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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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INTRODUCTION

Background:

The number of disasters and accidents and the amount of damage caused in Mongolia has been increasing in recent years. This is due to factors such as climate change, population growth, industrialization, and rampant urbanization and it has become one of the factors affecting the safety of the population. For example, the number of earthquakes with a magnitude of 3.5 or higher in Mongolia increased from 64 in 2020 to 271 in 2021, indicating that the probability of a strong earthquake in our country is increasing. According to the geophysical survey, 6 earthquake faults were recorded in the capital city of Ulaanbaatar and its vicinity, and one of them passes through the city center. Ulaanbaatar is one of the coldest cities in the world and more than 40% of Mongolia's population lives there. Also, there are a total of 92360 buildings, of which 2248 are public housing units. According to the survey, there are 152 earthquake-resistant buildings built before 1961, 111 buildings and 15 earthquake-resistant buildings built in 1961-1973 and 89 buildings built in 1973-1987, which are not earthquake-resistant. Based on these facts and research, it can be seen that Ulaanbaatar has a poor ability to withstand the force of a large-scale earthquake.

Hazardous phenomena, accidents and disasters such as building fires, forest and steppe fires, heavy snow and dust storms, flood and dzud are common in Mongolia.

During these accidents and 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 (NEMA) 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 (housing, drinking water, food, blankets, warm clothes, medical and psychological care and security).

In the legal documents in force in Mongolia, the requirements for evacuation shelters for citizens during disaster are briefly reflected in a too general way, so their implementation is insufficient.

Research methodology:

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

Scope of the research work:

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

Disaster management consists of several activities that are implemented in 3 phases: pre-disaster, during the disaster and post-disaster. These include following activities: prevention, mitigation, preparedness, response and recovery. Disaster mitigation activities are part of the disaster implementation phase. This includes activities such as activating the evacuation shelter, evacuating the disaster-affected and injured population, opening shelters, providing public assistance, emergency rescue, medical assistance, firefighting, and urban search and rescue. In the evacuation process, the people affected by the disaster are placed at a fixed point, registered, and taken to the shelter specified in the disaster protection plan in a unified manner.

Adequate shelter has a significant impact on human survival in the initial stages of disaster. A shelter requires more than just a roof for a space to be habitable. People living in a shelter must have enough clothing, blankets, mattresses, stoves, fuel, and access to services such as water and sanitation. Shelters are commonly roofed, secure, hygienic, and live able locations for people to utilize during periods of disaster until they are able to move back to their permanent dwellings. Many shelters are designed and planned so that they can be erected, dismantled, and stored for future use. These kinds of shelters are lightweight structures that can be used for a several purposes. Shelters include plastic sheets, tents, prefabricated housing, and public community buildings such as leisure centers, university halls of residence, places of worship, sports venues, and private rentals.

In a study, researchers at the School of Civil Defense in England divided shelters into the following five categories. It includes:

- Emergency shelters;
- Temporary shelters;
- Temporary housing and
- Permanent housing.

However, the International Federation of the Red Cross and Red Crescent Societies have added additional categories to these, such as transitional shelters, progressive shelters, and core shelters/one-room shelters. Let's explain the role and purpose of these shelters.

Emergency Shelter: This type of shelter is used for brief periods of time to deliver life-saving support and is the most basic kind of shelter support aside from staying in another permanent building (to be used for a temporary period) for a single night to a few days during an emergency. This kind of shelter commonly does not allow for the extensive preparation of food or prolonged medical services.

Temporary Shelters: This type of shelter is meant for short-term use. A simple tent or a public mass shelter used for a few weeks following a disaster constitute a temporary shelter. The duration of stay in such shelters may be limited, and therefore, prioritizing speed and limiting costs should be taken to account when constructing this kind of shelter.

Temporary Housing: This type of shelter is often distributed for long-term periods such as six months to three years. Temporary housing such as rental houses and prefabricated unit allow people affected by a disaster to return to their normal daily activities. In many cases, temporary houses are installed on temporary land.

Transitional Shelters: This type of shelter is usually developed by displaced individuals themselves following a disaster, and such resourcefulness and self-management should be supported. Transitional shelters are commonly relocated from a temporary site to a permanent location, upgraded into part of a permanent house, resold to generate income to aid with recovery, recycled for reconstruction, and reused for other purposes.

Permanent Housing: Permanent housing may be upgraded from a transitional shelter, a progressive shelter, a core shelter, or even a new house. Such houses should be resistant and resilient to future hazards and disasters.

Progressive Shelters: This type of shelter is designed and built to be more permanent and upgradeable in the future through alterable structural components.

Core Shelters/One-Room Shelters: This type of shelter is designed and built with the intent of being permanent housing in the future, including a foundation and all or some of the key services, such as plumbing and various utilities. The goal with this type of shelter is to build at least one or two rooms to meet permanent housing standards and facilitate improvement. However, these shelters are not intended to be a full permanent house.

In the "Requirements for temporary assembly areas, evacuation sites, and evacuation shelters" document, which is in effect in Mongolia, the evacuation shelters,

temporary assemble area and evacuation site for the evacuation of citizens during disasters are classified as follows.

Temporary assemble area: A safe area marked for disaster prevention, risk reduction and population protection

Evacuation site: A safety location marked for evacuation and placement of people and property for the purpose of disaster prevention, risk reduction and protection.

Evacuation shelter: Buildings that have been assessed for earthquake resistance and general assessment at the administrative and territorial level also refer to mobile homes, tents, and "ger" built according to the season.

In Japan, when a natural disaster occurs, citizens are instructed by local governments to go to shelters to ensure their own safety. Shelters are classified as follows:

Emergency evacuation site: A facility or place where residents evacuate in an emergency to ensure the safety of their lives under imminent danger of a tsunami or flood.

Evacuation shelter: A facility designed to allow evacuees to stay for a necessary time period until the danger of disaster is over, or to temporarily let residents who are unable to return home stay due to disaster.

These revisions distinguished between places for emergency evacuation at the time of a natural disaster, and schools and community centers where people could stay for a specific period and live as evacuees.

Of this range of shelter types, it is best for authorities to understand which type of shelter is most appropriate for a group of affects' needs and conditions. Of these, the evacuation shelter will be further considered and studied according to the limitations of my research plan.

Evacuation shelter needs pre- and post-disaster remains a major challenge for every country is governments, humanitarian agencies, and, most important of all, survivors. Evacuation shelters are considered vital for personal safety, climate protection, security, and resistance to disease and ill health.

Such evacuation shelters are commonly used until a displaced group of people can be re-housed in either their rehabilitated original dwellings or new permanent accommodations.

A shelter location may be required for periods that extend to several months or even years after a disaster. Therefore, numerous factors should be taken to account when planning and designing shelters, such as their physical location and the wants and needs

of likely users. Complementary support to shelters should come from all relevant stakeholders (e.g., local communities, Non-Governmental Organizations (NGOs), local politicians, and volunteers).

The provision of evacuation shelters is widely accepted as a necessary component of response and recovery following disasters such as earthquakes, hurricanes, tsunamis, and floods. But the provision and performance of evacuation shelters in certain cases has been hindered by inappropriate climate, cultural differences, poorly located settings, camp-related social issues, expenses, overcrowding, poor services, and delays.

Therefore, the following factors should be considered in the evacuation shelter.

Climate change: The weather varies significantly between potential disaster locations by season. People of different regions with different temperatures may find different types of shelter more appropriate and comfortable based on their home environment. Design details such as high ceilings and verandas can cause shelters in hot weather to be cooler, and reducing air gaps or including a lobby area can keep shelters warmer in cold weather.

Survivors should have fuel and stoves available, and they should be protected from the ground by mattresses and beds in extremely cold conditions. Furthermore, they should be supplied with proper clothing, stoves, and blankets. Ventilation is of vital importance in hot-dry and hot-humid climates as well as shade from the sun. Shelters for hot climates should also take to account possible temperature drops, particularly at night, in open areas such as deserts, and in areas at a high altitude.

Hygienic (water & air): Promoting personal and environmental hygiene is required in order to protect people's health. Water, sanitation and hygiene infrastructure and facilities have to be adequate on campus. However, each of these is often complex in nature and expensive. On the other hand, each are necessary for the health of survivors. Water supply and sanitation are essential for people to wash themselves, their clothes and bedding, to dispose of human waste, and to control disease-causing mosquitoes.

Food: Ways to improve affected' nutrition should be considered, such as their ability to store, prepare, and cook food.

Type of shelter: There are several types of shelters that can be used in disaster responses, such as plastic sheeting, tents, prefabricated units, and permanent buildings (to be used for a temporary period). A shelter's structure should be designed so as to protect its occupants from hazards such as earthquakes, storms and diseases.

Lifetime: The design and planning of shelters should understand their intended life spans given the standards and conditions of the locations where they are to be built. Thus,

in a shelter's design process, it is important to take to account that a shelter may be hard to build rapidly and will require a significant amount of money if it must last a long time. Sometimes it is preferable for money to be spent on the repair and development of permanent houses rather than on temporary houses in such a situation.

Livelihood: Livelihood support for shelter users applies for the most part to long-term displacement scenarios. After providing initial shelters to affected people, support groups can assist locals to begin earning money by helping them to start small businesses. The psychological recovery process of an affected population can be facilitated by encouraging activities that support life and elevate the socioeconomic status of affected people. For instance, people began to sell "Tamaki" and friendship bands made out of fishing nets, key chains, slippers, and fabric bags were hand-made by women following The Great Eastern Japan Earthquake.

Communication: Communication in the early stages of disaster recovery has a significant impact on survivors, and their participation in recovery decisions during these periods can reduce negative impacts and help them to think about requirements such as their future living locations and needs. There are several possible means of communication for a community to develop strong social networks: television, radio, internet, mobile phone, newspapers, leaflets, posters, information packs, committees, workshops, and training.

Evacuation and emergency shelter planning is part of broader emergency planning and preparedness. So, it is important to coordinate emergency shelter with evacuation planning.

1.2 Common types of disaster and accident in Mongolia, and some experience of evacuation

1.2.1 About Mongolia:

The territory of Mongolia is located in the central part of Asia between 41°35"-52°08" of latitude and 87°44" -119°55" of longitude, neighboring with Russia along 3543 km in the north and with China along 4709.6 km in the south.

Mongolia comprises 1564.1 thousand square kilometers of land and the 7th largest country in the Asia.

The capital city, Ulaanbaatar, has an independent administrative status as a municipality, which consists of several urban districts.

The country is administratively organized into 21 provinces (Figure 1).

Figure 1. Map of Mongolia (Political)



Topography

The average altitude is 1580 m and the highest point is the Huiten mountain peak with 4374 meter above sea level and located in the west while the lowest is the Khokh Nuur Depression with 532 meter above sea level and located in the east. The average altitude is 1580 m above sea level and Ulaanbaatar is at 1350 meter.

The Mongolian heartland consists of relatively flat steppes. The southern portion of the country is taken up by the Gobi Desert, while the northern and western portions are mountainous.

The southern region is semi-desert and desert. The Gobi Desert covers about one-third of Mongolia and is composed primarily of rock and cliffs, as well as sand dunes in more arid regions near the southern border.

Hundreds of lakes are scattered across Mongolia, the largest of which are Lake Uvs at 3,350 km² (1,293 square miles), Lake Khovsgol at 2,620 km² (1,012 square miles), and Lake Khar Us at 1,852 km² (715 square miles). The longest rivers are the Orkhon at 1,124 km (698 miles), the Kherlen at 1,090 km (677 miles), and the Selenge at 539 km (335 miles)

The rivers drain in three directions: north to the Arctic Ocean, east to the Pacific, or into the deserts and the depressions of Inner Asia. Rivers are most extensively developed in the north, and the country's major river system is that of the Selenge, which drains into Lake Baikal. Some minor tributaries of Siberia's Yenisei River also rise in the mountains of northwestern Mongolia. Rivers in northeastern Mongolia drain into the

Pacific through the Argun and Amur (Heilong Jiang) rivers, while the few streams of southern and western Mongolia do not reach the sea but run into lakes or deserts.

Demographic data:

Mongolia has an estimated population of 3 409 939 people with 1,553,556 km² of land area, Mongolia is the country with the lowest average population density in the world. It has a little over 2 people per km² (about 5 people per square mile). Mongolia’s population is 66% settled and 34% nomadic.

Table 1. Number of population (2017-2021)

Year	2017	2018	2019	2020	2021
Population	3 177 899	3 238 479	3 296 866	3 357 542	3 409 939

The ethnic makeup of Mongolia is approximately 83.8% Khalkh, 3.8% Kazakh, 2.6% Durvud, 2% Bayad, 1.4% Buriad, 1.2% Zakhchin, 1.1% Dariganga and 0.8% Uriankhai.

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. The highest winds occur in April and May. January is the coldest and July is the hottest.

The country averages 257 cloudless days a year, and it is usually at the center of a region of high atmospheric pressure. Precipitation is highest in the north, which averages 200 to 350 millimeters (7.9 to 13.8 in) per year, and lowest in the south, which receives 100 to 200 millimeters (3.9 to 7.9 in).

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.

Approximately four-fifths of the value of agricultural production is accounted for by millions of sheep, goats, cattle, horses, and camels, which are often referred to as the livestock (five animals).

In the last several decades, mining has emerged as a dominant economic force, with construction and service sectors (including tourism) also playing a significant role in the contemporary economy. Mongolia has large deposits of coal, fluorite (fluorspar),

copper, gold, silver, and other metallic ores. Coal is the predominant mining product, produced primarily for domestic use although some is exported to other countries.

Agriculture plays the second largest role in the modern economy, accounting for 35% of employment, 11-20% of GDP, 73 30% of exports, and 14% of foreign exchange revenues.

1.2.2 Overview of disaster and accident in Mongolia

The frequency of disasters and their impact has increased over recent years including Mongolia, as a result of global climate change, with disturbances to ecological balance and urbanization. Disaster can lead to widespread loss of life, directly and indirectly affect large segments of the population and cause significant environmental damage and large-scale economic and social harm. Classification of natural and human induced hazards in Mongolia is shown on Table 2.

Table 2. Natural and human induced hazards in Mongolia

Classification	Type	Disasters
Natural hazards and disasters	Climatic Hazardous Phenomena	Snow and dust storm
		Dzud
		Flood
		Forest and steppe fire
		Desertification
	Geological threats	Earthquake
		Landslides
	Biological threats	Livestock and animal infectious diseases
		Human infectious disaster
		Spread of detrimental rodents
Human induced hazards	Technological accidents	Building fire
		Traffic accidents
		Leakage of chemical and radiological substances
		Explosion
		Industrial accidents

The study of the total number of hazards and dangerous incidents in Mongolia can be seen in Table 3.

Table 3. Recapitulation of natural and human induced hazard and disaster occurrences /2012 - 2021/

Years	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Numbers of natural and human induced hazard	4047	4467	4928	5426	4373	3758	4373	4990	4006	12694
Number of deaths	237	201	175	198	225	193	208	203	248	2304

Livestock deaths /thousand heads/	13.1	235.6	13.2	202.9	1059.3	536.1	1 417.0	26.2	80.9	155.03
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According to the above research, the number of disasters occurring in Mongolia in recent years tends to increase.

Therefore, it can be seen that the number of people who lost their lives, the number of dead livestock and the total amount of damage have increased dramatically.

Mongolian economy is heavily reliant on the livestock sector. As the livestock sector is highly sensitive to extreme weather, and the natural resource represented by pastureland, rural householders are much more vulnerable to negative impact of climate hazards such as dzuds and severe snow and dust storms.

Mongolian most populated provinces that situated near the bigger river banks and also the nomads that move frequently around the 4 seasons, especially in fall and summer season on the mountain gap, dry pebbles, valley, nearby river are causing and increasing in the flood risk.

The following disasters are common in Mongolia.

Dzud:

The dzud is a weather-related phenomenon unique to Mongolia due to the country's unusual environment that is landlocked, semi-arid, and given to swings in temperature and precipitation. It is caused by the combination of drought in the summer followed by severe freezing weather and storms in the winter.

When droughts occur in the summer, animals of the steppe are not able to eat enough and fail to gain the protective fat that enables them to survive the icy winters. Additionally, herders are not able to collect enough hay to store throughout winter. When these hot, dry summer conditions are followed by severely cold winters, animals are not able to graze for enough sustenance to build up fat stores and core muscle strength to endure the winters. When feed supplies run out, the livestock weaken until they freeze or starve to death.

In Mongolia, the following types of dzud are recognized:

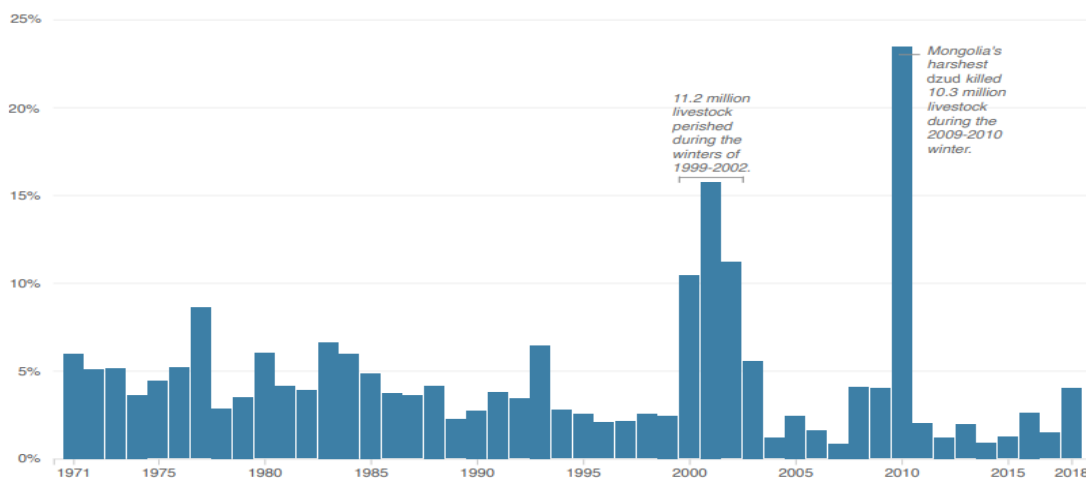
- *White dzud* results from high snowfall that prevents livestock from reaching the grass. It is a frequent and serious disaster that has caused a great number of deaths.
- *Black dzud* results from a lack of snowfall in grazing areas, leading to both livestock and humans lacking water. this type of dzud does not occur every year, nor does it affect large areas. it mostly happens in the Gobi desert region.

- *Iron dzud* results from a short wintertime warming, followed by a return to sub-freezing temperatures. the snow melts and then freezes again, producing an impenetrable ice-cover that prevents livestock from grazing.
- *Cold dzud* occurs when the temperature drops to very low levels for several days. the cold temperature and the strong winds prevent livestock from grazing; the animals have to use most of their energy to keep warm.
- *Combined dzud* is a combination of at least two of the above types of dzud.

Mongolian society has historically been nomadic and based on herding, which still provides the primary source of income for many Mongolians. Agriculture is comprised by 80% herding and is the second largest contributor to the economy, accounting for 19% of GDP but employing 36% of the working population.

Figure 2 is a bar chart that shows the percentage of national livestock that died each winter, with spikes evident during the worst dzuds and severest winters.

Figure 2. Percent of National Livestock that Died Each Winter (1970-2018)



In the 2000s, the country lost tens of millions of head of livestock, with the most severe mortality occurring in the 2000-2002 and 2010 winters. The 2009-2010 dzud alone killed 22% of the nation's livestock.

Dzuds are disastrous for the herders, often bringing an end to their livelihood.

Figure 3. As a result of the Zud disaster, a lot of damage is caused to livestock



Flood:

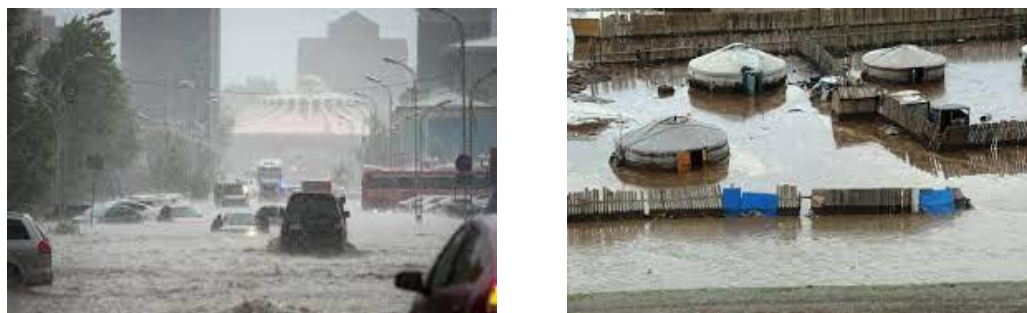
Mongolia's exposure to risk of flooding is considered high. The majority of Mongolia's floods stem from rainfall

The country typically sees three types of floods:

- Spring or snow melt flood wherein river levels slowly rise and overflow their banks over a relatively longer period of time;
- Rainfall flood wherein a quick rise of water levels from heavy rainfall leads to overflowing banks;
- Flash flood wherein heavy rainfall over steep riverbeds causes turbulent flows of water along with rocks, sediment, and other surface materials.

Flooding affects both rural and urban areas, and in the capital old bridges, roads, and avenues built without sewage systems have been severely affected.

Figure 4. Flood damage in Mongolia



Snow and dust storms:

Snow and dust storms occur frequently in Mongolia due to natural conditions, geography and climate features. Snow and dust storms severely affect the Mongolian ecosystem, economy, society and population health, resulting in natural disaster.

Rapid and massive land degradation such as desertification in the past few decades has contributed to increased occurrences of severe storms in Mongolia. The Gobi Desert, which comprises about 41% of Mongolia, experiences dust storms for 30-100 days per year. Overgrazing also contributes to dust storms, as the total Mongolian herd has tripled in size in the last three decades.

As a result of strong snow and dust storms, herding families living in rural areas suffer a lot. They get lost from their homes and their houses collapse and their animals died. If the strong snow and dust storms last for several days, it is impossible for herders to reach for help and communication is lost.

Figure 5. Strong snow and dust storm in Mongolia



Forest and steppe fire:

In Mongolia, forest and steppe fires usually occur in spring and autumn.

Spring weather brings strong, dry winds, which of prevalent from March through June, these winds increase fire risk in dry, dead grass from the previous fall.

The little rain Mongolia receives falls primarily in the summer, producing new grass growth. In the autumn the new grass dries out, becoming potential fuel for wildfires during September and October.

Winters are usually very cold and dry. Typically, the majority of wildfires in Mongolia occur in the grasslands or grass understory of the steppe and mountain steppe zones.

Forest and steppe fires cause a lot of damage to the environment, animals and plants.

Figure 6. Mongolian economy suffers a lot of damage every year due to forest and steppe fires



Animal diseases:

3.4 million Mongolians have 71 million livestock. Livestock includes cow, sheep, horse, camel, and goat. About 200,000 families raise livestock in Mongolia. So, there are about 300-1000 animals in 1 herding family. Because there are so many animals in one place, there are many infectious diseases in animals. Mongolian people consume the meat, milk, and skin of their livestock, so animal infectious diseases are very damaging to Mongolian people's life and Mongolia's economy.

There are 15 types of serious animal infectious diseases registered worldwide. In recent years, a number of serious livestock and animal infectious diseases, such as foot-and-mouth disease, rabies, avian influenza, and anthrax occurred in Mongolia.

Foot-and-mouth disease caused by virus of the Picornaviridae family, although thought to be eradicated in Mongolia, in 1973, it reappeared along the Chinese border in 2000. In the last decade, foot-and-mouth disease mostly occurred in the eastern part of Mongolia.

Rabies remains an endemic problem especially among dogs, wolves and livestock cases reported in Mongolia. The peak prevalence of animal rabies occurred in the 1970s. the number of rabies cases in animals decreased during the 1980s. This may have been due to a decrease in the number of wild reservoir animals and the improvement of appropriate veterinary measures. In recent years, animal rabies has prevailed in the Khangai and western provinces.

Anthrax is endemic throughout Mongolia, except in the semi-desert and desert areas of the south. The prevalence of anthrax in Mongolia had drastically since the 1950s, due to the use of anthrax antiserum and vaccines, but the privatization of the animal husbandry sector and changes in the structure of the veterinary and medical delivery systems in Mongolia over the last decade has resulted in challenges for disease control. Animal and human anthrax has become an increasing problem since the mid-1990s.

Highly pathogenic avian influenza (H5N1) was first recognized in late 2005 and subsequently identified in 2008 and 2009 among the wild birds.

Figure 7. In recent years, the number of infectious diseases of animals has increased.



Earthquake:

Mongolia has a high risk of earthquake hazard, with more than a 20% chance of a potentially damaging earthquake occurring in the next 50 years, and newly discovered risks to the capital.

Mongolia has a high risk of earthquake hazard and experienced four magnitude 8 earthquakes during the last century. The highest risks had historically been in the far northern, southern, and western areas of the country. Smaller magnitude earthquakes

occur very frequently, with more than 200 earthquakes of magnitude above 3.5 in every year.

Mongolia has suffered no catastrophic damages so far, partially due to earthquakes heretofore striking sparsely populated areas outside the capital where the rural population live in gers, whose flexible construction make them less prone to damage.

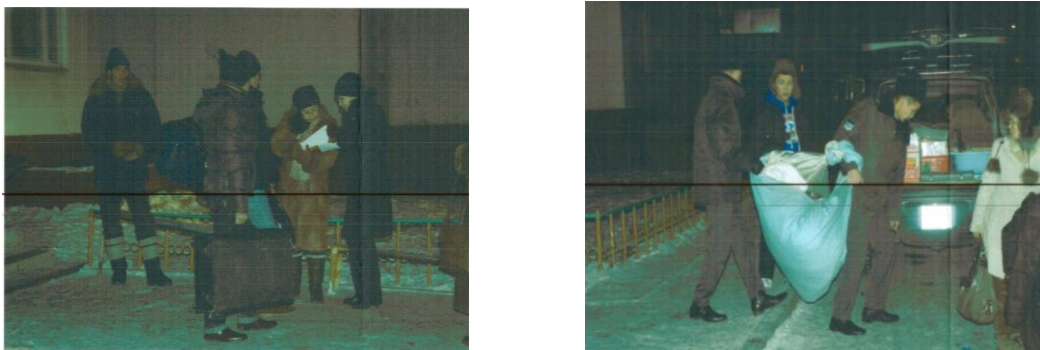
However, recently discovered earthquake risks to the capital are spurring renewed preparation activities. While Ulaanbaatar's exposure to earthquake hazard was previously considered very low, publications in 2019-2020 detailed the newly discovered Ulaanbaatar Fault, an active 50-km (31-mile) long fault crossing the urban area of the capital. Based on its length, the fault is believed to be capable of causing earthquakes with magnitudes greater than 7, which could result in considerable building damage and heavy casualties in the metropolitan area.

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

- In 2012, a 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 approx. 100 people were evacuated to safety places.

Figure 8. The evacuation process of citizens



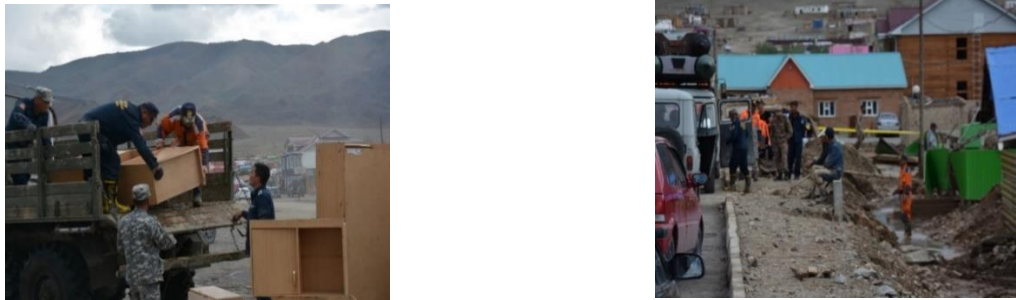
- In 2015, the wall of an apartment building in Bayangol district of Ulaanbaatar city was in danger of collapsing.

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.

About 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.

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

Figure 9. The evacuation process



1.3 Common types of disaster in Japan and some experience of evacuation shelter

1.3.1 About Japan

Japan is an island country located in the western Pacific Ocean. Total land area is about 378,000 square kilometers. Japan is divided into 47 administrative prefectures and eight traditional regions. The Greater Tokyo Area is the most populous metropolitan area in the world, with more than 37.2 million residents.

Figure 10. Map of Japan



Topography

More than 70 percent of land surface is mountainous.

Japan comprises 14,125 islands extending along the Pacific coast of Asia and five main islands, from north to south, are Hokkaido, Honshu, Shikoku, Kyushu and Okinawa.

The Ryukyu Islands, which include Okinawa, are a chain to the south of Kyushu. The Nanpō Islands are south and east of the main islands of Japan. Together they are often known as the Japanese archipelago. As of 2019, Japan's territory is 377,975.24 km² (145,937.06 sq mi). Japan has the sixth-longest coastline in the world at 29,751 km² (18,486 mi). Because of its far-flung outlying islands, Japan has the eighth-largest exclusive economic zone in the world, covering 4,470,000 km² (1,730,000 sq mi).

The Japanese archipelago is 67% forests and 14% agricultural.

The habitable zones, mainly in the coastal areas, have very high population densities: Japan is the 40th most densely populated country. Honshu has the highest population density at 450 persons/km² (1200/sq mi) as of 2010, while Hokkaido has the lowest density of 64.5 persons/km² as of 2016. As of 2014, approximately 0.5% of Japan's total area is reclaimed land (umetatechi). Lake Biwa is an ancient lake and the country's largest freshwater lake.

Demographic data:

Japan has a population of 125.4 million, of which 122.8 million are Japanese nationals (2021 estimates). A small population of foreign residents makes up the remainder.

In 2019, 92% of the total Japanese population lived in cities. The capital city Tokyo has a population of 13.9 million (2022).

Japan is an ethnically and culturally homogeneous society, the Japanese people form 98.1% of the country's population. Minority ethnic groups in the country include the indigenous Ainu and Ryukyuan people. Zainichi Koreans, Chinese, Filipinos, Brazilians mostly of Japanese descent and Peruvians mostly of Japanese descent are also among Japan's small minority groups. Burakumin make up a social minority group.

Climate information:

The climate of Japan is predominantly temperate but varies greatly from north to south. The northernmost region, Hokkaido, has a humid continental climate with long, cold winters and very warm to cool summers. Precipitation is not heavy, but the islands usually develop deep snowbanks in the winter.

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 Ryukyu and Nanpō Islands have a subtropical climate, with warm winters and hot summers. Precipitation is very heavy, especially during the rainy season.

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%.

The Japanese yen is the world's third-largest reserve currency after the US dollar and the euro.

Japan was the world's fourth-largest exporter and importer in 2021. Its exports amounted to 15.6% of its total GDP in 2020.

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

Japan's main imports are machinery and equipment, fossil fuels, foodstuffs, chemicals, and raw materials for its industries.

It ranks highly for competitiveness and economic freedom.

1.3.2 Overview of disaster in Japan

Japan is affected by Typhoon mostly every year and Volcanic disasters triggered by eruption and volcanic earthquake. Japan is earthquake prone area due to the geological formation with plate boundaries of the Pacific plate, the Philippine Sea plate, the Eurasian plate, and the North American plate. Classification of natural disaster in Japan is shown on Table 4.

Table 4. Natural disaster in Japan

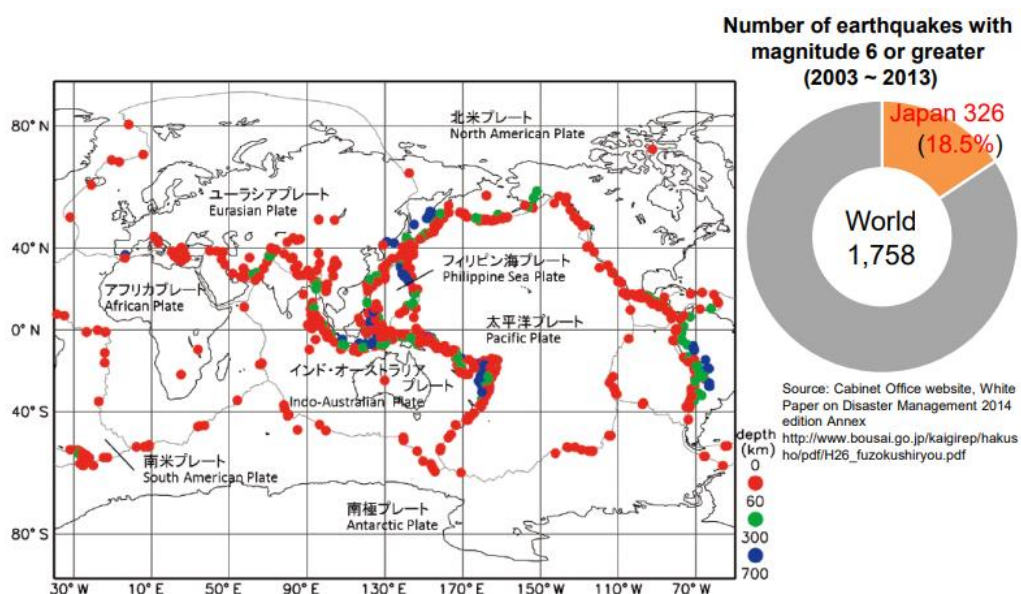
Classification	Type	Disasters
Natural hazards and disasters	Climatic Hazardous Phenomena	Flood
		Typhoons
		Heavy Monsoon rains
	Geological threats	Earthquake
		Tsunami
		Landslides
		Volcanic eruptions
		Snow avalanches

The following disasters are common in Japan.

Earthquakes:

Japan is located at a point on the earth's surface where four of more than 10 tectonic plates covering the globe are crushed against each other, making it earthquake-prone. More than 20% of the world's earthquakes have occurred in or around Japan.

Figure 11. World Geographic Distribution of Hypocenters and Plates

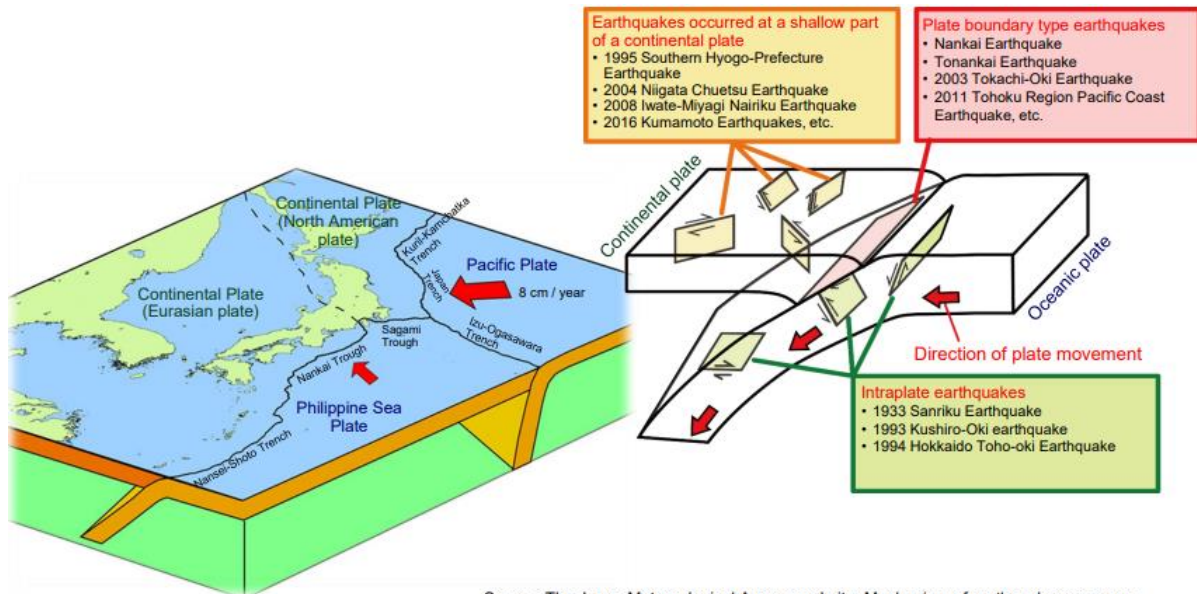


Japan is well acquainted with the massive inter-plate earthquakes produced by plate subduction and the inland crustal earthquakes caused by plate movement such as the Great Hanshin-Awaji Earthquake of 1995).

Table 5. Major earthquakes recorded the past 30 years

	Date	Earthquakes
1	1982.03.21	Uraga-oki Earthquake
2	1993.01.15	Kushiro-oki Earthquake
3	1994.10.04	Hokkaida-Toho-oki Earthquake
4	1994.12.28	Sanriku-Haruka-oki Earthquake
5	1995.01.17	Great Hanshin-Awaji Earthquake
6	1997.05.13	Sashuma rasion in Kagoshima Prefecture
7	1998.09.03	Northern region in Iwate Prefecture
8	2000.07.01	Niijima and Kozushima Earthquake
9	2000.10.06	Western Tottori Earthquake
10	2001.03.24	Geiyo Earthquake
11	2003.05.26	Miyagi-ken-oki Earthquake
12	2003.07.26	Northern Miyagi Earthquake
13	2003.09.26	Tokachi-oki Earthquake
14	2004.10.23	Nigata-ken-Chuetsu Earthquake
15	2005.03.20	Fukuoka-ken-Seihou-oki Earthquake
16	2005.08.16	Miyagi-ken-oki Earthquake

Figure 12. Mechanism of earthquake occurrence around Japan



Tsunami:

Surrounded by water on all sides with long and complex coastlines, Japan is highly vulnerable to earthquake-generated tsunamis. In reality, there has been severe damage caused by various tsunamis in the past, including the Meiji-Sanriku Earthquake Tsunami (1896), Nihon-kai-Chubu Earthquake (1983), and Hokkaido Nansei-oki Earthquake (1993).

In addition to local tsunamis generated by earthquakes near the coast, Japan has also suffered major damage from the onslaught of distant tsunamis generated by open-sea earthquakes. In 1960, a tsunami generated by the Chile Earthquake crossed the Pacific Ocean and reached the shores of Japan about 22 hours later, killing 142 people.

When a tsunami is expected to cause coastal damage, the Japan Meteorological Agency issues a tsunami warning or advisory within 2-3 minutes after the earthquake and then follows up with announcements about the estimated height and arrival time of the tsunami. The information is transmitted immediately to disaster management organizations and media outlets, and further forwarded to residents and maritime vessels.

Table 6. Tsunami history

Disaster	Year	Number of casualties and missing /approx..people/
Meiji Sanriki Earthquake Tsunami	1896	22000
Showa Sanriki Earthquake Tsunami	1933	3064
Tonankai Earthquake	1944	1223
Nankai Earthquake	1946	1443
Chile Earthquake Tsunami	1960	142

1968 Tokachi-oki Earthquake	1968	52
1983 Nihon-kai-hubu Earthquake	1983	104
2003 Hokkaida-Nansei-oki Earthquake	1993	230

Volcano:

Located along the circum-Pacific volcanic zone, Japan has 108 active volcanoes, about 10% of all the world’s active volcanoes.

Eruptions or other abnormal events are observed at about 15 volcanoes annually. Most recently, there were eruptions at Mt. Usu and Miyake Island in 2000, and at Mt. Asama in 2004.

Volcanic eruptions lead to the occurrence of various phenomena such as lava flows, pyroclastic flows, ash fall and mudflows, and cause massive damage.

Such disasters may continue for long periods of time, as in the case of Miyake Island, where the entire population was forced to evacuate the island and stay away for four and half years.

Storm and Flood:

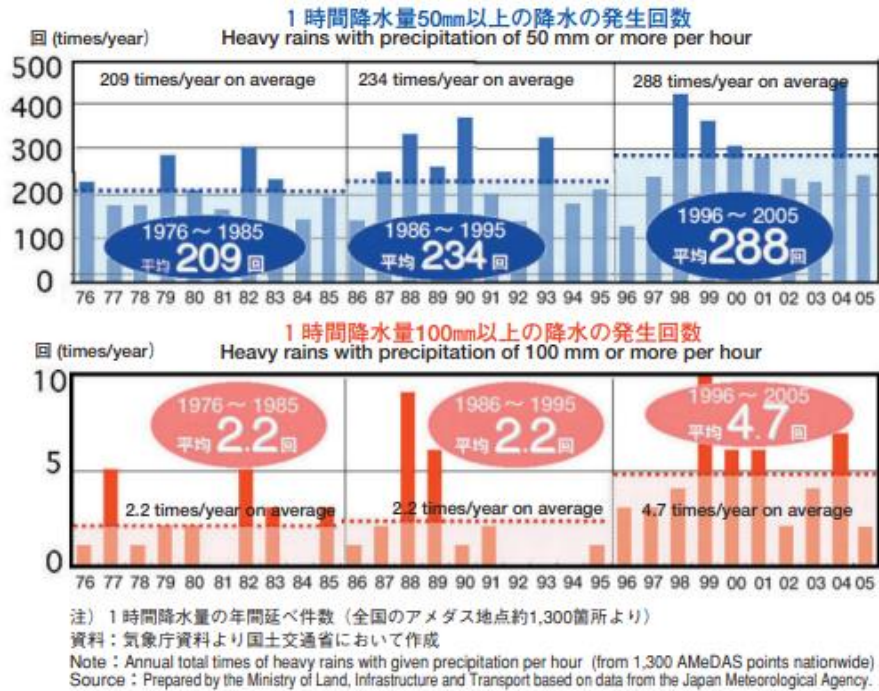
Japan is prone to a variety of disasters including flooding, landslides, tidal waves and storm hazards, owing to meteorological conditions such as typhoons and active weather-front systems and geographical conditions such as precipitous terrains and steep rivers, as well as social conditions where many of the cities are built on river plains.

Figure 13. Storm and Flood disasters in Japan



One-half of the population is concentrated in possible inundation areas, which accounts for about 10% of the national land. Although there has been a large reduction in the area inundated by floods owing to soil conservation and flood control projects over many years, the amount of general assets damaged in flooded areas has quickly increased in recent years.

Figure 14. Increasing tendency of torrential rainfall



1.3.3 Some experiences of used the evacuation shelter during disaster in Japan The Great East Japan Earthquake

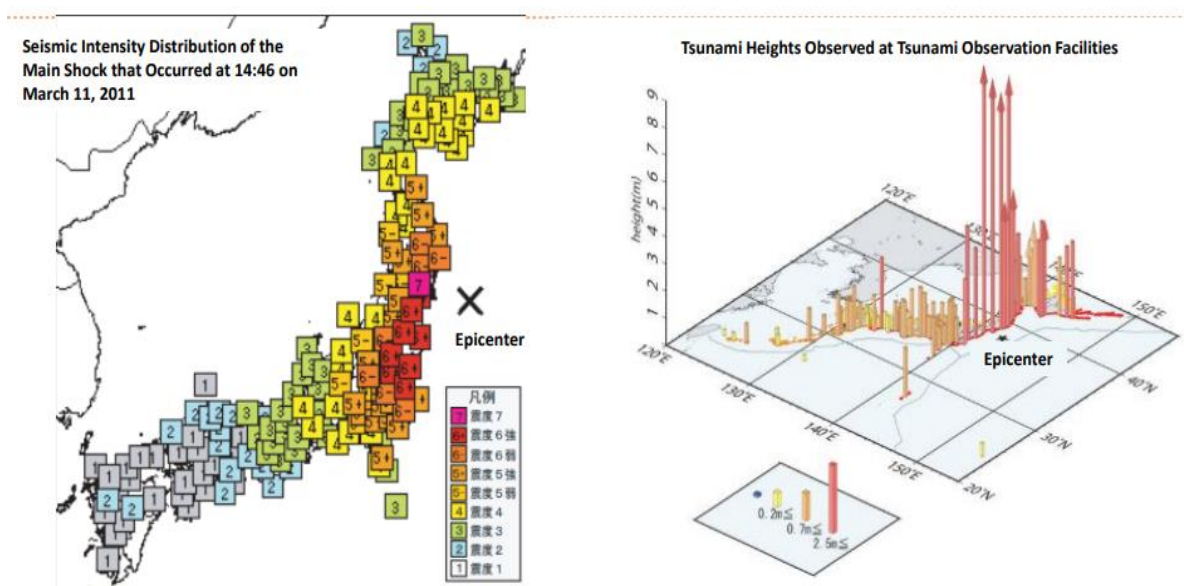
On March 11, 2011, an earthquake of magnitude 9.0 occurred in the Pacific Ocean off the coast of Japan's Tohoku region. The quake shook the ground as far away as western Japan and lasted for several minutes.

Figure 15. The Great East Japan Earthquake



A half-hour later, a tsunami of unprecedented force broke over 650 kilometers (km) of coastline, toppling sea walls and other defenses, flooding more than 500 square kilometers (km²) of land, and washing away entire towns and villages.

Figure 16. Intensity of earthquake and height of tsunami



The devastation left some 20,000 people dead or missing, with most of the deaths caused by drowning (Table 7). The tsunami leveled 130,000 houses and severely damaged 270,000 more. About 270 railway lines ceased operation immediately following the disaster, and 15 expressways, 69 national highways, and 638 prefectural and municipal roads were closed. Some 24,000 hectares of agricultural land were flooded. The areas worst hit were the Fukushima, Iwate, and Miyagi prefectures.

Table 7. The Great East Japan Earthquake of 2011 in figures*

Magnitude of earthquake	Mw 9.0 Depth: 24 Km
Deaths	19 759
Missing	2 553
Injured	6 242
Totally or partially destroyed houses	405 166
Economic damage	approx. 17 trillion yen

*-Reference: cabinet Office,
<https://www.bousai.go.jp/2011daishinsai/pdf/torimatome20220308.pdf>

Situation and organization of evacuation shelters:

After the Great East Japan Earthquake (GEJE), nearly 2,500 evacuation centers were established in the disaster-affected Tohoku region; additional centers were also located outside of Tohoku. At peak occupancy, more than 470,000 people were staying at these centers (figure 17). Most facilities, such as schools and community centers, were publicly owned and had been designated as evacuation centers even 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 (figure 18); also, a number of evacuees stayed with their relatives or friends.

Figure 17. Number of evacuees after the GEJE

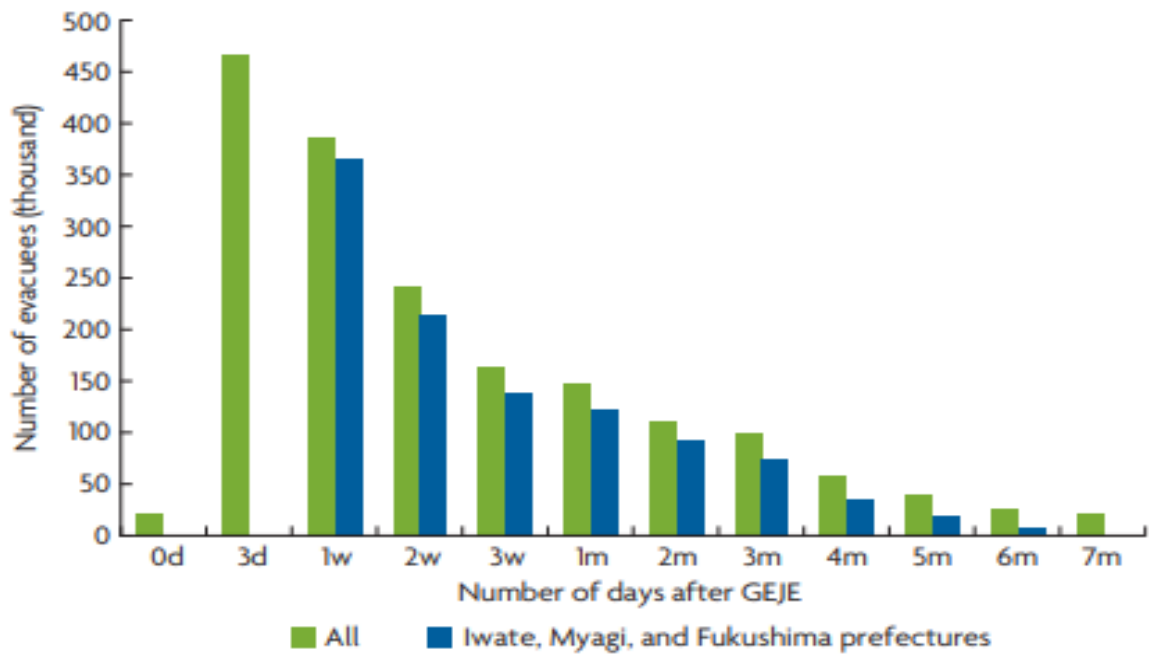
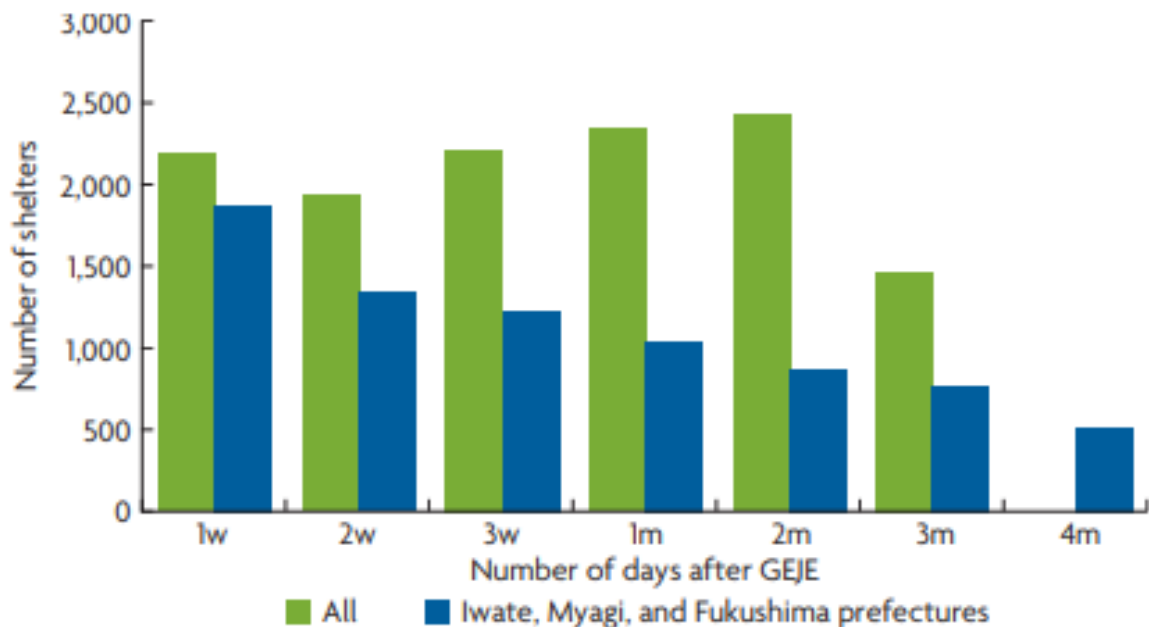


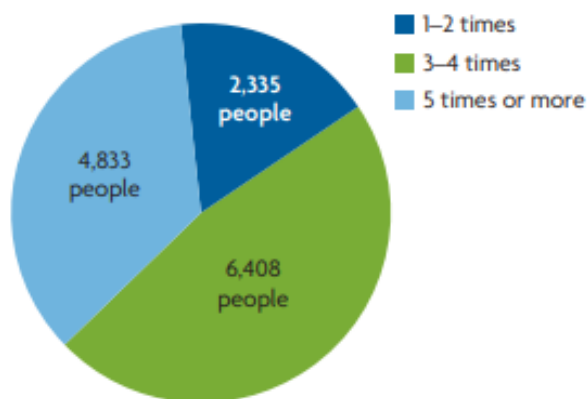
Figure 18. Number of evacuation centers



Evacuees gradually moved out of the centers as the construction of transition shelters progressed. 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.

Figure 19. Number of times people in Fukushima had to evacuate



The evacuation pattern in Fukushima, where the nuclear accident occurred after the GEJE, was very different from other disaster-affected areas in Tohoku. In Fukushima many people had to relocate from one center to another, moving further from the crippled nuclear power plant as information became available on

the risk of radiation exposure. More than 10,000 people had to change evacuation centers three or more times, with some people moving as many as 10 times (Figure 19).

Difficulties encountered in evacuation shelters:

The following difficulties were encountered in the 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. For example, they had difficulty using toilets without water for flushing. The cold weather in northeastern Japan and lack of electric heating in the facilities made many evacuees vulnerable to illness, especially the elderly. As the evacuation period became prolonged, the inability to bathe was also a serious issue. People could not stay in their high-rise apartments in Sendai City because of water and power failures. Since they could not continue to carry water and food upstairs to the higher stories, they moved to evacuation centers until public services were restored.

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. For example, evacuees at the Ofunato Junior High School in Iwate Prefecture organized themselves into several groups for nursing, sanitation, food, facilities, supplies, and heating. At one school in Minamisanriku in Miyagi Prefecture, evacuees divided themselves into 20 groups, based on the communities they came from before the disaster, and assigned themselves roles and responsibilities for day-to-day activities. An event hall called the Big Palette in Koriyama, Fukushima Prefecture, admitted more than 2,000 evacuees mainly from Tomioka Town and Kawauchi Village, both affected by the nuclear disaster. These evacuees established a volunteer center at the hall, where volunteers and the evacuees themselves helped organize activities such as opening three cafes, starting an FM radio station, organizing a gardening event, and undertaking a summer festival. The volunteer center provided opportunities for the evacuees to help themselves and engage in productive activities, thus improving their daily well-being.

Gender sensitivity:

One of the problems cited at many of the centers was a lack of 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. But Sendai City in Miyagi Prefecture had about 30 special centers called “welfare shelters” that provided nursing and other care for the

elderly, the disabled, and other groups. About 250 people and their families were transferred to these from other centers.

Managing with a human face:

A close relationship should be established early on between evacuees and local officials who are responsible for managing the centers. A good practice in this regard came from Hachinohe City in Aomori Prefecture. Right after the GEJE, there were about 120 families at eight evacuation centers in Hachinohe. The city government assigned two officials to every seven or eight evacuated families with whom they could consult on any issue. For example, they had questions about subsidies for future housing and livelihood recovery. The relationship established with the officials at the evacuation centers continued even after the evacuees had resettled in private or public rental houses. Although this arrangement was possible because of the relatively small number of evacuees in a relatively big city with more than 2,000 officials, the city should nevertheless be commended for its initiative.

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 (located relatively far from the crippled plant), 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. In most cases, however, the evacuation centers were managed by the evacuees' municipalities rather than by the hosts'.

Lessons:

The following lessons have been learned from the above problems.

Designate evacuation centers in safe locations:

While it may not be possible to be perfectly prepared for a mega disaster like the GEJE, it is nonetheless essential to designate evacuation centers in safe locations and equip them with as many emergency supplies as possible. Many prefectures and municipalities all over Japan are conducting ex post evaluations to assess the location and number of evacuation centers and the adequacy of supplies at these centers.

Prepare for primary service interruptions:

Since a mega disaster is likely to interrupt essential services such as water and power, it is critical to install alternatives such as portable toilets and power generators.

Sendai City is planning to equip its designated facilities with renewable energies, such as solar panels, as a backup power source.

Evacuees should take part in managing activities and services at evacuation centers:

They are not guests who are simply receiving food and materials, but capable enough to manage the evacuation centers themselves.

Anticipate different needs in evacuation centers:

Evacuees consist of diverse groups of people who have different needs and wants: women and children, the elderly, the disabled, and some foreigners. Those in charge of managing evacuation centers should be sensitive to this diversity. It is also critical that women are included in management and leadership positions at these facilities.

Creative management pays:

Some local governments have come up with innovative arrangements for managing evacuation centers and supporting evacuees. These governments should share their experiences and learn from one another so that good practices may be replicated in the future.

Providing the information that disaster victims need is not only critical to their well-being but also comforting. It is important to listen to evacuees to understand what kinds of information they need and want, and to continue listening as their needs change over time.

Conclusion of the chapter 1

Disaster mitigation activities are part of the disaster implementation phase. This includes activities such as activating the evacuation shelter, evacuating the disaster-

affected and injured population, opening shelters, providing public assistance, emergency rescue, medical assistance, firefighting, and urban search and rescue. In the evacuation process, the people affected by the disaster are placed at a fixed point, registered, and taken to the shelter specified in the disaster protection plan in a unified manner.

Among these activities, attention to the improvement of the requirements for the standards of evacuation shelters for the evacuation of citizens during disaster is a significant measure.

Each country has a different name for evacuation shelters. However, since the main functions of evacuation shelters during disaster are the same, I decided to use the term "evacuation shelter" according to the limitations of the research paper as mentioned in the legal documents of Japan.

When building evacuation shelters for the evacuation of citizens during disaster, the government and related organizations should consider many issues such as weather conditions, construction quality, safety, food supply, the country's economic situation, and common disasters.

Therefore, in this first chapter, I studied Mongolian and Japanese some information such as the geographical location, population, economic and common disasters and accidents.

Also, the some experience of evacuating citizens during disasters in Mongolia and Japan and the difficulties and lessons learned in the evacuation shelter were studied.

The following problems need to be taken into consideration from the problems that occurred in evacuation shelters after the mega disaster (earthquake) in Japan. It includes, designate evacuation shelters in safety sites, prepare for primary service interruptions, evacuees should take part in managing activities and services at evacuation shelters, anticipate different needs in evacuation shelters, creative management pays and providing the information that disaster victims need.

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

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

In Mongolia, the requirements for the evacuation of citizens and evacuation shelters during disasters are regulated by legal documents such as the "Law on Protection from Disasters"; the Resolution No. 340 of 2011 of the Government of Mongolia - "Procedures for Evacuation of Citizens during disasters" and "Procedures for the mobilization of forces during disaster"; Deputy Prime Minister's Order No. 75 of 2017 - "Disaster Protection Professional Class Rules" and 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 these law and rules are shown in Table 8.

Table 8. Study of some legal documents implemented in Mongolia

Name of the 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 -	The purpose of this requirement is to evacuate the population from the area of the disaster

"Requirements for temporary assembly areas, evacuation sites, and evacuation shelters"	site, dangerous phenomenon, accident, provide first aid to the victims, organize measures to provide food, prepare temporary assembly areas, evacuation sites, and evacuation shelters.
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Article 34.2.8 of the Law on Protection from Disasters: "Equipping buildings and shelters for the needs of your organization in times of disaster and danger, and making them available to the population if necessary" and in Article 19.1 of the law, "In the event of a disaster, dangerous event, or accident, forces shall be mobilized and the population, livestock, animals, property, historical and cultural monuments shall be relocated to a safe place"; Article 5.1.7 of the "Procedures for Evacuation of Citizens in Disasters" states "Organizing all kinds of provision to meet the priority needs of citizens (shelter, water, food, medical and psychological assistance, ensuring their safety); the Disaster Protection Professional Class Rules that "Evacuation from the center of disasters and accidents, organizing measures to meet the priority needs of citizens (shelter, clean water, food, blankets, warm clothes, medical and psychological assistance, safety) by setting up temporary shelters" and "In the times of a disaster or accident (strong storm, radiation, chemical biological hazard/) it was instructed to construct, equip, reserve, and refuel shelters for evacuation shelters of the population in accordance with relevant norms and standards" are provided.

In accordance with Resolution No. 340 of 2011 of the Government of Mongolia, the decision to evacuate citizens from the center of the disaster will be made. In accordance with the regulations, in the following cases, citizens will be accommodated in temporary shelters and evacuation shelters in a coordinated manner. It includes:

- Due to the earthquake, urban areas collapsed and people became uninhabitable;
- Due to technical accidents, explosions, leakage of radioactive substances and toxic chemicals in the area, the habitat of the population and animals has been destroyed;
- In cases where it is necessary to take necessary measures for the prevention of terrorist acts or in situations caused by terrorist acts;
- Serious consequences of droughts and droughts, shortage of water in urban areas, agriculture and animal husbandry;
- There has been a flood and a situation to take measures to prevent floods and water hazards;

- Necessary measures have been taken to prevent the population, livestock, and animals of the population, livestock, and animals of the outbreak of an internationally prohibited infectious disease and the population, livestock, and animals of the settlements adjacent to the outbreak;
- Forest, field and facility fires have caused real danger to nature, ecology, population, property and buildings of cities and towns.

In these cases, people will be evacuated to a safety location and evacuation shelters.

Table 9 shows how the "Professional Class Rules" approved by the Deputy Prime Minister include relocation, evacuation shelters, and resettlement centers for special purpose professional classes.

Table 9. Functions of the group responsible for evacuation/temporary housing and shelters, as specified in the rules of the professional class

Purpose of the professional class	Professional Class Classification	Functions of that professional class
Evacuation and temporary shelters	Evacuation and Temporary Housing Group	Evacuation from the center of disasters and accidents, organizing measures to meet the priority needs of citizens (shelter, clean water, food, blankets, warm clothes, medical and psychological assistance, security) by setting up temporary shelters
Shelters	Shelter group	Organization of construction, equipping, stockpiling, and replenishment of shelters for temporary accommodation of the population during disasters and accidents (strong storms, radiation, chemical and biological hazards) in accordance with relevant norms and standards

As can be seen from the table, arrangements have been made to organize the construction, equipping, stockpiling and replenishment of evacuation shelters for temporary shelter of the population in the during disasters and accidents in accordance with relevant norms and standards.

The Disaster Prevention Law stipulates that the governors of provinces, capitals, sums, and districts must attach evacuation measures to the disaster prevention measures plan and update them every year.

In this plan, the map of the locality, the calculation of manpower and equipment to be mobilized, the population to be relocated, the material and cultural values, their quantity, supply, organization, the role of professional classes, work, meeting place, transfer, the location and time of reception are clearly stated.

Studying according to the limitations of the research topic, it is stated that the evacuation shelters must meet the following requirements in the "Requirements for temporary assembly areas, evacuation sites, and evacuation shelters".

1. Ensure the safety and health of the population affected by the disaster.

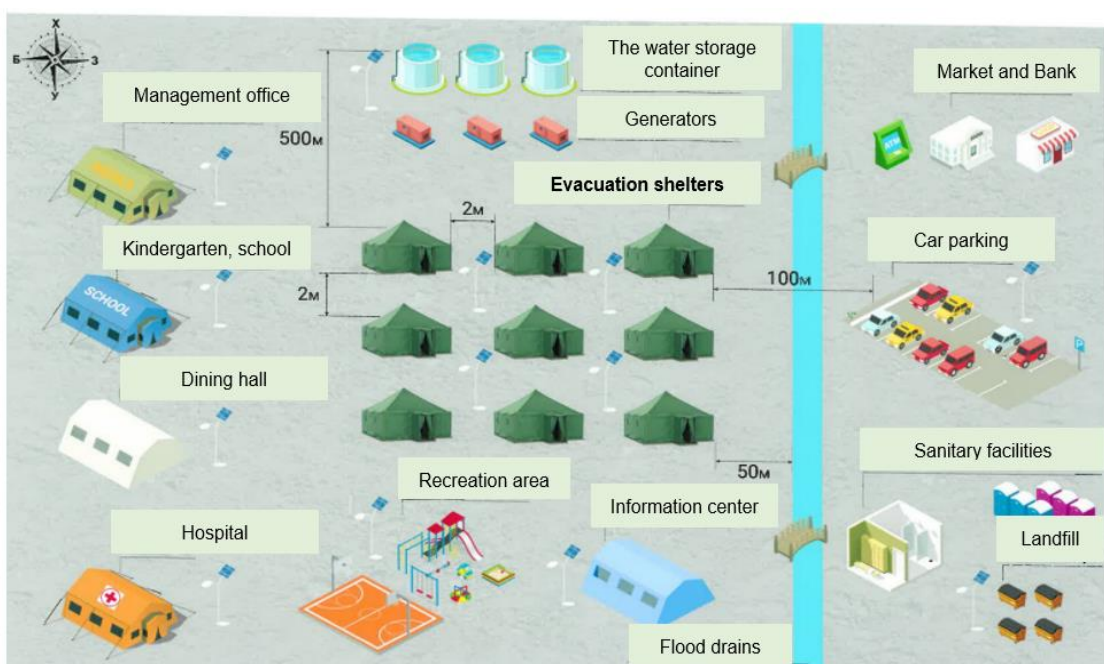
When placing people in temporary accommodation, the following factors will be taken in to account: Including:

- Number of citizens (families) affected by the disaster;
- Number/ratio of adults, children, elderly, gender;
- People with disabilities and religious differences and individual viability (Appendix 1).

2. Type of evacuation shelter (Figure 20):

- Organization of buildings, structures, houses, tents, mobile homes in the form of camps;
- The area allotted to each person should be at least 3.5 m²;
- In temporary accommodation, the space allocated to disabled people who are bedridden and use special equipment such as wheelchairs will be increased by 1 m²;
- Halls of schools, public and private buildings, facilities, recreation and tourism places that have been assessed for earthquake resistance and assessed at the level of administration and territory will be used as evacuation/temporary shelters;

Figure 20. Organization of evacuation shelter during disaster



3. Internal environment of the evacuation shelter
 - Have heating and cooling;
 - Having a set of air mixture;
 - Having a sound insulation and lighting;
4. Sanitation
 - It is necessary to have a male and a female sink and shower for every 30 people at a distance of 50 meters from the camp;
 - It is necessary to have a male and a female toilet for every 20 people at a distance of 100 meters from the camp;
 - Provision of necessary sanitary equipment and disinfectants;
 - Place a trash can 100 meters away from the camp;
 - Place trash cans downwind and away from flood dams;
 - Ensuring sterilization, disinfection and infection prevention regimens, regular cleaning and disinfection;
5. Water supply
 - Reserve drinking and consumption water, place it at a distance of 500 meters from the camp, estimate 7.5-15 liters per person per day;
 - Ensuring cleaning, disinfection and safety of water storage (tank);
6. Food and food products
 - Calculate and prepare the amount of food needed by the population for 3 days based on the order of the Minister of Health No. a/74 of 2017 and the order of the head of the National Statistics Committee No. 1/76 of 2008;
 - Having a warehouse and storage (150-200m²) for food, medicine, medical supply and chemicals;
7. Household items
 - Blanket;
 - Mattresses;
 - Eating utensils;
 - Toiletries;
8. Lighting, power source, address system
 - Having a power source and power transmission line;
 - Have a backup power source;
 - Mechanical lighting (candles, matches);
9. Organization
 - Preparation of accommodation for administrative, service and other staff;

- Establishment of public and social service department;
- Establishment of a waiting area for victims to arrive and return;
- Establishment of a registration and health examination section near the waiting area;
- Have fences, barriers and gates;
- Evacuation sites facilities should have addresses;
- Adhere to distance and area size;
- Clear regulation of dirty and solid waste;
- The internal organization will be organized in such a way that the movement of citizens will be easier, unimpeded and prompt.

Also, in this requirement,

- Signs and markings will be posted to show the temporary assembly area, evacuation sites, and the road and route to the evacuation shelters in a way that is understandable to the people.
- It is mandatory to have a device to transmit disaster announcement information in evacuation sites and evacuation shelters and
- Planned practices and schools for working with sirens to announce the danger of disaster will be organized every year. In doing so, it is stipulated that the citizens should be subjected to training such as gathering in a temporary assembly area, relocating to an evacuation site, and placing them in evacuation shelters.

The criteria, norms, and standards that need to be met in shelters for evacuation/temporary shelters of the population, gatherings, and reception centers included in these legal documents are limited to specifying the location and stating the requirements in an overly general manner.

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

Legal System and Organization Structure:

The Basic act on disaster management has the following structure. It includes:

- Purpose:

In order to protect the national land and the lives, bodies, and property of citizens from disasters, the basic principles for DRR shall be established, and the national government, local governments, etc. shall establish the necessary systems, clarify where the responsibility lies, and prepare disaster management plans, thereby contributing to maintaining social order and ensuring public welfare.

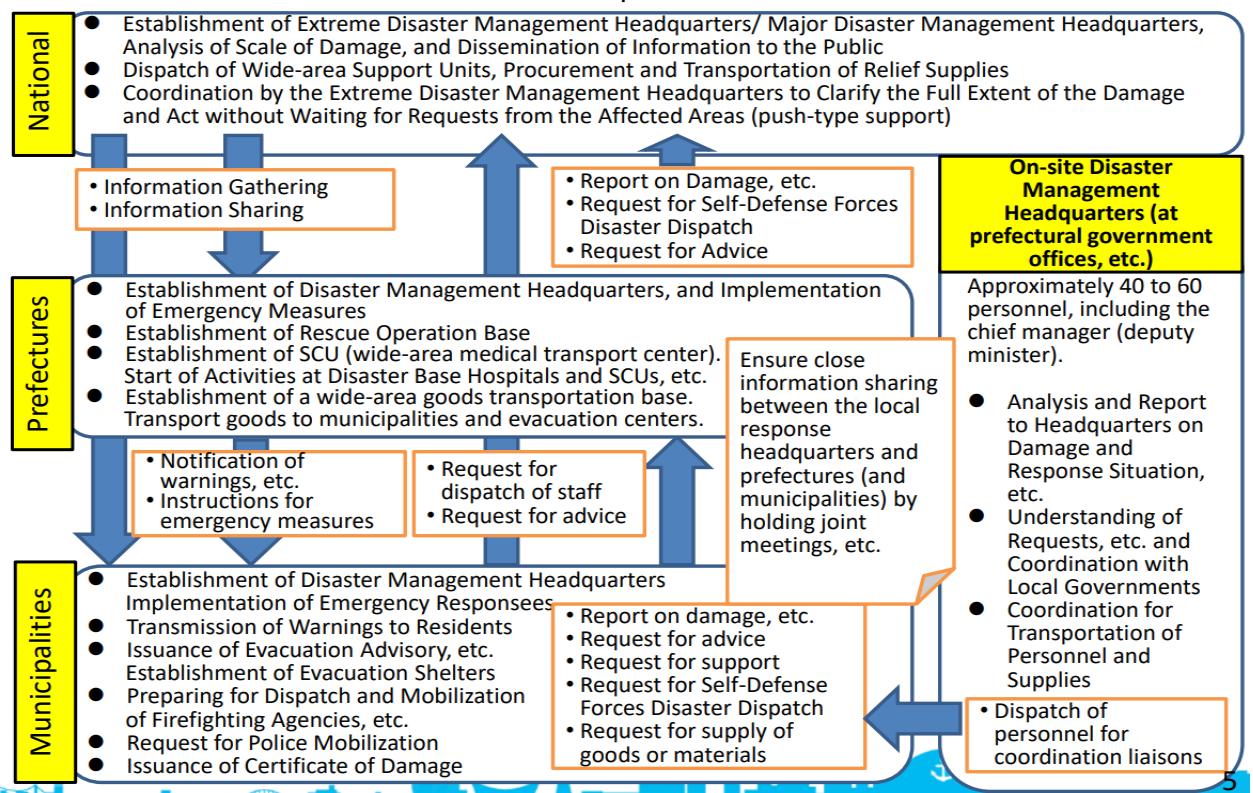
- Disaster Risk Reduction Philosophy and Responsibilities:

Basic principles of disaster countermeasures, responsibilities of the national government, prefectures, municipalities, residents, etc.

- Organization for Disaster Management:
 - [National] National Disaster Management Council, Headquarters for Specific, Emergency, and Urgent Disaster Countermeasures.
 - [Local] Local Disaster Management Councils and Disaster Control Headquarters.
- Disaster Management Plan:
 - [National (National Disaster Management Council)] Basic Disaster Management Plan
 - [Local] Local Disaster Management Plans.

Roles and Cooperation among the National Government, Prefectures, and Municipalities is shown in the following figure.

Figure 21. Roles and Cooperation among the National Government, Prefectures, and Municipalities



As you can see from the picture above, prefectures are responsible for "Transport goods to municipalities and evacuation centers" and the Municipalities are administration deals with the issue of "Issuance of Evacuation Advisory, and Establishment of Evacuation Shelters".

Now, let's consider the requirements for evacuation centers in times of disaster.

When the Great East Japan Earthquake occurred in March 2011, a clear distinction was not necessarily made between "evacuation sites" to which people could flee to

escape from the dangers of the imminent disaster and “evacuation shelters” where they could live in places of refuge following the disaster.

Furthermore, the evacuation sites were not designated according to the type of natural disaster for which they were intended. Thus, some people fled to evacuation sites immediately after the earthquake only to have these facilities destroyed by the tsunami. This was one cause of damage escalation.

Given this, revisions were made in June 2013 to the Disaster Countermeasures Basic Act establishing new provisions relating to “Designated Emergency Evacuation Sites” and “Designated Evacuation Shelters”.

During the disaster, the following guidelines are followed to ensure that the quality of life of the people is not compromised even in the unsuitable living conditions of the evacuation shelters:

- "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).

Details of these guidelines for disaster evacuation shelter requirements are provided below.

"Shelter Management Guidelines".

This guideline includes issues such as enhancing and strengthening evacuation center operation and management systems by establishing and reviewing local disaster prevention plans and disaster response systems, conducting drills and training, and improving the efficiency and facilitation of responses during disaster.

This guideline has 4 chapters: Operation to be performed in normal times, operation of evacuation centers (during disaster), responding to needs and elimination of shelters. In each chapter, the issues necessary to implement the relevant requirements were considered as sub-chapters.

I Operations to be performed in normal times:

1. Establishment of a shelter management system:

During normal times, the disaster response headquarters system has not yet been set up, and the measures to be taken at evacuation centers are currently left entirely up to the disaster management staff. While residents should take the initiative in living in evacuation centers, establishing a system to back up the operation of such centers is one of the cornerstones of disaster response operations in municipalities. With the spirit of an all-agency system, not only those in charge of disaster prevention but also several related sections, such as those in charge of persons requiring special care, should establish a cross-sectional system in advance, clarify How the division of roles, and prepare for emergencies.

2. Designation of shelters:

The designation of evacuation centers should be carefully processed based on the damage assumption according to the disaster anticipated in the area. In areas at risk of flooding, evacuation centers should not be located along rivers; in areas at risk of landslides, evacuation centers should not be located near disaster risk zones, such as in special landslide hazard areas; and in areas at risk of tsunamis, evacuation centers should not be located in tsunami hazard zones. Designate facilities in areas that are relatively less affected by possible disasters and where transportation of disaster relief supplies is relatively easy. It is also important to assume that undesignated buildings may become evacuation centers due to an increase in the number of evacuees. Prepare for such a situation by simulating the shortage of shelters during disaster response drills.

3. Specific preliminary assumptions for initial response:

In order to set up an evacuation center when the time comes, it is necessary to prepare in advance manuals and forms for shelter operation, share them with all concerned parties, and verify their effectiveness through drills and other means. In addition, since it is often practically difficult to request supplies from evacuation centers during the initial response, a system must be established to first send at least the minimum amount of supplies considered necessary to evacuation centers in a pushbutton fashion. Furthermore, a plan for securing and managing disaster toilets must be prepared in advance.

4. Establishment of a support system:

Since an evacuation center is a place where disaster victims live for a certain period of time, it is necessary to establish a system to manage the evacuation center.

In principle, "disaster victims themselves are required to take action and help each other to operate the shelter. In order to quickly establish a post-disaster management

system and ensure smooth operation, municipalities should take the lead in preparing an evacuation center operation manual, and confirm and inform the roles of evacuees, local residents, and staff dispatched to evacuation centers through evacuation center operation drills and other opportunities. By incorporating women's perspectives, more concrete opinions can be expected to be reflected.

5. Measures for evacuees who are unable to return home and evacuees at home:

In terms of preparations to be made under normal circumstances, it is of course important to respond to residents who are affected by the disaster in the community and evacuate to shelters.

Evacuation centers must also function as a base for evacuees at home (those who cannot find a place to stay at evacuation centers and have no choice but to return to their homes or those who are living in inconvenience due to the disruption of lifelines, etc.).

We should prepare as much as possible in advance, assuming possible situations depending on the characteristics of the area.

II Operation of evacuation shelters (during disaster):

(1) Core business:

6. Establish a cycle of shelter operations:

When a disaster occurs and an evacuation center is opened, it is first necessary to assess the damage to the facility and confirm whether or not it is in a condition to receive evacuees.

Next, the Disaster Control Headquarters must accurately assess the damage and the number of evacuees at each shelter and determine whether there is a shortage in the number of shelters in the area.

In order to quickly establish an operational cycle for the evacuation centers in the event of a disaster, the headquarters should conduct practical drills on the reception of evacuees and the preparation of a list of names of evacuees.

7. Acquisition, management and sharing of information:

In evacuation centers, the information needs of evacuees will increase. The means of obtaining, managing, and sharing information will need to be addressed while taking in to account the real constraints imposed by the effects of the disaster.

To this end, municipalities should ensure that each evacuation center is equipped with communication equipment such as radios and satellite cellular phones, as well as backup power sources and power generators, TVs, radios, door-to-door receivers, and other means of obtaining information, from normal times onward. In addition, conduct

periodic drills to ensure that staff members dispatched to evacuation centers are familiar with the use of such equipment.

8. Food and supply management:

If there is no space to store food, drinking water, etc. at the evacuation center, a supply plan should be prepared so that stockpiles can be distributed by push (i.e., suppliers send the minimum necessary supplies to evacuation centers during the initial response period without being requested to do so).

For the supply plan, agreements should be made in advance with distribution business groups, etc., to secure specific "supply bases" where supplies will be procured, transported, organized and packed. In addition, routes to each evacuation center should be secured, and storage locations for supplies at evacuation centers, etc. should be determined. In addition, it is essential to respond to the special needs of those who need special consideration, such as "Food allergies" and "Nursing food" at evacuation centers, in order to protect the lives and health of disaster victims.

9. Securing and managing restrooms:

There are four main types of disaster toilets (portable toilets, portable toilets, temporary toilets, and manhole toilets), and depending on the characteristics of each type, the expected time of use and necessary preparations differ.

Depending on the expected restoration of water, sewage, and septic tanks, efforts should be made from normal times to secure disaster toilets. Then, prepare a plan for securing and managing toilets with reference to the "Guidelines for Securing and Managing Toilets in Evacuation Shelters".

While securing and deploying disaster toilets, sanitation of the toilets is an important point. Since toilets in evacuation centers are used by a large number of people, it is necessary to pay more attention to hygiene and usability than usual.

Maintaining a sanitary and comfortable toilet environment will help prevent health hazards, including infectious diseases. Implement a cleaning system approach to ensure that infections, sanitary pests, and unpleasant odors are eliminated as much as possible, and that they are comfortable to use.

It is also important to ensure that hand washing water is available, that people know how to wash their hands, and that separate toilet footwear is provided to maintain a sanitary environment.

(2) Health Care:

10. Maintenance of a hygienic environment:

In evacuation centers where lifelines are disrupted and people live in groups, the risk of various infectious diseases and food poisoning increases, so it is necessary to thoroughly address sanitation immediately after a disaster strikes.

Regarding sanitary measures in general, be sure to prepare from normal times with the cooperation of local residents and volunteers, so that the hygiene department in particular, the crisis management department, and the person in charge of evacuation center management can work in close cooperation and with professional guidance to ensure that everything is in place. In addition, be very careful when handling food (perishables, boxed lunches, etc.) to prevent food poisoning.

11. Health care of evacuees:

In the time of disaster, to prevent the worsening of pre-existing conditions, to prevent the onset of new illnesses, and to maintain health, both within and outside the municipality.

Periodically conduct health checks and management of disaster victims by "Visiting and dispatching medical, health, and welfare professionals". Pay attention to the results of these checks, seek guidance from visiting physicians, etc., and ensure that a system is in place to properly transfer the victims to specialized facilities, etc.

12. Improvement of bedding:

In the environment caused by disasters and their evacuation, the continuous sleeping in cramped shelters and stress can lead to venous thromboembolism (economy class syndrome). If the effects are severe, the possibility of death cannot be ruled out.

Regarding sleeping arrangements, initial efforts should be made to alleviate cold and heat by providing blankets and ventilation, etc., followed by the introduction of cots, such as mats or cardboard cots. This is because prolonged lying on the floor not only causes economy class syndrome, but there are also concerns about health hazards from inhaling dust and other particles.

(3) Better Environment

13. Clothing:

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.

14. Bathing:

Especially in the case of flooding or other situations where the area has been affected by sewage, it is necessary to take showers or other means to remove dirt and grime to prevent infectious diseases. Also, consider appropriate measures depending on the situation, such as using existing bathing facilities or procuring temporary baths. When using temporary baths, make sure to drink water and check your health before and after bathing.

III Responding to Needs:

(4) Consideration required:

15. Accommodating those who need special consideration:

It is important to secure space and establish a system in which all evacuees can look after those who need special care in evacuation centers, such as the elderly, disabled, pregnant and nursing mothers, infants, and those with intractable diseases, to prevent their health from deteriorating. In addition, it is important to provide information on the conditions and needs of those in need among those involved in the evacuation shelter, including consideration for foreign nationals.

Share information and continue to manage your physical condition. Furthermore, what difficulties they are facing should be discussed with the persons concerned, such as by hearing from them and their families. Special consideration should be given to improving the living environment and moving to a welfare shelter or specialized facility.

16. Consideration for women and children:

Women and children have special needs. For example, by taking into consideration the need for sanitary products, changing room space, nursing rooms, etc.,

A safe environment can be maintained for many people. Even in times of disaster, it is important to be concerned so that maximum consideration is given. Also, encourage the participation of women in committees to implement shelter management from their own perspectives. Specifically, it is desirable to have at least 30% of the committee members be women, which is generally considered to be the target for administrative councils.

(2) Safety and Security:

17. Crime prevention measures:

One of the challenges in times of disaster is to maintain public safety. Since it is unfortunately not uncommon for thieves to enter from outside the disaster area, it is necessary to consider strengthening the community watchdog system by fire brigades, neighborhood watch groups, etc., requesting police patrols, measures to prevent sex crimes against women and children, and strengthening the counseling system.

18. Pet support:

Pets are very important to their owners, but in an evacuation shelter where people who are not fond of animals or who are allergic to animals live together, consideration must be given to their noises, scattered hair, and smell.

It is important to set rules for pets in evacuation shelters in advance. 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.

IV Elimination of shelters

19. For the elimination of shelters:

The stage at which lifelines have been restored to the community is one of the guidelines for the dissolution of shelters. After a certain period of time, ask the evacuees about their requests for a place to settle down. It is expected that the evacuees will be supported as much as possible in accordance with their requests, leading to the dissolution of the shelter. The shelter should be dissolved with the goal of completing its role and regaining its original role as an institution.

"Guidelines for Securing and Managing Toilets at Shelters":

Once a disaster occurs and flush toilets stop functioning, the disposal of excreta is delayed. This can lead to outbreaks of infectious diseases and pests caused by bacteria in the excreta. In addition, the number of victims in evacuation shelters who are uncomfortable because of unsanitary toilets increases, and the reluctance to use toilets leads to withholding of water and food, which in turn leads to deterioration of nutritional status, dehydration and venous thromboembolism (economy class syndrome) among the victims. This may lead to health problems such as worsening nutritional status, dehydration and venous thromboembolism (economy class syndrome) in the affected population.

Some shelter facilities have many toilets with Japanese-style toilets, and many temporary toilets also have Japanese-style toilets, which makes it extremely difficult for the elderly with weak legs and backs and disabled people in wheelchairs to use toilets. Securing nappies etc. is also a challenge, and for highly vulnerable people, the deteriorating sanitation environment can be a life-threatening problem.

Thus, toilet challenges can lead to many health hazards and deterioration of the sanitary environment, while at the same time increasing the number of victims who experience discomfort and damage to their dignity as human beings. In the context of

support for disaster victims, the issue of toilets in evacuation shelters should be viewed with stronger awareness of the problem than ever before.

The issue of toilets should be tackled in advance through the cooperation of relevant departments in municipalities (including special wards, the same applies below).

This guideline has 3 chapters: Current station 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.

Research was conducted on the general content of the guidelines.

I Current situation and challenges:

1. Issues surrounding toilets in evacuation shelters during disasters:

In this section, the rationale for separately considering the cleanliness and comfort of toilets for use in evacuation shelters during disasters is mentioned.

Also, research was conducted on problems related to shelter toilets during large-scale disasters that occurred in Japan in the past.

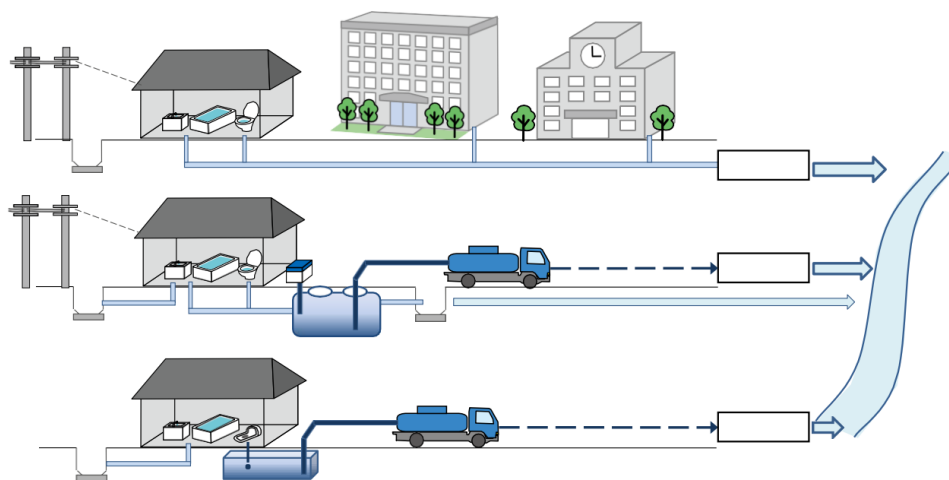
Securing and managing toilets in shelters during a disaster is an extremely important issue and, along with support for water, food, etc., should be recognized as one of the 'social infrastructure services that support the lives' of victims, just like 'lifelines (electricity, water, gas, sewerage, etc.)', and appropriate measures should be taken in the municipalities where shelters are established. It is necessary to ensure that appropriate measures are taken in the municipalities where evacuation centers are set up.

II. Basic approach to securing and managing toilets

1. On securing disaster toilets:

(1) Toilet mechanism

Figure 22. Toilet mechanism



(2) Constraints in securing toilets during disasters.

It is necessary to be aware at normal times that multiple situations can occur at the same time during a disaster, which can lead to various constraints in securing toilet facilities.

(3) System building:

Residents, communities and municipalities should take their respective positions to ensure that toilets are available in the event of a disaster, in preparation for the aforementioned situations. Municipalities should actively publicize the need to secure toilets in the event of a disaster by, for example, encouraging residents and communities to stockpile toilets in their homes and conducting drills on the installation of disaster toilets at evacuation shelters.

Residents, communities and municipalities should take their respective positions to ensure that toilets are available in the event of a disaster, in preparation for the aforementioned situations. Municipalities should actively publicize the need to secure toilets in the event of a disaster by, for example, encouraging residents and communities to stockpile toilets in their homes and conducting drills on the installation of disaster toilets at evacuation shelters.

In addition, within the municipality, the departments in charge of septic tanks and sewage treatment and other related departments, such as those in charge of disaster prevention and health, should cooperate in normal times to study toilet measures, and establish a system for cross-departmental information sharing and response aimed at “Providing a clean toilet environment for victims” in the times of disaster.

(4) Planning:

In order to ensure toilet provision in the event of a disaster, it is necessary to make specific assumptions about possible disaster situations during normal times, estimate the number of toilets required, and implement a plan to promote the stockpiling of portable toilets and other equipment, manhole toilets, etc. and establish means to procure toilets in the event of a disaster.

2. Items to be considered when securing and managing:

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.

The table below summarises the matters that need to be taken into account and the measures to be taken for those who need to be taken into account.

Table 10. Action issues for people who need to be taken care of in evacuation shelters

Matters to be taken in to account/People requiring consideration	Correspondence/response
Safety	<ul style="list-style-type: none"> • Install it in a place where it will not be dark. • Night lighting in private rooms and on the route to toilets. • Outdoor toilet sheds should be robust. • Ensure toilets are secured and prevented from tipping over. • Private rooms shall be lockable. • Install security buzzers.
Hygiene and comfort	<ul style="list-style-type: none"> • Prepare footwear for toilet use only (indoors only). • Ensure water is available for handwashing. • Wet wipes for handwashing. • Prepare disinfectant solutions. • Deodorants and insect repellents. • Implement measures against heat, cold, rain, wind and snow • Toilet cleaning equipment.
Women and children	<ul style="list-style-type: none"> • Separate toilets for men and women. • Provide a bin for the disposal of sanitary products. • Shelves and hooks for mirrors and luggage. • Install toilets that can be accessed with children. • Provide a diaper-changing area. • Install blindfolds for queues waiting to use the toilets.
Older people and people with disabilities	<ul style="list-style-type: none"> • Secure western-style toilets. • To be installed in a convenient location. • Ensure a clear flow line to the toilet. • Reduce the number of steps in toilets. • Install toilets in welfare evacuation spaces, etc. • Ensure toilets are accessible to cares.
Foreigner	<ul style="list-style-type: none"> • Provide notice boards in foreign languages (e.g. how to use the toilet, how to wash hands, how to disinfect, etc.).
Other	<ul style="list-style-type: none"> • Install multi-purpose toilets. • Ensure space for orthotic change for people with artificial anus and bladder holders. • Provide an infant booster seat.

3. Number of toilets (approximate)

Municipalities should take in to account the situation of temporary toilet installations in past disasters and the standards set by the United Nations and other organizations. At the beginning of the disaster, there was a need to install one device for every 50 evacuees. In the event of a prolonged evacuation, the number of units should be approximately 1 per 20 people.

The number of toilets is calculated as the combined number of private toilet rooms (using portable toilets in western style toilets) and disaster toilets in the facility.

Barrier-free toilets should not be included in the number of units mentioned above, but should be secured according to the number of evacuees and their needs.

However, these are only guidelines and the number of toilets required in shelters will vary depending on the situation of the evacuees and the extent of damage.

It is important that each evacuation centre ensures that the number of toilets and their treatment and storage capacity are appropriate for the number of evacuees (including men and women), bearing in mind the waiting time for toilets.

Table 11. Guideline for the number of toilets in a disaster situation.

Source of guidelines, etc.		Number of toilets	
Guideline by the United Nations UNHCR (United Nations High Commissioner for Refugees) guidelines for quantities in emergency situations.		Choice of response depending on the situation Proposal 1. One unit per household Proposal 2. 1 unit per 20 people Proposal 3. 1 individual room or 1 excretory area per 100 people	
Guideline by the Sphere Project*	Public places and facilities	Public places and facilities	Number of toilets (longterm)
	(the) market (as a concept)	1 per 50 stalls	1 per 20 stalls
	Hospitals and medical centers	Number of beds 20 or 1 unit per 50 outpatients	Number of beds 10 or 1 unit per 20 outpatients
	Soup kitchen	1 unit per 50 adults 1 unit per 20 children	1 per 20 adults 1 unit per 10 children
	Accepted/temporary residence centers (measure of land area)	1 unit per 50 persons Female to male ratio 3:1.	
	School	1 unit per 30 girls 1 unit per 60 men	1 unit per 30 girls 1 unit per 60 men
	Office		1 unit per 20 staff

*(Source: Sphere Project Humanitarian Charter and Minimum Standards for Humanitarian Response, 2011).

It is not realistic to stockpile all the toilets in shelters, and it is important to strengthen the cooperation system, for example by concluding agreements with relevant organizations and businesses in advance, so that disaster toilets can be quickly procured in the event of a disaster and operated smoothly in during of disaster.

4. Types of toilets

(1) Use of existing toilets

If existing toilets used in normal times can be used, it will be easier to secure the number of toilets and also desirable from the perspective of securing private rooms. For this reason, municipalities should cooperate with facility managers and others to ascertain in advance the use of existing toilets in the event of a disaster, including the water supply and drainage conditions at each shelter, the type and number of toilet bowls, and the selection of toilets in the facility that can be offered (opened) to evacuees.

At the same time, it is necessary to discuss and prepare in advance with relevant parties how to determine whether or not flush toilets can be used during a disaster, how

to utilise them, post rules for their use, cleaning and maintenance methods, cleaning supplies and other supplies needed to keep toilets clean, etc.

(2) Disaster toilets

There are various types of disaster toilets, as follows.

Table 12. Types of toilets for use in evacuation shelter

Type	Photograph
❖ Portable toilet - Portable toilet (Storage and collection) <i>(A bag that can be attached to an existing pedestal toilet)</i>	
❖ Simple toilet - Portable toilet (storage/collection) - Simple toilet assembly type (storage/collection) <i>(A small toilet that can be placed in a room)</i>	
❖ Temporary toilets - Portable toilet (pumping out) <i>(The same type of toilet used at events and construction site)</i>	
❖ Manhole toilet <i>(Installation of a toilet pedestal or compartment over a sewerage manhole or other drainage system)</i>	
❖ Other toilets - Self-cleaning toilet (water circulation type, composting type, drying/incineration type) - In-vehicle toilets - Storage in a toilet tank	

5. Toilet hygiene:

As toilets in shelters are used by large numbers of people, hygiene needs to be considered more than usual.

Consider providing dedicated toilets in the event of an infectious disease patient.

Determine from among the evacuees who will be responsible for the toilets and who will be in charge of cleaning duty.

Maintain a hygienic toilet environment with the help of volunteers and other supporters.

Examples of equipment required for hygiene management.

In order to ensure that the minimum necessary supplies, etc. are promptly available for continuous hygiene-conscious cleaning in the event of a disaster, efforts should be made to stockpile supplies from normal times, and means should be prepared in advance to inform people how to use toilets, wash their hands, clean up, etc.

Below, examples of equipment required are marked with:

⊙ for items that should be prepared on a priority basis and

○ for items that should be prepared on a preferred basis, to indicate priority.

Table 13. Equipment required for hygiene management

Classification	Equipment
Necessities	<ul style="list-style-type: none"> ⊙ Toilet paper (preferably plastic wrapped) ⊙ Sanitary products ⊙ Paper sorting bins/sanitary bins (if made of corrugated cardboard, protection against water from floor surfaces is required)
Health	<ul style="list-style-type: none"> ⊙ Water and soap for hand washing (if hand washing water is available) ⊙ Wet tissue (if no handwashing water available) ⊙ Hand rubbing alcohol (in the absence of hand washing water) ○ Paper towels (for hand washing)
What the person cleaning wears.	<ul style="list-style-type: none"> ⊙ Rubber gloves (disposable) ⊙ Masks (disposable) ○ Work wear for cleaning toilets
Cleaning utensils (Container labelled with contents and point of use).	<ul style="list-style-type: none"> ⊙ Water for cleaning (for cleaning and disinfection) ⊙ Buckets dedicated to toilet cleaning (for disinfection water and mop cleaning) ⊙ Chlorine bleach for making disinfectant water (kitchen use is fine) ⊙ Plastic bags (for refuse bags, for carrying cleaning equipment) ⊙ Brooms and dustbins for cleaning toilets ⊙ Rags for cleaning toilets (multiple for multi-purpose use) ⊙ Brushes (for floors and toilet bowls) ○ Toilet detergent (neutral detergent for disaster toilets) ○ mop ○ Paper towels (for cleaning)

Toilet-related equipment, etc.	<ul style="list-style-type: none"> ◎ Footwear designed for toilet use only (indoor toilets only) ◎ Post rules for using toilets. ◎ Hand washing and disinfection instructions posted <ul style="list-style-type: none"> ○ deodorant ○ Disinfection mats (boundary between indoor and underfoot footwear). ○ Plastic bags for sewage, deodorisers for sewage ○ Insect repellent for toilets
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III. Specific measures to secure toilets

1. Toilet model case

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. For example, the following cases can be considered for the use of each toilet over time. The combination of toilets in the times of a disaster is based on the table below.

Table 14. Toilet combination models over time.
(*Primary use ○Auxiliary use)

Types of disaster toilets	Disaster occurred ~3 days	~2 weeks	~ 1 month	~3 months or more
Portable toilet	*	○	○	
Simple toilet	*	○	○	
Temporary toilet (assembly type)	○	*	*	
Temporary toilet			*	*
Manhole toilet	○ ×	*	*	*
Self-cleaning toilet		○	○	○
In-vehicle toilet		○	○	○

x Can be used depending on the damage situation of the sewage system

"Guidelines for Securing and Managing Welfare Shelters"

The people envisaged to be accepted in welfare shelters are legally defined as 'persons requiring special consideration'. People requiring special consideration are defined as "The elderly, people with disabilities, infants and young children and other people requiring special consideration in times of disaster" (Article 8, Paragraph 2, Item 15 of the Basic Act on Disaster Countermeasures).

Therefore, the pre-designation of welfare shelters and their preparation must be prepared to receive these people. "Other people requiring special consideration' are assumed to include pregnant and nursing mothers, wounded or sick people, persons with internal disabilities, patients with intractable diseases and persons requiring medical care*. As these people are expected to have difficulties in living in general shelters,

welfare shelters should be set up to receive them and some special consideration should be given to them. Note that, for the purposes of these Guidelines, people to be accepted who are described as "people", such as "people with disabilities", etc.

This guideline 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.

I Efforts in peacetime

1. Identification of persons eligible for reception in designated welfare shelters:

1.1 Identification of the approximate number of people to be received in designated welfare shelters:

- People to be accepted at designated welfare shelters may include
 - (I) People with physical disabilities (visually impaired, hearing impaired, physically disabled, etc.),
 - (II) People with intellectual disabilities,
 - (III) People with mental disabilities,
 - (IV) Elderly persons (living alone, elderly-only households, etc.),
 - (V) Homebound patients with incurable diseases and persons requiring medical care using ventilators, oxygen supply equipment, etc.,
 - (VI) Pregnant and nursing women
 - (VII) Infants, vulnerable persons, injured and sick people, and
 - (VIII) Pregnant and nursing mothers.

1.2 Assessing the current status of persons eligible for reception in designated welfare shelters, etc.

It is advisable for municipalities to ascertain the current status of persons eligible for reception in designated welfare shelters from normal times, so that in the event of a disaster, persons eligible for reception in designated welfare shelters can be promptly evacuated to designated welfare shelters.

- Of the persons targeted for acceptance in the previous section "1.1 Identifying the approximate number of persons to be accepted in designated welfare shelters", those whose current conditions, etc. are considered to be surveyable, specifically.

For example, it may be possible to ascertain the current status of persons requiring medical care by utilising information held by municipalities on claims for services for

children and persons with disabilities under the Comprehensive Support for Persons with Disabilities Act and the Child Welfare Act.

The information to be ascertained is (I) Address, (II) Name, (III) Physical condition, and (IV) Family structure (including whether or not the person has a carer), (V) Carer status (daytime and nighttime), (VI) Emergency contact details, (VII) Location of the person's room, as a basic rule, while other items (including necessary medical care and associated power supply, hygiene products, etc.) are surveyed according to the needs of the recipient.

The information ascertained will be maintained in a database so that it can be used in times of disaster for measures such as confirming safety, communicating evacuation information, assisting with evacuation guidance and setting up designated welfare shelters, as well as for studying and implementing measures during normal times. In order to maintain up-to-date information, the registered information should be checked and updated on a regular basis.

2. Designation, public notice and dissemination of designated welfare shelter:

2.1 Identification of facilities that can be used as designated welfare shelters¹.

The municipality identifies facilities that can be used as designated welfare shelters. The following facilities are considered as available facilities. The following facilities will be selected with a primary focus on being 'barrier-free' and 'more accessible to support workers'.

- Facilities that serve as general evacuation centers (e.g. primary and junior high schools, community centers, etc.);
- Welfare facilities for the elderly (e.g. day service centres for the elderly, special homes for the elderly, welfare centers for the elderly, etc.) and facilities for people with disabilities (public and private);
- Child welfare facilities (e.g. nurseries), health centers;
- Special needs schools;
- Elementary and junior high schools, community centers and
- Accommodation (public and private).

2.1 Designation of designated welfare shelters.

2.1.1 Designation criteria for designated welfare shelters.

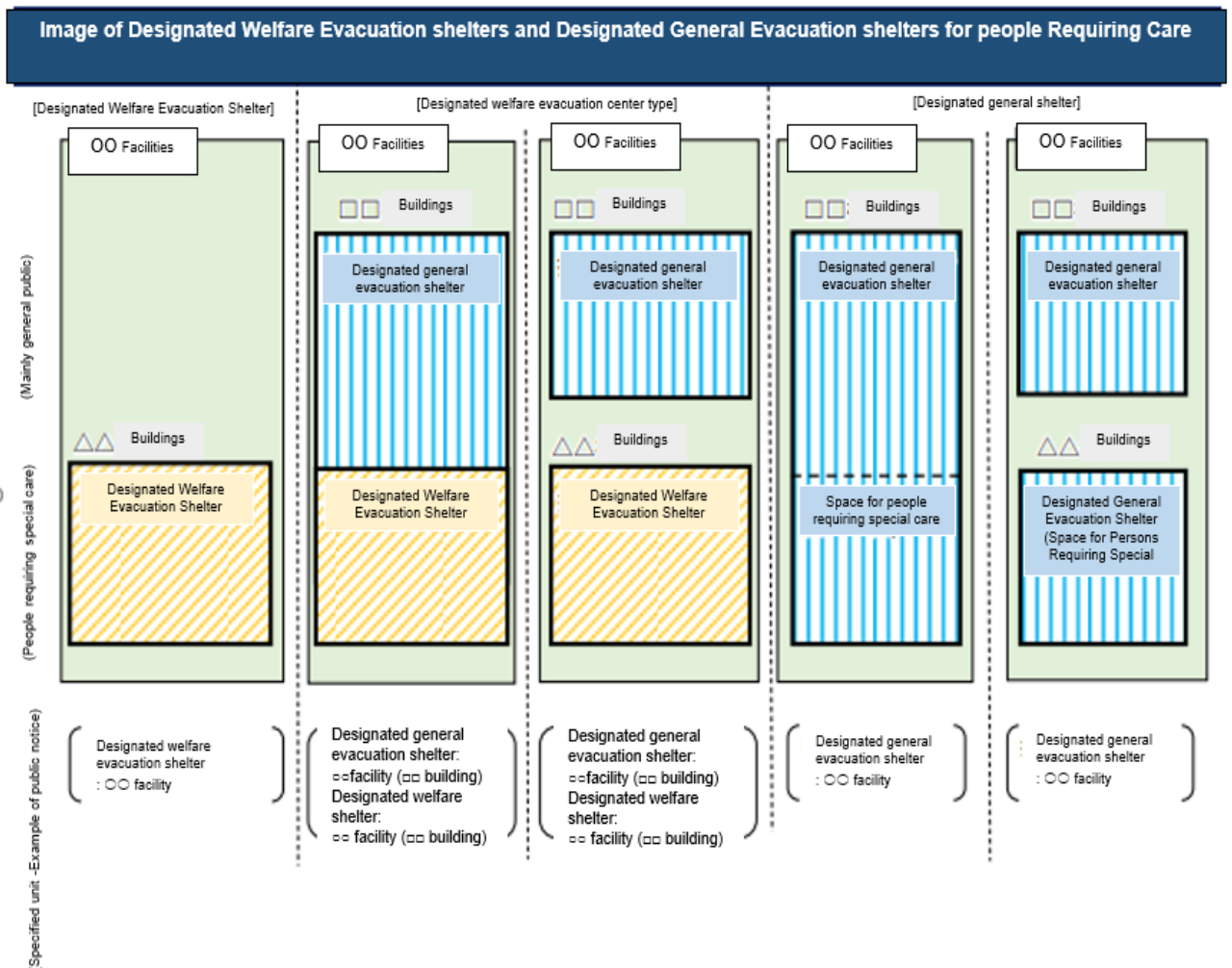
¹ Research and organise the facilities available as designated welfare shelters, including their location, name, owner/manager, available space, facilities and equipment, staffing and the number of people they can accept.

Municipalities designate welfare shelters in accordance with the criteria of the Basic Disaster Management Act.

People and facilities that are expected to receive the patients and facilities as designated welfare shelters.

- It is envisaged that persons requiring special care who, due to the degree of their disability or other factors, have difficulty in taking shelter in general evacuation centers, such as designated general evacuation centers, will be evacuated to facilities, equipment and systems that are well-equipped.
- Assumed facilities such as welfare facilities for the elderly and support facilities for people with disabilities, health centers, etc.

Figure 23. Image of Designated Welfare Evacuation shelters and designated general evacuation shelters for people required care



2.2.2 Setting targets for the designation of designated welfare shelters.

Municipalities set targets for the designation of designated welfare shelters, based on the number of persons eligible to be received in designated welfare shelters and the current situation.

- Designated welfare shelters are to be expanded to ensure that persons in need, such as the elderly and persons with disabilities, can receive the support they need, while taking in to account the needs of persons in need and the circumstances of the receiving facilities.
- Targets for the designation of designated welfare shelters should be set, taking in to account the living areas of persons in need and their families living with them and their links to the community.

2.1.2 Designation and public notification of designated welfare shelters.

Municipalities select and designate facilities to be designated as designated welfare shelters, based on information on facilities available as designated welfare shelters and the criteria for designated welfare shelters.

When a municipality designates a designated welfare shelter, it shall give public notice of its name, location and, if it specifies the victims, etc. to be received in such designated welfare shelter, a statement to that effect and other matters deemed necessary by the mayor of the municipality. (Revision of the Enforcement Regulations in 2021).

In view of the concerns expressed by victims and others who do not expect to receive them when welfare shelters are publicly notified as designated shelters, municipalities are now allowed to specify the persons eligible to receive them for each designated welfare shelter and publicly notify them at the time of designation.

In designating designated welfare shelters, coordination shall be made with the facility managers, etc. of such designated welfare shelters regarding the persons to be accepted.

Reference: Examples of public notices specifying the recipients. Notations specifying the recipients may include, as an example, the following.

Table 15. For older people:

Name	Address (e.g. of house)	Accepted applicants (*)	Other
Social welfare corporation ○○ park	○○ city △△ 1-1-1	Old people	
●● Welfare centres for the elderly	○○ city ●● 2-1-1	People identified by the city.	
Social welfare corporation ○● park	○○ city □□ 3-1-1	Old people (Around 3 care required)	

*Family members and others are also eligible for acceptance.

Table 16. For people with disabilities:

Name	Address (e.g. of house)	Accepted applicants (*)	Other
------	-------------------------	-------------------------	-------

Social Welfare Corporation △△ park	○○ city △△1-1-1	Handicapped	
▲▲ Disabled Center	○○ city ●●2-1-1	Person specified by the city	
Social Welfare Corporation ▽▽ park	○○ city ●●1-2-1	Intellectually disabled, mentally disabled (developmentally disabled)	Among the persons listed on the left, those who were identified by the city in advance and who made environmental adjustments in advance
▼▼ Disabled Center	○○ city ●●2-2-1	Physically handicapped (visually impaired, hearing impaired)	
■ ■ Special support school	○○ city ●●3-1-1	Current student	
□ □ Special support school	○○ city ●●3-1-1	Current students, graduates, and those identified by the city in advance	
▲ ▼ Child Development Support Center	○○ city ●●3-2-1	Children with disabilities and those identified by the city in advance	

*Families, etc. are also eligible for acceptance.

Table 17. For infants and pregnant women:

Name	Address (e.g. of house)	Accepted applicants (*)	Other
□ □ District center	○○ city △△1-1-1	Pregnant women and infants	
■ ■ Public hall	○○ city ●●2-1-1	Infants	

*Families, etc. are also eligible for acceptance.

Table 18. People with special needs who are not specified as being eligible for reception

Name	Address (e.g. of house)	Accepted applicants (*)	Other
□ □ District center	○○ city △△1-1-1	Person requiring special consideration	

*Families, etc. are also eligible for acceptance.

2.2.4 Ensure that designated welfare shelters are known to the public:

Municipalities should use all media available to them to provide information on the name of the designated welfare shelter and the persons to be received. The information on the following matters should be widely disseminated to the population. In particular,

the information should be made known to persons in need, their families, voluntary disaster-prevention organizations, support groups, etc.

2.2.5 Coordination of the number of people to be received at each designated welfare shelter.

The municipality shall coordinate in advance with each designated welfare shelter the persons to be accepted, etc., through the process of preparing district disaster prevention plans, individual evacuation plans, etc., for those who will evacuate directly to the designated welfare shelters.

In cases where the municipality is unable to directly evacuate all persons requiring assistance who wish to do so to a designated welfare shelter, for example, the municipality should first set up a space for persons requiring assistance in a general shelter for temporary evacuation.

3. Development of designated welfare shelters

3.1 Development of facilities for designated 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.

- Barrier-free facilities, such as elimination of steps, installation of ramps, installation of handrails and guidance devices, and installation of disabled toilets.
- Ensuring ventilation and air flow
- Maintenance of air-conditioning and heating systems
- Maintenance of emergency generators.
- Information-related equipment (radios, televisions, telephones, radios, facsimiles, computers, electronic noticeboards, etc.)

4. Securing supplies, equipment, human resources and means of transport

4.1 Securing supplies and equipment

Municipalities should work with facility managers to stockpile necessary supplies and equipment at designated welfare shelters.

- Nursing products, hygiene products, sanitary products
- Drinking water, food suitable for persons requiring special care, blankets, towels, underwear (including sanitary panties), clothing, batteries
- Portable toilets (mainly used with western-style toilets), beds, stretchers, partitions

- Wheelchairs, walkers, walking canes, hearing aids, urinals, stoma braces, tracheal aprons, oxygen cylinders and other prosthetic devices and equipment for daily living, etc.
- Supplies required as hygiene and environmental measures, e.g. masks, disinfectants, thermometers, (cardboard) beds, partitions, etc.

In addition to stockpiling supplies and equipment, municipalities should maintain a list of suppliers of supplies and equipment so that they can promptly secure the supplies and equipment they need at during the disaster.

4.2 Securing support personnel

Municipalities should prepare a list of people to whom they can request assistance in securing the specialist personnel needed to support the evacuation of people in need, and conclude agreements with relevant organizations and establishments, in order to cooperate with them to obtain personnel assistance in the time of a disaster.

4.3 Securing means of transport.

With regard to the transfer of persons in need from spaces for persons in general shelters, such as designated general shelters, to designated welfare shelters (transfer between designated welfare shelters), or from designated welfare shelters to emergency residential facilities, etc., municipalities should ensure appropriate means of transport that take into account the condition of persons in need, including welfare vehicles, emergency vehicles and Develop a list of suppliers of welfare vehicles, emergency vehicles, general vehicles, etc.

5. Cooperation with social welfare institutions and medical institutions

5.1 Strengthening of cooperation in the establishment and operation of designated welfare shelters.

Municipalities should ensure cooperation with social welfare and medical institutions from normal times through all possible opportunities, as they will need the cooperation of social welfare institutions, medical institutions, etc. in securing specialist personnel, procuring equipment and materials, emergency admission, etc.

The involvement of health and medical personnel is also essential to combat infectious diseases and heat stroke.

5.2 Response to emergency admissions, etc.

Persons requiring special care who have difficulty continuing to live at home and persons requiring special care who have difficulty living in general evacuation centers or designated welfare evacuation centers need to be accommodated by emergency admission to social welfare facilities, emergency short stays, etc. For this purpose,

prefectures and municipalities should identify and organize facilities where emergency admission, etc. are possible.

6. Pre-establishment of an operational system for designated welfare shelters

6.1 Pre-establishment of support teams for persons in need in the event of a disaster, etc.

Municipalities shall set up support teams for persons in need of assistance during disasters as a cross-sectional organization centers on the departments in charge of disaster management and welfare departments. Where necessary, councils, etc., should be set up with members including voluntary disaster management organizations, support groups, welfare-related personnel such as social welfare facilities, health and medical personnel such as public health nurses, doctors and nurses, civil servants and volunteers.

□ In order to ensure the prompt opening and operation of designated welfare shelters in the event of a disaster, a system should be put in place, such as designating in advance an official in charge of designated welfare shelters or, if it is not possible to designate an official in charge of designated welfare shelters, a section or section in charge of designated welfare shelters.

6.2 Pre-establishment of an operational system for designated welfare shelters.

In the aftermath of the evacuation, in view of the growing importance of health and medical responses, such as measures against infectious diseases and heat stroke, measures to ensure the quality of health and medical care, as well as information security for people with impaired vision, hearing function and other disabilities.

As designated welfare shelters are envisaged to be social welfare facilities, etc. that are well-equipped and structured, the system of such facilities shall be used as a basis, and municipalities shall work with relevant organizations from normal times to enhance the system by assigning staff in charge of designated welfare shelters and securing and assigning specialist personnel and volunteers.

7. Prepare manuals for the establishment and operation of designated welfare shelters and conduct drills.

7.1 Preparation of installation and operation manuals, conducting drills, etc.

Municipalities organize workshops and study groups on measures to support persons in need of assistance in order to provide opportunities for a wide range of stakeholders, including staff, voluntary disaster-prevention organizations, local residents, persons in need of assistance and their families, and social welfare facilities, to participate and learn.

Opportunities to discuss how to support people in need in the community through workshops and graphic drills, such as town walks and disaster prevention inspections.

7.2 Dissemination and awareness-raising on rules and regulations for designated welfare shelters.

Municipalities should establish and operate designated welfare evacuation centers smoothly in the event of a disaster. In normal times, the person requiring special care, her family, supporters, welfare, health, and medical personnel.

Efforts will be made to disseminate and enlighten people, voluntary disaster prevention organizations, etc. about measures for people requiring special care, disaster prevention measures, the purpose and rules of designated welfare evacuation shelters, etc.

II Efforts in times of disaster

1. Establishment of designated welfare shelters

1.1 Establishment of designated welfare shelters and reception of persons in need

Municipalities open designated welfare shelters when a disaster has occurred or is likely to occur (in the times of a disaster) and an evacuation of the elderly, etc. has been issued.

In addition, the municipality will open a designated welfare shelter if it considers that there are persons who have evacuated to a general shelter and are eligible to be accepted in a designated welfare shelter and that it is necessary to open a designated welfare shelter.

When a municipality opens a designated welfare shelter, it shall check the safety of the facility together with the facility manager.

The municipality and the facility manager of the designated welfare shelter should work together to manage the designated welfare shelter.

When a designated welfare refuge is opened, the location, etc., shall be promptly made known not only to staff but also to persons in need, their families, voluntary disaster-prevention organizations, local residents and support groups.

As soon as the reception system is in place, the designated welfare shelters will accept those eligible for reception.

If the pre-designated designated welfare shelters do not have sufficient capacity, request social welfare facilities, etc., which have not been designated as designated welfare shelters, to accept them, or rent public accommodation, inns, hotels, etc.

2. Operational arrangements for designated welfare shelters

2.1 Dispatch of staff in charge of designated welfare shelters

Municipalities and facility managers should work together on the establishment and management of designated welfare shelters.

When a designated welfare shelter is established, the municipality will dispatch the staff in charge as necessary. As it may not be possible to secure staff to be dispatched to welfare shelters at the beginning of a large-scale disaster, the municipality should seek cooperation from facility managers and others in order to cope with the situation.

2.2 Operational arrangements for designated welfare shelters and support for their activities.

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.

If necessary, prefectures are expected to coordinate efforts to secure specialist personnel, volunteers and other personnel, including disaster relief welfare teams, on a wide area basis.

3. Support for persons in need in designated welfare shelters.

3.1 Creation and management of evacuee registers for designated welfare shelters.

The municipality shall prepare a list of evacuees sheltering in designated welfare shelters. The list of evacuees shall be updated as necessary.

3.2 Provision of assistance in designated welfare shelters.

The municipality will work with welfare service providers, visiting nursing stations, public health nurses and civil servants to provide necessary welfare services to persons in need who have taken refuge in designated welfare shelters.

3.3 Emergency admission, etc.

Municipalities shall respond appropriately to persons requiring special care who have difficulty continuing to live at home or in general or designated welfare shelters, through emergency admission or emergency short stays.

If medical attention or treatment is required due to a sudden change in the symptoms of a person requiring attention, the person is transferred to a medical institution.

4. Elimination of designated welfare shelters

4.1 Consolidation and elimination of designated welfare shelters

Municipalities will seek to consolidate designated welfare shelters if the use of such shelters becomes prolonged and the number of evacuees varies from one designated welfare shelter to another.

Fully explain the consolidation of designated welfare shelters to evacuated persons in need and their families in order to seek their understanding and cooperation.

When the purpose of the designated welfare shelter has been achieved, the necessary restoration shall be carried out and the designated welfare shelter shall be dissolved.

III Agreements of use the welfare shelters.

1. Agreements of use the welfare shelters

1.1 Use of welfare shelters through agreements, etc.

Welfare shelters in the broadest sense include designated welfare shelters as well as those secured as welfare shelters by agreement or other means.

Welfare shelters could be set up by agreement or other means to enable appropriate responses to the condition of persons in need.

- Facilities such as welfare homes for the elderly, support facilities for persons with disabilities, health centers, etc., which have not been designated as designated evacuation centers, but which the municipality has secured as welfare evacuation centers by prior agreement or otherwise, as facilities with certain facilities, equipment, systems, etc.
- Assumed to evacuate people with special needs who have difficulty in sheltering in general evacuation centers due to their degree of disability or medical care.

In operating welfare shelters through agreements, etc., reference should be made to designated welfare shelters.

1.2 Establishment of spaces for people with special needs within general shelters.

Municipalities should include local residents and qualified personnel in the shelter operating organization of general shelters and specialists (nurses, public health nurses, care workers, social workers, psychiatric social workers, physical therapists, helpers, social workers, child welfare workers, counselors for persons with physical disabilities, Counselors for people with intellectual disabilities, community welfare promotion committee members, etc.).

In terms of dealing with persons requiring assistance in general evacuation centers, a group for persons requiring assistance will be set up in each evacuation center, and a contact point for persons requiring assistance will be set up in the evacuation center, where consultations with persons requiring assistance, reliable communication of information and provision of relief supplies will be carried out.

Conclusion of the chapter 2

In Mongolia and Japan, issues such as providing food, sanitary products, warm clothes, and blankets have been legislated to protect the safety of citizens living in evacuation shelters during disaster.

In Mongolia, the criteria, norms, and standards that need to be met in shelters for evacuation shelters of the population, gatherings, and reception centers included in these legal documents are limited to specifying the location and stating the requirements in an overly general manner.

From the example of Japan, when the Great East Japan Earthquake occurred in March 2011, a clear distinction was not necessarily made between “evacuation sites” to which people could flee to escape from the dangers of the imminent disaster and “evacuation shelters” where they could live in places of refuge following the disaster.

Furthermore, the evacuation sites were not designated according to the type of natural disaster for which they were intended. Thus, some people fled to evacuation sites immediately after the earthquake only to have these facilities destroyed by the tsunami. This was one cause of damage escalation.

During disaster, the following guidelines are followed to ensure that the quality of life of the people is not compromised even in the unsuitable living conditions of the evacuation shelters:

- "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).

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

3.1 Implementation of requirements for evacuation shelter during disaster

Evacuation shelters are places where victims who have lost their homes due to a disaster can temporarily live. Because of the public funds and support they receive, the term "quality improvement" is sometimes used to suggest that it is an extravagance.

However, the term "quality improvement" here refers to the "quality" of "how well a person is able to lead a humane and personal life," which is completely different from the "standard of living" calculated based on an individual's income and assets, so the criticism of "luxury" does not apply.

A "designated emergency evacuation site" is a facility or place where residents evacuate in an emergency to ensure the safety of their lives under imminent danger of a tsunami or flood. And a "designated evacuation shelter" is a facility designed to allow evacuees to stay for a necessary time period until the danger of disaster is over, or to temporarily let residents who are unable to return home stay due to disaster. These revisions distinguished between places for emergency evacuation at the time of a natural disaster, and schools and community centers where people could stay for a specific period and live as evacuees.

The number of rapid designated emergency sites and shelters as of 2013 and 2021 is shown in Table 19.

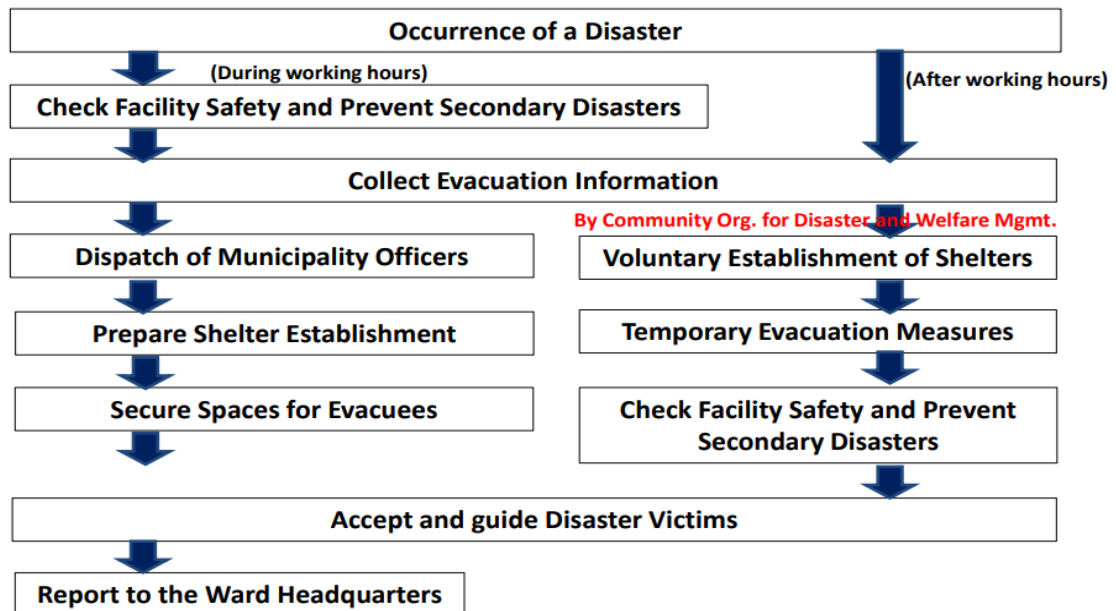
Table 19. The number of designated emergency evacuation sites and shelters as of 2013 and 2021

Types of unusual phenomenon	Items			
	No. of designated sites (sites)		Estimates no. of accommodated (10000 people)	
	2013	2022	2013	2022
Flood	21 459	70 323	3 363	11 808
Sediment disaster	19 468	-	3 713	-
Storm Surge	5 936	21 701	1 791	5 874
Earthquake	24 888	85 035	5 937	22 970
Tsunami	14 099	38 365	2 571	8 569
Large-scale fire	15 179	39 286	5 262	16 753
Heavy rainfall	13 995	37 993	2 397	7 208
Volcanic eruption	3 809	10 329	745	2 279
Slope failure debris flow and landslide	-	66 253		13 236
Total	37 181	369 285	8 333	88 697

From the table above, it can be seen that the number of the designated evacuation sites and shelters in 2021 has increased significantly compared to 2013.

In Japan, the following principles are followed when building evacuation shelters.

Figure 24. Establishment of shelter



Operation of Shelters:

1. Method of Operation

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, high schools, 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.

Figure 25. 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”). In this way, they have the knowledge to save themselves and others in times of disaster, and lead an active social life.

Figure 26. Members of voluntary organizations are participating in disaster relief activities.



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

The measures to be taken during 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/>.

- Preparation: Hazard maps, how to gather information, how to take evacuation actions, and stockpile emergency supplies at home
- Activities: Introduce community disaster drills, DRR efforts of NPOs and universities by photos and videos.
- Learning: Learn in a quiz format

- **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.

Figure 27. The “Sonae to U” Exhibition room in Kobe



"Tokyo Rinkai Disaster Prevention Park", located in Tokyo, conducts various activities to educate the public about the dangers of earthquake disasters. One of them is a demonstration of fully furnished models of evacuation shelters for citizens in times of disaster.

Figure 28. "Tokyo Rinkai Disaster Prevention Park"



- **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.

Figure 29. Some books, manuals and newspapers for the general public about disaster and evacuation shelter:



- **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.

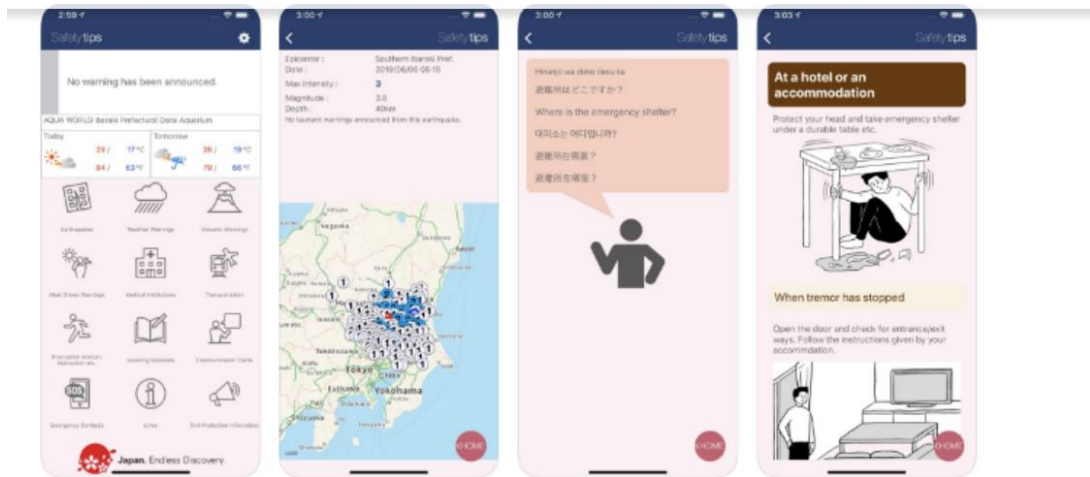
Figure 30. Citizens are informed about disasters through disaster risk reduction events



- **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.






Figure 31. "Safety tips" app for android and iOS.



- **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.

Figure 32. Types of disaster prescribed in Article 20 (iv) of the Disaster Countermeasures Basic Act:

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.

Figure 33. Existing JIS-Prescribed Symbol for Evacuation Sites

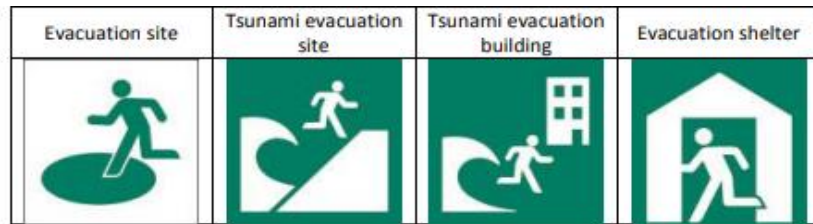
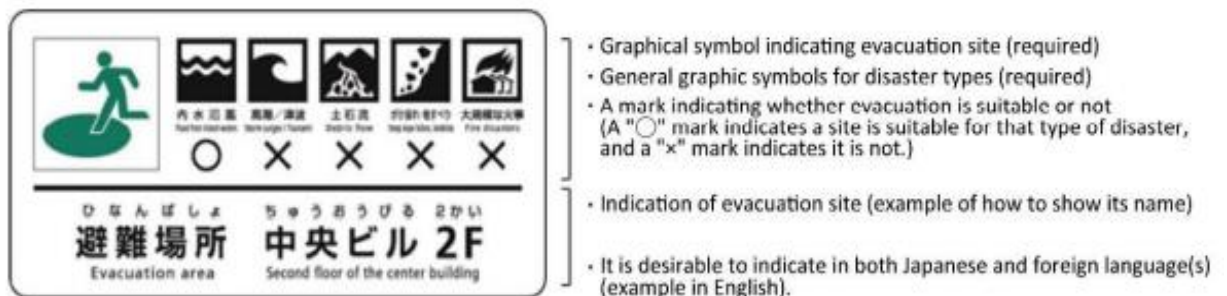


Figure 34. Example for Information Board Using the Hazard Specific Evacuation Guidance Sign System



- **Location of evacuation shelters in case of disaster:**

Emergency evacuation sites shall be designated as places where safety can be ensured for each type of disaster, such as earthquake, tsunami, flood, landslide, and major fire, and shall basically be outside the expected inundation zone or warning area, etc. area. As an example, let's consider how Kobe City's disaster management plan includes requirements for the location of evacuation shelters.

Figure 35. Positioning and Designation Policy of Emergency Evacuation Sites and Shelters (Kobe City)

Name (Disaster Prevention Act)	Name (Kobe, Japan)	Designation Policy	Designated facilities, etc.
Designated emergency refuge (Various)	Emergency refuge	(Great fire)	The building has the size and structure necessary to protect life and limb from the smoke and heat of a large-scale fire in an urban area caused by a major earthquake or other event.
		(Flood)	Designated as a basic indoor space outside of the expected flood zone designated under the Flood Prevention Law.
			Large parks and open spaces Grounds of elementary and junior high schools
			Indoor facilities with a certain amount of space (schools, public and private facilities, etc.)

		(Landslide)	Designated under the Landslide Prevention Act Designated as a basic indoor space outside of the landslide hazard warning area	Indoor facilities with a certain amount of space (schools, public and private facilities, etc.)
		(Tsunami)	Designated as a basic outdoor space with a certain area outside the tsunami inundation zone.	Large parks and open spaces Grounds of elementary and junior high schools Evacuation sites designated in the regional tsunami disaster prevention plan
Tsunami emergency shelter			The area is used as an emergency evacuation site in the event of a delayed evacuation or in the event that injured people or those requiring special care are unable to evacuate horizontally by the time the tsunami reaches the site. Designate at least the third floor of a solid building	Robust buildings (RC and SRC structures designed to new seismic resistance standards) In principle, the third floor or higher
Designated shelter	Shelter		Designate an indoor space with a certain amount of space for evacuation (After the danger of a disaster has passed, the area is used as an evacuation shelter in the event of damage to the home or other facilities. (Facilities that are located in the same area)	Indoor facilities with a certain amount of space (schools, public and private facilities, etc.)
		Welfare shelter	Designate an indoor space with a certain size for evacuation of persons requiring special consideration.	Community welfare centers, social welfare facilities, lodging facilities, etc.

3.2 A comparative study of requirements for evacuation shelter during disaster

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

I. Establishment of operational structure (peacetime):

(1) Operations to be performed in normal times:

1. Establishment of a shelter management system.
2. Designation of shelters:
3. Specific preliminary assumptions for initial response
4. Establishment of a support system
5. Measures for evacuees who are unable to return home and evacuees at home

II. Operation of evacuation centers (during the disaster):

(1) Core business

6. Establish a cycle of shelter operations
7. Acquisition, management and sharing of information
8. Food and supply management
9. Securing and managing restrooms

(2) Health Care

10. Maintenance of a hygienic environment
11. Health care of evacuees
12. Improvement of bedding

(3) Better Environment

13. Clothing
14. Bathing

III. Responding to Needs

(1) Consideration required

15. Accommodating those who need special consideration
16. Consideration for women and children

(2) Safety and security

17. Crime prevention measures
18. Pet support

IV. Elimination of shelters

19. For the elimination of shelters:

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.

I. Current situation and challenges:

2. Issues surrounding toilets in evacuation shelters during disasters:

II. Basic approach to securing and managing toilets

5. On securing disaster toilets:

- (2) Toilet mechanism
- (3) Constraints in securing toilets during disasters.
- (4) System building
- (5) Planning

6. Items to be considered when securing and managing:

7. Number of toilets (approximate)

8. Types of toilets

- (3) Use of existing toilets
- (4) Disaster toilets

5. Toilet hygiene:

III. Specific measures to secure toilets

2. Toilet model case

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.

I Efforts in peacetime

1. Identification of persons eligible for reception in designated welfare shelters:
 - 1.1 Identification of the approximate number of people to be received in designated welfare shelters:
 - 1.2 Assessing the current status of persons eligible for reception in designated welfare shelters, etc.
2. Designation, public notice and dissemination of designated welfare shelter:
 - 2.1 Identification of facilities that can be used as designated welfare shelters.
 - 3.3 Designation of designated welfare shelters.
 - 3.3.1 Designation criteria for designated welfare shelters.
 - 3.3.2 Setting targets for the designation of designated welfare shelters.
 - 3.3.3 Designation and public notification of designated welfare shelters.

- 3.3.4 Ensure that designated welfare shelters are known to the public:
- 3.3.5 Coordination of the number of people to be received at each designated welfare shelter.
- 3. Development of designated welfare shelters
 - 3.1 Development of facilities for designated welfare shelters:
- 4. Securing supplies, equipment, human resources and means of transport
 - 4.4 Securing supplies and equipment
 - 4.2 Securing support personnel
 - 4.3 Securing means of transport.
- 5. Cooperation with social welfare institutions and medical institutions
 - 5.1 Strengthening of cooperation in the establishment and operation of designated welfare shelters.
 - 5.2 Response to emergency admissions, etc.
- 6. Pre-establishment of an operational system for designated welfare shelters
 - 6.1 Pre-establishment of support teams for persons in need in the event of a disaster, etc.
 - 6.2 Pre-establishment of an operational system for designated welfare shelters.
- 7. Prepare manuals for the establishment and operation of designated welfare shelters and conduct drills.
 - 7.1 Preparation of installation and operation manuals, conducting drills, etc.
 - 7.2 Dissemination and awareness-raising on rules and regulations for designated welfare shelters.

II Efforts in times of disaster

- 2. Establishment of designated welfare shelters
 - 2.1 Establishment of designated welfare shelters and reception of persons in need
- 2. Operational arrangements for designated welfare shelters
 - 2.1 Dispatch of staff in charge of designated welfare shelters
 - 2.2 Operational arrangements for designated welfare shelters and support for their activities.
- 3. Support for persons in need in designated welfare shelters.
 - 3.1 Creation and management of evacuee registers for designated welfare shelters.
 - 3.2 Provision of assistance in designated welfare shelters.
 - 3.3 Emergency admission, etc.
- 4. Elimination of designated welfare shelters

4.1 Consolidation and elimination of designated welfare shelters

III Agreements of use the welfare shelters.

2. Agreements of use the welfare shelters

2.1 Use of welfare shelters through agreements, etc.

2.2 Establishment of spaces for people with special needs within general shelters.

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, 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.
- 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.
- Issues such as the evacuation and transfer of citizens from welfare evacuation centers were resolved.
- 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.

Research into the legal documents in force in Japan, which regulate the issue of evacuation shelters, shows a tendency to respect human rights. It also aims to reduce the emotional distress of citizens by providing comfort and basic human needs, and prevent secondary disasters such as infectious diseases, even when people have to temporarily stay in evacuation shelters during disasters.

Conclusion of the chapter 3

Operation of Shelters:

1. Method of Operation: In evacuation centers, there are different measures taken during the disaster and in the 1-2 months after it. For example, 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: Allocate elderly, handicapped, and sick people to the places in the best environmental conditions; Promote barrier-free access and improvement of evacuees' living circumstance; Involve both male and female in decision-making of shelter operation, to consider perspectives of both sexes, including the different needs.

The following items must be prepared at the evacuation shelters: Stockpile emergency food and supplies for 3 days after a disaster (Shelters and stockpiling bases); small generator (floodlight), battery for recharging; infectious disease control supplies; welfare shelters etc. Storages belonging to wards and prefectures disaster protection departments and offices are located next to the evacuation shelters of people in times of disaster.

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").

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.

Also, in this chapter, it is written that there are several provisions that can be implemented in my country after researching the guidelines that determine the requirements for evacuation shelters.

CONCLUSION

According to the research, the number of disasters, accidents, dangerous phenomena and the amount of damage caused in Mongolia tends to increase in recent years. This is due to factors such as climate change, population growth, industrialization,

and rampant urbanization and it has becoming one of the factors affecting the safety of the population.

During accidents and disasters, possibility of evacuation of the people to a safety place or emergency shelter until the situation normalizes, so the Government of Mongolia and the National Emergency Management Agency (NEMA) need to be prepared.

Preparedness is an important factor in disaster prevention, which is one of the main factors in disaster management.

In the legal documents in force in Mongolia, the requirements for emergency shelters for citizens during disaster are briefly reflected in a too general way, so their implementation is insufficient.

Therefore, a study was conducted on how the requirements for evacuation shelters are defined in the documents in force in Japan. Japan is a strong nation that has survived several mega disasters throughout its history. As Japan several large-scale disasters, it constantly updates and improves its evacuation shelter requirements.

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

- ❖ Each country has a different name for evacuation shelters. However, since the main functions of evacuation shelters during disasters are the same, I decided to use the term "evacuation shelter" according to the limitations of the research work as mentioned in the legal documents of Japan.
- ❖ 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 the following issues to the requirements for evacuation shelter of legal documents implemented in Mongolia.
 - In "Shelter Management Guidelines", 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.
- In "Guidelines for Securing and Managing Toilets at Shelters", 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.
- In "Guidelines for Securing and Managing Welfare Shelters", 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, 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.
 - 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.
 - Issues such as the evacuation and transfer of citizens from welfare evacuation centers were resolved.
 - 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.
- ❖ According to a study, 22.9 percent of people rescued during the Great Hanshin-Awaji earthquake were rescued by professional organizations, while 77.1 percent were rescued by citizens. Based on this research, the government of Japan 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. They are organized into Voluntary Disaster Management Organizations (Community Organization for Disaster and Welfare Management “Bokomi”). In this way, they have the knowledge to save themselves and others during disaster, and lead an active social life.

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

- ❖ 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.

From an early age, children are taught lessons about the dangers of disasters, how to protect themselves, and how to go to an evacuation shelter in a way that is appropriate for their age and mindset.

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Appendix 1

Survey of displaced people

No	Family name	Last name	First name	Register number	Sex	Province and city of birth	Home address	Mobile number
Information about citizens staying in evacuation shelter								

1								
2								
3								

Details about the citizen staying in the evacuation shelter

No	Surname of citizen staying in temporary accommodation	Nationality	Major	Profession	Education	Employment status	Blood type	Name, address and phone number of emergency contact person
1								
2								

Information of family members

No	What kind of relative are you?	Last name	First name	Register number	Sex	Province and city of birth	Home address	Mobile number

Additional information:

.....

Profession and education:

.....

Do you have knowledge of first

aid?:

