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# CURRENT CHANGES IN EMERGENCY SITUATIONS WORLDWIDE AND THEIR CONSEQUENCES

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**Abstract:** The contemporary emergency landscape is changing from a pattern dominated by isolated hazard events to one characterized by more frequent climate-related extremes, compound crises, cascading infrastructure failures, prolonged humanitarian emergencies, and transboundary consequences. This article analyzes recent global changes in emergency situations and evaluates their human, economic, health, environmental, and governance consequences. The study uses a descriptive-analytical review of international disaster databases, climate assessments, humanitarian reports, and selected official materials from Uzbekistan. In 2024, EM-DAT recorded 393 natural hazard-related disasters, 16,753 deaths, 167.2 million affected people, and approximately USD 241.95 billion in direct economic losses (1). At the same time, the World Meteorological Organization reported that 2024 was likely the first calendar year with global mean near-surface temperature more than 1.5 degrees C above the 1850-1900 average, intensifying heat, flood, drought, wildfire, and storm risks (2). The analysis shows that the most important change is not merely the number of emergencies but the growing interaction among hazards, exposure, vulnerability, urbanization, technological dependence, conflict, disease outbreaks, and climate change. The findings support a shift from event-centered response toward anticipatory, risk-informed, multi-hazard governance, early warning, resilient infrastructure, public preparedness, and cross-border cooperation.

**Keywords:** emergency situations, disasters, climate change, disaster risk reduction, cascading risk, public health, displacement, resilience, early warning, Uzbekistan.

## INTRODUCTION

Emergency situations are no longer adequately understood as rare, geographically limited events that can be managed only after they occur. In the current period, natural hazards, technological failures, biological threats, armed conflicts, cyber-dependent infrastructure disruptions, and humanitarian crises increasingly overlap. The consequences of one event can propagate through energy, transport, health, food, water, finance, communications, and supply-chain systems. Therefore, the scientific analysis of emergencies must focus not only on hazard frequency, but also on the changing structure of risk: who and what are exposed, how vulnerable systems are, and how quickly local disruption can become a regional or global problem.

Recent global evidence demonstrates this transition. According to the Centre for Research on the Epidemiology of Disasters, 2024 included 393 natural hazard-related disasters worldwide, with 16,753 reported fatalities, 167.2 million people affected, and direct economic losses of about USD 241.95 billion (1). Although mortality was lower than the long-term average because the year did not contain a single ultra-large mass-casualty disaster, the economic burden was high and several extreme heat, flood, drought, and tropical cyclone events had major social consequences. This distinction is important: a lower annual death toll does not mean that disaster risk is declining. It

may instead reflect better warning and response in some places while exposure, asset concentration, and indirect losses continue to rise.

Climate change is a central driver of the changing risk environment. The World Meteorological Organization identified 2024 as the warmest year in the 175-year observational record and estimated the global mean near-surface temperature at 1.55 +/- 0.13 degrees C above the 1850-1900 average (2). The Intergovernmental Panel on Climate Change has concluded that human-caused climate change is already affecting weather and climate extremes in every region, with increasing risks to ecosystems, infrastructure, health, livelihoods, and food and water security (6). Higher background temperatures increase the probability and severity of heat extremes and can intensify hydrological variability, while sea-level rise increases coastal exposure. These processes interact with demographic growth and urban expansion, creating new emergency management challenges.

The purpose of this article is to identify the principal contemporary changes in emergency situations worldwide, assess their main consequences, and outline practical directions for modern disaster risk management. Particular attention is given to compound and cascading risks, health emergencies, displacement, economic losses, early warning, and the relevance of international experience for Uzbekistan.

## MATERIALS AND METHODS

The study was designed as a descriptive-analytical review using a comparative and systems approach. The evidence base consisted of ten sources selected for their institutional authority, recency, and direct relevance to disaster trends, climate-related hazards, humanitarian emergencies, internal displacement, and risk governance. Global quantitative indicators were taken primarily from the EM-DAT annual disaster review for 2024 (1). Climate indicators and descriptions of high-impact weather and climate events were obtained from the World Meteorological Organization State of the Global Climate 2024 report (2). The broader financial and systemic interpretation of disaster risk was informed by the United Nations Office for Disaster Risk Reduction Global Assessment Report 2025 (3).

Health-related consequences were assessed using the World Health Organization annual report on emergency response (4), while displacement dynamics were examined through the Internal Displacement Monitoring Centre Global Report on Internal Displacement 2025 (5). Long-term climate risk attribution and vulnerability concepts were taken from the IPCC Sixth Assessment Report Synthesis Report (6). The Sendai Framework for Disaster Risk Reduction 2015-2030 was used as the principal international policy framework for interpreting prevention, preparedness, resilience investment, and Build Back Better approaches (7).

To include a national perspective, the analysis also reviewed official Uzbek-language materials of the Ministry of Emergency Situations of the Republic of Uzbekistan concerning activities and outcomes in 2024 (8), the 2026 Cabinet of Ministers resolution on improvement of the unified system for monitoring and forecasting natural and technological emergencies (9), and official comparative data on emergencies recorded in the first quarter of 2024 and 2025 (10). These sources were not used to generalize Uzbekistan data to the entire world; instead, they were used to illustrate how global risk-management principles are reflected in a national institutional setting.

The analytical procedure consisted of four stages. First, recent evidence was grouped by hazard and consequence: meteorological and hydrological events, geophysical events, biological and health emergencies, technological risks, conflict-related humanitarian crises, and cascading failures. Second, the direction of change was assessed across five dimensions: hazard intensity, spatial exposure, vulnerability, interdependence of critical systems, and duration of recovery. Third, consequences were categorized as direct human losses, population displacement, public-health impacts, economic and infrastructure losses, environmental damage, and institutional stress. Fourth, the identified changes were interpreted through the disaster-risk model in which risk results from the interaction of hazard, exposure, vulnerability, and response capacity rather than from hazard alone.

The study is limited by the fact that global disaster databases depend on national reporting systems and threshold definitions. Some disasters, especially heat-related mortality, slow-onset drought, local technological incidents, and indirect health effects, may be under-recorded. Economic loss estimates also vary substantially between countries because asset values, insurance coverage, and post-event assessment capacities differ. In addition, global annual totals can be strongly influenced by a small number of very large events. Consequently, this article interprets annual statistics as indicators of broader structural change rather than as proof of a simple linear increase in all types of emergencies.

## RESULTS

The review identified six major contemporary transformations in the global emergency landscape: (1) intensification of climate-related extremes; (2) increased frequency of compound and cascading crises; (3) rising concentration of people and assets in exposed urban and coastal areas; (4) greater interaction between disasters, conflict, disease, and displacement; (5) growing indirect and systemic economic losses; and (6) increasing dependence on anticipatory technologies, early warning, data exchange, and multi-agency coordination. These changes are interconnected and should be analyzed as a single risk system rather than as separate trends.

## RESULTS

1. Climate-related extremes are becoming a dominant component of emergency risk. The WMO reported record global warmth in 2024 and emphasized major socioeconomic disruptions from floods, droughts, tropical cyclones, wildfires, and extreme heat (2). The IPCC assessment provides the longer-term scientific context: warming has already altered the frequency or intensity of multiple climate extremes and the risks increase with additional warming (6). Heat emergencies are especially important because their health impacts are often diffuse, occur across large populations, and may be underestimated in conventional disaster statistics. Droughts similarly develop slowly but can produce severe secondary consequences through crop loss, food inflation, water scarcity, migration, and ecosystem degradation.

2. The global pattern is increasingly characterized by compound and cascading events. A heat wave can coincide with drought and wildfire; a tropical cyclone can cause storm surge, flooding, landslides, contamination of drinking water, interruption of electricity, and hospital overload. The emergency therefore evolves across sectors. When communication networks, power supply, transport corridors, or data systems fail, the effectiveness of rescue and medical response also

declines. This systemic behavior helps explain why the social cost of a disaster can far exceed the direct value of damaged buildings.

**Table 1. Selected indicators illustrating the contemporary global emergency context**

| Indicator | Recent value / observation | Source |
|---|---|---|
| Natural hazard-related disasters recorded in 2024 | 393 events; 16,753 deaths; 167.2 million people affected; about USD 241.95 billion direct losses | CRED / EM-DAT (1) |
| Global temperature in 2024 | About 1.55 +/- 0.13 degrees C above the 1850-1900 average; warmest year in the 175-year record | WMO (2) |
| Estimated full annual disaster cost | More than USD 2.3 trillion when indirect and ecosystem impacts are included | UNDRR (3) |
| People living in internal displacement at end-2024 | 83.4 million globally; 73.5 million due to conflict and violence and 9.8 million due to disasters | IDMC (5) |
| Emergency-health environment | Overlapping and prolonged crises driven by conflict, climate shocks, outbreaks, and mass displacement | WHO (4) |

3. Human exposure is growing even when hazard occurrence does not increase uniformly. Rapid urbanization, informal settlement, development in floodplains, coastal zones, wildfire-prone interfaces, and unstable slopes can convert a moderate hazard into a severe emergency. Dense cities also concentrate critical infrastructure and economic value. A short power interruption can simultaneously affect water pumping, transport signals, telecommunications, cold-chain storage, medical equipment, digital payments, and public information. This means that resilience of lifeline infrastructure is increasingly a core component of civil protection.

4. The economic consequences are becoming more systemic. UNDRR estimates that direct disaster losses are only one part of the burden; when indirect and ecosystem impacts are included, annual costs can exceed USD 2.3 trillion (3). Indirect losses include interrupted production, school closure, health-system overload, disrupted tourism and trade, declining agricultural output, unemployment, higher public debt, and long-term productivity loss. The distribution of these costs is unequal: lower-income communities and small economies often have less insurance, weaker infrastructure, and limited fiscal capacity for recovery.

## RESULTS

5. Health emergencies increasingly overlap with disasters and humanitarian crises. The WHO annual report for 2024 describes millions of people affected by prolonged and overlapping emergencies related to conflict, climate shocks, disease outbreaks, and mass displacement (4). Disasters influence health both immediately and over time. Immediate effects include trauma, burns, drowning, heat illness, interruption of emergency care, and exposure to hazardous substances. Secondary effects include waterborne and vector-borne disease, malnutrition, reduced vaccination,

disrupted maternal and child health services, mental-health disorders, and deterioration of chronic diseases when medicines or routine care become unavailable.

The interaction between climate and health is particularly important. Extreme heat increases mortality among older people, outdoor workers, pregnant women, and people with cardiovascular or respiratory disease. Floods may contaminate water supplies and damage health facilities. Drought can worsen food insecurity and population movement. Wildfire smoke can affect respiratory health far beyond the burned area. These consequences demonstrate that emergency preparedness must include public-health surveillance, reserve medical supply chains, evacuation planning for vulnerable populations, and continuity plans for hospitals and primary-care facilities.

6. Displacement has become one of the clearest indicators of persistent crisis. The Internal Displacement Monitoring Centre estimated that 83.4 million people were living in internal displacement at the end of 2024, more than twice the level reported a decade earlier in the first edition of its global report. Of this total, 73.5 million were displaced by conflict and violence and 9.8 million by disasters (5). Displacement is not simply a temporary movement from a hazard zone. It can disrupt education, employment, social networks, housing, access to health care, legal documentation, and protection systems. Repeated displacement can create chronic vulnerability and make future emergencies more damaging.

7. The boundary between natural, technological, biological, and social emergencies is becoming less distinct. An earthquake may trigger industrial accidents; a flood may damage chemical storage; extreme heat may overload electricity systems; cyber disruption may delay emergency communications; armed conflict can destroy water and health infrastructure and increase outbreak risk. Such compound conditions require multi-hazard planning and joint exercises among emergency services, health agencies, utilities, local government, police, transport authorities, environmental bodies, and private operators. Planning that addresses only a single hazard can fail when a real event produces several simultaneous consequences.

8. Early warning and predictive monitoring are becoming more central to modern emergency management. The Sendai Framework identifies understanding risk, strengthening risk governance, investing in resilience, and enhancing preparedness for effective response and recovery as core priorities (7). The practical value of these priorities is increasingly visible as forecasting, remote sensing, geographic information systems, mobile alerts, and real-time data exchange improve. However, technology alone does not guarantee protection. Warning messages must reach people in understandable language, at the right time, through redundant channels, and must be connected to feasible protective actions such as evacuation, cooling, sheltering, or temporary shutdown of hazardous operations.

The Uzbekistan experience illustrates this institutional shift toward prevention and monitoring. Official reporting by the Ministry of Emergency Situations for 2024 emphasizes measures for protection of the population and territories, fire safety, civil protection, and implementation of priorities linked to the Sendai approach (8). In 2026, the Cabinet of Ministers adopted Resolution No. 328 to improve the unified system for monitoring and forecasting natural and technological emergency situations, including data exchange, environmental monitoring, geographic information systems, and forecasting functions (9). These measures reflect the global transition from reactive response toward continuous risk observation and anticipatory management.

## DISCUSSION

The findings suggest that the phrase "more emergencies" should be used carefully. Global emergency risk is increasing in complexity and potential impact, but annual event counts can fluctuate because of hazard variability, reporting thresholds, database methodology, and the presence or absence of a few catastrophic events. The more defensible conclusion is that climate-related hazard intensity, exposure of people and assets, infrastructure interdependence, displacement, and indirect losses are creating a more difficult operating environment for emergency management. A modern system must therefore be evaluated by its capacity to anticipate and absorb shocks, maintain essential services, communicate risk, protect vulnerable groups, and recover without reproducing the same vulnerabilities.

A second important finding is the growing significance of cascading risk. Traditional plans often divide emergencies into separate categories, such as flood, earthquake, fire, industrial accident, epidemic, or transport incident. In practice, these categories can occur in sequence or simultaneously. For example, flooding may block roads used for evacuation, interrupt electricity to pumping stations, reduce access to hospitals, contaminate water sources, and create conditions for infectious disease. A risk-reduction plan that addresses only the first physical hazard will underestimate the true emergency. Scenario planning should therefore include secondary and tertiary failures and identify which services must be restored first.

The economic evidence also changes the policy logic of disaster management. If only insured physical damage is counted, prevention may appear expensive. UNDRR's broader accounting approach shows that disasters produce large hidden costs through health impacts, ecosystem degradation, educational disruption, supply-chain interruption, reduced investment, and fiscal stress (3). This supports a shift from treating disaster spending as an emergency expense to treating risk reduction as a development investment. Resilient schools, hospitals, bridges, communication systems, drainage, water supply, and energy networks protect not only lives but also future economic activity.

For countries such as Uzbekistan, international experience is especially relevant because climate variability, water stress, heat, seismic risk, industrial development, transport corridors, and expanding urban systems create a multi-hazard environment. National statistics should be interpreted dynamically. For example, official data showed 34 emergencies in the first quarter of 2024 and 25 in the first quarter of 2025, including both technological and natural events (10). A short-term decrease is positive but does not remove the need for preparedness. Risk governance must focus on long-term exposure, critical infrastructure, seasonal hazard forecasting, local response capability, and public awareness rather than on one-year or one-quarter event counts alone.

Several practical priorities follow from the analysis. First, multi-hazard risk assessments should be updated regularly and connected to land-use planning, construction standards, industrial safety, and health preparedness. Second, early-warning systems should be designed end-to-end: observation and forecasting must lead to clear decisions, trusted communication, and protective action. Third, critical infrastructure should have redundancy, backup power, alternative communications, and tested continuity plans. Fourth, emergency medical preparedness should include surge capacity, stockpiles, mobile teams, epidemiological surveillance, mental-health support, and continuity of care for chronic disease. Fifth, communities should participate in drills and risk communication so that warnings result in timely behavior rather than confusion.

Sixth, disaster data systems should integrate hazard, exposure, vulnerability, loss, health, displacement, and recovery information. The 2026 Uzbek decision to strengthen unified monitoring and forecasting is consistent with this direction (9). Seventh, financing should move upstream toward prevention, resilient infrastructure, and risk-informed development. Eighth, cooperation across borders is essential because river basins, drought, dust storms, epidemics, energy systems, migration, and supply chains do not follow administrative boundaries. Finally, recovery should follow the Sendai principle of Build Back Better by correcting pre-existing vulnerabilities rather than simply reconstructing damaged systems as they were before the event (7).

The principal implication is that emergency management must become a permanent component of governance, not an episodic activity activated only after disaster declaration. Climate information, public health, urban planning, infrastructure management, social protection, education, and finance should all incorporate disaster risk. The effectiveness of future emergency systems will depend on how well they connect scientific forecasting with local institutions and public action, and how effectively they protect those who have the least capacity to absorb losses.

## CONCLUSION

Emergency situations worldwide are changing in scale, structure, interaction, and consequences. Recent data do not support a simplistic claim that every type of disaster is increasing every year; however, they clearly show a more complex and interconnected risk environment. The combination of record heat, climate-related extremes, dense urban exposure, technological dependence, conflict, disease outbreaks, displacement, and fragile supply systems means that emergencies can spread across sectors and persist long after the initial hazard has passed. In 2024 alone, hundreds of natural hazard-related disasters affected more than 167 million people and caused direct losses approaching USD 242 billion (1), while broader estimates indicate that indirect and ecosystem costs make the true global economic burden far larger (3).

The most serious consequences are multidimensional. Human losses include death, injury, disease, psychological trauma, interrupted education, loss of housing and livelihoods, and displacement. Economic losses extend beyond destroyed assets to business interruption, public debt, agricultural decline, damaged ecosystems, and reduced long-term development capacity. Health systems face simultaneous pressure from trauma, outbreaks, heat, displacement, and interruption of routine services (4). These effects are unequally distributed, with vulnerable households, children, older people, people with disabilities, displaced populations, and low-income communities often carrying the highest relative burden.

The required policy response is a shift from reactive emergency response to anticipatory risk governance. This includes multi-hazard assessment, early warning, predictive monitoring, resilient critical infrastructure, public preparedness, integrated health planning, interoperable data systems, continuity of essential services, and sustained financing for prevention. International frameworks provide a common direction, while national systems must adapt these principles to local hazards, institutions, and social conditions. Uzbekistan's recent emphasis on monitoring and forecasting demonstrates the practical relevance of this transition (8, 9). The central conclusion is that resilience is not produced only by stronger rescue capacity; it is built before an emergency through safer development, informed communities, coordinated institutions, and investment decisions that reduce vulnerability over time.

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