# DISASTER PREPAREDNESS TOKYO



# **STEP2** Get deeper knowledge.

Let's get prepared. Do everything to protect yourself.

A disaster can occur at any time, such as an earthquake directly hitting Tokyo, wind and flood damage, or a volcanic eruption. Are you prepared?

## Let's learn and get prepared.

Tokyo has been hit by natural disasters such as large earthquakes and volcanic eruptions many times in the past.

Following the publication of "Disaster Preparedness Tokyo" in 2015 and "Disaster Readiness Guide" in 2018, there was the damage caused by Typhoon Hagibis in 2019 and then the Covid–19 pandemic.

This situation of disasters being likely to occur at any time is going to continue, including wind and flood damage becoming more severe and more frequent due to the effects of climate change, an earthquake directly hitting Tokyo, a large-scale volcanic eruption, and infectious diseases, as well as the risk of multiple disasters occurring together.

## Do everything to protect yourself.

In order to properly prepare for these risks, it is important for each Tokyo resident to learn the latest knowledge about various disasters and their countermeasures, and to share them with the community in order to raise awareness of disaster preparedness.

Please use the 100<sup>th</sup> anniversary of the Great Kanto Earthquake as an opportunity to further deepen your knowledge of disaster preparedness and become more fully prepared for disasters. What if an Earthquake Directly Hits Tokyo or a Nankai Trough Mega Earthquake Occurs?



The Great Kanto Earthquake that struck in 1923 caused significant damage to the Tokyo metropolitan area. The earthquake is estimated to have had a magnitude of 7.9, and many buildings in Tokyo were destroyed by fire.

Now, 100 years later, more large-scale earthquakes are predicted to occur.

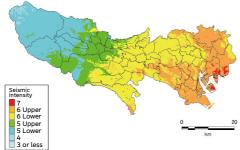
These are an "earthquake directly hitting Tokyo" and the "Nankai Trough mega earthquake."

If either of these earthquakes hits the large population of Tokyo, buildings with low seismic resistance will collapse. Fires will also break out. The city will be filled with many victims and people who are unable to return home. It is predicted that lifelines will be damaged and electricity, gas, water, and sewerage services will be unavailable for some time. Disruptions to communications such as telephone and internet services are also predicted. If the damage is extensive, the time required for recovery and reconstruction could be very long.

The life we take for granted will change completely from the day such an earthquake occurs.

## New Damage Predictions (1) Earthquake Directly Hitting Tokyo (Southern Central **Tokyo Earthquake**)

The southern central Tokvo earthquake refers to a magnitude 7-level earthquake that is expected to cause maximum damage to Tokyo. Approximately 60% of the 23-wards area is expected to experience a seismic intensity of 6 or higher.



Injuries

93.435\*

From fires: 9.947

From shaking: 83,489

#### Predicted damage in Tokyo

Buildings damaged 194.431 From shaking: 82,199 From fires: 112,232

Deaths 6.148 From shaking: 3,666 From fires: 2,482

Stranded commuters and others Approx. 4.53 million

### **Evacuees** Approx.

2.99 million

\* The total does not add up due to rounding.

Source: Edited and created based on Tokyo Metropolitan Government "New Damage Predictions for Tokyo: Predicted Damage to Tokyo from an Earthquake Directly Hitting Tokyo" (May 2022)

## New Damage Predictions (2) Nankai Trough Mega Earthquake

The Nankai Trough mega earthquake refers to the earthquake that is predicted to occur with an epicenter in the Nankai Trough, which stretches from the Tokai region to Kyushu. In Tokyo, there are concerns about the effects of long-period ground motion, and it is expected that a tsunami will hit Tokyo's islands in a short period of time.



#### Predicted damage in Tokvo

Maximum tsunami height: approx. 28 m (Shikinejima) Deaths: 952

#### Buildings damaged: 1,258



Source: Edited and created based on Tokyo Metropolitan Government "New Damage Predictions for Tokyo: Predicted Damage to Tokyo from an Earthquake Directly Hitting Tokyo" (May 2022)

#### Tsunami damage: Maximum tsunami height (time until arrival)

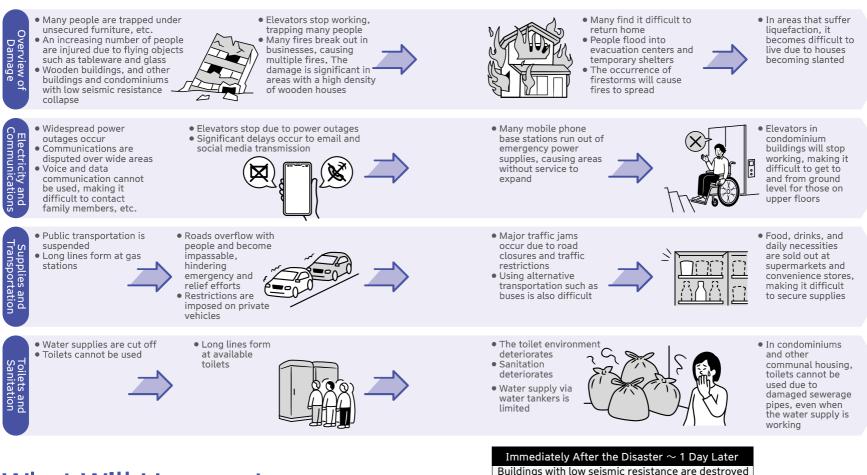
Tokyo Bay Area • Edogawa Ward: 2.24 m A Koto Ward: 2.63 m Chuo Ward: 2.42 m Minato Ward: 2.37 m Shinagawa Ward: 2.38 m **O**ta Ward: 2.25 m Tokyo Bay reclaimed land: 1.99 m

#### Islands

Oshima: Approx. 16 m (approx. 23 min.) O Toshima: Approx. 17 m (approx. 19 min.) S Niijima: Approx. 27 m (approx. 17 min.) Shikinejima: Approx. 28 m (approx. 14 min.) S Kozushima: Approx. 27 m (approx. 17 min.) Miyakejima: Approx. 16 m (approx. 25 min.) Mikurajima: Approx. 7 m (approx. 30 min.) B Hachijojima: Approx. 17 m (approx. 32 min.) Aogashima: Approx. 14 m (approx. 36 min.) Chichijima: Approx. 15 m (approx. 126 min.) Hahajima: Approx. 16 m (approx. 108 min.)



#### Immediately After the Disaster $\sim$ 1 Day Later



What Will Happen to Residents if an Earthquake Directly Hits Tokyo?

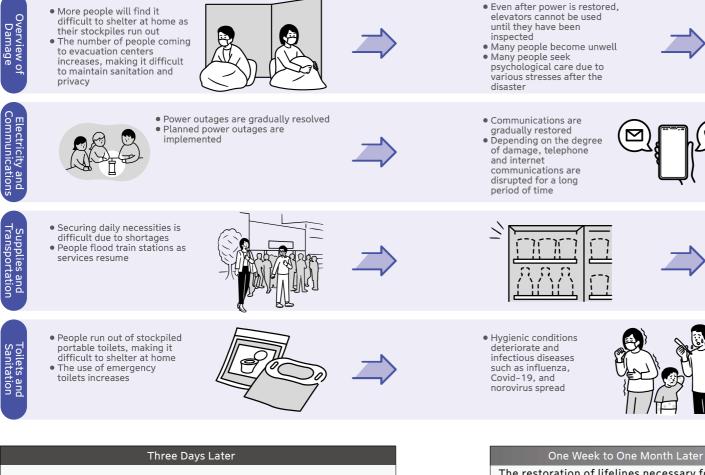
due to the sudden, strong shaking. Although there is no major damage to office buildings and

condominiums, lifelines such as electricity, gas, and water are out of service, as well as communications and public transportation. Many people become

stranded, unable to contact their families and loved

ones, or injured.

#### **Three Days Later**



• The number of people leaving evacuation centers in order to start

**One Month Later** 

rebuilding their lives increases

• The chronic shortage of aoods continues

• More people become able to resume living at home as water and sewage systems are restored

One Week Later

The restoration of lifelines necessary for daily life and communications gradually begins, but the supply of goods into Tokyo is limited. The number of people using evacuation centers gradually decreases, and support and measures for people to rebuild their lives commence.

While many Tokyo residents are sheltering at home, after the third day,

stockpiles of water, food, and other supplies in homes begin to run out, and the number of people who try to use evacuation centers increases. The

recovery of lifelines is limited, and many people are unable to use a toilet.

## What Will Happen if a Nankai Trough Mega Earthquake Occurs

#### Islands region

In the islands region, Tsunami waves exceeding 20 meters may reach some islands in as little as ten minutes. In the Sanriku region, which is often hit by tsunamis, there is a saying that goes, "Tsunami Tendenko," which means that when a tsunami occurs. it is important for every person to escape to higher ground, even if they are not with their family, in order to protect their own lives.



#### In high-rise buildings, etc. in Tokyo

If a Nankai Trough mega earthquake occurs, it is thought that a long-period, slow and large shaking (ground motion) will occur. This kind of earthquake motion is called "long-period ground motion," and when the seismic wave period and the natural period of a high-rise building or condominium match up, the subsequent resonance will make the building shake significantly. When a high-rise building resonates, it will sway largely for a long period of time, which can cause indoor furniture and appliances to fall over or move. and elevators to malfunction

#### Tokyo Metropolitan Government's Damage Prediction Website

A website has been created based on "Predicted Damage to Tokyo from an Earthquake Directly Hitting Tokyo" and enables you to check the damage that is predicted to occur around you when a disaster occurs.

Tokyo Damage Prediction Map

Tokyo My Predicted Damage

You also can check the seismic intensity distribution and damage distribution described in "Predicted Damage to Tokyo from an Earthquake Directly Hitting Tokyo" on maps.

By selecting factors including your family composition, building structure, and the area vou live in, vou can create vour own "My Predicted Damage."



Source: Iwate Prefecture "Proposals from Iwate Prefecture regarding disaster preparedness and reconstruction based on lessons learned from the Great East Japan Earthquake and Tsunami" (2015) https://www.pref.iwate.jp/kensei/seisaku/bousaikaigi/1012174.html

Japan Meteorological Agency "What is Long-period Ground Motion" from the Japan Meteorological Agency website

## **New Preparations for Changing Disasters**

In recent years, disasters have become more severe and more frequent all over Japan, to the point where we hardly have time to catch our breath between disasters. In particular, the nature of disasters is changing dramatically, with the occurrence of new weather phenomena such as torrential rains, large typhoons, and rainbands, as well as increased volcanic activity being confirmed in various places, which are thought to be caused by climate change and active movement of the earth's crust.

On the other hand, the number of people who need various types of support is increasing as society ages, the digitalization of society is progressing, and disaster preparedness apps and web-based services that utilize smartphones are now available, while the use of battery devices and LED lighting is also expanding. In response to changing disasters, it is important for society as a whole to improve its various preparations, such as improving new preparations through self-help, increasing opportunities to experience disaster preparedness, and interacting with the community.



## How to use "Disaster Preparedness Tokyo"

Two volumes have been prepared, the Disaster Readiness Guide, which is an 'actions' volume that links to actions to be taken during daily life, and the Disaster Preparedness Tokyo, which is a 'knowledge' volume intended to improve knowledge in order to be more fully prepared for disasters. Please read and use the Disaster Readiness Guide before using this Disaster Preparedness Tokyo. Learn how to protect your life in preparation for a disaster.





Disaster

Tokvo

Volume>

Preparedness

<Knowledge

Readiness Guide <Actions Volume>

## **Do Now Mark**



In this manual we have added the "Do Now" mark to pages introducing disaster preparedness actions that can be implemented right away. Make it a point to first confirm the contents of pages containing this mark and carry out those actions.

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Prepare Ways to Confirm Safety	Page 054
Know Your Community's Disaster Risk Level	Page 060
Seismic Retrofitting a Detached House	Page 076
Learn About Disaster Preparedness	Page 096



This is the Tokyo Metropolitan Government's official disaster preparedness app, which is useful in daily life and in an emergency. The app features content that will be useful in the event of a disaster and allows users to have fun while gaining basic knowledge about disaster preparedness, based on the concepts of "play," "learn," and "use."



#### Tokyo Stockpiling Navi Tokyo My Timeline



Understand the items and quantities that you need to stockpile by simply answering some simple questions such as your family composition. Start with what you can do for yourself and your loved ones. Decide in advance what you will do to prepare for evacuation in the event of a flood, in order to avoid panic in case of an emergency. This will allow you to organize appropriate evacuation actions in advance.



#### Tokyo Disaster Preparedness Seminars

The Tokyo Metropolitan Government conducts "Tokyo Disaster Preparedness Seminars" that invite disaster preparedness experts to your city.





Download it now before a disaster strikes.

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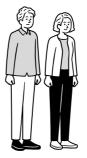


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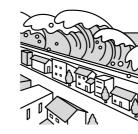
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