



**ASIAN DISASTER REDUCTION CENTER**  
**Visiting Researcher Program**  
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**A study on the issues to be considered in improving  
the requirements for evacuation shelter during disaster**

**(Final report)**

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### **Background:**

The number of disasters and accidents and the amount of damage caused in Mongolia has been increasing in recent years.

During disasters, possibility of evacuation of the people to a safety place or evacuation shelter until the situation normalizes, so the Government of Mongolia and the National Emergency Management Agency need to be prepared. Therefore, it is necessary to evacuate people from disasters and accidents, prepare to the evacuation shelters and in there the basic needs of people.

### **Research methodology:**

The research paper used the general scientific methods such as analysis, summarize, comparison and observation etc.

### **Scope of the research paper:**

Based on legal documents and actual requirements, the problem of determining the types and designations of shelters specially prepared for the purpose of evacuation shelters disaster affected and injured people until conditions return to normal, as well as their safety, will be studied.

### **Research results:**

In this research, the standard requirements in Japan for evacuation shelters for people in case of an earthquake or any other disaster will be compared with the standards in Mongolia. Then, based on scientific evidence and research, proposals will be made to change the basic requirements for updating the standards, norms, and rules of evacuation shelters during disasters in Mongolia.

**1. AN ANALYSIS OF THE CURRENT SITUATION OF EVACUATION SHELTER DURING DISASTER**

**1.1 Evacuation shelter for use during disaster and its needs**

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1.3.1 About Japan

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1.3.3 Some experiences of used the evacuation shelter during disaster in Japan

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### **Demographic data:**

Mongolia has an estimated population of 3 409 939 people with 1,553,556 km<sup>2</sup> of land area.

### **Climate information:**

Mongolian weather is high, cold, and dry. There are four seasons: winter, spring, summer and autumn.

It has an extreme continental climate with long, cold winters and short summers, during which most precipitation falls.

January and February averages of -20 °C are common, with winter nights of -40 °C occurring most years.

Summer extremes reach as high as +38 °C in the southern Gobi region and +33 °C in Ulaanbaatar.

### **Economics:**

Mongolian economy activities based on livestock, agriculture and mining.

Mongolia has large deposits of coal, fluorite (fluorspar), copper, gold, silver, and other metallic ores.

Agriculture plays the second largest role in the modern economy, accounting for 35% of employment, 11-20% of GDP, 30% of exports, and 14% of foreign exchange revenues.

### **Demographic data:**

Japan has a population of 125.4 million, of which 122.8 million are Japanese nationals (2021 estimates).

### **Climate information:**

The climate of Japan is predominantly temperate but varies greatly from north to south.

The Pacific coast features a humid subtropical climate that experiences milder winters with occasional snowfall and hot, humid summers because of the southeast seasonal wind.

The main rainy season begins in early May in Okinawa, and the rain front gradually moves north. In late summer and early autumn, typhoons often bring heavy rain.

### **Economics:**

Japan has the world's third-largest economy by nominal GDP, after that of the United States and China; and the fourth-largest economy by PPP. As of 2020, Japan's labor force is the world's eighth-largest, and consists of 66.5 million workers. As of 2021, Japan has a low unemployment rate of around 2.8%.

Its main exports are motor vehicles, iron and steel products, semiconductors, and auto parts.

It ranks highly for competitiveness and economic freedom.

## Some experiences of evacuation during accident and hazardous in Mongolia and difficulties encountered

- In 2012, 5-liter liquefied gas fuel cylinder used by a family on the 7th floor of a public apartment in Darkhan-Uul province exploded and was released into the air, causing an explosion and a fire. Also, during the fire there was a power outage.

Since the explosion took place in winter, emergency measures were taken to provide relief to people, prevent them from getting cold, eliminate the effects of the explosion, and rebuild, and about 100 people were evacuated to safety places.

- In 2015, the wall of a public apartment building in Bayangol district of Ulaanbaatar city was in danger of collapsing. Therefore, the governor of Bayangol district has issued the orders "To take measures to prevent potential dangers and risks" and "To take measures to prevent potential dangers and risks, and to evacuate citizens from the apartment at risk of collapse" and took the following measures, respectively.

Approximately, 200 people living in the building that was in danger of collapsing were informed about the situation, advised to move to a safe place immediately, and were released from the building.

- On July 14-16, 2018, mountain floods occurred 3 times in most of Bayan-Olgii province due to continuous heavy rains. Approximately, 2500 citizens affected by the flood were evacuated from the disaster site.

## Some experiences of used the evacuation shelter during disaster in Japan

The Great East Japan Earthquake (GEJE),

- Most facilities, such as schools and community centers, were publicly owned and had been designated as evacuation centers before the GEJE. Right after the GEJE, a number of private facilities such as hotels and temples were also enlisted as the need for centers far exceeded expectations.

Within four months after the disaster, about 75 percent of evacuation centers were closed, although some centers in Tohoku stayed open as long as nine months.

- At peak occupancy, more than 470,000 people were staying at evacuation shelters.

## Difficulties encountered in evacuation shelters:

### ***- Not enough supplies:***

Given the magnitude of the disaster and the number of evacuees, most evacuation facilities lacked sufficient supplies of food, water, clothes, and blankets. In the first days and weeks following the disaster, transporting these essentials to the centers was hampered by damaged roads and a shortage of vehicles and fuel. This problem was exacerbated by the fact that the many temporary facilities were not formally designated centers and therefore had not been stocked with essentials.

### ***- Lack of water and power:***

Furthermore, water and power supply systems were damaged in most of the disaster-affected areas, and in some places were not restored even after one month. These problems made life miserable for the evacuees. The cold weather in northeastern Japan and lack of electric heating in the facilities made many evacuees vulnerable to illness, especially the elderly.

### ***- Self-management by evacuees:***

Although managing evacuation centers is a municipal responsibility, most municipalities in the disaster-affected areas suffered badly from a loss of staff, seriously weakening their capacity to cope with the emergency.

At the beginning, most facilities were supported by local teachers, volunteers, and other civil society groups.

As the evacuation period became extended, evacuees themselves started taking a number of initiatives.

At many shelters, a self-governing body emerged, with leaders and members of various committees selected by the evacuees themselves.

- ***Gender sensitivity:***

There simply wasn't enough privacy for anyone, particularly not for female evacuees-many did not have private spaces where they could change their clothes or breast-feed their babies.

Many centers eventually installed partitions, but it was often too late. It has also been reported that relief goods delivered to these centers were biased in favor of male evacuees.

This was mainly because it was mostly men who were managing the centers, whether they were run by municipalities or by evacuees themselves.

- ***Welfare shelters for those with special needs:***

Many experts have pointed out that evacuees tend to suffer from tremendous stress, especially children, and therefore need special mental health care and counseling services as evacuation periods extend.

But the availability of such services varied from center to center. Taking care of the elderly and others who needed special attention was another big challenge.

At many centers, all the special needs groups had to share the facilities with the other evacuees.

- ***Disaster relief agreement:***

- In 2006 two cities in Fukushima Prefecture entered into a Disaster Relief Agreement: Naraha City, which was affected by the nuclear disaster, and Aizu-Misato City, which was not. When the nuclear disaster happened, most evacuees from Naraha City went to evacuation centers in Aizu-Misato City that were managed by local officials. This was a rare example of successful cooperation between two municipalities, strengthened by their long-standing friendly relationship. In Fukushima most evacuees had to go beyond the prefecture's jurisdictional boundaries because of radiation risks.

## **2. AN ANALYSIS OF THE LEGAL REGULATION OF EVACUATION SHELTER DURING DISASTER**

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### **2.1 An analysis of legal documents defining evacuation shelter standards in Mongolia**

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### **2.2 An analysis of legal documents governing evacuation shelter standards in Japan**

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### **Conclusion of the chapter 2**



# An analysis of legal documents defining the requirements for evacuation shelter during accident and disaster in Mongolia

From the legal documents in force in Mongolia, the following table shows the documents related to evacuation shelter

Laws and rules	The purpose
"Law on Protection from Disasters"	The purpose of this law is to organize prompt and effective disaster prevention activities, and regulate the relationship between emergency organizations and disaster prevention management systems, organization, and activities.
The Resolution No. 340 of 2011 of the Government of Mongolia: 1. "Procedures for the mobilization of forces during disaster" and 2. "Procedures for Evacuation of Citizens during disasters"	1. This procedure regulates relations related to the prevention of potential disasters, evacuation and placement of people, livestock, animals and property in a safe environment. 2. This procedure regulates relations related to the involvement of manpower and equipment for the purpose of carrying out disaster rescue, damage removal, and immediate reconstruction activities.
Deputy Prime Minister's Order No. 75 of 2017 - "Disaster Protection Professional Class Rules"	This rule governs the activities of professional units that aim to prevent potential disasters, search and rescue at disaster sites, eliminate harm, provide medical and humanitarian aid to victims, and support immediate reconstruction operations.
Disaster management plan for governors of provinces, capitals, sums and districts	It is a management document for disaster prevention, preparedness, search and rescue, disaster relief, immediate reconstruction, and humanitarian assistance.
Order No. A/305 of 2020 of the Director of the National Emergency Management Agency - "Requirements for temporary assembly areas, evacuation sites, and evacuation shelters"	The purpose of this requirement is to evacuate the population from the area of the disaster site, dangerous phenomenon, accident, provide first aid to the victims, organize measures to provide food, prepare temporary assembly areas, evacuation sites, and evacuation shelter.

## An analysis of legal documents governing evacuation shelter standards in Japan

In Japan, the standard requirements for evacuation shelters are implemented according to the following guidelines.

- "Shelter Management Guidelines"- (Provides an explanation of specific measures and preparations as they relate to matters described in the Guidelines for Ensuring Satisfactory Living Conditions at Evacuation Shelters, from the designation of evacuation shelters through to their closure);

- "Guidelines for Securing and Managing Toilets at Shelters"- (Sets out guidelines for securing toilets, as one of the matters that administrative bodies supporting those living in evacuation shelters should deal with) and

- "Guidelines for Securing and Managing Welfare Shelters"- (Guidelines that can be used when setting up and managing welfare evacuation shelters after a disaster has occurred, as well as being used by municipalities, etc. under normal circumstances when formulating preparedness measures and manuals).



## Chapter 3.

### **3. IN JAPAN, IMPLEMENTATION AND GOOD PRACTICES OF REQUIREMENTS FOR EVACUATION SHELTER DURING DISASTER**

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#### **3.1 Implementation of legal documents for evacuation shelters during disaster**

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#### **3.2 A comparative study of requirements for evacuation shelter during disaster**

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#### **Conclusion of the chapter 3**



# Implementation of legal documents for evacuation shelters during disaster in Japan

## 1. Method of Operation evacuation shelters:

Community organizations, mainly the community organizations for disaster and welfare management, work together to voluntarily operate the shelters. City officers, facility administrators, and other volunteers will provide assistance as needed. [Examples of the Main Tasks of the Shelter]

- Occurrence of a disaster - one month after the disaster: Confirmation of safety, securing drinking water and food, first-aid station, temporary toilets, etc., installation of baths, acceptance of volunteers, etc.

- About one month after the disaster: In addition to the above, formulation of rules and self-governing bodies, handling of complaints, etc.

## 2. Points to Note for Operation

Provide support for those in need of assistance in times of disaster, and consider the perspectives of both male and female, etc.

- Allocate elderly, handicapped, and sick people to the places in the best environmental conditions.
- Provide disaster information for the visually impaired, hearing impaired, and foreigners.
- Promote barrier-free access and improvement of evacuees' living circumstance (materials and equipment).
- Involve both male and female in decision-making of shelter operation, to consider perspectives of both sexes, including the different needs (privacy, changing rooms, bathrooms, etc.).
- Prevent violence against women and children, etc.



## The following items must be prepared at the evacuation shelters:

- **Indoor emergency shelters and evacuation centers:**  
(Municipal elementary and junior high schools and public facilities)
- **Stockpile emergency food and supplies for 3 days after a disaster (Shelters and stockpiling bases).**  
Food: water, risotto, cookies, milk, etc. Some items are allergy and halal compliant.  
Supplies: blankets, diapers, sanitary products, etc.
- **Small generator (floodlight), battery for recharging.**
- **Infectious disease control supplies:**  
Partition tents, non-contact thermometers, thermal camera, disinfectant, etc.
- **Signing of Disaster Support Agreement:**  
Coagulant for toilets  
Cardboard beds and partitions, tatami mats  
Daily commodities and beverages  
[Supermarkets, convenience stores, home centers, manufacturers]  
Stockpiling, accumulation, and delivery [e.g., transportation companies].
- **Welfare shelters**



Storages belonging to wards and prefectures disaster protection departments and offices are located next to the evacuation shelters of people in times of disaster.

### Miki disaster management park stadium



In Japan, many volunteers are trained and involved in disaster prevention activities. They are organized into Voluntary Disaster Management Organizations (Community Organization for Disaster and Welfare Management “Bokomi”).

Members of voluntary organizations are participating in disaster relief activities.



The measures to be taken during the disaster, the location of the evacuation shelter, how to get there, and what should be there are provided to the citizens as follows.

- **Use of social networks:**

Using websites such as <https://www.bousai.go.jp/index-e.html>, <https://www.kobe-sonae.jp/>, citizens can get information about transmission of emergency information (Information on evacuation, evacuation shelters, and disaster damage) and various disaster management information from government. For example, the following information can be obtained from DRR Portal Site "SONAE to U?" - <https://www.kobe-sonae.jp/>.

- **DRR exhibition room, museum and other building constructions:**

In Japan, there are many museums, exhibition departments, and organizations that educate people about the dangers of various disasters such as earthquakes, floods, and landslides, teach people how to cope with disasters with minimal damage, and provide information about evacuation shelters in the times of a disaster. For example,

- The "Sonae to U" Exhibition room in Kobe is always open to the public, elementary school students, domestic and international group visits during business hours except for New Year's Day, and information about Disaster Management goods, earthquake-proofing and furniture fall prevention goods, DRR education books, aerial photographs of the floor, types of evacuation toilet etc. can be obtained from here.



- **Documentaries and television programs**

Documentaries and television programs with interviews and recordings of citizens who lived during the disaster and were affected by the disaster are very effective tools for understanding the disaster and the condition of the evacuation shelter at that time.

Documentaries and programs can be viewed at the aforementioned museums and events.

- **Books, manuals and newspapers for the general public:**

Many books, newspapers, magazines, and manuals are published and distributed to citizens about the location of evacuation centers and shelters, the way to get there, and how to protect yourself and others from disasters.



- **Disaster risk reduction events:**

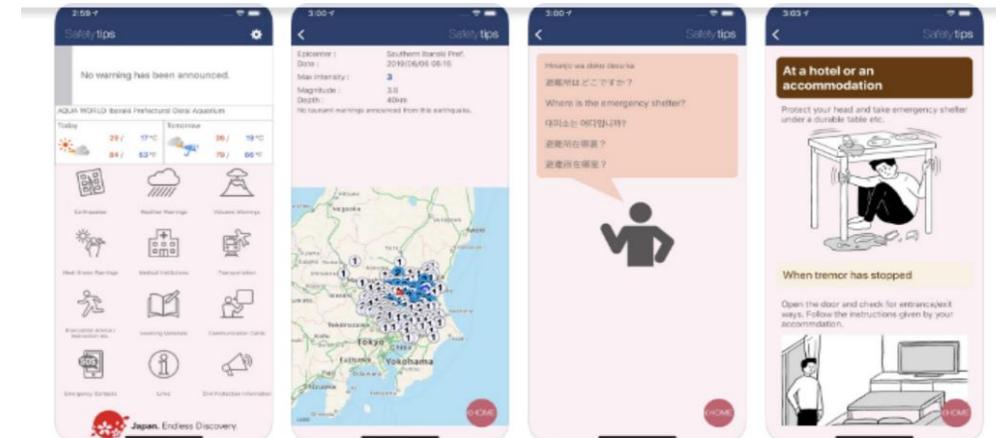
In Japan, many events are organized with the aim of providing knowledge to citizens about the dangers of disasters, evacuation shelters, and how to protect oneself and others during disasters. For examples,

- These disaster drill programs, developed and improved by listening to the victims of the Great Hanshin-Awaji Earthquake in 1995 and those of the Great East Japan Earthquake in 2011, provide not only interesting activities but also practical activities that are helpful at times of earthquake disasters.



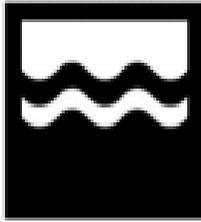
- **Use mobile applications:**

Easy-to-use apps such as "Japan shelter" and "Safety tips" have been developed that allow citizens to use their phones to locate evacuation shelters in the times of a disaster.



- **Exiting JIS-Prescribed Symbol for Evacuation Sites:**

Since 2016, the Hazard Specific Symbols and Hazard Specific Evacuation Guidance Sign System relating to types of signage for guiding people to evacuation sites using those symbols were instituted/revised in Japan.

Tsunami/storm surge	Flood/rainfall inundation	Debris flow	Slope failure/landslide	Widespread fire
				

*Explanation: 1) Flood; (2) Slope failure, debris flow, and landslide; (3) Storm surge; (4) Earthquake; (5) Tsunami; (6) Widespread fire; (7) Rainfall inundation; (8) Volcano.*

The following decisions were made in establishing this JIS.

- The evacuation methods for tsunami and storm surge are similar, so these have been combined under a single symbol
- The evacuation methods for flood and rainfall inundation are similar, so these have been combined under a single symbol
- Debris flow and slope failure / landslide are different phenomena, so separate symbols have been established
- Earthquakes are represented by the phenomena that they cause (for example, tsunami, widespread fire, etc.)
- Volcanoes require evacuation to a shelter or similar, so efforts will be made to notify people of these
- Symbols for tsunami evacuation sites and tsunami evacuation buildings already exist, so these will continue to be used.

## Exiting JIS-Prescribed Symbol for Evacuation Sites

Evacuation site	Tsunami evacuation site	Tsunami evacuation building	Evacuation shelter
			

### Example for Information Board Using the Hazard Specific Evacuation Guidance Sign System



- Graphical symbol indicating evacuation site (required)
- General graphic symbols for disaster types (required)
- A mark indicating whether evacuation is suitable or not (A "○" mark indicates a site is suitable for that type of disaster, and a "x" mark indicates it is not.)
- Indication of evacuation site (example of how to show its name)
- It is desirable to indicate in both Japanese and foreign language(s) (example in English).

## **A comparative study of requirements for evacuation shelter during disaster:**

In Japan, the requirements for evacuation shelters are governed by the following guidelines. Its including:

- "Shelter Management Guidelines";
- "Guidelines for Securing and Managing Toilets at Shelters" and
- "Guidelines for Securing and Managing Welfare Shelters".

"Shelter Management Guidelines" has 4 chapters: Operation to be performed in normal times, operation of evacuation centers (during disaster), responding to needs and elimination of shelters. These groups are divided into the following sub-groups and implement the relevant requirements.

In this guideline, there are a number of provisions that can be added to the legal documents of our country and are aimed at citizens staying in evacuation shelters. For examples;

- The issue of changing and washing clothes of the people who arrived at the evacuation center was specially submitted. In doing so, it was legislated that "For disaster victims who evacuated with only the clothes on their backs, clothing should be taken into consideration. Beginning with underwear, try to secure clothing that is appropriate for their gender and age. Once the situation settles down, aim to create an environment where the victims can wash their clothes by themselves".

- The guidelines also address the issue of domestic pets kept by residents who arrived at the evacuation shelter. In doing so, it was legislated that "Consider specific measures such as securing a place for the pet owner to keep the pet at the shelter responsibly and preparing a cage or other container for the pet".

- The issue of eliminate and consolidation of resettlement premises is very important, and this issue will also be regulated by this guideline.

- "Guidelines for Securing and Managing Toilets at Shelters" has 3 chapters: Current situation and challenges, basic approach to securing and managing toilets and specific measures to secure toilets. In each chapter, the issues necessary to implement the relevant requirements were considered as sub-chapters.

In this guideline, there are a number of provisions that can be added to the legal documents of our country and are aimed at citizens staying in evacuation shelters. For examples;

- In securing and managing toilets during disasters, efforts should be made to actively incorporate the views of disabled persons and women on the location of toilets and security measures, and to ensure that toilets for disabled persons are separate from those for the general public. Also, it has been carefully calculated the difficulties of using toilets for people with disabilities, children, women, and the elderly.
- The number of toilets required in the evacuation shelter is calculated using a special method based on the total number of private toilets and emergency toilets in the facility.
- There are 5 different types of toilets used in evacuation centers: portable toilet, simple toilet, temporary toilets, manhole toilet and other toilets the purpose of each of them is clearly specified in this guideline. Also, toilets can be combined together. The combination of toilets in shelters during a disaster should be chosen to be suitable according to the passage of time since the disaster, the circumstances of the users and the facilities of the shelter, in addition to the lifeline situation and location of the shelter.

- "Guidelines for Securing and Managing Welfare Shelters" has 3 chapters: Efforts in peacetime, Efforts in times of disaster and Use of welfare shelters, etc. under agreements. In each chapter, the issues necessary to implement the relevant requirements were considered as sub-chapters. Significance and purpose of welfare shelters and how to use this guideline, experiences of using welfare shelters are also included.

In this guideline, there are a number of provisions that can be added to the legal documents of our country and are aimed at citizens staying in evacuation shelters. For examples;

- In this guideline, a schematic drawing of the Designated Welfare evacuation shelters and Designated General evacuation shelters for people required care.
- The guidelines clearly describe issues such as who is responsible for the essential items in the welfare shelters. The municipality, in cooperation with the facility manager, will develop the necessary facilities to ensure that the facility functions as a designated welfare shelter and that people in need of assistance have a good living environment for their evacuation.
- Municipalities, in cooperation with prefectures, assign staff in charge of welfare shelters to liaise between designated welfare shelters and disaster response headquarters, etc., and to coordinate volunteers, as well as to assign specialized personnel and volunteers to designated welfare shelters.
- Issues such as the evacuation and transfer of citizens from welfare evacuation centers were resolved.
- In this guideline, it is legislated to separately regulate the issue of keeping citizens with disabilities, pregnant and nursing mothers, and elderly people in need of special care in welfare evacuation shelter.

## CONCLUSION

As a result of the research, the following conclusions were reached. It includes:

- ❖ In Japan, evacuation shelter requirements are governed by 3 major guidelines: "Shelter Management Guidelines", "Guidelines for Securing and Managing Toilets at Shelters" and "Guidelines for Securing and Managing Welfare Shelters".

These guidelines have been updated after mega disasters and based on experience gained from those disasters. In this way, the requirements for the evacuation shelter will become clearer and the implementation and control will be improved.

- ❖ It is considered appropriate to add issues to the requirements for evacuation shelter of legal documents implemented in Mongolia (Chapter 3.2).

- ❖ Based on many research, the government of Japanese has taken many measures to increase the participation of citizens during disasters. Therefore, citizens were trained in ways to protect others from disasters. Retired doctors, nurses, and firemen are also working as trainers, and they are also working in evacuation shelters. In Japan, many volunteers are trained and involved in disaster prevention activities.

In our country, we believe that it will be effective if we legislate how to use the knowledge of volunteer activists and retired citizens to help others in times of disaster and employ them as trainers.

- ❖ One of the main indicators of the implementation of legal documents is to make people knowledge of disasters.

The measures to be taken during the disaster, the location of the evacuation shelter, how to get there, and what should be there are provided to the citizens as follows. For example: use of social networks, DRR exhibition room, museum and other building constructions; documentaries and television programs; books, manuals and newspapers for the general public; disaster risk reduction events; Use mobile applications etc.

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Thank you for your attention  
Arigato gozaimasu

