

Paper:

How will we Manage Recovery from a Catastrophic Disaster? Organization Structure for Recovery Management in the World

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The role of recovery organization management is important, and organizations in various forms have been established internationally to aid recovery from large-scale disasters. This paper clarifies three types of recovery organizations by analyzing them in various countries based on disaster organization theory. Furthermore, it analyzes recovery organizations that operated after the Hanshin-Awaji Earthquake and the Great East Japan Earthquake in Japan. It then examines the operations of recovery organizations during large-scale earthquakes that may lead to a national crisis by comparing recovery organizations internationally. Finally, this paper clarifies the necessity of “emergent” organizations.

Keywords: recovery management organization, recovery agency, the 1995 Kobe earthquake, the Great East Japan Earthquake Disaster, catastrophic disaster

1. Background to the Study and Objectives

Recovery organizations play an important role in the recovery phase following a disaster. The American Planning Association identifies four important steps for defining recovery organizations: (1) determine how decisions will be made and who leads local recovery management, (2) clearly define the organizational structure for local recovery management, (3) legalize authorities for local recovery management, and (4) formalize and engage partnerships for local recovery management (Johnson, 2014). The Act on Reconstruction from Large-Scale Disasters (2013), which was enacted after the Great East Japan Earthquake, designates local public organizations as responsible for formulating recovery plans. The Act states that “municipalities (snip) can formulate recovery plans solely or in cooperation with particular affected prefectures.”

The government of Japan established the Reconstruction Agency after the Great East Japan Earthquake as an organization that: (1) plans, arranges, and performs national measures for recovery; and (2) serves as a centralized window providing support to local public organizations (the Reconstruction Agency, 2016). In Japan,

the Imperial Reconstruction Board was constituted after the Great Kanto Earthquake (1922) and the War Reconstruction Board after World War II. Instead of municipalities, these boards directly managed the business of recovery. However, following the Great Hanshin-Awaji Earthquake, local governments led recovery efforts and, on the national level, the Committee for Reconstruction of the Hanshin-Awaji Area coordinated recovery measures through relevant organizations.

As such, various organizations have been established for disaster recovery in Japan, and the question remains as to which are effective. Mitsui (2007), the Secretary-General of the Headquarters for Reconstruction of the Hanshin-Awaji Area, describes how disaster recovery organizations should ideally operate in Japan. However, the discussion does not include the Great East Japan Earthquake or consider world trends.

This paper examines the operation of disaster recovery organizations by comparing those in Japan to those internationally. Furthermore, it clarifies how disaster recovery organizations should operate after the predicted earthquakes that will occur directly beneath the Tokyo Metropolitan Area and Nankai Trough, which may lead to a national crisis.

2. Study Method

In this study, international cases on recovery organization management for recently occurring large-scale disasters were collected and analyzed to identify the types of recovery organization management. Disasters in which recovery management was employed include the Indian Ocean Tsunami in Indonesia (2004), Great Sichuan Earthquake in China (2008), Hurricane Katrina in the US (2005), the bushfire in Victoria, Australia (2009), and Canterbury Earthquake in New Zealand (2011). However, not all disasters are reported on in the literature; thus, the results of this case analysis has some limitations.

Information on recovery organization management was collected by: (1) creating original management diagrams, and (2) asking researchers familiar with disaster sites to make any needed amendments to the original diagrams. The following researchers assisted in this study: Takaaki



Kato¹ (University of Tokyo) in the case on the Great Sichuan Earthquake in China; and William Siembieda² (California State Polytechnic University) in the cases for Hurricane Katrina in the US, Canterbury Earthquake in New Zealand, and the bushfire in Victoria, Australia. The collected cases were categorized into types based on Quarantelli's disaster organization theory to clarify typologies of recovery organization management.

Regarding recovery organization management in Japan, concepts related to national recovery organizations for the Great Hanshin-Awaji Earthquake and Great East Japan Earthquake were organized based on the results of interviews with those involved in establishing and managing such organizations. Furthermore, the characteristics of types of recovery organizations are clarified. Finally, based on the study results, the ideal operation of recovery organizations is examined for disasters that may lead to a national crisis.

3. International Recovery Organizations

1) Indian Ocean Tsunami in Indonesia (2004) (Maki et al., 2010)

In affected areas in Indonesia, many officials of cities and states were affected, including the mayor of Banda Aceh City, who was killed in the tsunami. Because the administrative capabilities of local governments were significantly impaired, the Indonesian government established Badan Rehabilitasi dan Rekonstruksi NAD-Nia (BRR), a recovery organization implemented directly under the jurisdiction of a minister.

The characteristics of BRR are as follows: (1) A resident minister on duty in the office of the affected city, Banda Aceh. (2) The organization mainly organized projects for international aid agencies and NGOs. (However, BRR directly engaged in projects in areas that did not receive aid.) (3) While the organization directly managed projects immediately after the tsunami, its activities were transferred to local government in April 2006, three years after the disaster. **Fig. 1** shows recovery management after the Indian Ocean Tsunami disaster in Indonesia.

2) Great Sichuan Earthquake in China (2008)

Rather than establishing a new recovery organization, the National Development and Reform Commission led recovery efforts after this earthquake. However, recovery projects were handled as the provision of “one-on-



Fig. 1. Recovery organization management after the Indian Ocean Tsunami Disaster in Indonesia.

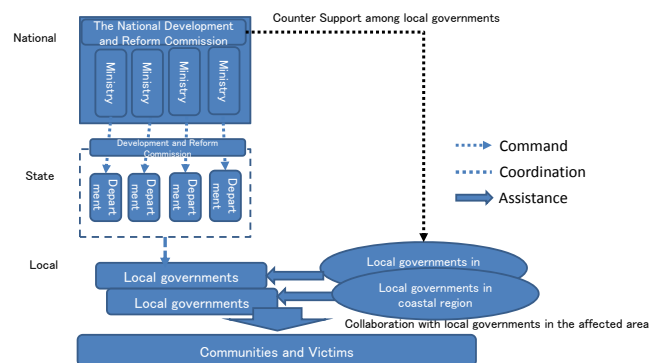


Fig. 2. Recovery organization management after Sichuan Earthquake in China.

one support” in collaboration with affected local municipalities and wealthier coastal municipalities. Characteristics of recovery management after Sichuan Earthquake are as follows: (1) Affected local governments and those of coastal areas cooperatively promoted recovery projects. (2) Recovery projects were completed within a short time-frame, namely in three years and nine months (Japanese Red Cross, 2013). **Fig. 2** illustrates recovery organization management after the Sichuan Earthquake in China.

3) Hurricane Katrina in the US (2005) (Maki et al., 2006)

In the US, the President issues a federal disaster declaration following large-scale disasters. Following this, the Federal Emergency Management Agency (FEMA) leads the federal government support of disaster recovery and reconstruction under the organization. The Emergency Support Functions (ESF) of the National Response Framework stipulates the role of each federal agency. In 2005, the ESF covered all phases, from emergency response to recovery and reconstruction (**Fig. 3**). As stipulated in ESF 14, FEMA supported community planning for long-term recovery.³

In the case of Hurricane Katrina, the President issued a federal disaster declaration and the federal government

1. Takaaki Kato has been continuously involved in research on recovery from the Great Sichuan Earthquake. Research results were published in “Two Years from Wenchuan Sichuan Earthquake in China – Further Development after Disaster: Reconstruction of City and Radical Modernization of Farm Village –,” The City Planning Institute of Japan, and other papers.
2. William Siembieda is an expert on recovery in the US, and has been continuously involved in research on the Canterbury Earthquake in New Zealand, Hurricane Katrina, and the bushfire in Victoria. Research results were published in William Siembieda, Rebecca Lynn Teasley, Liam Wotherspoon, Adapting Policy Following Cascading Natural Hazards: Case Study of Christchurch, New Zealand, IDRIM Journal, Vol.5, No.2, 2015, and other papers.

3. Following Hurricane Katrina, the US Congress mandated that FEMA and the US Department of Housing and Urban Development (HUD) develop a National Disaster Recovery Framework (FEMA 2011) that now guides the federal government involvement in the recovery phase.

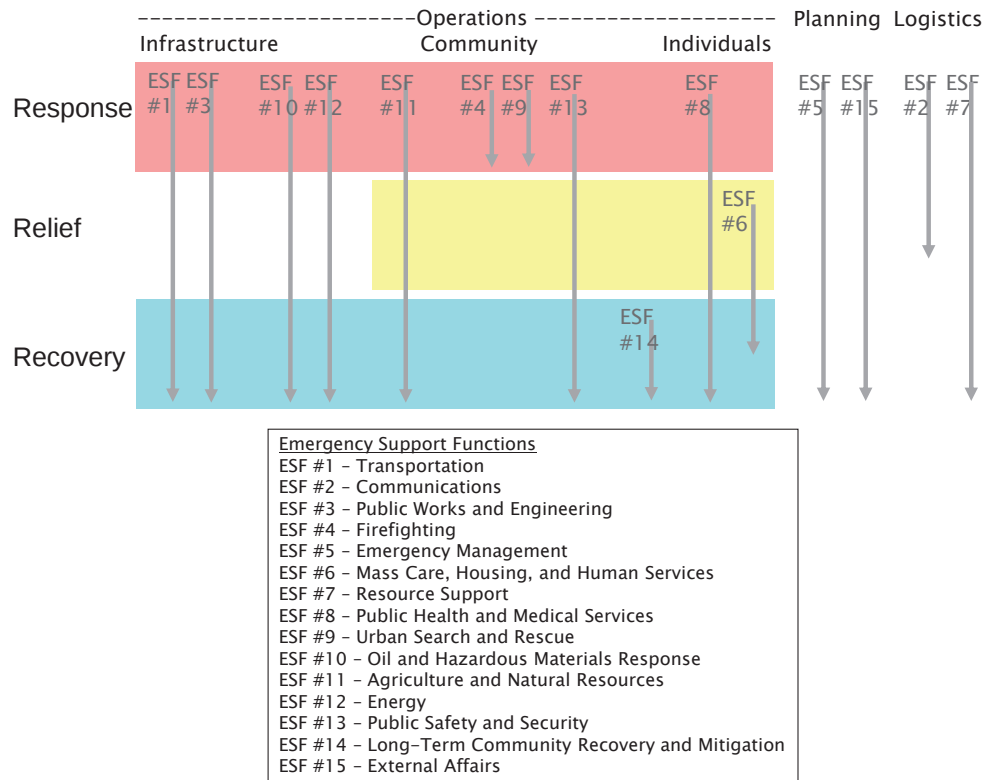


Fig. 3. Federal government operational system stipulated in the ESF during a disaster.

took the initiative in addressing the situation. Liaison offices were established in two affected states, namely Mississippi and Louisiana. Meanwhile, the federal coordinator responded to the disaster and addressed recovery and reconstruction efforts. The federal government supported local communities and affected individuals depending on the scale of damage. Characteristics of recovery organizations in the US are as follows: (1) The federal government plays an important role. (2) The recovery system is already established before a disaster occurs. (3) Local communities are also supported. **Fig. 4** illustrates the recovery organization management in Louisiana after Hurricane Katrina.

Essentially, no new national organizations were established; however, the President did appoint a Federal Coordinator for Gulf Coast Rebuilding to serve as principal point of contact for the executive branch with Congress and key stakeholders, and monitor the implementation of specific recovery policies; the Office of the Federal Coordinator for Gulf Coast Rebuilding was housed within the U.S. Department of Homeland Security which also houses FEMA. The state of Louisiana founded the Louisiana Recovery Authority (LRA) to help secure funding for recovery and provide planning and policy guidance for the recovery (LRA 2010). The LRA established the policies and priorities for expenditure of recovery funds, namely the federal funding managed by the state's Office of Community Development (OCD) for housing and community recovery. The LRA functions transferred to OCD after the authority was closed.

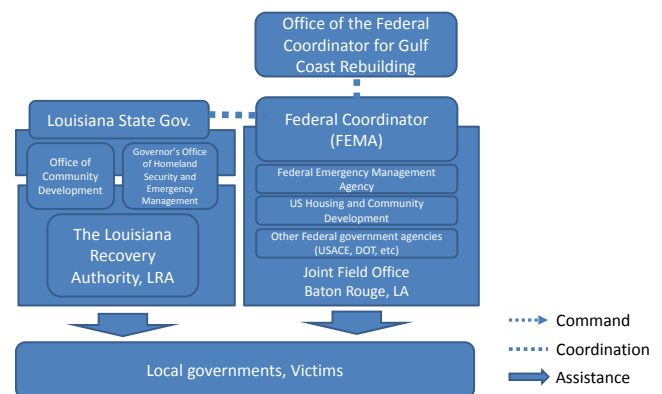


Fig. 4. Recovery organization management in Louisiana after Hurricane Katrina in the US.

4) The bushfire in Victoria, Australia (2009)

The bushfire occurred in Victoria, Australia in February 2009. Simultaneously, the fire affected an area of 31,206 ha, with a death toll of 173 victims (2009 Victoria Bushfire Royal Commission, 2010). The state government established the Victorian Bushfire Reconstruction and Recovery Authority (VBRRA) under the auspices of Regional Development Victoria. The authority operated for two years and four months—from February 2009 to June 2011 – to support affected communities and individuals (Regional Development Victoria, Victorian Bushfire Recovery, 2012). Characteristics of the VBRRA are as

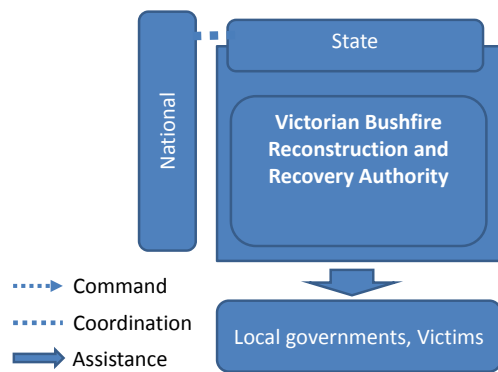


Fig. 5. Recovery organization management after the bushfire in Victoria, Australia.

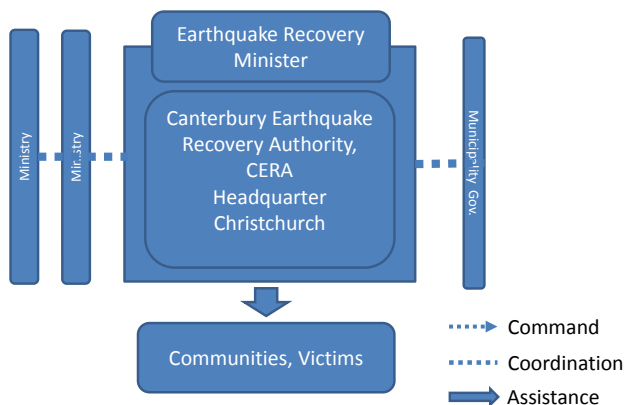


Fig. 6. Recovery organization management after the Canterbury Earthquake in New Zealand.

follows: (1) It is a state government organization. (2) It provided support to affected communities and individuals. **Fig. 5** shows the recovery organization management after the bushfire in Victoria, Australia.

5) The Canterbury Earthquakes in New Zealand (2011)

The national government directly managed recovery projects for the Canterbury Earthquakes and established the Canterbury Earthquake Recovery Authority (CERA) in Christchurch, the affected area. The CERA is the implementing agency for recovery projects and directly coordinates national agencies and local communities to support affected communities and individuals. However, an emerging issue was the division of roles between the national government and the city of Christchurch (Seldon et al., 2015).

Characteristics of recovery organization management after the Canterbury earthquake are as follows: (1) The national government established a new recovery organization. (2) The national government managed recovery projects directly. **Fig. 6** illustrates recovery organization management after the Canterbury Earthquakes in New Zealand.

4. Types of Recovery Organizations

Quarantelli, an American sociologist, categorized disaster organizations into four types based on the following criteria: “old/new structure (S)” and “old/new task (T).” The four types are: (1) Established (S: old, T: old); (2) extending (S: new, T: old); (3) expanding (S: old, T: new); and (4) emergent (S: new, T: old) (Quarantelli, 1966). In this typology, police and fire departments involved in providing regular services are categorized as “established” organizations, while newly established organizations that perform regular services such as volunteer activities are “extending.” Furthermore, existing organizations that experience an increased workload during a disaster, such as disaster headquarters, are “expanding” organizations, while newly established recovery organizations that perform new services are categorized as “emergent.” Not all recovery organizations are emergent. **Table 1** summarizes the characteristics of recovery organizations internationally.

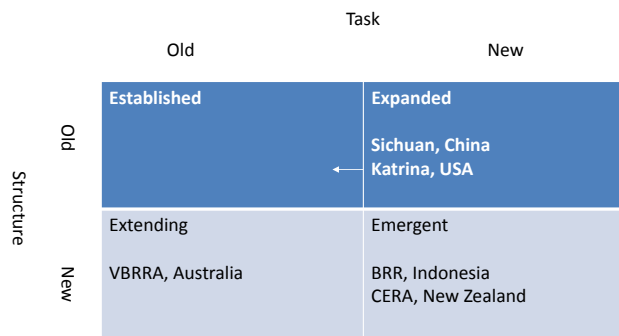
The BRR in Indonesia and CERA in New Zealand were new organizations created after a disaster. Because they were involved in recovery efforts not addressed by national organizations before these disasters, they are categorized as emergent. On the other hand, recovery operations for the Sichuan Earthquake and Hurricane Katrina were promoted by the National Development and Reform Commission (that develops national plans in normal conditions) in China and the Federal Emergency Management Agency (FEMA) in the US respectively. They expanded their services rather than creating new organizations. FEMA already had recovery responsibilities prior to Hurricane Katrina; thus, it is categorized as an established and expanded organization.

Although VBRRA was a newly established organization, it is considered as established because of an increase in the workload for town development for Regional Development Victoria. This is also the case with the LRA in that it just helped to support an increased workload by other established agencies in the state of Louisiana. Subnational governments create recovery organizations to deal with the increased workload. The target of support is also important, and in the US and Australia, support was provided for affected communities and individuals. **Fig. 7** illustrates the types of recovery organization management.

The analysis described above indicates two national types of recovery organization management: (1) Emergent organizations: newly established organizations that directly support recovery, and (2) expanded organizations: existing organizations that are newly involved in recovery. In addition, subnational governments establish new extending recovery organizations to address the increased workload required for town development and recovery. In the future, the authors wish to clarify, through detailed surveys, the reasons why each recovery organization took on a particular form.

Table 1. Outline of recovery organizations internationally.

		Indian Ocean Tsunami, Indonesia (2004)	Sichuan Earthquake, China (2006)	Hurricane Katrina, USA (2005)	Victoria State Wild Fire, Australia (2009)	Canterbury Earthquake, New Zealand (2011)
Impacted Area	Single State or Prefecture				○	○
	Multiple State or Prefecture	○	○	○		
Government	National	○	○	○		○
	Local				○	
Target	Individual people	○		○	○	○
	Local			○	○	
Office Venue	Capital city		-			
	Impacted area	○		Joint field Office	○	○
Task	Extended			○	○	
	Expanded	○	○			○
Structure	Old		○	○		
	New	○ (BRR)			○ (VBRRA)	○ (CERA)
Period		BRR 5year 4month	Completion of Recovery (3year 9month)	Joint field Office	VBRRA 2year 4month	



Based on E.L.Quarantelli, 1966

Fig. 7. Types of recovery organization management.

5. Recovery Organization Management in Japan

5.1. Outline of Interview Survey

To clarify recovery organization management in Japan, the authors conducted an interview survey with those involved in establishing recovery organizations for the Great Hanshin-Awaji Earthquake and Great East Japan Earthquake. **Table 2** lists the interviewees.

The questions were sent beforehand and discussed during the interview survey. Organization diagrams and other materials were used to better understand the structure of the recovery organization. The following questions were asked during the interview:

(1) How were the roles of Japan, prefectures, and cities decided upon during recovery from the Great Hanshin-Awaji Earthquake and the Great East Japan Earthquake? (2) What worked or did not work for decision-making, information sharing, and revenue securing in recovery ef-

forts following the Great Hanshin-Awaji Earthquake and the Great East Japan Earthquake? (3) Which model for recovery efforts is suitable for future catastrophic urban disasters in Japan? Is another model preferred? (4) Do you have any other comments on the recovery process and organizations in Japan?

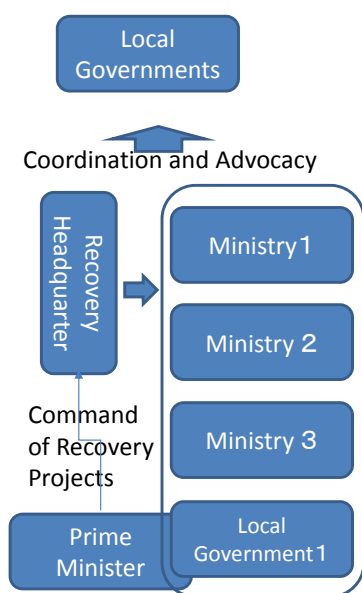
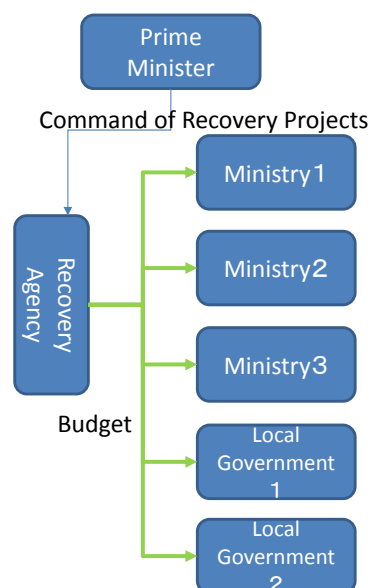
5.2. Recovery Organizations in Japan

Based on the results of the interviews, diagrams for recovery organization management for the Great Hanshin-Awaji Earthquake (**Fig. 8**), the Great East Japan Earthquake (**Fig. 9**), and the Great Kanto Earthquake and World War II were created from the perspectives of scope of service and chain of command. Three types of recovery organizations for large-scale disasters in Japan were identified: (1) the proposal and adjustment type (the Great Hanshin-Awaji Earthquake), (2) budget management type (the Great East Japan Earthquake), and (3) direct operation type (the Great Kanto Earthquake and World War II Reconstruction Boards).

During recovery from the Great Hanshin-Awaji Earthquake, the Headquarters for Reconstruction of the Hanshin-Awaji Area led by the Prime Minister was founded in the General Administrative Agency of the Cabinet, and the Secretary of the National Land Agency served as the Director-General. Decentralization of authority was emphasized during recovery from the Great Hanshin-Awaji Earthquake, and the national recovery headquarters was “involved in supporting local recovery plans to the maximum” (Shigeru Ito, 2005). Interview results indicate that recovery headquarters primarily (1) proposed new tasks and identified important issues during recovery, and (2) coordinated each national agency and local community. Recovery headquarters planned new tasks in response to new circumstances and coordinated organi-

Table 2. Interviewees.

	Interview date	Time	Brief biography
Kojiro Niino	October 27, 2014	10am - 12noon	Formulated the strategic recovery vision for the Great Hanshin-Awaji Earthquake in Hyogo prefecture and chaired the recovery plan formulation committee of Kobe city
Toshitami Kaihara	October 27, 2014	2pm - 4:30pm	The governor of Hyogo prefecture at the time of the Great Hanshin-Awaji Earthquake
Yasuhiro Mitsui	October 28, 2014	2pm - 4pm	Administrative Vice-minister and Director General of the headquarters of Hanshin-Awaji recovery in the General Administrative Agency of the Cabinet after the Great Hanshin-Awaji Earthquake
Yoshikatsu Okamoto	October 29, 2014	9am - 10am	Current Administrative Vice-minister of the Reconstruction Agency, continuously related to the agency after the Great East Japan Earthquake

**Fig. 8.** Recovery organization management for the Great Hanshin-Awaji Earthquake.**Fig. 9.** Recovery organization management for the Great East Japan Earthquake.

zations. **Fig. 8** shows recovery organization management after the Great Hanshin-Awaji Earthquake.

During recovery from the Great East Japan Earthquake, a new organization, namely the national Reconstruction Agency, was established. Interview results indicate that the establishment of recovery headquarters was considered for recovery from the Great East Japan Earthquake, similar to the structure used following the Great Hanshin-Awaji Earthquake. However, the Reconstruction Agency model was ultimately established. The role of the Reconstruction Agency includes: (1) planning, coordinating, and implementing national measures of recovery; and (2) serving as a unified window to support local public organizations (the Reconstruction Agency, 2016) and coordinating national agencies and local communities. Forty core projects managed by national agencies were implemented during recovery from the Great East Japan Earthquake, and the Reconstruction Agency managed the recovery budget. A significant difference from the case of

the Great Hanshin-Awaji Earthquake in **Fig. 8** is management of the recovery budget by the Reconstruction Agency. **Fig. 9** illustrates the recovery organization management for the Great East Japan Earthquake.

After the Great Kanto Earthquake and World War II, the Reconstruction Board directly implemented projects in areas where they managed each agency's projects (**Fig. 10**). In the case of the Great East Japan Earthquake, management is mixed; for example, in road development, some areas are managed by the Reconstruction Agency and others by the Ministry of Land, Infrastructure, Transport, and Tourism.

6. Operation of Recovery Organizations to Overcome a National Crisis

Recovery organization management in Japan is categorized into types based on Quarantelli's disaster orga-

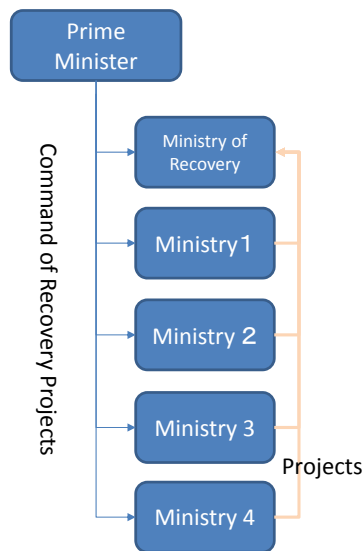


Fig. 10. Recovery organization management for the Great Kanto Earthquake and World War II.

nization theory, similar to the international cases. Recovery organization management was conducted by establishing a recovery headquarters in the case of Great Hanshin-Awaji Earthquake. As discussed earlier, the recovery headquarters was involved in planning measures for new efforts to address disaster recovery that had not taken place for a long time in Japan. So, this was a new task. The National Land Agency served as the core of the secretariat office, although manpower was sourced from various organizations. Here, the agency was an existing organization. In contrast, in the case of the Great East Japan Earthquake, the Recovery Agency was newly established, but the existing system handled recovery projects, because the system for recovery was developed after the Great Hanshin-Awaji Earthquake. Therefore, new organizations performed existing tasks. **Fig. 11** outlines the types of recovery organization management in Japan.

Kato et al. points out that after the Great East Japan Earthquake, recovery proceeded based on the old system established during the economic boom era, despite changing social circumstances. They also highlight the importance of creating a recovery system according to new circumstances and continuously reviewing and implementing recovery efforts. Flexible measures according to social circumstances or the damages sustained are important in recovery. The Nankai Trough Earthquake and earthquakes predicted to occur directly beneath the Tokyo Metropolitan Area might lead to a national crisis and generate unexpected circumstances. Therefore, a future recovery organization structure needs the ability to flexibly address an array of unforeseen circumstances and the implement the new measures that are required. In other words, recovery organizations should be involved in new tasks rather than simply carrying out old ones. In addition, new organizations must be established, as these will be large-scale disasters and multiple prefectures will be

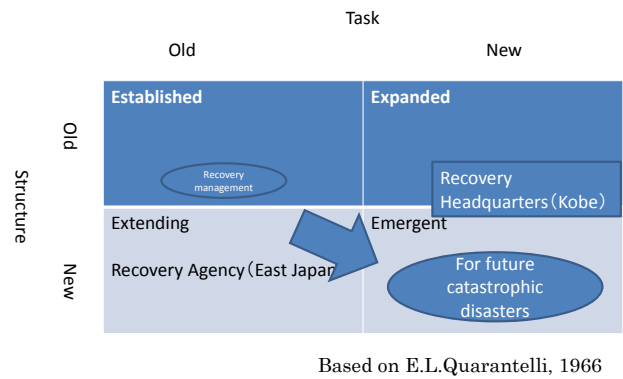


Fig. 11. Types of recovery organization management in Japan.

simultaneously affected.

In international cases, emergent organizations such as the CERA in New Zealand and BRR in Indonesia were established in affected areas after large-scale disasters to directly manage recovery projects. In Japan, emergent organizations were established to directly manage recovery projects after the Great Kanto Earthquake and World War II. This implies that an emergent organization is required to address issues of recovery from a future disaster that may lead to a national crisis.

Furthermore, Kato emphasizes that recovery efforts be continuously reviewed. In this regard, we can learn from FEMA in the US. FEMA studies recovery before a disaster and promotes recovery as a normal task. However, FEMA does not employ many permanent employees; thus, many experts and staff are hired to address disasters and promote reconstruction and recovery.

As shown in **Fig. 11**, to promote recovery, it is important to establish a new emergent organization to address new projects after a disaster occurs that may lead to a national crisis.

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- K. Iuchi, E. Maly, and L. Johnson, "Three Years After a Mega-disaster: Recovery Policies, Programs and Implementation After the Great East Japan Earthquake," in Post-Tsunami Hazard: Reconstruction and Restoration, Springer (V. Santiago-Fandino, Y. A. Kontar and Y. Kaneda (Eds.)), 2015.

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