CAPABILITY ASSESSMENT FOR READINESS IN CASE OF URBAN DISASTERS

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(This paper was presented in the EAROPH regional seminar in Yogyakarta, Indonesia, on Sep. 20, 2005)

Abstract: During the year 2004, a large number of serious natural disasters occurred in Japan and the crucial need for regional disaster reduction capability assessment for readiness has been recognized by local public bodies in Japan.
This paper presents disaster reduction capability self-assessments for readiness in Kawaguchi City, Saitama Prefecture and Ohta City, Gunma Prefecture under our guidance, which involved about 800 questionnaires. The assessment process examines operational readiness and capabilities of the cities to mitigate against, prepare for, respond to and recover from, emergency and disasters. It focuses on the nine Emergency Management Functions (EMF) such as Hazard ID and Risk Assessment, Mitigation and Preparedness, Formulation of Management System, Communication and Warning, Logistics and Facilities, Planning, Public Information, Education and Training and Check and Act. Each EMF has four levels of disaster countermeasures: average, basic (required), standard (desirable) and applied (advanced).
This study found that Kawaguchi City and Ohta City are required to improve Hazard ID and Risk Assessment immediately and that it is also important to educate the citizens and that the EMF overall average scores of Kawaguchi City, Ohta City and Japan were 46.8 (marginally capable), 54.4 (generally capable) and 43.5 (marginally capable), respectively. It was also found that Kawaguchi City is required to improve EMF 1－Hazard ID and Risk Assessment (23.5) and EMF 9－Check and Act (13.2) immediately. Generally speaking, Japan needs to improve EMF 9－Check and Act (23.9).
Keywords: Capability assessment, disaster preparedness, local government, emergency management, Japan

1. Introduction

Off the West Coast of Northern Sumatra Earthquake Disaster as well as the Indian Ocean Tsunami Disaster occurred on 26 December, 2004. During the year 2004, a large number of serious natural disasters also occurred in Japan and the crucial need for regional disaster reduction capability assessment for readiness has been recognized by local public bodies in Japan.
For this purpose, Fire and Disaster Management Agency, Japanese Government, made up the self-assessment method and carried out the pilot study for all of the 47 prefectures in 2003. This method consists of about 800 questionnaires by way of the choice between two to four things.
This paper is the result of the actual application of this method for two municipalities, Kawaguchi City and Ohta City.
Kawaguchi City is located in north adjacent area of Tokyo and has the population of about half a million. The area is rather low land along the Arakawa River and developed as middle class residential areas.
Ohta City is located about 86 kilometers north of Tokyo with the population of about 218 thousand. This area is a little too far from Tokyo and developed as inland industrial areas, and also low land along the Tone River. Both cities will have the fear for disasters of flood, earthquake and big fire.

2. Design and Methodology of Assessment

The assessment process examines operational readiness and capabilities of the cities to mitigate against, prepare for, respond to and recover from, emergency and disasters. It focuses on the following nine Emergency Management Functions (EMFs).[1)]

① Hazard ID and Risk Assessment
② Mitigation and Preparedness
③ Formulation of Management System
④ Communication and Warning
⑤ Logistics and Facilities
⑥ Planning
⑦ Public Information
⑧ Education and Training
⑨ Check and Act

Each EMF has four levels of disaster countermeasures

(DC) such as average, basic (required), standard (desirable) and applied (advanced), and was assessed on a score of 0 to 100 based on the following:

- A score of 75.0 - 99.9 means that the organization met the attribute or characteristic consistently and only a limited effort is required to reach full capacity. This area is considered to be “Very Capable”.
- A score of 50.0－74.9 means that the organization generally met the attribute or characteristic and will require significant effort to reach full capacity. This area is considered to be “Generally Capable”.
- A score of 25.0－49.9 means that characteristics are normally met, but a substantial amount of effort is required to reach full capacity. This rating is considered to be “Marginally Capable”.
- A score of less than 25.0 means that this area is considered “Not Capable” and substantial improvements are needed.

Questionnaire sheets contain about 800 questions and Question 1 is shown below for example.

Question 1 Check all of the items realized in your organization.
(1) Risk management basic ordinance is enacted.
(2) No basic ordinance but elementary ordinances exist.
(3) No ordinance but action plan exists.
(4) No action plan but risk management is recognized as an important item in the disaster prevention plan.
(5) Mayor declared the importance of risk management.

Then the score will be automatically computed by the check of the responder and get the total score by above mentioned 9 Emergency Management Functions (EMFs) after checking all of the questions of about 800.

3. Results of the Assessments

3－1 *National Average for the EMFs*

These assessments were made from the results of all 47 prefectural governments which participated fully in the self-assessment pilot test and submitted formal reports to the Fire and Disaster Management Agency (FDMA) of the Ministry of Internal Affairs and Communications, Japan, in 2004 [2)]. The results of the assessments are shown in Figure 1.

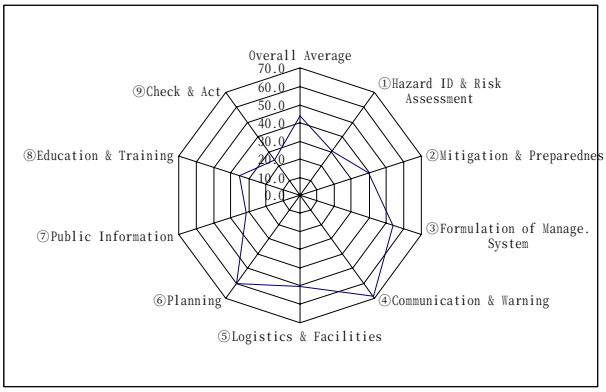

Fig. 1 EMFs of National Average

The national overall average of the EMFs is 43.5. This score is viewed by the assessment standard as “marginally capable”, indicating that criteria are normally met, but a substantial amount of efforts is required to reach full capability.

The four EMFs scoring “generally capable”, in descending order, were EMF4－Communication and Warning (Average 68.5); EMF6－Planning (Average 59.6); EMF3－Formulation of Management System (Average 53.6). and EMF5－Logistics and Facilities (Average 50.2).

The four EMFs scoring “marginally capable”, in descending order, were
EMF2－Mitigation and Preparedness (Average 40.0); EMF8－Education and Training (Average 35.0); EMF7－Public Information (Average 31.0); and EMF1－Hazard ID and Risk Assessment (Average 30.0).

The lowest scoring EMFs of “not capable” were EMF9－Check and Act (Average 23.9), which means that substantial improvements are needed.

3－2 *Kawaguchi City, Saitama Prefecture*

3－2－1 *Outline of Kawaguchi City*

Kawaguchi City suffered considerable losses from storms and floods in 1958 and 1966. It is located on the southern edge of Saitama Prefecture, separated from Tokyo only by the Arakawa River, thus making it a convenient location for those who commute to Tokyo for work or school. With a population of approximately 492,900 people, Kawaguchi is a bustling city, ranking with Saitama City as one of the major economic and cultural centers of Saitama Prefecture. Notably, with about 15,700 foreign residents (3% of the population), Kawaguchi is a town with a very cosmopolitan atmosphere. Historically, Kawaguchi's development has

been spurred by its long history in the cast-iron molding industry. Today, Kawaguchi is a city of industry and culture, producing cast-iron products, machinery and greenery.

3－2－2 *The EMFs of Kawaguchi City* [3)]

The results of the assessments are shown in Figure 2.

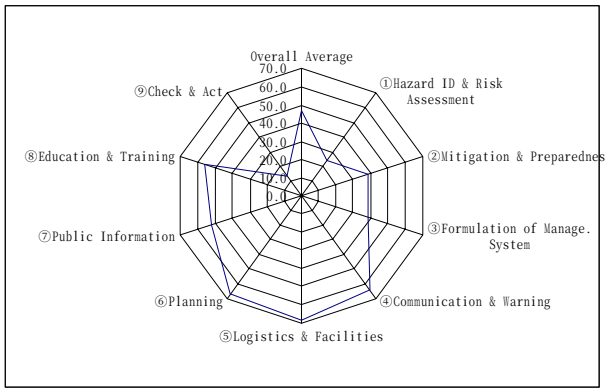

Fig.2 EMFs of Kawaguchi City

The overall average of the EMFs is 46.8. This score is viewed by the assessment standard as “marginally capable”, indicating that criteria are normally met, but a substantial amount of efforts is required to reach full capability.

The five EMFs scoring “generally capable”, in descending order, were EMF5 － Logistics and Facilities (Average 68.2); EMF6－Planning (Average 66.8); EMF4－Communication and Warning (Average 63.9); EMF8－Education and Training (Average 56.1); and EMF7－Public Information (Average 52.3).

The two EMFs scoring “marginally capable”, in descending order, were EMF2 － Mitigation and Preparedness (Average 38.7); and EMF3 － Formulation of Management System (Average 38.4).

The lowest scoring EMFs of “not capable”, in ascending order, were EMF9－Check and Act (Average 13.2); and EMF1－Hazard ID and Risk Assessment (Average 23.5), which means that substantial improvements are needed.

3－3 *Ohta City, Gunma Prefecture*

3－3－1 *Outline of Ohta City*

Ohta City has scarcely ever suffered serious natural disasters. It is situated in the north-west section of the Kanto Plain in the south-eastern part of Gunma Prefecture, and just 86 kilometers north of Tokyo. Its population is approximately 217,900 people with about 9,100 foreign residents, 4% of the population.

With an annual industrial output exceeding 1.3 trillion yen, Ohta ranks first in Gunma Prefecture and is on a par with large industrial cities on the northern Kanto area such as Hitachi City and Utsunomiya City. Machinery, metal products and textiles account for more than 46% of the Ohtal industrial output.

3－3－2 *The EMFs of Ohta City*[3)]

The results of the assessments are shown in Figure 3.

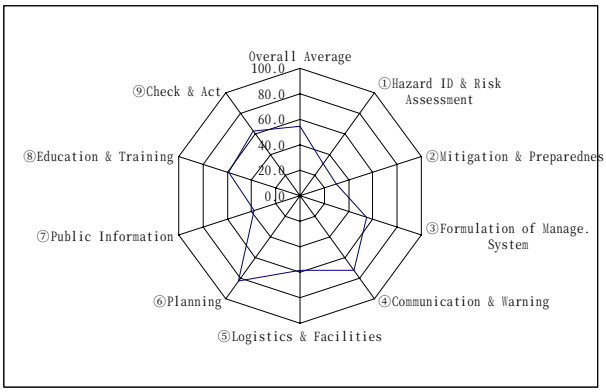

Fig.3 EMFs of Ohta City

The overall average of the EMFs is 54.4. This score is viewed by the assessment standard as “generally capable”, indicating that a baseline capability has been developed, but a significant effort is required to reach full capacity.

The six EMFs scoring “generally capable”, in descending order, were EMF6－Planning (Average 82.5); EMF4－Communication and Warning (Average 72.4); EMF9－Check and Act (Average 63.4); EMF8－Education and Training (Average 59.1); EMF5 － Logistics and Facilities (Average 58.6); and EMF3－Formulation of Management System (Average 55.1).

The three EMFs scoring “marginally capable”, in descending order, were EMF7 － Public Information (Average 37.7); EMF1 － Hazard ID and Risk Assessment (Average 30.5); and EMF2－Mitigation and Preparedness (Average 30.1).

3－4 *Comparison for Disaster Countermeasures*

EMF overall average scores of Japan, Tokyo, Osaka, Kawaguchi City and Ohta City were 43.5 (marginally capable), 69.4 (generally capable), 52.4 (generally capable), 46.8 (marginally capable), and 54.4 (generally capable), respectively, as shown in Table 1.

Table 1. Scores of Disaster Countermeasures

	Average	Basic	Standard	Applied
Japan	43.5	56.2	43.7	30.7
Tokyo	69.4	78.0	72.0	58.1
Osaka	52.4	66.9	50.4	39.9
Kawaguchi City	46.8	57.6	45.6	37.1
Ohta City	54.4	71.6	55.9	35.6

4. Conclusion

The overall average for the EMFs of Kawaguchi City is 46.8 (marginally capable) which indicates that a substantial amount of efforts is required to reach full capability. Especially, Kawaguchi City needs to improve EMF9－Check and Act (Average 13.2), EMF1－Hazard ID and Risk Assessment (Average 23.5), EMF2－Mitigation and Preparedness (Average 38.7), and EMF3－Formulation of Management System (Average 38.4), immediately.

The overall average for the EMFs of Ohta City is 54.4 (generally capable) which indicates that a baseline capability has been developed, but a significant effort is required to reach full capacity. Especially, Ohta City needs to improve EMF1－Hazard ID and Risk Assessment (Average 30.5), EMF2－Mitigation and Preparedness (Average 30.1), and EMF7－Public Information (Average 37.7), immediately.

The overall average for the EMFs of Japan is 43.5 (marginally capable) which indicates that a substantial amount of efforts is required to reach full capability. It is noted that the higher regional disaster risk grows the higher regional disaster reduction capability of the local public body. Generally speaking, it is important to educate the citizens about the results of the EMFs and to improve EMF9－Check and Act (Average 23.9) in Japan.

Reference

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