines the responsibilities and authorities of governments and related departments at all levels in disaster management.

In addition to improving relevant regulations, Taiwan has also clearly established a three-tier disaster response system, setting up disaster prevention and relief meetings and committees to decide on disaster prevention policies, and introducing scientific advice to enhance policy formulation. The *Disaster Prevention and Protection Act* also stipulates the need to collect, assess, process, and compile disaster information, which not only helps each response unit in decision-making but can also be subsequently applied to the research and development of disaster science and related technologies.

National Rescue Teams and Training Center

In terms of specialized search and rescue and training, Taiwan has established several professional rescue teams, including the formation of the National Special Search and Rescue Team (under the National Fire Agency) in 2002. This team has gradually gained prominence through multiple domestic and international disaster rescue operations. In 2010, Taiwan established the largest fire and rescue training center in Asia and the third largest in the world. This center offers a variety of rescue training facilities and courses, training both Taiwanese and international fire and rescue personnel to enhance their ability to respond to various types of disasters. In addition to 66 rescue training programs across 13 categories, the total number of trainees reached 233,000 in 2023, making it a world-class training center both in terms of quality and quantity.

Resilient Disaster Communication System

To respond to emergency incidents, facilitate disaster relief communications, and transmit disaster information, Taiwan has implemented a unified emergency management information system at both the central and local levels. Additionally, the country has established the "Disaster Prevention e-Point (防災 e 點通)" website to disseminate disaster prevention information to the public. To ensure resilient disaster communication, Taiwan has also planned multiple communication channels, including microwave systems, GSN-VPN fixed networks, VSAT satellite systems, and large-scale radio systems.

Fostering Self-reliance in Disaster Prevention and Relief

Taiwan promotes several key projects, including introducing the Japanese concepts of "Disaster Management Instructor (Bosaishi)" and "Disaster Management Assistant (Bosai Kaijoshi)" to promote resilient community certification, aiming to ensure that during major disasters, communities can quickly and effectively initiate self-rescue actions when external resources have not yet arrived or are reduced.

Finally, in the area of disaster prevention and relief, Taiwan has promoted various training programs and community certifications, including Disaster Management Instructor (防災士), Resilient Community Certification (韌性社區), and the establishment of the Taiwan Civil Emergency Response Team (T-CERT, 臺灣民間自主緊急應變隊). The goal is to ensure that when major disasters occur, communities can quickly and effectively initiate self-help and mutual aid actions, especially when external resources have not yet arrived or have diminished.

Future Perspectives

The National Fire Agency will continuously improve and perfect the disaster management system and actively introduce advanced technologies and equipment to address various disaster challenges that may arise in the future. In the future, efforts will continue to be made across various dimensions to strengthen disaster management in response to unknown challenges. Additionally, ongoing improvements in disaster management administration will be pursued to enhance the resilience framework for disaster prevention and relief, thereby deepening the disaster resilience of the entire society.