DISASTER MANAGEMENT OF LOCAL GOVERNMENT IN JAPAN

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ABSTRACT

This paper introduces activities of local governments and communities of citizens to mitigate earthquake disasters in Japan. As for the action “after” an earthquake disaster, the quick damage inspection system is introduced which has been developed in Japan, especially after the 1995 Great Hanshin-Awaji Earthquake Disaster. As for the action “before” an earthquake disaster during the normal life, it is important to increase public consciousness for disaster management and take measures such as promotion of seismic retrofit of vulnerable houses to prevent collapse and reduce casualty in case of earthquake. The community-based voluntary organization for disaster management is introduced. Also, the examples of local government actions to promote seismic retrofit of private houses and concrete block fences are introduced.

1. INTRODUCTION

Japan has a long history of earthquake disasters. Various actions have been taken by the central and local governments to mitigate earthquake disasters. In the national level, the Central Disaster Management Council chaired by the Prime Minister formulates and executes disaster management plan. Prefectural Governments and Municipalities also have their own Disaster Management Councils and formulate and promote disaster management local plans. However, at the 1995 Great Hanshin Awaji Earthquake Disaster, the central government failed to capture the damage situation correctly and delayed making right actions. The disaster caused more than 6,000 casualties. Most of them were killed by the collapse of old wooden houses. Since this disaster, many voluntary disaster management organizations have been established in the community level and voluntary activities for disaster mitigation have been conducted widely. Also, the central government issued regulations for promoting seismic retrofit of old buildings and many local governments provide free seismic evaluation to the citizens and prepare subsidy for retrofit of old wooden houses.

2. ACTION AFTER EARTHQUAKE DISASTER

Post earthquake quick damage inspection of buildings is the first essential step immediately after a major earthquake disaster to mitigate the secondary disaster caused by aftershocks. The purpose of this inspection is to quickly inspect and judge the risk of collapse of damaged buildings or falling of building components due to after shocks and to inform the habitants about the safety of their houses as soon as possible to prevent secondary disaster due to aftershocks. The result of quick inspection also provides the basic information to estimate the number of temporary houses and refuge centers necessary for the displaced people. Figure 1 shows the time table of typical actions after an earthquake disaster. Quick inspection of building damage must be done in the first stage of actions. In this chapter, the post earthquake quick damage inspection system in Japan is introduced.

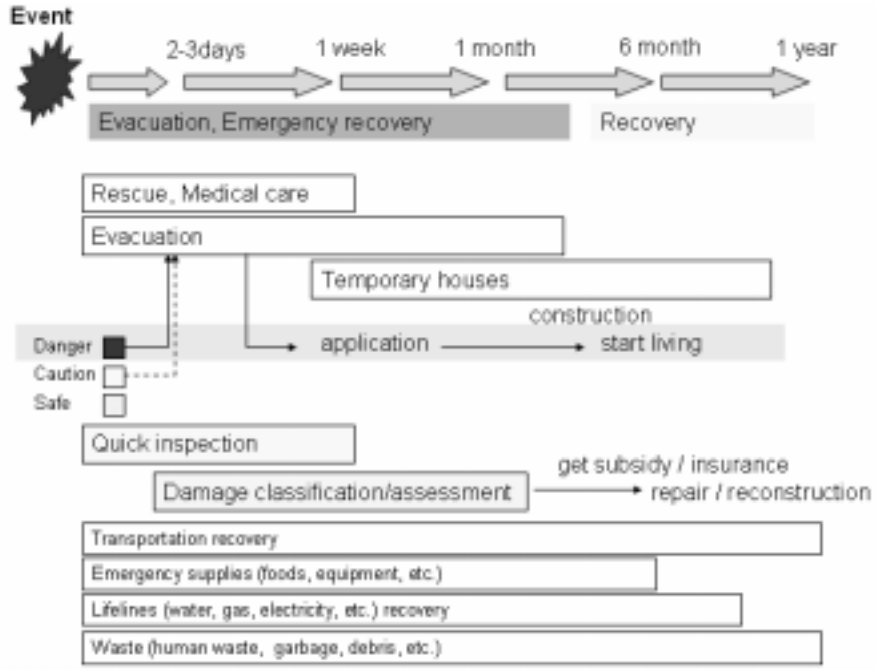

Figure 1: Time table of actions after an earthquake disaster

The operation of quick risk inspection and safety declaration must be completed in a very limited period on the basis of visual observation of damaged buildings. To implement the risk inspection practice using a large number of inspectors smoothly, it is quite important to formulate a well-planned organization structure in a local government. Figure 2 shows the process to establish a quick risk inspection headquarter in a local government after the event of earthquake. Figure 2 shows the plan of risk inspection work force in Japan, where, inspection work is done by a team of two inspectors. The direction from headquarter is transferred through a coordinator to group leaders and inspectors.

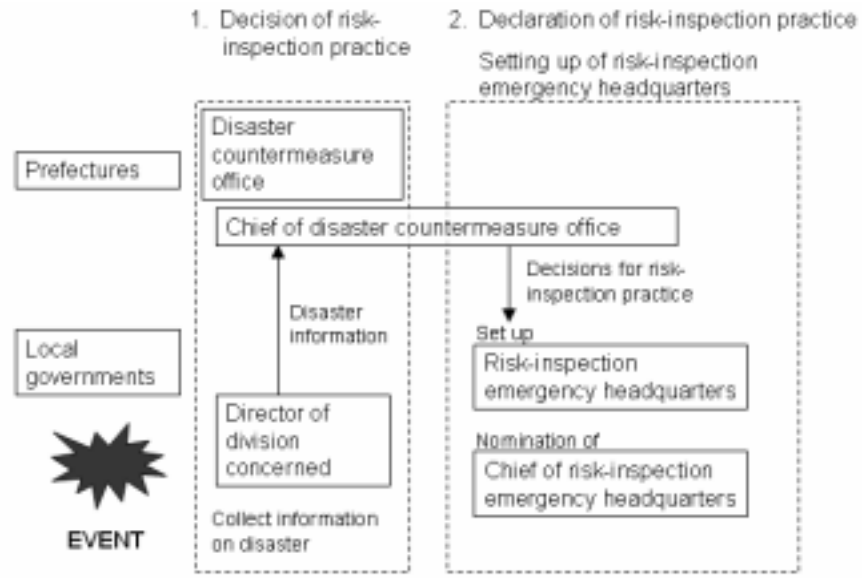

Figure 2: Implementation of risk-inspection work

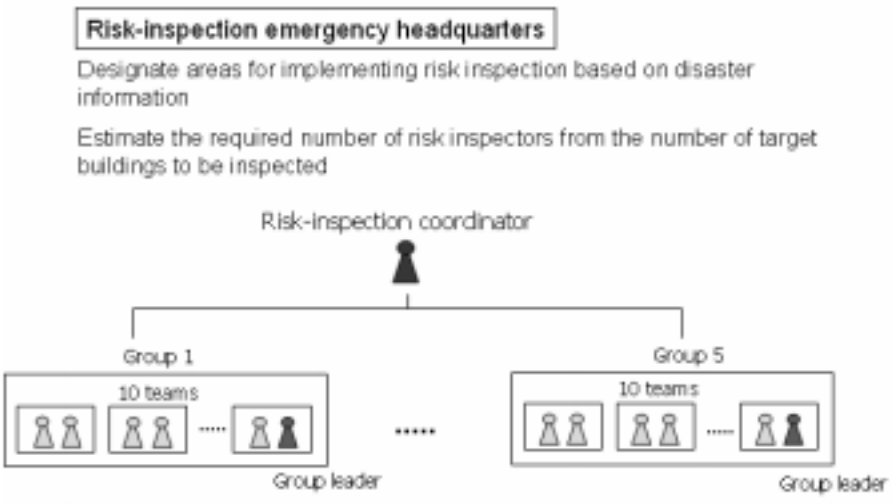

Figure 3: Plan for risk-inspection work force

Since the quick risk inspection of building damage must be done as soon as possible to assure the safety of human life from secondary disaster, the inspection methodology is relatively simple based on visual inspection. There is another damage assessment methodology which is more detailed and accurate but time-consuming and complicated, which is used for the following purposes:

- Damage classification for repair and retrofitting done by engineers in construction companies,
- Damage assessment for subsidy from Government done by officials in local government,
- Damage assessment for earthquake insurance done by engineers hired by insurance company.

3. ACTION BEFORE EARTHQUAKE DISASTER

3.1 Increasing disaster management consciousness

1) Memory of the Great Kanto Earthquake Disaster

In Japan, September 1st is "Disaster Management Day" to commemorate the Great Kanto Earthquake Disaster on September 1st in 1923, the most devastating earthquake disaster in the history of Japan. Also the period from August 30th to September 5th is declared as "Disaster Management Week" and a variety of events such as the Disaster Management Fair, Disaster Management Seminar and Disaster Management Poster Contest are held to increase disaster management consciousness and disseminating disaster management knowledge.

2) Memory of the Great Hanshin-Awaji Earthquake Disaster

Additionally, various events are held to promote volunteer activities and local disaster management activities based on neighborhood associations on "Disaster Management and Volunteer Day" on January 17th and during Disaster Management Volunteer Week (January 15th – 21st) to commemorate the Great Hanshin-Awaji Earthquake Disaster on January 17th in 1995.

Figure 4: Prize winning posters of the Disaster Management Poster Contest (from Cabinet Office, Government of Japan)

3.2 Local voluntary disaster management organizations and volunteer activities

At the Great Hanshin-Awaji Earthquake Disaster in 1995, the number of building collapse or heavily damaged is around 250,000 and the number of people captured in the buildings is around 35,000. After the earthquake happened, in the situation that telephone didn't work and there was a heavy traffic on the road, 27,000 people were rescued by neighbors and 80% of them were alive. However, 8,000 people were rescued by Army, Police or Fire Fighters and less than 50% of them were alive. This fact gives us a lesson that the activity of local community is the key to mitigate earthquake disaster.

Figure 5: Lesson from 1995 the Great Hanshin-Awaji Earthquake Disaster

Based on this lesson, the number of community-based organization is increasing rapidly in Japan. In 2003, there are more than 100,000 organizations covering more than 60% of families in whole country. For example, the city of Kobe has 416 community-based organizations covering 81.8% of member families. Each organization has a structure consisting of headquarter and team leaders as shown in Figure 7. The basic activity of community-based organization is listed in Figure 8.

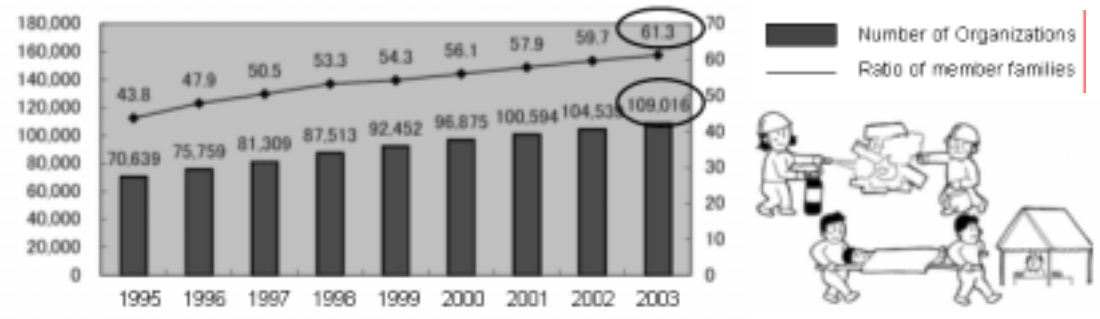

Figure 6: Number of community-based organizations in Japan

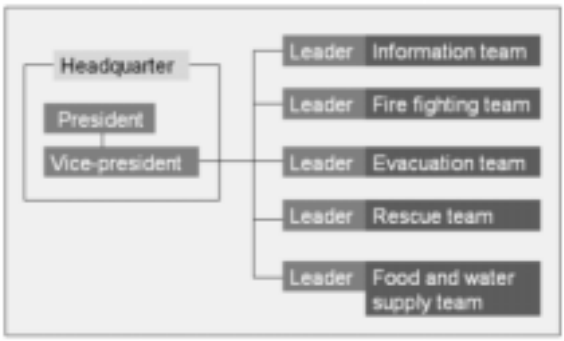

Figure 7: Community-based organization structure

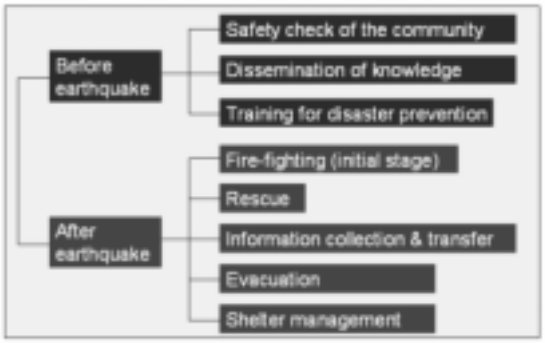

Figure 8: Activity of community-based organization

For example, since the capability of fire-fighting in the community-based organization is limited, they can be in charge of initial stage of fire-fighting until the arrival of professional fire-fighters. Also collaborations with other organizations such as schools, hospitals and private companies are important as shown in Figure 9.

Figure 9: Collaboration with other organizations

One of effective activities to increase consciousness of people about the safety of community is making a map to indicate locations of essential facilities or dangers in the community in case of earthquake as shown in Figure 10.

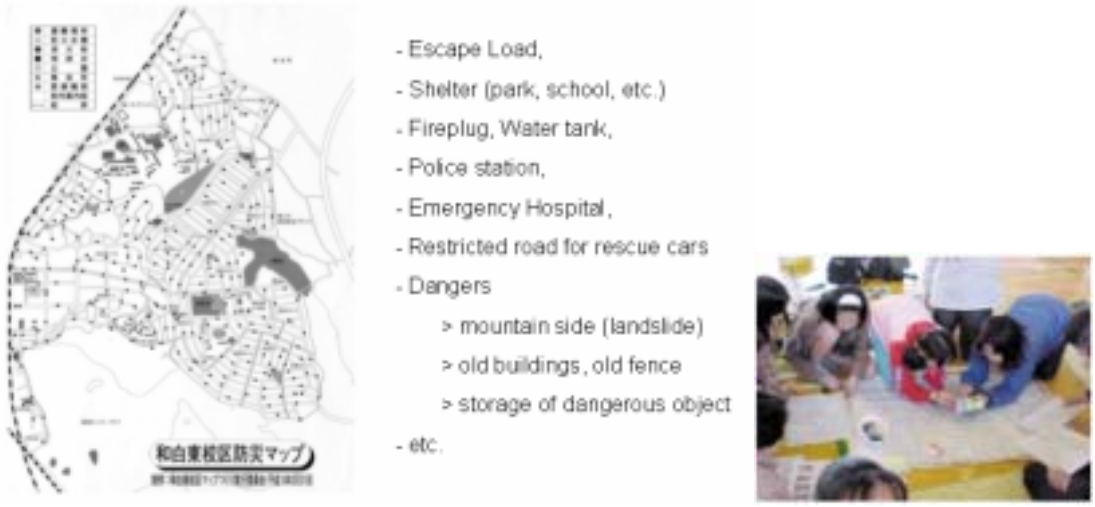

Figure 10: Map for disaster prevention made by Community

3.3 Promotion of seismic retrofit by local government

The most effective way to reduce human casualty in case of earthquake disaster is to retrofit vulnerable buildings to prevent building collapse. Most of the local governments in Japan prepare the service of free building seismic evaluation of the wooden houses to promote seismic retrofit. This evaluation work is done by "Wooden House Seismic Evaluators" certified by the Mayor and the evaluators check the seismic resistance of the citizen's houses and give advices for retrofit. Citizens who want seismic retrofit of their houses can apply to the local government a financial grant or a loan with no interest to cover part of the retrofit cost (Figures 11 and 12).

Figure 11: Pamphlet in the city of Yokohama

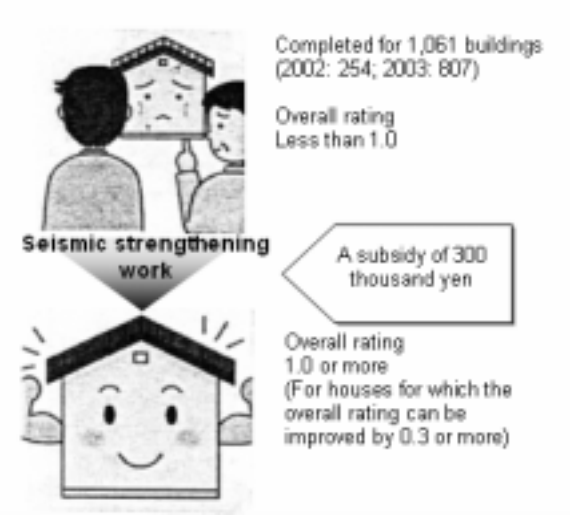

Figure 12: Promotion in Shizuoka Prefecture

Since many people have been killed under the concrete block fences fell down by the earthquakes, the Shizuoka Prefecture provides a subsidy to replace or improve concrete block fences (Figure 13).

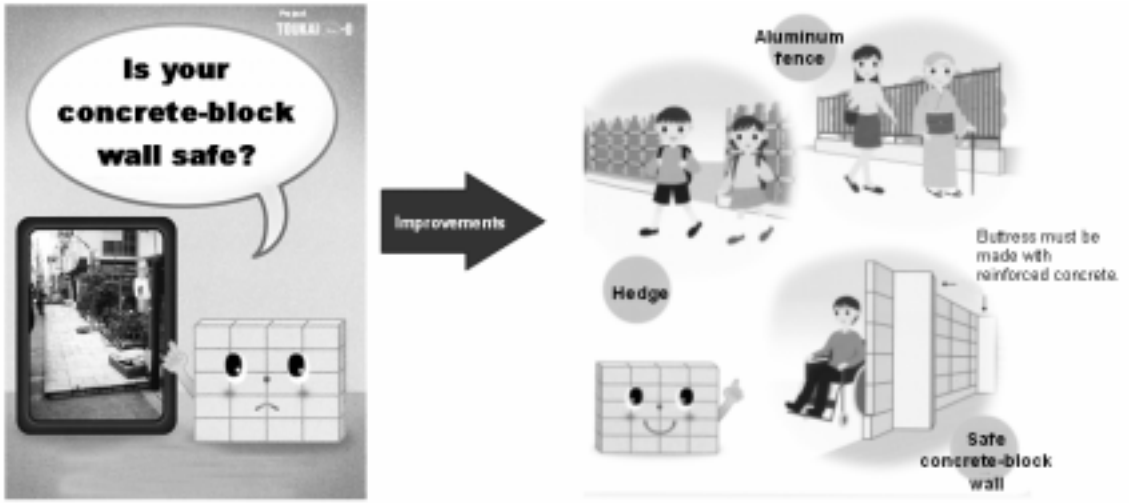

Figure 13: Subsidy system in Shizuoka Prefecture to replace or improve concrete block fence

4. CONCLUSIONS

For effective disaster management, it is important that the Central Government, the local governments, the designated public corporations and even private citizens must work out their roles appropriately. Especially, in Japan, after the 1995 Great Hanshin-Awaji Earthquake Disaster, the role of local governments and private citizens is getting more and more important. Such experience and knowledge of disaster mitigation action in Japan should be shared with other countries by taking consideration of local conditions in each country.

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