

Major Natural Disasters in Japan

An Assessment of Frequency, Infrastructure Damage, and Economic Loss

Japan's Disaster Risk Profile

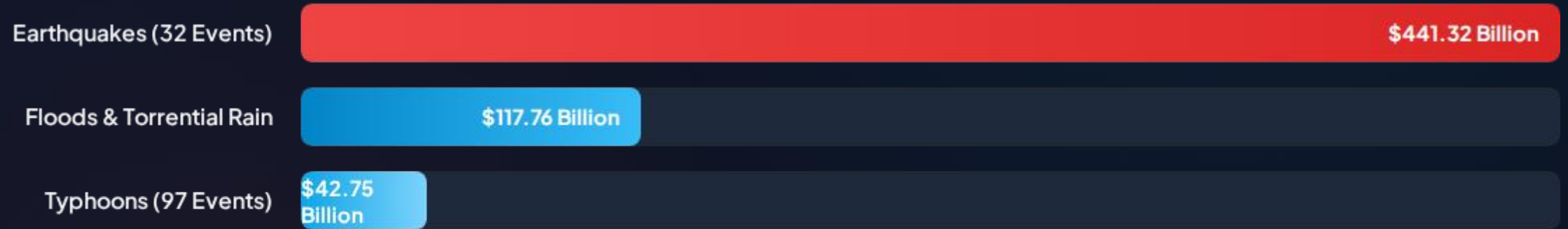
Vulnerability Along Pacific Rim

Japan is a highly disaster-prone nation situated along the Pacific Ring of Fire. This geographical positioning renders it exceptionally susceptible to frequent typhoons, widespread flooding, severe weather events, and catastrophic earthquakes.

Resilience vs. Economic Loss

Despite implementing world-class construction technologies, strict building codes, comprehensive disaster management systems, and routine public drills, large-scale natural disasters continue to inflict massive financial damage on Japan's economy.

Economic Loss Comparison (USD)



Data Source: EM-DAT recorded events. Earthquakes account for the single largest proportion of economic damage, despite occurring significantly less frequently than meteorological and water disasters.

Typhoons: High Frequency Threats

97

Recorded Typhoon Events

Most frequent natural hazard in EM-DAT database

\$42.75 Billion Total Loss

Typhoons represent the most recurring disaster type in Japan. Concentrated wind shear, extreme storm surges, and associated torrential rain repeatedly disrupt transportation networks, industrial supply chains, and power grid infrastructure across major metropolitan regions.

SEVERE TYPHOON DAMAGES IN JAPAN(2018-2019)

2019: TYPHOON 19 (HAGIBIS) - EAST JAPAN / KANTO / TOHOKU



RECORD RAINFALL: BREACHED DOZENS OF RIVERS.
HOKURIKU SHINKANSEN: INUNDATION & DECOMMISSIONING.
TOTAL DAMAGE: EST. \$13.5-15.3 BILLION USD (LARGEST FLOOD DAMAGE ON RECORD)

2019: TYPHOON 15 (FAXAI) - KANTO



RECORD WIND SPEEDS: DIRECT HIT TO TOKYO METRO AREA.
POWER GRID COLLAPSE: TOWER & POLE TOPPLING.
POWER GRID COLLAPSE: LONG-TERM MAJOR OUTAGE FOCUSED ON CHIBA PREFECTURE.
INSURANCE PAYOUT: EST. \$4.2 BILLION USD

2018: TYPHOON 21 (JEBI) - KINKI / KANSAI



FIERCE WINDS & HIGH STORM SURGE.
KANSAI INTL. AIRPORT (KIX): INUNDATED & ISOLATED.
OIL TANKER COLLISION WITH ACCESS BRIDGE.
INSURANCE PAYOUT: EST. \$9.6 BILLION USD (HIGHEST EVER FOR SINGLE TYPHOON)

2018: TYPHOON 24 (TRAMI) - ALL-JAPAN TRAVERSAL



RETAINED INTENSE STRENGTH: TRAVERSED JAPAN.
TOKYO METRO RAILWAYS: WIDE-AREA POWER OUTAGE & DEBRIS DAMAGE.
INSURANCE PAYOUT: EST. \$2.7 BILLION USD

Major Water Disasters Impact



\$117.76 Billion

Total economic loss caused by combined flooding, river levees failing, and torrential heavy rain disasters recorded in recent periods.



Geographic Spread

Mountainous topography leads to rapid river runoff, severe landslides, mudslides, and urban flooding across both Honshu and Kyushu.



Infrastructure Loss

Repeated inundation severely damages residential zones, agricultural sectors, public transport systems, and municipal facilities.

Water Disaster Loss by Prefecture

Major Water Disasters in Japan (2013-2022 Total)



1st Fukushima Prefecture (approx. ¥727.7 Billion)

- Frequent Typhoons even after the 2011 Earthquake.
- Severe damage from 2019 Typhoon Hagibis (approx. ¥679.8 Billion).
- Far highest damage over the past 10 years.



Damage from Typhoon Hagibis in 2019



2nd Hiroshima Prefecture (approx. ¥459.2 Billion)

- Landslides in Hiroshima City and other areas in Aug. 2014.
- 77 deaths, 179 houses completely destroyed.
- The July 2018 heavy rain caused approx. ¥338.8 Billion in damage.



Landslide damage in Hiroshima City due to heavy rain in 2014



3rd Okayama Prefecture (approx. ¥441.1 Billion)

- The July 2018 heavy rain brought record-level disaster.
- Levee failure in Mabi Town, Kurashiki City.
- Total damage reached approx. ¥420.9 Billion.



Damage in Mabi Town, Kurashiki City, Okayama Prefecture from July 2018 heavy rain



4th Kumamoto Prefecture (approx. ¥396.5 Billion)

- Record-breaking rainfall during July 2020 heavy rain.
- Levee damage on Kuma River caused flooding in Hitoyoshi City etc.
- Evacuation centers were also flooded, expanding the damage.



Flooding in Kuma Village, Kumamoto Prefecture from July 2020 heavy rain

Earthquakes: Low Frequency, Severe Loss

\$441.3B

Total Economic Loss

Across 32 recorded earthquake events

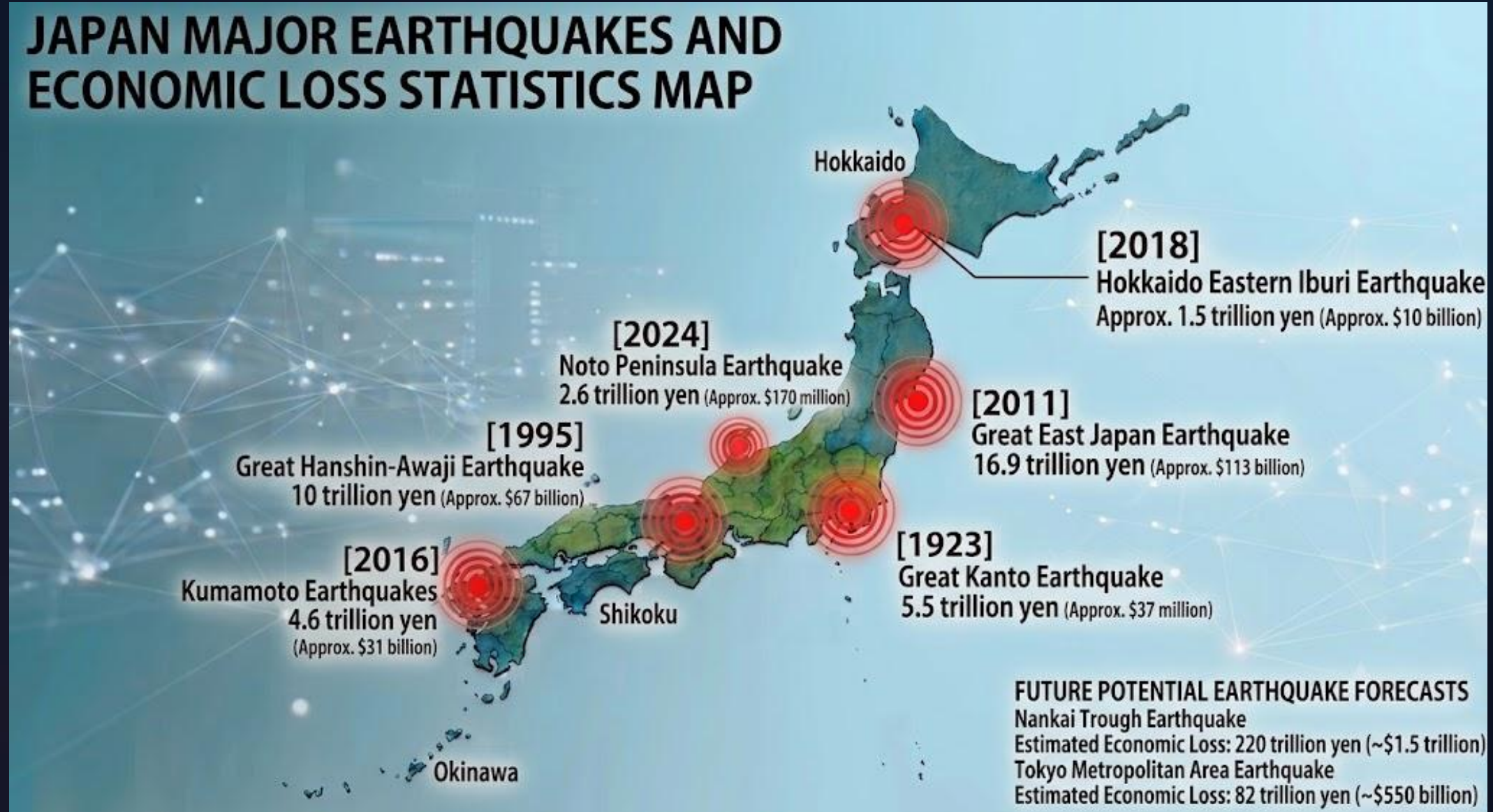
Structural vs. Human Impact

While earthquakes occur less frequently than typhoons, they produce catastrophic financial shockwaves. Strict earthquake-resistant engineering and building standards have successfully kept human casualties remarkably low, yet structural and industrial asset damages remain immensely high.

Major Damaging Earthquakes Near Japan (2016 to Present)

Year	Human Casualties	Housing Damage	Major Earthquakes
2026	Total: 15	Total: 114 buildings	Eastern Shimane Earthquake (M6.4)
2025	Total: 52	Total: 57 buildings	Aomori Eastern Offshore Earthquake (M7.5), Hyuga-nada Earthquake, etc.
2024	Total: 2,168	Total: 166,444 buildings	2024 Noto Peninsula Earthquake (M7.6), Bungo Channel Earthquake, etc.
2023	Total: 62	Total: 3,503 buildings	Noto Peninsula Offshore Earthquake (M5.9), Southern Chiba Earthquake, etc.
2022	Total: 285	Total: 56,998 buildings	Fukushima Offshore Earthquake (M7.4), Hyuga-nada Earthquake, etc.
2021	Total: 261	Total: 20,561 buildings	Fukushima Offshore Earthquake (M7.3), Northwestern Chiba Earthquake, etc.
2020	Total: 19	Total: 5 buildings	Fukui Reihoku Earthquake, Chiba Eastern Offshore Earthquake, etc.
2019	Total: 68	Total: 1,687 buildings	Yamagata Offshore Earthquake (M6.7), East-Central Iburi Earthquake, etc.
2018	Total: 1,311	Total: 78,378 buildings	2018 Hokkaido Iburi Eastern Earthquake (M6.7), Northern Osaka Earthquake, etc.
2017	Total: 5	Total: 34 buildings	Fukushima Offshore, Southern Nagano, Kagoshima Bay Earthquakes, etc.
2016	Total: 3,141	Total: 222,369 buildings	2016 Kumamoto Earthquakes (M7.3), Central Tottori Earthquake, etc.

Japan Major Earthquakes and Economic Loss Statistics Map



Disaster Category Summary

Disaster Category	Frequency (EM-DAT)	Economic Loss (USD)	Primary Impact Characteristics
Earthquakes	32 Events	\$441.32 Billion	Massive infrastructure & capital loss; human casualties kept low by code.
Flooding & Torrential Rain	Frequent / Seasonal	\$117.76 Billion	Levee failure, landslides, urban inundation, localized residential destruction.
Typhoons	97 Events	\$42.75 Billion	Power grid collapse, airport/transportation shutdown, storm surges.

Post-Disaster Recovery Imperative

Time	2007	2010	2011	2012	2013	2014	2016	2018	2019	2020
Pacific Island Countries and territories										
· Melanesia										
· Fiji		* 24,623,058.000	* 1,224,504.000	* 141,400,784.000			* 374,109,863.000	* 50,247,780.000	* 1,090,125.000	* 24,247,724.000
· New Caledonia							* 20,310,000.000			
· Papua New Guinea				* 1,077,375.000	* 1,713,195.000		* 9.570			* 1,593,750.000
· Solomon Islands		* 5,826,567.000	* 129,938.000	* 1,091,496.000	* 12,626,951.000					
· Vanuatu		* 3,071,588.000	* 1,470,068.000	* 281,580.000		* 245,100.000	* 81.700	* 64,500,000.000		
· French Polynesia							* 30,220,000.000			
· Samoa							* 22,048,411.000			
· Tonga		* 4,676,174.000	* 1,113,801.000			* 18,560,063.000	* 3,050,475.000	* 8,579,025.000		
· Japan	* 12,500,000,000.000		* 210,000,000,000.000				* 38,000,000,000.000	* 3,500,000,000.000		

Key Strategic Focus

Facing unprecedented economic losses compared to other Pacific Rim nations, bolstering post-disaster economic recovery, resilient infrastructure investments, and international cooperation is an indispensable global priority.