26 May 2026

InterRisk Asia Natural Disaster Report <2026 No.01>

Summary of ASEAN Typhoon in 2025

[Key Takeaways]

- The devastating typhoon season of 2025 highlighted the urgent need for proactive flood risk management across ASEAN. With more than 2,000 fatalities, millions displaced, and damages exceeding $20 billion.
- Climate drivers such as La Niña and El Niño are further intensifying rainfall and storm activity, clearly highlighting the unpredictability of future weather events.
- By identifying site-specific vulnerabilities—such as factory locations, supply chain hubs, and residential floodplains—organizations can implement tailored prevention measures, strengthen business continuity plans, and reduce economic losses.
- A structured flood risk assessment provides actionable insights into exposure levels, preparedness gaps, and mitigation strategies, enabling decision-makers to safeguard assets and ensure resilience against increasingly severe climate disasters.

Introduction

In 2025, ASEAN nations endured one of the most destructive typhoon seasons in recent history, with storms such as Super Typhoon Ragasa, Typhoon Koto, and Cyclonic Storm Senyar causing catastrophic flooding, landslides, and economic losses across Thailand, Vietnam, Malaysia, Indonesia, and the Philippines. Fatalities exceeded 2,000, millions were displaced, and damages surpassed $20 billion, marking the season as a defining climate disaster for Southeast Asia.

Factors Driving Storms in ASEAN

ENSO (El Niño–Southern Oscillation) phenomenon is the factor used to monitor El Niño or La Niña, which reflects changes in sea surface temperatures and atmospheric conditions in the central and eastern Pacific Ocean. **El Niño and La Niña are the key factors causing the typhoon season in ASEAN.** The table below shows the summary factors to identify El Niño and La Niña.

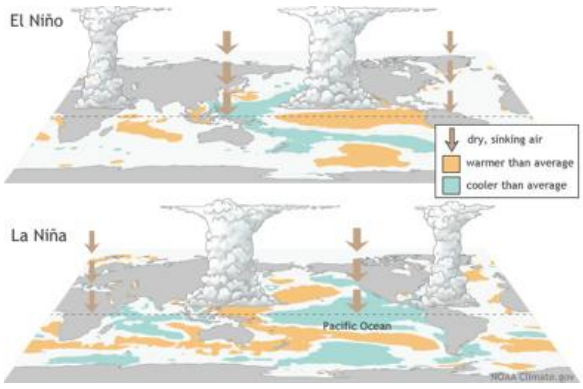

Figure 1. Characteristic of El Niño and La Niña

Source: https://www.climate.gov/enso

Table 1. The summary factors of El Niño and La Niña

Factor	El Niño	La Niña
Sea Surface Temperatures (SSTs)	**Warmer than average** in the central and eastern Pacific (≥ +0.5°C for several consecutive months)	**Cooler than average** in the central and eastern Pacific (≤ –0.5°C for several consecutive months)
Trade Winds	Weaken, allowing warm water to move eastward.	Strengthen, **pushing warm water to accumulate in the western Pacific**
Rainfall and Convection Distribution	Shifts from the western Pacific to the east → Southeast Asia tends to experience drought	Concentrated in the western Pacific → Southeast Asia tends to experience heavier rainfall
SOI (Southern Oscillation Index)	Negative values (air pressure at Tahiti < Darwin)	Positive values (air pressure at Tahiti > Darwin)
Impact on Southeast Asia	Higher drought risk, fewer storms	**More rainfall, more storms**

Although La Niña is the primary factor that frequently causes storms in ASEAN, these are usually small to medium in scale. **In contrast, El Niño can sometimes act as an intensifying factor, leading to severe storms in ASEAN, such as Typhoon Ragasa.** This occurs because rainfall patterns are disrupted by influences such as warmer sea surface temperatures (SSTs) in the eastern and central Pacific, which increase the latent heat energy available to storms. Changes in trade winds and wind shear, along with storm tracks shifting eastward, allow storms to form farther out at sea and accumulate energy over warm waters for longer periods before eventually moving toward Southeast Asia.

According to NASA's ENSO Index (sea-level based), the climate pattern has remained in a La Niña phase since April 2020, with a brief shift into El Niño between June 2023 and February 2024, before returning to La Niña conditions.

In current condition in 2026 according to NOAA: Climate Prediction Center published on 14th May 2026, **in May-July 2026, El Niño is likely to emerge (82% chance) and persist through at least February 2027.**

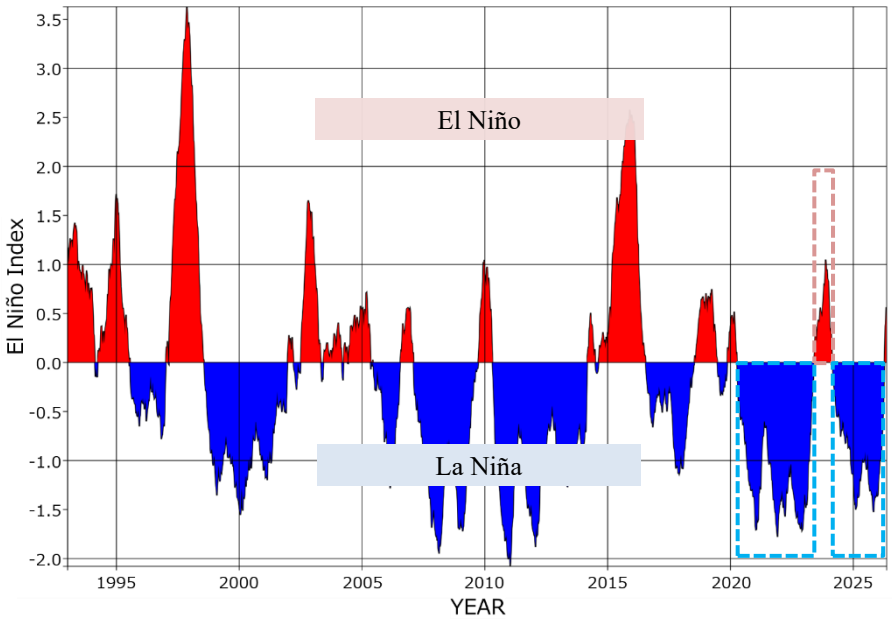

Figure 2. ENSO Index from 1993-Present by NASA

Source: https://sealevel.jpl.nasa.gov/overlay-elnino/

The Storm Record of 2025

According to data from NOAA's Climate Prediction Center (RONI index) published on 16 March 2026, Southeast Asia experienced La Niña conditions in 2025, as indicated by negative sea surface temperature (SST) departures in the Niño 3.4 and Niño 4 regions. These anomalies were associated with increased storm activity and enhanced rainfall across multiple ASEAN countries. Comparative analyses show that accumulated rainfall in 2025 was approximately 20–35% higher than in 2024, which was characterized by El Niño conditions. This assessment is based on reports from NOAA, WMO, ASMC, and national meteorological agencies including the Meteorological Department of Thailand, PAGASA (Philippines), and BMKG (Indonesia).

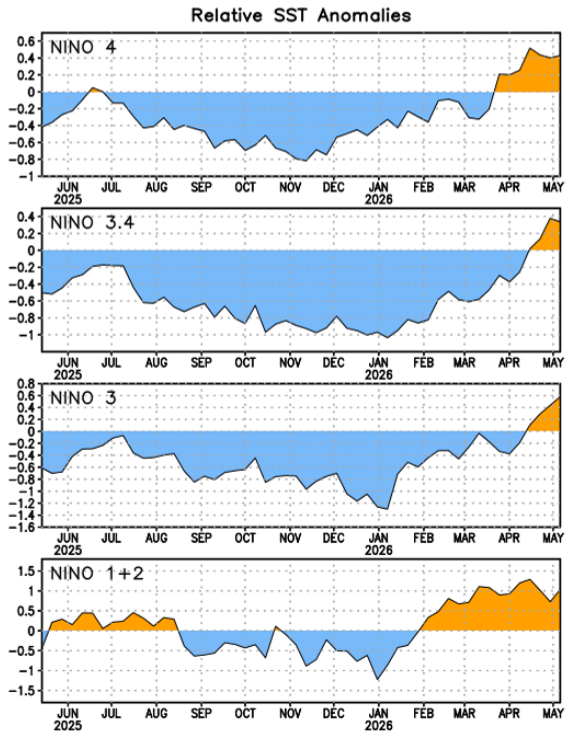

Figure 3. RONI Index by NOAA's Climate Prediction Center

Source:https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_disc_mar2026/figure02.gif

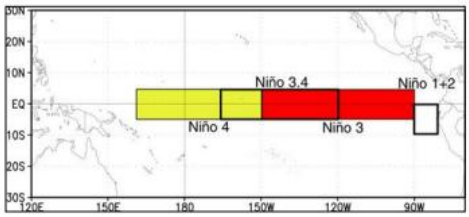

Figure 4. El Niño monitoring area

Source: https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/ensostuff/nino_regions.shtml

The findings are consistent with climate trends typically observed during La Niña episodes, particularly in the March–May and September–November seasons, as documented by JMA and global La Niña climatological features.

Figure 5. Comparison of La Niña impacts in ASEAN between 2024 and 2025

Created by our company using generative AI

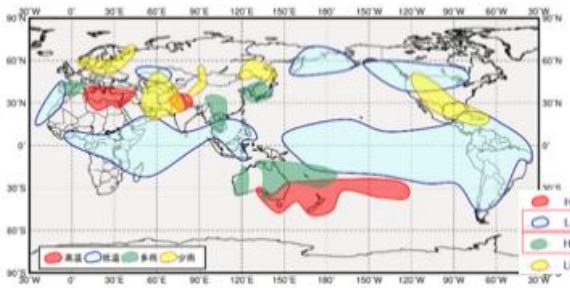

Figure 6. Characteristics of weather during March-May (Spring in the Northern Hemisphere) when a La Niña event occurs

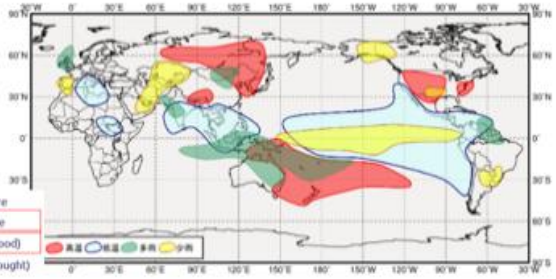

Figure 7. Characteristics of weather during September-November (Autumn in the Northern Hemisphere) when a La Niña event occurs

Source: https://www.data.jma.go.jp/cpd/data/elnino/learning/tenkou/sekai2.html

Storm Records in 2025

ASEAN was struck by six super typhoons in 2025, each with wind speeds exceeding 118 km/h. The storms included Ragasa (September 16–25), Bualoi (September 22–29), Matmo (September 30–October 6), Kalmaegi (October 31–November 7), Fung-Wong (November 4–12), and Koto (November 23–December 3). These major storms typically occurred between September and November, a period marked by weak La Niña conditions. Several systems formed farther east over warm waters, allowing them to intensify and extend their lifespans before landfall.

In addition, ASEAN was hit multiple times by tropical storms with wind speeds below 118 km/h, which also caused widespread damage and significant economic losses from heavy rainfall, high winds and significant flooding.

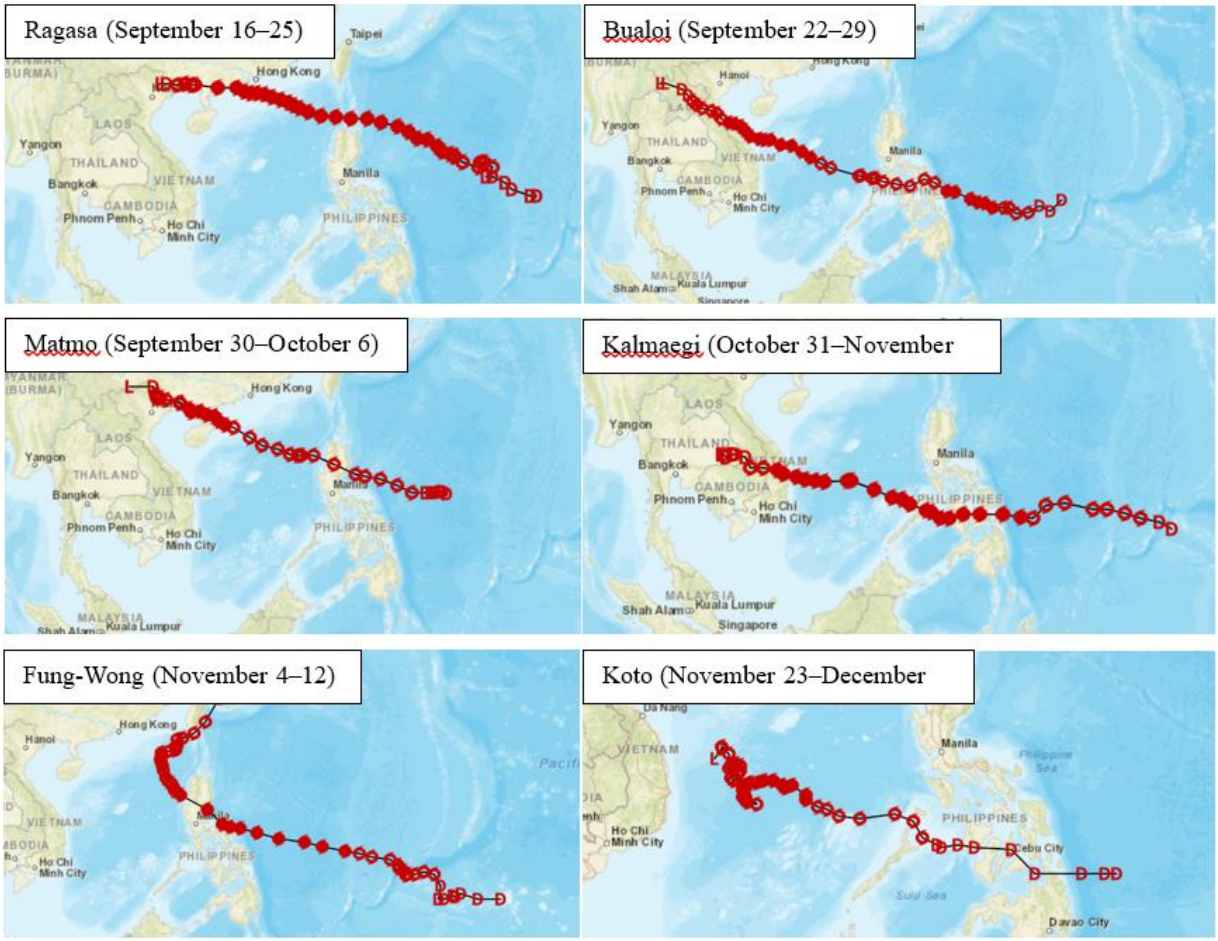

Figure 7. Storm tracking of six major typhoons

Source: Thai Meteorological Department, https://www.tmd.go.th/en/storms

Manufacturing Sector Economic Impacts

In 2025, several major typhoons — Ragasa, Kalmaegi, Fung-Wong, Bualoi, Matmo, and Koto — struck ASEAN countries, causing widespread flooding and damage to industrial and factory zones, particularly in the Philippines, Vietnam, and Thailand. The most severe impacts were seen in Cebu (Philippines), Central Vietnam, and coastal industrial hubs where manufacturing plants and export facilities were disrupted as present in table below.

Table 2. Summary of the Impacts of Typhoons on the Industrial Sector in ASEAN, 2025

Typhoon	Affected ASEAN Areas	Precipitation volume (mm)		Factory/Industrial Impact
		Normal Monthly Rainfall (Sep–Nov)	Typhoon Event Rainfall (approx.2-3 days)	
[September] Ragasa	Luzon & Visayas in Philippines	250-300 mm/month	200-300 mm	Flooding in Manila's industrial zones, disruption of electronics and textile factories;
	Central Vietnam	200-250 mm/month	250-300 mm	Vietnam's coastal factories saw downtime due to flooding.
[September] Bualoi	Masbate in Philippines	250-300 mm/month	200-350 mm	Repeated flooding in Manila; garment and electronics factories halted operations.
	Northern Vietnam	200-250 mm/month	300-400 mm	Flooding in Northern (e.g. Bac Ninh, Thai Nguyen, and Hanoi's surrounding areas.) and Northern Central Vietnam (e.g. Thanh Hoa, Nghe An, Ha Tinh)
[October] Matmo	Northern Vietnam	200-250 mm/month	350-450 mm	Flooding in Vietnam's northern industrial parks; Thai Nguyen, Bac Ninh; industrial parks
	Northern Thailand	150-200 mm/month	150-250 mm	Thailand's agricultural processing plants affected.
[November] Kalmaegi	Cebu in Philippines	250-300 mm/month	150-250 mm	Cebu's export processing zones (electronics, shipbuilding) heavily damaged;
	Central Vietnam	200-250 mm/month	200-300 mm	Central Vietnam's industrial parks flooded;
	Northern Thailand	150-200 mm/month	100-200 mm	Thailand's northern factories disrupted by landslides.
[November] Fung-Wong	Luzon and Mindanao in Philippines	250-300 mm/month	200-250 mm and 300 mm+	Philippine factories in Luzon faced power outages; indirect impact on ASEAN supply chains due to Taiwan/China damage.
[November] Koto	Visayas & Mindanao in Philippines	250-300 mm/month	50-200 mm	Vietnam's ports disrupted.
	Central Vietnam	200-250 mm/month	100-200 mm	
	Penang/Johor in Malaysia	200-250 mm/month	100-200 mm	Flooding in Malaysia's coastal factories (Penang, Johor) shut down temporarily.
	Java in Indonesia	150-200 mm/month	100-200 mm	Flooding in Indonesia's Java industrial belt;

Preparedness for Flood/Typhoon Prevention

After identifying site-specific risks, preparedness becomes a crucial element in implementing preventive measures to minimize property loss. Since flooding often results as a consequence of typhoons, comprehensive prevention strategies that address both hazards are essential to mitigating damage across all aspects.

Authorities emphasize that flood and typhoon preparedness can be categorized into four phases, with readiness during the normal phase regarded as the most critical.

Table 3. Flood and Storm Preparedness and Response Plan

Condition	Topics	
Normal Phase	**Enhancing Awareness of Flood Risk**	
	☐	Are the conditions of both the facility and neighboring buildings properly assessed?
	☐	Are the conditions of both the facility and neighboring buildings clearly identified and assessed?
	Inspection of Site, Buildings, and Flood Protection Equipment	
	☐	Are production equipment and power receiving/distribution facilities installed at elevated locations?
	☐	Are areas within the site that are prone to water accumulation (e.g., low-lying areas or locations with insufficient drainage capacity) identified?
	☐	Are rules established for regular inspections of roofs, exterior walls, and related structures?
	☐	Are vulnerabilities to typhoons evaluated based on the results of periodic inspections?
	☐	Are repair priorities identified and a repair plan established?
	☐	Are drainage pumps (including emergency generators and fuel) prepared?
	☐	Are regular inspections of private generators (fuel, batteries, and start-up tests) conducted?
	☐	Are drainage systems, roof drains, and on-site gutters regularly cleaned?
	Monitoring of Weather Conditions	
	☐	Is a close coordination system established with relevant local authorities (e.g., meteorological and water resource departments) to obtain up-to-date information and support during emergencies?
	☐	Is a system in place to continuously monitor river water levels and flood risks during prolonged heavy rainfall?
	Development of Flood Control Plan	
	☐	Is a timeline-based disaster response plan established, outlining actions to be taken from the onset of a typhoon?
	☐	Is a typhoon response manual established, including emergency organization structure, communication systems, and clear roles and responsibilities?
	Training and Review of Flood Control Plan	
	☐	Are disaster preparedness drills conducted (e.g., installation of flood barriers, sandbags, and review of plans and manuals)?
	☐	Are emergency supplies (e.g., drinking water, emergency food, portable toilets) secured?
	Business Continuity Planning (BCP)	
	☐	Is a Business Continuity Plan (BCP) established to prepare for situations in which the company is affected by a disaster?

Flood and Storm Preparedness and Response Plan (Continue)

Condition	Topics	
Risk Phase: Typhoons and Floods	**Emergency Response Preparedness**	
	☐	Has an emergency response headquarters been established?
	Inspection of Relevant Areas	
	☐	Are checklists for typhoon and flood preparedness developed, and are safety inspections conducted based on them?
	☐	Have drainage systems, roof drains, and on-site gutters been cleaned on an emergency basis?
	☐	Are trees around windows properly trimmed?
	Protection and Relocation of Assets	
	☐	Is backup of critical data conducted?
	☐	Are indoor assets stored at a sufficient distance from windows?
	☐	Are critical assets avoided from being stored under indoor drainage pipes or similar locations?
	☐	Are important assets (e.g., products, raw materials, utility-related equipment, production equipment) not continuously stored in temporary structures?
	☐	Have important assets, such as products and outdoor-stored cargo, been moved to safe locations inside buildings?
	Preparation of Flood Protection Equipment	
	☐	Are sandbags and waterproof sheets prepared for installation at building entrances?
	☐	Are potential rainwater intrusion points inspected and, where necessary, protected with waterproof sheets or similar measures?
	Monitoring of Weather Warnings	
	☐	Is monitoring of weather warnings conducted?
Flooding/Typhoon event	☐	Are actions implemented in accordance with established plans?
	☐	Are evacuation procedures carried out and instructions provided to employees?
	☐	Is the situation continuously monitored?
	☐	Are measures taken to mitigate secondary damage?
Post-Disaster	☐	Are affected areas cleaned?
	☐	Are machines and facilities restored?
	☐	Are procurement of raw materials and resumption of production carried out in accordance with the BCP?
	☐	Are damage conditions assessed and analyzed?
	☐	Are emergency response plans reviewed and improved?

Understanding local risks is the foundation for effective preparedness planning. Recognizing the specific vulnerabilities of an area is the first step toward developing appropriate response measures. Proper preparedness enables business operators to minimize potential damage and to respond swiftly to various forms of natural disasters.

Have you assessed and understood the risks in your area?

Summary

The 2025 typhoon season was one of the most destructive in ASEAN's history, with six super typhoons and multiple tropical storms causing over 2,000 fatalities, millions displaced, and damages exceeding $20 billion. Driven by La Niña conditions, storms intensified over warm waters and struck industrial hubs across the Philippines, Vietnam, Thailand, Malaysia, and Indonesia, disrupting manufacturing and exports. The season underscored the urgent need for proactive flood risk assessments and preparedness planning. By identifying site-specific vulnerabilities and implementing structured prevention measures, governments and businesses can reduce losses, safeguard assets, and strengthen resilience against future climate-driven disasters.

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Property Risk Consulting Department, Head of Department, **Tanaporn Longwech**

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Our Natural Disaster Services

✓ **Flood Risk Survey**	On-site survey is conducted to evaluate flood risk based on topographical data, past inundation history, and flood hazard accompanied with the flood countermeasures in the premises. Furthermore, opinion and recommendations provided by the surveyors are included in the report to reduce flood risk.
✓ **Flood Risk Assessment**	Flood risk is evaluated based on the public information to assess the elevation profile of the river, site , and surroundings, hazard map (with 100 year and 500 year-return period), and historical map.
✓ **Flood Analysis by using ArcGIS**	Flood hazard is estimated by using ArcGIS software to create the flood hazard map. 2D and 3D topographic images and animation are available to understand overall flood risk easily.
✓ **Flood Simulation**	Flood simulations using high-precision topographic maps are provided (Mesh size: 1m x 1m) to simulate the river flood and/or inland flood scenarios. The expected inundation depth regarding return period (e.g. 100 year, 200 year, 500 year) on the premises will be shown on the simulation.
✓ **Flood BCP**	Flood BCP service is an establishment and enhancement of effective business continuity plan (BCP) so that the supply of important products and services can be continued and to minimize the property damage during flood incident.
✓ **Flood BCP Training**	The flood BCP training service will give the basic knowledge of the flood BCP awareness which is suitable for the management and all employees.
✓ **Flood Risk News**	Flood risk news in Thailand are published once or twice a month. (Rainy season only: from May to November). The up-to-date situation on dams and river will be reported.
✓ **Flood Risk Survey by Drone**	Drones are utilized to survey the areas where the river flood has occurred and flood risk is increasing.

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InterRisk Asia (Thailand) Co., Ltd. is a risk management company based in Bangkok, Thailand. We provide various risk consulting services in Southeast Asian countries, including fire risk surveys, natural disaster and industrial accident risk surveys for factories, warehouses, commercial facilities, etc., traffic risks, BCP formulation support, cyber risks, etc.

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