

December 25, 2012

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 on disaster protection facilities/equipment of public schools designated as emergency evacuation sites in Japan following the survey in the last fiscal year. The center publicly discloses the compiled results.

1. Purpose and background

- School facilities have a role as emergency evacuation sites for local residents and made a big contribution to their evacuation after the Great East Japan earthquake. On the other hand, schools used as shelters faced various issues, including the securing of electricity and water.
- Individual local governments are expected to endeavor to develop facilities/equipment of evacuation shelters based on their regional disaster prevention plans. The Emergency Recommendations (note) compiled and made public by MEXT in last year states the need for consideration in cooperation between boards of education and disaster management departments.

Note: Urgent Recommendation “Concerning School Facility Improvement in Light of the Damage Caused by the Great East Japan Earthquake.” (made public in July 2011)

- Against this background, NIER conducted a condition survey on disaster protection functions of public schools across Japan following the survey in the last fiscal year.

2. Outline of the survey results (as of May 1, 2012)

(1) Designation of emergency evacuation site

- Schools designated as evacuation sites: 32,333 schools or 90% of all public schools in Japan (30,513 schools (89%) in the previous year, excluding those in Iwate, Miyagi, and Fukushima prefectures)

(2) Coordination/cooperation for improvement of disaster protection functions

- Roles of the board of education and the disaster management departments are defined in a disaster prevention plan, etc.: 59% (no data in the previous fiscal year)
- Functions that would be necessary for an evacuation shelter have been or are being considered: 50% (no data in the previous fiscal year)
- Regional disaster management is considered in planning and design of school facilities: 56% (40% in the previous fiscal year)

(3) State of the development of disaster prevention facilities/equipment

- Schools with disaster prevention/stockpile warehouses on school premises: 38% (35% in the previous fiscal year)
- Schools with toilets accessible from outdoors: 68% (66% in the previous fiscal year)
- Schools with toilets in the gymnasium: 80% (78% in the previous fiscal year)
- Schools with emergency communication equipment: 40% (30% in the previous fiscal year)
- Schools with a non-utility power generator to prepare for power outage(note): 28%

(18% in the previous fiscal year)

- Schools with a water tank and/or a water purification system for the swimming pool and well: 34% (30% in the previous fiscal year)
- Details are described in the accompanying document.

Note: Non-utility power generators in this survey include photovoltaic installations that can supply power in a disaster, batteries and agreements, etc. that give the school priority use of a generator owned by others.

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/bousaikinou2012.pdf>

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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 emergency evacuation sites for local residents in a disaster. Schools made a big contribution to local residents' evacuation after the Great East Japan Earthquake. On the other hand, the schools used as evacuation sites faced various issues in their evacuation functions, including securement of electricity and water.

Urgent Recommendation "Concerning School Facility Improvement in Light of the Damage Caused by the Great East Japan Earthquake" compiled by MEXT (made public in July 2011) states "there is a need to change the way of thinking in future development/improvement of school facilities to provide functions necessary for evacuation sites in addition to educational functions so that schools can fulfill their important role as evacuation sites for children and local residents" and that it is necessary to define the extent of the role as an emergency evacuation site that school facilities should fulfill and determine the facilities and equipment that school facilities should have in each stage from the beginning of a disaster to the resumption of school.

While the development and management of public school facilities is carried out by boards of education, the Basic Disaster Management Plan stipulates that local governments must endeavor to develop facilities/equipment necessary to function as evacuation sites based on the disaster prevention plans of the respective regions. Therefore, their disaster management departments should endeavor proactively and in cooperation with the boards of education to develop disaster management systems for school facilities, including the designation of schools as evacuation sites. The Emergency Recommendation, etc. mentioned above also states that for a school to assume a role as an evacuation site for local residents after fulfilling its primary responsibilities, it is important that the board of education, the disaster management department, and local residents respond to situations in close coordination and cooperation.

Against this background, NIER conducted a condition survey on disaster protection functions of public schools across Japan following the survey conducted in the last fiscal year. The purpose of this survey was to identify the state of coordination and cooperation between boards of education and disaster management departments to improve disaster protection functions of school facilities, and the development of the facilities/equipment that were mentioned as functions necessary for an evacuation site in the Emergency Recommendation and other documents mentioned above.

The survey results will be sent to boards of education of prefectures across Japan and published on the website of the Institute (URL is shown below)

- Results of 2012 Survey: <http://www.nier.go.jp/shisetsu/pdf/bousaikinou2012.pdf>

Results of the surveys of disaster protection functions of school facilities conducted last year and fiscal 2006 are also published:

- Results of 2011 Survey: <http://www.nier.go.jp/shisetsu/pdf/bousaikinou2011.pdf>

- Results of 2006 Survey: <http://www.nier.go.jp/shisetsu/pdf/bousaitsuiki.pdf>

1. Outline of the condition survey

- Survey subject: public elementary schools, lower secondary schools, upper secondary schools, secondary education schools, and Schools for Special Needs Education in Japan
- Survey timing: as of May 1, 2012
- Survey method: questionnaires were sent to all prefectural boards of education, and they all responded
- Survey items: the survey was conducted on the following six items ([new] indicates new items)
 - (1) Number of schools designated as evacuation sites
 - (2) Coordination/cooperation system between the board of education and the disaster management department [new]
 - (3) Considerations of disaster protection functions believed to be necessary for an evacuation site [new]
 - (4) Formulation of a utilization plan of school facilities as evacuation sites
 - (5) Consideration of regional disaster prevention in planning and design of school facilities [partially new]
 - (6) Development status of disaster protection facilities/equipment of schools
 - Disaster prevention/stockpile warehouses [partial new]
 - Toilets accessible from outdoors, toilets in gymnasiums
 - Emergency communication equipment (Priority telephone links in disaster, disaster management radio communications, satellite phones, etc.)
 - Non-utility power generator, etc. (including portable types)
 - Water tank, water purification system for the swimming pool, well, etc.
 - Space for protection of privacy of women and people needing assistance [new]
 - Barrier-free gymnasiums and schoolhouses (with wheelchair ramps, multipurpose toilets, etc.) [new]

2. Number of schools designated as evacuation sites

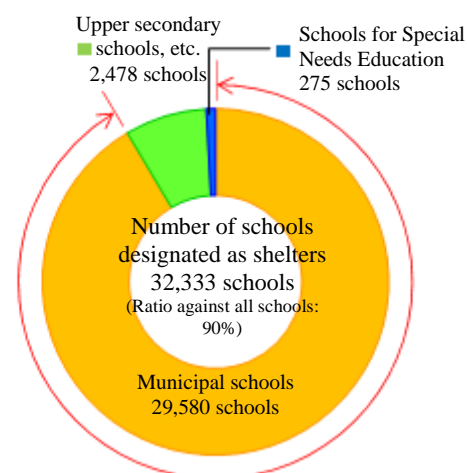
- 89.6% (89.3% in the previous year) of the public schools in Japan or 32,333 schools are designated as evacuation sites
- 91.5% (91.8% in the previous year) or 29,580 schools of the schools designated as evacuation sites are municipal schools
- The ratio of schools designated as evacuation sites is almost the same as that of the previous survey.

Note: the survey of the last year did not cover the schools in Iwate, Miyagi, and Fukushima prefectures.

Table 1 Number and ratio of schools designated as shelters

School type		Total number of schools	Schools designated as shelters	Ratio (%)
Municipal schools		31,642	29,580	93.5
		29,675	27,822	93.8
		(29,995)	(27,997)	(93.3)
Prefectural schools	Upper secondary, etc.	3,578	2,478	69.3
		3,338	2,348	70.3
		(3,385)	(2,286)	(67.5)
	Special needs education	868	275	31.7
813		268	33.0	
		(805)	(230)	(28.6)
Total		36,088	32,333	89.6
		33,826	30,438	90.0
		(34,185)	(30,513)	(89.3)

Figure 1 Number and ratio of schools designated as shelters



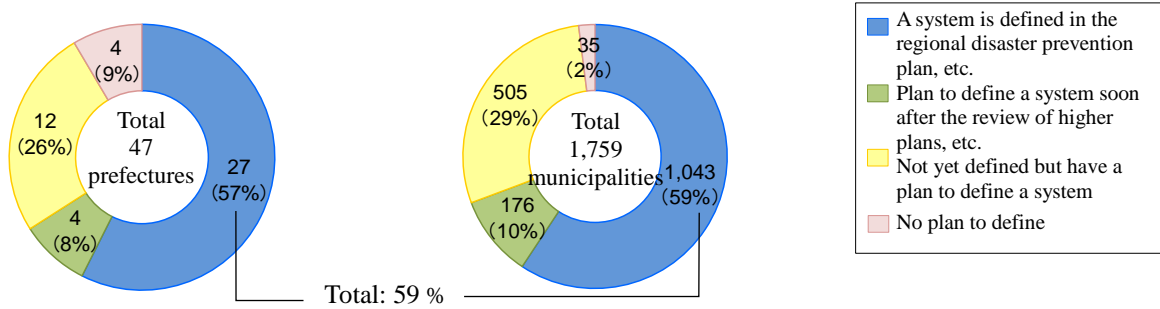
- Numbers in the upper row shows the national figures
 - Numbers on the middle row are as of May 2012 and those in () are as of May 2011. These numbers do not include Iwate, Miyagi, and Fukushima prefectures.

Ratio of municipal schools against all schools designated as shelters: 91.5%

3. Coordination/cooperation system between the board of education and the disaster management department [New]

- Survey results on whether a system had been defined for coordination/cooperation between the board of education and the disaster management department while ensuring clear role sharing: 57% of the prefectures and 59% of the municipalities, 59% in total, had established such systems in their regional disaster prevention plan.

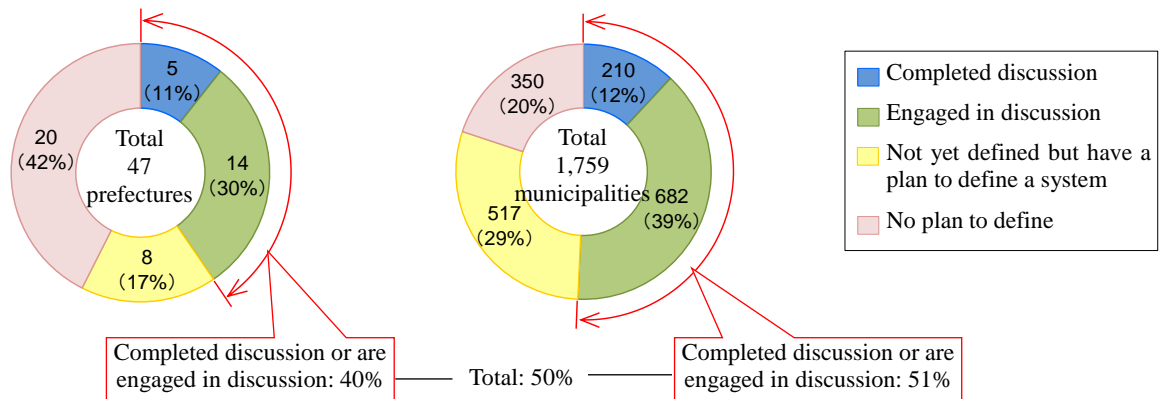
Figure 2 Defining of coordination/cooperation system between the board of education and the disaster management department



4. Study of disaster protection functions believed to be necessary for an evacuation site [new]

- Survey results on whether they were considering facilities/equipment necessary for an evacuation site: 40% of the prefectures and 51% of the municipalities, 50% in total completed discussion or were engaged in discussion.

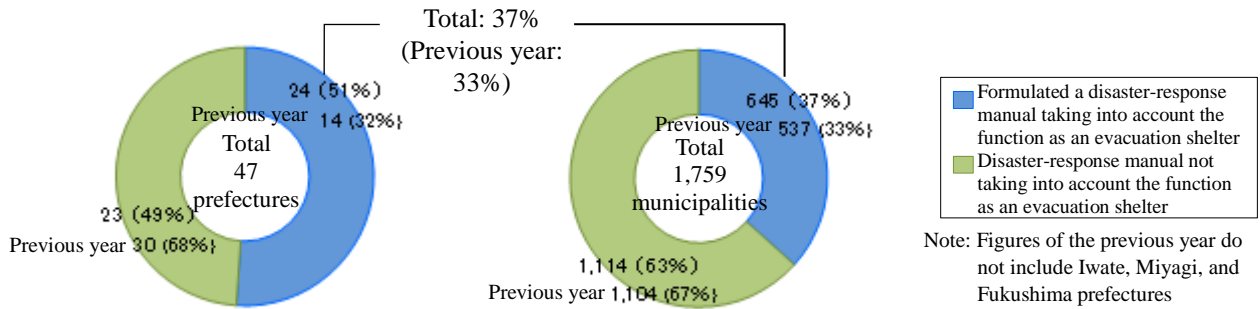
Figure 3 Status of the consideration of disaster protection functions believed to be necessary for a shelter



5. Formulation of a utilization plan of school facilities as evacuation sites

- It is important to consider emergency disaster responses beforehand including a plan to use facilities as evacuation sites (planning spaces to allocate to local residents to ensure smooth resumption of education activities) and facility inspection before opening of evacuation shelters.
- Survey results on whether the disaster-response manuals, etc. for schools considered the use of school facilities as evacuation sites: 51% of the prefectures and 37% of the municipalities had plans to use them as evacuation sites.

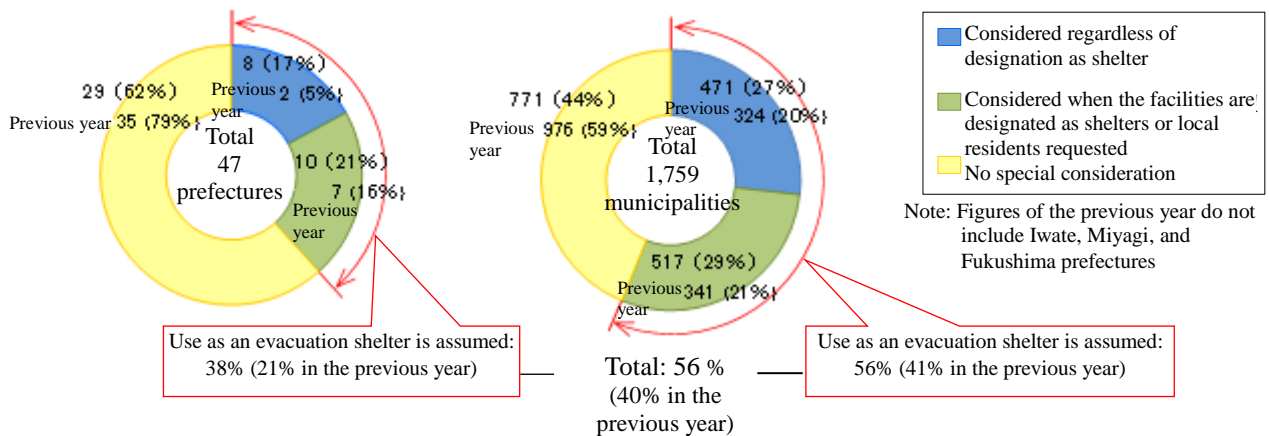
Figure 4 Status of the formulation of a school facilities utilization plan to use them as emergency evacuation sites



6. Consideration of the regional disaster management in design and construction of school facilities.

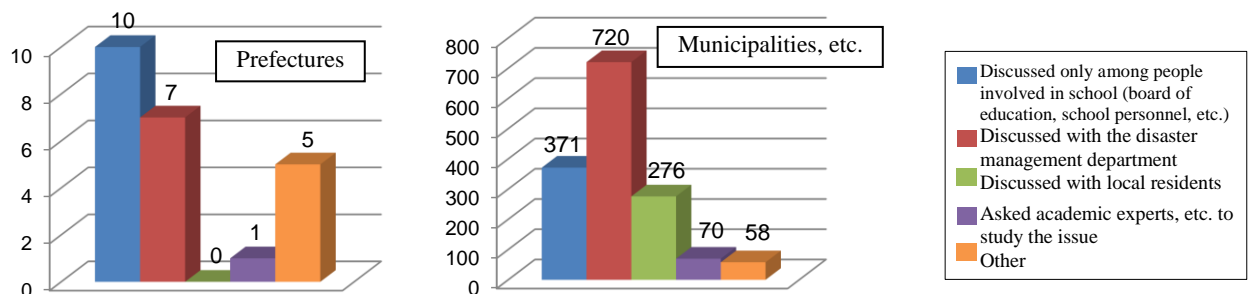
- Special considerations for use as an evacuation shelter when planning and designing school facilities, the ideal consideration, inspection and maintenance of disaster protection facilities/equipment [new], and the financial support system used for the development of school facilities with disaster protection functions were surveyed.
- 38% of the prefectures and 56% of the municipalities, 56% in total, gave consideration to regional disaster prevention when planning and designing school facilities.

Figure 5 Consideration of regional disaster prevention in planning and design of school facilities



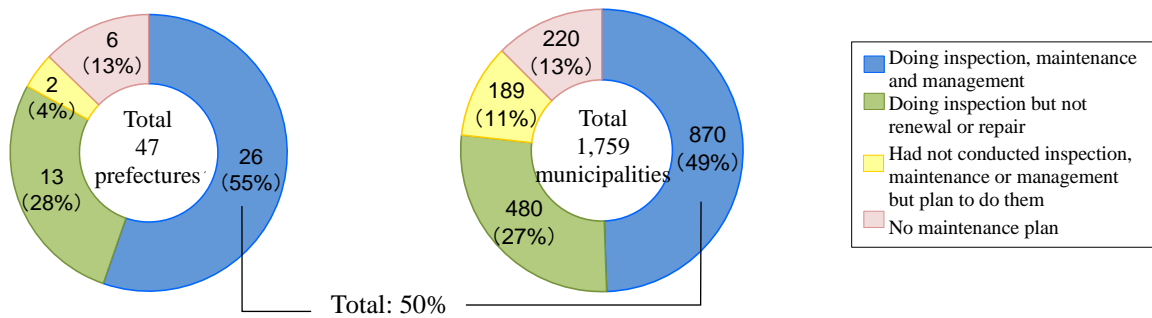
- In the approaches of consideration of regional disaster prevention, the largest number of prefectures “discussed only among people involved in school,” while the largest number of municipalities “discussed the matter with the disaster management department.”

Figure 6 Approach to discussion of consideration of regional disaster prevention



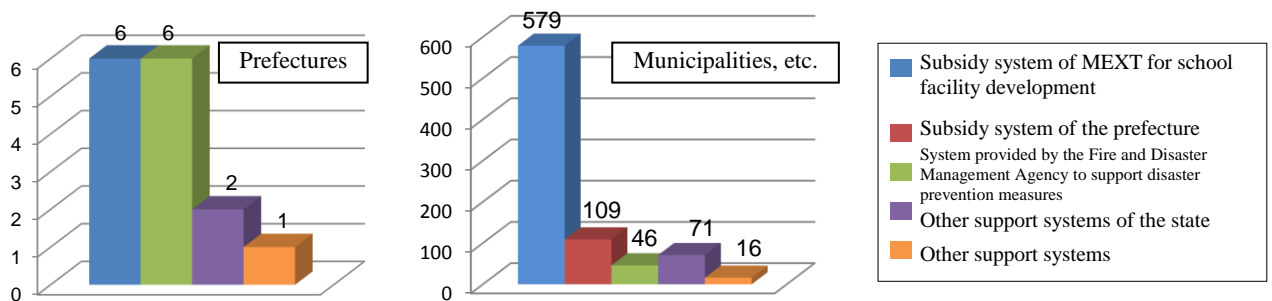
- Inspection and maintenance/management of disaster protection facilities/equipment: 55% of the prefectures and 49% of the municipalities, 50% in total, were conducting regular inspection and ensured appropriate maintenance and management.

Figure 7 Inspection and maintenance/management of disaster protection facilities/equipment



- Financial support system used for the development of facilities with disaster protection functions: The subsidy system of the Fire and Disaster Management Agency and the support system of MEXT are both used by the largest number of prefectures; the latter was used by the largest number of municipalities.

Figure 8 Financial support system used for the development of school facilities with disaster protection functions



<<Examples of support systems provided by the government>>

- MEXT: Charge for public school facilities expense, Grant for improvement of school facility environment
- Reconstruction Agency: the Great East Japan Earthquake Reconstruction grants
- 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, Disaster prevention project bonds, Emergency disaster prevention/mitigation bonds
- Ministry of Health, Labour and Welfare: Program for lifeline function enhancement, etc.
- 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: City Disaster Prevention Synthesis Promotion Project, Urban renaissance project, Community renovation grants, Earthquake countermeasure package for sewerage systems
- Ministry of the Environment: Project of the Renewable Energy Introduction Promotion Fund
- Ministry of Defense: Subsidy for maintenance related to soundproofing project, Soundproofing project for education facilities, etc., Soundproofing project for facilities around defense facilities

7. Development status of disaster protection facilities/equipment of schools

- Each local government is expected to make efforts to develop disaster protection facilities/equipment based on the regional disaster prevention plan according to the local conditions. The results of the survey on their situation are as follows:
 - Disaster prevention/stockpile warehouse outside school, securement of space for people requiring assistance and for protection of privacy of women, wheelchair ramps in gymnasiums and school buildings, and multipurpose toilets in gymnasiums and school buildings are new items in this survey.
 - Disaster protection facilities/equipment may be developed not in the school but in neighborhood facilities depending on the regional disaster prevention plan.

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 (%)				
Disaster prevention/stockpile warehouses (on school premises)	29,580	11,731	39.7	2,478	599	24.2	275	84	30.5	32,333	12,414	38.4 (35.2)	
Stockpile warehouse, etc. (Including those outside the school)		14,392	48.7		639	25.8		86	31.3		15,117	46.8	—
Toilets accessible from outdoors		19,793	66.9		1,887	76.2		150	54.5		21,830	67.5 (65.7)	
Toilets in the gymnasium		23,941	80.9		1,676	67.6		193	70.2		25,810	79.8 (78.0)	
Multipurpose toilets in the gymnasium		5,660	19.1		433	17.5		101	36.7		6,194	19.2	—
Multipurpose toilets in the school buildings		12,193	41.2		1,291	52.1		203	73.8		13,687	42.3	—
Communication equipment		12,327	41.7		532	21.5		71	25.8		12,930	40.0 (30.2)	
Non-utility power generator, etc.*		7,830	26.5		863	34.8		206	74.9		8,899	27.5 (18.0)	
Water tank, water purification system for the swimming pool or well		9,888	33.4		852	34.4		98	35.6		10,838	33.5 (29.7)	
Space for people requiring assistance		10,216	34.5		1,163	46.9		140	50.9		11,519	35.6	—
Space for protection of women's privacy		9,836	33.3		1,041	42.0		123	44.7		11,000	34.0	—
Wheelchair ramps in gymnasiums		12,753	43.1		911	36.8		170	61.8		13,834	42.8	—
Wheelchair ramps in school buildings		14,489	49.0		1,412	57.0		201	73.1		16,102	49.8	—

* Non-utility power generators in this survey include photovoltaic installations that can supply power in a disaster, batteries, and agreements, etc. that give the school priority use of a generator owned by others.

* Numbers in () in the ratio boxes are as of May 2011 and do not include those of Iwate, Miyagi and Fukushima Prefectures. Items without numbers in () were not surveyed in the previous year.

- The number and ratio of schools with western-style toilets accessible from outdoors or in the gymnasium, schools with communication equipment capable of intercommunication, and schools with non-utility power generators, etc. to ensure a power source for evacuation shelter are as follows:

Table 3 Ratio of schools with western-style toilets 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 accessible from outdoors (western-style)	19,793	5,917	29.9	1,887	661	35.0	150	92	61.3	21,830	6,670	30.6 (29.1)
Toilets in the gymnasium (western-style)	23,941	12,014	50.2	1,676	986	58.8	193	171	88.6	25,810	13,171	51.0 (48.5)

* Numbers in () in the ratio boxes are as of May 2011 and do not include those of Iwate, Miyagi and Fukushima Prefectures.

Table 4 Ratio of schools with communication equipment capable of intercommunication

Item	Municipal schools			Prefectural schools						Total		
	Number of schools with communication equipment	Number of schools with intercommunication equipment	Ratio (%)	Upper secondary schools, etc.			Schools for Special Needs Education			Number of schools with communication equipment	Number of schools with intercommunication equipment	Ratio (%)
				Number of schools with communication equipment	Number of schools with intercommunication equipment	Ratio (%)	Number of schools with communication equipment	Number of schools with intercommunication equipment	Ratio (%)			
Communication equipment (intercommunication)	12,327	9,861	80.0	532	379	71.2	71	49	69.0	12,930	10,289	79.6

Table 5 Ratio of non-utility power generators for use in evacuation shelter, and agreement, etc. that gives the school priority use of a generator owned by others

Item	Municipal schools			Prefectural schools						Total		
	Number of schools with non-utility power generator	Number of schools with non-utility power generator for use in shelters	Ratio (%)	Upper secondary schools, etc.			Schools for Special Needs Education			Number of schools with non-utility power generator	Number of schools with non-utility power generator for use in shelters	Ratio (%)
				Number of schools with non-utility power generator	Number of schools with non-utility power generator for use in shelters	Ratio (%)	Number of schools with non-utility power generator	Number of schools with non-utility power generator for use in shelters	Ratio (%)			
Non-utility power generator, etc. (for evacuation shelter)	7,830	6,763	86.4	863	484	56.1	206	57	27.7	8,899	7,304	82.1
Non-utility power generator, etc. (agreement, etc.)		297	3.8		22	2.5		4	1.9		323	3.6