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UNITED NATIONS OFFICE FOR DISASTER RISK REDUCTION

MITIGATING THE IMPACTS OF THE RISING TIDE OF CLIMATE CHANGE-DRIVEN NATURAL DISASTERS

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Introduction: Defining Climate Change-Driven Natural Disasters

The United Nations Office for Disaster Risk Reduction defines climate-change driven natural disasters as extreme weather events whose frequency, intensity, or duration are significantly influenced by anthropogenic climate change.[1] This type of climate change is different from Earth's natural cycles of heating and cooling. Anthropogenic climate change refers to climate change that is accelerated by human activities. Since the industrial revolution, humans have been releasing greenhouse gases, whose chemical properties allow for a "greenhouse effect", into the atmosphere. These emissions are primarily responsible for the warming of the planet. Primary greenhouse gases, such as carbon dioxide, methane, and nitrous oxide are released into the atmosphere by the burning of fossil fuels, raising livestock, and burning vegetation.[2]

The natural disasters themselves include droughts, tropical cyclones, and heatwaves. Global warming increases the likelihood and severity of extreme weather events. This means as climate change progresses and the global temperature rises, even just one degree celsius, weather events get more extreme. This includes even events that aren't necessarily heat-related, the disruption of normal climate patterns can create extreme storms, blizzards, and temperatures. Nations have been weathering natural disasters long before the United Nations was even conceived. Today, with these increasingly extreme events comes the difficult task of disaster preparedness for nations.

Past Trends and Costs

Over the past two decades, climate-related disasters have nearly doubled, with weather-related hazards accounting for approximately half of all disasters and nearly three-quarters of economic losses worldwide.[3] According to the World Meteorological Organization, weather, water, and climate-related hazards have killed more than two million people over the past fifty years, with developing countries accounting for 90 percent of deaths.[4] When indirect and ecosystem impacts are considered, global losses are estimated to exceed $2.3 trillion annually.[5]

The disproportionate impact of such disasters on developing nations highlights global inequity in resilience and recovery. Roughly 91 percent of all disaster-related deaths occur in low-income regions, where communities often lack access to sustainable infrastructure,

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[1]www.preventionweb.net. "Climate Change Disaster Risk," n.d. https://www.preventionweb.net/understanding-disaster-risk/risk-drivers/climate-change.
[2]NASA. "The Causes of Climate Change." Edited by Kalina Velev. NASA, October 23, 2024. https://science.nasa.gov/climate-change/causes/.
[3]Ibid.
[4]"Weather, Water, and Climate-Related Hazards," World Meteorological Organization, https://news.un.org/en/story/2025/10/1166151
[5] "Global Assessment Report on Disaster Risk Reduction 2025," UNDRR, https://www.undrr.org/gar/gar2025

emergency preparedness programs, and post-disaster relief funding.[6] By contrast, in wealthier nations such as the United States, climate disasters from 1980 to 2024 alone have cost over $2.9 trillion in damages.[7] These figures underscore the increasing human and economic toll of climate-driven disasters. As both frequency and intensity continue to rise, traditional disaster management systems have struggled to adapt to the unpredictability and new extremes brought on by a changing climate.[8]

The UN/UNDRR's Historical Role

The United Nations Office for Disaster Risk Reduction (UNDRR) leads global efforts in disaster risk reduction through the **Sendai Framework for Disaster Risk Reduction 2015–2030**, which provides a comprehensive plan for mitigating the human and economic consequences of disasters.[9] The framework emphasizes the importance of risk-informed governance, early warning systems, and resilience-building at all levels of society.

UNDRR has worked to integrate climate change adaptation into disaster risk reduction strategies, promoting synergy between National Adaptation Plans (NAPs) and DRR policies.[10] Through this integration, UNDRR seeks to ensure that climate adaptation is not treated as a separate issue but as a core element of long-term disaster prevention. The organization's impact is evident in the improvement of early warning systems, which have significantly reduced mortality rates in recent decades.[11] Additionally, UNDRR's forensic analyses of disaster events have helped identify systemic vulnerabilities and the root causes of disproportionate impacts, enabling nations to strengthen governance and community preparedness.

Case Studies

2025 Southern California Wildfires

In 2025, Southern California faced one of its most destructive wildfire seasons on record, with more than 57,000 acres burned and over 16,000 structures destroyed across Los Angeles County.[12] The United Nations, in coordination with the U.S. Environmental Protection Agency (EPA) and the Federal Emergency Management Agency (FEMA), emphasized the importance of integrating risk-informed urban planning and wildfire resilience into future infrastructure

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[6] "Climate Disasters and Global Inequality," UN News, http://news.un.org
[7] "Billion-Dollar Disasters," NOAA National Centers for Environmental Information, https://www.ncei.noaa.gov/access/billions/
[8] "UNDRR: Climate Action and Disaster Risk Reduction," UNDRR, https://www.undrr.org/implementing-sendai-framework/drr-focus-areas/climate-action-and-disaster-risk-reduction
[9] "Sendai Framework for Disaster Risk Reduction 2015–2030," UNDRR, http://undrr.org
[10] "Promoting Synergy Between Climate Change Adaptation and DRR Policies," UNFCCC, https://unfccc.int/sites/default/files/resource/UNDRR_Promoting_Synergy_and_Alignment_between_CCA_and_DRR.pdf
[11] "Global Progress in Early Warning Systems," UN News, https://news.un.org/en/story/2021/09/1098662
[12] "Southern California Wildfire Exposure 2025," International Association of Fire Fighters, https://www.iaff.org/wp-content/uploads/2025/03/SoCal_WildfireExposure_2025.pdf

projects. Cleanup efforts focused on hazardous materials mitigation, while emergency response operations prioritized evacuation and air quality management. From these fires, critical lessons emerged regarding the need for more robust climate forecasting and urban planning that accounts for drought conditions, rising temperatures, and fire-prone development zones. Improved collaboration between local, national, and international agencies was also identified as essential to effective disaster management.[13]

2024 Typhoon Yagi in Vietnam

Typhoon Yagi, the strongest typhoon to strike Vietnam in three decades, affected approximately 3.6 million people and caused an estimated $3.3 billion in damages.[14] The UNDRR, working alongside the United Nations Development Programme (UNDP) and the Vietnamese government, launched a Joint Response Plan focused on housing reconstruction, resilient livelihoods, and community-based climate adaptation. This partnership not only provided immediate humanitarian assistance but also strengthened local governance and community resilience. By integrating local knowledge with UN-led frameworks, recovery programs fostered inclusivity and long-term sustainability, setting a precedent for disaster management in other vulnerable regions.[15]

2020–2022 Horn of Africa Drought

Between 2020 and 2022, the Horn of Africa endured its worst drought in four decades, affecting over 36 million people across Ethiopia, Kenya, and Somalia.[16] UNDRR conducted a comprehensive forensic risk analysis to identify systemic vulnerabilities, examining how prolonged rainfall failure and climate variability intersected with regional governance challenges. The agency also supported the integration of climate risk assessments into both humanitarian and development planning across East Africa. This initiative underscored the importance of long-term resilience strategies and the construction of climate-sensitive infrastructure designed to withstand future droughts.

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[13] "Climate Action and Disaster Risk Reduction," UNDRR, https://www.undrr.org/implementing-sendai-framework/drr-focus-areas/climate-action-and-disaster-risk-reduction
[14] "Typhoon Yagi Impact Report," Typhoon Committee Vietnam, https://www.typhooncommittee.org/19IWS/docs/Technical%20Presentations/12.%2020240925VIETNAM_YAGI_2411.pdf
[15] "UNDP Vietnam: Building Back Better," UNDP, https://www.undp.org/vietnam/publications/undp-viet-nam-responds-typhoon-yagi-building-back-better-resilience-inclusive-growth-and-empowerment-bridge
[16] "Horn of Africa Humanitarian Overview," UN OCHA, https://www.unocha.org/publications/report/ethiopia/horn-africa-drought-regional-humanitarian-overview-call-action-revised-21-september-2022

The Present

With the turn of the 21st century, the global community has made climate change a pressing issue since the occurrence of natural disasters have only risen in the past number of years. 2025 has seen the worst of it, with 14 disasters striking the United States alone, causing over 101.4 billion dollars in damages,[17] the majority of these being tornadoes and severe weather. National Determined Contributions have shown that countries do care about climate change, with 89% of the participating countries showing improvement in the quality and credibility of their goals.[18] Unfortunately, the rapid pace at which climate change is evolving, the global losses from natural disasters number in the hundreds of billions, with wildfires and typhoons being some of the most destructive.[19] The frequency and intensity of disasters are rapidly climbing, posing an active threat against humanity.

Planetary extremes have been recorded by the State of the Climate Change Report, where 22 of the 34 "vital signs" of Earth are at record highs. This includes ocean temperatures, surface temperatures, and deforestation due to wildfires.[20] Additionally, climate change is affecting the natural water cycle process, expediting evaporation and rainfall, which is increasing the frequency of both droughts and floods in many areas.[21] The question then is not why are disasters happening, but how is the global community responding to them?

Response and Cost

Since the signing of the Paris Agreement in 2015, members are required to send in nationally determined contributions (NDCs) that detail the progress and success of combatting climate change in their countries every five years. The Sendai Framework, established in the same year, centers around disaster relief strategies specifically, providing a framework of priorities for countries to follow with the goal of reducing country losses in the event of a disaster while also increasing the preparedness of as many countries as possible. This framework works both on the national and local scale, with 131 countries having Sendai Framework aligned strategies in place on the national scale and 110 on the local scale as of 2023.[22] This is an improvement from 2022 by 5 percent and shows that efficient disaster response is quickly becoming a necessity for all countries and not just those with a previous history.

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[17] "Now at Climate Central: U.S. Billion-Dollar Weather and Climate Disasters | Climate Central." Climatecentral.org, 2025, www.climatecentral.org/climate-matters/billion-dollar-disasters-oct-2025.
[18] "2025 NDC Synthesis Report." Unfccc.int, 2025, unfccc.int/process-and-meetings/the-paris-agreement/nationally-determined-contributions-ndcs/2025-ndc-synthesis-report.
[19] Wholf, Tracy J. "Natural Disasters Have Caused More than $131 Billion in Losses so Far in 2025." Cbsnews.com, 29 July 2025, www.cbsnews.com/news/natural-disasters-damage-losses-2025/.
[20] Deelen, Grace van. "2025 State of the Climate Report: Our Planet's Vital Signs Are Crashing." Eos, 29 Oct. 2025, eos.org/research-and-developments/2025-state-of-the-climate-report-our-planets-vital-signs-are-crashing.
[21] UCAR. "Predictions of Future Global Climate." Scied.ucar.edu, UCAR, 2021, scied.ucar.edu/learning-zone/climate-change-impacts/predictions-future-global-climate.
[22] UNDRR. "What Is the Sendai Framework?" Www.undrr.org, UNDRR, 2025, www.undrr.org/implementing-sendai-framework/what-sendai-framework.

There are several angles that disaster prevention can take, which allows for countries to comprehensively lock down on mitigating the damage that natural disasters bring. Infrastructure resilience is one of them, and it plays a major part in ensuring that losses do not continue to accumulate further down the line. Infrastructure resilience is defined as "the timely and efficient prevention, absorption, recovery, adaptation and transformation of national infrastructure's essential structures and functions, which have been exposed to current and potential future hazards".[23] While this often refers to physical and structural resilience in buildings, homes, and government institutions, it also means how well a country can reinstate essential functions such as schooling or healthcare. The COVID-19 crisis is a prime example that shows a need for countries to implement more infrastructure in the case of a pandemic, what with schools having to shut down and make the clumsy move to virtual for some and not at all for others. Studies done in the wake of COVID-19 show its drastic negative effects on students' learning and social processes, as well as their mental health. The stalling of the education system also has far reaching effects for nations, particularly in GDP income and social inequalities due to the sudden stop in curriculum.[24]

Working Towards Prevention

Prevention can also take a more holistic stance, with Comprehensive Risk Management (CRM).[25] This focuses on long term resilience in countries, taking into account past disasters, how they acted, and adjusting based on that and prediction models to best prepare in the event of other disasters and their impacts. More than just infrastructure buildup, CRM works on climate change and global warming solutions, particularly in vulnerable countries. CRM is essential to disaster relief and prevention; natural disaster frequency has doubled in the last 20 years, costing over $2.3 trillion USD annually when indirect and ecosystem impacts are considered. This begs the question of why more nations are not investing in efficient disaster response and infrastructure.

Taking action against the source of extreme weather is the ideal, yet it is understandably a massive and complicated undertaking that requires large investments of both time and money. Unfortunately, this means that the implementation of effective infrastructure, disaster relief, and climate friendly measures are uneven globally, particularly in low-income and high-risk regions. Due to these areas being constantly bombarded with disasters, many potential investors and economic opportunities draw away, leading these regions into heavy debt spirals and even worse losses during natural disasters. For example, Haiti faces such a problem.[26] The nation's GDP is

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[23] Panda, Abhilash, et al. "Principles for Resilient Infrastructure." United Nations Office of Disaster Risk Reduction, 2024.
[24] https://www.undrr.org/news/undrr-roamc-investment-education-creates-more-resilient-societies
[25] UNDRR. "Comprehensive Disaster and Climate Risk Management (CRM)." Www.undrr.org, 25 June 2021, www.undrr.org/climate-action-and-disaster-risk-reduction/comprehensive-disaster-and-climate-risk-management.
[26] "Disaster Risk Reduction in Haiti: Situational Analysis 2023." Undrr.org, 9 Sept. 2023, www.undrr.org/publication/disaster-risk-reduction-haiti-situational-analysis-2023.

around $25 billion USD, significantly lower than the world average and placing it in a position of poverty. This unfortunate fact makes basic necessities inaccessible and creates a very fragile society. This, in conjunction with other factors such as political instability and geographical issues, makes creating long lasting and safe disaster frameworks and infrastructure a hard reality.

The UNDRR works with other branches of the UN to attempt to bring financially achievable and sustainable disaster relief strategies to low-income nations. A way they have done this is through the New Collective Quantified Goal (NCQG).[27] The end goal is to scale global climate finance past USD 100 billion annually through Paris Agreement member state contributions and commitments. It works through several different levels, and places emphasis on partnership with bilateral climate finance providers and multilateral development banks while also encouraging a more comprehensive grant and debt-free loan system for least developed countries.[28] The aim is for adaptation to be at the forefront, and the Green Climate Fund has significantly increased adaptation finance since 2019; in fact it doubled in 2024. The reality is that comprehensive and effective disaster relief, prevention, and adaptation requires heavy investment of economic capital. Through the NCQG's and other initiatives, the global community can hopefully close the gap between disaster and resilience.

The Future of Disasters

The United Nations has already implemented certain solutions to the ramping climate change related disasters throughout the world. Though there have been many solutions discussed, more notable actions taken by the United Nations include the COP30 Conference taking place in Brazil later this year. The UNFCCC five year plan was renewed at COP29 last year, which also invited non party stakeholders to support the five year rolling plan. COP30 promises to offer solutions that align with the Paris Agreement through the Granary of Solutions, which has already begun releasing solutions, focuses on individual solutions to nation-wide issues such as energy and food solutions.[29]

The timeline for humanity isn't set in stone, rather defined by the degree that the global temperature rises. The generally accepted point of no return is 1.5℃, where the effects become irreversible, but it's important to note that the effects of irreversible climate change will not be a mass-extinction event. Instead, the aforementioned climate disasters will become more intense. According to Nasa, in the United States alone sea levels will rise up to 6.6 feet, and throughout the world climate change will continue beyond this century.[30] The climate has already risen by 1.24℃ as of 2024, nearly doubling since 2014. This has already taken a toll on sea-levels and

[27] What Is the New Collective Quantified Goal on Climate Finance and What Is It For? https://unfccc.int/sites/default/files/resource/UNFCCC_NCQG2023_flyer_web.pdf
[28] Things to Know About Climate Finance. https://us.boell.org/sites/default/files/2025-03/cfu-10things2025.pdf
[29] "Action Agenda." Climatechampions.net, 2025, www.climatechampions.net/action-agenda. Accessed 10 Nov. 2025.
[30] NASA. "The Effects of Climate Change." Science.nasa.gov, NASA, 23 Oct. 2024, science.nasa.gov/climate-change/effects/.

natural disasters as mentioned before, but current initiatives taken by nations are meeting the needed dedication.

The UNDRR has encouraged a number of solutions regarding the future of climate disaster relief. The most poignant development is a financial one, a framework risk-informed investment provided by the Global Assessment Report, with solutions such as publicly funded and democratized risk assessment in order to ensure the benefit of the people.[31] The UNDRR also introduced The Pact for the Future last year, meant not only to acknowledge the generational nature of climate disasters, but to promise a better future for the next generation. The Pact put an emphasis on identifying the vulnerability of certain regions, anticipations of disaster and actions to take towards immediate prevention, and a multitude of infrastructure related goals. All such goals align with previously outlined UNDRR goals, and place a specific importance on the financial aspect of future climate disaster prevention and relief efforts.[32] Specific projects expected to continue into the future include Southern California wildfires relief, the disaster itself costing the area $250 Billion USD, Typhoon Yagi and the drought in the Horn of Africa. The details of all these disasters continue to inform the UNDRR approach to disaster relief and show the importance of investment to disaster relief.

Guiding Questions for Research

1. What specific initiatives has your country been a part of globally or implemented nationally?
2. What are high-risk areas in your nation, and how has your nation addressed concerns regarding them?
3. What financial and emissions goals can your country commit to?

Guiding Questions for Debate

1. What is the specific role of the UNDRR in disaster relief with regards to global guidelines and funding?
2. What solutions can your nation provide, and how can the global community implement them practically?
3. How much can we ask member states to sacrifice for their role in climate disaster prevention?

[31] ---. “Global Assessment Report (GAR) 2025.” Undrr.org, 27 May 2025, www.undrr.org/gar/gar2025.
[32] “Disaster Risk Reduction at the Core of the Pact for the Future.” Undrr.org, 24 Jan. 2025, www.undrr.org/implementing-sendai-framework/drr-focus-areas/pact-for-future.