

August 5, 2011

## Results of a Condition Survey on Disaster Protection Functions of School Facilities

Educational Facilities Research Center, National Institute for Educational Policy Research- Japan, conducted a condition survey of disaster protection facilities/equipment of the public schools designated as evacuation shelters in Japan (excluding Iwate, Miyagi and Fukushima Prefectures). The center publicly discloses the compiled results.

### 1. Purpose and background

- School facilities have a role of emergency evacuation shelter for local residents in a time of disaster and they made a major contribution to their evacuation after the Great East Japan earthquake, when 622 schools were used as shelter at the peak (March 17, 2011).
- On the other hand, schools used as shelters faced various issues including securement of electricity and water, lack of heating equipment and communication disruption.
- In response, the National Institute for Educational Policy Research conducted a survey of disaster protection functions of the public schools in Japan (excluding Iwate, Miyagi and Fukushima Prefectures).

### 2. Outline of the survey results

- Questionnaires were sent in June 2011 to ask about the conditions as of May 1.
- The survey found that 89.3% of the public schools were designated as evacuation shelters but the designation was not always accompanied by the expected disaster prevention functions.
  - (1) 30,513 public schools or 89.3% of all public schools were designated as evacuation shelters
  - (2) Development status of disaster protection facilities/equipment of schools designated as evacuation shelters is as follows:
    - Toilets in gymnasium: 78.0%
    - Toilets accessible from outdoors: 65.7%
    - Disaster prevention/stockpile warehouses, etc. on school premises: 35.2%
    - Equipment to secure water (water tank, swimming pool with a purification system, well, etc.): 29.7%
    - Non-utility power generator to prepare for power outage (including portable types): 18.0%
    - Emergency communication equipment (Priority telephone links in disaster, disaster management radio communications, etc.): 30.2%
  - (3) 32.7% of the local governments have disaster response manuals with consideration of evacuation shelter functions.

### 3. Future plans

- The survey results will be sent to boards of education and prefectures across Japan and published on the website of the Institute at:  
<http://www.nier.go.jp/shisetsu/pdf/bousaikinou2011.pdf>

Contact information

Educational Facilities Research Center, National Institute for Educational Policy Research

Director Koichi Shinpo, Senior Researcher Masato Shimbo, Research Specialist Atsushi Fujii

Telephone: 03-6733-6992

# Results of a Condition Survey on Disaster Protection Functions of School Facilities

Educational Facilities Research Center, National Institute for Educational Policy Research

School facilities are places of learning for children and at the same time have a role of evacuation sites for local residents in a disaster. It is widely known that schools accommodated a large number of evacuees after large-scale disasters in the past. They made a big contribution to their evacuation also after the Great East Japan earthquake, when 622 schools were used as shelters at the peak (March 17, 2011) (see Reference Material).

On the other hand, schools used as shelters faced various issues in their evacuation functions including securement of electricity and water, lack of heating equipment and communication disruption. The Urgent Recommendation concerning school facilities published by the Ministry of Education, Culture, Sports, Science and Technology on July 7 pointed out “there is a need to change the way of thinking in future development/improvement of school facilities to provide functions necessary for emergency evacuation sites in addition to educational functions.”

In response, the National Institute for Educational Policy Research conducted a survey of disaster protection functions of the public schools across Japan (excluding Iwate, Miyagi and Fukushima Prefectures). Survey slips were sent in June 3, 2011, to ask about the conditions as of May 1 of the same year.

Results of the survey are as described below. It was found that 89.3% of public schools were designated as evacuation shelters but the designation was not always accompanied by the expected disaster prevention functions.

This was the second national survey as the institute conducted a similar survey also in 2006. The results of the previous survey are described in “For improvement of disaster protection functions of school facilities” (August 2007) at <http://www.nier.go.jp/shisetsu/pdf/bousaitsuiki.pdf>

## 1. Outline of the condition survey

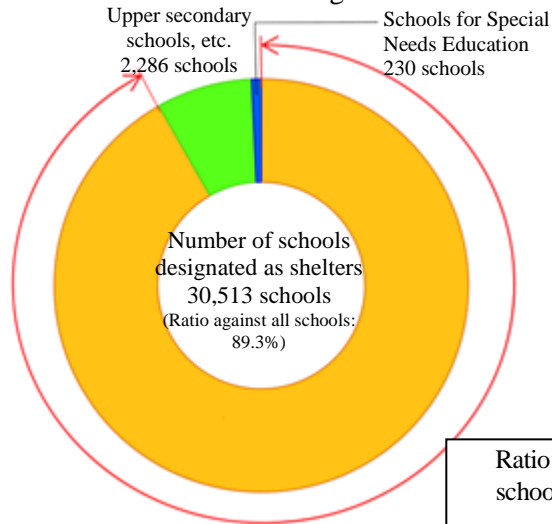
- Survey subject: elementary schools, lower secondary schools, upper secondary schools, secondary education schools, and Schools for Special Needs Education in Japan (excluding Iwate, Miyagi and Fukushima prefectures)
- Survey timing: as of May 1, 2011
- Survey method: Survey slips were sent to all prefectural boards of education excluding those of the three prefectures mentioned above. All prefectures to which survey slips were sent responded.
- Survey items: (1) Number of schools designated as evacuation shelters
- (2) Status of the development of disaster protection facilities/equipment of schools
  - Toilets in gymnasiums
  - Toilets accessible from outdoors
  - Disaster prevention/stockpile warehouse, etc. on school premises
  - Equipment to secure water (water tank, swimming pool with a purification system, well, etc.)
  - Non-utility power generator to prepare for power outage (including portable types)
  - Emergency communication equipment (Priority telephone links in disaster, disaster management radio communications, satellite phones, etc.)
- (3) Status of formulation of disaster response manuals with consideration of evacuation shelter functions

#### (4) Disaster protection consideration in school facility design

##### 2. Number of schools designated as evacuation shelters

- 89.3% of the public schools in Japan or 30,513 schools are designated as evacuation shelters
- 91.8% of them (27,997 schools) are municipal schools
- The number of schools designated as shelters declined by 3.1% (from 31,482 to 30,513 schools,) because the total number of schools declined due to school consolidation, etc. The ratio of designation remained almost the same as that of the previous survey.

Figure1 and Table 1 Number of schools designated as shelters



School type		Total number of schools	Schools designated as shelters	Ratio* (%)
Municipal schools		29,995 (31,008)	27,997 (29,039)	93.3 (93.7)
Prefectural schools	Upper secondary, etc.	3,385 (3,588)	2,286 (2,261)	67.5 (63.0)
	Special needs education	805 (765)	230 (182)	2.8.6 (23.8)
Total		34,185 (35,361)	30,513 (31,482)	89.3 (89.0)

\* Figure of the survey in May 2006 in ( ) (excluding Iwate, Miyagi and Fukushima prefectures)

##### 3. Development status of disaster protection facilities/equipment of schools designated as evacuation shelters

- The development status of the six items that are considered to be basic functions of an evacuation shelter in schools designated as evacuation shelters was surveyed.
- 78.0% and 65.7% of the schools had toilets in the gymnasium and those accessible from outdoors respectively. However, the ratio was only 35.2% for disaster prevention/stockpile warehouse, 29.7% for equipment to secure water, and 18.0% for a non-utility power generator. The ratio for emergency communication equipment, the item newly added in this survey, was 30.02%.
- The ratios increased slightly from the previous survey but the rate of increase is lower compared with the ratio of earthquake-resistant school facilities, which increased from 54.7% to 73.3%.

Table 2 Status of the development of disaster protection facilities/equipment of schools designated as evacuation shelters

Item	Municipal schools			Prefectural schools						Total		
	Number of schools designated as evacuation shelters	Schools with the facilities/equipment	Ratio (%)	Upper secondary schools, etc.			Schools for Special Needs Education			Number of schools designated as evacuation shelters	Schools with the facilities/equipment	Ratio (%)*
				Number of schools designated as evacuation shelters	Schools with the facilities/equipment	Ratio (%)	Number of schools designated as evacuation shelters	Schools with the facilities/equipment	Ratio (%)			
Toilets in the gymnasium	27,997	22,142	79.1	2,286	1,496	65.4	230	170	73.9	30,513	23,808	78.0 (75.4)
Toilets accessible from outdoors		18,216	65.1		1,707	74.7		125	54.3		20,048	65.7 (60.9)
Disaster prevention/stockpile warehouses		10,212	36.5		479	21.0		63	27.4		10,754	35.2 (28.8)
Water purification system for the water tank/swimming pool		8,230	29.4		740	32.4		87	37.8		9,057	29.7 (28.2)
Non-utility power generator		4,715	16.8		609	26.6		177	77.0		5,501	18.0 (14.5)
Communication equipment		8,784	31.4		397	17.4		37	16.1		9,218	30.2 —

Figure of the survey in May 2006 in ( ) (excluding Iwate, Miyagi and Fukushima prefectures)

- The survey results for the existence of western-style toilets considering the use by people with special needs (elderly, people with disabilities, etc.): 48.4% of toilets in gymnasiums and 29.0% of those accessible from outdoors included western-style toilets. The ratios increased by 16.3% and 8.9% respectively compared with the previous survey.

Table 3 Ratio of schools with western-style toilets in the gymnasium and those accessible from outdoors or in the gymnasium

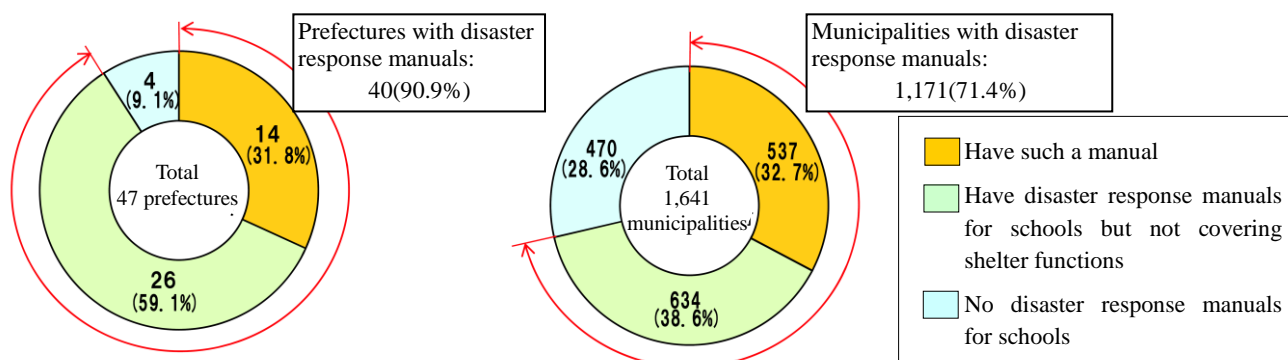
Item	Municipal schools			Prefectural schools						Total		
	Number of schools with appropriate toilets	Number of schools with western-style toilets	Ratio (%)	Upper secondary schools, etc.			Schools for Special Needs Education			Number of schools with appropriate toilets	Number of schools with western-style toilets	Ratio (%)*
				Number of schools with appropriate toilets	Number of schools with western-style toilets	Ratio (%)	Number of schools with appropriate toilets	Number of schools with western-style toilets	Ratio (%)			
Toilets in the gymnasium	22,142	10,547	47.6	1,496	844	56.4	170	141	82.9	23,808	11,532	48.4 (32.1)
Toilets accessible from outdoors	18,216	5,167	28.4	1,707	574	33.6	125	80	64.0	20,048	5,821	29.0 (20.1)

Figure of the survey in May 2006 in ( ) (excluding Iwate, Miyagi and Fukushima prefectures)

#### 4. Formulation of disaster response manuals with consideration of evacuation shelter functions

- In order to ensure smooth operation of an evacuation shelter, it is important for the disaster management department and the board of education to coordinate and cooperate to formulate an evacuation shelter operation manual.
- 90.9% of prefectures and 71.4% of municipalities have disaster response manuals for schools. About one third of the manuals take evacuation shelter functions into account.

Figure 2 Formulation of disaster response manuals with consideration of evacuation shelter functions

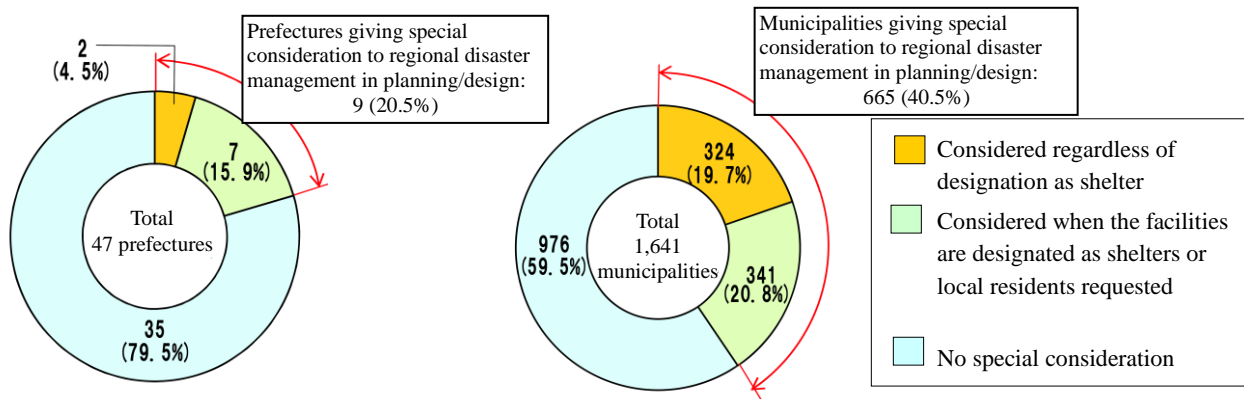


#### 5. Consideration of disaster protection in design and construction of school facilities

##### (1) Special consideration of disaster protection in design of school facilities

- Only 20.5% of the prefectures and 40.5% of the municipalities gave special consideration to use as evacuation shelters when designing school facilities.

Figure 3 Consideration of disaster prevention in planning and design of school facilities

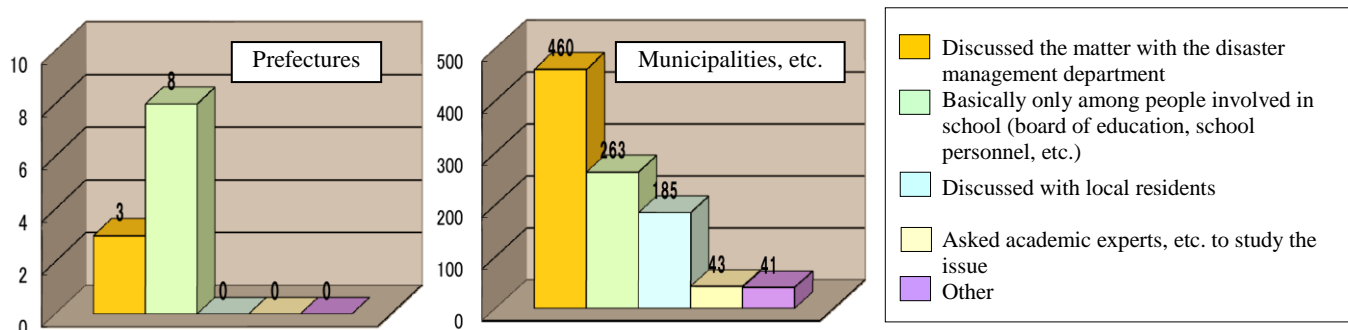


\*The municipalities that answered they gave such consideration in question (1) (9 prefectures and 665 municipalities) were asked the questions below

(2) Status of discussion on the consideration of disaster protection in designing school facilities (multiple answers)

- Concerning the approach for consideration of disaster prevention, the largest number of prefectures discussed “only among people involved in school” followed by “discussed the matter with the disaster management department.” On the other hand, the largest number of municipalities “discussed the matter with the disaster management department”, followed by “only among people involved in school” and “discussed the matter with local residents.”

Figure 4 Approach to discussion of consideration of regional disaster prevention (multiple answers)



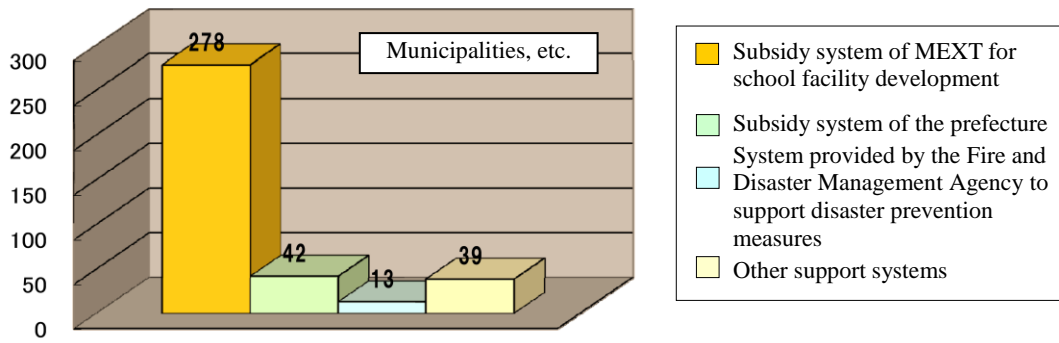
(3) Setting special area for evacuation of People Requiring Assistance During a Disaster

- None among 9 prefectures and only 93 out of 665 municipalities set special areas for evacuation for People Requiring Assistance During a Disaster separately from those for other evacuees.

(4) Financial support system used for the development of school facilities with disaster protection functions (multiple answers)

- Municipalities were asked what financial support system they used for the development of school facilities with disaster protection functions. In addition to subsidy systems of MEXT, they used support systems of prefectures, the Fire and Disaster Management Agency and other state organs (Cabinet Office, the Ministry of Internal Affairs and Communications, the Ministry of Land, Infrastructure, Transport and Tourism, the Ministry of the Environment, etc.)

Figure 5 Financial support system used for the development of school facilities with disaster protection functions



<<Other support systems>>

- Cabinet Office: Model project to develop regional disaster protection center facilities, Special grants for regional vitalization/infrastructure, Special grants for regional vitalization/economic-crises countermeasures, Special grant for regional vitalization and life-assistance
- Ministry of Internal Affairs and Communications: Municipal merger promotion system subsidy, Remote area bonds
- Ministry of Agriculture, Forestry and Fisheries of Japan: Subsidy for rural development
- Ministry of Economy, Trade and Industry: Grants for area-locating electric power stations, Grants for area-locating petroleum reserving facilities
- Ministry of Land, Infrastructure, Transport and Tourism: Urban renaissance project, Community renovation grants, Grants for comprehensive infrastructure development
- Ministry of Defense: Subsidy for maintenance related to soundproofing project, Soundproofing project

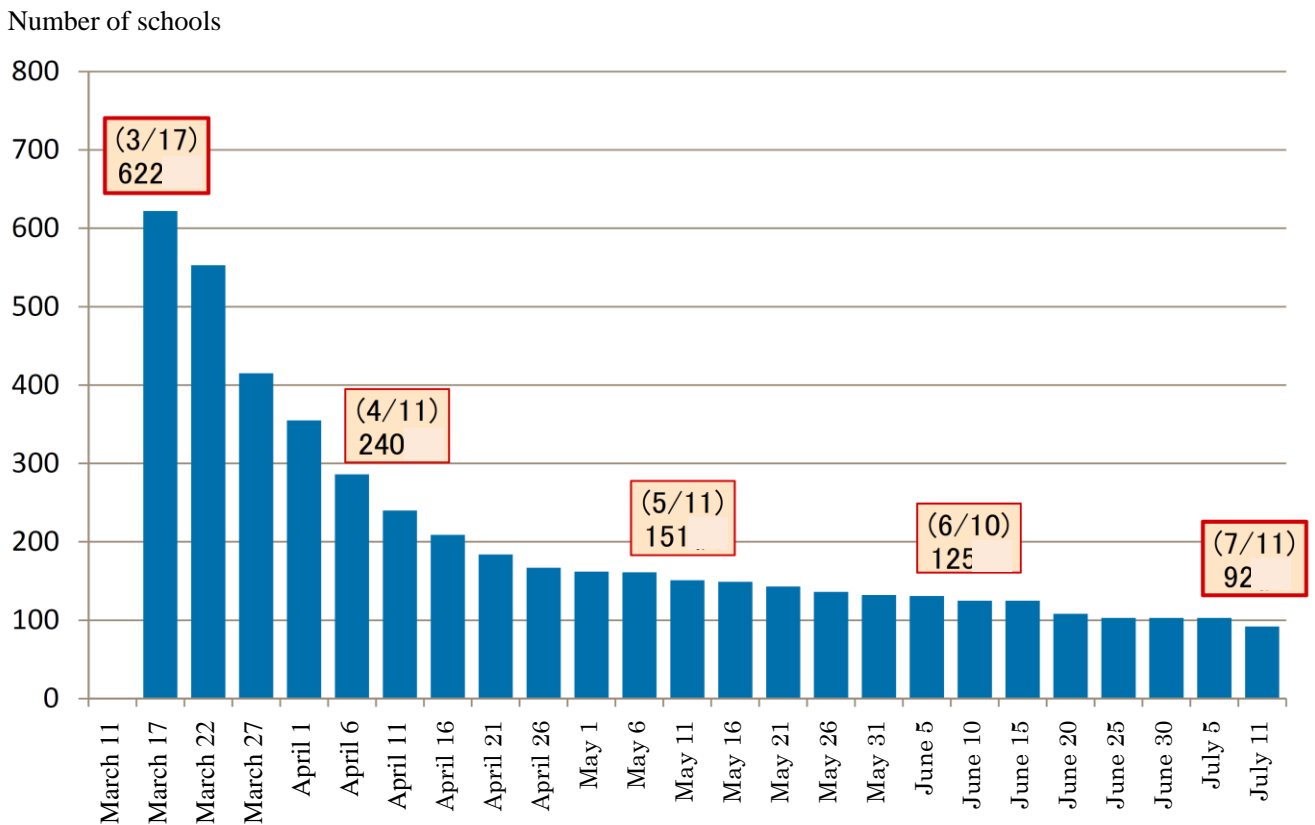
[Reference material]

### Changes in the number of schools used as evacuation shelters after the Great East Japan Earthquake

The number of the schools used as evacuation shelters was largest on March 17 (Thursday) when 622 schools were used as shelters in 11 prefectures. Later, the number gradually decreased but 92 schools in three prefectures of Iwate, Miyagi and Fukushima are used as shelters as of July 11 (Monday.)

(Source: MEXT press release materials)

Figure 6 Changes in the number of schools used as evacuation shelters after the Great East Japan Earthquake (those known to MEXT)



\*Created based on MEXT press release materials