Crisis Management Conference 2023

Post Conference Report

October 12-13, 2023, Tokyo

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Conference Summary

Name	Crisis Management Conference 2023
Objective.	The Network for Crisis Management, a multi-city practical cooperation project implemented by the Tokyo Metropolitan Government (TMG), holds a "Crisis Management Conference" every year to share experiences and know-how of each city regarding crisis management and to enhance professional and practical capabilities. The decision was made to hold the 2023 event in Tokyo as an opportunity to effectively communicate Tokyo's vision of creating Tokyo as the world's safest and most secure city. This year marks the centennial of the Great Kanto Earthquake. This will be used as an opportunity to exchange opinions, etc. among crisis management experts from each city through the Crisis Management Conference (referred to as the "CMC") in order to build a more resilient city.
Date/Time/ Venue	Plenary Meeting Thursday, October 12, 2023, 10:30-18:00 (Registration starts at 10:00) Keio Plaza Hotel 44F Harmony Reception Thursday, October 12, 2023, 18:00-19:30 Keio Plaza Hotel 44F Ensemble Visit the Kanda River/Loop Road No. 7 Underground Regulating Reservoir and the Security & Safety Trade Expo Friday, October 13, 2023, 9:00-17:25 Zempukuji River Intake Facility/Tokyo Big Sight
Participating Cities	Participating Cities: 15 cities (12 in-person, 3 online) Network cities: 9 cities Bangkok, Jakarta, Kuala Lumpur, Manila, New Taipei, Seoul, Singapore, Taipei, and Tokyo Observer cities: 6 cities Brussels, Government of Catalonia, Durban Online observers: Berlin Fire Department, Istanbul, Reykjavik

List of Participants

▼Foreign Participants from the Network for Crisis Management

No.	City	Position, Department	Name
1	Bangkok （Network City）	Director- General of Fire and Rescue Department	Teerayut Poomipak
2		Director of Disaster Prevention Measures and Plans Division	Phairote Janjuea
3		Chief of City Capacity Promotion Section, International Affairs Office	Sureerat Naruniranat
4		Officer, Fire and Rescue Department	Chayanat Samleekaew
5	Jakarta （Network City）	Head of Board for Local Disaster Management	Isnawa Adji
6		Head of Regional Cooperation Bureau	Marulina Dewi
7		Head of Implementing Unit of Disaster Data and Information	Michael Oktaviyanes
8		Head of Subdivision for Sister City Cooperation	Melissa Aesthetica
9		International Cooperation Officer of Regional Cooperation Bureau	Akmal Fauzan
10	KualaLumpur （Network City）	Director, Malaysia Civil Defence Force	Rohaizat bin Hadli
11	Manila （Network City）	Acting Chairman, Metropolitan Manila Development Authority	Romando S. Artes
12		Deputy Chairman	Engr. Frisco S. San Juan, JR.
13		Assistant General Manager for Operations	David Angelo R. Vargas
14		Acting Assistant General Manager for Planning	Victor Pablo C. Trinidad
15		Director IV of Legal and Legislative Affairs' Office	Crisanto C. Saruca. JR.
16		Planning Officer II	Monica Marie M. Mateo
17		Assistant	Homer Herrera
18	New Taipei （Network City）	Deputy Commissioner	Gwo-Jong, Chen
19		Section Chief	Gary Li-Kai Hsiao
20		Deputy Section Chief	Sheng-Chieh ,Lee
21	Seoul （Network City）	Head of Seoul Metropolitan Fire and Disaster Headquarters	Hwang, Ki seok
22		Ancillary Room Operation and Schedule Management	Lee, Yeong byeong

23		International conference	Jeong, Da jeong
24		Interpreter	Kim jungyeop
25	Singapore （Network City）	Director, Operations Dept., Singapore Civil Defence Force	Michael Chua Szu Chiap
26		So Operations Development	Chao Shan Te
27	Taipei （Network City）	Deputy Commissioner	Hsu,Chih-Min
28		Subdivision Chief	Lang,Jia-Ruei
29		Section Assistant	Huang,Ping-Chia
30		Interpreter	Kayo Yen
31	Brussels （Observer）	Expertise	Valerie Barbier
32	Durban （Observer）	Deputy City Manager, Community and Emergency Services	Musa Gumede
33		Head, Disaster Management and Emergency Control	Vincent Ngubane
34	Government of Catalonia （Observer）	Head of the Delegation of the Government of Catalonia to Japan	Mònica Castellà

▼Online Foreign Participant Cities from the Network for Crisis Management

No.	City
1	Berlin Fire Department
2	Istanbul
3	Reykjavík

▼Participants from Embassies

No.	Name of Embassy
1	Embassy of the Kingdom of Belgium
2	Embassy of the Federal Republic of Germany
3	Embassy of Iceland
4	Embassy of Malaysia
5	Embassy of Mongolia
6	Embassy of the Republic of the Philippines
7	Embassy of the Republic of Singapore
8	Embassy of the Republic of South Africa

9	Embassy of the Republic of Türkiye

▼Participants from Tokyo

No.	Title	Name
1	Special Advisor to the Governor on International Affairs	Sekiguchi Noboru
2	Special Advisor to the Governor on Technical Affairs	Nakajima Takashi
3	Director for Planning Section, Disaster Prevention Division, Bureau of General Affairs, TMG	Hamanaka Akihiko
4	Counselor to Division Chief, Disaster Preparedness Division, Life Safety Education Section, Tokyo Fire Department	Nakajima Tatsuomi
5	Director for Planning for Small Rivers, Planning Section, River Division, Bureau of Construction, TMG	Hijikata Takashi
6	Senior Director for International Affairs, International Affairs Division	Ogawa Kiyoyasu
7	Director for Project Section, International Affairs Division	Otsuka Tomoe

▼Moderators

No.	Department	Name
1	Professor, Department of Housing and Architecture, Faculty of Home Economics, Japan Women's University	Hirata Kyoko
2	Professor /The University of Tokyo	Hiroi U
3	Professor, Center for Integrated Disaster Information Research, Interfaculty Initiative in Information Studies, The University of Tokyo	Ohara Miho

Plenary Meeting on Thursday, October 12th

▼ Time	Agenda
10:00	Registration
10:30	**Opening remarks by the Governor of Tokyo**
10:40	**Keynote speech by Special Advisor to the Governor on Technical Affairs**
10:55	**Introduction of the participants**
11:00	Break
11:10	**Session 1 - Formulating plans for disaster preparedness（1h20min）**
	Introduction of moderator
11:13	1　Presentation（Bangkok）
11:23	2　Presentation（Jakarta）
11:33	3　Presentation（Kuala Lumpur）
11:43	4　Presentation（Singapore）
11:53	5　Presentation（Bureau of General Affairs, TMG）
12:03	Q&A session
12:18	Moderator wrap-up
12:35	Lunch
13:50	**Session 2 - Preparations for frequent earthquakes（1h）**
	Introduction of moderator
13:53	6　Presentation（Manila）
14:03	7　Presentation（Taipei）
14:13	8　Presentation（Tokyo Fire Department, TMG）
14:23	Q&A session
14:38	Moderator wrap-up
14:55	Coffee break
15:15	**Session 3 - Preparations for increasingly severe storm and flood damage（1h10min）**
	Introduction of moderator
15:18	9　Presentation（Brussels）
15:28	10　Presentation（Durban）
15:38	11　Presentation（New Taipei）
15:48	12　Presentation（Seoul）

15:58	13　Presentation（Bureau of Construction, TMG）
16:08	Q&A session
16:23	Moderator wrap-up
16:40	Coffee break
16:55	**Annual Report from the Secretariat**
17:05	**Announce of the Next Host City/Address by the Next Host City**
17:15	**Closing Remarks**

▼Opening remarks：KOIKE Yuriko
Governor of Tokyo

We are facing unprecedented risks, including the climate crisis, infectious diseases, natural disasters, and human-made disasters. This makes it necessary for us to study disaster management measures from a wide variety of perspectives. This year marks the centennial of the Great Kanto Earthquake. Applying the lessons learned from the Great Kanto Earthquake, the Tokyo Metropolitan Government is working to improve our city's disaster resilience through the combination of self-support, mutual support, and public support. We hope to share our ideas and initiatives with all of you at this conference.
Next year, we will be hosting SusHi Tech Tokyo 2024, an event that will bring together startups and city leaders from around the world. New awareness and ideas help lead to the creation of safer, more secure cities. We would appreciate your cooperation in encouraging the leaders of your cities to join us for the event.

▼ Keynote Speech: NAKAJIMA Takashi
Special Advisor to the Governor on Technical Affairs

I am going to explain about TOKYO Resilience Project against natural disasters. Tokyo is the capital of Japan and a metropolis of about 14 million people living in a vast area of about 2,200 square kilometers. The Great Kanto Earthquake that occurred 100 years ago caused widespread damage. We will continue to make efforts to help the capital, Tokyo, further evolve as a mature city that will continue to grow sustainably into the future, and as a safe, secure, and resilient city.

In addition to five crises Tokyo is anticipating, including torrential rains, major earthquakes, volcanic eruptions, interruptions in power and communications, and infectious diseases, it is assumed that complex disasters such as typhoons following large-scale earthquakes occur. In order to address these crises, the "TOKYO Resilience Project" was formulated in December last year. The total project size by the 2040s is 15 trillion yen, of which 6 trillion yen is scheduled to be invested over the next 10 years. This is 1.5 times the scale of disaster countermeasures taken over the past 10 years, and will further accelerate efforts to make Tokyo resilient.

Regarding countermeasures against heavy rainfall in rivers, channelization and construction of control basins are underway, and control basins utilizing public space are also being installed. In addition, an underground control basin connecting to the Kanda River/Loop Road No. 7 Underground Regulating Reservoir is currently under construction, which, when completed, will be effective in dealing with localized short-time heavy rainfalls of 100 mm per hour by interconnecting control basin capacities across the watershed.

Strom and flood damage countermeasures are being promoted not only through hardware development but also through software measures. Live streaming of river monitoring camera footage is available on YouTube, which contributes to the rapid evacuation of Tokyo residents. In addition, the rain information system "Tokyo Amesh" has been introduced, and a wide range of rain information centered on Tokyo is displayed in real time to visualize the situation and convey it in an easy-to-understand manner.

Regarding earthquakes, taking into account that Japan is a region frequently hit by earthquakes, we are promoting the elimination of utility poles. This will prevent road blockages caused by collapsed utility poles during earthquakes and will prevent obstacles to evacuation and transportation of goods. In addition, efforts are being made to make roadside buildings earthquake-resistant to prevent road blockages due to building collapses in the event of an earthquake.

Efforts are also being made to eliminate Densely-built Wooden House Areas and to improve disaster-resistant housing and roads by converting aging wooden houses into apartment complexes. Earthquake-proofing of metropolitan housing unites is also underway, with reinforcement work being carried out from both the outside and inside of the building. We will steadily promote the "TOKYO Resilience Project" by making full use of various technologies, further improve the level of safety and security of the city, and create a Tokyo that attracts many people from Japan and abroad.

▼ Session 1
Moderator: HIRATA Kyoko
Professor, Department of Housing and Architecture, Faculty of Home Economics
Japan Women's University

I currently specialize in risk communication and am also a member of the Tokyo Metropolitan Government's Reconstruction Study Council.

My research focuses on achieving voluntary management by residents in shelters. In particular, it is important to educate citizens about disaster prevention and communicate information. Although Japanese citizens are educated in disaster prevention and have basic knowledge of seismic intensity, individual and community cooperation is essential for disaster preparedness.

Furthermore, communicating information is also an important factor. During a training session for government officials in Beyoğlu district, Turkey, we were surprisingly able to create a disaster prevention app and conduct disaster prevention training for citizens in just one month.

Finally, disaster recovery is people-centered, and citizen cooperation and action are key to disaster preparedness. In future sessions, expect to learn information from other cities and share information on disaster preparedness and citizen actions.

(1) To be addressed by Office of Disaster Prevention and Mitigation (Bangkok)
Presenter : Teerayut Poomipak
Director General of Fire and Rescue Department, Bangkok Metropolitan Administration

I will share the disaster risks and countermeasures in the city of Bangkok. Bangkok is Thailand's capital and largest city, it's densely populated, with many buildings, and prone to a variety of disasters. In fact, according to the latest statistics, on average, 30 to 40 different disasters occur in Bangkok each month.

These disasters range from fires, building collapses, flooding, and PM2.5 (particulate matter), and have had widespread impacts on local communities. The risk of disasters is increasing, especially in densely populated areas, and this affects not only residents but also many people, including foreigners. The City of Bangkok recognizes these risks and has developed a plan to take specific measures to address them. The Bangkok Metropolitan Administration's Fire and Rescue Department is in charge of implementing the plan.

First, the City of Bangkok has been conducting disaster awareness activities for its residents. This promotes residents to improve their knowledge and awareness of disasters. They also help residents protect their own communities through volunteerism in accordance with public plans. In addition, local residents are trained to implement appropriate response measures before the fire brigade arrives. In this way, efforts are being made to minimize damage caused by disasters.

The City of Bangkok has developed a comprehensive plan to deal with disasters and is working with residents to make the entire city more resilient, livable, and safe.

Bangkok's disaster preparedness plan focuses on improving overall community safety and disaster preparedness capacity. The plan consists of several elements, at the heart of which is the improvement of the authorities' knowledge and the introduction of modern equipment. Professional knowledge and skills are essential in the prevention of disasters and mitigating damage. For this reason, the authorities place great emphasis on gathering up-to-date information on disasters and incorporating it into their actual countermeasures.

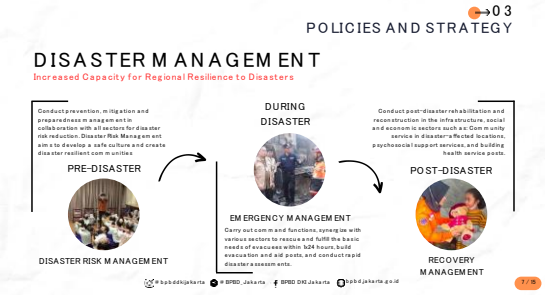
In addition, Bangkok's plan includes elements to increase coverage of risk areas. This is a measure to enable rapid deployment of rescue teams, especially to areas at high risk of disaster. According to the plan, rescue teams can reach the site within eight minutes, which will speed up the rescue and assistance of the victims.

Bangkok also actively shares knowledge about disasters through national and international networking. Through partnerships with other cities, we share best practices and experiences, learn from each other, and improve our disaster prevention and mitigation efforts. By signing many MOUs and working with partner cities, Bangkok is actively contributing to the international disaster preparedness community.

(2) Jakarta's Resilience in Disaster Preparedness (Jakarta)

Presenter: Isnawa Adji

Head of Board for Local Disaster Management, Jakarta Capital City Government



The current situation and disaster risks in Jakarta will be discussed in detail. Jakarta is the capital of Indonesia and covers a vast area with a population of more than 11 million. Jakarta's centrality as a city makes it a growing business, economic, and cultural center, but it also poses many disaster risks. Major disaster risks in Jakarta include floods, earthquakes, intra-urban fires, extreme weather, land liquefaction, and drought. These disasters occur frequently in the city and have a significant impact on citizens and infrastructure. Specifically, more than 1,000 fires were reported within the city from 2018 to 2020, including 635 in Jakarta alone. In addition, the seismic threat exists around Mount Jakarta, where cities are built on soft ground, increasing their vulnerability to earthquakes.

Jakarta is developing a preparedness and risk reduction plan to deal with these disasters. Based on specific strategies and policies, the city aims to promote disaster prevention and risk management and increase the resilience of the entire urban community to disasters. In the event of a disaster, the city will exercise its command function and cooperate with various departments to implement a rapid and effective response. The city has developed a regulation policy for fence protection and disaster prevention and has a contingency plan and work plan in place. 267 platoons are deployed throughout the city, allowing for rapid response to disasters. These platoons will collect data, prepare for different disaster scenarios, and provide necessary resources. In the event of a disaster, the head of each platoon shall take command as the disaster manager.

The city has entered into cooperative agreements with related agencies to conduct disaster drills and strategic floor games. It also seeks to build capacity in the disaster field through education, research, and community service. Twenty-four early warning systems have been installed in flood-prone areas of the city to warn citizens by implementing SMS. In addition, electrical systems are inspected in areas where fires frequently occur.

In addition, seismic risk monitoring of multi-story buildings using a seismic case building system has been implemented to mitigate seismic risk. The City is committed to fostering disaster resilient schools and communities and improving disaster literacy throughout the community. This effort includes the cooperation of buildings, utilities, schools, and volunteers; a disaster literacy room has been set up in the city to provide disaster preparedness drills and simulations.

The City is also promoting digital literacy, strengthening community engagement, and working with citizens on disaster risk reduction. It also encourages community participation by collecting dolls and toys to support survivors. The 5,760 people trained participate in the city's disaster preparedness programs, helping to strengthen the community.

(3) Factor Influencing Disaster Preparedness in Managing Evacuation Centres (KualaLumpur)

Presenter: Rohaizat bin Hadli

Director, Malaysia Civil Defence Force

Disaster preparedness and shelter management operations in Malaysia will be explained. Malaysia is exposed to natural disasters such as flooding and is taking measures to cope with them. The ASEAN report stated that 69% of the total population of the ASEAN region is threatened by floods, leaving US $89.7 billion worth of capital vulnerable to flood damage. Malaysia itself has experienced frequent flooding, with 85 of its 189 river basins flooded, affecting 5.7 million people.

Therefore, it is important to establish and manage shelters. In Malaysia, there are standard operating procedures for the management of shelters, and various roles are defined, including those of NGOs. Malaysia deploys disaster prevention and mitigation at three levels: district, state, and federal, and takes measures according to the type of disaster.

Disaster management committees are responsible for ensuring the safety of shelters, and volunteer organizations and many resources are needed. Buildings such as schools and community centers are used as evacuation centers, and plans for the establishment and operation of evacuation centers are formulated in advance. Disaster management activities consist of many elements, such as proactive measures, developing warning systems, predicting hazards, and planning for effective response. Evacuation centers are set up to ensure people's safety in the event of a disaster, and Malaysia has a large number of evacuation centers that can accommodate millions of victims.

Disaster preparedness activities are being developed in accordance with standard procedures for the management of shelters. Instructions for the procedures related to the actual establishment and operation of the shelter. A document on shelter operations is referenced to shelter staff, detailing how the shelter will function in the event of a disaster. It also provides information needed to prepare for shelter. The dissemination of weather forecasts and weather warning information is involved in the proper management of shelters, providing information to the community through an Early Warning System (EWS) and reducing factors that affect shelter operations.

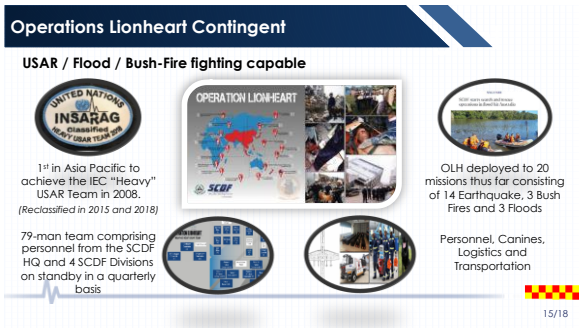
Appropriate information is provided through key media, with electronic media, reports, and social media being utilized. Weather warning information by the Malaysian Meteorological Department is divided into three categories - Alert, Severe, and Danger - to encourage appropriate countermeasures.

In addition, a community-based organization, the Village Development and Safety Committee (JPKK), promotes community-based disaster management activities and educates local leaders. There are 15,434 community-based organizations in the country that conduct awareness programs for local communities, and local leaders collect and provide information on local disaster risks. The government provides resources related to the shelter and conducts educational activities regarding living conditions and sanitation. We plan to work together with all sectors and will use science and knowledge to address this.

(4) Singapore’s Preparedness Against Natural Disasters (Singapore)

Presenter: Michael Chua Szu Chiap

Director, Operations Dept., Singapore Civil Defence Force



I would like to share with you some of the disaster preparedness and humanitarian efforts in Singapore. While Singapore is a small country, it has implemented physical adaptation measures to prepare for the effects of flooding and severe weather associated with climate change. Singapore's land area is small, and its population of 5.7 million is concentrated in a city of many high-rise buildings and commercial centers. This makes disaster preparedness in urban areas important.

Coastal protection facilities, levees, warning systems, and sensor networks are in place to prepare for weather-related risks such as floods and droughts. In addition, an emergency response plan is in place to prepare for different disaster scenarios.

The Singapore Civil Defence Force (SCDF) is trained for a wide range of activities, from emergency response to firefighting, rescue, hazardous materials management, and medical care in the event of a disaster.

As an incident management organization, SCDF works with different agencies to address the issue and takes a multi-functional, multi-agency approach. Singapore, being a small territory, has effectively used its tangible resources and human resources to ensure that it is thoroughly prepared for urban disasters.

Emergency preparedness and community cooperation are critical. It is also essential that emergency responses involve the entire community, not simply professionals.

At the heart of the community are people called "lifesavers”. They are trained to be able to perform life-saving actions in critical situations.

It is also important to address risk through education, training, and the use of science and technology. The “myResponder” mobile app provides citizens with information that can help them in an emergency and improve their capabilities.

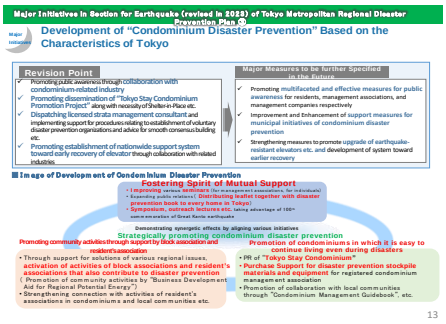
Community readiness is critical, and we are using schools, homes, and online platforms to train and educate. Furthermore, scientific and technological advances are essential in risk management, and Singapore is actively working in this area.

In terms of contribution to the international community, while Singapore is a relatively safe country, international assistance is needed in the ASEAN region, as many lives have been lost due to disasters. I would like to contribute to the international community by participating in humanitarian assistance such as medical care.

(5) Section for Earthquake of Tokyo Metropolitan Regional Disaster Prevention Plan (Tokyo)

Presenter: HAMANAKA Akihiko

Director for Planning Section, Disaster Prevention Division, Bureau of General Affairs, Tokyo Metropolitan Government



I would like to explain the section for Earthquake of Tokyo Metropolitan Regional Disaster Prevention Plan, which is an important plan for disaster preparedness of the Tokyo Metropolitan Government (TMG). Last year, for the first time in 10 years, the TMG conducted a review of its earthquake damage estimates. The purpose of this plan revision is based on the TMG's newly estimated damage of earthquake.

Disaster prevention plan in Japan has a three-tiered structure, with the Disaster Management Basic Plan formulated by the national government as the base, and prefectures and municipalities formulating their own disaster prevention plans according to the characteristics of their respective regions. This regional disaster prevention plan lays out the specific roles and responsibilities of all players involved in disaster prevention, including the TMG, municipalities within Tokyo, as well as the national government and related agencies.

Furthermore, we will explain the damage estimates in the event of a large-scale earthquake in Tokyo. The area is particularly vulnerable to the distribution of intensity for an epicentral earthquake under the southern city center, with an estimated 190,000 buildings damaged and 6,100 people killed as a result of shaking and fires. Compared to the damage estimates made 10 years ago for an earthquake of the same magnitude, these figures indicate that building damage and fatalities have been reduced by 30 to 40% due to progress in making buildings more earthquake resistant and noncombustible.

Furthermore, the diagram shows areas in Tokyo where wooden houses are densely built, and these areas are prone to building collapses due to earthquakes and buildings being destroyed by main fires. These quantitative assessments are very important indicators for governments to promote disaster prevention measures. On the other hand, residents may have difficulty in recognizing the risks as relevant to them, so in order to visualize disaster risks, non-damage scenarios after a disaster, such as disruption of lifelines and environmental degradation of evacuation centers, are also presented.

With regard to securing communications, the city is promoting the improvement of disaster resistance of telecommunications carriers' core facilities in order to ensure communications that connect anyone anywhere in the city are still operational. In addition, the company is promoting the use of satellite communications by installing Wi-Fi at evacuation centers and public facilities. Efforts are also underway to eliminate utility poles, ensuring communication stability and increasing the efficiency of information transmission.

Next, the TMG is also working on condominium disaster prevention, a unique feature of Tokyo. Approximately 9 million people live in apartment complexes in Tokyo, and efforts are underway to strengthen the connection between condominiums and local communities as a form of mutual aid, and to foster a spirit of mutual help as a form of self-help.

It also focuses on reducing disaster-related deaths. We are working to secure supplies essential for maintaining the environment of disaster-stricken residential areas, and is particularly focused on resolving the problem of toilets in times of disaster. The TMG is actively promoting comprehensive toilet countermeasures and taking measures to minimize disaster-related deaths in preparation for disasters such as large-scale earthquakes.

<Q&A Session>

Question by Musa Gumede (Durban)

◆Question 1: In a country where disasters occur frequently, I would like advice on appropriate shelters and spaces. I would also like to ask how we should prepare for a major disaster.

Ans: Rohaizat bin Hadli (Malaysia)

In Malaysia, schools and community centers are used as evacuation centers in the event of a large-scale disaster, and temporary shelters are set up to help victims evacuate. The shelter consists of tarps and temporary cubicles.

Ans: Michael Chua Szu Chiap (Singapore)

In Singapore, gymnasiums and other facilities are used as evacuation centers for short periods of time, but in the case of long-term evacuation, they are converted to temporary housing. The Authority and the Housing Authority will select public housing units and utilize them in case of need for long-term evacuation.

Ans: HAMANAKA Akihiko (Tokyo)

In Japan, the first step in disaster preparedness is to understand the risks in your area. It is best if risks can be identified through simulations, but if not, lessons can be learned from past disasters and routine preparations should be made. Identify the different risks in each region and consider appropriate countermeasures.

◆Question 2: I would like to ask about the expectations of volunteers and the quality of their assistance. I would also like to ask questions about training and compensation, whether there are obligations to volunteers, who will be held accountable if they do something wrong, and whether there is any legal action.

Ans: Isnawa Adji (Jakarta)

In Jakarta, the PentaHelix cooperative has trained more than 5,000 volunteers and is working with the city government to provide education and medical training. Volunteers work without pay and are supported by the community to respond to emergencies.

Ans: Rohaizat bin Hadli (Malaysia)

There are two types of volunteers in Malaysia. One is the community-driven volunteers who work for free. The other is government-led volunteers, who work according to instructions and may receive some gratuities. As for employment, these volunteers are engaged in shelter preparation activities, etc.

Ans: Michael Chua Szu Chiap (Singapore)

When Singapore began training and operating AEDs as volunteers in 2015, they were concerned about legal liability, but they have put laws in place to ensure that they are not held liable for their actions in good faith. Volunteers received no compensation, but were motivated to help people out of the goodness of their hearts. However, they must be trained.

◆Question 3: I would like to ask about post-disaster reconstruction funds. I would also like to ask about clear guidelines and policies regarding funding and government responsibility in disaster recovery.

Ans: Isnawa Adji (Jakarta)

Jakarta has two budgets. One is the budget from the city of Jakarta, mainly for education and emergency response. The other is an emergency budget in the event of a disaster, with approximately $100 million set aside each year for flooding and other disasters.

Ans: Rohaizat bin Hadli (Malaysia)

In Malaysia, reserves for reconstruction are budgeted by the state government and the amount is set based on an assessment by the disaster management committee. The budget will be increased or decreased according to the results of the assessment, and funding will be secured from the state and federal governments.

Ans: HAMANAKA Akihiko (Tokyo)

In Japan, disaster victims receive support money from the government, but this may not be enough to cover all expenses. For this reason, there is an insurance system for earthquakes and other disasters, which is jointly administered by the national government and private operators. This private insurance program serves to supplement the assistance provided to disaster victims.

Summary: HIRATA Kyoko (Moderator)

We would like to thank everyone for their impressive presentations. I was particularly impressed by the community-based measures and the training of volunteers who can take action in an emergency.

It is extremely important to create a state of disaster resilience plan on a regular basis and utilize them in emergencies. In Japan, in particular, there is a very strong focus on reconstruction after earthquakes and disasters. Therefore, the budget is used to strengthen supplies, logistics, and their backup.

Another important point is how to return to the standard of living after a disaster. When disaster strikes, those affected may lose their jobs. They will not be able to continue to live where they live. Therefore, it is important to take measures to address this issue. The first challenge is to strengthen buildings, but I would like to hear in the next presentation how each country is building systems that allow citizens and society to recover quickly even after a disaster occurs.

▼ Session 2
Moderator: HIROI U
Professor, The University of Tokyo

As a specialist in Urban Plan and Disaster Risk Reduction, my research focuses on disaster management planning, particularly in large cities. Among them, I am especially conducting research on disaster prevention planning with a focus on large cities.

One of my studies focuses on the Stranded Commuters Problem. This is what we studied after the Great East Japan Earthquake that occurred 12 years ago. This phenomenon occurs when a major earthquake or other disaster paralyzes trains and transportation systems, leaving many people stranded in the city who cannot return home, causing congestion and safety concerns. I am researching this issue and looking for solutions.

In addition, my research includes work on new disaster scenarios. For example, a new disaster scenario called Tsunami Fire, in which a fire may be triggered by a tsunami, is being studied to provide an approach to enhancing disaster preparedness.

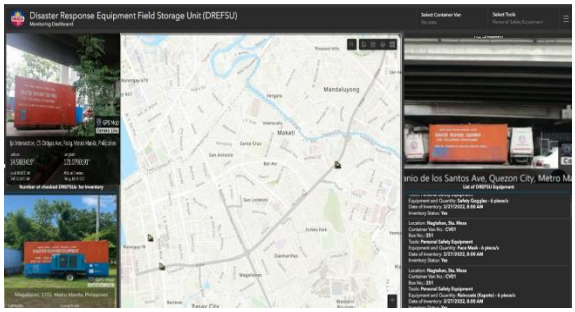
Also part of my research is the Migrant Simulation approach. It focuses on the possibility that a major disaster could result in a sharp increase in population outflow from the affected area, and addresses new challenges related to managing and assisting evacuees.

Large-scale disasters are likely to cause new phenomena and problems that may not be adequately addressed by one country alone. Therefore, it is crucial to share experiences and best practices among cities and regions to jointly develop effective disaster management strategies. Especially in densely populated areas such as large cities, new phenomena need to be addressed, and from this perspective, international cooperation and knowledge sharing is important.

(1) Earthquake Preparedness (Manila)

Presenter: Romando S. Artes

Acting Chairman, Metropolitan Manila Development Authority



I will describe efforts to maintain the safety and resilience of Metro Manila. While Metropolitan Manila is a cultural and commercial center, it is also home to one of the world's most active fault lines, and a magnitude 7.2 earthquake would be devastating.

Metropolitan Manila is the center of the Philippines and is known as the cultural and commercial center of the country, but it is also a dangerous area that hosts an active fault zone. The potential for earthquakes, especially those caused by the West Valley Fault, could be catastrophic.

In order to fulfill our responsibility to protect public safety, we would like to share a video that presents our strategies and initiatives to manage earthquake-related risks and ensure the safety and resilience of Metro Manila.

The Metropolitan Manila Development Authority is developing a comprehensive disaster preparedness plan for earthquakes in accordance with Republic Act 7924, Section 6. There are four pillars of efforts: Disaster prevention, Mitigation, Disaster preparedness, Emergency response, and Preparedness.

The West Valley Fault has been recorded to have shifted four times in the past. And since the fault has been observed to move about once every 400 years, it is highly likely that another major earthquake will occur within the next 50 years.

Against this background, the Metropolitan Manila Development Authority, in cooperation with the Philippine Institute of Earthquake and Volcanology and the Japan International Cooperation Agency, conducted a study on the West Valley Fault and conducted an earthquake disaster preparedness planning study. This preparedness plan defines the division of roles at each stage of the pre-earthquake and post-earthquake phases, and serves as a guideline for cooperation throughout the community.

In addition, various strategies are being developed in 17 districts in Metro Manila, with the necessary resources located in identified staging areas. Through the Department of Public Safety, free training will be offered to state ministries, municipalities, and other stakeholders to help them improve their capabilities. Disaster prevention information is disseminated through various media, and information is routinely provided through social media.

In addition, a state-of-the-art center will be established in 2023 to enhance road condition monitoring and emergency response. The center serves as a place to provide necessary information and assistance in implementing appropriate countermeasures, making it an important center for community safety.

(2) Preparedness for earthquakes of Taipei City (Taipei)
Presenter: Hsu, Chih-Min, Deputy Commissioner
Lang, Jia-Ruei, Subdivision Chief
Taipei City Fire Department

The presentation will detail countermeasures and preparations for seismic risk in Taipei. Taiwan is located in an area where tectonic plates intersect and there is frequent seismic activity. Taipei City, in particular, is located in a basin in northern Taiwan, and its topography places it at high risk for earthquakes.

To prepare for earthquakes, Taipei City has set long-term goals and is working on the 10 essential requirements by the United Nations Disaster Reduction Agency. This includes risk analysis, risk control, preparedness enhancement, and efficiency improvement strategies to minimize damage and economic losses.

Regarding the analysis of seismic risk, Taiwan is located at a tectonic plate intersection and is believed to have 36 active faults. In that report, the likelihood of an earthquake directly under Taipei is estimated at 12%, and the risk of liquefaction is also taken into account. In preparation for this, Taipei City has developed urban planning and disaster countermeasures based on risk analysis and risk control.

Taipei has been affected by earthquakes in the past, with a major earthquake in 1999 causing much damage. Based on this experience, Taipei City has conducted simulations to address earthquake risks, estimating the number of collapsed buildings and victims in the event of a major earthquake. Based on this simulation, the City of Taipei is increasing earthquake preparedness and focusing on the need for safe shelters.

Seismic monitoring is conducted using digital governance. And a system is in place to issue early warnings before an earthquake occurs. This has enabled effective measures to be taken against infrastructure such as high-speed railroads and gas pipelines in preparation for earthquakes.

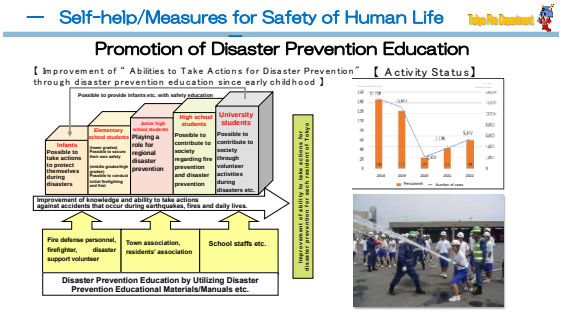
In terms of capacity preparedness, Taipei City is preparing for a major earthquake through simulations and is working on housing measures that will allow more than 27,000 people to evacuate to safe locations. Emergency shelters and special hospitals are being set up, citizens are being recruited to volunteer for disaster relief, buildings are being earthquake-proofed, and roads are being repaired.

Taipei City also emphasizes communication and community involvement in disaster preparedness, with schools, businesses, and the entire citizenry working together to reduce earthquake risk and enhance disaster preparedness.
Disaster preparedness and response is a collaborative effort between the government, businesses, and the community at large, and Taipei City is working to minimize risk by sharing ways to build a safer city through a variety of activities and exercises.

(3) Earthquake Preparedness of the TFD (Tokyo)

Presenter: NAKAJIMATatsuomi

Counselor to Division Chief, Disaster Preparedness Division, Life Safety Education Section, Tokyo Fire Department



The Tokyo Fire Department's earthquake countermeasures will be described, including Self-help and Mutual-help during an earthquake. Tokyo has a complex underground crustal structure, and there are concerns that an earthquake directly under the city center could cause extensive damage. Therefore, the government and local governments are focusing on disaster countermeasures and are promoting earthquake damage estimates and policy projects based on them.

Self-help measures include preventing furniture from toppling over, disseminating action guidelines for earthquakes, and promoting disaster prevention education. The organization also focuses on the production of digital disaster prevention teaching materials and the development of disaster prevention education using ICT. Regarding Mutual-help, we place importance on strengthening local communities where local residents cooperate in the event of an earthquake and support local residents' preparations. On the public assistance side, the Tokyo Fire Department is fully staffed and equipped to respond to disasters and protect the lives and property of Tokyo residents.

According to Tokyo's earthquake damage estimates, the number of deaths is estimated to be approximately 6,000, of which approximately 4,000, or 63.7%, are elderly, disabled, and other people who require special care. To address this issue, Tokyo Metropolitan Government fire officials are working to visit directly the homes of people who need attention in the event of a disaster to identify fire, earthquake, and daily life accident hazards and to implement safety measures.

The concept of Mutual-help is also emphasized, and fire and disaster prevention drills are being promoted in which local residents participate. This training aims to improve the knowledge and skills of Tokyo residents in fire and disaster prevention, enhance each person's ability to take action in disaster prevention, and establish a Mutual-help system in the community.

Furthermore, the Tokyo Fire Department provides training methods that incorporate the latest technology. For example, augmented reality (AR) training equipment is being utilized, and this technology allows virtual images and sounds of flames and smoke to be superimposed on real-life scenery, enabling training participants to experience simulation as if there were an outbreak of fire at the site. This technology is used especially for residents of high-rise condominiums, allowing them to avoid smoke and experience realistic evacuation situations.

Various training vehicles are also available to encourage training participation. These include a VR disaster prevention experience vehicle, in which visitors wear head-mounted goggles and sit in motion seats to virtually experience earthquakes, fires, windstorms, floods, and other disasters. This allows training participants to learn to respond to disasters in realistic situations. Tokyo is feared to be in danger of an earthquake directly under Tokyo, but the Tokyo Fire Department is promoting efforts day and night to prepare for such an earthquake, so we hope you will enjoy your stay in Tokyo with peace of mind.

<Q&Answer Session>

Question by Romando S. Artes (Manila) to Tokyo, Japan
◆His own organization also has a simulator, but it does not have VR technology. If you share your VR videos with us, we can buy VR goggles ourselves and upload the videos. He hopes to use it in his own earthquake simulator.

Ans: NAKAJIMA Tatsuomi (Tokyo)
We cannot give an immediate answer and would like to discuss this in the future. 360-degree VR video teaching materials for disaster prevention education are available on YouTube, so please refer to this first. In addition, the last mentioned Life Safety Learning Center are located in Honjo, Tachikawa, and Ikebukuro, and we invite you to visit them to experience the VR vehicle images.

Question by Michael Oktaviyanes (Jakarta)
◆I would like to ask about the impact on investors in cities where there is mapping of seismic risk. Also, these cities are economic and business centers, and we would like to ask how this will affect the economic sector.

Ans: Romando S. Artes (Manila)
The Best Valley Fault is important in the Metro Manila area and provides information on the location of that active fault. Safety zones and building Regulations are in place, and buildings must adopt earthquake-resistant construction in areas near faults. This is important information for investors and office selection and will be helpful for investment and construction planning in the Manila area.

Ans: Lang, Jia-Ruei (Taipei)
Taipei is promoting the idea of disaster prevention to businesses in order to minimize economic losses caused by major earthquakes and large-scale disasters. It encourages each company to develop a business continuity plan and provides tax breaks to economic sectors after a disaster to ease the burden.

Ans: NAKAJIMA Tatsuomi (Tokyo)
The Tokyo Metropolitan Government encourages companies to develop business continuity plans, and the Cabinet Office (in charge of disaster prevention), a national agency, provides guidelines for formulating plans. The Cabinet Office also discloses the rate of plan formulation, which investors and others can use as reference. Damage estimates indicate economic losses, but countermeasures are being taken in terms of both hardware and software.

Question by: HIROI U(Moderator) Questions for Manila
◆In relation to the case of the Disaster Operation Center in Manila, I would like to ask whether the training is targeted at residents or government officials, firefighters, etc. I would also like to ask about the benefits to the recipient of the certificate.

Ans: Romando S. Artes (Manila)
First, local municipal rescue workers and volunteer first aid groups will respond to the disaster. The training is then provided to civil society organizations, which are then issued certificates to certify that they have completed the training. This initiative is offered not only to Metro Manila, but also to other municipalities and companies. While there are no specific benefits of the certificate, receiving it increases one's patriotic awareness of one's country and allows one to utilize basic knowledge in times of disaster.

Question by Musa Gumede, Durban

◆I would like to ask a question about how to prepare for earthquakes in areas where earthquakes do not occur frequently.

Ans: NAKAJIMA Tatsuomi (Tokyo)

Tokyo recognizes the need for a comprehensive approach to earthquake preparedness. The highest priority is placed on measures to protect individuals, and educational activities are conducted to educate people about appropriate behavior in the event of an earthquake and living in evacuation centers. In addition, post-disaster reconstruction is also being considered. We also place importance on educating foreign residents who have never experienced an earthquake, and are educating them about earthquake risks and appropriate actions through VR experiences and Life Safety Learning Center.

Ans: Lang, Jia-Ruei (Taipei)

A similar approach is used in Taipei as in Tokyo. It stresses the importance of educating residents about earthquakes and disasters and educates them about the need for self-protection and self-help in the event of a disaster. We are working to educate residents so that they can defend themselves and cooperate with each other instead of relying on limited rescue teams and government resources.

Ans: Romando S. Artes (Manila)

In Manila, risk assessment and preparedness are considered key. First, assess the risk in a particular location or country, and based on that assessment, promote education and the provision of necessary equipment to the population. It also has a rescue team and should be prepared to respond quickly in the event of a disaster.

Summary: HIROI U (Moderator)

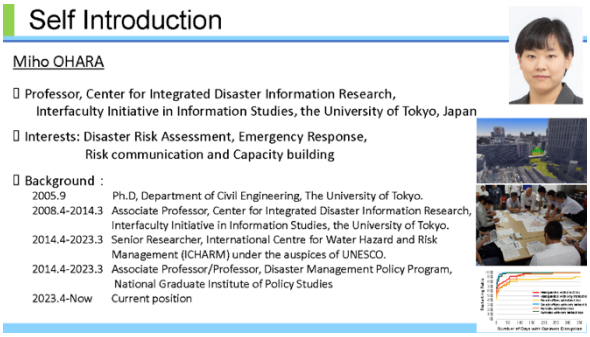
I would like to thank all the presenters. The participants in Manila, Taipei, and Tokyo provided information on how to protect lives, buildings, and assets in the event of an earthquake disaster.

One common issue is that it is difficult for the government alone to respond adequately to a major earthquake, and it is important to educate citizens and businesses, etc. before they respond. In addition, how to respond to the upcoming aging of the population and how to utilize AI will be a major issue in the future.

▼ Session 3

Moderator: OHARA Miho

Professor, Center for Integrated Disaster Information Research,
Interfaculty Initiative in Information Studies, The University of Tokyo



As a professor at the University of Tokyo's Interfaculty Initiative in Information Studies, Center for Integrated Disaster Information Research, I am engaged in specialized research and education in disaster management and risk assessment. Through an interdisciplinary approach, the Center is deeply involved in the fields of informatics, disaster management, and risk communication, and its research results contribute to disaster preparedness and urban safety.

After graduating from the University of Tokyo, I began my university career as an associate professor. Later, to broaden my knowledge in the field of risk management, I took a position with the International Centre for Water Hazard and Risk Management as a Water Hazards specialist, part of UNESCO. Here I worked on projects related to risk management in the Asian region and gained international experience.

I then returned to my university position as an associate professor, this time in the Disaster Management Policy Program at the National Graduate Institute of Policy Studies. Located in Roppongi, Tokyo, the program is geared toward those interested in policy, and includes a JICA-funded program specifically for foreign officers.

I was actively involved in projects related to disaster management in Japan and abroad, sharing Japanese technology and know-how in various regions. I had an international perspective and worked with other countries, contributing to risk management in various countries for about 15 years.

(1) Crisis Management Conference (Brussels)
Presenter: Valerie Barbier
Expertise, Brussels Fire Department

I will give a presentation on lessons learned and response measures for the July 2021 floods in Belgium. The floods caused extensive damage throughout Belgium, resulting in many casualties and damage to buildings and infrastructure.

Unprecedented heavy rains and gusty winds were cited as the cause of the flooding, which also caused river levels to rise sharply. The flooding exposed firefighters and rescue workers to physical and psychological dangers and they experienced psychological stress. The need for psychological counseling was also highlighted.

Rescue efforts were complex, and problems included difficulties in communicating information and coordinating resources, difficulty in accessing the site, and inclement weather. In addition, domestic and international coordination was necessary, but the limitations of the initial response and damage to the infrastructure created challenges.

Through this flood, it was suggested that more effective information sharing and coordination, psychological support, and balance of resources are needed to respond to unknown risks and unknown situations. And more effective disaster preparedness and enhanced risk management are essential.

At the call center, the lack of available equipment and initial responders made it difficult to respond, and critical issues remained unresolved for extended periods of time.

First, there were no clear procedures defined for responding to calls. In addition, there was a lack of coordination among the initial response services, and time was wasted in establishing a support structure. On the other hand, the Wallonia area was at significant risk of flooding, especially intensive surface flow conditions due to its inundated area.

However, information based on the severity and frequency of flooding is lacking, and the possibility of flooding in areas not previously considered hazardous cannot be ignored. There were also situations where flooding was possible, such as in the subway system, even though catastrophic flooding was said to be rare, as in Brussels.

Additionally, there are important lessons to be learned from the perspective of first responders. They witnessed the victim's distress and were stressed because communication problems made it difficult to locate victims. The impact on the wellbeing of firefighters was also a concern, with occupational health and emotional distress upon return emerging as issues.
To address these issues, an approach called “The Stress Continuum” was proposed. On this continuum, we found that moderate stress is motivating, but prolonged stress leads to heartache. Therefore, we believe that stress management and training are important to maintain the psychological health of firefighters.

(2) eThekwini Disaster Management Centre-KZN-South Africa (Durban)

Presenter: Vincent Ngubane

Head, Disaster Management and Emergency Control, eThekwini Municipality

Presentation on disaster management and emergency response in Durban. The city of Durban is located in the KwaZulu-Natal Province of South Africa, an area prone to emergencies such as fires, heavy rains, strong winds, and thunderstorms.

The City of Durban has a disaster management and emergency response structure in place in accordance with national laws and regulations and in coordination with national and local government, municipal authorities, and various agencies. The safety of tourists is also a priority for the city of Durban, as tourism is an important component of the city's economy.

In preparation for emergencies, the city of Durban is using an early warning system of information dissemination to keep citizens and relevant agencies informed. The city's emergency preparedness efforts and the impact of the multiple emergencies that have occurred to date will now be detailed.

Durban City experienced flooding in 2017 and 2019, the impact of a new coronavirus infection in 2020, and riots in 2021. Through the experience gained from these events, the City of Durban has evolved its emergency preparedness program to create a more effective response.

I will describe how the city of Durban will cope with flooding and other disasters. Durban is an important coastal city, with a population of more than 3.7 million people and infrastructure such as ports, airports, and petrochemical industry that is considered a factor affecting the entire country. The city has an area of approximately 2,291 square kilometers, with an urbanization rate of 27% and informal settlements. Municipal authorities introduced technical protocols in 2018 to address risks such as flooding, industrial pollution, and fire. These disasters have particularly affected vulnerable communities, with the April 2022 floods being the most severe flooding in the history of South Africa's KwaZulu-Natal Province. The floods killed 449 people, left 12,000 homeless, and caused economic damage of more than 6 billion rand, reducing annual GDP by 1.8%.

The government has taken emergency response measures and is working with citizens in the business sector, and in international organizations to provide assistance and meet humanitarian needs. It is also pursuing a strategy to increase its resilience to climate change and is developing programs to address climate change.

I will also discuss the case of companies affected by the flooding, particularly Toyota, and its impact on the city's bottom line. The city is working to improve and restore infrastructure and is considering measures to prevent a recurrence. And through international sister city partnerships and collaboration with academic researchers, more effective measures and rebuilding processes are underway.

(3) Rainfall and Flood Emergencies responses with the Emergency Data Platform (EDP) for EOC in New Taipei City (New Taipei)

Presenter: Gwo-Jong Chen, Deputy Commissioner
Gary Li-Kai Hsiao, Section Chief
Sheng-Chieh, Lee, Deputy Section Chief
New Taipei City Government Fire Department



I will make a presentation on Rainfall and Flood Emergencies response with the Emergency Data Platform (EDP) of New Taipei City Government Fire Department, of which we are a part. EDP, New Taipei's Emergency Data Platform, has been instrumental in the emergency response to flooding, and its effectiveness is increasing. We have responded through experience and worked through strategies and annual plans.

First, we will discuss climate change and disaster management in Taiwan. New Taipei City and Taipei City are enhancing disaster risk management in Taiwan through the cooperation of weather information and experts, as well as with consulting firms that provide weather forecasts. Using routine rainfall forecast information, the city has developed a system that warns of the risk of spikes in rainfall and prepares the city for countermeasures and initial response.

There are 29 districts in New Taipei City, each with different topography and risks. Through information and cooperation, the focus is on localized risk management, utilizing weather information and expert help.

One example of the success of this effort is a case of flooding caused by a forecasted one-hour rainfall of 90 mm. Effective forecasting to take appropriate measures depending on the location and extent of the problem. An Emergency Data Platform (EDP) was then implemented to centralize the multifaceted information and provide real-time data for developing action plans that can be implemented. This platform is used to address all-hazard emergencies and offers both internal and external benefits.

The EDP is an important tool for disaster management and information integration, allowing for diverse and dynamic information gathering. It can also be used to manage various types of disasters, emergency measures, progress, etc.

In addition, EDP has received international recognition, winning the International Innovation Award in 2022. The New Taipei City community and partnerships provide an important means for citizens to cope with disasters and take early action. The EDP is utilized by all levels of government agents in the city to provide accurate information and services to citizens and contribute to risk reduction. This effort has been supported by collaborators and experts, and I would like to take this opportunity to thank them.

(4) Emergency Rescue Control Team (Seoul)

Presenter: Hwang, Ki Seok

Head of Seoul Metropolitan Fire and Disaster Headquarters

I will make a presentation on the emergency rescue system for Seoul's wide-area response system. Recently, global warming has increased the likelihood that it will continue to cause large-scale disasters and floods in the future. Specifically, devastating floods occurred in Western Europe in 2021, flood damage was reported in Pakistan in 2022, and severe flooding occurred in Libya in 2023. In addition, in August 2022, one of the heaviest rains ever recorded fell in Seoul, resulting in the loss of many lives and economic damage. On this day, 140 mm of rainfall per hour was recorded on the Han River in the southern part of Seoul, an amount equal to one month's summer rainfall.

Flooded roads and heavy rains made it difficult for fire trucks to move to the scene. These large-scale natural disasters resulted in widespread, simultaneous damage and a flood of calls. In such situations, it was very difficult to respond to non-emergency search and rescue and to respond to calls for, for example, drainage problems.

We were also faced with a shortage of human resources due to this sudden rush of calls. Ultimately, the variety of calls and information received, and the lack of resources, made it difficult for us to effectively prioritize our response.

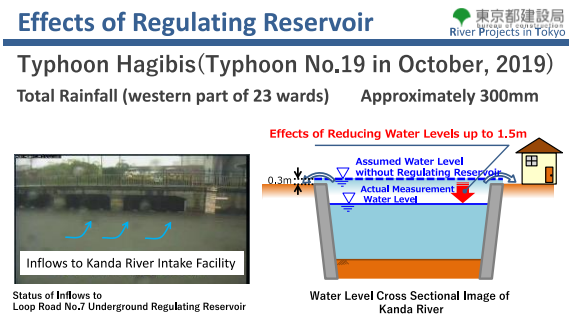
To cope with such heavy rainfall and flooding, Seoul introduced a Wide-Area Response System. The system is intended to respond to large disasters that occur simultaneously and is designed to allow multiple fire departments to respond effectively to the impacted area. The response system prioritizes saving lives in actual disasters by better tracking calls and effectively deploying necessary resources.

The wide-area response system has four main functions The first step is to track traffic laws for effective reporting in the event of a sudden increase in fence emergency calls. Second, the nearby fire department should be operational with the necessary personnel to start activities at places where lives need to be saved. Third, by improving our situational awareness, we at headquarters will have stronger control over our situational awareness and also our ability to manage information. Lastly, we will intensify our cooperation with the relevant ministries and agencies and give priority to saving lives while managing non-emergency calls.

The Seoul Fire and Disaster Management Headquarters will continue to make the protection of human life its top priority and will actively work to ensure the safety of the public. Prompt and effective response to disasters is essential for the safety of the city and the lives of its citizens. The Seoul Fire and Disaster Headquarters will continue to put human life first and to be a partner in safety for the citizens.

(5) Flood Control in Tokyo (Tokyo)

Presenter: HIJIKATA Takashi
Director for Planning for Small Rivers, Planning Section, River Division,
Bureau of Construction, Tokyo Metropolitan Government



I will explain Tokyo's flood control measures and their effectiveness. Tokyo's weather is characterized by heavy precipitation. The annual average is 1,600 mm, which is about 1.4 times the global average. On the other hand, abundant water resources sometimes create flood damage. Tokyo's rivers have steep slopes, and rainfall occurs frequently, increasing the risk of flooding from typhoons. Especially from September to October, this is the time of year when typhoons are approaching, and the risk of flooding is high. While the upper reaches of the river have large expanses of natural areas, the lower reaches have become residential and then covered with concrete and asphalt.

As urbanization progressed, the land was covered with concrete and asphalt, making it more difficult for rainwater to flow into rivers and increasing the incidence of flooding. Some of the flood control measures being taken to address this problem include physical measures such as widening the river and digging deeper into the riverbed. In addition, the city has established a control basin that temporarily stores river water and a diversion channel that serves as a river bypass.

Through these efforts, Underground Regulating Reservoir and Diversion Aqueducts have been developed to temporarily store floodwaters and reduce flood risk. In Tokyo, many facilities use underground regulating reservoir to effectively manage river water levels. These facilities have enhanced Tokyo's flood protection and improved urban safety. However, since it takes time to develop facilities, prompt provision of evacuation information and dissemination of information to residents are also important. Flood forecasts and information to residents are also provided so that city residents can understand the risks and take appropriate action.

However, maintenance can take a long time and there is a risk of more rain than planned. In order to protect the lives of residents, it is also important to take soft measures such as disseminating information for prompt evacuation. As part of this effort, we conduct rainfall simulations, create and publish a predicted inundation area map that shows the expected inundation area and depth. Cameras have also been installed on the river, and real-time video is streamed on YouTube.

Finally, we will discuss the climate change measures we are currently working on. According to the IPCC report, the global average temperature will increase by 1.5 to 2 degrees Celsius around 2050. According to an analysis by the Ministry of Land, Infrastructure, Transport and Tourism, a 2 degree Celsius rise would increase rainfall by a factor of 1.1 in the Kanto region, including Tokyo. Tokyo is currently studying new maintenance goals, maintenance methods, and these in consideration of the future flood risks that will increase due to such climate change. I hope my presentation will be beneficial to your cities in their flood control projects.

<Q&A Session>

Question by: OHARA Miho (Moderator)

◆ New Taipei City has adopted the Emergency Data Platform, and Seoul has introduced a wide-area response system. When you started these new systems, did you train the people who would implement them?

Also, how do you respond if a disaster actually occurs before the system goes live?

Answered by Gary Li-Kai Hsiao (New Taipei City)

The EDP is a platform designed for decision makers, such as mayors, who are at the top of their command and control, using tables and pictures to present information in a system that supports decision-making. The staff collects information and presents it to decision makers to facilitate their decisions.

Ans: Hwang, Ki Seok (Seoul)

Because the system is used on site, the government does not have close involvement. As a fire department, we train together with the government, but when a disaster actually occurs, the situation is controlled by the fire department itself.

Question by: Isnawa Adji (Jakarta)

◆I would like to ask about flood control measures. There are 25 sub-districts in Jakarta that are considered to be at very high risk of flooding. How does Tokyo manage river flooding? Or do you have a system of special training, management, etc.? Also, do you publish educational materials or pamphlets, for example?

Ans: HIJIKATA Takashi (Tokyo)

Since residents live in most areas, flood control measures such as river widening, and construction of control basin are being implemented in all areas. Not only certain areas are taking measures, but funds are being invested in maintenance to ensure the safety of residents.

In addition to infrastructure development, we are also conducting public relations activities, such as publishing pamphlets and having our staff members go and talk to the public.

Question by: Isnawa Adji (Jakarta)

◆Jakarta has installed pumping stations in all areas, etc. Are there any plans in Tokyo to increase the size of water management stations or take community-based measures?

Ans: HIJIKATA Takashi (Tokyo)

First, the level of 50mm of rainfall per hour has been maintained. Now that more intense rainfall is expected, the level will be increased to 75 millimeters per hour in the eastern part of Tokyo, and safety measures will be taken in the future to keep pace with climate change.

Question by Marulina Dewi (Jakarta)

◆I think disaster forecasting training is hard work. Are the underground reservoirs being installed in Tokyo located throughout Tokyo or only in areas with low population density?

Ans: HIJIKATA Takashi (Tokyo)

Underneath the road are lifelines such as gas, electricity, and water, which are avoided and regulating reservoirs are built underneath. Basically, we want to build as shallow as possible, but only a few places are building 40 meters underground.

Question by: OHARA Miho (Moderator)

◆A presentation from Brussels indicated that firefighters and officials are having difficulty coping with the stresses and increasing disasters caused by climate change, and that new stress management is needed.

In particular, since Japan has not focused much on stress management, we would like to see other countries share their experiences and stress management. We would also like to know how the government supports stress management.

Ans: Valerie Barbier, Brussels

There are several stressors. For example, firefighters may be exposed to catastrophic stress from responding to a fire. Chronic stress can also occur in crisis management work. Other stresses can be added to a situation that would normally be unlikely to occur.

Ordinary stress management methods are not sufficient, especially for those suffering from Post-Traumatic Stress Disorder (PTSD), who need additional support. Approaches such as peer support and medical assessment are being considered to address this issue. Since this is a sensitive issue that requires funding, we are working with the Department of Justice to find a solution.

Summary: OHARA Miho (Moderator)

Each presenter shared actual disaster experiences such as flood and typhoon and provided examples of specific flood occurrences.

Rebuilding after a disaster is critical, not only in terms of structural measures, but also in terms of organization and capacity. There was discussion about flooding as well as the introduction of new technologies and learning from other countries' trials. Abnormal weather conditions caused by climate change occurred in many parts of the world, and Japan was also hit by a heat wave this year. It is essential to discuss not only flooding, but also other weather-related issues, and it is important to continue the discussion and make many cities more weather resilient.

▼ Annual Report from the Secretariat

SASAMOTO Chiho
Project Section, International Affairs Division, Office of the Governor for Policy Planning, Tokyo Metropolitan Government

The secretariat of the Network for Crisis Management will make an annual report for 2023. The Network for Crisis Management aims to enhance the crisis management capabilities of the cities participating in the Network through capacity building and human networking. To achieve this, the Network is implementing projects in three areas: The first is Development of Human Resources, the second is sharing of knowledge at the Crisis Management Conference, and the third is exchanging information.
Finally, I would like to officially announce that Jakarta will be the host for the Crisis Management Conference in 2024.

▼Announce of the 2024 Crisis Management Conference Host City

Marulina Dewi
Head of Regional Cooperation Bureau, Jakarta Capital City Government

Jakarta, which will be the host for the Crisis Management Conference in 2024, has expressed its intention to become the host city next year.

▼Closing Remarks

SEKIGUCHI Noboru

Special Advisor to the Governor on International Affairs

In recent years, along with global climate change, natural disasters, including storm and flood damage and earthquakes, are becoming more extreme. Although Asia's major cities continue to achieve remarkable growth, they also face a range of risks. Furthermore, risks such as large-scale accidents and terrorism are universal challenges also shared by areas outside of Asia. As such, we must enhance the sharing of information between cities around the world.

We cannot eliminate all of the different risks that surround us, and, especially, we cannot stop the occurrence of natural disasters. However, by anticipating unavoidable dangers and making thorough preparations from every angle, we must continue efforts to protect our citizens and keep damage to a minimum.

With this in mind, let's continue working together to deepen mutual cooperation, including the sharing of information and cultivation of human resources, and enhance each of our city's crisis management systems, under the framework of the Network for Crisis Management.

Visit the Kanda River/Loop Road No. 7 Underground Regulating Reservoir and the Security & Safety Trade Expo on Friday, October 13

▼Time Schedule

8:50	Depart from Shinjuku
9:30-11:00	Site tour The Kanda River/Loop Road No. 7 Underground Regulating Reservoir
12:00	Lunch
13:00-15:00	Site tour Security & Safety Trade Expo
15:00	Coffee break
15:30-16:15	Discussion session
17:25	Arrive in Shinjuku

▼ Site Tour of the Kanda River/Loop Road No. 7 Underground Regulating Reservoir

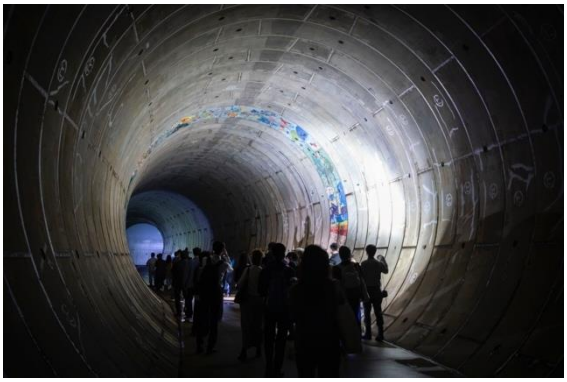
What is the Kanda River/Loop Road No. 7 Underground Regulating Reservoir?

This facility protects the lives and livelihoods of Tokyo residents from flood damage by taking in water from rivers such as the Kanda River, which runs through the center of Tokyo, before they overflow. It involves the construction of a 4.5 km-long underground tunnel with a 12.5-meter inner diameter beneath the area of Loop Road No. 7 that can store approximately 540,000 ㎥ of flood water from the Kanda River, Zenpukuji River, and Myoshoji River.

Overview explanation

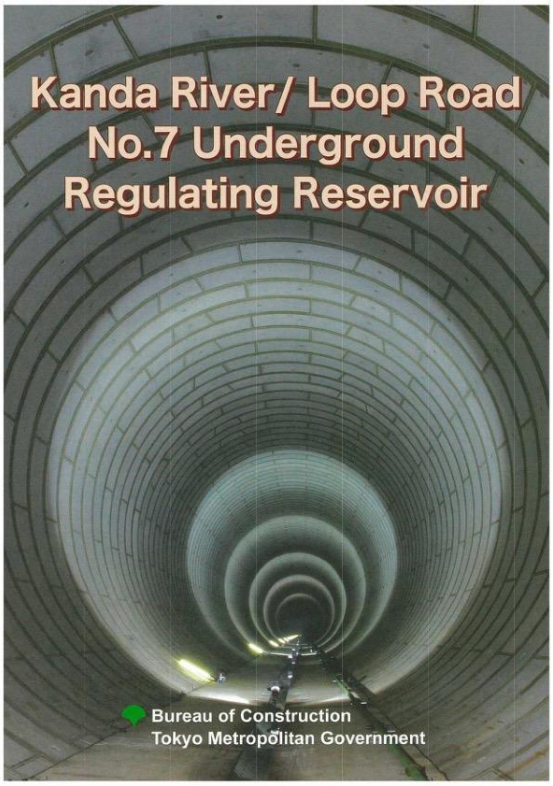
Operation room visit

Explanation of water flow using a model



Tunnel Inspection

▼ Handout



Outline of the Kanda River System

The Kanda River is a class A river, 24.6 km in length. The river begins in Inogashira Pond in Mitaka City and is joined by the Zenpukuji River and the Myoshoji River along the way, flowing east across the borders of Shinjuku-ku, Toshima-ku, and Bunkyo-ku, and branching off the minor stream as the Nihonbashi River in the vicinity of Suidobashi Station before flowing in the Sumida River. The Kanda River basin stretches into two cities and 13 districts ("ku" in Japanese), including Suginami-ku, Nakano-ku, and Shinjuku-ku, and has a river basin of 105 km², which is the largest among the river basins of the small- and medium-size rivers in Tokyo.
The Zenpukuji River, a tributary stream 10.5 km in length, begins in Zenpukuji Pond in Suginami-ku, winds through the district, and meets the Kanda River near the border of Nakano-ku. The Myoshoji River is also a class A river of 9.7 km in length, beginning in Myoshoji Pond in Suginami-ku. The river flows through the eastern part of Nakano-ku, meets the Ekoda River in the vicinity of Ekoda Park before running into Shinjuku-ku, and flows into the Takadanobaba diversion canal in the vicinity of Shimo-Ochiai Station.
In the Kanda River system, small and medium river improvement projects are underway in the upper stream from the fork in the Nihonbashi River, while storm-surge control projects are underway downstream from the fork. Small and medium river improvement projects focus on such things as improvements of bank protection, division canals, and underground regulating reservoirs, that can handle a rainfall of 75 mm per hour.

Location of Kanda River/Loop Road No. 7 Underground Regulating Reservoir

Major Flood Damage in the Kanda River System

Date	Flood name	Area Flooded (ha)	Houses Building(s) flooded
Sep. 26, 1958	Kanogawa Typhoon	1194. 0	38, 356
Aug. 31, 1963	Local heavy rainfall	353. 0	9, 455
Jun. 28, 1966	Typhoon No. 4	493. 2	9, 175
Apr. 8, 1978	Local heavy rainfall	120. 6	2, 743
May 16, 1979	Local heavy rainfall	62. 4	1, 544
Jul. 22, 1981	Local heavy rainfall	180. 7	5, 937
Oct. 22, 1981	Typhoon No. 24	214. 5	4, 939
Sep. 12, 1982	Typhoon No. 18	285. 5	5, 856
Jul. 14, 1985	Local heavy rainfall	70. 7	1, 458
Aug. 1, 1989	Local heavy rainfall	51. 8	2, 989
Sep. 19, 1991	Typhoon No. 18	28. 5	1, 067
Aug. 27, 1993	Typhoon No. 11	117. 1	4, 706
Aug. 19, 2005	Local heavy rainfall	3. 7	296
Sep. 4, 2005	Local heavy rainfall	126. 9	3, 591

Note: Area flooded and the number of houses flooded include cases caused by local runoff (overflow other than those from rivers).


Flood pictures (Kanda River hit by Typhoon No. 11 on August 27, 1993)

History of the Project

The Kanda River/ Loop Road No. 7 Underground Regulating Reservoir project aims to quickly improve safety against floods that often occur in the middle basin of the Kanda River.
The project involves the construction of a 4.5 km-long underground tunnel with a 12.5-meter inner diameter beneath the area of Loop Road No. 7 that can store approximately 540,000 m³ of flood water from the Kanda River and Zenpukuji River. Since the project deals with a huge regulating reservoir facility and will take a considerable amount of time to complete, the project has been divided into first and second stages in order to make the greatest benefit as quickly as possible.

Procedures for Urban Planning

	Stage 1	Stage 2
Urban Plan Decision	Tokyo Metropolitan Government Notice No. 1264, issued on December 22, 1986	Tokyo Metropolitan Government Notice No. 86, issued on January 26, 1990
Project Permitted	Ministry of Construction Notice No. 290, issued on March 6, 1987	Ministry of Construction Notice No. 1382, issued on July29, 1990 (intake facility on Zenpukuji River only) Ministry of Construction Notice No. 1507, issued on July 5, 1993 (excluding the intake facility on Zenpukuji River)

Stage 1 Project

A 2.0 km-long underground tunnel that can store approx. 240,000 m³ of flood water and the "Kanda River Intake Facility" that undertakes flood water from the Kanda River have been completed. The construction project started in 1988 and was completed in fiscal 1998, when the control building, etc. were completed. In this connection, since April 1997, river water intake has started, contributing greatly to reducing flood damage in the downstream basins.


Stage 1 Tunnel

Stage 2 Project


Myoshoji River Intake Facility and Intakes

The Tokyo Metropolitan Government has constructed a "2.5 km-long tunnel that can store approximately 300,000 m³ of reserve volume" that connects the Stage 1 tunnel with an intake facility that takes flood water from the Zenpukuji River and the Myoshoji River. The construction project started in 1995. The Zenpukuji River intake facility started flood water intake from September 2005. The intake facilities, including the control building and electrical and other facilities, were entirely completed in March 2007. A civil engineering facility was also completed in the Myoshoji intake facility in March 2007 and has started water intake. The intake facility, including the electrical and other facilities, was completed in March 2008.

Stage 1

September 6, 1985	The Tokyo Metropolitan Government Underground River Plan Study Meeting (consultative meeting for Tokyo Government) was set up
October 16, 1986	Interim report by the Tokyo Metropolitan Government Underground River Plan Study Meeting
December 22, 1986	Urban plan decided
March 6, 1987	Project approved
October 30, 1988	Official report by the Tokyo Metropolitan Government Underground River Plan Study Meeting
October 1988 to December 1990	Uraharo starting shaft works
June 1989 to January 1995	Shield works (machine making, assembling, and tunneling)
September 1991 to March 1997	Kanda River intake facility works (civil engineering facility)
October 1995 to March 1999	Kanda River intake facility works (electrical and mechanical facilities)
April 1997	Operation started (intake started)
December 1997 to March 1999	Kanda River intake facility works (control building construction)

Stage 2

January 26, 1990	Urban plan decided
July 26, 1990	Project approved (Zenpukuji River intake facility)
July 5, 1993	Project approved (partial, Myoshoji River intake facility)
July 1995 to March 1997	Land acquired for Myoshoji River starting shaft
November 1995 to September 2005	Zenpukuji River intake facility works (civil engineering facility)
October 1997 to August 2002	Myoshoji River starting shaft works
June 2001 to December 2006	Shielding works (machine making, assembling, tunneling)
June 2005 to March 2007	Zenpukuji River intake facility works (control building construction)
August 2005 to March 2007	Zenpukuji River intake facility works (electrical and mechanical facilities)
September 2005	Zenpukuji River intake facility (land use started (intake started)
March 2007	Zenpukuji River intake facility completed Myoshoji River intake facility (land use started (intake started)
March 2008	Myoshoji River intake facility completed

Outline of Facilities

The Kanda River/ Loop Road No. 7 Underground Regulating Reservoir is comprised of the following facilities.

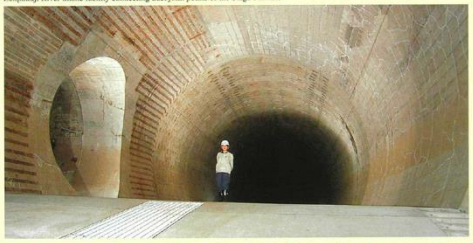
◇ Intake facilities : Facilities that take in flood water from rivers and guide it into the underground tunnel. They include a side overflow weir along the bank, shaft that drops flood water underground, connecting ducts that lead water into the tunnel, discharge pumps, ventilation facilities, etc.
◇ Regulating reservoir tunnel : A facility that reserves inflowing water from intake facilities
◇ Control building : A facility that operates, controls, and monitors water inflow and discharge facilities

Outline of Facilities

	Total	Stage 1 Project	Stage 2 Project
Storage volume	540,000 m³	240,000 m³	300,000 m³
Tunnel length	4.5 km	2.0 km	2.5 km
Tunnel inner diameter	12.5 m		
Intake facilities	Three points	Kanda River	Zenpukuji River
			Myoshoji River

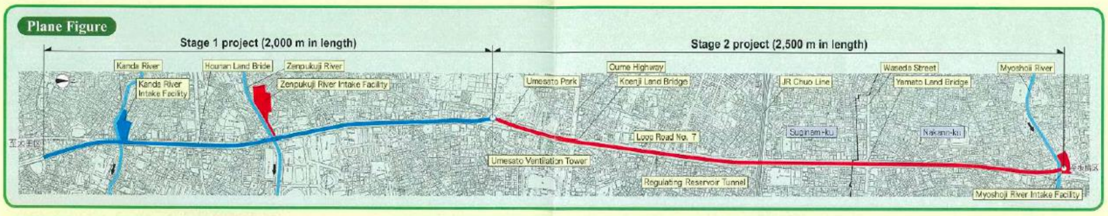
Reverse circulation type shield machine (Stage 2 project)

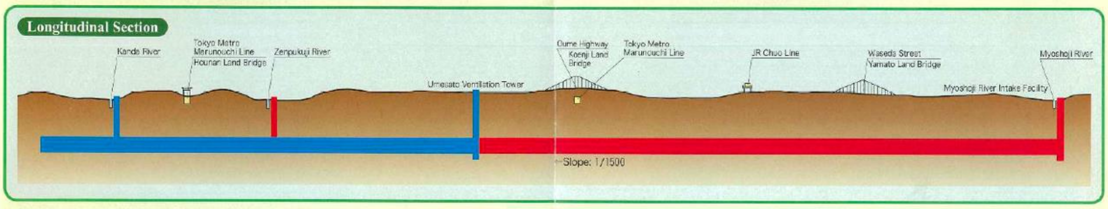
Zenpukuji River intake facility connecting duct joint points of the Stage 1 tunnel



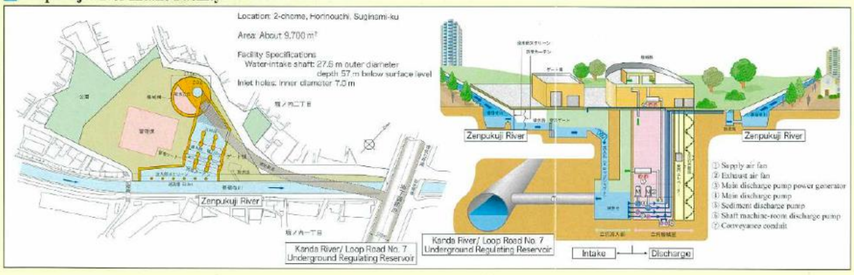

Central monitor and control board of Zenpukuji River intake facility


Main discharge pump of Zenpukuji River intake facility

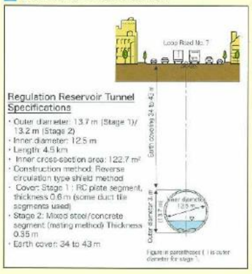




Zenpukuji River Intake Facility



Standard Cross Section



Project Benefits

The Kanda River/ Loop Road No. 7 Underground Regulating Reservoir has started use of the first stage project site since April 1997, and has started use of the second stage project site since September 2005.
There were forty-two inflows by the end of January 2019, and the regulating reservoir played a great role in reducing flood damage in the downstream basins.

Inflows to Kanda River Intake Facility

Typhoon No. 11 in 1993 caused significant flood damage in the middle basin of the Kanda River. Typhoon No. 22 in October 2004 also brought rainfall whose volume was almost the same as of the abovementioned typhoon; however, flood damage was greatly reduced due to the improved river bank protection implemented by river disaster control special emergency projects* and the Loop Road No. 7 underground regulating reservoir that stored flood water.

Inflows

As of the end of January 2019

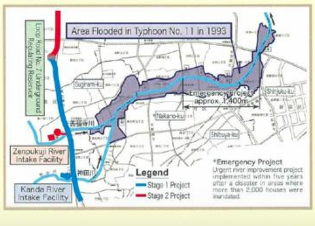
Number	Date	Meteorological Title	Inflow Volume (m³)	Rainfall record Max. Per Hour (mm)	Rainfall record Total Rainfall (mm)	Observation Station
1	Jun. 30, 1997	Typhoon No. 7	40,800	22	97	Izumi
2	Aug. 23, 1997	Local heavy rainfall	37,000	55	93	Izumi
3	Sep. 3, 1997	Local heavy rainfall	20,000	43	45	Kugayama
4	Sep. 8, 1997	Local heavy rainfall	8,000	35	43	Kugayama
5	Aug. 6, 1998	Local heavy rainfall	14,000	45	51	Takaido
6	Sep. 15, 1998	Typhoon No. 5	151,700	33	176	Izumi
7	Jul. 21, 1999	Local heavy rainfall	70,000	65	71	Takaido
8	Aug. 14, 1999	Tropical depression	52,000	38	208	Kugayama
9	Aug. 29, 1999	Local heavy rainfall	24,000	46	62	Wadamibashi
10	Sep. 4, 1999	Local heavy rainfall	9,500	58	89	Izumi
11	Jul. 8, 2000	Typhoon No. 3	214,000	29	197	Izumi
12	Sep. 12, 2000	Local heavy rainfall	61,000	53	146	Narita Higashi
13	Sep. 11, 2001	Typhoon No. 15	120,000	38	172	Takaido
14	Jun. 25, 2003	Local heavy rainfall	38,000	45	66	Musashino
15	Oct. 13, 2003	Local heavy rainfall	148,000	68	69	Wadamibashi
16	Oct. 9, 2004	Typhoon No. 22	215,000	58	284	Yayoicho
17	Oct. 20, 2004	Typhoon No. 23	52,000	42	228	Yayoicho
18	Aug. 15, 2005	Local heavy rainfall	35,000	38	39	Izumi
19	Sep. 4, 2005	Local heavy rainfall	*1 420,000	101	238	Kugayamabashi
20	Jun. 16, 2006	Local heavy rainfall	128,900	31	103	Kugayama
21	Jul. 29, 2007	Local heavy rainfall	76,000	28	58	Kugayama
22	May. 20, 2008	Local heavy rainfall	79,000	26	131	Kugayama
23	Aug. 10, 2008	Local heavy rainfall	1,000	43	44	Saginomiya
24	May. 24, 2009	Local heavy rainfall	1,900	26	36	Shimoigusa
25	Oct. 8, 2009	Typhoon No. 18	505,000	45	152	Wadamibashi
26	Sep. 28, 2010	Local heavy rainfall	95,700	44	155	Shimoigusa
27	Dec. 3, 2010	Local heavy rainfall	113,800	38	91	Aioibashi
28	Aug. 26, 2011	Local heavy rainfall	92,700	86	99	Nakano
29	May. 3, 2012	Local heavy rainfall	81,000	26	173	Musashino
30	Apr. 7, 2013	Local heavy rainfall	210,000	45	104	Wadamibashi
31	Aug. 12, 2013	Local heavy rainfall	110,000	58	59	Suginami
32	Sep. 5, 2013	Local heavy rainfall	79,600	40	69	Banyabashi
33	Sep. 15, 2013	Typhoon No. 18	540,000	45	152	Aioibashi
34	Oct. 16, 2013	Typhoon No. 26	431,100	36	244	Kugayamabashi
35	Jul. 24, 2014	Local heavy rainfall	378,400	75	121	Musashino
36	Sep. 10, 2014	Local heavy rainfall	132,600	70	85	Kugayamabashi
37	May. 12, 2015	Typhoon No. 6	175,800	41	65	Aioibashi
38	Aug. 17, 2015	Local heavy rainfall	145,200	54	103	Ikebukurobashi
39	Aug. 22, 2016	Typhoon No. 9	213,400	41	129	Musashino
40	Oct. 23, 2017	Typhoon No. 21	92,000	30	259	Musashino
41	Mar. 9, 2018	Local heavy rainfall	286,400	54	161	[illegible]
42	Aug. 27, 2018	Local heavy rainfall	123,400	79	83	Aioibashi

Note : Capacity of Regulating Reservoir : 240,000m³ (since Sep. 2005 : 540,000m³)
Rainfall record is maximal value of the Observation Stations around the Kanda River intake facility
*1 Had an urgent water intake into the Stage 2 tunnel, Which was under construction

Comparison of Typhoon No. 11 (1993) with Typhoon No. 22 (2004)

	Typhoon No. 11 (August 27, 1993)	Typhoon No. 22 (October 9, 2004)
Total Rainfall (rainfall per hour)	288 mm (47 mm)	284 mm (57 mm)
Area Flooded	85 ha	4 ha
Houses Flooded (above and below floor)	3,117 houses	46 houses

Yayoicho
in Nakano-ku



Zenpukuji River intake facility in full view

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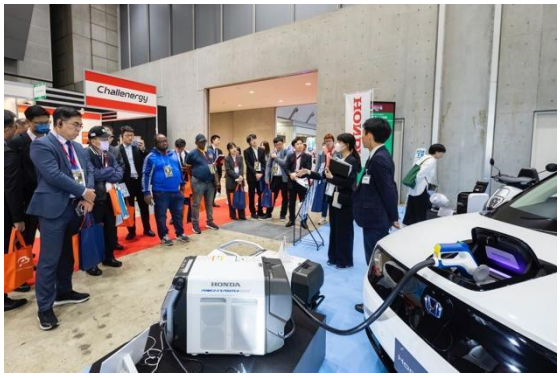
Fiscal 2018 registration No. 13 issued in March 2019

▼ Site Tour of the Security & Safety Trade Expo

What is the Security & Safety Trade Expo (RISCON TOKYO)?

This is one of the largest comprehensive risk management tradeshows in Japan, which markets advanced products and services that cover potential operational risks focusing on, Disaster Risk Reduction, Business Risk Management, and Security. RISCON TOKYO is highly recognized as an innovator in risk management tradeshows serving as a marketplace that interacts with their executives and administrators. This is not limited to national and local governments, key infrastructure, manufacturers, schools, hospitals, welfare facilities, and others. It provides an ideal business opportunity for exhibitors to enter or expand sales channels in the risk management market.

The environment surrounding companies and local governments is undergoing dramatic changes, as they are required to prepare for risks and respond to crises in all aspects of daily life and business against the backdrop of the long-term experience of the coronavirus pandemic, increasingly severe natural disasters, and the continuing instability in the international situation. This exhibition will support the creation of new businesses by proposing "new crisis management" on the theme of pressing issues in the business activities of companies, national and local governments.



【Secretariat】

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