



Crisis Management Conference 2025

Collaboration for Crisis Management

Thursday 22nd May, 2025

Asawin Grand Convention Hotel, Bangkok, Thailand

Opening session

About the Crisis Management Conference

The Crisis Management Conference (CMC) is an annual international conference held in 14 cities. CMC was initiated by the Tokyo Metropolitan Government (TMG) and organized by the Network for Crisis Management (NCM). NCM member cities are **Bangkok, Delhi, Hanoi, Jakarta, Kuala Lumpur, London, Manila, New Taipei, Seoul, Singapore, Taipei, Tokyo, Yangon and Ulaanbaatar.**

During the event, disaster management officials from member cities from different parts of the world gathered to share their experiences and expertise in disaster management and preparedness. The main objective of the conference is to enhance crisis management capabilities and develop human resources for member cities and the region as a whole.



This year's conference convenes distinguished experts, professionals, and policymakers from diverse sectors to exchange insights and strategies for effectively managing and mitigating crises in an increasingly complex global landscape.

The conference served as a vital platform for sharing innovative strategies and collaborative approaches to urban disaster preparedness, with delegates emphasizing the critical importance of integrating cutting-edge technology alongside community-based disaster risk reduction initiatives.



The Objectives of the Crisis Management Conference 2025

1. To exchange knowledge, experiences, and best practices in crisis management at the organizational, national, and global levels.
2. To promote collaboration among government agencies, the private sector, and international organizations in preparing for and responding to various types of crises.
3. To enhance the capabilities of leaders and practitioners in making effective decisions and taking appropriate actions during crisis situations.
4. To develop policies, tools, and operational frameworks for crisis management that are aligned with current and future challenges.

The collaboration and support of Crisis Management Conference (CMC) Year 2025 are from the partners across all 9 member countries which are **Bangkok, Jakarta, Kuala Lumpur, Manila, New Taipei, Seoul, Singapore, Taipei, and Tokyo**. Each city's delegation comes to share perspectives and effective practices based on their local crisis management experiences. CMC 2025 aims to enhance the role of Bangkok as a regional hub for disaster preparedness and response.

CMC 2025 seeks to strengthen cooperation among member cities in crisis management and emergency preparedness, while promoting knowledge exchange in disaster risk reduction under the theme **"Collaboration for Crisis Management."** The initiative also aims to reinforce **Bangkok Metropolitan Administration (BMA)**'s leadership in regional disaster management.

The conference featured a series of panel discussions with experts from member cities and leading Thai specialists sharing insights and experiences across various topics, including Innovation for Smart Cities, Climate Change, All Hazard Plan (Chemical, Biological, Radiological and Nuclear [CBRN]), and Coordination in Crisis.

Moreover, the conference highlighted successful international cooperation initiatives, with Singapore's focus on training and preparedness, Malaysia's emphasis on community engagement, and Metro Manila's integrated flood mitigation planning serving as exemplary models. Tokyo's evolution in CBRN (Chemical, Biological, Radiological and Nuclear) preparedness demonstrated the continuous innovation required in disaster response training.

Key sessions explored innovation for smart cities, climate change adaptation, all-hazard planning, and coordination strategies during crises. The integration of artificial intelligence and underground systems emerged as particularly promising areas for enhancing urban resilience.

➤ **Associate Professor Tavid Kamolvej, Deputy Governor of Bangkok**

The recent earthquake in Myanmar had a significant impact on Bangkok, causing substantial damage to infrastructure, particularly in the construction sector. Our rescue operation, focused on saving individuals trapped in collapsed buildings, took 45 days to complete.

This incident highlights the importance of recognizing that governance structures and emergency response systems vary across countries. Therefore, comprehensive planning is essential for both emergency management and crisis response to ensure preparedness and effective coordination in times of disaster.



Hazards Challenge in Bangkok: Thailand was so huge now, due to the effect from global warming situation. Thailand faced enormous challenges day by days especially “rain bombs” and increased flood risks that current existing cannot fully withstand.

Bangkok cities in Crisis: A City of Complex Risk, Bangkok was the one of big capital risky to sink by nearly 2050. So, with CMC Conference key session will help to explore the innovative for smart cities, climate change adaptation strategies as particularly promising areas for enhancing urban resilience.

Multi-Hazard Environment

Bangkok is no longer confronting isolated disaster events. Instead, it faces multifaceted crises that intertwine climate-related risks with public health emergencies, requiring integrated and cross-sectoral responses.

Emerging and Compound Hazards

Contemporary hazards increasingly occur simultaneously or act as triggers for one another; for example, flooding during disease outbreaks or heat waves leading to power failures. This evolving context demands a holistic risk perspective that recognizes and prepares for interconnected threats.

A New Risk Landscape: Urbanization and Uncertainty

The convergence of rapid urban expansion, informal settlements, and aging infrastructure, combined with unpredictable and intensifying hazards, has created a high-risk urban environment characterized by complexity and volatility.

The Imperative for Adaptive and Anticipatory Governance

To effectively respond to this dynamic risk landscape, Bangkok must transition from a reactive disaster response model to one that is adaptive, forward-looking, and grounded in continuous learning.

Proactive planning, flexible governance, and community engagement are critical for building resilience in the face of escalating urban risks.

Exposure Challenges: A City Exposed – Fragile Systems in a Climate Age

Bangkok: Below Sea Level, Above Risk Thresholds

Bangkok's geographical location makes it exceptionally vulnerable to environmental threats, particularly chronic flooding. Situated only slightly above sea level, the city faces an ever-increasing risk from a combination of sea-level rise, land subsidence, and the intensification of extreme weather events due to climate change. These overlapping factors significantly elevate the city's exposure to both sudden and gradual environmental hazards, placing it well above globally recognized risk thresholds.

"We faced enormous challenges, not only in managing immediate emergencies but also in coordinating urban search and rescue efforts," Tavidia explained. "It's clear that we need to be better prepared before crises occur, rather than just responding afterwards."



Aging Infrastructure amidst Emerging Threats

The city's resilience is further compromised by its aging and inadequate infrastructure. Drainage systems, many of which were constructed decades ago, are no longer capable of handling the frequency and intensity of today's rainfall events. Similarly, numerous buildings are deteriorating and lack retrofitting to withstand modern environmental stresses. The limited presence of green spaces, essential for absorbing excess rainwater and mitigating urban heat, reduces Bangkok's capacity to adapt effectively to evolving climate challenges.

Air Pollution and Heat: The Invisible Crisis

Beyond visible threats, the city also contends with insidious, slow-onset stressors such as air pollution and rising temperatures. Fine particulate matter (PM2.5) continues to degrade air quality; while recurring heat waves exert pressure on both public health and energy systems. These stressors not only weaken individual and community

health over time but also erode urban productivity and the overall quality of life. Together, they contribute to a multidimensional exposure landscape that calls for urgent, integrated adaptation and mitigation strategies.

Vulnerability Challenges: A City Exposed – Fragile Systems in a Climate Age

Urban Poor Living in High-Risk Zones

Many low-income communities in Bangkok reside in low-lying areas that are particularly susceptible to flooding and other environmental hazards. These neighborhoods often lack proper urban planning and are characterized by substandard housing that is ill-equipped to withstand the increasing frequency and severity of climate-related disasters. In such environments, daily life unfolds amid chronic risk: fires can sweep through tightly packed settlements with ease, while extreme heat turns poorly ventilated bedrooms into suffocating spaces. The lack of resilient infrastructure and limited access to public services further compounds these vulnerabilities.

Aging Society and the Challenge of Slow Evacuation

As the city's population ages, disaster preparedness and emergency response systems must adapt to meet the specific needs of older adults. Mobility limitations, chronic health conditions, and communication barriers place elderly residents at heightened risk during climate emergencies. Timely evacuation becomes more difficult, and shelters or relief services must be tailored to provide appropriate medical care, physical accessibility, and emotional support for this growing demographic.

Urban Density and Informal Settlements: Barriers to Effective Response

Bangkok's high population density, particularly in informal settlements, presents significant challenges for disaster response operations. Narrow alleyways, unregistered dwellings, and unregulated construction patterns hinder access for emergency services and complicate rescue efforts. These densely packed communities often operate outside formal systems, making it harder for authorities to identify, reach, and assist vulnerable individuals during crises.

Informality and the Invisible Populations

A substantial segment of Bangkok's population remains invisible in official planning and support systems. Migrant workers, undocumented residents, and individuals employed in the informal sector frequently fall outside the scope of public welfare programs, disaster relief plans, and insurance schemes. Their lack of legal recognition and social protection not only exposes them to disproportionate risk but also limits their ability to recover in the aftermath of disasters. Addressing these vulnerabilities requires a more inclusive approach to urban governance that ensures no one is left behind.

Capacity Challenges

Beyond Silos: Building a City-Wide Crisis Response Ecosystem from Fragmented Capacity to Collective Strength

Limitations of Single-Agency Responses

In the face of increasingly complex and multi-dimensional disasters, no single government agency possesses the full range of tools, jurisdictional reach, or public legitimacy required to manage crises effectively on its own. Current emergency response efforts in Bangkok are often hindered by institutional silos, where bureaucratic boundaries obstruct the flow of critical information, slow down decision-making, and fragment coordination across departments. This fragmented approach

weakens the city's overall preparedness and can lead to delayed or inefficient responses during times of crisis.

The Need for Multi-Sector Collaboration

A truly effective and resilient urban disaster response system demands coordinated action across a wide array of actors. Local governments must work closely with the military, private sector entities, academic institutions, and civil society organizations to align efforts, pool resources, and bridge gaps in knowledge and capacity. This **Whole-of-Society** approach is essential to creating an integrated, agile, and responsive crisis management framework that can address both immediate needs and long-term recovery.

Skills and Technology Gaps at the Local Level

A significant barrier to effective disaster response is the lack of technical skills and modern tools among local officials and frontline responders. Many district-level authorities lack adequate training in key areas such as risk mapping, Geographic Information Systems (GIS), early warning systems, and crisis communication. Furthermore, some districts do not possess even the most basic equipment required for search and rescue operations, including protective gear and emergency medical supplies. This lack of preparedness exposes both responders and residents to heightened danger during emergencies and underscores the urgent need for capacity-building initiatives and strategic investments in local resilience infrastructure.

Who's Missing? Bridging the Gaps in Urban Disaster Resilience

Unrealized Potential: NGOs, Academia, and Volunteers

Current disaster response frameworks often overlook the immense value that non-governmental organizations (NGOs), academic institutions, and volunteer networks can bring to urban resilience. Civil

society groups, youth volunteers, and research bodies offer unique strengths, ranging from grassroots community engagement and trust-building to innovation, data-driven insights, and policy advocacy. Their inclusion can enhance both immediate response capabilities and long-term preparedness, creating a more holistic and inclusive crisis management ecosystem.

Empowering Communities: From Vulnerable Populations to First Responders

Communities are too often treated solely as recipients of aid rather than as active participants in disaster preparedness and response. In reality, local residents are frequently the first to respond in times of crisis, especially in hard-to-reach or densely populated areas. Strengthening Community-Based Disaster Risk Management (CBDRM) initiatives is therefore critical. This includes equipping local groups with proper training, response tools, and dedicated budgets. Empowered communities are not only more resilient but also serve as foundational elements in broader urban risk reduction strategies.

Bangkok as a Regional Learning Hub for Disaster Preparedness

With its complex urban landscape and growing experience in disaster management, Bangkok is well-positioned to become a regional model for urban disaster resilience. The city has the potential to serve as a “living laboratory” for simulation-based training, peer-to-peer learning, and cross-sectoral policy experimentation in Disaster Risk Reduction (DRR). By institutionalizing partnerships with academic institutions and civil society, Bangkok can lead the way in knowledge-sharing and capacity-building, both within Thailand and across the Asia-Pacific region.

Addressing institutional challenges is critical for effective disaster response, as existing structures frequently impede efficient action. A

fundamental rethinking of crisis governance is imperative to overcome these impediments.

One significant hurdle lies in legal frameworks that are often confined by a linear logic. Current disaster laws typically delineate response phases as “Pre-During-Post,” a categorization that fails to align with the dynamic and often non-linear nature of real-world crises. There is a pressing need for legal frameworks that are flexible and adaptive, enabling fluid and continuous response across all phases of a disaster, rather than being restricted by rigid sequential structures.

Furthermore, fragmented authority and overlapping jurisdictions present substantial challenges to coordinated disaster management. The intricate web of mandates among national, provincial, and city-level authorities frequently leads to delays and inefficiencies in coordination efforts. This bureaucratic complexity is compounded by governance structures that are often siloed, thereby hindering collaborative decision-making, effective data-sharing, and the implementation of integrated responses. In numerous past disaster events, the absence or poor implementation of a systematic Incident Command System (ICS) has been a notable deficiency, further highlighting the need for improved institutional frameworks and operational protocols.

To ensure progress in urban resilience, a shift from traditional crisis governance to a focus on resilient urban futures is essential. In this endeavor, the Making Cities Resilient (MCR2030) Scorecard serves a dual purpose. It functions not merely as a tool for measurement but critically as a mirror, reflecting a city’s specific vulnerabilities, while simultaneously acting as a compass, guiding necessary institutional reforms. This comprehensive assessment tool provides invaluable insights for strategic planning and targeted interventions.

Furthermore, building urban resilience necessitates learning not solely from theoretical frameworks but also from the practical

experiences of other cities. Bangkok, for instance, can significantly enhance its resilience by engaging in horizontal learning from its peers. Exemplary models of urban resilience from other global cities include:

- **Tokyo's innovative approach to earthquake preparedness¹**, demonstrated through its implementation of large-scale earthquake simulations in public parks, which effectively engage citizens and test emergency protocols. ¹([TOKYO Resilience Project](#))
- Rotterdam's leadership in urban flood resilience, achieved through integrated design strategies that proactively mitigate flood risks and enhance the city's adaptive capacity.
- Seoul's utilization of smart data dashboards, which provide real-time risk updates and facilitate agile decision-making during crises, showcasing the power of technology in urban disaster management.

By drawing lessons from these diverse urban experiences, cities like Bangkok can adopt proven strategies and adapt them to their unique contexts, fostering a more robust and resilient urban future.

Moving forward, it is crucial to recognize data as a fundamental infrastructure for risk-informed urban planning. For a city like Bangkok, integrated spatial risk mapping is indispensable. This sophisticated mapping capability would serve as a critical guide for:

- Informing land-use decisions, ensuring that development occurs in areas least susceptible to hazards.
- Optimizing emergency logistics, allowing for the efficient deployment of resources and personnel during crises.
- Directing infrastructure investments towards projects that enhance urban resilience and mitigate risks effectively.

To foster a more resilient urban environment, it is imperative to build a shared risk data ecosystem. A truly resilient city thrives on shared knowledge. Therefore, Bangkok must undertake several key initiatives:

- Establish robust cross-agency data-sharing protocols to ensure seamless and timely exchange of critical information among various governmental bodies and stakeholders.
- Launch public risk dashboards that provide accessible and understandable information to citizens, empowering them with knowledge about potential hazards.
- Enable advanced early warning systems with real-time updates, leveraging technology to disseminate timely alerts and critical information to the public, facilitating proactive responses.

Furthermore, institutionalizing collaborative governance is paramount. Crisis collaboration should not be reliant on individual goodwill but rather on established structures. This necessitates the creation of permanent multi-stakeholder platforms where government agencies, civil society organizations (CSOs), academic institutions, and the private sector can regularly convene to share insights, coordinate strategies, and make collective decisions regarding disaster risk reduction.

Finally, fostering resilience requires cultivating a risk-literate society. Resilience is inherently social, and broad public awareness of risks is vital. This can be effectively promoted through:

- Comprehensive public education programs that equip citizens with knowledge about local hazards and appropriate protective measures.
- Targeted media campaigns that effectively communicate risk information and promote preparedness behaviors.
- The establishment of community learning hubs that serve as local centers for disseminating information, conducting training, and

facilitating peer-to-peer learning on disaster preparedness and response.

Given Bangkok's unique urban landscape, characterized by numerous diverse communities alongside a high concentration of high-rise buildings, it is imperative to strengthen these communities while simultaneously empowering robust collaboration between the public and private sectors. This integrated approach is critical for building comprehensive urban resilience.

The path forward necessitates the formulation of a comprehensive resilient framework specifically designed to address all existing gaps in current disaster preparedness and response mechanisms. This framework must be adaptable and forward-thinking, capable of tackling unpredictable future disaster scenarios.

Within this framework, there is a distinct opportunity for the private sector, particularly in the real estate domain, to innovate. For instance, condominium developers could evolve their offerings from merely selling fully furnished rooms to providing units equipped with advanced site monitoring capabilities. This shift would enable residents and building management to effectively monitor potential risks and proactively respond to unpredictable future disasters, thereby integrating resilience directly into urban living spaces.

She also advocated for enhanced regional data sharing, proposing integrated systems across ASEAN and Asia Pacific to ***"better understand and respond to cross-border hazards, pollution, and climate impacts"***.

Special Session

➤ ***Ms. Chatchadaporn Boonpreeranat, Deputy Director – General of Department of Disaster Prevention and Mitigation, Ministry of Interior, Thailand***

Action taken by Thailand following M 7.7 Mandalay earthquake

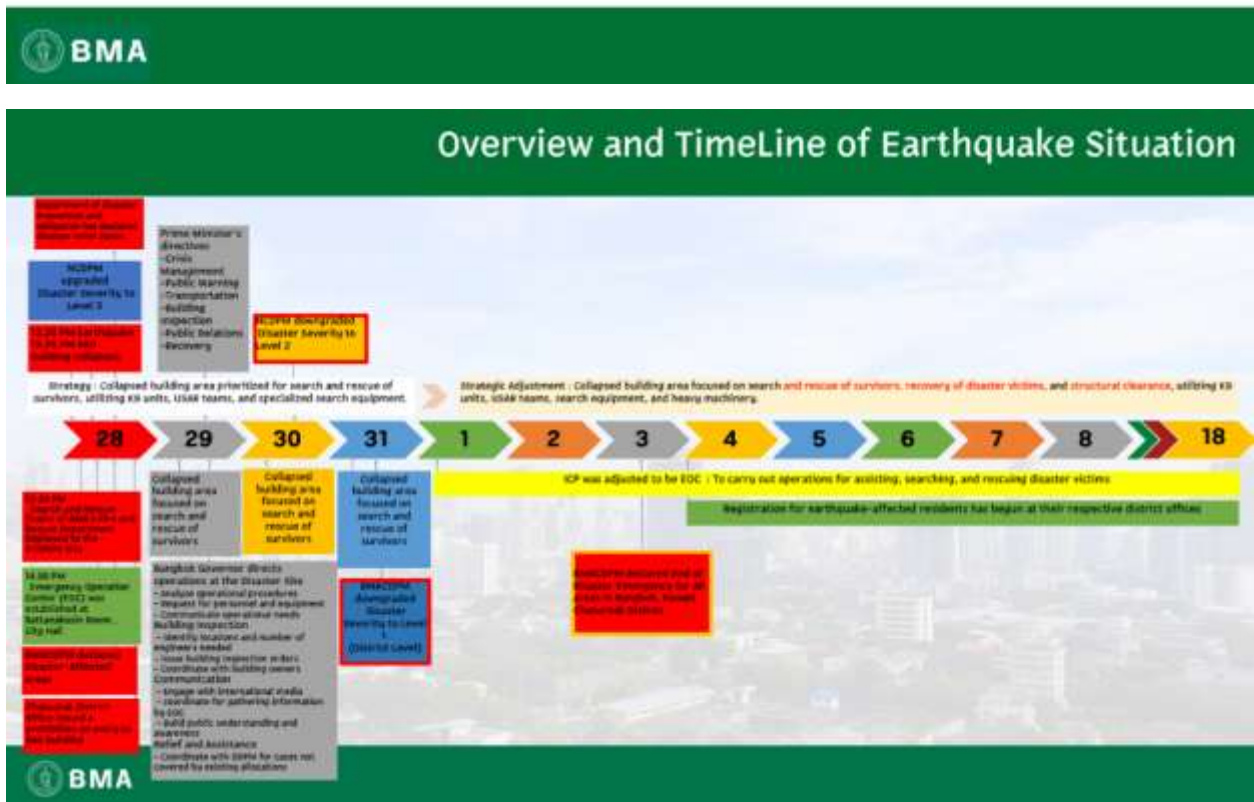
On 28 March 2025, at approximately 12:50 PM Myanmar time, a magnitude 7.7 earthquake struck at a depth of 10 kilometers, located about 19 kilometers northwest of Mandalay, Myanmar. Later that same day, at 1:02 PM Myanmar time, a significant aftershock with a magnitude of 6.4 and a depth of 10 km further intensified the impact.

The earthquake was felt widely across Myanmar with catastrophic impacts. State of emergency was declared in the six (6) most impacted regions - Mandalay, Sagaing, Magway, Shan State, Nay Pyi Taw, and Bago. On the same day, an urgent request for humanitarian assistance in the event of the powerful earthquake was sent by DDM Myanmar to the Secretary-General of ASEAN.

In Thailand, tremors were felt across 63 provinces, and impacts reported in 18 provinces. Bangkok was the most severely affected, including a collapsed building that resulted to numerous casualties.

Mandalay Earthquake and Its Impact in Thailand

- Mandalay Earthquake occurred on 28 March 2025 at 13:20 hrs (Thailand local time)
- Strong tremors were felt in 57 provinces across Thailand, including regions in the North, Northeast, Central (including Bangkok), and the South.
- Resulted in damage to life and property in affected areas.



[Crisis Management Conferences 2025, Bangkok Thailand]

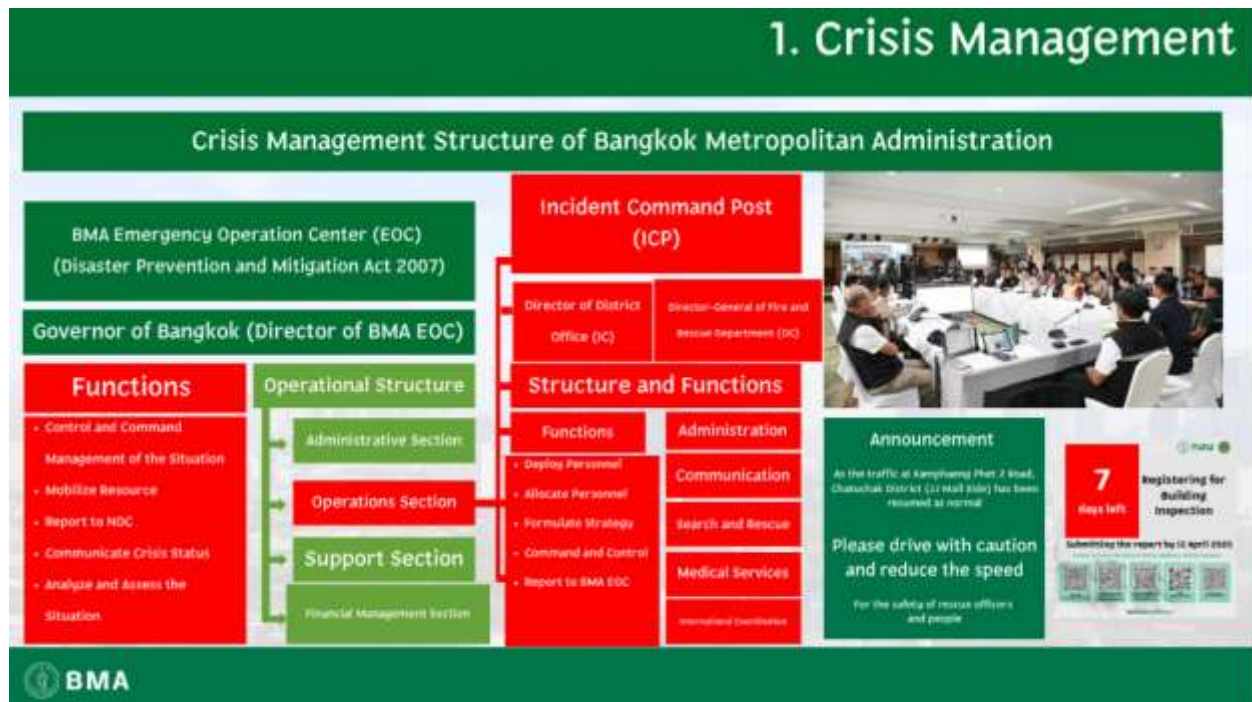
- **28 March 2025**, the National Disaster Command Centre elevated the response level to Level 3: Large-scale Disaster, in accordance with the National Disaster Prevention and Mitigation Plan 2021–2027.
 - **Minister of Interior**, as the National Commander, directed strategic operations and policy coordination.
 - **Director-General** of The Department of Disaster Prevention and Mitigation (DDPM) served as the Central Director.
 - **Activated 15 Emergency Support Functions (ESFs)** for coordinated efforts across government agencies, private sector, volunteers, and civil society to ensure effective and efficient emergency response and support operations.

30 March 2025, the disaster level was downscaled to Level 2: Medium-scale Disaster, with **provincial governors** and the **Governor of Bangkok** assuming operational leadership to ensure continuous support and recovery efforts at the local level.

Bangkok Metropolitan Administration (BMA) Response

- **Incident Command Center** established to coordinate emergency operations.
- **Public Support and Recovery**
 - Damage Inspection: Partnered with Department of Public Works and Town & Country Planning to assess buildings
 - Temporary Shelters: 12 shelters opened (1,415-person capacity)
 - Community Support: “Music in the Park” event organized to support mental well-being.

- Damage Reporting: Enabled via **Traffy Fondue** application.
- Financial Assistance: Temporary housing support, compensation for injuries, and livelihood recovery funds provided.
- **Search and Rescue Operations** (SAO Building Collapse): Coordinated with relevant agencies to rescue individuals trapped in the collapsed State Audit Office (SAO) building.





Search and Rescue Operations and International Cooperation

- As of early April, overall situation stabilized except one critical incident: the collapse of the State Audit Office (SAO) building in Bangkok.
- Key Contributing Factors:
 - Extremely powerful tremors from distant epicenter
 - Weak and adverse soil conditions
 - Structural irregularities and insufficient reinforcement
- International USAR Response (UNOCHA/INSARAG): Teams deployed from China, France, Mexico, Israel, United States, Canada, and Hong Kong

2. Search and Rescue Operations at the Disaster Site



3. Relief and Recovery for Disaster Victims



➤ **Thawatchai Palakhamarn, GIZ Bangkok and the Sustainable Use of Peatlands and Haze Mitigation in ASEAN (SUPA Thailand)**

Tech-Driven Crisis Management

- How the SUPA Project Transformed Peatland Fire Management in Thailand
- Peatland Fire Trends in Kuan Kreng Peatland
- Significant Reduction
- The damage trend continues to decline, but there are still fires, most of which have proven to be the result of agricultural burning.

Key Contributors

- Continued deterrence and active community collaboration.

Prediction Challenges

- Forecasting hot spots remains intricate due to insufficient data and monitoring.

Modern Monitoring Caution

- Current technology and methods could inadvertently increase the hot spots.

Progress in Fire Management (1993-2024)

Key Success: Fire damage reduced from over **14,000 hectares (1993)** to **1,000 hectares (2023)**.

Long-term Efforts: Water control systems (2003), reforestation, and community-based management were critical in long-term fire reduction.

Community Involvement: Local engagement played a major role in sustainable peatland restoration and fire prevention.

Technological Breakthrough (2023-2024)

✓ **95% Fire damage reduction:** significant decrease due to advanced technologies

✓ **Rapid Response:** drones, satellite monitoring, and IoT-based water monitoring network optimized readiness and response, accelerating fire suppression efforts.

✓ **Highlight:** Faster and more precise interventions transformed fire management efficiency

Eyes in the Sky: A Drone network for faster decisions and safer Peatlands

Without drone: Visual spotting by ranger, Travel by motorbike/foot, Manual visual check, Note-taking/photos, Radio or return to base, More patrols needed, Delay until report complete, Ranger exposed to risks, Detection Initiation, Travel to Site / Area Scan, Fire Location Confirmation, Data Collection, Communication to Command Center, Coverage Expansion, Decision- Making, Personnel Safety

With drone: Auto-launch or triggered drone, Drone flies in minutes, GPS-tagged aerial imaging, Real-time video feed, Instant live transmission, Drone covers wide area fast, Fast decision-making, Operator stays safe

Empowering Local Capacity through Drone Technology

We actively invest in building local capacity by training staff, many of whom begin with no prior experience, to become professional drone operators. This transformation not only enhances individual skillsets but also significantly strengthens community-level capabilities in fire detection, monitoring, and rapid response. As part of this initiative, we have supported the deployment of a fleet of more than 20 drones, strategically stationed at every forest fire control station within the Khuan Khreng peatland area. These efforts are grounded in research data collected between July and September 2024, ensuring that interventions are evidence-based and tailored to local fire dynamics.

IoT-Enabled Water Monitoring: Faster Decisions, Safer Peatland

Key Highlights of Monitoring Network

- **300 km² Coverage:** Extensive sensor network covering 300 square kilometers for comprehensive fire monitoring.

- **70 Water Level Sensors:** Monitors both surface and subsurface water levels to assess fire risk.
- **3 High-Altitude Air Quality Stations:** Continuous air quality tracking for early detection and environmental safety.
- **5-Year GIZ Support:** GIZ funds all operational costs for the first 5 years, ensuring sustainable monitoring up to 2029.

Technical Advantages

- **Cloud-Based System:** Real-time data collection and remote access for enhanced decision-making.
- **Stand-Alone Solar Panels:** Independent power supply, ensuring uninterrupted monitoring in remote areas.
- **Modular & Low-Cost Replacement:** Easily replaceable components reduce maintenance costs and extend system longevity.
- **5G-Enabled Technology:** Faster data transmission, enabling real-time updates for rapid response.

✓ Continuous 24-hour data on water levels, with real-time monitoring of surface water levels and soil moisture at a 2-meter depth.

✓ Daily, monthly, and historical data over time are available, with detailed point-by-point measurements.

✓ Facilitating the shift from experience-based to data-driven decision-making

✓ The data platform is accessible to everyone; simply register to gain access.

Satellite Monitoring Systems Harmonized ASEAN-wide peatland map
Updated Peatland area in ASEA (as of November 2024): 275811 km²

Technological Impact

Technology	Key Impact	Result
Drones	107% increase in monitoring efficiency, 93% faster response, 117% more accurate fire detection	95% reduction in fire-related damage, rapid response in remote areas
IoT-Enabled Water Monitoring	86% faster decision-making, real-time data, continuous monitoring of nearly 100 points	Significant reduction in fire risk with proactive management based on real-time data
Satellite Monitoring Systems	80% increase in coverage, accurate detection of fire-prone areas	Improved fire forecasting and monitoring in remote regions
Integrated Command Vehicles	Real-time coordination of fire suppression teams, mobile command centers for synchronized response	Increased efficiency in coordinating ground teams and drone operators
Predictive Analytics	Predictive fire risk analytics, smarter decision-making using big data-driven tools	Early fire risk identification, better prevention measures

Managing Fire with Innovation

The factors include Technology Enhances Efficiency, Community Engagement, Policy & Collaboration, Capacity Building, Data-Driven Decision Making, and Scalability.

Technology Alone is not Enough

While technology like drones, IoT, and big data can significantly enhance fire management in peatland efficiency, it cannot work in isolation. Effective integration with protocols, a robust management system, and the utilization of open data at the local level are essential. Protocols guide consistent, coordinated action, while management systems ensure that technological tools are deployed effectively. Open data empowers local communities, enhancing their ability to engage with real-time information and contribute to sustainable, long-term fire management efforts. The combination of technology, policy, and local engagement is key to achieving lasting success in protecting peatlands.

Local Community Adoption of SUPA Solutions

Empowering Communities to Protect Peatlands by Merging Innovation with Local Action

Training Programs

Local communities are trained to operate drones and use IoT systems, building technical skills from zero experience to professional competency. This hands-on approach ensures locals are empowered to manage fire prevention independently.

Community-Led Monitoring

With new skills, locals become the frontline in fire detection, using technology to monitor peatlands in real-time. This community-led surveillance increases the speed and accuracy of fire response, reducing reliance on external support.

Ownership and Participation

Community involvement fosters a sense of ownership over environmental protection. By integrating traditional knowledge with modern tools, locals are more motivated to safeguard their peatlands.

Sustainability through Local Engagement

Local communities play a critical role in the long-term sustainability of these initiatives. Their continuous engagement ensures that solutions like drone monitoring and IoT networks are maintained and operational beyond the initial project phase.

Incentivizing Participation

Involving communities in conservation efforts is supported through economic incentives and education, encouraging proactive engagement in fire prevention and land management.

➤ ***Associate Professor Tavidia Kamolvej, Deputy Governor of Bangkok***

Role of Bangkok Metropolitan Administration in Earthquake Management on 28 March 2025: 2025 Bangkok Skyscraper Collapse

Overview and TimeLine of Earthquake Situation

▪ 28 March 2025

- Department of Disaster Prevention and Mitigation has declared disaster relief zones.
- NCDPM upgraded Disaster Severity to Level 3.
- Earthquake at 1.20 PM and SAO Building collapsed at 1.25 PM.
- 1.30 PM Search and Rescue Teams of BMA's Fire and Rescue Department Deployed to the Incident Site
- 2.00 PM Emergency Operation Center (EOC) was established at Rattanakosin Room, City Hall
- BMACDPM declared Disaster-Affected Areas
- Chatuchak District Office issued a prohibition on entry to SAO building

▪ 29 March 2025

- Prime Minister's directives on Crisis Management, Public Warning, Transportation, Building Inspection, Public Relations, and Recovery
- Collapsed building area focused on search and rescue of survivors
- Bangkok Governor directed operations at the Disaster Site to analyze operational procedures, request for personnel and equipment, and communicate operational needs
- Building Inspection to identify locations and number of engineers needed, issue building inspection orders, and coordinate with building owners

- Communication to engage with international media, coordinate for gathering information by EOC, and build public understanding and awareness

- Relief and assistance to coordinate with DDPM for cases not covered by existing allocations.

- **30 March 2025**

- NCDPM downgraded Disaster Severity to Level 2

- Collapsed building area focused on search and rescue of survivors

- **31 March 2025**

- Collapsed building area focused on search and rescue of survivors

- BMA CDPM downgraded Disaster Severity to Level 1 (District Level).

Strategy: Collapsed building area prioritized for search and rescue of survivors, utilizing K9 units, USAR teams, and specialized search equipment.

- **3 April 2025**

- BMA CDPM declared End of Disaster Emergency for All Areas in Bangkok, Except Chatuchak District

- **4 April 2025**

- ICP was adjusted to be EOC: To carry out operations for assisting, searching, and rescuing disaster victims

- Registration for earthquake-affected residents has begun at their respective district offices

Strategic Adjustment: Collapsed building area focused on search and rescue of survivors, recovery of disaster victims, and structural clearance, utilizing K9 units, USAR teams, search equipment, and heavy machinery.

Roles of Bangkok Metropolitan Administration

1. Crisis Management: Emergency Operation Center (EOC) (Disaster Prevention and Mitigation Act 2007).

- First 168 hours after the Earthquake, Done 16,324 cases, Transfer 920 cases, and Proceeding 1,561 cases.

- Receiving 18,945 cracked building cases.

- 5 top districts with cracked building cases: Chatuchak 1,998 cases Huai Khwang 1,667 cases Watthana 1,144 cases Bang Sue 1,076 cases Ratchathewi 993 cases.
- 2. Search and rescue of Disaster Victims: Incident Command Post (ICP)
- 3. Relief and Recovery for Disaster Victims
 - Collapsed SAO Building Situation Report 17 April 2025 (10.00 am.)
 - Total 103 affected people, 44 Deaths, 9 Injuries, 50 Missing people

The news and information are updates via the platform of **Traffy Fondue: A Smart Urban Problem Management Platform***. The *Traffy Fondue* platform (also affectionately referred to as “*Than Phi Fong-Doo*”) is designed to support government agencies in managing urban issues in a timely and efficient manner. The system provides detailed information about each reported issue, including images from the field and precise location coordinates. This enables authorities to make informed decisions and dispatch personnel to resolve problems swiftly.

**Traffy Fondue* was developed as a public-facing platform to facilitate the reporting and management of urban issues. Citizens can report problems directly through the application or via the LINE Chatbot. Once a report is submitted, the relevant agency is promptly notified and proceeds with the necessary resolution actions.

Crisis Management Structure of Bangkok Metropolitan Administration
BMA Emergency Operation Center (EOC) was established under the Disaster Prevention and Mitigation Act 2007 having the Governor of Bangkok as the Director of BMA EOC.

Functions

- Control and Command Management of the Situation
- Mobilize Resource
- Report to NOC
- Communicate Crisis Status

- Analyze and Assess the Situation

Operational Structure

- Administrative Section
- Operations Section
- Support Section
- Financial Management Section

Incident Command Post (ICP) was directed by Director of District Office (IC) and Director-General of Fire and Rescue Department (OC) with the structure and functions as below:

Functions

- Deploy Personnel
- Allocate Personnel
- Formulate Strategy
- Command and Control
- Report to BMA EOC

Administration

- Communication
- Search and Rescue
- Medical Services
- International Coordination

Search and Rescue Operations at the Disaster Site

Director of District (IC)

Director-General of Fire and Rescue Department (OC)

Functions

- Plan for Search
- Deploy Personnel
- Allocate Personnel
- Plan Operational Strategy
- Command and Control at Site
- Report to BMA EOC

Process and Operational Strategy

Establish WSC (work site control)

Director of Fire & Rescue Division 1, 3 (Control & Operate)

- Access Control to the Incident Site
- On-Site Situation Assessment
- Search and Rescue Operations

Main Response Forces

- BMA's FRD Personnel / USAR
- USAR Team / DDPM
- K9 / Police / Military / General
- Chatchai Choonhavan Foundation

Operational Strategy

- During the first 72 hours, operations focus on search and rescue by personnel and K9 units to locate survivors.
- After the first 72 hours, search efforts continue with a focus on locating survivors, alongside the use of heavy machinery.
- Divide operational area into 4 zones (A, B, C, D)
- Request for advanced equipment to support the search for victims trapped under collapsed building

Search and Rescue Operations at the Disaster Site (International Support Team)

A total of 9 international search and rescue teams supported the mission from 30 March to 9 April 2025.

Operational Missions

1. Support Missions for Search and Rescue Operations: 7 Teams
 - (1)CHN-10 Blue Sky Team and Chinese Foundation Team: 22 Personnel and 1 K9
 - (2)ARSI USAR Search Engineers from France: 4 Personnel with Lidar Scanning Equipment
 - (3)Peaceland, Hongkong Peaceland, Hong Kong, and the Chinese-Hong Kong Foundation Team: 4 Personnel with Rescue Equipment and Heavy Machinery
 - (4)ISR-1 Israel National Search and Rescue Unit (NRU) from Israel: 22 Personnel
 - (5)Burnaby Search and Rescue from Canada: 9 Personnel and 1 K9

(6)US Air Force: A total of 36 members, deployed in shifts of 6-8 personnel every 4 hours, with expertise in search and rescue using rope systems

(7)US Army Corps of Engineers from USA: 7 Personnel

2. Support Missions in Consultancy and Technical Assistance: 2 Teams

(1)FUERZA TENOCH Frank Bolio Specialist in collapsed structures: 1 architect from Mexico

(2)Topos Azteca: 1 Rescue Specialist from Mexico

Coordination Channels for Operational Deployment: I-USAR through DDPM, Each Embassy in Thailand. All are coordinated and overseen by BFRD International Operation Team. Gradual withdrawal of forces and mission completion starting from 4 April 2025, with all teams fully withdrawn by 9 April 2025 to proceed to Myanmar.

Relief and Recovery for Disaster Victims

Relief and rehabilitation efforts for disaster victims are categorized into two groups: individuals affected by the earthquake and those impacted by building collapse. Financial assistance is made available through registration at the local District Office. Support is provided through both the Bangkok Metropolitan Administration (BMA) and the Department of Disaster Prevention and Mitigation (DDPM). From the BMA budget, consolation payments of 2,300 baht per person are offered to those injured, along with career rehabilitation funds amounting to 11,400 baht per person. Under the DDPM budget, financial aid for the injured includes 4,000 baht for inpatients and 2,000 baht for outpatients. Individuals who have sustained injuries resulting in disability are eligible for 13,300 baht in assistance. Moreover, support for home repair materials is provided, not exceeding 49,500 baht per household.

Steps to Request Financial Assistance for Earthquake Victims in Bangkok

1. Verify Eligibility – Check your rights to confirm whether you qualify for financial assistance.

2. Prepare and Submit Required Documents – Collect all necessary documentation and submit them to the designated authority.
3. Schedule and Await Building Inspection – Authorities will arrange an appointment to assess the damage to your property.
4. Receive Financial Assistance – Once the inspection is complete and your request is approved; you will receive the designated support.

Registration was at all 50 district offices throughout Bangkok. To enhance convenience, each district office had established a special complaint and support desk to assist residents in the application process.

BMA Policies in Action: Best Practices Toward a Sustainable City

The Bangkok Metropolitan Administration (BMA) has implemented a range of policies aimed at fostering a more sustainable, resilient, and inclusive urban environment. Innovative and resilience-building solutions have been introduced to reduce risks and improve public safety, including the development of tools such as the Risk Map, Traffic Fondue, Health Map, and Open Data platforms. These initiatives are supported through active partnerships and collaborations with international organizations, promoting knowledge exchange and capacity building.

To support a healthy and sustainable lifestyle, the BMA has undertaken extensive improvements to the city's physical environment. Notable efforts include the planting of 2 million trees, the creation of 500 pocket parks, the installation of 85,000 streetlights, and the development of 1,000 kilometers of sidewalks to encourage walkability and enhance urban greenery.

BMA also places emphasis on promoting an inclusive society, demonstrated through initiatives such as the Bangkok Health Assembly and the Public-Private Partnership (PPP) Committee for District Development, which encourage community participation and multi-sectoral engagement in local governance. Furthermore, the BMA is committed to enhancing the quality of life for vulnerable groups. Key

programs include the establishment of 50 Bangkok Food Banks, the creation of 1,966 dust-free classrooms in schools to protect children from air pollution, and the employment of 415 persons with disabilities, promoting equal opportunity and inclusive employment.

Challenges and Limitations

Bangkok faces several interrelated challenges in its efforts to address climate change and enhance urban resilience. On the climate front, one key limitation is the need to promote broader engagement from both the public and private sectors in reducing greenhouse gas (GHG) emissions. While there are emerging initiatives to explore various forms of climate financing, greater scale and coordination are needed to accelerate Bangkok's climate actions. Besides, public awareness and participation in waste segregation remain limited, requiring more robust and continuous promotional campaigns. A significant structural limitation lies in the current legal framework, as The Bangkok Metropolitan Administration Act B.E. 2528 (1985) does not explicitly cover climate change, posing a governance gap that hampers integrated climate policy development.

In terms of resilience, unplanned urbanization has led to inadequate disaster safety infrastructure, including an insufficient drainage system, which increases vulnerability to flooding and other climate-related events. Public awareness regarding disaster preparedness is low, and there is a lack of effective coordination among relevant agencies, which undermines a unified response to emergencies. Furthermore, economic constraints have limited the budget available for disaster preparedness and resilience planning, highlighting the need for strategic resource allocation and enhanced inter-agency collaboration.



Way Forward

To effectively address future urban challenges, the Bangkok Metropolitan Administration (BMA) must prioritize capacity-building across all levels. This includes training, upskilling, and reskilling relevant personnel to enhance operational readiness, as well as raising public awareness to promote citizen literacy on disaster preparedness and climate resilience. For urban poor and vulnerable populations, targeted investments in infrastructure, economic support, and healthcare are essential to enhance their overall resilience.

Moreover, the city should focus on strengthening regional and inter-city networks to address climate change and disaster risks. This involves collaborative knowledge-sharing, the exchange of best practices, and the co-development of policy frameworks aimed at climate action and urban resilience. A critical component of this approach is the joint development of urban databases and integrated data management systems, which will enable timely and effective situation assessments.

Lastly, Bangkok must leverage and strengthen international partnerships to unlock climate and resilience financing. By maximizing access to

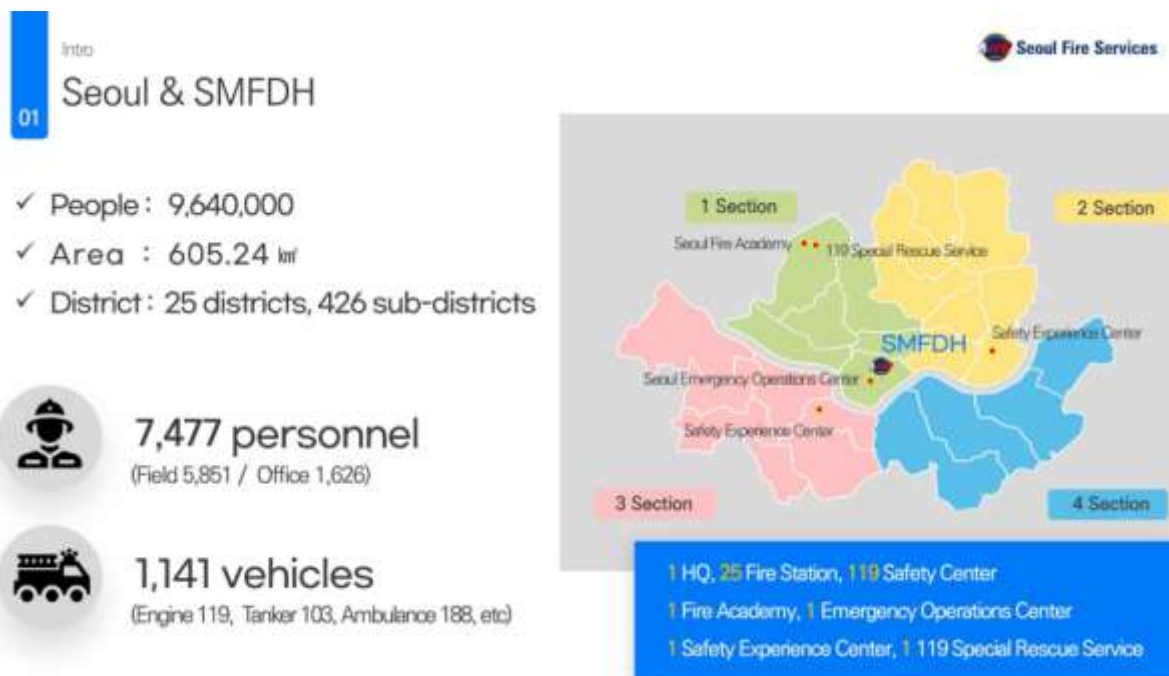
existing global support mechanisms, the city can accelerate the implementation of innovative, sustainable, and inclusive solutions for long-term resilience.

Session 1 Panel discussion on the Innovation for smart city

➤ ***Mr. Son Myungeun from Seoul Metropolitan Fire and Disaster Headquarters***

Resilience in Heavy Rain: Urban flood preparedness

The Seoul Metropolitan Fire and Disaster Headquarters (SMFDH) operates within the city of Seoul, which has a population of approximately 9.64 million people and covers an area of 605.24 square kilometers. Administratively, Seoul is divided into 25 districts and 426 sub-districts. The SMFDH is staffed by a total of 7,477 personnel, including 5,851 field operatives and 1,626 administrative and office staff. The agency manages a fleet of 1,141 emergency vehicles, consisting of 119 fire engines, 103 water tankers, and 188 ambulances, among other specialized vehicles. The organizational structure includes one central headquarters, 25 fire stations, and numerous 119 Safety Centers that operate as part of the fire station network. Furthermore, the SMFDH maintains a range of specialized facilities, including one Fire Academy for training and education, one Emergency Operations Center for centralized crisis coordination, one Safety Experience Center aimed at enhancing public awareness and preparedness, and one 119 Special Rescue Service Unit dedicated to advanced rescue operations.



2024 dispatches

In 2024, the Seoul Metropolitan Fire and Disaster Headquarters responded to a total of 5,654 fire incidents, resulting in 23 fatalities and 305 injuries, averaging approximately 15 fire-related dispatches per day. Rescue operations accounted for 210,773 cases, including 17,382 actual rescues, with a daily average of 577 cases. Emergency medical services (EMS) were dispatched for 559,006 cases, leading to 285,048 patient transfers, averaging 1,531 EMS calls per day. These figures highlight the significant operational demand and critical role of the SMFDH in safeguarding the lives and well-being of Seoul's residents.

Change in the Disaster Environment

Current Climate Change

- WMO, "Key climate change indicators again reach record levels" (25.3)
- UN Secretary-General, "Urgency of the extreme heat epidemic, fueled by climate change" (24.7)
- SNU, "The rain is pouring in buckets it will become more frequent in the future." (23.8)

How higher temperature cause extreme rainfall

1. Increased Solar Heat Leads to Greater Evaporation

As global temperatures rise due to climate change, more heat from the sun warms the Earth's surface and oceans. This additional heat increases the rate of evaporation, especially from bodies of water such as seas, lakes, and rivers.

2. Higher Moisture Content in the Atmosphere

The increased evaporation adds more water vapor to the atmosphere. Warmer air can hold more moisture, leading to the formation of larger and more saturated clouds.

3. Intensified and Heavier Rainfall

When this moisture-laden air cools and condenses, it results in more intense precipitation. The higher the moisture content, the heavier the rainfall becomes, often leading to extreme weather events such as flash flood and prolonged storm.

Change in the Disaster Environment

Heavy Rain in Seoul (2022)



Heavy Rain In Seoul(2022)

> 119 calls and situation management

- ✓ Reports and Dispatches: **11,664** (16:00-24:00 / 8hours) / **2,726**
 - ⇒ Up to 465 calls awaited during localized heavy rain
- ✓ Expanded reception desk (24 units → 40 units) / emergency duty of off workers
 - ⇒ 150 cases per hour are handled by one controller

> Dispatch and Response

- ✓ Lifesaving: **220(356 people)**, Safety report: 286, Drainage Support: 1,665
 - ⇒ 1,273 cases were dispatched to four fire stations in the southwestern part of Seoul
- ✓ Around 21:00, Three dead inundation of semi-basement houses
 - ⇒ All firetrucks in territorial were dispatched, delayed arrival due to road flooding



Outline of Occurrence

- (date/location) 2022.8.8. (Mon) around 20:00/The Southern Part of the Han River
- (weather) Localized Heavy Rain of up to 140mm per hour

20h (47mm) → 21h (141mm) → 22h (73mm) → 23h (20mm)

Damages

- (Casualty) 12 (8 deaths, 4 injured)
 - Flooded in Homes (4), Fell into Manhole (2), Flooded Underground Parking Lot (1), Electric Shock (1)
- (Property) Approximately \$96 million estimated

About 10,000 submerged vehicles, road and house flooding, landslides, etc.

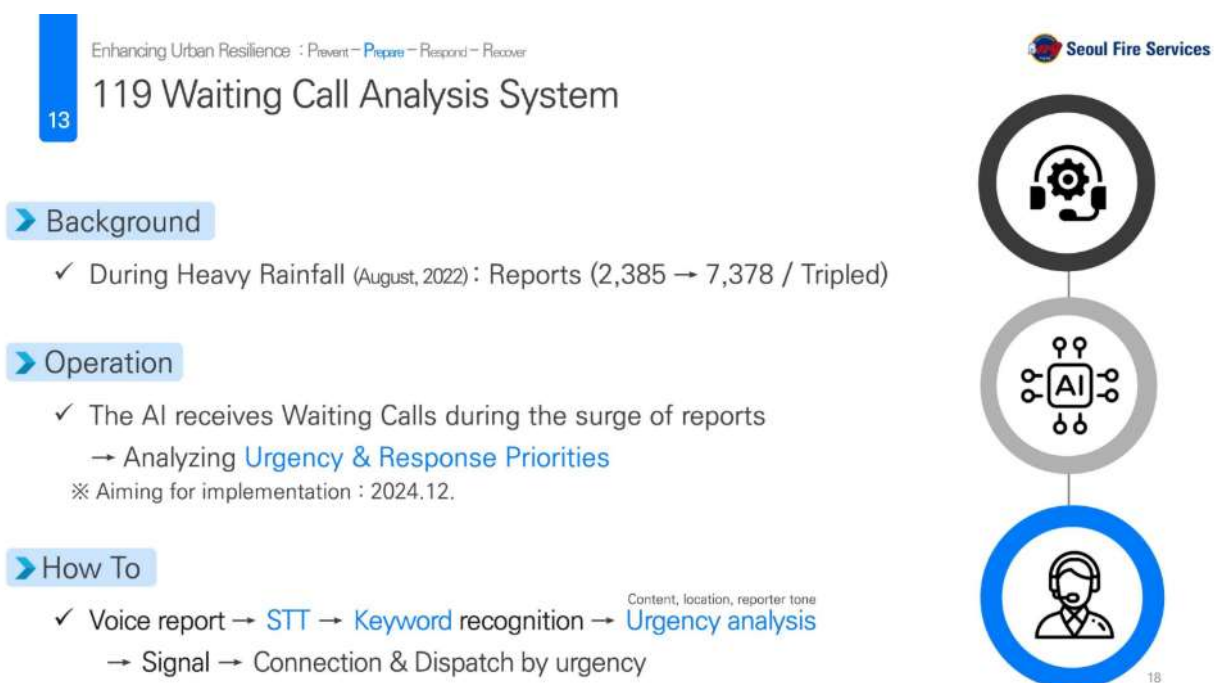
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Limitations of the Existing Emergency Response System

The current emergency response system faces several critical limitations, particularly when dealing with large-scale disasters. One major challenge is the wide area of damage, which often leads to a simultaneous surge in incident reports, overwhelming communication and coordination systems. Responding effectively across such widespread areas becomes increasingly complex, especially when immediate actions are required for life-saving operations, safety measures, and drainage management.

In addition, limited resources, including insufficient personnel and inadequate equipment, significantly hinder the efficiency of the response. The lack of staff on the ground often leads to delays in providing assistance, while equipment shortages further constrain operational capacity.

Difficulties in accessing affected areas due to damaged infrastructure or hazardous conditions complicate rescue and relief efforts. Moreover, a lack of situational control, stemming from both information interference and over-control mechanisms such as overly rigid trace management, makes it challenging to maintain clarity and efficiency in operations.

Finally, sorting and prioritizing responses becomes problematic under these strained conditions, especially without accurate real-time data and a streamlined coordination mechanism. These challenges highlight the urgent need to strengthen the system through improved resource allocation, better technology integration, and adaptive crisis management frameworks.

Enhancing Urban Resilience: A Comprehensive Approach Across the Disaster Cycle – Prevention, Preparedness, Response, and Recovery

To strengthen urban resilience, Seoul has implemented a range of integrated measures across key phases of disaster management, prevention, preparedness, response, and recovery, particularly focused on mitigating flood risks in underground spaces.

For underpasses, the city has enhanced entry monitoring and rapid response capabilities. This includes the installation of 30 entry control systems, 11 CCTV units, and 2 grounding boards to manage electrical safety. To ensure swift action during emergencies, four designated staff members are assigned to each location for real-time response and coordination.

In the subway system, the focus has been on preventing water ingress. Water barriers have been installed at 1,938 out of 1,958 subway gates, significantly reducing the vulnerability of these critical transport nodes to flooding.

Addressing risks in underground apartments, water barriers have been installed at 14,990 out of 24,842 units across Seoul. To foster innovation and public engagement, the city also launched a Water Barrier Design Contest, encouraging citizen participation in developing creative solutions for flood prevention in residential settings.

These initiatives represent Seoul's proactive commitment to minimizing the impact of urban flooding and enhancing the city's resilience to climate-induced hazards.

119 Waiting Call Analysis System

▪ Background

During the heavy rainfall in August 2022, the number of emergency reports to the 119 system surged significantly, from 2,385 to 7,373, representing a threefold increase. This unprecedented surge highlighted the urgent need for a more efficient system to manage and prioritize emergency responses.

▪ System Operation

To address this challenge, an AI-driven Waiting Call Analysis System is being developed. During periods of high call volume, the system will receive waiting calls and perform real-time analysis to assess the urgency and determine appropriate response priorities. Implementation of this system is targeted for December 2024.

▪ Operational Workflow

The system will operate through the following sequence

1. Voice reports will be received.
2. Speech-to-Text (STT) conversion and keyword recognition will be applied.
3. Urgency levels will be analyzed using AI algorithms.
4. Based on the urgency analysis, the system will generate a signal for appropriate connection and dispatch actions.

Application of AI in Disaster Management

Mid-Term Planning for the Emergency Operations Center (EOC)

A strategic plan is currently underway for integrating AI into the 119-management system, as part of the EOC's Business Process Reengineering (BPR) and Information Strategy Planning (ISP). The planning period spans from July 2024 to December 2026.

- **Project Scope and Development Stages:**

The AI integration will be developed in three progressive steps:

- **Step 1:** Data analysis and the development of the Waiting Call Response System.
- **Step 2:** Creation of a risk prediction model and resource assessment system.
- **Step 3:** Development and dissemination of reporting software to support disaster response operations.

This AI-driven approach aims to enhance operational efficiency, reduce response time, and strengthen the city's disaster management capabilities.

- **Wide-Area Response System**

The Wide-Area Response System is a coordinated operational framework established to address large-scale or simultaneous incidents that impact multiple fire stations across Seoul. This system enables a unified and strategic response when localized resources are insufficient to manage the scope of an emergency.

Objectives:

- To prioritize the preservation of human life and the prevention of further damage.
- To minimize disruption and inconvenience to residents.
- To maintain continuity of essential urban functions during and after the incident.

Response Principles:

- Rapid activation of response protocols to maximize disaster response effectiveness.
- Enhanced operational capacity of the fire department's Emergency Operations Center to ensure timely decision-making and resource allocation.

This system ensures a comprehensive, city-wide approach to disaster management, improving resilience and public safety during large-scale emergencies.

▪ **Comparison of Emergency Response Systems**

Emergency response systems can be broadly categorized into two main approaches: the General Response System and the Wide Area Response System.

The General Response System is primarily designed for social disasters occurring in local areas. This approach emphasizes an initial response that prioritizes utilizing the fire station's own resources first. This allows for immediate action tailored to the specific needs of the affected locality.

In contrast, the Wide Area Response System is implemented for natural disasters that impact broad geographical regions. This system necessitates a more comprehensive response, typically managed at a metropolitan level, such as the Seoul Metropolitan level. The core principle here is the utilization of all available personnel and equipment within Seoul to address the widespread impact of such disasters. A key characteristic of this system is SMFDH-Centered Situation Management and Response, indicating a centralized command and control structure for efficient coordination across the wide area.

▪ **Cooperative Governance in Disaster Response**

Cooperative governance plays a crucial role in effective disaster response, as exemplified by the “Dong-hang” partner initiative. This program focuses on providing assistance from neighbors in the case of flooding, specifically targeting vulnerable populations. Currently, 1,196 recipients (elderly and disabled individuals residing in underground apartments) are supported by 2,956 partners.

Beyond community-level initiatives, inter-agency collaboration is formalized through the Disaster Response Agency Committee. This committee brings together representatives from the government, fire department, police, and military, facilitating seamless communication and coordination, often utilizing systems like PS-LTE.

This collaborative framework ensures cooperation and joint resource allocation during emergencies. The fire department typically handles rescue operations, while the government is responsible for drainage, and the police manage traffic control. Furthermore, strategic resource sharing is evident in the consultation for the use of specialized equipment such as the Unimog (U300), which boasts an operational high of 120cm, significantly exceeding a standard fire truck's operational high of 65cm in flooded conditions.

Emergency Recovery Task Force

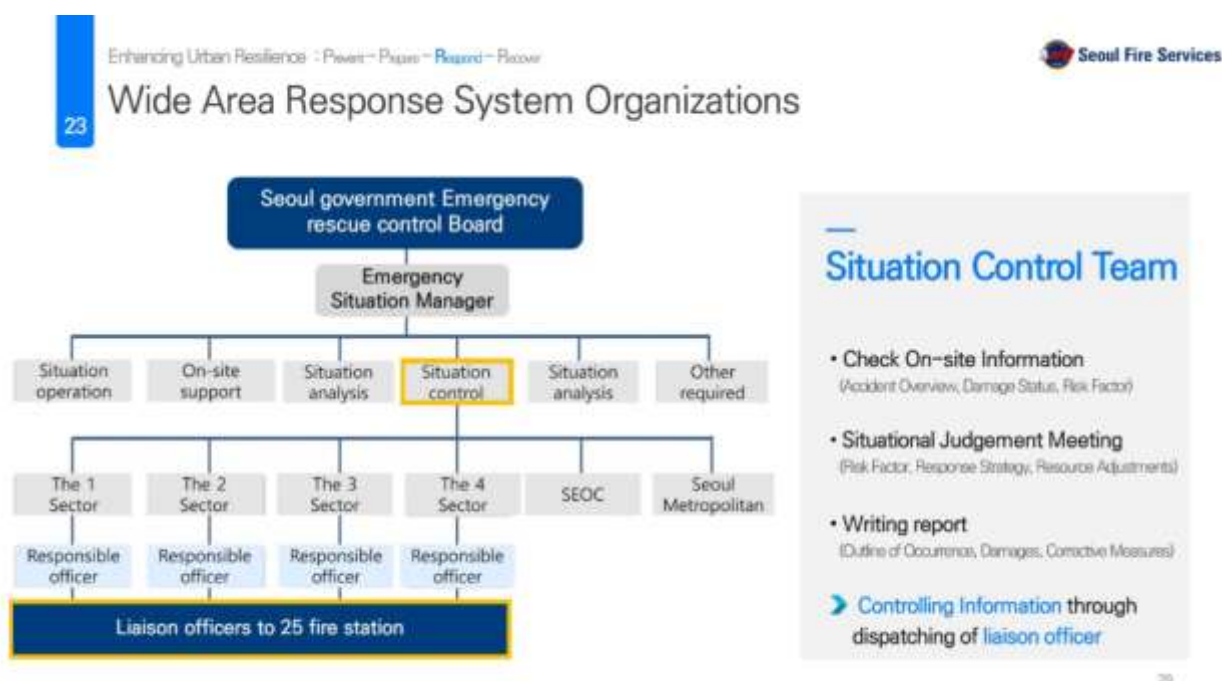
Background

The increasing impact of climate change has led to an unpredictable rise in the risk of urban flooding. This presents significant operational challenges, including restricted access for emergency vehicles, making the operation of standard fire trucks difficult on flooded roads. Furthermore, underground flooding often exacerbates the situation due to a severe lack of drainage capability, with conventional systems only able to process approximately 7 tons per second.

Operation

To address these critical issues, an Emergency Recovery Task Force (TF) has been established, comprising personnel from the City Disaster Department and the Seoul Metropolitan Fire and Disaster Headquarters

(SMFDH). This task force is equipped with two units of hydraulic drain trucks, each possessing a formidable drainage capacity of 50 tons per second. These specialized vehicles, powered by diesel engines and hydraulic pumps, dramatically improve drainage efficiency. For instance, an operation that previously took 35 hours to remove 1,500 tons of water can now be completed in just 5 hours. Beyond its direct operational scope, the Emergency Recovery TF also provides crucial assistance and support to other local governments grappling with flood damage.



➤ *Mr. Mohtar Bin Samat from Kuala Lumpur – Malaysia Civil Defence Force (MCDF)*

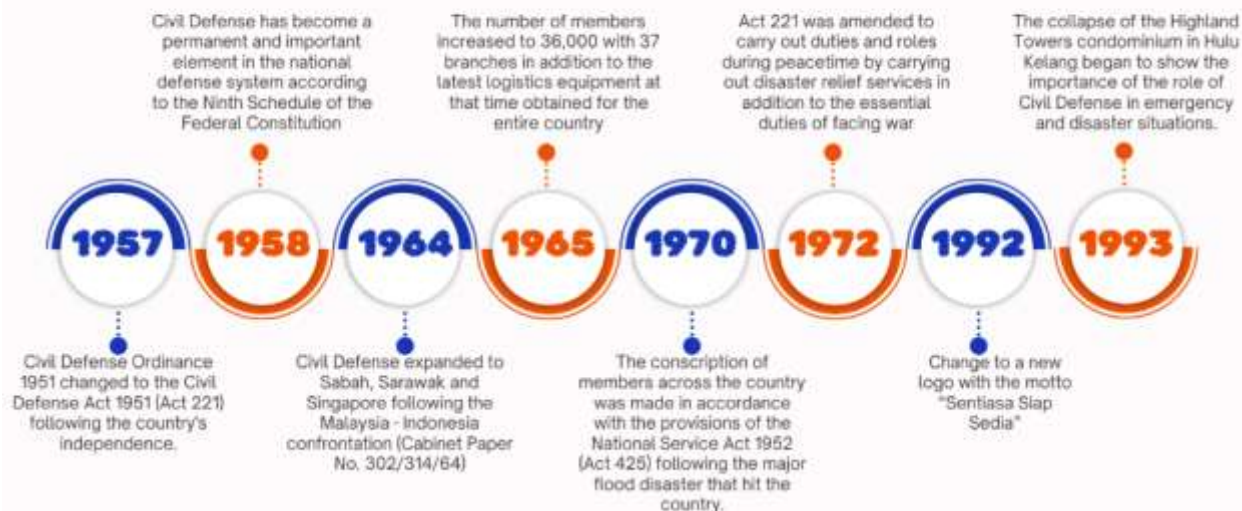
Vision: Becoming a Competent Civil Defense in Public Preparedness, Public Protection and Disaster Management

Mission: Strengthening Public Preparedness for National Security and Prosperity

PRE-INDEPENDENCE



POST-INDEPENDENCE



General Roles in CRISIS, DISASTERS, AND EMERGENCIES

Any measures and actions taken, whether before, during, or after an emergency, disaster, or crisis, including making sure the local population is prepared to face them.

MCDF LEGAL PROVISIONS

- **Before**

1. To instruct the civilian population regarding civil defence and to equip them for the purposes of such defence
2. To train the following persons for civil defence purposes (i) Civil Defence Force (ii) Police Force (iii) Fire Officer (iv) Statutory Body
3. To provide advice to the minister on matters relating to civil defence
4. To identify hazards and risks that the Chief Commissioner considers are of national significance
5. To train and equip the civilian population to cope and assist with any civil defence purposes
6. To inform and advise the civilian population relating to civil defence
7. To provide, maintain, control and operate prescribed public warning devices

- **During**

1. To requisition, purchase and hire land, buildings, materials, property and goods required for Civil Defence purposes
2. To rescue and transfer endangered persons to areas of safety
3. To set up emergency and first-aid posts and provide first-aid to casualties and to transfer the casualties to hospitals or areas of safety
4. To assist relevant public authorities and other agencies to provide for the relief of distress and for welfare generally, including the accommodation of the homeless and the conserving and supplying of food, fuel, clothing, first-aid and medical supplies and other necessities
5. To assist relevant public authorities to undertake measures for the disposal of the dead in the event of emergency
6. To control and coordinate lighting and the distribution of clean water and other essential supplies

7. To take lawful measures in order to protect life and property in case of fire by providing auxiliary fire services

- **After**

1. To assist relevant public authorities to carry out clean-up works, clear streets, road and other public places and remove and dispose of dangerous structures and materials
2. To assist relevant public authorities to carry out repairs to essential utilities and government buildings in the event of emergency

- **Continuously**

1. To carry out disaster management
2. To perform humanitarian services
3. To manage all shelters including air-raid shelters and temporary shelters in the event of emergency
4. To provide and maintain emergency ambulance services
5. To execute such other duties as may be imposed on it by this Act or any other written law

- **Coordination in Crisis**



THE DISASTER AND INCIDENT IN MALAYSIA

- 1968: Building Collapse in Jalan Raja Laut, Kuala Lumpur

- 1991: Fireworks Factory Explosion (Bright Sparklers) in Sungai Buloh, Selangor
- 1993: Highland Towers Collapse in Hulu Kelang, Selangor
- 2004: Tsunami in Penang, Kedah, Perak, Selangor
- 2015: Earthquake in Kundasang, Sabah
- 2015: Haze Crisis in Southeast Asia
- 2017: Rabies Outbreak in Sarawak
- 2019: Measles Outbreak in Kuala Koh, Kelantan

RELATED FLOODS, LANDSLIDES, AND NORTHEAST MONSOON SEASON

- 2008: Landslide in Bukit Antarabangsa, Kuala Lumpur
- 2014: Flood (Yellow Flood) in Kelantan, Terengganu, Johor, and Perak
- 2017: Landslide in Tanjung Bungah, Penang
- 2018: Landslide in Bukit Kukus, Penang
- 2019: Chemical Spill in Hulu Langat, Selangor
- 2019: Chemical Waste Pollution in Sungai Kim Kim, Pasir Gudang, Johor

NATIONAL DISASTER MANAGEMENT MECHANISM

NADMA Directive No. 1: Policy and Mechanism National Disaster Management

It replaces National Security Council Directive (MKN) No.20. The role of the Chairman of the Disaster Management Committee and the Commander and stakeholder agencies are clearly stated. It serves as a guide to all agencies to manage a disaster more efficiently and effectively.

Maritime Disaster

- A maritime accident or emergency, lead and handled by Malaysian Maritime Enforcement Agency (MMEA)
- Oil spill or accident, lead and handled by Department of Environment (DOE)

Chemical, Biological, Radiological, Nuclear, & Explosive (CBRNE) Disasters

- Lead and handled by Fire and Rescue Department of Malaysia (JBPM)

Haze Disaster

- Lead and handled by Department of Environment (DOE)

Pandemic, Epidemic, or Zoonotic Disaster

- Lead and handled by Ministry of Health (MOH) Malaysia

Aviation & space-related disasters

- An air accident or emergency, Lead and handled Civil Aviation Authority of Malaysia (CAAM)
- A space disaster Regulated under the Malaysian Space Agency Act 2022 (Act 834) through the Ministry of Science, Technology, and Innovation

DISASTER MANAGEMENT IN MALAYSIA

- Implemented through a Committee System
- Managed at the District, State, and Federal levels
- Emphasizes and prioritizes coordination of roles and integrated mobilization of agency resources
- Coordinated through specific committees established under Directive NADMA No. 1

The Disaster Management Committees (DMC) at all levels to be actively engage to regularly review the implementation status of the short, medium and long-term action plans, strategies and other measures to prevent new disaster risk, reduce existing disaster risk and manage residual risk contributing to the strengthening of resilience and reduction of disaster losses.

The Disaster Management Committees (DMC) at all levels including states and districts to be immediately activated to boost preparedness in the face of any disaster.



Training for Communities

The aims of training are to make the Malaysia skilled in terms of rescue and alert to the disasters faced in Malaysia. This training will provide the knowledge to the community how to respond to help themselves and others in emergency and dangerous situations. In class, the team will explain about emergency rescue, CPR, emergency treatment and fighting small fires. Government agencies, statutory bodies, private companies, industry/factory and community Non-

Governmental Organizations (NGOs), political organizations and residents' associations or community are welcome to join the class.

COMMUNITY'S AWARENESS IN DISASTER RISK

Increasing public awareness about disaster preparedness is very important. MCDF will collaborate with non-governmental organizations and community leaders to provide understanding and training to communities to deal with disasters.

Community's role in disaster risk reduction (DRR)

GOVERNMENT has start to provide training for would-be (newly) volunteer to improve the quality, help maintain the hygiene and living conditions at evacuation centres especially among the local communities, NGOs

JPKK (Village Development and Safety Committee) is a Community-based organization appointed by the government consist of village head as chairman, secretary and 11 members who work with the organizations voluntarily.

Community-based disaster reduction management (CBDRM) training

This activity helps the community and related parties to identify the physical environment as well as the activities carried out according to different times.

- Identify the danger zone
- Evacuation area for village residents
- Local resources
- Critical infrastructure
- Safe areas that can be used during emergencies (disasters)

- A safe path for the smoothness of communication systems during emergencies (disasters)



COMMUNITY'S AWARENESS IN DISASTER RISK

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➤ ***Watchara Amasiri, Department of Electrical and Computer Engineering, Thammasat University***

Question: How can we make the smart city innovation inclusive for all sectors? Can we integrate the smart city innovation into the government plan? As for the limited resources in some places as the lack of laptops or internet, we have to do it manually.

Answer: All systems can be installed for monitoring such as air pollution and flooding. We consider everybody equal. So, we provide all with equal access. For example, when calling the operator after the disaster, we can use AI assistance in the operation. The AI will analyze the level of emergency and give some aid. We can use the AI system to solve the problem. We should analyze the data in order to improve AI to handle the problem well. When we have GIS and satellite information, we can obtain some information and disseminate online for people to understand and keep pace with the incident in a timely manner. With the mixed-method, the knowledge and model can be shared both offline and online platforms. The government and city should communicate about the use of technology. It can be advantageous and reduce the redundancy.

----- *Afternoon Session* -----

Session 2: Climate Change

➤ ***Mr. MUKOYAMA Kimihito, Director for Planning for Small Rivers, River Division, Bureau of Construction, Tokyo Metropolitan Government***

River Projects for Climate Change Adaption in Tokyo

Overview of Tokyo's Flood Management Strategies

1. Flood Control

Characteristics of Tokyo's Rivers



Tokyo over 100 years ago



Tokyo in recent years



Tokyo receives an average annual rainfall of 1,598 mm, which is significantly higher than the global average of 1,171 mm. Given this relatively high precipitation, the city faces considerable challenges related to flood control, particularly in small- and medium-sized rivers as well as in lowland river areas that are susceptible to storm surges.

The rivers in Tokyo exhibit unique characteristics. Rainwater naturally permeates into the ground; however, excessive rainfall can lead to river swelling, causing flood disasters and resulting in flood damage. To mitigate these risks, the Tokyo Metropolitan Government has implemented a range of structural measures to improve river channels. These include river widening, dredging, and reinforcement of riverbanks.

Apart from channel improvements, significant efforts have been made in the development of regulating reservoirs and diversion channels to manage excess water during heavy rainfall events. At present, 2.6 million cubic meters of regulating reservoir capacity has been completed, with an additional 1.0 million cubic meters currently under construction. Notable examples of such infrastructure include the Zenpukuji River Regulating Reservoir and the Kanda River/Loop Road No. 7 Underground Regulating Reservoir. Furthermore, the Edogawa Bridge Diversion Channel serves as a key component in diverting floodwaters away from vulnerable areas, contributing to Tokyo's comprehensive approach to urban flood management.

Development of Regulating Reservoirs/Diversion Channels



Effects of Regulating Reservoirs and Climate Change Adaptation Measures in Tokyo

During the East Japan Typhoon of October 2019, the western part of Tokyo's 23 wards experienced approximately 300 mm of total rainfall. The regulating reservoirs played a critical role in reducing water levels by up to 1.5 meters, thereby significantly mitigating the risk of flooding in urban areas.

To further strengthen resilience against future typhoons and storm surges, Tokyo is actively enhancing its storm surge control facilities. The development goals of these countermeasures take into account the increasing severity of typhoons, which is attributed to climate change. Key contributing factors include the rise in sea levels projected to reach a maximum of approximately 0.6 meters as well as high tide deviation, wave run-up height, and the increasing strength of typhoons. As part of the adaptive strategy, the city is undertaking the heightening and seismic retrofitting of storm surge levees to ensure structural integrity and effectiveness under extreme weather conditions.

For inland flood management, particularly in response to prolonged or localized heavy rainfall, Tokyo is implementing climate change adaptation measures focused on advanced drainage infrastructure. One such method involves the construction of underground tunnel-type regulating reservoirs. These systems are expected to be highly effective in managing heavy rainfall events that last several hours. Furthermore, by connecting multiple regulating reservoirs into a network, the city enhances its ability to respond to localized heavy rain events with increased efficiency.

Future planning is based on ensemble climate forecast data, which includes simulations of sea surface temperature (SST) and typhoon behavior under projected climate conditions. For example, typhoon modeling, using data similar to that of the historical Ise-Wan Typhoon, accounts for minimum central pressure estimates derived from future climate scenarios. These models support evidence-based design and implementation of adaptive storm surge countermeasures to protect

Tokyo's coastal and urban areas from increasingly severe weather phenomena.

➤ ***Atty. Crisanto C. Saruca Jr. Mnsa, Metropolitan Manila Development Authority***

HOLISTIC APPROACH TO FLOOD MITIGATION AND CLIMATE CHANGE ADAPTATION IN METRO MANILA

Overview of Metro Manila

Metro Manila, officially known as the National Capital Region (NCR), is the political, economic, and cultural center of the Philippines. Comprising 17 local government units, 16 cities and 1 municipality, it stands as a highly urbanized region characterized by the rapid development of skyscrapers, expansive residential communities, and a continuous influx of individuals seeking economic advancement. As of the 2020 Census, Metro Manila recorded a population of 13,484,462, making it the third most populous urban area in the world. The region contributes significantly to the national economy, accounting for approximately 31.36% of the Philippines' Gross Domestic Product (GDP).

URBAN FLOOD RISK

- 104,000 of the 556,526 informal settler families live in environmentally hazardous zones (Ner et. al., 2023).
- The flood-prone areas in the CAMANAVA area are low-lying flat lands with an elevation of 0.5 to 1.5 meters below the mean sea level of Manila Bay.
- Leveling data from the National Mapping and Resource Information Authority (NAMRIA) reveal areas in Metro Manila that sank 0.68 meter to 1.34 meters in 30years (from 1979 to 2009).

Climate Change Impacts

RAINFALL DATA FROM TYPHOONGAEMI (CARINA)

Carina rainfall in Metro Manila within 24 hours is equivalent to 1.03 billion drums of water. Recent recorded highest rainfall intensity was 74mm/hr (Science Garden Rainfall Gauging Station), while the existing drainage system in Metro Manila is only designed for normal observed average rainfall intensities of 15-25 mm/hr.

OUTDATED AND INSUFFICIENT DRAINAGE INFRASTRUCTURE

- Most drainage mains here in Metro Manila were constructed during the 1970s.
- The total pumping capacity of 71 pumping station is only 1,021,622.21 cubic meters per hour.
- For an average 20 mm/hr rainfall intensity or less, flood subsides between 15 to 30 minutes. However, during Typhoon Carina, flooded areas took hours to subside due to the high water level of major waterways and impending high tide in Manila Bay.

IMPROPER WASTE MANAGEMENT PRACTICES

- Improper, indiscriminate, and illegally disposed garbage reach the waterways (i.e. canals, esteros, tributaries, rivers, etc.) and clog the drainage system.
- Difficulty in collection of garbage from waterways due to inaccessibility of some areas (i.e. encroachment, narrow alleys).
- Combined sewer and drainage system in Manila, where both wastewater and storm water flow through the same system, causes both solid and liquid waste directly discharging to waterways.

DEFORESTATION OF UPSTREAM WATERSHEDS

- The Sierra Madre mountain range serves as a natural barrier against typhoons and heavy rainfall. Deforestation in this region has diminished the forest's ability to absorb rainfall, increasing surface runoff that overwhelms drainage systems.
- The Upper Marikina River Basin Protected Landscape (UMRBPL), covering over 26,000 hectares, has experienced extensive deforestation due to illegal logging, quarrying, and unregulated development.

- The Department of Environment and Natural Resources (DENR) has identified over 500 illegal structures within the protected area, exacerbating the problem.

- Rapid urbanization in downstream areas such as Marikina, Cainta, and San Mateo has replaced permeable surfaces with concrete, hindering natural water absorption.

LACK OF GREEN SPACES AND INCREASE IN IMPERVIOUS SURFACES

- Coupled with a lack of open spaces to absorb the runoff, soil carried by this excess water enters waterways, further reducing their capacity and contributing to more frequent flooding in Metro Manila.

- Estimated Green Space in Metro Manila has significantly decreased from 12,152.79 has. (2014) to 4,588.99 has. (2022) (DENR)

THE METRO MANILA FLOOD MANAGEMENT PROJECT-PHASE 1: Holistic approach to flooding

2009: Typhoon Ondoy or Ketsana

2012: Development of the Master Plan for Flood Management in Metro Manila and Surrounding Areas

2016: Inception of the Metro Manila Flood Management Project

2018: Project Implementation

The MMFMP is a joint project between the MMDA and the Department of Public Works and Highways (DPWH), with technical and financial support from the World Bank Group and the Asian Infrastructure Investment Bank (AIIB).

Component 1: Modernizing Drainage Areas

- 26 out of the 71 Pumping Stations for Rehabilitation
- 4 New pumping stations to be constructed
- 246 Trash traps installed in waterways including mechanized ones

Component 2: Minimize Waste in Waterways

FACILITY-BASED PROJECTS: Focuses on waterway waste recovery and processing by implementing or enhancing solid waste management facilities at Pumping Stations established under Component 1.

COMMUNITY-BASED STRATEGIES: Aim to demonstrate grassroots programs with emphasis on community ownership. It is geared towards Social-Behavioral Change towards a more effective and sustainable solid implementation of solid waste management processes, plans and policies.

METROWIDE INITIATIVES: These interventions aim to influence both local government SWM planning and stakeholder behavior, serving as essential enablers for the adoption and long-term sustainability of waste reduction practices and technologies.

MMFMP: Community-Based Strategies

Community-Based Solid Waste Management Program

- Development of 5-Year Community SWM Plans
- Promotion of household and community composing
- CCTV Monitoring Systems for monitoring illegal disposal of waste and flood incidences
- Provision of waste management tools and equipment

Social Behavioral Change Approaches

- Results Based Incentives Program
- Mobile Materials Recovery Facility (MMRF) or the Trash to Cashback Program
- Neighborhood Upgrading Program
- Social Behavioral Change Campaigns and Propagandas in Communities

Component 3: Participatory Housing and Resettlement

Component 4: Project Management and Coordination

MMFMP: Metro Wide Initiatives

Long term enabling guides and tools

Development of the 25-Year Metro Manila Solid Waste Masterplan as a roadmap to harmonize the SWM system of Metro Manila,

strengthen community participation, and integrate diversion technologies into the localities. Meanwhile, the WACS study provides baseline data on the overall generated waste per locality.

This centralized database system collects data from the 17 LGUs, the MMDA Solid Waste Management Office and the Flood Control Management Office to generate real-time SWM and Flood Management data. The SWMIS is a useful tool for planning decisions and tracking progress of SWM efforts.

INTEGRATION OF NATURE-BASED SOLUTIONS (NBS)

The MMDA recognizes the need for urban green spaces and sustainable solutions to address flooding within the highly dense and impervious landscapes of Metro Manila; hence, a study on the suitable Nature Based Solutions shall be conducted to achieve the followings; Enhance Urban Resilience, Improve and Environmental Quality and urban ecosystems services, Support Inclusivity and promote awareness, and Pilot innovative solutions for CCA and DRR.

WHAT DO WE WANT TO ACHIEVE FURTHER?

ROAD TO ZERO WASTE

Integrate circular economy in the Metro Manila SWM system including all sectors even private institutions and developers

RESILIENT AND SELF SUSTAINED COMMUNITIES

HOLISTIC FLOOD MANAGEMENT SYSTEMS

Having structural and non-structural solutions working to address occurrences and impacts of flooding.

➤ ***Prof. KOMORI Daisuke from Tokyo / Green Goals Initiatives, Tohoku University.***

Variations of Risk Types

1. Urbanization (Human Activity) – Based on Mr. Takeya's References

This type of risk arises from rapid and often unplanned urban development, which can lead to increased exposure and vulnerability to hazards. It includes risks related to overcrowded living conditions, insufficient infrastructure, inadequate land-use planning, and environmental degradation. Mr. Takeya emphasizes how urban expansion without proper risk assessment can amplify disaster impacts, particularly in developing regions.

2. Climate Change (Natural Phenomena)

Risks under this category stem from long-term changes in climate patterns, such as rising temperatures, altered rainfall patterns, sea-level rise, and increased frequency of extreme weather events (e.g., floods, droughts, hurricanes). These phenomena, although natural in origin, are being accelerated by human-induced factors and significantly affect both ecosystems and human settlements.

3. Extensive Risk

Refers to the widespread and recurrent impact of low-to-moderate intensity hazards (e.g., seasonal floods, localized storms, landslides) that cumulatively cause significant damage over time. These risks are often underestimated and disproportionately affect rural and low-income populations due to limited preparedness and resilience.

4. Existing Risk

These are risks that currently pose a threat to communities or systems due to past decisions, existing vulnerabilities, and current exposure to hazards. Existing risks are often a result of historical

development patterns, outdated infrastructure, or previous land-use decisions that did not consider disaster resilience.

5. Future Risk

This category encompasses potential risks that may arise due to evolving environmental, technological, socio-economic, or political changes. It includes risks anticipated from climate change, population growth, new technological threats (e.g., cyber-attacks), or emerging disease outbreaks. Understanding and anticipating future risks is essential for proactive planning and sustainable development.

6. Intensive Risk

Intensive risk involves high-impact, low-frequency events that can result in significant loss of life, major infrastructure damage, and economic disruption. These include catastrophic disasters such as large-scale earthquakes, tsunamis, and major cyclones. Such risks often overwhelm local capacities and require national or international responses.

Emergency Management Framework

During normal conditions, the emergency management framework is organized to ensure preparedness through expert consultation and interdepartmental coordination. The Experts Consulting Committee plays a key advisory role and is composed of 24 specialists and scholars across six major sectors: typhoon and flood management, earthquake response, public safety, system operations, information management, and public health. The committee is chaired by an appointed leader and provides strategic guidance on disaster preparedness and mitigation.

In parallel, the Disaster Prevention and Protection Councils serve as the principal coordination body. The council is chaired by the Mayor,

with the Deputy Mayor acting as Vice-Convener and the Secretary-General serving as the Chief Executive Officer. All departments across the municipality are invited to participate in the council to ensure comprehensive planning and coordination for disaster prevention and response.

During emergencies, decision-making is centralized through the Emergency Operation Center (EOC). The EOC is commanded by the Mayor, with the Deputy Mayor serving as Vice Commander. Functional group leaders, typically governors or heads of relevant agencies and divisions, coordinate the implementation of emergency response measures to ensure effective and timely actions across all involved sectors.

Session 3: All Hazard Plan (CBRN)

➤ ***Mr. ONODERA Michinori, Commander, the 8th District HQ, 1st Assistant Chief, Tokyo Fire Department***

Tokyo Fire Department's CBRN Countermeasures

Fire Rescue Task Forces of Tokyo

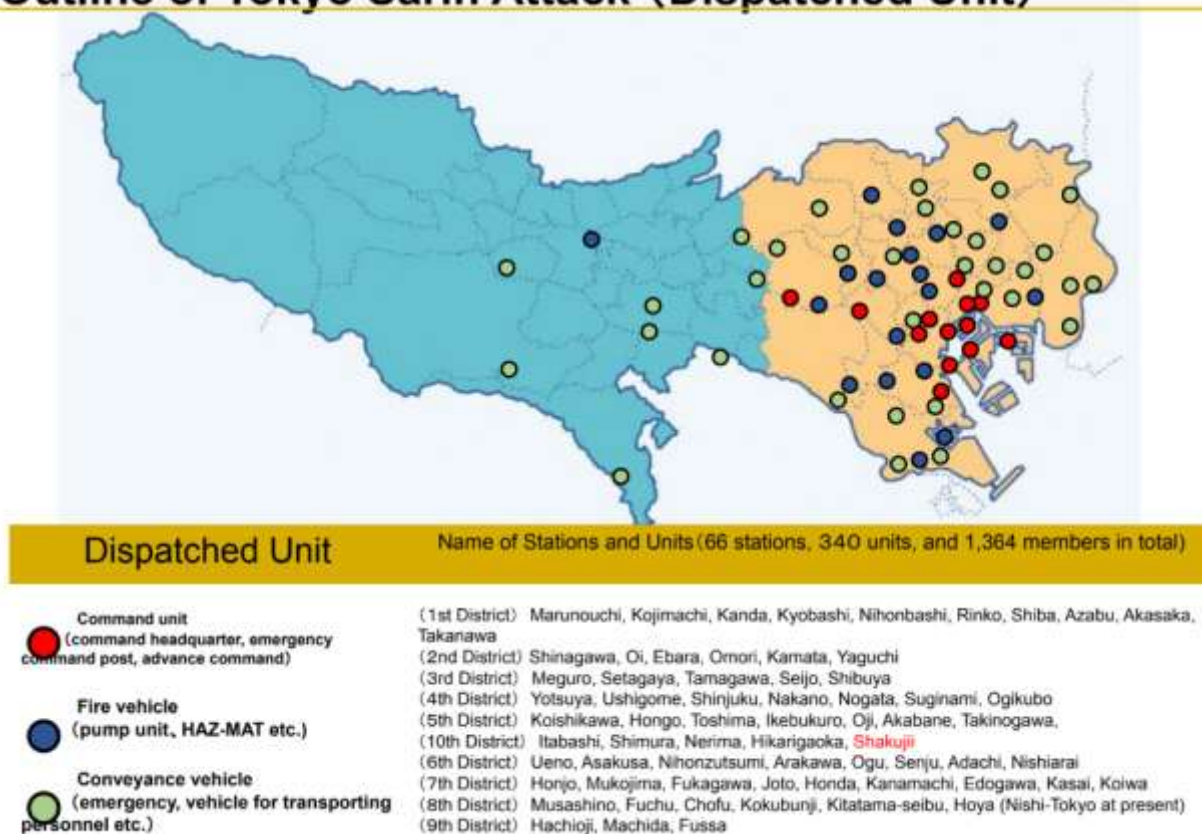
- Fire Department
- 6 Fire Rescue Task Forces
- Earthquake Response Counter – NBC Terrorism Squad

30 Years Since Tokyo Subway Sarin Attack (Mass Murder Incident by Using Poisonous Substance in Subway Stations on March 20, 1995)

An intentional disaster where sarin, a nerve gas, was released in subway cars and station premises of multiple subway lines, injuring a large number of passengers and station employees.

- [Crisis Management Conferences 2025, Bangkok Thailand]

Outline of Tokyo Sarin Attack (Dispatched Unit)



The Fire Department maintains robust emergency response capabilities, including six dedicated Fire Rescue Task Forces and an Earthquake Response Counter–NBC Terrorism Squad, which is trained to handle nuclear, biological, and chemical threats. These units are essential components in responding to large-scale and complex disasters.

One significant case that highlights the need for such specialized response units is the Tokyo Subway Sarin Attack, which occurred 30 years ago . This tragic incident, classified as an intentional mass-casualty event, involved the release of sarin gas, a lethal nerve agent, in multiple subway cars and station premises across several lines in Tokyo.

Outline of the Tokyo Subway Sarin Attack:

- Date and Time of Incident: Approximately 8:09 a.m., Monday, March 20, 1995

- Location: A total of 16 subway stations on lines such as the Tokyo Metro Hibiya Line, Marunouchi Line, and Chiyoda Line
- Casualties: 14 fatalities and over 5,800 injuries, including 135 injured firefighters
- Emergency Response: A total of 692 rescue personnel were deployed, including four specialists assigned to on-site handling
- Transportation of Victims:
 - Ambulance Transport: 463 individuals transported using ambulances and spare units
 - Additional Support Vehicles: 225 individuals transported using publicity vehicles, personnel carriers, and pumping vehicles

This incident underscored the critical need for preparedness against unconventional threats and reinforced the importance of continuous training, inter-agency coordination, and investment in specialized emergency response capabilities.

Issues reviewed in working group on firefighting operation at that time

Due to insufficient zoning and decontamination, contamination was spread, having resulted in causing a large number of casualties (including firefighters.)

Secondary contamination was not estimated.

On the other hand, it was also judged that there were few deaths due to quick transportation of injured persons to medical institutions.

[Subsequent measures] Revision of the standards for operation (specification of prevention of damage spread and measures for decontamination, etc.)

Issues reviewed in working group on firefighting operation at that time

There were no means to detect sarin. Equipment and materials owned by chemical mobile squad then (excerpt). Detector Tube, Gas Analyzer, Gas Chromatograph. As there was no data on sarin, having detected as “acetonitrile”.

**Transition in strengthening capabilities for CBRN disaster response
Revision of Standards for Firefighting Operation etc. (Standard for
Firefighting Operation etc. of Fires Concerning Poisonous and
Deleterious Substances etc.)**

- Change of the name to “Standard for Firefighting Operation etc. of Fires Concerning Poisonous and Deleterious Substances etc. ”

- Clarifying guideline for establishment of danger zones etc. and control on operation (zoning)

- Specifying guideline for emergency measures for disasters caused by poisonous and deleterious substances and guideline for evacuation guide of residents.

- Adding the substances specified in Act on Prevention of Bodily Harm by Sarin and Similar Substances to the targets of firefighting operation.

- Setting “Preventing spread of damage, and securing safety of residents and members etc.” as a priority item for firefighting operation.

- Constantly reviewing danger zones and prescribing their expansion or reduction as required.

- Prescribing decontamination of the members who operated in danger zones and equipment and materials used there.

- Specifying avoidance of direct contact with clothes etc. of persons required rescue and prevention of secondary contamination.

- Specifying the guideline for decontamination measures, such as locations of decontamination and decontamination by water etc.

- It was specified that while rescue of human lives shall be conducted in line with emergency measures against poisonous and deleterious substances, rescue of human lives shall be prioritized.

- Adding intentional disaster to the targets of firefighting operation.

- Having specified “prioritizing search and rescue of human lives” as a priority item for firefighting operation

- Starting operation of advisor system for support at the time of NBC disasters

Disaster that is Likely to Occur in the Future

- Unstable World Situations
- Outbreak of Wars across the World
- Nuclear/Missile Development
- Increase of Storage/Handling Volume of Hydrogen and Ammonia for the Purpose of Decarbonized Society



➤ Mr. Chen Guo-Zhong, Deputy Commissioner, New Taipei City Fire Department

The Results of Using VR to Train Disaster Scene Commanders in New Taipei City

New Taipei City has a dense population, with diverse environments and disaster types. It comprises 29 administrative districts and has the largest population in Taiwan, totaling 4.04 million residents.

- In 2024, New Taipei City recorded approximately 1,600 fire incidents, the highest in Taiwan.
- Firefighting in New Taipei City faces the nation's toughest challenges, and with 36 firefighter deaths across Taiwan in the past decade, strengthening command capabilities is a critical priority.



VR Application

- VR training allows for repeated practice at low cost, helping accumulate experience through frequent simulations.
- It fits New Taipei City's environment well—most frequently used scenarios including warehouses, residential apartments, and sheet-metal houses. The system supports elements like day-night transitions.
- Unified command tools and symbols across all levels improve communication and coordination during disaster response.
- The “Intelligent Incident Command Assistant System” integrates rescue data digitally and visually to enhance deployment and information efficiency.



➤ **Prof. NAGAMI Kozo from Tokyo / Green Goals Initiatives, Tohoku University.**

How can you deal with the unexpected disaster in the future?

Based on the training, we developed the rules and teaching ways to warn people at the time of disasters. The trainees are taught some skills for surviving. The practice scenarios are designed in large scale. Some case studies are applied for planning and designing. The parameters are observed and examined in order to obtain some knowledge.

We can develop hazard plan by learning from the history. The hazard plan can be learned mainly from training.

Session 4: Coordination in Crisis

➤ **Mr. OMI Ryosuke, Director for Strategy and Coordination Crisis Management Division, Bureau of General Affairs, Tokyo Metropolitan Government**

Tokyo Metropolitan Government's Disaster Countermeasures
Measures Aiming for the Safest Capital : Tokyo

Total population: 14,034,861 persons

Total areas: 2,194.03K m²

- **Population Density**

Population of Tokyo is approximately 14,000,000, approximately 70% of which concentrates in the ward areas.

- In the metropolitan area, there are approximately 37,000,000 persons, which accounts for approximately 30% of the nationwide population and constitutes the world largest major metropolitan area.

- Population of daytime when people inflow from other areas is approximately 16,000,000, the density becomes more evident in ward areas.

- Population density in the ward exceeds 15,000 persons, which is the densest in Japan (ranking around 20th in the world)

- **High-Low Mixed City**

Tokyo combines advanced urban functions with traditional townscape

Tokyo combines advanced urban functions with traditional townscape

The Phenomenon of High

- By utilizing urban space **three dimensionally with high density**, urban functions will be made **more density and more complicated**

➔ High-rise building, transportation infrastructure, underground regulating reservoir etc.

- **High-rise building** in Tokyo has increased **by 40%** in this past decade ➔ **Concentrated in ward areas** (approximately 95%)

- Total traffic of fixed **broadband internet** subscriber becomes **approximately 16 times** in this past decade (throughout Japan)

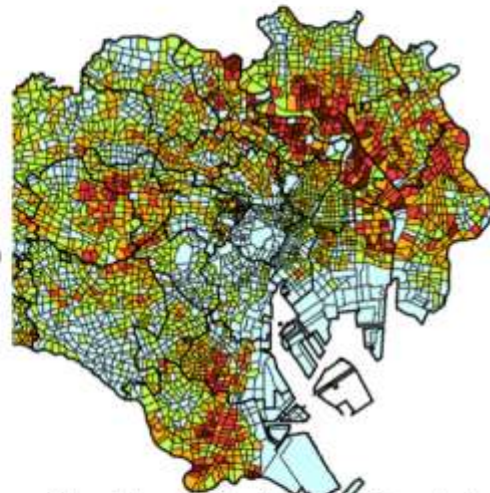
➔ **Data centers** are located in the suburbs of Tokyo (60% of server room areas throughout Japan is located in Kanto Area (2018))

The Phenomenon of Low

- There are still approximately 8600ha of **densely built wooden houses areas** in Tokyo ➔ serious damage of building collapse and fire

- Due to inland earthquake, **back roads** as the last mile of transportation routes would be blocked mainly in densely built wooden house areas.

➔ 14.0% of the ward areas have high rate of blockade (15% or more)



Tokyo Hazard Map (collapse, fire, etc.)

Not only is the improvement of low-rise houses important, but also addressing the risks associated with high-rise buildings, especially considering the occurrence of disasters, is essential.

▪ The Phenomenon of High

By utilizing urban space three dimensionally with high density, urban functions will be made more density and more complicated High-rise building, transportation infrastructure, underground regulating reservoir etc.

High-rise building in Tokyo has increased by 40% in this past decade, concentrated in ward areas (approximately 95%). Total traffic of fixed broadband internet subscriber becomes approximately 16 times in this past decade (throughout Japan). Data centers are located in the suburbs of Tokyo (60% of server room areas throughout Japan is located in Kanto Area (2018))

▪ The Phenomenon of Low

There are still approximately 8,600ha of densely built wooden house areas in Tokyo, serious damage of building collapse and fire. Due to inland earthquake, back roads as the last mile of transportation

routes would be blocked mainly in densely built wooden house areas. 14.0% of the ward areas have high rate of blockade (15% or more). Not only is the improvement of low-rise houses important, but also addressing the risks associated with high-rise buildings, especially considering the occurrence of disasters, is essential.

Changes in the Social Environment Surrounding Tokyo

The Social environment, including demographic structure, has dramatically changed in this past decade.

- Increase of aging population
- Disaster preparedness actions at home and disaster prepared activities in local communities are in deceleration trend.
- Due to spread of teleworking, it is expected that working generation would be retained locally.
- Along with increase in the number of the residents living in the apartments, the one of the apartments with high earthquake resistance available for home evacuation has been increasing accordingly.
- Increase in the number of foreign tourists visiting Japan

New disaster prevention measures are required to address the drastic changes in residency forms and lifestyles of Tokyo citizens.

Damage Assessment of a Tokyo Metropolitan Earthquake

Southern Tokyo Inland Earthquake: Earthquake that is assumed to cause the largest-scale damages in Tokyo. Approximately 60% or more of the ward areas are included in the areas of seismic intensity of 6 or more.

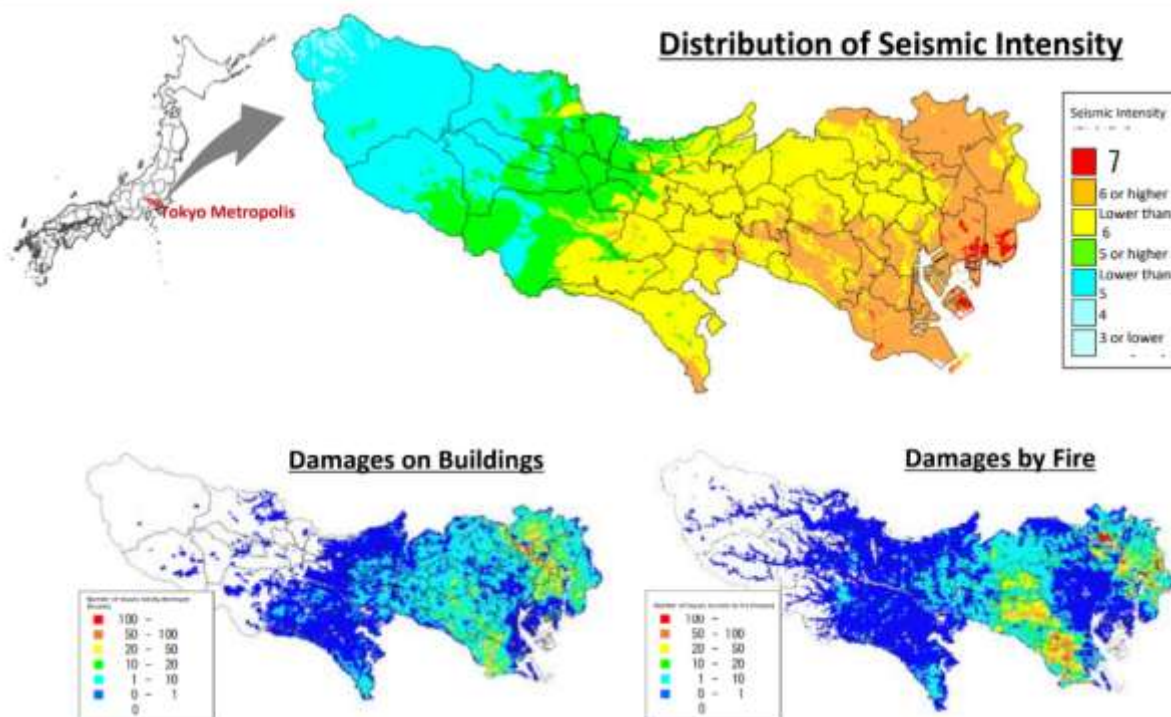
Efforts to Establish and Implement Disaster Mitigation Measures

For systematic advancement of disaster reduction countermeasures, specifying the goals for disaster prevention in the TMG Plan for Local Disaster Preparedness. By FY2030, human/material damages due to Tokyo Inland Earthquake etc. will be reduced approximately by half.

Promotion of Earthquake Resistance/Fireproofing

02 Damage Assessment of a Tokyo Metropolitan Earthquake 東京都

Southern Tokyo Inland Earthquake : Earthquake that is assumed to cause the largest-scale damages in Tokyo ➡ Approximately 60% or more of the ward areas are included in the areas of seismic intensity of 6 or more



- Approximately eliminating the residences with insufficient earthquake resistance based on the old seismic code (FY2025)
- Reducing wooden housing with insufficient earthquake based on the new seismic code by half (FY2030).
 - For promotion of earthquake resistance of wooden houses based on the new seismic code built from 1981 to 2000, having created subsidy system for construction costs etc. through municipalities in FY2023.
 - Enhancement of advisor system by qualified architects etc. In accordance with earthquake resistance, providing information and improving disaster prevention properties and environmental properties, and comfort.
- Fireproofing

- Achieving 70% or more of fireproofing areas at all development areas (FY2030)

Strengthening support system in prioritized development areas

- Fireproofing special ward system
- Adding subsidy for expenses for construction work (strengthening of system)
- Development areas other than prioritized development areas
- For costs for elimination and rebuilding, subsidizing costs for design and management

◆Progress of earthquake resistance/fireproofing in this decade

- Making residences earthquake resistant: 81.2% to 92.0%
- Rate of fireproofing areas (development areas): 58.4% to 64.0%

Promotion of Underground Power Lines

Tokyo Municipal Road

- Expanding the roads from inside of the center core area whose development is almost completed to inside of Ring Road No.7
- Focusing on development of primary emergency transportation routes that connect the main buildings of administrative organizations and disaster center hospitals, major ports, and airports etc.

Municipal Roads

- In addition to center core areas and major stations and periphery of main sightseeing spots etc., providing financial support and technological support targeted at” lines contributing to disaster prevention”.

Earthquake Preparedness Measures for Water Supply and Sewage Systems

■Water Supply System - Focusing on making joints of water-supply pipe earthquake-resistant in the areas whose damages by water

supply failure are estimated to be significant (The end of FY2023: approximately 51% completed)

- Strengthening backup features by duplexing water conveyance facilities and networking water pipes over wide areas etc.
- Developing water supply base with water reserving functions within a 2 km radius
- Securing establishment of system for restoration in advance by concluding agreement with industry groups in Tokyo etc.

■Sewage System

- Making joint parts with manhole earthquake resistant targeted at sewer pipes that receive wastewater from evacuation sites and disaster restoration bases etc. (The end of FY2023: approximately 85% completed)
- Suppression measures for up floating of manhole targeted at emergency transportation routes of the areas with high risk of liquefaction (The end of FY2023: approximately 85% completed)
- Securing the system on mutual support between administrations and emergency recovery with industry groups etc.

Earthquake Preparedness for Elevators

- There are approximately 166,000 elevators that exist in the damage estimate by TMG, among which approximately 22,000 ones are likely to lead to trapping.
- Disseminating and raising awareness of necessity of emergency operation devices upon earthquake etc. for building owners etc.

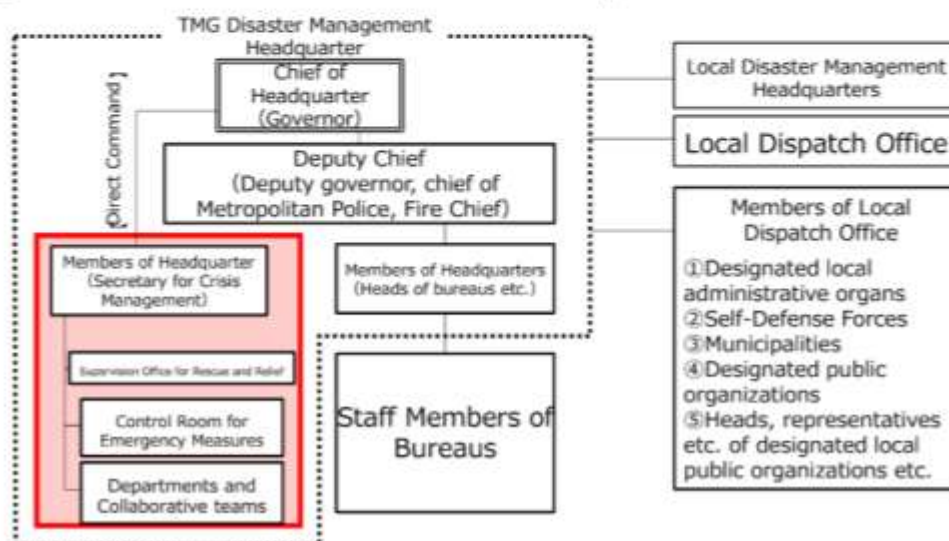
- Collecting information on trapping etc. and establishing rescue system in collaboration with Japan Elevator Association etc.
- Supporting establishment of nationwide support system and strengthening prompt recovery system

Tokyo Metropolitan Government's Disaster Response Framework

04 Tokyo Metropolitan Government's Disaster Response Framework

- ✓ Tokyo Metropolitan Government appoints approximately over 300 staff member and has them reside near the Tokyo Metropolitan Government Office. Upon outbreak of a large-scale disaster, TMG calls them and implement initial response. In case of a large-scale disaster including Tokyo Inland Earthquake etc., the staff members of tens of thousands respond to such disaster finally.

«Organization Chart for TMG's Disaster Response»



Tokyo Metropolitan Government appoints approximately over 300 staff members and has them reside near the Tokyo Metropolitan Government Office. Upon outbreak of a large-scale disaster, TMG calls them and implement initial response. In case of a largescale disaster including Tokyo Inland Earthquake etc., the staff members of tens of thousands respond to such disaster finally.

Disaster Management Headquarter Office

- Two hours after outbreak of disaster, the Governor, Deputy Director General for Crisis Management and heads of bureaus etc. held conference for disaster management headquarter, where information on damages is shared and the policies for disaster response by TMG is determined.

Command Information Office

- The officials of TMG and liaison officers of relevant organizations collect information and share information, and implement coordination between organizations and bureaus on rescue and relief operation and emergency measures etc.

➤ ***Mr. Png Yan Da, Head of Operations, 4th SCDF Division Singapore Civil Defence Force***

Singapore Civil Defence Force (SCDF)

Mission: To protect and save lives and property for a safe and secure

Vision: A world-leading lifesaving force through people innovation & partnership for an emergency ready nation

Core Values: We take pride in saving lives and property. We care for our people and those we serve.



Overseas Crisis Response

SCDF is the Singapore's focal point for disaster management and Humanitarian Assistance and Disaster Relief (HADR) related platforms

- **United Nations Disaster Assessment and Coordination (UNDAC)**

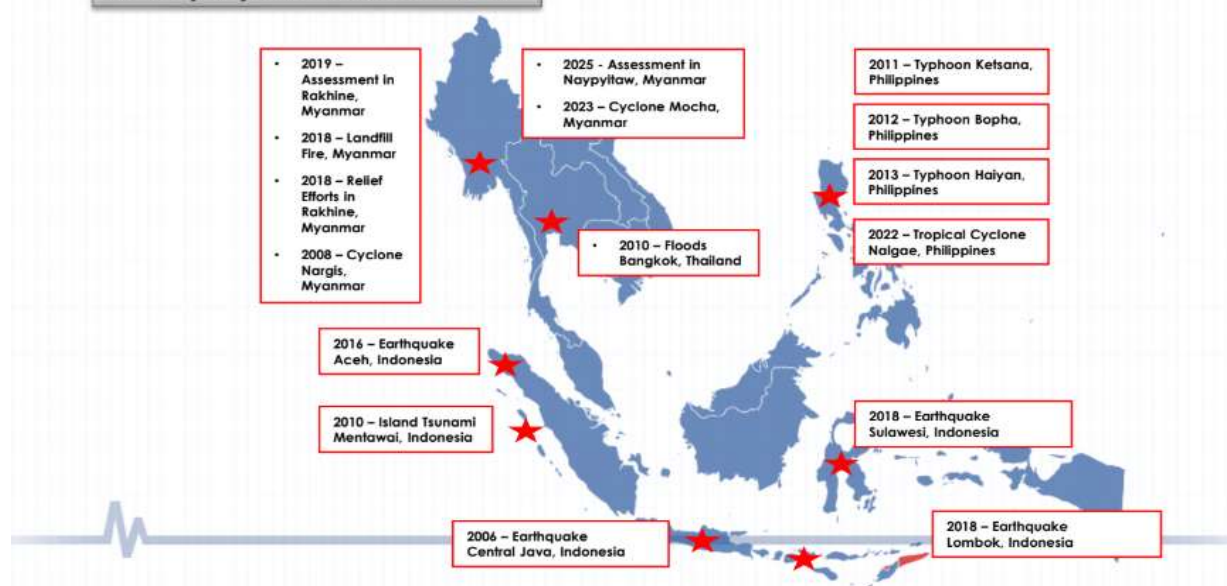
- 1) Carry out rapid assessment of needs and priorities
- 2) Support the national authorities and the UN Resident Coordinator to coordinate international relief on-site

- **ASEAN - Emergency Response and Assessment Team (ASEAN ERAT)**

- 1) Conduct assessment, coordinate and conduct search and rescue operations
- 2) Deployment to disasters in the ASEAN region

UNDAC and ASEAN-ERAT Deployments

16 Deployments as of 2025



Coordination Efforts for OLH Deployment to Myanmar (2025) Before Deployment

- Activation of OLH contingent (available on 24 hours basis, 365 days).
- Swift coordination with multiple internal and external stakeholders (e.g. Ministry of Foreign Affairs, logistic companies, AHA Centre; etc).
- Worked with the Singapore Embassy/Mission in Yangon for expedited clearance of personnel and equipment, and securing SIM cards, accommodation and other necessities.
- Internal arrangements of meals, transport to the airport and charter flight to Yangon International Airport.

During Deployment

- ERAT and UNDAC officers linked up with the AHA In Country Liaison Team (ICLT) at Singapore Airport beforehand, and moved together within Naypyidaw.

- Worked with the Myanmar's disaster response authorities and provided USAR and medical support to multiple sites and at the field medical post.
- Met with the AHA staff, local authorities, international USAR teams regularly at scene to update on situation.
- Chartered additional freight cargo for communications equipment to improve connectivity.

Post Deployment

- Cleaning and replacement of equipment (e.g. USAR suit and boots, satellite equipment) to ensure continual operational readiness
- Regular checks on psychological and physical well-being of deployed personnel
- After action review to update processes based on best practices and sharing

Operations Civil Emergency

- SCDF is the Crisis Manager for civil disasters in Singapore
- Operations Civil Emergency is the response plan to manage civil disasters
- Outlines the roles and tasks of SCDF and Related Agencies (RAs)
- Close working relationship with RAs through joint-response plans, meetings and exercises

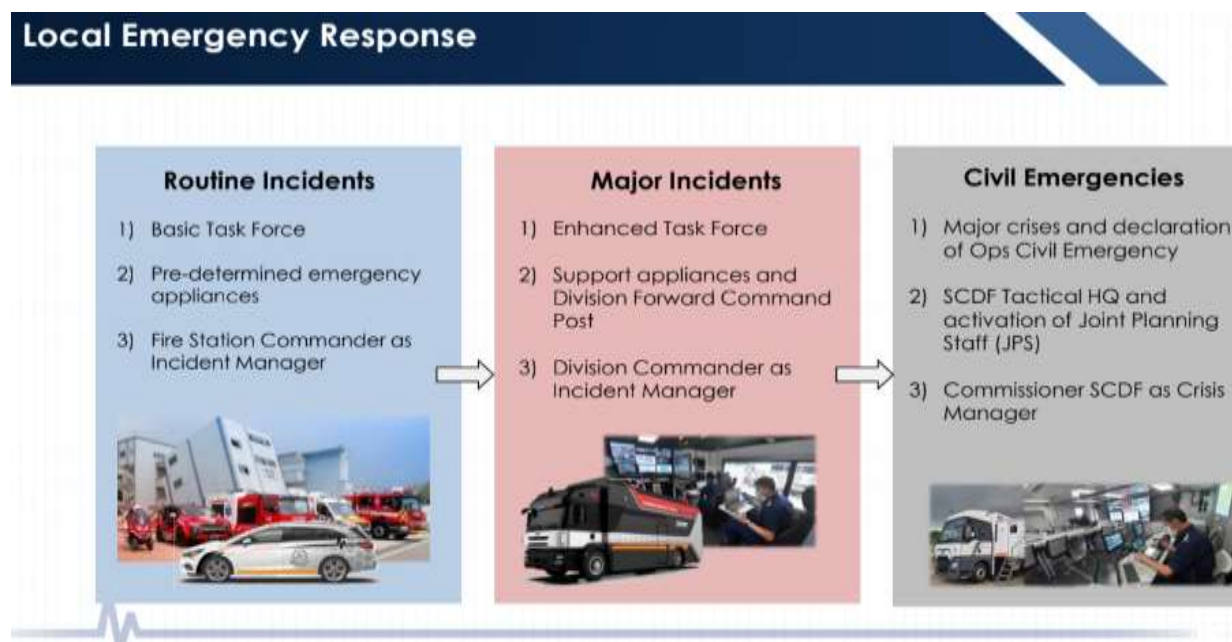
Pulau Bukom Fire 2011

- SCDF responded to a fire on 28 Sep 2011, that broke out at an oil refinery on Pulau Bukom, an offshore island located 5km away from Singapore.
- SCDF reached Pulau Bukom within 35mins with 100 firefighters and equipment.
- Ops CE was declared by Commissioner SCDF
- The fire involved a network of pumps, valves and pipelines carrying gasoline, kerosene and other refined oil products
- The entire operation lasted 34 hours.

Community Response and Preparedness

Call-to-Action for a Nation of Lifesavers

- About 70% of all Out-of-Hospital Cardiac Arrest (OHCA) cases in Singapore occurred at homes
- Save-A-Life initiative to enhance community first response and increase the survival rates of cardiac arrest victims in Singapore.
- Build a Nation of Lifesavers
- Building and maintaining the strong partnerships with internal and external international stakeholders
- Validate and review response plans through regular exercises
- Strengthens community resilience and emergency preparedness
- Leveraging on technology



➤ **Mr. Marulitua Sijabat, Executive Secretary, Provincial Disaster Management Agency, Jakarta Capital City Government**

Emergency Response Management in Jakarta

Ensuring Effective Crisis and Disaster Handling

Jakarta as a metropolitan city is vulnerable to various emergencies. There are 10 disaster threats in Jakarta. Effective emergency response management is critical to ensure public safety, reduce losses, and restore normalcy.

Jakarta has 10 disaster threats, including Flood, Urban Fire, Earthquake, Extreme Weather, Liquefaction, Tidal Waves and Abrasion, Epidemic & Disease Outbreaks, Drought, Technological Failure, and Tsunami.



DISASTER THREATS AND RISKS



Jakarta has 10 disaster threats, including:

1. Flood
2. Urban Fire
3. Earthquake
4. Extreme Weather
5. Liquefaction
6. Tidal Waves and Abrasion
7. Epidemic & Disease Outbreaks
8. Drought
9. Technological Failure
10. Tsunami

Source: Jakarta Disaster Risk Study 2022-2026

Priority		Risk		
		Low	Medium	High
Disaster Trends	Decrease		- Technological Failure - Drought	
	Constant	Tsunami	- Tidal Wave & Abrasion - Epidemic & Outbreak Disease	
	Increase	- Extreme Weather - Liquefaction	- Flood - Earthquake - Urban Fire	

KEY: ■ Prioritas Pertama ■ Prioritas Kedua ■ Prioritas Ketiga



STRENGTHENING DISASTER AWARENESS AND PREPAREDNESS ACROSS ALL SECTORS

Build a resilient Indonesia through inclusive disaster education and mitigation programs.

School

- Disaster Preparedness Curriculum (in collaboration with education authorities –
- Simulation Drills & School Safety Plans

Private Sector

- Workplace Evacuation & Risk Assessments
- Simulation Drills

Business & Industry

- Infrastructure Risk Mapping
- Simulation Drills

Government

- Inter-agency Emergency Response Coordination

- Capacity Building for Local Governments

The Disaster Risk Reduction Forum (FPRB) in Jakarta is a multi-stakeholder platform aimed at coordinating disaster risk reduction (DRR) efforts across sectors. It was established Media to facilitate communication, collaboration, and synergy among various actors involved in disaster management.

Key Roles of FPRB in Disaster Management

Coordination and Collaboration: FPRB brings together stakeholders from various sectors—local government, NGOs, universities, private companies, and community groups—to align disaster Media preparedness, response, and recovery strategies.

Policy Advocacy: Business FPRB plays an active role in influencing and shaping disaster-related policies in Jakarta. It ensures that the voices of local communities and marginalized groups are included in disaster planning and decision-making processes.

Community Capacity Building and Knowledge Sharing: Academia FPRB plays an active role in influencing and shaping disaster-related policies in Jakarta. It ensures that the voices of local communities and marginalized groups are included in disaster planning and decision-making processes.

Risk Assessment and Mapping: FPRB supports risk assessment initiatives and helps in identifying vulnerable areas. This information is crucial for planning early warning systems and disaster mitigation infrastructure.

Emergency Preparedness and Response Planning:

FPRB has contributed to a more coordinated and inclusive disaster management system in Jakarta. Its emphasis on community involvement and multi-sector collaboration has led to improved early warning systems, better risk communication, and more resilient urban planning.



STRENGTHENING DISASTER AWARENESS AND PREPAREDNESS ACROSS ALL SECTORS

**Build a resilient
Indonesia
through inclusive
disaster
education and
mitigation
programs.**



06

COMMUNITY-BASED COORDINATION

- Empowerment of Kelurahan (Sub-Districts) and RT/RW (neighborhoods) Units for first response
- Governor's Decree Number 1245 of 2020 concerning the Appointment of Lurah (Subdistrict Head) as Disaster Management Managers in Village Areas
- The Subdistrict Head plays an important role and becomes the commander in dealing with disasters in his area to ensure the safety of residents.



Empowerment of Kelurahan (Sub-Districts) and RT/RW (neighborhoods) Units for first response

COMMUNITY-BASED COORDINATION

Governor's Decree Number 1245 of 2020 concerning the Appointment of Lurah (Subdistrict Head) as Disaster Management Managers in Village Areas

The Subdistrict Head plays an important role and becomes the commander in dealing with disasters in his area to ensure the safety of residents.



[bpbddkijakarta](https://www.bpbddkijakarta.go.id)
bpbddkijakarta.go.id
 112 (only for emergencies)

CHALLENGES OF FLOOD MANAGEMENT

Post-disaster recovery management will become increasingly complex, especially in the implementation of rehabilitation and reconstruction activities which are based on the principle of building back better, safer and sustainable.

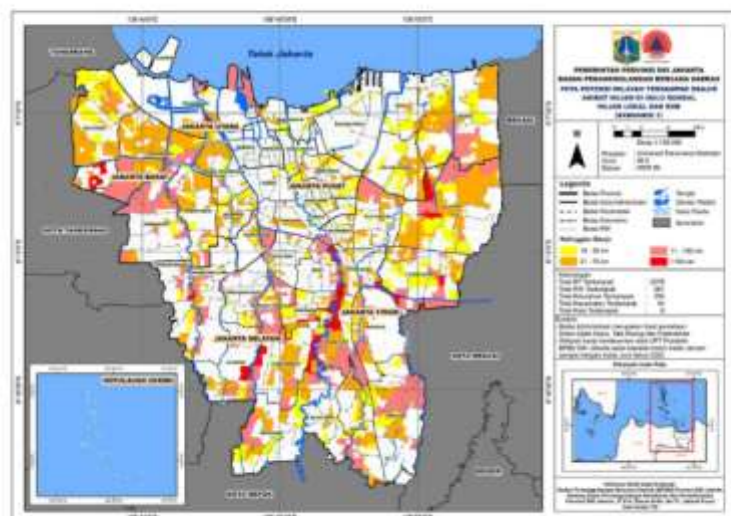
The importance of synergy and integrated collaboration because disaster management involves various stakeholders.

Disaster emergency management will be hampered by the large number of disaster events occurring at the same time and the large area affected by disasters, especially those related to hydrometeorological disasters.

Disaster events are becoming more difficult to predict, due to rapidly changing climate conditions. The increasing threat and number of disaster events is not directly proportional to the capacity of the management resources available.



FLOOD RISK AND SCENARIOS



Worst Case Scenario
(Flooding due to upstream, local and tidal seas)

Disaster Prediction

Very heavy (100-150 mm/day) to extreme (>150 mm/day) rainfall occurs for 1-2 days in the Jabodetabek area

Impact Prediction

Flooding will impact: 44 districts

205 sub-districts

- Number of people affected: 83.406 people
- Number of residents displaced: 72.250 people

20

City Mitigation: Comprehensive Flood Control Strategies

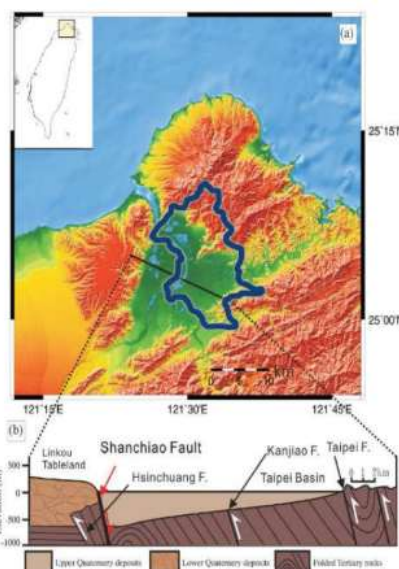
Effective urban flood control hinges on a multi-faceted approach, encapsulated by the strategy to “Catch, Hold, and Utilize” water. This framework integrates various structural mitigation efforts designed to manage water flow and prevent inundation within city limits.

A primary component of this strategy involves retaining water in upstream areas. This is achieved through the construction of reservoirs, which serve to store excess runoff. Additionally, the implementation of infiltration wells and vertical drainage systems facilitates the absorption of water into the ground, reducing surface flow. Furthermore, the development of green open spaces, conceptualized as “green and blue city parks,” provides natural areas for water retention and percolation.

Complementing these upstream and infiltration efforts is the building of infrastructure that adheres to masterplan designs for flood resilience. Key initiatives include river dredging to increase channel depth and widening river capacity to accommodate larger water volumes. The development and rehabilitation of polder systems are also crucial for managing water levels in low-lying areas. Finally, the construction of coastal protection embankments provides a vital barrier

➤ **Mr. Eric Huang from Taipei**

Taiwan is located at the intersection of plates, creating a mountainous geographical environment. Taipei City is located in the northern part of Taiwan, characterized by a basin-like topography. It is traversed by the Keelung River and Tamsui River, serving as the capital and political-economic center of the country.



Taiwan is located at the intersection of plates, creating a mountainous geographical environment.

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Coordination in Crisis In Taipei

Crisis Response Structure - TEOC Activation Levels

Normal Time

LEVEL 3: Supported by Fire department and Academic institute

During Emergency

LEVEL 2: Supported by 13-16 institutions and academic institute

LEVEL1: Supported by 31 institutions and academic institute

Mitigation and Adaptation

Comprehensive Disaster Operation Mechanism

The Taipei City Emergency Operations Center operates 24/7, monitoring earthquakes and water levels. During the typhoon and raining seasons, meteorological experts are stationed to analyze real-

time weather and rainfall intensity. The Emergency Management Information System manages disaster relief resources, ensuring ample emergency supplies. Abnormal conditions or disasters prompt public notifications through multiple channels.

Crisis Planning: Proactive Measures Before Impact

Effective crisis management necessitates comprehensive planning conducted *before* a crisis impacts. This proactive approach can be categorized into four key areas:

1. Government-Led Initiatives

Government bodies play a pivotal role in leading preparedness efforts. This involves a structured progression of exercises designed to test and refine response capabilities:

- **Workshops:** These serve as foundational sessions for stakeholders to understand roles, responsibilities, and preliminary strategies.
- **Table-top Exercises:** These simulated discussions allow participants to verbally walk through a crisis scenario, identifying potential gaps in plans and decision-making processes.
- **Functional and Full-Scale Exercises:** Progressing from theoretical to practical application, these exercises involve real-time simulation of crisis events, testing operational procedures, equipment, and inter-agency coordination in a more realistic environment.

2. Community Participation

Building resilient communities is fundamental to effective crisis response. This involves fostering active engagement and knowledge dissemination among the populace:

- **Building Resilient Communities:** This encompasses initiatives that empower local residents with the knowledge, skills, and resources to prepare for, respond to, and recover from disasters.
- **Educating Dissemination:** Broad and consistent communication of emergency information, including risks, warning systems, and

appropriate actions, is crucial to ensure public awareness and readiness.

3. Disaster Prevention Education

Targeted educational programs are essential for cultivating a culture of safety and preparedness, particularly among younger generations and the general public:

- **Fire Education Day:** Dedicated events focused on fire safety awareness, prevention techniques, and emergency response procedures.
- **Fire Summer Camp:** Immersive educational programs that provide hands-on training and knowledge about fire safety and general disaster preparedness in an engaging format.

4. Disaster Prevention in Business

The private sector also has a critical role in pre-crisis planning to ensure operational continuity and minimize disruption:

- **Continuity Plan:** Businesses are encouraged to develop comprehensive business continuity plans that outline procedures for maintaining essential operations during and after a crisis, including data backup, alternative work sites, and supply chain resilience.
- **Self-Protection Drill:** Regular drills conducted within businesses to train employees on emergency procedures, evacuation routes, and the use of safety equipment, ensuring they can effectively respond to internal and external threats.

Planning –Before the Crisis



- Workshop
- Table-top Exercises
- Functional and full-scale exercises



- Fire Education Day
- Fire Summer Camp

1. Government-Led



- Build Resilient Communities
- Educating Dissemination

3. Disaster prevention education



- Continuity Plan
- Self Protection Drill

2. Community participation

4. Disaster Prevention in business

Strategic Imperatives for Enhanced Disaster Resilience

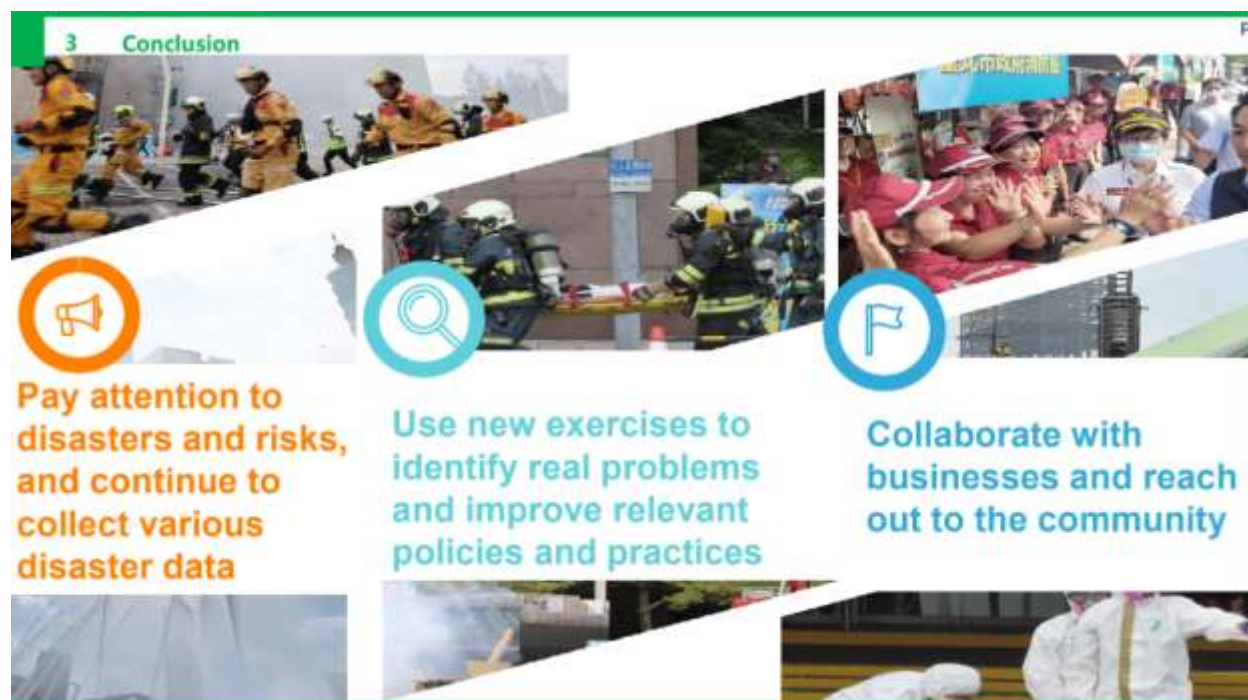
To effectively enhance disaster resilience, a multi-faceted approach focusing on continuous learning, practical application, and collaborative engagement is essential.

Firstly, it is imperative to maintain a vigilant focus on potential disasters and emerging risks, coupled with the continuous collection of comprehensive disaster-related data. This ongoing data acquisition is fundamental for understanding evolving threats, identifying vulnerabilities, and informing evidence-based policy development.

Secondly, the systematic use of novel exercises is crucial for identifying real-world problems and subsequently refining relevant policies and practices. These exercises, ranging from drills to full-scale simulations, provide invaluable insights into operational gaps, communication breakdowns, and areas requiring policy adjustment, thereby fostering a dynamic and responsive crisis management framework.

Finally, effective disaster resilience demands robust collaboration with businesses and proactive outreach to the broader community. Engaging the private sector leverages their resources and expertise,

while fostering community participation builds grassroots capacity, enhances public awareness, and ensures a more cohesive and resilient societal response to adverse events.



➤ ***Assoc. Prof. Prapatpong Upala (Ph.D.), Department of Urban and Regional Planning, King Mongkut's Institute of Technology Ladkrabang***

A "Crisis" is a time of intense difficulty, trouble, or danger. It refers to a critical situation or turning point that can lead to major changes - either for better or worse.

Types of Crisis: Natural Crisis, Human Made Crisis, Organizational Crisis, Technological Crisis, Economic/Financial Crisis, and Personal Crisis. Crisis Management involves identifying, assessing, understanding, coping, strategy, recover and procedures.

Flood Solutions

- **BEFORE**

- Check your emergency plans are up-to-date and ready.

- Check your insurance covers flood damage.
- Become familiar with roads and causeways that are likely to flood. These are usually identified with flood level markers. Plan alternative routes.
- Check out the City Plan Interactive Mapping Tool to see if your property is in the flood map area and download a Flood Search Report: cityofgoldcoast.com.au/floodmaps
-
- **DURING**
 - Keep your emergency plan with you.
 - Listen for warnings and communications including local radio and SMS updates.
 - Turn off water, power, and gas supplies.
 - Raise furniture, valuables and electrical items onto higher floors, beds, tables or into roof spaces.
 - Use hessian bags and sand for sandbagging and place at property entry points.
 - Put a sandbag inside toilets and on top of indoor drains to prevent sewage back flow.
 - Move vehicles, outdoor equipment, garbage, and chemicals to higher ground.
 - If you are willing and able, ensure the safety of any vulnerable people around you, such as children, the elderly, and people with special needs.
-
- **AFTER**
 - Listen for warnings and communications including local radio and SMS updates.
 - Do not walk or drive into remaining flood waters.
 - Flood waters may be contaminated and pose a health risk.
 - If you were evacuated, do not re-enter your home until it's declared safe to.

- Do not use gas or electrical appliances until they are safety checked.
- Do not eat food that has been in flood water.
- Check on your neighbors if it is safe to do so.
- If your electrical appliances are checked and are considered safe for use, boil tap water until water supplies are declared safe.
- If your house is seriously damaged, please contact the SES (132 500).

Earthquake Solutions

What you can do to stay safe

▪ BEFORE

- Check your emergency plans are up-to-date and ready.
- Make sure chairs and beds are not under hanging items such as ceiling fans, pot plants, paintings, and mirrors.
- Secure freestanding furniture, such as bookshelves and water heaters.
- Move fragile or heavy items and hazardous liquids, such as pesticides, cleaning fluids and paint, to the bottom shelf.
- Find safe places for you and your family to shelter in your home during an earthquake, such as under a sturdy table, desk, or other heavy furniture.

▪ DURING

- Keep your emergency plans with you.
- If you are indoors: drop to the ground, take cover by getting under a sturdy table or other piece of furniture, and hold on until the shaking stops.
- If there is not a table or desk near you, cover your face and head with your arms and crouch in an inside corner of the building.
- If you are using a wheelchair, lock and brake your wheelchair, cover your head and neck with a pillow, book, or whatever is available, and hold on.

- If you are outdoors during an earthquake, stay outdoors until the shaking stops, move away from buildings, streetlights, and utility wires.
-
- **AFTER**
- Return home only after local authorities tell you it is safe. Aftershocks may follow an earthquake. Do not assume that after one quake the danger is over.
- Do not re-enter your home until it is declared safe to.
- Do not use gas or electrical appliances until they are safety checked.
- If your electrical appliances are checked and are considered safe for use, boil tap water until water supplies are declared safe.
- If your house is seriously damaged, please contact the SES (132 500).

➤ ***Dr. Phaitoon Ngammuk, Deputy Director of the Bangkok Fire and Rescue Department, Bangkok Metropolitan Administration***

Special session: Crisis Management Challenges in Urban Cities and Metropolises

Thailand's Department of Disaster Prevention and Mitigation (DDPM) presented the national system under the Disaster Prevention and Mitigation Act. The system promotes collaboration across all levels and sectors and emphasizes risk reduction and sustainable recovery in line with global frameworks such as the SDGs, the Sendai Framework, and the New Urban Agenda.

The recent earthquake in Bangkok demonstrated the strength of our building codes. However, it also highlighted the challenges in human resources, coordination, and response mechanisms. Cooperation with

international teams and the private sector was essential. The ****SUPROMED project****, in collaboration with ASEAN, proposed the use of technology such as drones and IoT to enhance crisis management in large-scale disasters, especially where manpower is limited.

The education sector emphasized structural and behavioral modeling, while the need for early warning systems, public reporting apps, and preparation for an aging population was also highlighted. All sectors agreed that disaster resilience requires collaboration and both technological and social innovation.

Session 1: Urban disaster preparedness and innovation

Seoul showcased its urban flood response using underground systems, AI disaster management, and intelligent reporting. Malaysia emphasized community-based disaster risk reduction (CBDRM) and strong organizational structure. We were also joined by Chulalongkorn University's Sustainable Environment Research Institute, reinforcing the role of academia in regional resilience.

Session 2: Flood mitigation and climate change adaptation

Tokyo shared its flood control strategies, including regulating reservoirs and storm surge facilities. Metro Manila discussed its experience in managing urban growth and flood risks, emphasizing integrated planning and infrastructure innovation. Navamindradhiraj University also contributed to this discussion, focusing on resilience in climate-affected cities.

Session 3: Hazardous disaster response and training innovations

The Tokyo Fire Department reflected on lessons from the Tokyo Subway Sarin Attack and outlined their evolving CBRN response capabilities. The New Taipei City Fire Department presented their use of

****Virtual Reality (VR)**** for training disaster commanders, improving decision-making in high-pressure situations.

Session 4: Coordination in crisis

The Tokyo Metropolitan Government detailed their strategic preparedness and disaster response goals. Taipei City presented a structured crisis response mechanism and digital governance. Singapore shared its crisis management model emphasizing joint planning, community training, and overseas response. Jakarta presented its emergency response strategy, covering urban disaster threats, education-based preparedness, and flood management. We were pleased to have additional academic contributions from King Mongkut's Institute of Technology Ladkrabang and the National Institute for Emergency Medicine.

Throughout the day, knowledge, experiences, and innovative strategies have been shared to strengthen the preparedness for future crises. Whether through policy, technology, or collaboration, the insights gained today will support more resilient cities and systems.

➤ Annual Report and Announcement of the Next Host City

The Secretariat of the Network for Crisis Management (Tokyo Metropolitan Government) shared CMC Annual Report and announced the host city for CMC 2026 which is Seoul.

Framework of the Network for Crisis Management

Development of Human Resources: Drills & Training
 Sharing of Knowledge: Crisis Management Conference
 Capacity Building and Human Networking
 Exchanging Information: Emergency Hotline, Exchange information on experiences and expertise accumulated to date

Enhance the Crisis Management Capabilities of Participating Cities

(1) Comprehensive Joint Disaster Management Drill – Joint Training (Tokyo, 2024)

This training program featured a multinational collaboration involving representatives from Singapore, New Taipei City, Taipei City, and the National Fire Agency of the Ministry of the Interior, Taiwan, who participated as observers. The 2024 program, held in Tokyo, focused on enhancing interagency coordination and international cooperation in disaster response through simulated emergency scenarios and joint operational exercises.

(2) International Urban Search and Rescue Course (Singapore)

(3) Disaster Prevention Training Program (Taipei)

(4) Fire Rescue Techniques Training Course (Tokyo)

This program is structured in two stages to enhance the leadership and operational capabilities of fire and rescue personnel:

- **Stage 1: Leadership Training in Tokyo**
- **Date:** October 2024
- **Participants:** Delegation from Taipei

This initial phase focuses on strengthening command-level competencies through intensive classroom instruction, scenario-based simulations, and exchange of best practices with Japanese counterparts.

- **Stage 2: Follow-up Training in the Participant City**
- **Date:** February 2025
- **Location:** Taipei

This stage involves practical, on-site application of the knowledge and techniques acquired during Stage 1. Japanese experts provide field-

based coaching and assessment to support the continued development of local rescue teams.

Crisis Management Conference

1 st (2003) Tokyo	12 th (2014) Kuala Lumpur
2 nd (2004) Taipei	13 th (2015) Tokyo
3 rd (2005) Seoul	14 th (2016) Singapore
4 th (2006) Singapore	15 th (2017) Seoul
5 th (2007) Jakarta Taipei	16 th (2018) New
6 th (2008) Kuala Lumpur	17 th (2019) Manila
7 th (2009) Tokyo	18 th (2021) Taipei
8 th (2010) Taipei	19 th (2022) Delhi
9 th (2011) Seoul	20 th (2023) Tokyo
10 th (2012) Bangkok	21 st (2024) Jakarta
11 th (2013) Metro Manila	22nd (2025) Bangkok

In a significant announcement, the Secretariat revealed that Seoul has been selected to host the 2026 Crisis Management Conference. Kwon Hyuk-min, Head of Seoul's Fire and Disaster Department, expressed the city's commitment to advancing disaster response through innovative technology and citizen engagement.



----- Closing remarks -----

➤ ***Mr. Chadchart Sittipunt, Governor of Bangkok***

This collaboration in crisis management and the exchange of experiences shared today will serve as valuable assets in preparing for and responding to potential future crises. The recent earthquake and subsequent building collapse presented an unprecedented situation, posing significant challenges and offering critical lessons in crisis response. Through this experience, Thailand has recognized the importance of enhancing its crisis management capabilities. The integration of training, advanced technologies, particularly the use of drones, and shared expertise will play a crucial role in strengthening the nation's overall efficiency and effectiveness in managing emergencies.



Bangkok Governor **Chadchart Sittipunt** closed the conference with sobering reflections on the inevitability of urban crises.

"I believe the crisis will happen sooner or later. For Bangkok, it may come sooner than we expect," he said, citing Myanmar's recent earthquake as a stark reminder of unpredictable disasters.

The Governor recounted a remarkable incident where a 33-storey building in Bangkok collapsed during the Myanmar earthquake, breaking two world records: the greatest distance between an earthquake's epicentre and a building collapse (1,000 km), and the tallest building to completely fall under seismic activity.

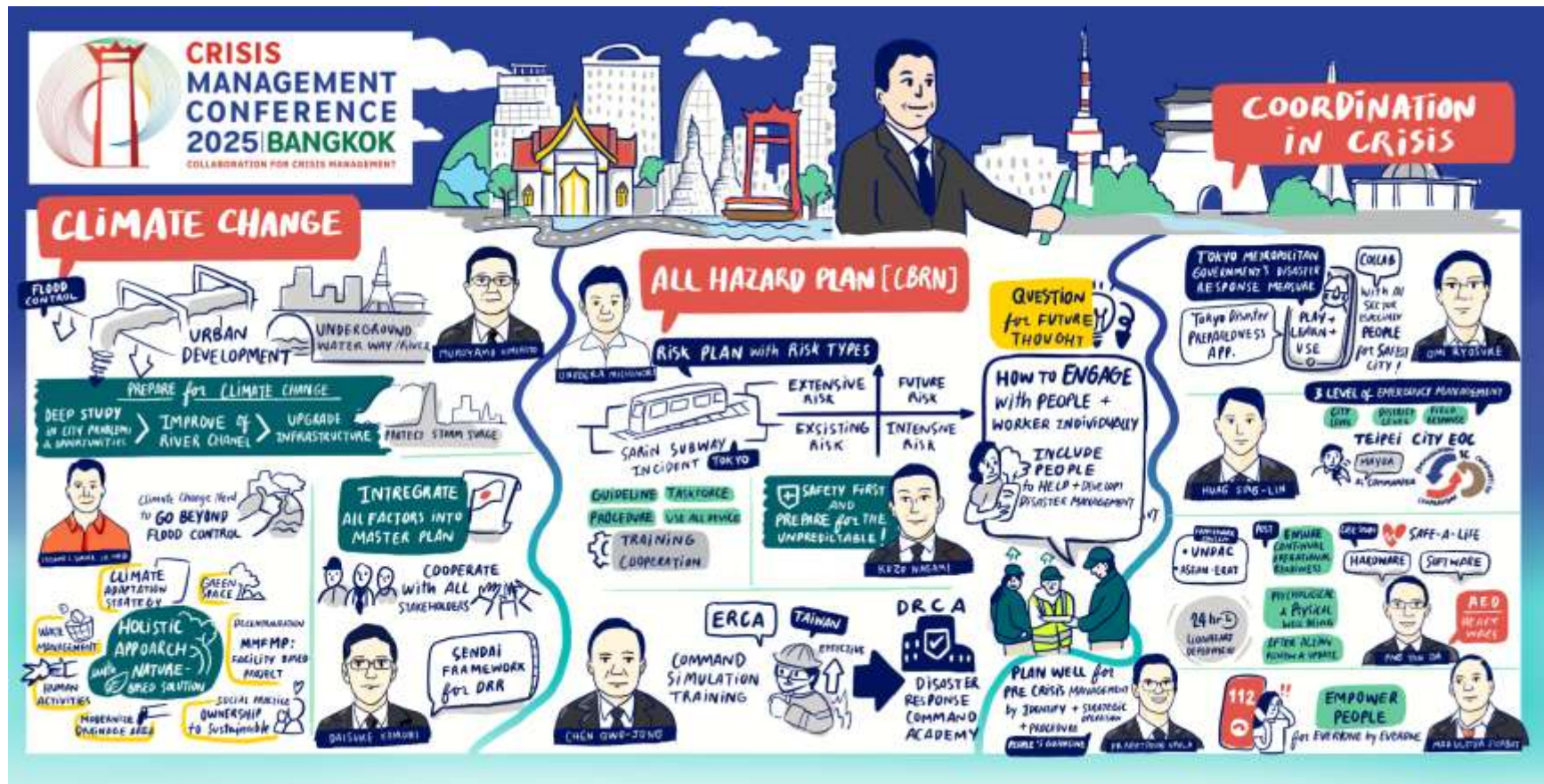
Having spent 48 days on-site during rescue and recovery efforts, Chadchart emphasised that experience remains the most vital asset in crisis situations, alongside technology. He particularly praised the role of drones, describing them as "your third, fourth, fifth, sixth, seventh eyes in the air" for enhancing operational efficiency.

The conference also featured exhibitions on city vulnerable populations, road safety, and urban flooding, aimed at raising public awareness and promoting practical solutions for safer cities.





"This infographic presents a summary of the Crisis Management Conference 2025 held in Bangkok, Thailand."



"This infographic presents a key sentence from each countries based management show case for the Crisis Management Conference 2025 held in Bangkok, Thailand."

Crisis Management Conference 2025

Collaboration for Crisis Management

Friday 23rd May, 2025

Nong Chok Fire and Rescue Station, Bangkok, Thailand

Opening session

➤ ***Mr. Suriyachai Rawiwan, Director of the Department of Disaster Prevention and Mitigation***

The Department of Disaster Prevention and Mitigation plays a pivotal role in overseeing public safety during disaster situations. The department is tasked with a comprehensive mandate that includes prevention prior to incidents, emergency response during crises, and post-incident relief efforts. Currently, there are a total of 50 fire stations under the department's control, consisting of 43 main stations, 7 sub-stations, and 1 water-based fire station.

The Nong Chok Fire and Rescue Station, the focus of today's visit, operates under Fire and Rescue Operations Division 4. The visit includes a live demonstration of high-rise building rescue techniques, as well as a briefing on Bangkok's water management system. This study visit is anticipated to provide valuable insights and contribute significantly to knowledge exchange and capacity building.



➤ ***Mr. Praphat Sooknok, Head of the Nong Chok Fire and Rescue Station***

The Nong Chok Fire and Rescue Station, operating under the supervision of the Department of Disaster Prevention and Mitigation, officially opened in 2024 following the completion of a purpose-built facility. The station was designed to fully support the comprehensive mission of disaster prevention and mitigation.

The building comprises:

- Ground floor: Parking area for fire and rescue vehicles
- Floors 1–3: Office spaces
- Floors 4–8: Residential units for on-duty personnel
- Rooftop: Observation and surveillance area

Adjacent training tower: Designed for simulated incident scenarios and structured emergency response training

The station is staffed by 42 officers and equipped with a fleet of 11 fire trucks, including both standard and specialized vehicles, with additional units pending allocation to enhance operational capacity and efficiency.

The station's jurisdiction covers over 74,000 households in the Nong Chok district, which is predominantly agricultural but increasingly urbanized with the development of residential communities and community malls.

The station's key responsibilities include fire suppression, emergency assistance, and animal control, particularly dealing with reptiles and venomous animals such as snakes, which are commonly found in the area. In the past year alone, the station responded to 13 fire incidents with no reported fatalities, and conducted over 1,220 snake removals.

In the absence of urgent missions, the personnel regularly undergo disaster response drills at the training tower to continuously enhance their readiness and operational effectiveness.

➤ ***Mr. Chayan Sawatdee, Senior Officer of Disaster Prevention and Mitigation***

The high-rise rescue operation was demonstrated.

➤ ***Mr. Jessada Chantharaphapha, Director of Drainage and Sewerage Department***

Crisis Management for Flooding

Flood Management and Drainage System in Bangkok

Bangkok is characterized by low-lying terrain and is situated near the Gulf of Thailand, making it susceptible to tidal influences from the sea. Due to its topography, particularly the challenge posed by high tides, draining excess water into the Chao Phraya River is often difficult. Interestingly, areas located closer to the river are at a higher elevation

compared to those farther inland, necessitating the use of pumping systems to manage water flow effectively.

The city's drainage strategy relies on an integrated network of roads and canals, supported by small pumping stations that help redirect storm water into the canal system. Additionally, Bangkok employs water retention solutions such as reserving ponds and underground water storage systems modeled on the "monkey cheek" concept to collect and store rainwater.

Bangkok's drainage infrastructure is divided into two main systems; the Thon Buri system and the Khlong 7 system, which serve rural and urban areas respectively. Pumps are used to discharge water from inner-city areas into the Chao Phraya River, with water gates playing a crucial role in controlling and facilitating water flow.

The city also utilizes an extensive canal network as part of its drainage system. To enhance drainage efficiency, the Bangkok Metropolitan Administration (BMA) undertakes regular canal excavation projects within two to five-year timelines. Moreover, the BMA removes waste from the canals on a daily basis to ensure unimpeded water flow and improve overall drainage capacity.

Main Canal Capacity Improvement Project in Bangkok

One of the key initiatives to enhance Bangkok's drainage efficiency is the Main Canal Capacity Improvement Project. Khlong Prem Prachakorn, recognized as one of the city's principal canals, plays a vital role in water management. The canal system utilizes a pipe network extending approximately 6,924 kilometers, which is cleaned on a biennial basis to maintain optimal flow capacity.

Apart from the canal system, Bangkok is developing a network of large-scale drainage tunnels to support storm water management. A

total of 13 major tunnels has been planned: 4 have already been completed, 4 are currently under construction, and 5 are designated for future development. The city also faces ongoing challenges related to groundwater management, which further complicates flood control efforts.

Canal Network and Improvement Measures

Bangkok is home to 1,980 canals with a combined length of approximately 2,745 kilometers, forming the core infrastructure for transporting storm water out of urban areas. To improve the capacity and performance of these canals, the Bangkok Metropolitan Administration (BMA) has undertaken several engineering interventions. These include the construction of concrete retaining walls along both banks of the canals and dredging to increase canal depths by 1 to 3 meters. Additionally, garbage is removed from the canals on a daily basis to enhance drainage capacity and prevent blockages.

When canal water levels pose a risk, emergency drainage operations are carried out, with affected areas marked in red on monitoring systems.

Adoption of Smart Water Management Technologies

To strengthen flood preparedness and real-time response capabilities, the BMA has adopted advanced technologies for disseminating water management information. This includes continuous updates on the water situation, radar-based rainfall tracking, and the use of artificial intelligence (AI) to forecast weather conditions up to three hours in advance. The city maintains 248 flood monitoring stations, 281 water measurement stations, and 130 automatic rainfall monitoring stations. These systems provide comprehensive data, including water level readings in the Chao Phraya River, rainfall amounts, tidal patterns,

and regular flood reports, thereby enabling proactive and informed decision-making in urban water management.

Early Warning and Real-Time Monitoring

An essential component of Bangkok's flood management strategy is the implementation of a real-time weather monitoring and alert system. The government facilitates inter-agency coordination by promoting data sharing and collaboration with various partners. To disseminate information to the public, multiple communication channels are utilized, including radio broadcasts and social media platforms such as Facebook, TikTok, Instagram, and X (formerly Twitter). These platforms play a critical role in alerting citizens promptly during emergency situations.

Emergency Response and Evacuation

To enhance drainage capacity during periods of heavy rainfall and flooding, mobile pumps are deployed throughout the city. In addition, trucks and four-wheel drive vehicles are utilized to assist in the transportation of affected individuals in inundated areas. Clearly defined evacuation routes and designated shelters have been established, with communication systems in place to inform residents about safety procedures and shelter locations.

Preparedness and Community Involvement

Efforts have also been made to build community resilience through public awareness campaigns and two-way communication channels that encourage feedback from residents. These initiatives aim to increase understanding of flood risks and preparedness strategies at the community level.

Recovery and Long-Term Planning

After a flood event, recovery operations are prioritized, including the repair of damaged infrastructure and the distribution of emergency aid. A specialized team is responsible for compiling data from past events, identifying high-risk zones, and developing both short-term and long-term strategic plans to mitigate future risks. These plans are informed by lessons learned and aim to build a more robust and sustainable urban flood management framework.

Strengthen preparedness measures for rainfall events

1. Prevention and Mitigation

- Monitor and assess weather, radar.
- Reduce water levels in canals.
- Utilize pumping stations and Monkey cheeks.
- Prepare backup equipment, mobile pumps.

2. Dealing with the incident and cooperation

- DDS communicated via Trunked Radio, Line app.
- Field team deployed to report flood situation.
- Bangkok Fire and Rescue department support units to district offices.
- Enhance tools equipment and water pumps to critical or underserved area.
- Provide shuttle service for the public.
- Report on rainfall conditions rainfall volume and flooded areas to communication channels.

3. Rehabilitation and reconstruction

- Lesson learned.

- Implement measures to resolve the root causes of Flooding.

----- Q&A Session -----

Question : What is the key priority support from BMA for Bangkok fire station in each district management?

Answer: The Bangkok Metropolitan Administration (BMA) is currently in the process of constructing new fire station and renovating existing one to ensure structural integrity, modern standard, and safety fit with the international protocol. In addition, BMA is considering expanding the number of fire station both land based, and water based, to improved coverage across the city. At present, there are 43 land-based fire stations, 7 sub-stations, 2 fireboat stations locating along the Chao Praya River.

Answer: BMA was continuously supporting BMA fire station staffs to training with USAR Thailand and join hand with rescue team for the actual mission, By the Year 2025, USAR Thailand will have the assess potential by the standard of INSARAG.

Question : How about water management and flood monitoring in Bangkok?

Answer: The Department of Drainage and Sewerage of Bangkok Metropolitan will be the focal point organization who manage the water management and flooding monitoring in Bangkok. This department will have the internet server radar to update the water management and rainfall situation in every 15 minutes for public. See more details as <https://weather.bangkok.go.th/radar>

Answer: Public People can share all information and problems about water management to Bangkok Flood Control Center 02-2460317 or Hotline 1555 for 24 Hour, moreover, can connect by official LINE: @traffyfondue



An example pictures from Field trip visit at Nong Chok Fire Station, Bangkok Thailand

23 May 2025



(Annex I)

Crisis Management Conference 2025

Between 22-23 May Year 2025

Bangkok City, Thailand

List of Attendees

Bangkok

No.	Name	Job Title / Position
1	Asst. Prof. Dr. Tavida Kamolvej	Deputy Governor of Bangkok, Bangkok Metropolitan Administration
2	Mr. Suriyachai Rawiwan	Director - General of Bangkok Fire and Rescue Department
3	Mr. Punlop Paitoonbuathong	Deputy Director - General of Bangkok Fire and Rescue Department
4	Dr. Phaithoon Ngammuk	Deputy Director - General of Bangkok Fire and Rescue Department

Jakarta

No.	Name	Job Title / Position
1	Mr. Marulitua Sijabat	Executive Secretary
2	Ms. Melissa Aesthetica	Chief of the Sub-group for International Local Government Cooperation
3	Mr. Muhtasor	Head of the Fire Operation Section Fire and Rescue Department

Kuala Lumpur

No.	Name	Job Title / Position
1	Dato' Ismail Bin Mohd Zawawi	Associate Deputy Commissioner
2	Mr. Mohtar Bin Samat	Assistant Commissioner
3	Mr. Mohd Zairosnizam Bin Mohd Tarmizi	Major

Metro Manila

No.	Name	Job Title / Position
1	ATTY. Crisanto C. Saruca Jr.	Director IV
2	Ms. Jea Sata-Umengan	Project Evaluation Officer III
3	Ms. Nina Camille C. Gonzales	Planning Officer I

New taipei

No.	Name	Job Title / Position
1	Mr. Chen Gwo-Jong	Deputy Commissioner
2	Mr. Hsieh Ming-Chun	Section Chief
3	Ms. Lin Chiu-chi	Associate Technical Specialist

Seoul

No.	Name	Job Title / Position
1	Mr. Kweon Hyeok Min	Commissioner
2	Mr. Son Myungeun	Planning/Reporting
3	Ms. Jeong Dajeong	International Cooperation

Singapore

No.	Name	Job Title / Position
1	Mr. Png Yan Da	Head Operations Branch
2	Ms. Ng Qin Ling	Senior Staff Officer

Teipei

No.	Name	Job Title / Position
1	Mr. LUI Yung-Chou	Deputy Commissioner
2	Mr. HUANG Sing-Lin	Division Officer
3	Mr. HSU Tsung-Wei	Division Officer

Tokyo

No.	Name	Job Title / Position
1	Ms. Honda Asako	Director for International Projects
2	Ms. Ando Miki	Deputy Director for International Projects
3	Ms. Ito Kaori	Senior Staff Member (International Projects)
4	Mr. Onodera Michinori	Commander, the 8th District HQ (1 st Assistant Chief)
5	Mr. Oba Ryosuke	Fire Sergeant
6	Mr. Omi Ryosuke	Director for Strategy and Coordination

No.	Name	Job Title / Position
7	Mr. Nakano Kyosuke	Superintendent
8	Mr. Marume Tatsunori	Inspector
9	Mr. Mukoyama Kimihito	Director for Planning for Small Rivers
10	Mr. Sasajima Yuto	Senior Staff Member

<u>Summary</u>		
<u>No</u>	<u>Indicator</u>	<u>Number</u>
1.	Participants from member city (Include Host City)	34
2.	Participant from International Observation City	4
3.	Number of Key Note Speaker/ Moderators	21
4.	Number of Representative / VVIP	1
5.	Invitees from Ministry/ Institutional/ University Etc.	> 100
6.	Total participants attending on Conference Day (First Day)	215
7.	Toal participants attending a field trip at Nong Chok	137

Programme for the Crisis Management Conference 2025

“Collaboration for Crisis Management”

During 22 - 24 May 2025, Bangkok, Thailand

Date	Time	Activities
Wednesday, 21 st May 2025 Arrive Bangkok		
Thursday, 22 nd May 2025 (1 st day)	08.30 – 09.00 hrs.	Registration
	09.00 – 09.15 hrs.	Welcome Speech at Reception Room
	09.15 – 09.30 hrs.	Press Conference
		Opening Ceremony
	09.30 – 09.45 hrs.	Special Opening Performance
	9.45 – 10.00 hrs.	Video presentation of Bangkok city
	10.00 – 10.15 hrs.	- Opening Remarks by the Governor of Bangkok - Photo Session
	10.15 – 11.00 hrs.	Special Lecture on “Challenges in Crisis Management in Metropolitan and Large Cities” by Assoc. Prof. Tavida Kamolvej, Deputy Governor of Bangkok
	11.00 – 11.15 hrs.	Break
	11.15 – 12.00 hrs.	Session 1 Innovation for Smart City
	12.00 – 13.00 hrs.	Lunch Break
	13.00 – 13.45 hrs.	Session 2 Climate Change
	14.00 – 14.45 hrs.	Session 3 Hazard Plan (CBRN)
	14.45 – 15.00 hrs.	Break
	15.45 – 15.45 hrs.	Session 4 Coordination in Crisis
	15.45 – 15.50 hrs.	Annual Report from the Secretariat and Announcement of the Next Host City
	15.50 – 16.00 hrs.	Address by the Next Host City

Date	Time	Activities
Thursday, 22 nd May 2025 (1 st day)	16.00 – 16.15 hrs.	The Governor of Bangkok Presenting a Commemorative Gift to the Next Host City
	16.15 – 16.30 hrs.	Conference Summary by the Host City
	16.30 – 17.00 hrs.	Exhibition Tour
	18.00 – 21.30 hrs.	Cocktail Reception

Date	Time	Activities
Friday, 23 rd May 2025 (2 nd day)	09.00 – 09.30 hrs.	Registration
	09.30 – 12.00 hrs.	Field Visit to Study High-Rise Rescue Operations and Flood Management At Nong Chok Fire and Rescue Station
	12.00 – 13.00 hrs.	Lunch Break
	13.00 – 18.00 hrs.	Rest
	18.00 hrs.	Depart for Bangkok
Saturday, 24 th May 2025 Depart from Bangkok		

The schedule may be adjusted as deemed appropriate.

Crisis Management Conference 2025

Bangkok, Thailand