Your Community's Earthquake Risk 2022

The Ninth Community Earthquake Risk Assessment Study

Bureau of Urban Development, Tokyo Metropolitan Government

Contents

Background

In November 1975, the Tokyo Metropolitan Government announced the results of its first assessment of earthquake risks facing communities (limited to the Tokyo ward area at that time) based on the Tokyo Metropolitan Earthquake Preparedness Ordinance (then Earthquake Management Ordinance). Since then, studies have been conducted about once every five years incorporating new earthquake-related information and knowledge, and latest data on buildings and other changes in the urban landscape. The contents of the ninth assessment report, which has recently been released, have been summarized in this brochure in an easy-to-understand manner. This ninth assessment indicated each community's earthquake risk for 5,192 communities in Tokyo's urbanized districts based on its building collapse risk, fire risk, emergency response difficulty coefficient and combined risk. In order to conduct this study, the Community Earthquake Risk Assessment Study Subcommittee, made up of disaster management experts, was formed to study this investigation, including improvements for new, more accurate methods of assessment.

Community Earthquake Risk Assessment Study Subcommittee Members (as of September 2022)

Chair **Itsuki Nakabayashi**	Tokyo Metropolitan University, Professor Emeritus	**Takahisa Enomoto**	Kanagawa University, Professor Emeritus
Taro Ichiko	Tokyo Metropolitan University, Environmental Sciences, Professor	**Toshihiro Osaragi**	Tokyo Institute of Technology,Department of Architecture and Building Engineering, School of Environment and Society,Professor
Eiichi Itoigawa	University of Tsukuba, Professor Emeritus	**Takaaki Kato**	The University of Tokyo, Institute of Industrial Science, Professor
Noriko Imura	Musashino University,Department of Architecture,Faculty of Engineering, Professor	**Fumio Yamazaki**	National Research Institute for Earth Science and Disaster Resilience, Senior Chief Researcher

1 Do You Know Your Community's Level of Risk?

Assessing Each Community's Earthquake Risk

Japan is one of the most earthquake-prone countries in the world, experiencing about 10 percent of the world's temblors. Experts say that there is a 70 percent chance for a massive earthquake with a magnitude of about 7 to hit the southern Kanto region within the next 30 years. What risks does your community face in the event of a huge earthquake? Ground shaking can trigger building collapse and the outbreak and spread of fires, resulting in devastating damage. In this study, a community's degree of vulnerability to an earthquake was assessed as community earthquake risk, which rates communities through a relative assessment.

How the Community Earthquake Risk Can Be Used for the Realization of a “Safe and Secure Tokyo”

In order to enhance the disaster-resilience of Tokyo, along with the development of roads and parks and other efforts taken by the municipal governments, it is important that the residents of Tokyo be fully prepared by taking measures such as making buildings earthquake- and fire-resistant.

For this reason as well, the residents are encouraged to confirm their community's earthquake risk with people in their community.

The Tokyo Metropolitan Government is using the assessment results for matters such as designating areas in the “Project to Promote Creation of a Disaster- Resilient City” that require improvements in order to realize a “Safe and Secure Tokyo."

Discrepancy with Earthquake Damage Estimates

The damage estimates of a major earthquake directly striking the capital and other earthquakes announced by the Tokyo Metropolitan Government in May 2022, are based on specific earthquakes. Because of this, the areas affected and the degree to which they are affected are limited; for instance, less shaking would occur in areas located at a distance from the epicenter of the earthquake. This community earthquake risk, however, is a relative assessment of the risk of damage to communities within Tokyo from an earthquake. The major difference between the 2022 damage estimate and this earthquake risk assessment is that this assessment measures risk to communities under the assumption that the same level of shaking has occurred directly under each of the communities.

2 What is Community Earthquake Risk?

This study assesses each community's vulnerability to the following hazards.

- Building collapse risk (danger of building collapse)
- Fire risk (danger of spread of fire from the outbreak of fire)
- Combined risk (combination of the above two indicators added together and then multiplied by the emergency response difficulty coefficient)

What Kind of Earthquake Is Assumed in the Study?

As it is not known when or where an earthquake will hit, this study does not assume the occurrence of a specific earthquake, but assesses risk on the assumption that an earthquake of the same seismic intensity has occurred in the engineering bedrock* of all the communities.

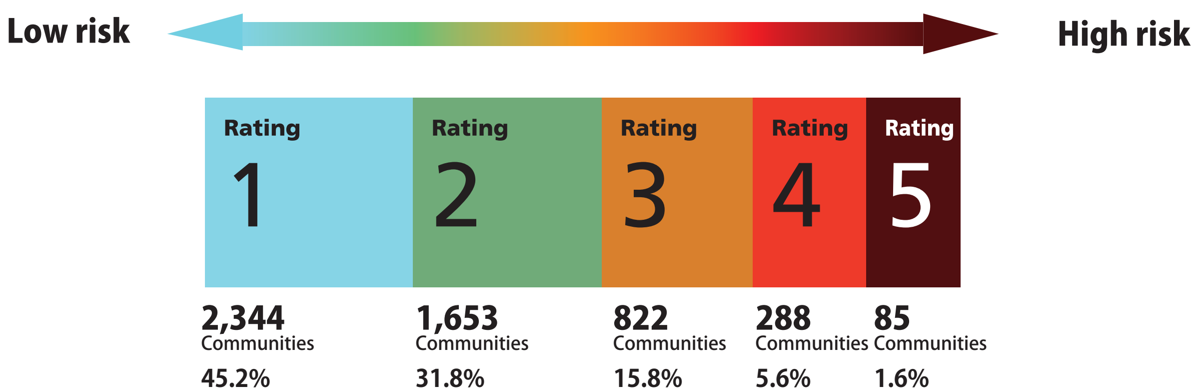
How Is Community Earthquake Risk Assessed?

This study scientifically measures earthquake damage risk for each community in the urbanized districts of the 23-ward area and the Tama area of Tokyo (see Flowchart of Community Earthquake Risk Assessment).

How Is Rating Determined?

Community earthquake risk is a relative assessment that rates communities on a scale from 1 (low) to 5 (high). Each of these ratings contains a predetermined percentage of communities. The communities are ranked in order of degree of risk and rated.

*Engineering bedrock: Bedrock suitable for basing incident seismic motion settings for earthquake-resistant design capable of supporting buildings, and is a robust foundation that has a shallow layer N-value of 50 or higher (S-wave velocity over 300 m/s to about 700 m/s).



* Since risk rating is a relative assessment, a Community's rating could, despite safety improvements, change to the worse if other communities make even larger improvements.

Flowchart of Community Earthquake Risk Assessment

Classifying and tallying buildings

- Number of buildings by buildingtype (structural type, year built,number of stories, etc.)

Classifying soil condition

(12 categories according to topographical and geological features)

Buildings at risk of collapse

Items assessed for building collapse risk

- Number of buildings by building type (number of buildings, structural type, year built and seismic resistance improvement, etc.)
- Site amplification rate*
- Number of buildings that will collapse due to liquefaction
- Number of buildings that will collapse at sites developed by large-scale groundworks

Buildings at risk of fire

Items assessed for fire spread risk following the outbreak of fire

- Risk of fire outbreak (use of open-flame appliances, site amplification rate, etc.)
- Risk of fire spread (number of buildings, structural type, wide roads, parks, etc.)

Building collapse risk

- The number of buildings per unit area for each community that will collapse due to an earthquake is assessed
- A relative ranking is used to rate the risk.
(Explanation on pp. 4–5; map on pp. 6-7)

Fire risk

- The number of buildings per unit area for each community that will be totally lost to fire due to an earthquake is assessed
- A relative ranking is used to rate the risk.
(Explanation on pp. 8-9; map on pp. 10-11)

Emergency response difficulty coefficient

- Lack of effective space for disaster response activities, such as roads and parks
- Lack of road networks that can be used for evacuation, etc.
- Derived based on the above two indicators
(Explanation on pp. 12–13; map on pp. 14-15)

Combined risk

- Assessed by adding together the number of buildings at risk of collapse and the number of buildings at risk of fire and then multiplying that by the emergency response difficulty coefficient
- This comprehensive score is rated by a relative ranking.
(Explanation on pp. 16; map on pp. 18-19)

*Site amplification rate: A value obtained by dividing the magnitude (maximum speed) of the shaking of the ground surface by the magnitude (maximum speed) of the shaking of the engineering bedrock

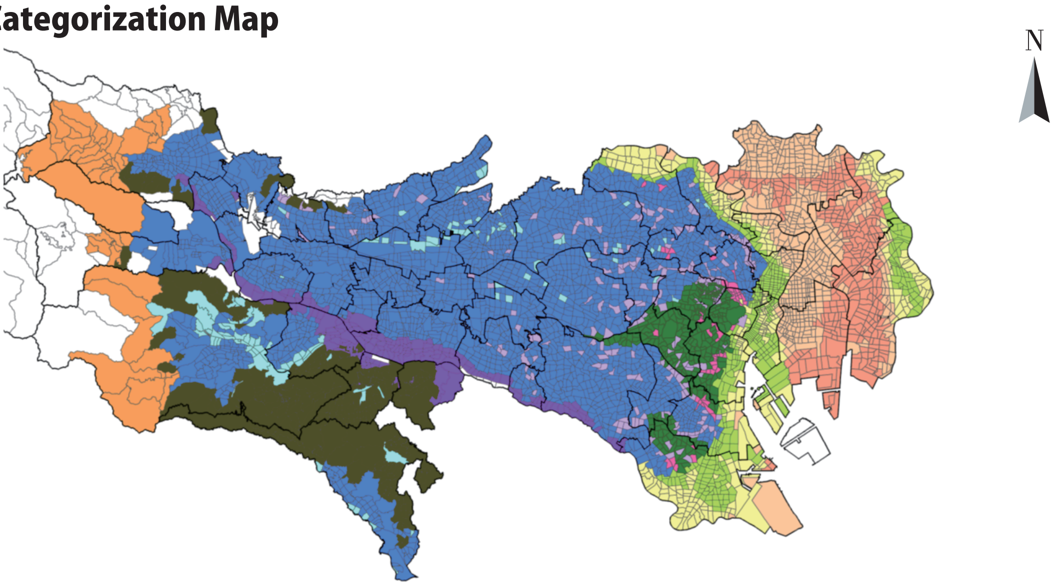
3 Building Collapse Due to Earthquake Ground Shaking: Building Collapse Risk

Building collapse risk is the danger of buildings collapsing or tilting due to shaking from an earthquake. This risk is assessed by the community's ground characteristics and building characteristics.

Ground Characteristics

Risk of building collapse is affected by ground characteristics. The ground in Tokyo is categorized as mountains and hilly areas, tableland of the Yamanote uptown area, alluvial lowland of the Shitamachi downtown area, and valley lowlands made up of valleys carved into the tableland. Alluvial lowlands and valley lowlands are areas that have a relatively high probability of damage occurring because the soil tends to amplify shakings from earthquakes.

Ground Categorization Map



Source: Institute of Civil Engineering of the Tokyo Metropolitan Government, "Geological Maps of Tokyo (23 ward area)", 1969; The Tokyo Disaster Management Council, "Ground Categorization Maps of Tokyo Ward Area" , 1978.

Mountain, Hill, Tableland		Amplification Rate	
Mountain	Mountain	**1.0**	The ground is chiefly diluvial soil deposited far back in history. As this is hard ground, which tends not to amplify ground shaking from earthquakes, the risk is relatively low in this area.
Hill	Mainly hilly area	**1.4**	
Tableland 1	Kanto loam layer on top of fluvial gravel layer	**1.6**	
Tableland 2	Kanto loam layer on top of sedimentary clay and sand layers	**1.7**	
Valley Lowland	Thickness of Soft Layer	Amplification Rate	
Valley Lowland 1	Less than 3 meters	**1.5**	This is soft soil made up of sediments deposited in valleys carved into the tableland. As shaking from earthquakes tends to be amplified in this area, the risk is relatively high in this area.
Valley Lowland 2	From 3 meters to under 8 meters	**1.8**	
Valley Lowland 3	8 meters or more	**2.0**	
Alluvial Lowland	Thickness of Soft Layer	Amplification Rate	
Alluvial Lowland 1	Mainly fluvial gravel	**1.5**	The ground is chiefly alluvial soil deposited more recently. As this is soft soil mainly made up of sediments below sea level, which tends to amplify ground shaking from earthquakes, the risk is relatively high in this area.
Alluvial Lowland 2	Less than 10 meters	**2.3**	
Alluvial Lowland 3	From 10 meters to under 25 meters	**2.6**	
Alluvial Lowland 4	From 25 meters to under 40 meters	**2.9**	
Alluvial Lowland 5	40 meters or more	**2.9**	

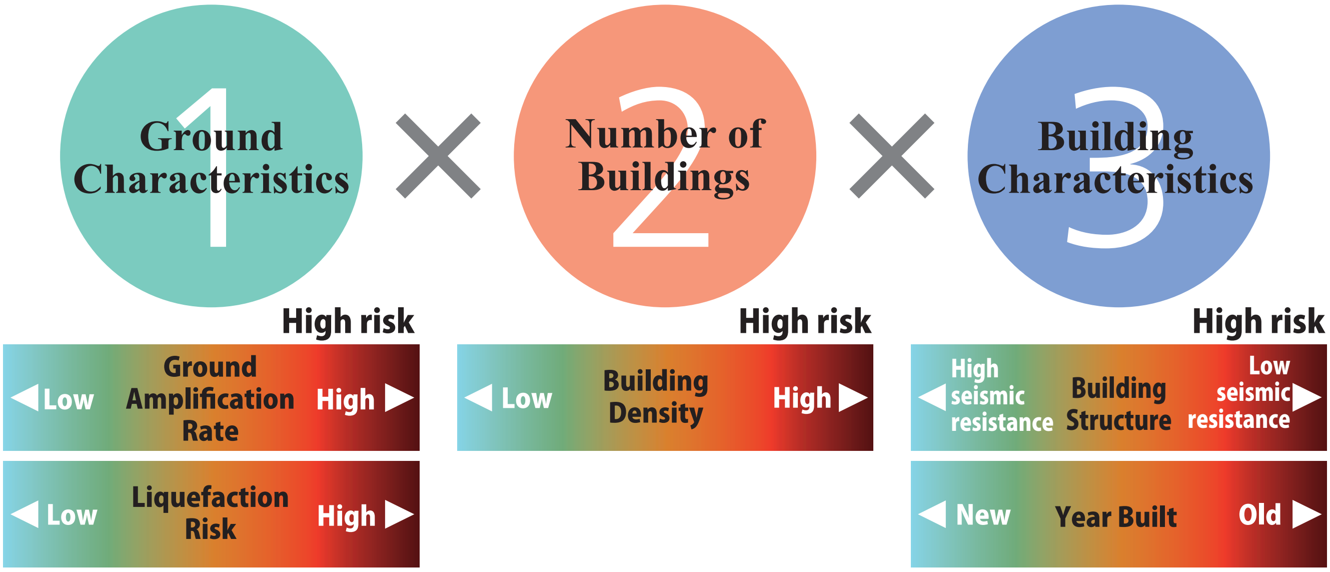
Building Characteristics

Risk of building collapse is affected by building characteristics. The lower the earthquake resistance of the building, the higher the risk of collapse.

How Building Collapse Risk Is Assessed

Building collapse risk is assessed the number of buildings per unit area for each community that will be totally destroyed due to an earthquake, i.e., “buildings at risk of collapse (number of buildings/ha)” , and is assessed through a relative ranking of this figure by community.

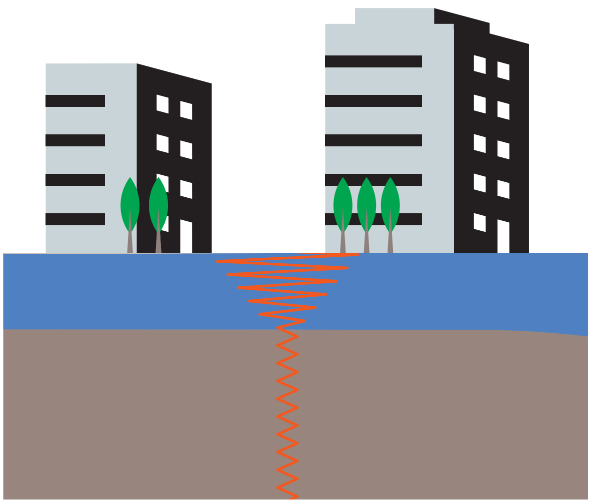
Deriving Buildings at Risk of Collapse (number of buildings/ha)



Buildings at risk of collapse is derived by multiplying **the number of buildings** tallied by category with the building damage rates according to **ground** and **building characteristics**. The **number of buildings** is tallied for each community by **building characteristics**, such as type of structure (wooden or reinforced concrete, steel, etc.) and age. Community **ground characteristics** are categorized into 12 types according to the “Ground Categorization Map” on the left page. An amplification rate is established for each ground type to indicate the ground's tendency to shake. Liquefaction at alluvial lowlands and the impacts of large-scale embankment construction in hilly areas are also taken into consideration. Establishment of building damage rates is based on damage studies of past earthquakes such as the Great Hanshin-Awaji Earthquake and the Kumamoto Earthquakes. The results of seismic resistance improvement and other work are then taken into account.

Example of Community with Low Building Collapse Risk

1. Ground Characteristics: Not prone to shaking
2. Number of Buildings:
   Buildings are not highly concentrated
3. Building Characteristics:
   - Building structure: High earthquake resistance (reinforced concrete, etc.)
   - Age: New

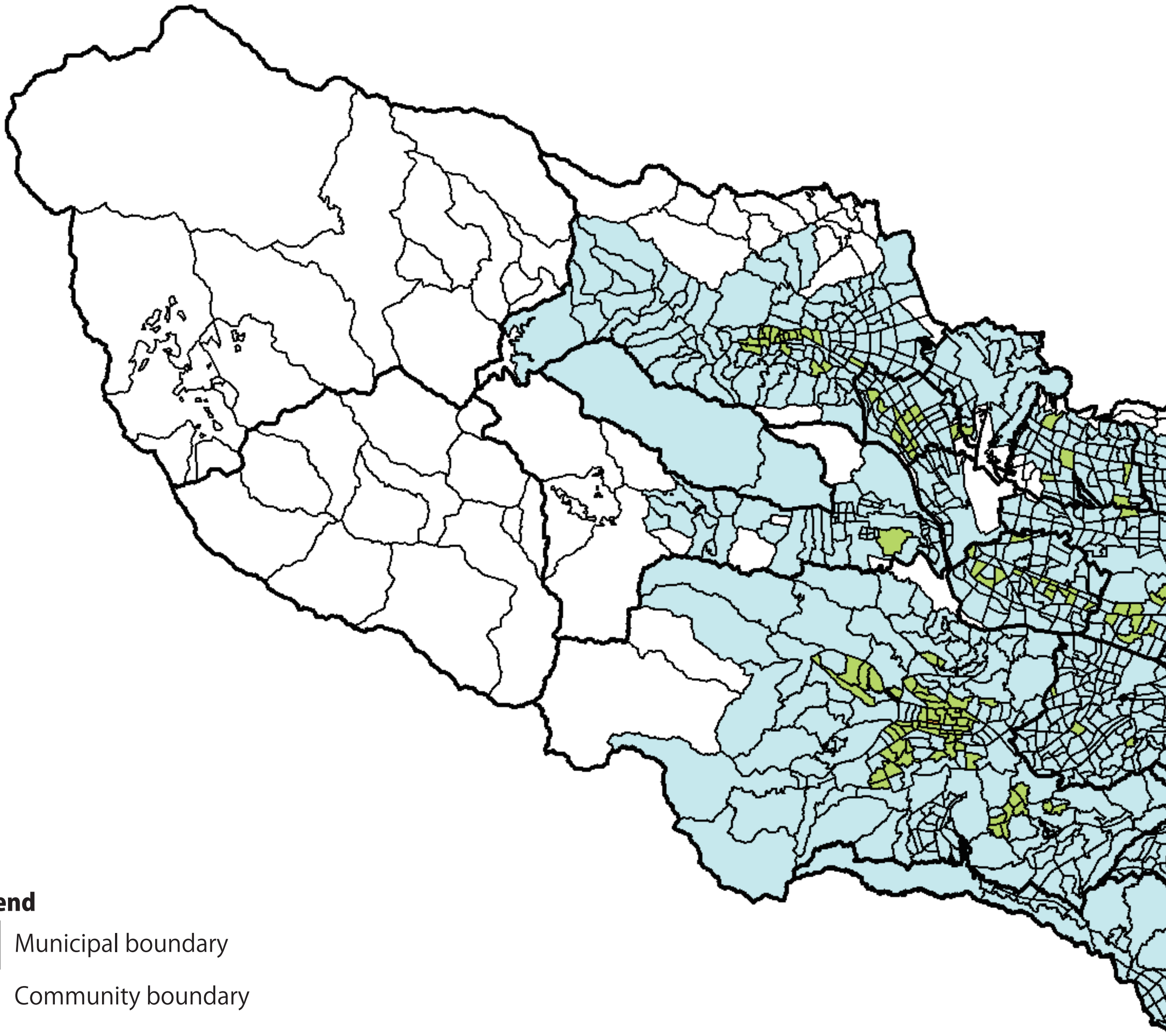


Example of Community with High Building Collapse Risk

1. Ground Characteristics: Prone to shaking
2. Number of Buildings:
   High concentration of buildings
3. Building Characteristics:
   - Building structure: Low earthquake resistance (wooden, etc.)
   - Age: Old

Map of Building Collapse Risk Ratings

High risk communities are located in areas such as alluvial lowlands with soft ground prone to amplifying the shaking in the event of an earthquake and areas with a high concentration of old wooden or light-gauge steel frame buildings. These communities are distributed along the Arakawa and Sumida rivers.



Legend

Municipal boundary

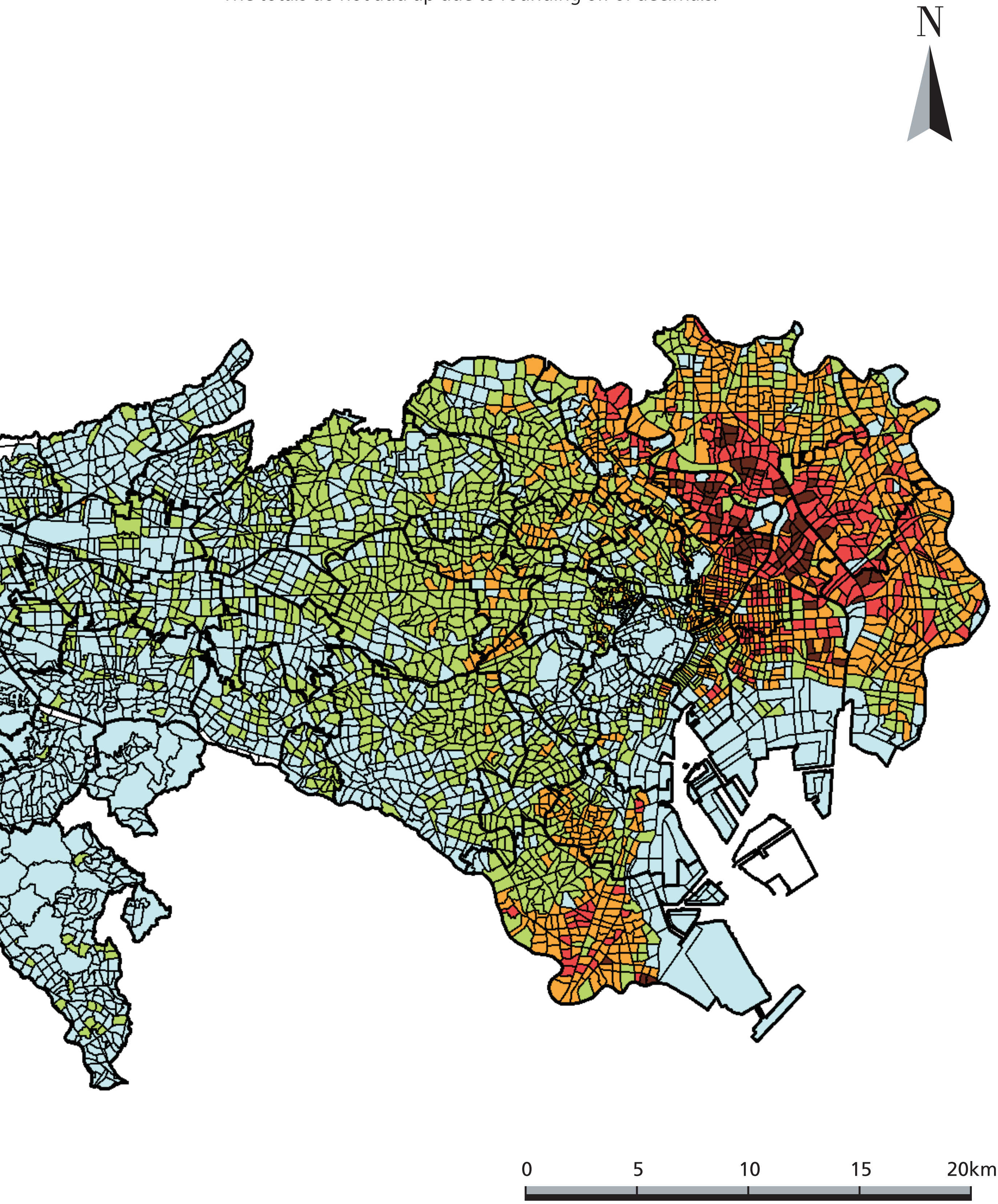
Community boundary

Building Collapse Risk Ratings (Ninth Study)	[Buildings at risk of collapse (Buildings/ha)]
5 (1 - 85)	[19.52 - 9.59]
4 (86 - 373)	[9.59 - 6.19]
3 (374 - 1195)	[6.19 - 2.94]
2 (1196 - 2848)	[2.94 - 1.22]
1 (2849 - 5192)	[1.22 - 0.00]

* Areas in white were not included in this assessment.

	Ninth Study Buildings at Risk of Collapse (Buildings/ha)	Eighth Study Buildings at Risk of Collapse (Buildings/ha)	Amount of Change (Buildings/ha) (Ninth Study – Eighth Study)
Average for the whole of Tokyo	2.16	2.79	-0.62

*The totals do not add up due to rounding off of decimals.



4 Fire Outbreak and Spread Triggered by Earthquake Ground Shaking: Fire Risk

When an earthquake occurs, there is the risk of wide-area damage from the spread of fires breaking out from the shaking. The assessed degree of such risk is called “fire risk.” Assessment of fire risk is based on fire outbreak risk and fire spread risk.

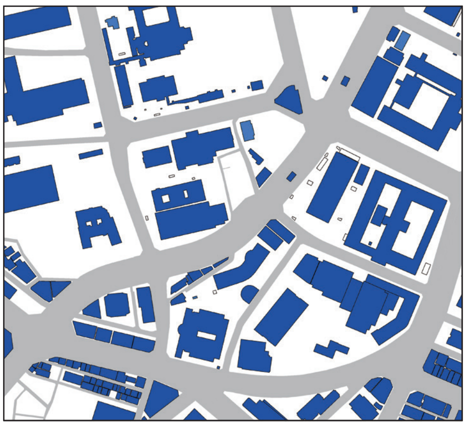
Fire Outbreak Risk

Fire outbreak risk is the risk of fire outbreak triggered by an earthquake, assessed by the distribution of households and business establishments classifed by building purpose, the use of open-flame appliances, the rate of fire outbreaks, tendency for the ground to shake, and other factors. Areas with a high utilization of open-flame appliances and a high concentration of households have high fire outbreak risk, with this even higher in areas highly prone to shaking.

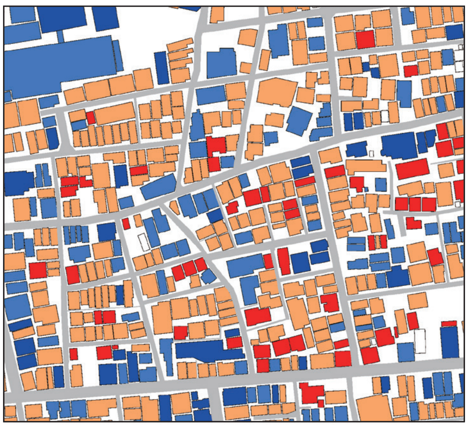
Fire Spread Risk

Fire spread risk is the risk of fire spreading after a fire outbreak, assessed by assuming a fire spread time of 12 hours, building structure, space between buildings, and other factors. Communities with few open spaces such as parks and wide roads that can keep fire from spreading and which have a high concentration of close-set wooden buildings with low fire resistance have higher fire spread risk. Furthermore, when neighboring communities have the same features and there is no road to block the spread of fire, the risk becomes even higher because there will be a high chance of fire spreading from the neighboring communities.

Example of Built-up Area with Low Fire Spread Risk



Example of Built-up Area with High Fire Spread Risk



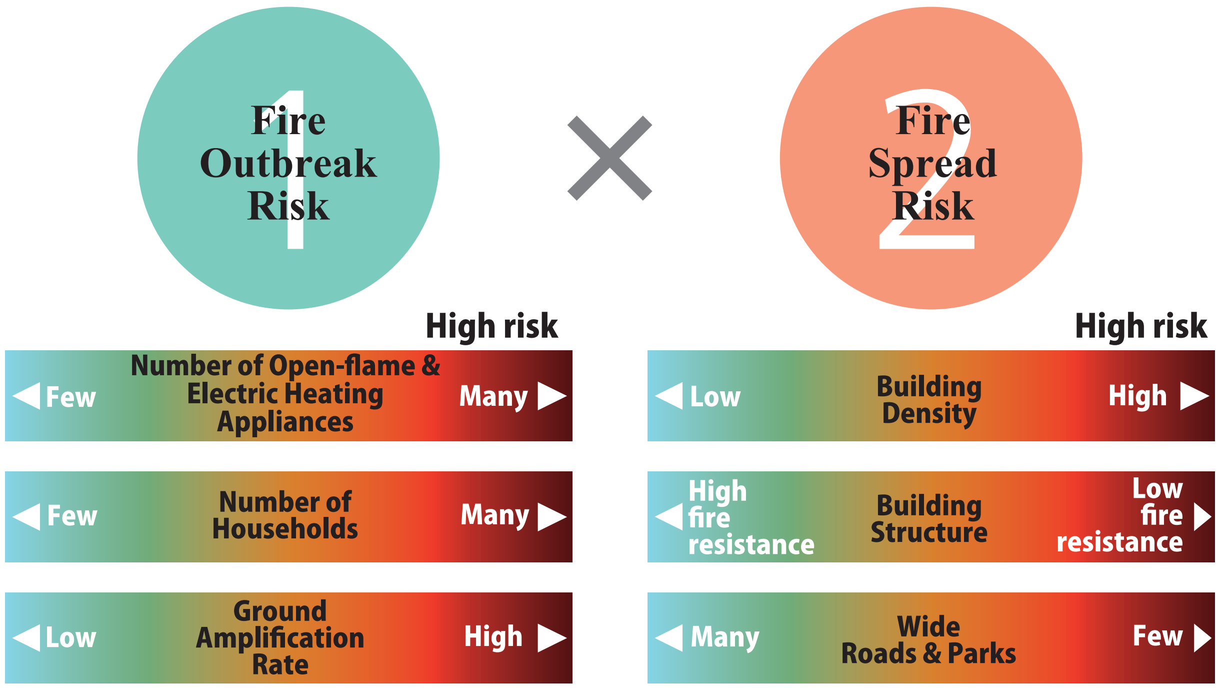
Legend

- Fireproof structure
- Semi-fireproof structure
- Fire-retardant structure
- Wooden structure
- Road

How Fire Risk Is Assessed

Fire risk is assessed by calculating the number of buildings per unit area for each community that will be totally lost to fire triggered by earthquake, i.e. “buildings at risk of fire (number of buildings/ha)” , and through a ranking of this figure, community risk is rated relatively.

Deriving Buildings at Risk of Fire (number of buildings/ha)



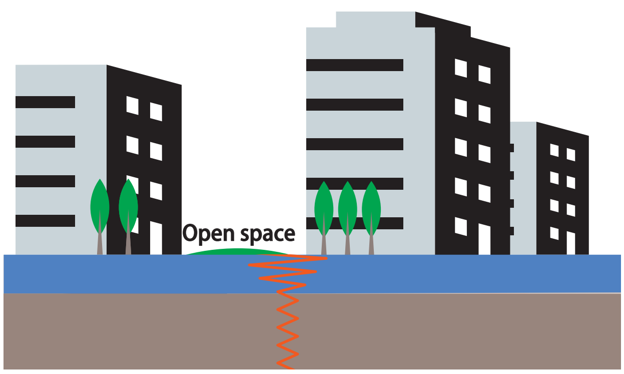
Buildings at risk of fire is derived by multiplying **fire outbreak risk** with **fire spread risk**. **Fire outbreak risk** is derived by tallying the number of fire outbreaks in each community based on data from the 10th Tokyo Metropolitan Government Assessment of Fire Outbreak Risk by Area in the Event of an Earthquake (June 2021) conducted by the Tokyo Fire Department. **Fire spread risk** is derived using the method applied in the 10th Tokyo Metropolitan Government Assessment of Fire Spread Risk by Area in the Event of an Earthquake (March 2020) conducted by the Tokyo Fire Department. The number of buildings totally lost to fire in each community within a set time of 12 hours is tallied. The risk of fire spreading from neighboring communities is also included.

Example of Community with Low Fire Risk

1. Fire outbreak risk
   - Number of open-flame & electric heating Community's appliances: Few
   - Ground: Not prone to shaking
2. Fire spread risk
   - Number of buildings: Not highly concentrated
   - Building structure: Highly fire resistant (reinforced concrete, etc.)
   - Many wide roads, parks, etc.

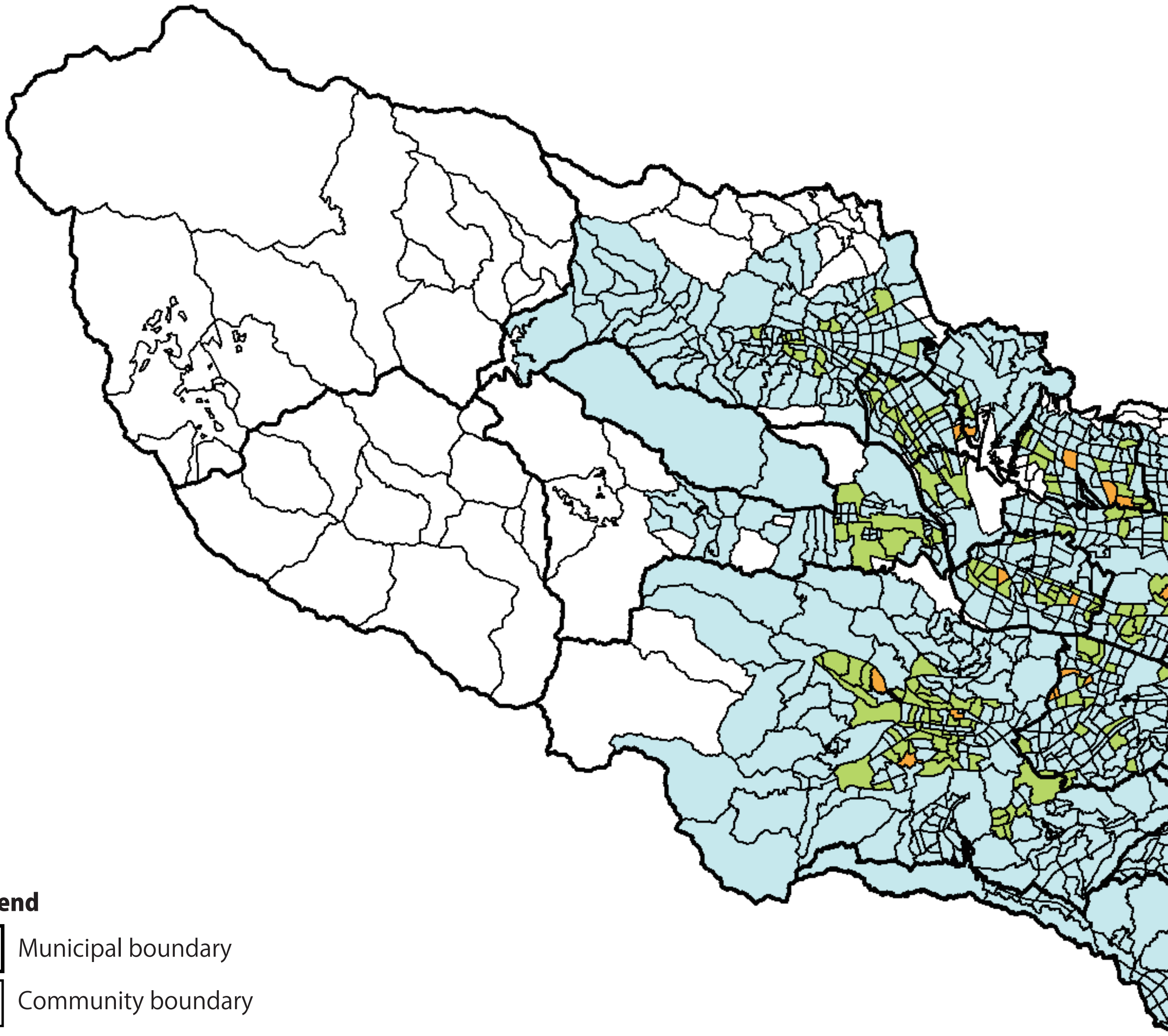
Example of Community with High Fire Risk

1. Fire outbreak risk
   - Number of open-flame & electric heating appliances: Many
   - Ground: Prone to shaking
2. Fire spread risk
   - Number of buildings: Highly concentrated
   - Building structure: Low fire resistance (wooden, etc.)
   - Few wide roads, parks, etc.



Map of Fire Risk Ratings

High risk communities are areas with a high concentration of close-set wooden buildings with low fire resistance performance and where firebreak belts have not been formed. These communities are distributed in a donut-shape centered on the inner side of Ring Road No. 7 in the Tokyo special-ward area as well as along the JR Chuo Line (Tokyo special-ward area).



Legend

Municipal boundary

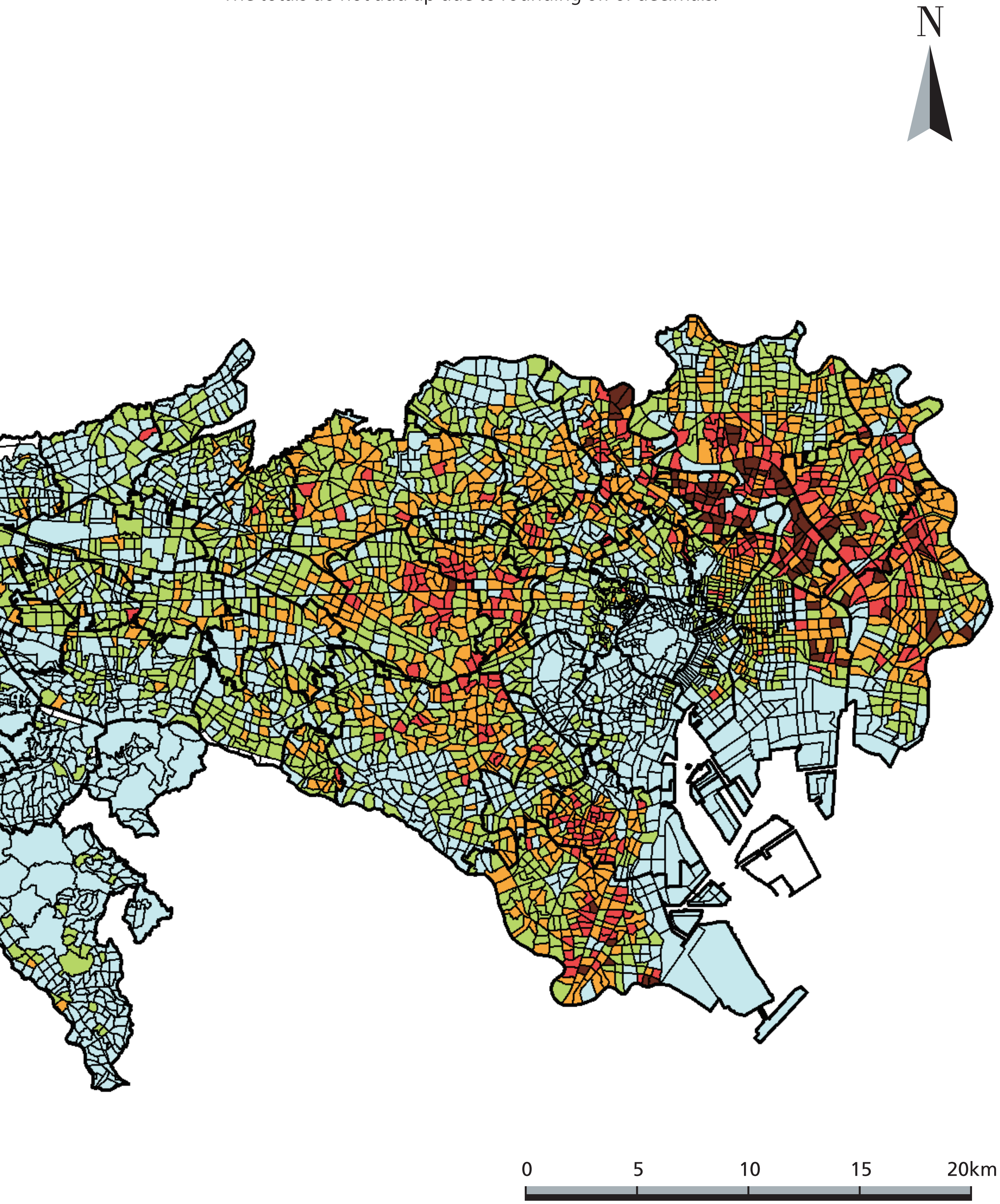
Community boundary

Fire Risk Ratings (Ninth Study)	[Buildings at Risk of Fire (Buildings/ha)]
5 (1 - 85)	[22.37 - 4.48]
4 (86 - 373)	[4.48 - 1.47]
3 (374 - 1195)	[1.47 - 0.40]
2 (1196 - 2848)	[0.40 - 0.07]
1 (2849 - 5192)	[0.07 - 0.00]

*Areas in white were not included in this assessment.

	Ninth Study Buildings at Risk of Fire (Buildings/ha)	Eighth Study Buildings at Risk of Fire (Buildings/ha)	Amount of Change (Buildings/ha) (Ninth Study – Eighth Study)
Average for the whole of Tokyo	0.45	0.97	-0.52

*The totals do not add up due to rounding off of decimals.



5 Emergency Response Difficulty Based on the Status of the Road Network and Other Infrastructure: Emergency Response Difficulty Coefficient

When buildings collapse or fires break out from an earthquake, how easy (or difficult) it is to evacuate from the stricken areas or to conduct firefighting and rescue activities will affect the scale of further damage. The "emergency response difficulty coefficient" is an indicator of the ease (or difficulty) of such operations based on assessments of the existing road infrastructure including the density of the road network and the amount of effective space for disaster response activities. By assessing combined risk through adding together the buildings at risk of collapse and buildings at risk of fire and then multiplying that by the emergency response difficulty coefficient, community risk takes into account the ease (or difficulty) of response in the event of a disaster.
The emergency response difficulty coefficient is derived based on the following two indices.

Lack of effective space for activities

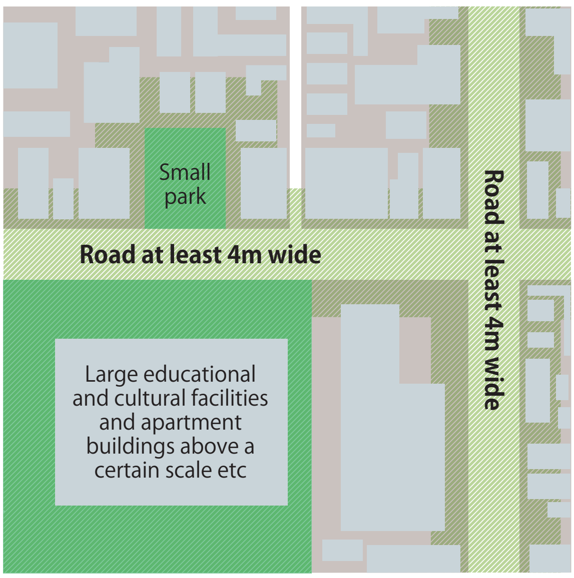
Lack of effective space for activities is an index expressing the lack of effective space that can be used for evacuation and emergency response activities such as firefighting, rescue and relief in a community as a ratio of the community's total area. The more serious the lack of such effective space, the higher the community's emergency response difficulty coefficient will be.

Lack of road network density

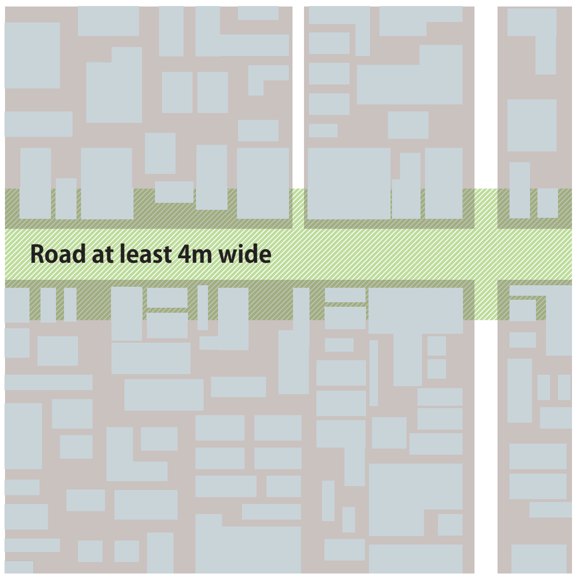
Lack of road network density is an index expressing the lack of community road networks that link the disaster-stricken site to wide roads, which can be used for evacuation and emergency response activities such as firefighting, rescue and relief. The more serious the lack of such community road networks, the higher the community's emergency difficulty coefficient will be.

❶ Lack of effective space for activities

Example of a Community with a Low Emergency Response Difficulty Coefficient



Example of a Community with a High Emergency Response Difficulty Coefficient

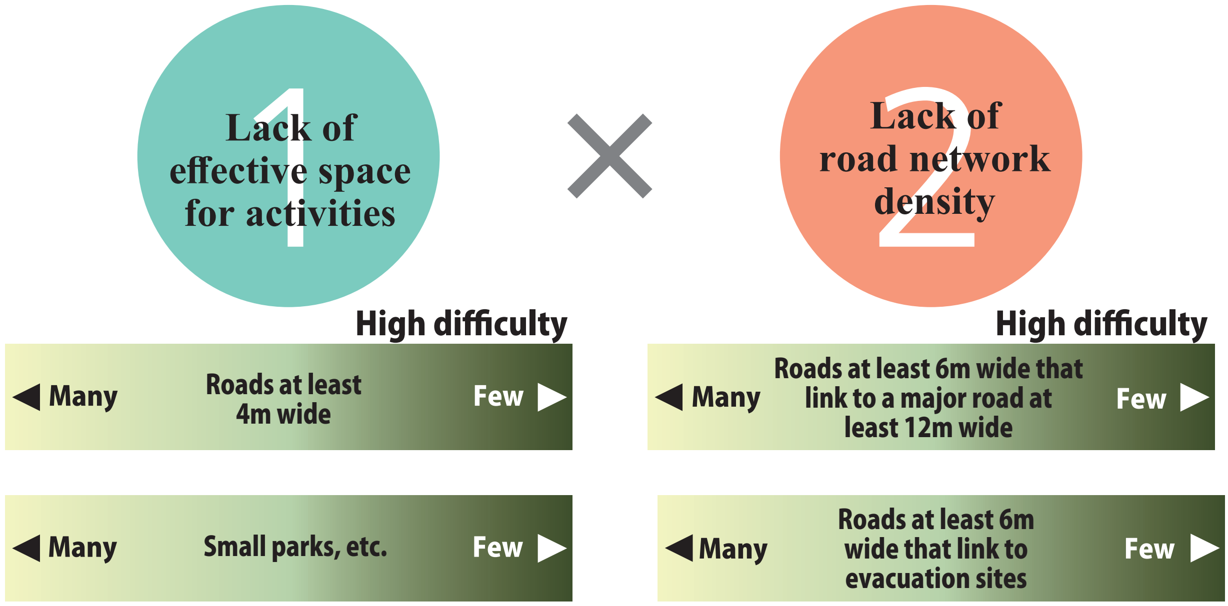


Building / Effective space for disaster response activities

How the Emergency Response Difficulty Coefficient is Derived

The emergency response difficulty coefficient is derived based on the lack of effective space for activities and the lack of road network density.

Deriving the Emergency Response Difficulty Coefficient

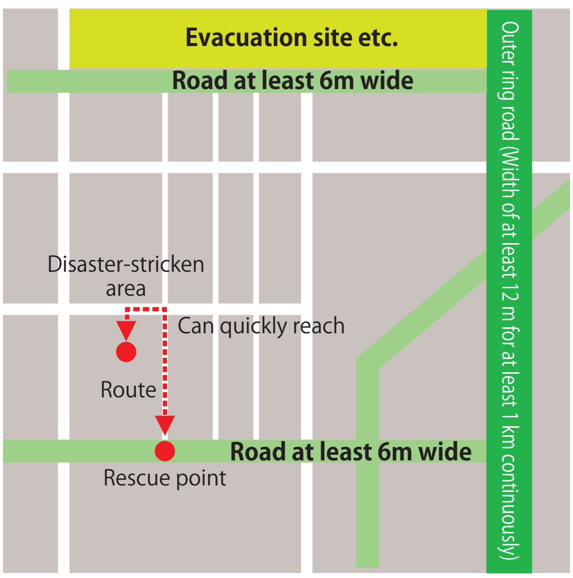


Lack of effective space for activities is derived by evaluating spaces such as roads at least 4m wide and small parks (excluding buildings), as well as their surrounding areas, as effective for disaster response activities, and assessing the other space, which is not effective, as a ratio of the community's total area. Large educational and cultural facilities and apartment buildings above a certain scale are also evaluated as effective spaces for disaster response activities.

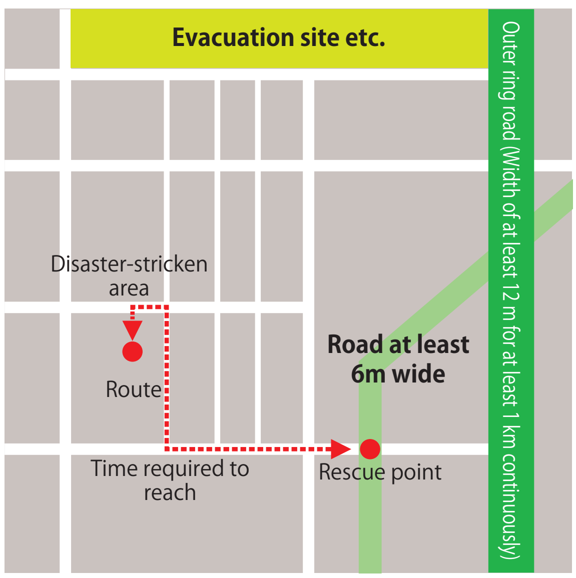
Lack of road network density is derived based on the average time required to reach a road at least 6 m wide that connects to a major road at least 12 m wide (roads that can serve as firebreak belts) running continuously for at least 1 km or a road at least 6 m wide that links to an evacuation site or large rescue and relief activity base candidate site from points throughout the community.

❷ Lack of road network density

Example of a Community with a Low Emergency Response Difficulty Coefficient

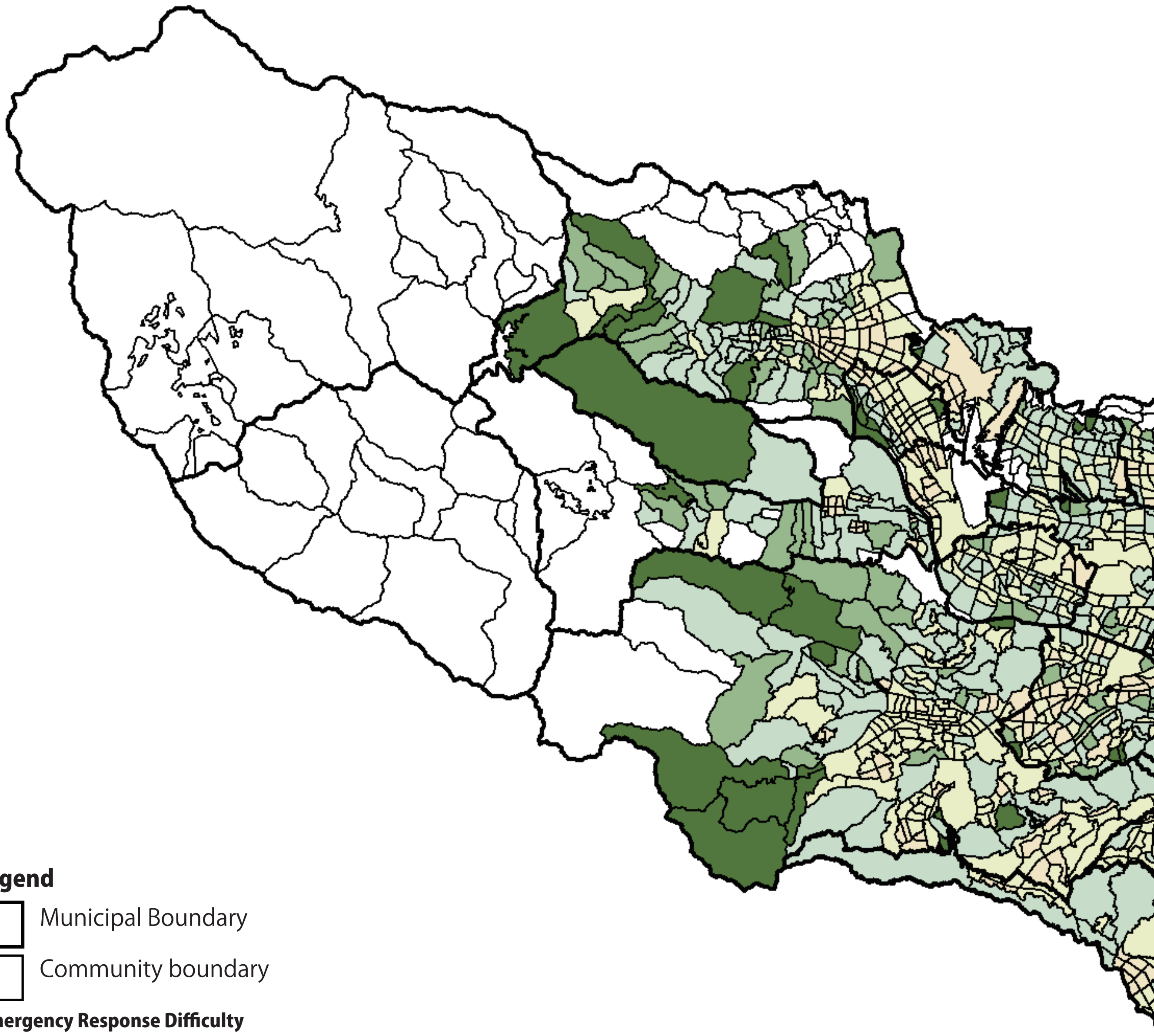


Example of a Community with a High Emergency Response Difficulty Coefficient



Map of the Emergency Response Difficulty Coefficient

Communities with a high emergency response difficulty coefficient are areas that have not made much progress in road infrastructure development at the community level. These communities are distributed in the Tama area and the western part of the Tokyo special-ward area. On the other hand, the center and eastern part of the Tokyo special-ward area where progress has been made in road infrastructure development at the community level are communities with a low emergency response difficulty coefficient.



Legend

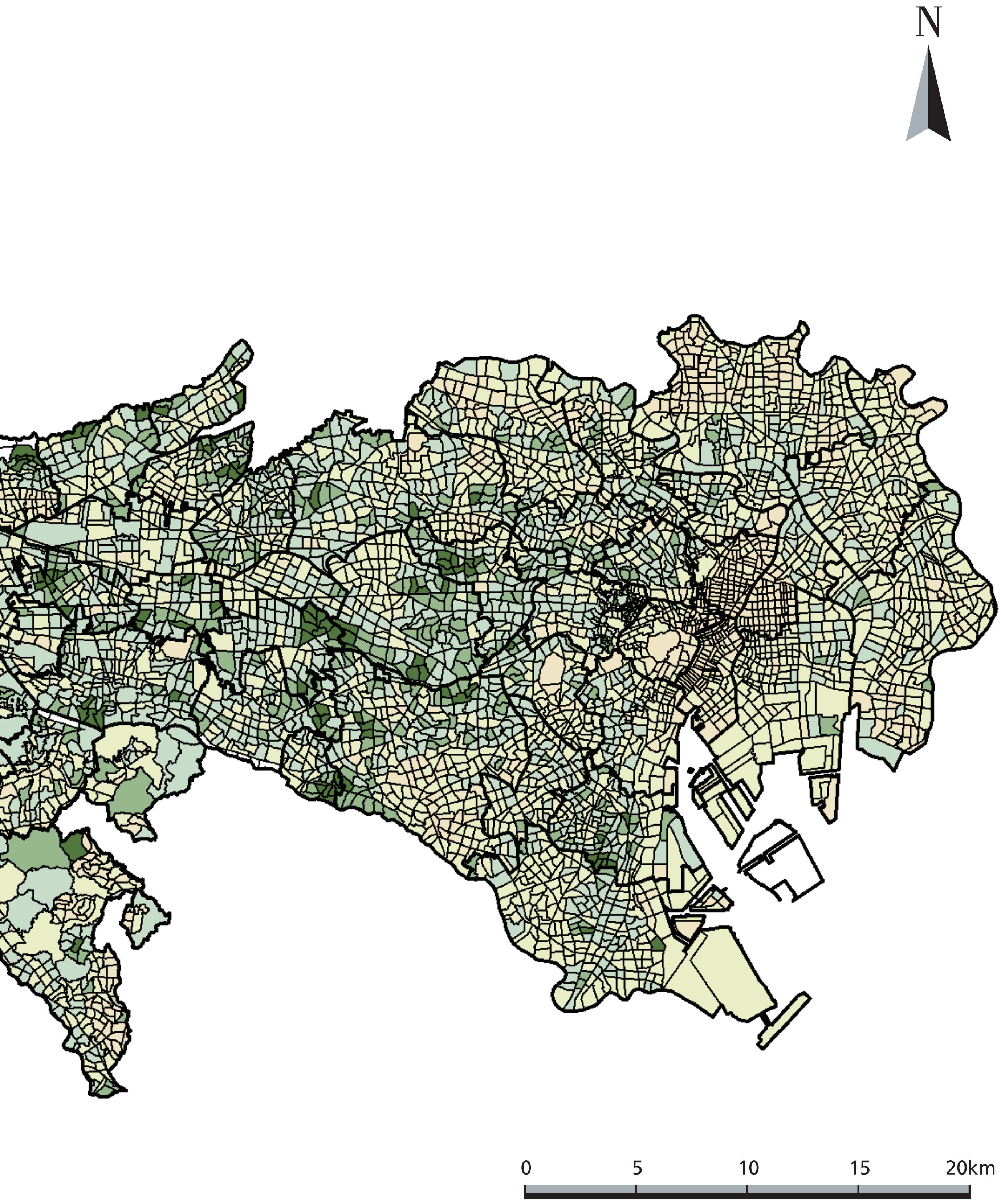
Municipal Boundary

Community boundary

Emergency Response Difficulty Coefficient (Ninth Study) (Number of Communities)

0.4 -	**(129)**
0.3 - 0.4	**(418)**
0.2 - 0.3	**(1427)**
0.1 - 0.2	**(2392)**
0 - 0.1	**(826)**

* Areas in white were not included in this assessment.

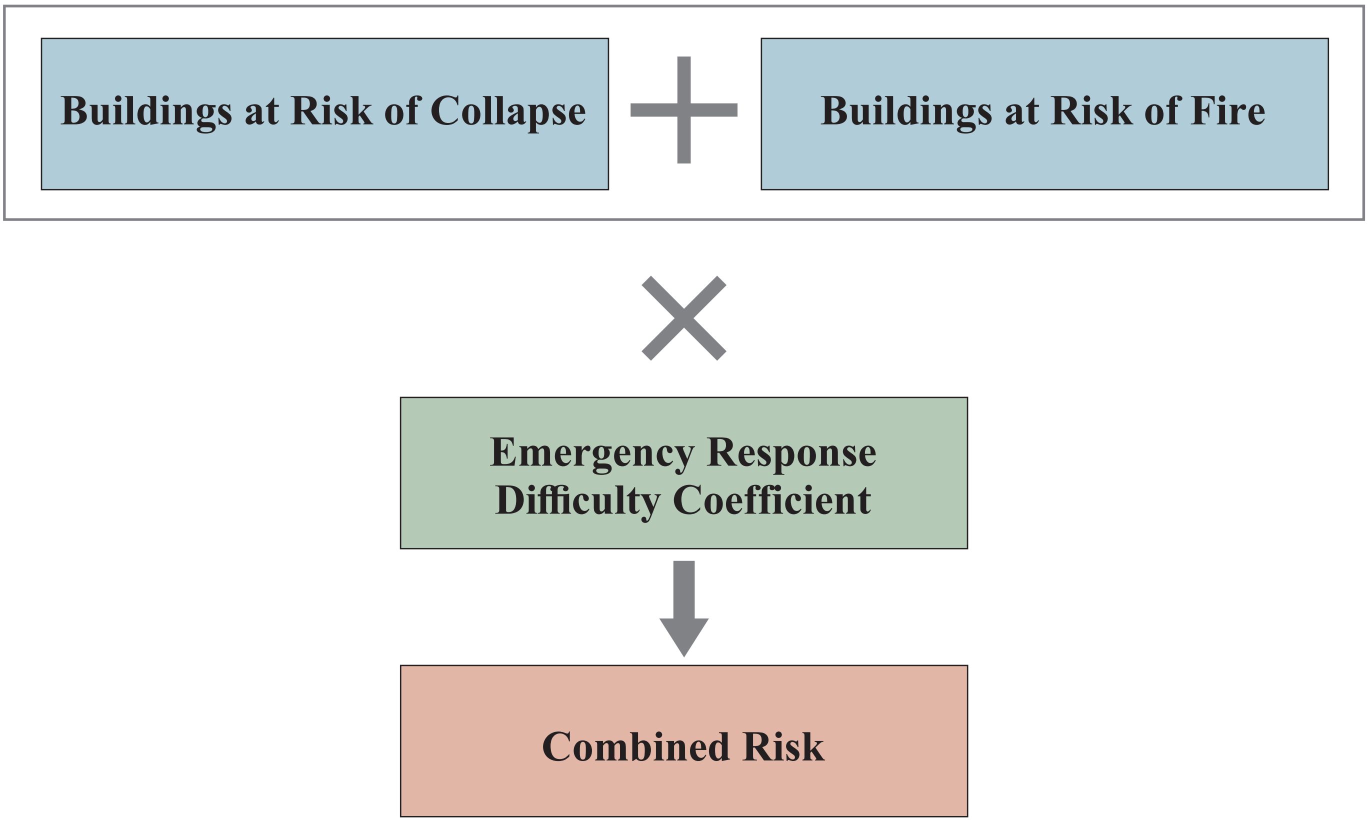

N
0
5
10
15
20km

6 Overall Community Earthquake Risk: Combined Risk

To make it easier for the residents to understand the level of risk their community faces from an earthquake, the combined risk index adds together the buildings at risk of collapse and buildings at risk of fire from earthquake shaking, and then multiplies that with the factors in emergency response difficulty, an index of how easy or difficult it is to evacuate and conduct operations such as firefighting and rescue activities from an area, serving as the coefficient, into one index. From the perspective of knowing the scale of possible damage to a community from earthquake shaking and fires, as well as from the perspective that roads serve an essential role as space to support evacuation and firefighting/rescue activities in a disaster, "combined risk" will serve as an indicator for building a disaster-resilient city and road development, and it is hoped that residents will use this to consider the ease or difficulty of response to earthquake disasters in their community and make preparations accordingly.

How Combined Risk Is Assessed

Combined risk is determined by adding together the buildings at risk of collapse and buildings at risk of fire and then multiplying that by the emergency response difficulty coefficient, which is derived from factors such as the status of community roads.



Measures Effective in Making Communities Safe

Seismic retrofitting


Reinforcement of walls


Reinforcement of joints

Creation of a Shared Complex


Before


After

Aiming for a Disaster-Resilient City

Along with aiming to improve seismic resistance and fire resistance through building reconstruction, various disaster preparedness measures must be promoted in a multilayered and comprehensive manner in areas at high risk and neighboring communities. Measures include the development of wide roads to stop the spread of fire and development of community roads and local parks to support evacuation and firefighting and rescue activities when a disaster strikes. Since an earthquake can strike at any time, constant community development, relevant countermeasures, and preparation are essential.
The Tokyo Metropolitan Government utilizes the results of the Community Earthquake Risk Assessment Study to select development districts — areas where measures related to building a disaster-resilient city are implemented, including projects to redevelop districts with close-set wooden houses by promoting the fire resistance of buildings and road development projects to create firebreak belts, and to designate evacuation areas for use in the event fires breaks out following a major earthquake. The study is also used to establish the local conditions for designation of a district by the governor of Tokyo as a new fire resistance regulation zone to promote the fireproofing of buildings.

Message to Tokyo Residents

In preparing for a disaster, assistance from public authorities should not be the sole focus. It is also essential to have an understanding of the concepts of “self-help” and “mutual assistance," and be aware of the need to take the initiative to protect one's own community. The Tokyo Metropolitan Government conducts this study with the aim to raise awareness regarding disaster preparedness among the people of Tokyo and help residents know the risks in their community.
To protect the lives and assets of residents especially in communities at high risk, it would be important to establish a community development association made up of local residents to proactively study community development and conduct disaster preparedness activities such as disaster drills, and also enhance the seismic resistance and fire resistance of homes through methods such as rebuilding.
Working to realize a "a Safe and Secure Tokyo," The Tokyo Metropolitan Government has established various types of support and subsidies to promote the creation of communities that will not collapse or burn, including generous support for seismic building assessments and seismic reinforcement, as well as initiatives that strongly encourage the establishment of fireproof zones, such as initiatives to rebuild for fireproofing. Please contact the municipality where you live to find out more and take advantage of these programs.

Rebuilding for Fireproofing

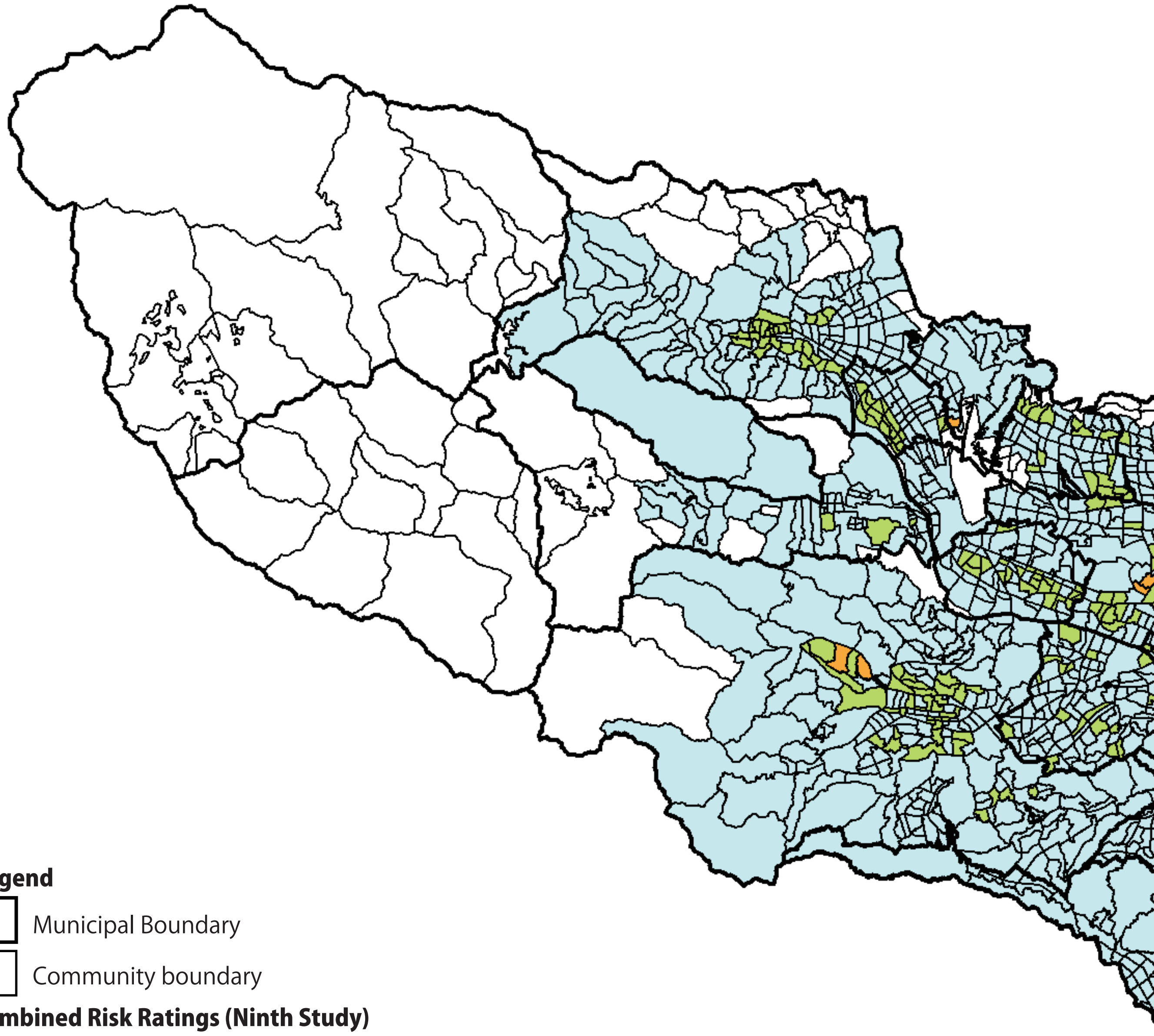
Before After

Development of Disaster Prevention Residential Roads

Before After

Map of Combined Risk Ratings

Communities with a high combined risk are spread out in the southwestern part of Shinagawa-ku, the central part of Ota-ku,Nakano-ku and the eastern part of Suginami-ku in addition to communities along the Arakawa and Sumida rivers.



Legend

Municipal Boundary

Community boundary

Combined Risk Ratings (Ninth Study)

5 (1 - 85)

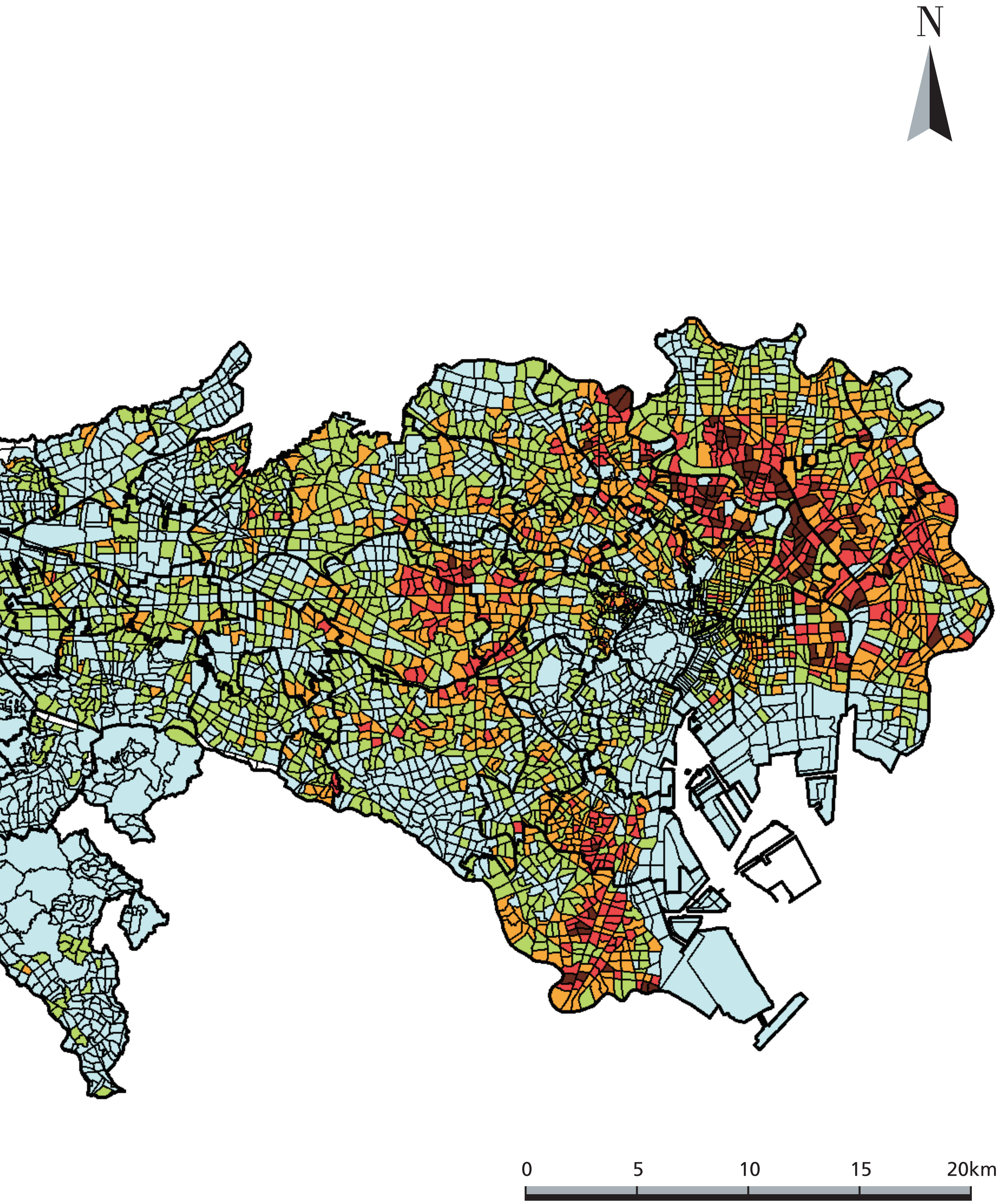
4 (86 - 373)

3 (374 - 1195)

2 (1196 - 2848)

1 (2849 - 5192)

*Areas in white were not included in this assessment.


N
0
5
10
15
20km

Q & A

Your Community's Earthquake Risk General Q & A

Q Have any of the assessment methods changed from the previous study?

A The building collapse risk was set based on examples of an investigation into the Kumamoto Earthquakes in regards to the rate of the complete destruction of wooden buildings. Buildings were excluded from the effective space for disaster response activities in regards to the lack of effective space for activities in the emergency response difficulty coefficient. In addition, roads that enter evacuation sites were also added as goal targets in regards to the lack of road network density and then evaluated including the perspective of resident evacuation and relief and aid activities.

Q How does combined risk change when multiplied by the emergency response difficulty coefficient?

A Since it is difficult to respond to a disaster in areas where road development has not progressed on the community level, meaning the emergency response difficulty coefficient is high, the combined risk will be higher. The area spreading to Nakano-ku and the eastern part of Suginami-ku and the area of the southwestern part of Shinagawa-ku has a high emergency response difficulty coefficient, so the combined risk is higher. Moreover, in areas such as Taito-ku and Sumida-ku, the building collapse risk and fire risk is high even though road development has progressed. Therefore, the combined risk is high.

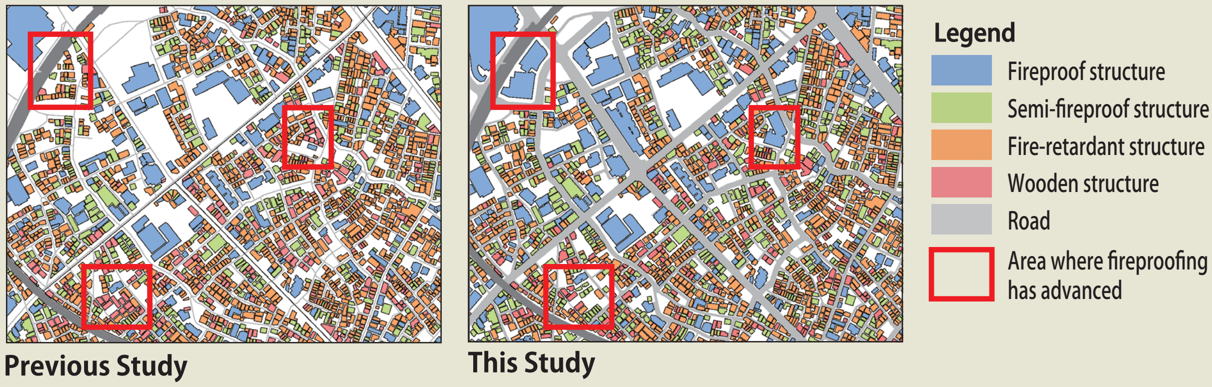
Q How can we check the results of the community earthquake risk assessment?

A Results, including the outline of the study, risk ratings by community, and risk rating maps are available on the Tokyo Metropolitan Government Bureau of Urban Development's website. Risk ratings for each community and assessment methods can also be found in the Ninth Community Earthquake Risk Assessment Study Report (Japanese edition only). Along with posting the report on the Bureau of Urban Development's website, it will also be sold at the Tokyo Citizens' Information Room (located on the third floor of the Tokyo Metropolitan Government No. 1 Building) and made available at major libraries.

Q Why did the amount of risk of some communities improve substantially from the previous study (Eighth Study)?

A For instance, in the area around Kyojima 1-chome to 3-chome in Sumida-ku shown below, fire-resistance through redevelopment, building reconstruction and other measures has advanced, with a reduction in the number at risk compared to the previous study (eighth study).

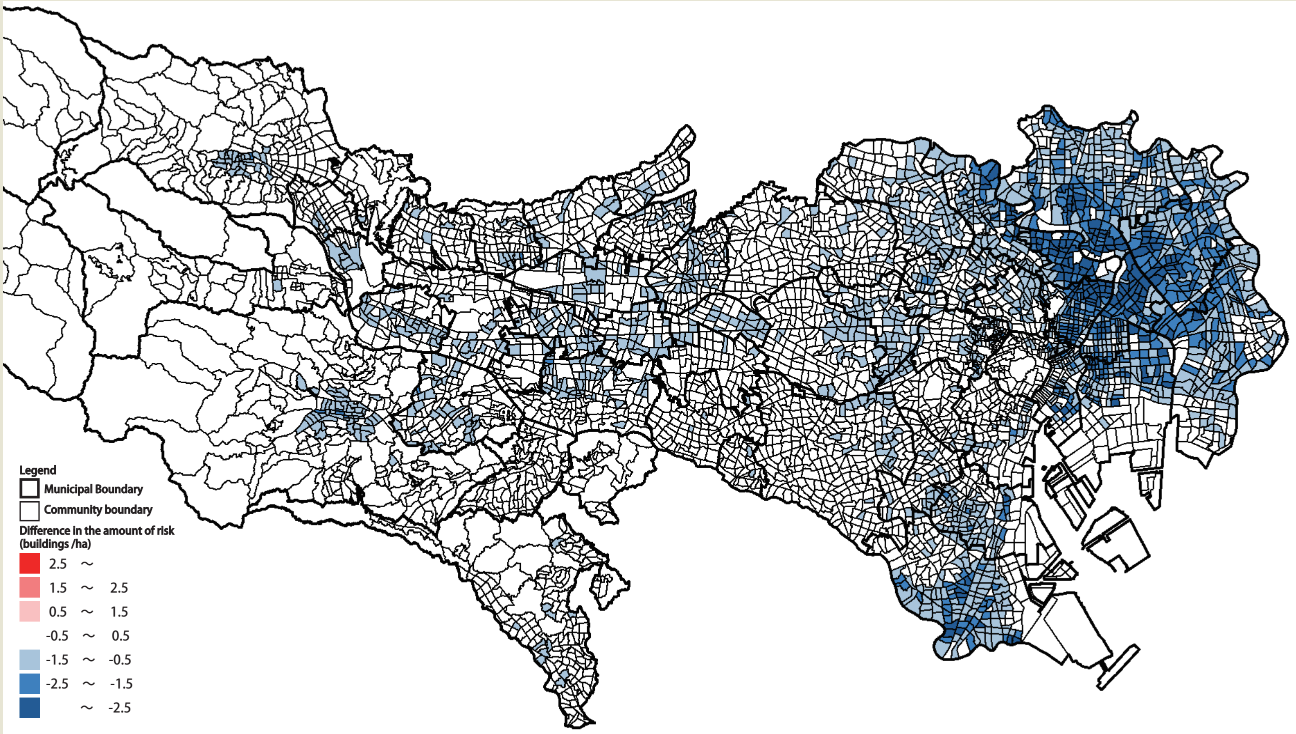
Although the reasons vary from community to community, this study revealed that the building of highly disaster-resilient urbanized zones through urban redevelopment and road development projects; reconstruction and retrofitting to make buildings highly seismic resistant; and less use of open flames including oil heaters in homes and businesses, contributed largely to improving disaster resistance.



Q Has the number of buildings at risk decreased compared to the previous study (eighth study)?

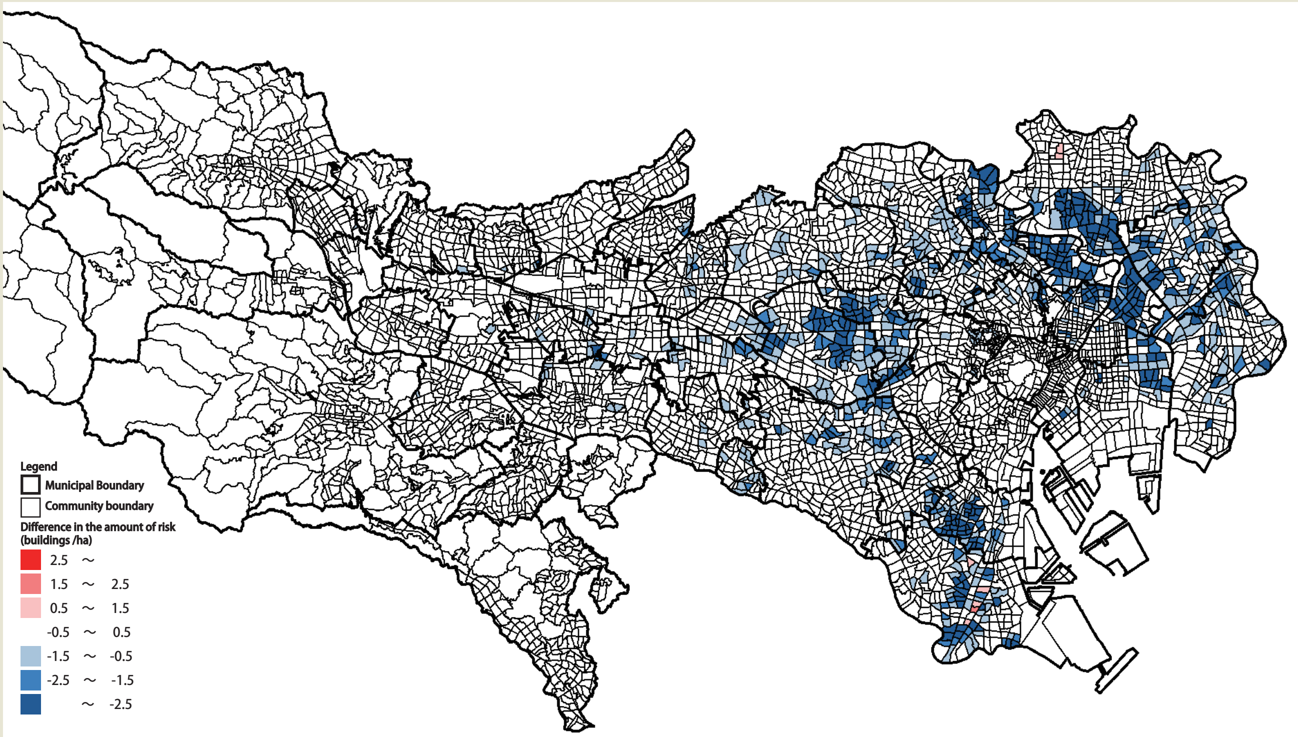
A The number of buildings at risk of collapse and the number of buildings at risk of fire have both decreased as a trend over the whole of Tokyo. Accordingly, it was confirmed that the disaster preparedness in urban areas has improved. In particular, in areas with a high building collapse risk rank and fire risk rank, the risk of both has decreased significantly. Accordingly, it was confirmed that steady progress has been made of disaster-resistant urban planning.

Changes in the Number of Buildings at Risk of Collapse



The number of buildings at risk of collapse has decreased in many areas due to the changes in the rate of the complete destruction of wooden buildings and the rebuilding to buildings with high earthquake resistance,the progress of urban development such as redevelopment.

Changes in the Number of Buildings at Risk of Fire



The number of buildings at risk of fire has decreased in many areas due to changes in the use of fire, fireproof rebuilding, and the development of wider roads and parks.

2022

Your Community's Earthquake Risk

The Ninth Community Earthquake Risk Assessment Study

September 2022 Registration no. (4) 58

Edited and published by:

Disaster Management Section, Urban Development Projects Division,

Bureau of Urban Development, Tokyo Metropolitan Government

2-8-1 Nishi-Shinjuku, Shinjuku-ku, Tokyo 163-8001

Tel: 03(5320)5142

https://www.toshiseibi.metro.tokyo.lg.jp/

古紙パルプ配合率60%再生紙を使用

リサイクル適性Ⓐ
この印刷物は、印刷用の紙へリサイクルできます。