Forum: Environment Committee

Issue: Establishing better cooperation between UN agencies, NGOs, and medical and scientific institutions in response to natural disasters

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Introduction

Natural disasters throughout history have been the source of various forms of destruction to humanity as a whole. These impacts can range from the death of millions to disrupting the economies of the affected nations.[1] The latter was seen especially in the case of the Indian Earthquake and the devastating impact it had on the Japanese economy amounting to close to 10 billion dollars.[2] These disasters as the name would suggest are largely independent of human activities, however, disasters such as floods as seen in the Mediterranean region last year are exacerbated by an enhanced greenhouse effect due to increasing carbon emissions.[3] At the same time, the 21st century has seen a great shift in power dynamics towards actors like the United Nations (UN), Non-governmental Organizations (NGOs), and medical and scientific research institutes.[4] Natural Disasters are defined by the United Nations Statistics Division to be “unforeseen” by their very nature;[5] Hence effective cooperation efforts amongst these actors are likely to yield more favorable results. However, unlike governments, the aforementioned agencies, especially NGOs, do not have any robust system of scrutinization or accountability placed upon them.[6] This means their actions are largely dictated by the behest of the people in charge of such organizations. This can lead to various issues:[7] miscommunication, lack of relevant information, lack of relevant technology, and lack of funding. Delegates must also carefully balance the level of intervention that can be substantiated by the mandate of the Environment Committee since some of these organizations are sovereign entities.

In 2016 the United Nations Office for Disaster Risk Reduction (UNDRR) proposed the Sendai Framework for Disaster Risk Reduction under the Paris Agreement and 2030 Agenda for Sustainable Development.[8]

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[1] Hannah Ritchie, Max Roser, and Pablo Rosado, “Natural Disasters,” Our World in Data, December 7, 2022, https://ourworldindata.org/natural-disasters.
[2] “Global Economic Impact of the Japanese Earthquake, Tsunami, and Nuclear Disaster,” www.spglobal.com, n.d., https://www.spglobal.com/marketintelligence/en/mi/country-industry-forecasting.html?ID=1065929196.
[3] D. Garcia-Castellanos et al., “Catastrophic Flood of the Mediterranean after the Messinian Salinity Crisis,” *Nature* 462, no. 7274 (December 2009): 778–81, https://doi.org/10.1038/nature08555.
[4] “Shift the Power: Network Organizations as a Power for Change,” Solidaridad Network, accessed December 2, 2023, https://www.solidaridadnetwork.org/news/shift-the-power-network-organizations-as-a-power-for-change/.
[5] “Natural Disasters UNSD Workshop on Environment Statistics,” 2008.
[6] Vaibhav Goel and Manoj Kr. Tripathi, “THE ROLE of NGOs in the ENFORCEMENT of HUMAN RIGHTS: An Overview,” *The Indian Journal of Political Science* 71, no. 3 (2010): 769–93, https://www.jstor.org/stable/42748408.
[7] Ibid 6
[8] United Nations Office for Disaster Risk Reduction , “What Is the Sendai Framework?,” www.undrr.org (UNDRR, 2015), https://www.undrr.org/implementing-sendai-framework/what-sendai-framework.

It recognized that efforts to significantly decrease disaster risk and mitigate losses in lives, livelihoods, and various assets should involve collaboration among the State, local government, private sector, and other stakeholders.[9] It asserted the state bears the primary responsibility for risk reduction, but a shared commitment is essential for comprehensive resilience across communities and nations.[10] It however did not provide any specifics on how this should be done and should serve as guidelines for how cooperation can be established for the delegates.

In 2022 UNDRR published their annual report which briefly touched upon how cooperation amongst various actors can be carried out.[11] In Madagascar, for example, the UN agency intervened to help the government engage with various stakeholders under the policy guidelines of the 2030 agenda.[12]

When addressing the question of bolstering cooperation amongst the actors involved in the management of natural disasters several solutions can be considered. One of these is the development of information-sharing mechanisms between such actors.[13] Delegates are expected to provide solutions as to what technologies will be used to communicate, and how they will be made as fast and reliable as possible. Focus should also be placed on how these mechanisms will be made secure from any form of hacking and how the privacy of the organization involved will be maintained.

Secondly, training and capacity building will also be a ground-level solution that can be considered.[14] How government employees and volunteers will be trained to use the available technologies to avert the negative consequences of the disaster as effectively as possible will be the topic of discussion. The scope would be expanded to include capacity-building measures for the ground-level actors and how they will be supported by their respective governments.

Thirdly, delegates must present robust solutions in the context of how funding will be raised and allocated towards cooperation during natural disaster management.[15] This would discuss how NGOs and research institutes should be allocated funding by governments and other organizations like the World Bank. It would also include the criteria the mechanism through which technology and other monetary resources will be distributed. Delegates should note in THIMUN procedure it is assumed that the UN has unlimited funding. Despite this, delegates must come up with feasible and agreeable solutions that have some real-world application.

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[9] Ibid 8
[10] Ibid 8
[11] "DRR and UNDRR's History | UNDRR," www.undrr.org, May 17, 2023, https://www.undrr.org/our-work/history.
[12] Ibid 11
[13] "Essential Nine: Ensure Effective Disaster Response - Home - Beta Version: Campaign," www.unisdr.org, n.d., https://www.unisdr.org/campaign/resilientcities/home/article/essential-nine-ensure-effective-disaster-response.html.
[14] "Capacity Building | NDMA, GoI," ndma.gov.in, accessed December 2, 2023, https://ndma.gov.in/about-us/division/Capacity-Building#:~:text=At%20the%20national%20level%2C%20The.
[15] European Civil Protection and Humanitarian Aid Operations, "Disaster Preparedness," civil-protection-humanitarian-aid.ec.europa.eu, n.d., https://civil-protection-humanitarian-aid.ec.europa.eu/what/humanitarian-aid/disaster-preparedness_en.

Several past resolutions can be referred to and their ideas expanded upon in the resolutions. Resolution A/RES/2717 talked about the integration of technology for disaster management and mentioned the importance of the various stakeholders yet no direct recommendations for how cooperation will be established.[16] Resolution A/RES/2959 built upon the issue of the consequences of natural disasters in LEDCs by recommending certain preventive measures for the respective governments but failed to adequately address the role of the stakeholders in doing so.[17] Resolution A/RES/36/225 built upon why information-sharing mechanisms should be established by various UN agencies yet did not shed light on the exact steps that would be needed.[18]

The agenda in its entirety is not controversial in the stances that will be espoused by the delegates; however, debate on how this cooperation will be achieved among the various actors would be in focus. The best solutions would take into account the feasibility and scale of impact for all nations even Less Economically Developed Countries (LEDCs).

Definition of Key Terms

Early Warning Systems

> "An integrated system of hazard monitoring, forecasting, and prediction, disaster risk assessment, communication and preparedness activities systems and processes that enable individuals, communities, governments, businesses, and others to take timely action to reduce disaster risks in advance of hazardous events.[19]"

Emergency

> Emergency is sometimes used interchangeably with the term disaster, as, for example, in the context of biological and technological hazards or health emergencies, which, however, can also relate to hazardous events that do not result in the serious disruption of the functioning of a community or society.[20]

Disaster Impact

> Disaster impact is the total effect, including negative effects (e.g., economic losses) and positive effects (e.g., economic gains), of a hazardous event or a disaster. The term includes economic,

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[16] Mark Allen, Zakaria Sibahi, and Earl Sohm, "Evaluation of the Office of the United Nations Disaster Relief Co-Ordinator," n.d., accessed December 2, 2023.
[17] Ibid 16
[18] Ibid 16
[19] Ruth Favela, "Early Warning Systems and Disaster Risk Reduction: A Comprehensive Guide," Tomorrow.io, July 4, 2023, https://www.tomorrow.io/blog/early-warning-systems-and-disaster-risk-reduction-a-comprehensive-guide/#:~:text=The%20United%20Nations%20Office%20for.
[20] UNDRR, "Disaster," Undrr.org (United Nations Office for Disaster Risk Reduction, 2015), https://www.undrr.org/terminology/disaster.

human and environmental impacts, and may include death, injuries, disease and other negative effects on human physical, mental and social well-being.[21]

Disaster Preparedness

Disaster preparedness refers to a group of actions performed ahead of time by governments, businesses, communities, or people to better respond to and deal with the aftermath of any kind of disaster, whether it is caused by natural or man-made dangers. Reducing the loss of life and livelihoods is the goal.[22]

Humanitarian Aid

Humanitarian Aid can be defined as assistance usually financial in nature to protect human life, facilitate development, and alleviate human suffering. Usually, provided in the aftermath of a man-made crisis or natural disaster. It can come in the form of government intervention or even from NGOs or IGOs working for a particular cause.[23]

Incident Command System

Incident Command System (ICS) is a management system used by various organizations to command, control, or coordinate action during the event of a natural disaster. Its design and capabilities change with technological innovation. However, its effectiveness greatly depends on the access to resources the organization possesses. A globally unifying ICS has been considered a solution to the issue of predicting and helping in the recovery process of natural disasters.

Inclusive Decision-making

The process of involving various stakeholders when deciding how to approach the recovery process from natural disasters.[24] Various agencies of the UN promote this by allowing NGOs and research institutes to participate in discussions. The purpose is to come up with agreeable and acceptable strategies and solutions that take into account the plurality of views on the matter.

Natural Disasters

A situation or event that overwhelms local capacity, necessitating a request to the national or international level for external assistance; an unforeseen and often sudden event that causes great damage, destruction and human suffering.[25]

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[21] Ibid 20
[22] Ibid 20
[23] Wikipedia Contributors, “Humanitarian Aid,” Wikipedia (Wikimedia Foundation, December 31, 2019), https://en.wikipedia.org/wiki/Humanitarian_aid.
[24] “5 Tips for Inclusive Disaster-Risk Management Planning,” blogs.worldbank.org, July 11, 2023, https://blogs.worldbank.org/sustainablecities/5-tips-inclusive-disaster-risk-management-planning.
[25] CRED, “EM-DAT - the International Disaster Database,” www.emdat.be, accessed December 2, 2023, https://www.emdat.be/#:~:text=EM%2DDAT%20defines%20disasters%20as.

Rapid Response Teams

Specialized teams trained to quickly deploy and provide immediate assistance in the aftermath of natural disasters. They are usually made of various professionals including scientists, emergency rescue officers, medical staff, and even paramilitary forces. Their success greatly depends on the extent of cooperation between the different members and the training they have undergone.[26]

Resource Mobilization

Resource Mobilization refers to the act of deploying and mobilizing certain resources in the event of a natural or man-made disaster.[27] It usually requires resources beyond those under the control of the local authorities and can come in the form of mutual aid agreements. Even communities can support resource mobilization by providing human resources or funding. NGOs are a form of a stakeholder that mobilizes the resources of individual communities.

Risk Assessment

"A qualitative or quantitative approach to determine the nature and extent of disaster risk by analysing potential hazards and evaluating existing conditions of exposure and vulnerability that together could harm people, property, services, livelihoods and the environment on which they depend.[28]"

Background Information

In the event of natural disasters, collaborative and cooperative intervention can facilitate effective recovery protecting lives and minimizing damages. It can even allow more effective utilization of resources especially in a situation where they're potentially scarce. Inter-agency collaboration despite manifesting in various forms around the world, has no specific guidelines to be implemented. For this reason, the extent of cooperation between various stakeholders depends on a number of factors: the restrictions the government places on non-governmental agencies, the funding the government provides to these agencies, and the economic state of the country in question. For example, LEDCs tend to have

[26] "RAPID RESPONSE TEAM for DISASTER RELIEF," American Federation of Teachers, August 20, 2018, https://www.aft.org/resolution/rapid-response-team-disaster-relief.
[27] "Resource Mobilization | Division of Homeland Security and Emergency Management," dhsem.colorado.gov, accessed December 2, 2023, https://dhsem.colorado.gov/emergency-management/logistics/resource-mobilization#:~:text=The%20Resource%20Mobilization%20Plan%20is.
[28] "Disaster Risk Assessment," www.undrr.org, n.d., https://www.undrr.org/terminology/disaster-risk-assessment#:~:text=A%20qualitative%20or%20quantitative%20approach.

less than half the research institutes and NGOs when compared to nations in the West.[29] For this reason, the need for a unifying solution applicable to each and every nation is unlikely to be effective. Regional Collaboration between neighboring countries has emerged as a possible solution to mitigating the consequences of natural disasters. Asia alone has witnessed 1333 natural disasters in the last few decades, with damage amounting to close to 105$ billion.[30] At such a stage inefficient utilization of available resources has the capability of worsening the humanitarian. Hence, the collaboration of various actors like NGOs, IGOs, and governments helps place an overarching emphasis on mitigating the long-term consequences of natural disasters.

Although states can manage natural disasters by themselves, using the channels of complex interdependence and interlinkage is likely to yield the promotion of mutual interests by delegating recovery and prevention tasks based on expertise.[31] Cooperation would assist in sharing accountability between the various stakeholders such that the impact on each can be viewed from the lens of benefitting society as a whole. Cooperation, however, entails foraging partnerships in the short and long run focusing on a variety of matters. In the 21st century, the extent of the impact of both natural and man-made disasters has significantly increased. This has caused a decentralization in the management systems from the state to organizations like NGOs and research institutes.[32] However, this can cause a conflict of interest due to varying standards held by different actors. For example, an NGO in Europe may believe in different values to that of an NGO in the USA.

Another issue, stemming from cooperation is the aspect of incentivization. Governments have a direct incentive to promote disaster management efforts; however, the same cannot be said for the other stakeholders.[33] Aligning the interests of actors like businesses and research institutes may not always be viable in regards to the recovery effort. It is also important to note different actors cannot really know about the skills and resources at the disposal of the other actors in question, this makes cooperation problematic as the extent to which one actor can contribute to the operation remains ambiguous.[34] Even the aspect of them being capable enough to fulfill their responsibilities is logistically challenging to assess.

The idea of equity must be explored in the light of how it affects all the people involved. The natural disaster itself is the same for all people. However, its impact can vary based on the social and economic background of the person in question. Hence, it is vital to address the needs of all those concerned when

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[29] "Category:Research Institutes by Country," Wikipedia, March 17, 2022, https://en.wikipedia.org/wiki/Category:Research_institutes_by_country.
[30] https://www.facebook.com/AsianDevBank, "Recent Significant Disasters in the Asia and Pacific Region," Asian Development Bank, February 3, 2019, https://www.adb.org/news/infographics/recent-significant-disasters-asia-and-pacific-region.
[31] Mohammad Mojtahedi and Bee Oo, "Association of Researchers in Construction Management," 2012.
[32] Narges Rouhi, Hasan Abolghasem Gorji, and Mohammadreza Maleki, "Nongovernmental Organizations Coordination Models in Natural Hazards: A Systematic Review," *Journal of Education and Health Promotion* 8 (February 15, 2019): 44, https://doi.org/10.4103/jehp.jehp_201_18.
[33] "Weak Governance," www.preventionweb.net, n.d., https://www.preventionweb.net/understanding-disaster-risk/risk-drivers/weak-governance.
[34] Ibid 33

considering the question of disaster management and risk reduction.[35] UN guidelines exist on the same in the form of the "Leaving No One Behind[36]" agreement yet facilitating equitable use of resources in disaster management remains a challenge. Delegates can look to even address the issue from the perspective of how compensation plans are designed taking into account increased costs of damages for the poor. Even aspects such as racial, gender and religious bias should be taken into account when designing how various stakeholders could contribute to the cooperative effort. This would add a social angle to which Civil Society Organizations (CSOs) and NGOs can speak to based on which part of the world they function in. Key aspects of the 16th Sustainable Development Goal.[37]

Sub-Topic 1: Development of information-sharing mechanisms among the actors involved

Following a natural disaster the exchange of information is essential, especially within the first 72 hours.[38] Rescuing survivors and providing medical treatment are immediate priorities that heavily rely on information-sharing mechanisms. Inconsistencies in the process of communication can lead to several problems in terms of disaster management. Due to a lack of a uniform platform for communication there tend not only to be delays but also overlaps. For example, during the Indian Ocean Earthquake in 2004 both governments and local NGOs assisted in the recovery efforts yet this led to a greater loss of lives due to the lack of effective cooperation between the two stakeholders.[39]

Role of technology

The advent of technology has helped information sharing in the case of natural disasters. Specifically, Information Communication Technologies have made communication almost seamless in recent times.[40] Data can be shared in a matter of seconds with anyone in any part of the world. Increased investment in data stores and cloud computing has also given researchers access to historical patterns to predict and assist in preventive measures against natural disasters. For example the Haiti, earthquake social media was used by survivors to convey information about their respective locations.[41] Moreover, an increase in the efficiency of information sharing has been a direct consequence of the implementation of new technology. The United Nations Office for Humanitarian Affairs (UN OCHA) hosts a platform known as

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[35] "Disaster Equity Plan Statement," www.acf.hhs.gov, July 31, 2023, https://www.acf.hhs.gov/ohsepr/about/disaster-equity-plan-statement#:~:text=Disaster%20equity%20is%20the%20provision.
[36] "Leave No One Behind: Disaster Resilience for Sustainable Development - Asia-Pacific Disaster Report 2017 | PreventionWeb," www.preventionweb.net, October 10, 2017, https://www.preventionweb.net/publication/leave-no-one-behind-disaster-resilience-sustainable-development-asia-pacific-disaster.
[37] "Disasters Discriminate - Our Response Should Not," UNDP, accessed December 2, 2023, https://www.undp.org/eurasia/blog/disasters-discriminate-our-response-should-not.
[38] "Information Sharing in Disasters an Introduction to Guidelines and Best Practices for Civ-Mil Information Sharing during Disasters Center for Excellence in Disaster Management & Humanitarian Assistance," n.d., accessed December 2, 2023.
[39] Katherine Wikoff, "Communication Lessons Learned from the Indian Ocean Tsunami and Other Natural Disasters," Katherine Wikoff, December 26, 2014, https://katherinewikoff.com/2014/12/26/communication-lessons-learned-from-the-indian-ocean-tsunami-and-other-natural-disasters/.
[40] "The Role of Science and Technology in Disaster Reduction the Role of Science and Technology in Disaster Reduction," n.d., accessed December 2, 2023.
[41] "Role of Technology in Disaster Management," Unacademy, accessed December 3, 2023, https://unacademy.com/content/upsc/study-material/disaster-management/role-of-technology-in-disaster-management/.

the Virtual on-sight Coordination Center which has over 20,0000 registered users all around the world.[42] Despite being accessible using a smartphone the low sign-up rates can be attributed to a lack of awareness. The need for an information-sharing system designed from the perspective of disaster management must be brought into the mainstream. Income inequality, however, does not help this effort from the perspective of providing access to such technologies to all stakeholders involved. This by extension links to the idea of cooperating and providing technical assistance.[43]

Barriers to effective information sharing

The exchange of information in disaster management despite the advances in technology has not changed that much. Information is only shared when necessary and tends to be somewhat irrelevant. Due to this, there is no guarantee each stakeholder receives the information they require to act efficiently.[44] The need to establish a coordinated channel of communication becomes more apparent. This system should ideally construct infrastructure that can carry the relevant information in a timely manner to all the relevant stakeholders in a format that is decipherable to them.[45] This would also need to take into account the technology available to all the stakeholders.[46] Highly advanced channels of communication may not be suitable for disaster relief on the ground level for this exact reason.

Role of ICT platforms

Information Communication Technology platforms play a vital role in communication with various stakeholders during all phases of disaster management. These platforms provide two-way communication which allows effective sharing of information almost in real-time.[47] However, this requires a stable internet connection which may not always be present in certain remote locations.[48] This is particularly alarming since such remote locations tend to be the most affected by natural disasters anyway. The increase in the sheer number of stakeholders has caused several problems: the emergence of competitive platforms, different levels of technological advancements, and lack of synchronization. Since all the involved stakeholders tend to have different communication systems information-sharing becomes convoluted. The information gets distributed in a non-linear manner which can directly impact how information itself reaches different stakeholders. This underscores the need for one unanimous

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[42] United Nations, “OCHA,” United Nations, n.d., https://www.un.org/en/ccoi/ocha-united-nations-office-coordination-humanitarian-affairs.
[43] “SAMHSA Disaster Technical Assistance Center Supplemental Research Bulletin Greater Impact: How Disasters Affect People of Low Socioeconomic Status,” 2017.
[44] Nitesh Bharosa, JinKyu Lee, and Marijn Janssen, “Challenges and Obstacles in Sharing and Coordinating Information during Multi-Agency Disaster Response: Propositions from Field Exercises,” *Information Systems Frontiers* 12, no. 1 (May 9, 2009): 49–65, https://doi.org/10.1007/s10796-009-9174-z.
[45] Ibid 44
[46] Sara Waring, PhD, PGCert L&T, MSc, BSc (Hons), Michael Humann, PhD, PGCert L&T, MSc, BSc (Hons), and Natasha Dawson, MSc, BSc (Hons), “Facilitators and Barriers to Effective Information Sharing during International Disaster Response,” *Journal of Emergency Management* 17, no. 6 (December 1, 2019): 469–86, https://doi.org/10.5055/jem.2019.0440.
[47] Alessia D’Andrea, Patrizia Grifoni, and Fernando Ferri, “Discussing the Role of ICT in Sustainable Disaster Management,” *Sustainability* 14, no. 12 (June 11, 2022): 7182, https://doi.org/10.3390/su14127182.
[48] Ibid 47

platform that can be used by stakeholders all around the world.[49] This raises several questions, however: how will countries at odds with each other be expected to cooperate, how will privacy concerns be addressed, and how will legal and ethical issues be dealt with?[50] Delegates in their clauses should look to address such questions. They should also strive to recommend the creation of a platform universal and accessible channel for information sharing. The language and form in which the information and data will be shared would depend greatly upon what is deemed acceptable by the involved actors.[51]

Sub Topic 2: Training and capacity building with the pre-text of technological development

Natural disasters, despite a common occurrence in the last decade, managed to have catastrophic consequences on the regions they have impacted. Different types of disasters can have different extents of impact. This depends greatly on the region they affect and their magnitude. Humans around the world will always be vulnerable to natural disasters if left unprepared. This necessitates preparation in the event of a natural disaster. This preparation involves training the required stakeholders along with building capacity to mitigate the various costs associated with such disasters: capacity building could refer to ensuring adequate food, medical, and health facilities are provided to those in need.[52] It also extends to include rehabilitation and response efforts since both also require the mobilization of resources. Such efforts invariably involve other stakeholders since different stakeholders tend to have different expertise in dealing with natural disasters.[53] Therefore, increasing the capacity of all the stakeholders to mitigate the consequences of natural disasters would allow better utilization of the resources required in disaster management which tend to be scarce in various contexts.

Capacity building through training

The primary aim of capacity building is to have an effective disaster management process in the shortest possible time frame. Capacity-building activities have been defined under the Disaster Risk Management (DRR) programme and include strategies like community-based training, learning how to share information, and training for emergency rescue teams.[54] However, taking sustainable development goals into account, the development of such practices should not only enhance the disaster management capabilities but do so in a manner through which future generations can benefit from it as well. India, due to its diverse geography has experienced several hundred natural disasters in the last few years. Close

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[49] "The Role of ICT during the Disaster - a Story of How Internet and Other Information and Communication Services Could or Could Not Help Relief Operations at the Great East Japan Earthquake," n.d., accessed December 3, 2023.
[50] "Unit Overview," n.d., accessed December 3, 2023.
[51] Justin Wilson, Fredrick Wilson, and Joseph Wilson, "The Use of ICT in Disaster Risk Management: A Case Study of Nema Borno State," *Journal of Remote Sensing GIS & Technology* 5, no. 1 (n.d.), accessed December 3, 2023, https://doi.org/10.5281/zenodo.2555630.
[52] Damira Jantassova et al., "Capacity Building for Engineering Training and Technology via STEAM Education," *Education Sciences* 12, no. 11 (October 24, 2022): 737, https://doi.org/10.3390/educsci12110737.
[53] Ibid 52
[54] "Capacity Building for Disaster Risk Management," PrepareCenter, n.d., https://preparecenter.org/topic/capacity-building-disaster-risk-management/.

to 54% of India's landmass is susceptible to an earthquake at any point. One such state is Odisha, where the efforts of the state government can be used as a case study to propose globally implementable solutions.[55] For example, the state government in Odisha ran campaigns to educate vulnerable populations about different types of disasters and the steps the people could take to minimize risk.[56] This was done through verbal means in the language of the locals all around the state. The locals were also trained in acquiring survival skills and assisting each other. The training was not only carried out by the government themselves. NGOs like the Indian Red Cross Society and OSDMA assisted in training by including locals in disaster management teams in the case of Typhoons.[57] These NGOs even conducted some drills for the locals, so in the case of an emergency they would have experience in regards to how to evacuate. The government also provided recommendations such as keeping valuables in waterproof bags and having accessible first-aid kits. The government ensured that one person in a village had access to a cell phone for early warning messages such that the person who received the message could convey it to all the villagers. This involved the state government working closely with gram panchayats (the governing body in villages). The greater engagement of the community was crucial to effective management of Cyclone Phailin in 2013.[58] It is estimated the government efforts saved a few thousand lives by educating the villagers on the issue of disaster management.

Applications of different technologies

Natural Disasters have been a constant occurrence since the dawn of civilization. In 1931, for example, the Chinese floods killed close to 3.7 million people.[59] The impact of natural disasters can be seen even after the disaster itself. Reconstructing infrastructure and allowing people to regain likelihood is only part of the post-disaster crisis.[60] The adverse effects on local ecosystems can risk upsetting the ecological balance in the region affected by the natural disaster as well. Technological advancements have bolstered our capacity to prepare for, respond to, and recover from natural disasters.[61] Various new technologies and their utility can be discussed: Remote sensing refers to using satellites to gather information about upcoming natural disasters and track their location; IoT refers to technologies that link various devices to work with each other like the internet, they can be used for information sharing regarding natural disasters; Radars help monitor the activity of the earth and monitor objects using radio waves.[62] All these technologies can contribute to the effective tracking of weather forecasts, provision of early warnings, and measuring the magnitude of natural disasters. All this information is essential in the mitigation of natural disasters. The application of these technologies can extend beyond what they are

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[55] Devendra Yadav and Akhilesh Barve, "Role of Capacity Building in Disaster Preparedness: A Case of Cyclone Phailin Role of Capacity Building in Disaster Preparedness: A Case of Cyclone Phailin," 2014.
[56] Ibid 55
[57] Ibid 56
[58] Ibid 56
[59] Vijan Bhandari, "Use of Technology in Disaster Management," *Unity Journal* 3, no. 01 (March 6, 2022): 292–304, https://doi.org/10.3126/unityj.v3i01.43333.
[60] Ibid 60
[61] Bingqing LU, Xingyi ZHANG, and Jin WEN, "Real World Effectiveness of Information and Communication Technologies in Disaster Relief: A Systematic Review," *Iranian Journal of Public Health*, November 21, 2020, https://doi.org/10.18502/ijph.v49i10.4678.
[62] Benedikte Bjerge et al., "Technology and Information Sharing in Disaster Relief," ed. Kim-Kwang Raymond Choo, *PLOS ONE* 11, no. 9 (September 1, 2016): e0161783, https://doi.org/10.1371/journal.pone.0161783.

currently used for. For example, satellite imaging can be used to track the amount and nature of damage caused by natural disasters.[63] In order to explore such new uses for these technologies research should be conducted on the same. Research institutes and universities should work closely with governments to provide technical assistance as to how this should be done, especially in an affordable manner. This would assist in capacity building as it would allow modern technologies to be used in order to reduce reaction time and improve preparedness. How this technology will be distributed to all relevant stakeholders like poor countries, for example, is something delegates will need to address. The cost of running such technologies may be too much of a burden, so delegates must focus on how they can be made affordable to use and how the United Nations could involve itself as well. Political perspectives should be taken into when deciding how such technologies can be used: how much of the government's budget should be spent on this, how they be used in preventing cross-border natural disasters, and how they will open the public will be to contemporary technologies are factors that need to be taken into account, when deciding effective solutions.[64]

Capacity development amongst local governments

When focusing on disaster management, it is necessary to consider the inclusion of all stakeholders, so the interests of various groups in the country can be upheld. One way to do so is capacity building within local governments. In most federalist systems state governments and other smaller regions tend to have a certain degree of autonomy from the central government.[65] This autonomy can be used to build capacity, which assists in disaster management. Broadly, "capacity building refers to strengthening the ability of individuals and systems to perform certain functions effectively in the long-run.[66]" This by definition requires engagement with the community as a whole. This engagement can be induced through the interactions between these governments and CSOs. The Serbian case study can be used to analyse the effectiveness of capacity development between local governments. Natural disasters tend to vary in their impact around the country.[67] For this reason, different local governments tend to have varying degrees of interests on the matter. However, the information-sharing systems used in the country are the same for each region. This can be catastrophic since incomplete information on any possible natural disasters has the ability to significantly worsen the damages. Moreover, civil engagement with the issue is fairly constant throughout the country. This is concerning since disaster preparation would significantly be bolstered if citizens were more cognizant of the threats of natural disasters. This highlights how a one for all approach from the central government will ignore the needs of individual populations. Hence, individual capacity-building efforts will need to be provided based on a criterion that governments would need to determine. This is in stark contrast to a lack of an institutionalized system for

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[63] Ibid 62
[64] "Role of Science and Technology in Disaster Management," Aeologic Blog, November 10, 2022, https://www.aeologic.com/blog/role-of-science-and-technology-in-disaster-management/.
[65] Rochyati Wahyuni Triana, "Capacity Building in Local Government," *Journal of Government and Politics* 4, no. 1 (February 1, 2013): 60–77, https://doi.org/10.18196/jgp.2013.0004.
[66] United Nations, "Capacity-Building," United Nations, 2022, https://www.un.org/en/academic-impact/capacity-building#:~:text=Capacity%2Dbuilding%20is%20defined%20as.
[67] Vladimir M. Cvetković and Vanja Šišović, "Capacity Building in Serbia for Disaster and Climate Risk Education," Social Science Research Network (Rochester, NY, September 18, 2023), https://doi.org/10.2139/ssrn.4575350.

the same in Serbia since 2009.[68] The central government should provide the local governments with the necessary technology required or at least access to a centralized database monitoring the state of natural disasters.

Sub-Topic 3: Raising and allocating funding for non-state actors to respond to natural disasters

Extensive discussion on the role of technology and capacity building has occurred throughout the research report, but the monetary aspect of the same has largely been ignored. Whilst what measures can be implemented can be debated upon, how funding will be raised to implement these measures and how it will be distributed amongst the various stakeholders needs to be addressed.[69] This raises another dilemma by itself: should the funding be received for preparation or for recovery efforts. It also begs the question whether private sector stakeholders such as NGOs and clinics are even eligible for aid. Who provides this aid is also a question that must be answered: taxpayers, donors or international aid. One suggestion that is often discussed is raising funding through a publicly funded fundraiser. The scope of this solution rests greatly on the region for which this funding is being used. The other issue stemming from this discussion is how exactly this money will be allocated, how would transparency be maintained to avoid the incidence of corruption.

Timing for financial assistance

The introduction saw a brief discussion of the dilemma of when the funding should be provided. One might suggest, that the funding should be provided only in recovery effort since there is an almost guarantee it will be used for its intended purposes, something that cannot be guaranteed by providing this funding for disaster preparation. It is not to be noted that even a highly developed country like the USA does not have a pre-disaster institutionalised planning system. This implies to an extent non-state actors must remedy the gap that exists in this regard. For example, Post Hurricane Katrina the US government passed the National Disaster Recovery Framework to deal with pre-disaster preparation.[70] Despite this, the vast majority of the funding non-state actors and state governments received came after the disaster had occurred. This is certainly politically motivated as publicity of a government assisting after a disaster has occurred shows the incumbent government in a more positive light. Pre-disaster preparation naturally even benefits post-disaster reaction time and has the ability to minimize the damages that occur.[71] Another issue that must be addressed is whether the aid/loans provided be one of or applicable in the long-term. Returning to normalcy post a disaster especially, from an economic perspective requires extensive investment. Standard forms of aid cannot address the long-term challenges local stakeholders may need to face such as the effect disruptions on local ecosystems can

[68] Ibid 64
[69] Medical Committee on Post-Disaster Recovery of a Community's Public Health, Board on Health Sciences Policy, and Institute of Medicine, *Disaster Recovery Funding: Achieving a Resilient Future?*, *Www.ncbi.nlm.nih.gov* (National Academies Press (US), 2015), https://www.ncbi.nlm.nih.gov/books/NBK316517/.
[70] Ibid 69
[71] Ibid 69

have on the development of the region itself.[72] Even the issue of how this aid is distributed between different actors could be taken up. If resources are distributed disproportionately the efficacy of the disaster management system is likely to reduce. Since, not all stakeholders will be able to mobilize the same recovery efforts, leaving a gap in some areas. For example, if regions with low-income citizens are not provided food aid malnutrition is a problem that is likely to occur even if they receive equivalent funding to that of other regions.[73]

Coordinating funding

Communities face many difficult choices related to rebuilding and reconstruction during the long-term phase of disaster recovery. These include determining how much hazard mitigation is factored into recovery, restoring environmental systems, redeveloping the economy, and reconstituting social networks.[74] Post-disaster recovery efforts may include the need for reconstruction and shifting people to less vulnerable regions. At such a time a quick and guaranteed transfer of financial resources is essential. Yet, no piece of legislation in any nation in the world defines a criteria for which the funding will be allocated.[75] There exist only a few procedures to request funding and even these vary based on region to region. This means the disaster management policy tends to be a haphazard mixture of incentives, budget cuts and loans with no clear distinction between how it should be suited to different actors.[76] The lack of any sort of coordination can have impacts on individuals as well. For instance, the government tends to reimburse homeowners a lot more than people who rent their residences. So whilst the homeowners benefit financially despite being on average richer, tenants who tend to be poorer have no access to such benefits. Therefore when coordinating the funding governments need to focus on equitable outcomes for the citizens, as poorer citizens tend to be more greatly affected by natural disasters to begin with.[77] In context, to coordinate effective financial policies, understanding underlying interests offers a chance to look for mutually beneficial policies that can direct resource distribution in a cooperative way while also pointing out and changing actions that are redundant or ineffective. The willingness of organisations to incorporate important disaster recovery objectives like disaster resilience into pre-disaster funding criteria could serve as a gauge of how much of this has happened.[78]

Non-state donors

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[72] https://www.facebook.com/AsianDevBank, “Recent Significant Disasters in the Asia and Pacific Region,” Asian Development Bank, February 3, 2019, https://www.adb.org/news/infographics/recent-significant-disasters-asia-and-pacific-region.
[73] Ibid 72
[74] United Nations, “Coordinating Funding for Humanitarian Emergencies,” United Nations, n.d., https://www.un.org/en/chronicle/article/coordinating-funding-humanitarian-emergencies.
[75] Medical Committee on Post-Disaster Recovery of a Community’s Public Health, Board on Health Sciences Policy, and Institute of Medicine, *Disaster Recovery Funding: Achieving a Resilient Future?*, *Www.ncbi.nlm.nih.gov* (National Academies Press (US), 2015), https://www.ncbi.nlm.nih.gov/books/NBK316517/.
[76] Ibid 75
[77] “Disaster Response Should Be Equitable | UNC-Chapel Hill,” The University of North Carolina at Chapel Hill, accessed December 3, 2023, https://www.unc.edu/discover/disaster-response-should-be-equitable/.
[78] Ibid 77

Private sector humanitarian aid, unlike other forms of aid, has declined in the last decade, by close to 7%. Being 4$ billion in 2012 the number stands at close to 3.6 $ billion today.[79] While, the sources and purpose of this form of aid varies greatly some of it is directed towards disaster management. The difference between state sanctioned aid and private aid is the idea of accountability. Private donors have no direct incentive besides working for humanitarian causes to provide aid.[80] However, the aid provided by such donors tends to benefit disaster affected communities a lot more. Donors almost exclusively provide this funding to local authorities and NGOs working in the disaster site. This form of aid also provides much more flexibility and reliability as it is not at the behest of the government's policy to asked for a variety of capacity building measures or response efforts. Another interesting facet of this is how states who receive private donor aid tend to usually not receive as much institutional aid. Like Haiti in 2012 received the most private donations yet was 15th on the list for countries receiving donations for disaster management related activities.[81] This disparity highlights the differences in the priorities of governments and private donors. Since the start of the global revolution private companies have seen an increase in their influence on the global stage. For example, before the 2000s private companies contributed only 1% to the UN disaster management budget, now it's above 15%.[82] Even other aspects of corporate social responsibilities allow the companies to participate in other aspects of disaster management such as by sending their employees to volunteer or providing food and medical assistance. Governments can consider incentivizing such companies through economic benefits.[83] This is likely to boost private sector engagement as well.

Major Countries and Organizations Involved

Japan

Japan by virtue of its geography is situated in a region where there is regular seismic activity. For this reason, Japan has had to deal with several natural disasters, in particular earthquakes and tsunamis. In 2011 a 9.0 earthquake which led to the damage of a nearby nuclear power plant.[84] The nuclear disaster combined with the damage caused by the impending Tsunami led to the death of over 15,000 living in the region.[85] The environmental damage caused by the nuclear contamination poses risks for future generations and animals living in the region. The government has spent close to 200$ billion to increase

[79] "Revenue by Non-Government Donor | United Nations - CEB," unsceb.org, n.d., https://unsceb.org/fs-revenue-non-government-donor.
[80] "Humanitarian Assistance from Non-State Donors: Latest Trends - World," ReliefWeb, May 14, 2015, https://reliefweb.int/report/world/humanitarian-assistance-non-state-donors-latest-trends.
[81] https://devinit.org/resources/humanitarian-assistance-non-state-donors/
[82] Ibid 81
[83] Ibid 81
[84] John P Rafferty and Kenneth Pletcher, "Japan Earthquake and Tsunami of 2011," in *Encyclopædia Britannica*, October 15, 2018, https://www.britannica.com/event/Japan-earthquake-and-tsunami-of-2011.
[85] Ibid 84

the efficacy of safety measures like public awareness campaigns and evacuation.[86] The government has also placed regulations on the way new structures can be built taking into account safety. The Japanese government also works closely with international organizations and scientific institutes to exchange best practices, research findings, and knowledge.[87]

The United States of America

The USA due to its complex geography has been impacted significantly by natural disasters. For example, Hurricane Katrina which came in 2005 led to close to 2,000 deaths and damages estimated to be 150$ billion.[88] However, the USA due to its stringent disaster management system has equipped itself to be extremely effective in ensuring the safety of citizens and minimising economic damages. The Federal Emergency Management Agency has been successful at responding to disasters such as the California wildfires, to an extent better than any other country. The high level of technology and research funding has led to the US to be one of the leaders in predicting and by extension preparing for natural disasters.[89] To an extent, this can be attributed to the inclusion of research institutes and billions of dollars of endowments provided to them. Even NGOs are known to cooperate greatly in recovery efforts. The USAID department also assists various countries in the recovery process at an amount of 8$ billion a year.[90] The USA and its systems can act as a model for how cooperation should be established between the different stakeholders involved.[91]

Doctors Without Borders

Doctors Without Borders, also known as Médecins Sans Frontières, or MSF, is particularly relevant to the agenda of increasing collaboration in response to natural disasters. Being a non-governmental organisation (NGO), MSF frequently responds to natural disasters like earthquakes, floods, conflicts, and disease outbreaks among others first.[92] Their medical teams, which are made up of physicians, nurses, and support personnel, which number 63,000, are prepared to address the impacted populations' urgent medical requirements.[93] The significance of MSF stems from its capacity to act quickly, fill up gaps in the healthcare system, and work with local groups, governments, and other humanitarian organisations to

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[86] Stephan Danninger and Kenneth Kang, “Finance and Development,” Finance and Development | F&D, June 2011, https://www.imf.org/external/pubs/ft/fandd/2011/06/danninger.htm.
[87] Ibid 86
[88] “U.S. Most Costly Natural Disasters 2020,” Statista, n.d., https://www.statista.com/statistics/744015/most-expensive-natural-disasters-usa/.
[89] “Hurricane Katrina | George W. Bush Library,” www.georgewbushlibrary.gov, n.d., https://www.georgewbushlibrary.gov/research/topic-guides/hurricane-katrina.
[90] “Disaster Response, Resilience and Humanitarian Assistance | Bangladesh,” U.S. Agency for International Development, April 6, 2023, https://www.usaid.gov/bangladesh/food-disaster-humanitarian-assistance#:~:text=When%20disasters%20occur%2C%20USAID%20responds.
[91] Ibid 90
[92] Doctors Without Borders, “Home | Doctors without Borders - USA,” Doctorswithoutborders.org, May 17, 2019, https://www.doctorswithoutborders.org/.
[93] Doctors Without Borders, “Our History,” Doctors Without Borders - USA, 2023, https://www.doctorswithoutborders.org/who-we-are/our-history.

guarantee a coordinated and thorough response.[94] Their effectiveness was particularly seen in their collaboration without African governments.

Indonesia

Since Indonesia is situated in the seismically active Pacific Ring of Fire, disaster planning and response are essential. To lessen the effects of seismic disasters, the nation has put in place a number of initiatives, such as community exercises and early warning systems. But the costs of earthquakes in Indonesia are high, in terms of both lives lost and money lost. In 2004, one of the worst earthquakes and tsunamis in recorded history occurred in the Indian Ocean, killing almost 230,000 people in Indonesia.[95] Recent earthquakes have severely damaged infrastructure and uprooted residents in areas like Sulawesi and Lombok.[96] The Indonesian government is still making investments in disaster resilience initiatives, working with NGOs and international organisations.

World Bank

The World Bank plays an essential role in supporting global efforts regarding the management of natural disasters. The World Bank provides nations with financial assistance, technical expertise, and policy guidance. It has a number of recovery projects in various countries aiming to build capacity and infrastructure. An example of their assistance was seen after the Haiti earthquake in 2010 where the World Bank provided a fund of 250$ million for recovery efforts. For this reason cooperation between the World Bank and other stakeholders can play a big role.[97]

United Nations Office For Disaster Risk Reduction

The United Nations Office for Disaster Risk Reduction is a sub-entity within the UN dealing with the issue of reducing the frequency of natural disasters around the world. It has been mentioned in several resolutions and is tasked with tracking the status of how well resolutions on disaster management are enforced. For example, the UNDRR uses an online platform to check the status of countries implementing the Sendai framework. Its meetings also include the presence of various stakeholders like NGOs and Research Institutes. UNDRR has served as the focal point for global collaboration on the matter since the year 2000. Ultimately, by 2030 equitable distribution of capacity-building tools remains its primary goal under the Sendai Framework. The role the UNDRR will play in establishing cooperation in the future depends greatly on the interests of the international community.

China

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[94] Ibid 93
[95] "The Facts: Indonesia Earthquakes, Tsunamis and Other Natural Disasters - Indonesia," ReliefWeb, n.d., https://reliefweb.int/report/indonesia/facts-indonesia-earthquakes-tsunamis-and-other-natural-disasters.
[96] Unicef, "Deadly Earthquake and Tsunami Hit Indonesia," www.unicef.org, October 1, 2018, https://www.unicef.org/stories/deadly-earthquake-and-tsunami-hit-indonesia.
[97] "Disaster Risk Management," World Bank, n.d., https://www.worldbank.org/en/topic/disasterriskmanagement.

China adopts a comprehensive approach to disaster risk reduction because it is a diverse country that is vulnerable to earthquakes, floods, and other natural disasters. Seismic preparedness measures, such as stringent building codes and sophisticated early warning systems, emphasize efforts to reduce the impact of earthquakes. Flooding caused by the monsoon is addressed by flood control measures like building dams. Notably, China showed prompt, well-coordinated disaster response and recovery following the 2008 Wenchuan earthquake which had caused over 60,000 deaths.[98] The nation actively participates in international cooperation, makes investments in risk-understanding research and innovation, and supports community-based strategies for resilient development. Through information-sharing these systems could potentially adopted in other nations as well.[99]

The Philippines

The Philippines, which is located in the Pacific Ring of Fire and is vulnerable to earthquakes, typhoons, and volcanic eruptions, places a high priority on disaster risk reduction. To share expertise and lessons learned from disasters like Typhoon Haiyan in 2013, which led to close to 6,000 deaths and damages worth 3$ billion.[100] The nation has invested in resilient infrastructure, established community-based early warning systems, and actively participated in regional and international collaborations.[101] Due to being comparatively poor solutions must be designed to be inclusive such that even poorer countries can benefit from the advent of new technologies and systems.

International Federation of Red Cross and Red Crescent Societies

The International Federation of Red Cross and Red Crescent Societies (IFRC) is a prominent non-profit organization that has been instrumental in the recovery efforts for a lot of natural disasters. The organization due to its various community-based channels reaches close to 160 million people.[102] It is most notable for providing medical support in the shortest possible time frame. Due to its direct links to the other 91 Red Cross agencies, it can establish direct channels of communication with them, particularly useful in ground-level response measures.[103]

Timeline of Events

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[98] “Natural Disaster Challenges in China: Key Trends and Insights | GFDRR,” www.gfdrr.org, n.d., https://www.gfdrr.org/en/feature-story/natural-disaster-challenges-china-key-trends-and-insights#:~:text=In%20the%20last%20few%20decades.

[99] Ibid 98

[100] “Philippines: 2022 Significant Events Snapshot (as of 11 January 2023) - Philippines | ReliefWeb,” reliefweb.int, January 12, 2023, https://reliefweb.int/report/philippines/philippines-2022-significant-events-snapshot-11-january-2023#:~:text=In%202022%2C%20PHIVOLCS%20recorded%20more.

[101] World Bank Group, “World Bank Climate Change Knowledge Portal,” climateknowledgeportal.worldbank.org, 2021, https://climateknowledgeportal.worldbank.org/country/philippines/vulnerability.

[102] IFRC, “International Federation of Red Cross and Red Crescent Societies,” International Federation of Red Cross and Red Crescent Societies, 2019, https://www.ifrc.org/.

[103] Ibid 102

Date	Name	Description of event
October, 30th, 1963	A/RES/1888	A/RES/1888(Measures in Connexion with the Hurricane which has Just Struck the Territories of Cuba, the Dominican Republic, Haiti, Jamaica and Trinidad and Tobago) passed which focused on the role of the Secretary-General in dealing with natural disasters.
October, 23rd, 1968	A/RES/7286	A/RES/7286 (Assistance to Iran in connexion with the eartquake of August 1968) passed which focused on the Iranian Earthquake, however, established the precedent for how the various agencies of the UN should work in case of natural disasters.
October, 11th, 1971	A/RES/2757	A/RES/2757 (Assistance to Afghanistan following two years of severe drought) passed which focused on efforts to mitigate the food shortage and economic crisis in Afghanisthan, which was caused by 2 year long natural drought.
December, 12th, 1972	A/RES/ 2959	A/RES/2959 (Assistance in cases of natural disaster and other disaster situations) was passed in order to lessen the impact of disasters, by providing assistance to disaster-prone countries in preventive measures, and disaster contingency planning.
December, 17th, 1981	A/RES/36/225	A/RES/36/225 (Strengthening the capacity of the United Nations system to respond to natural disasters and other disaster situations) was passed, focused on information and preparation mechanisms in the context of UN agencies.
December, 11th, 1987	A/RES/ 42/169	A/RES/ 42/169 (International decade for natural disaster reduction) passed focused on the need to reduce the impact of natural disasters on all populations
May, 23rd, 1994	The World Conference on Natural Disaster Reduction	The World Conference on Natural Disaster Reduction is held. Attentded by delegates from all over the world
January, 12th, 1994	The Utilization of Early Warning systems	First Early Warning systems are being used by the UN
July, 16th, 1997	The El Nino Phenomena first detected	The emergence of the El Nino Phenomena urges the General assembly to request international cooperation on the matter

July, 5th, 1999	IDNDR programme forum	The IDNDR programme forum is held emphasizing the idea of prevention of natural disasters in its agenda. The economic and social effects are also placed at the helm of the discussion.
December, 21st, 2001	A/RES/56/195	A/RES/56/195 (International Strategy for Disaster Reduction) was passed, and provided a strategy for international cooperation on the matter specifically in regards to the Yokohama Strategy.
December, 20th, 2006	A/RES/61/198	A/RES/61/198 (International Strategy for Disaster Reduction) was passed calling for a global platform for disaster management which would include actors like research institutes and would be available to all member nations.
June, 20th, 2012	The Future We Want Conference	The Future We want conference is held at Rio. Member nations agree to assist each other in the recovery efforts proceeding natural disasters.
March, 18th, 2015	Sendai Framework for Disaster Risk Reduction	Sendai Framework for Disaster Risk Reduction is agreed upon. It's primary aim was to reduce global disaster mortality by 2030 sustainably.
October, 20th, 2016	New Urban Agenda	The New Urban Agenda is presented with some mention of how urban dwellings should not be left susceptible to the risk of natural disasters.

Relevant UN Treaties and Events and Previous Attempts to Solve the issue

- Assistance in cases of natural disaster and other disaster situations, 12 December 1972 **(A/RES/2959)**
- **Focuses on limiting the extent of impact of natural disasters failed to adequately address the role different stakeholders will play in this.**
- **No explicit mechanism to establish cooperation is given, only a quantification of what will be considered inappropriate.**
- **The resolution provides more so a general consensus as opposed to definitive guidelines.**
- Strengthening the capacity of the United Nations system to respond to natural disasters and other disaster situations, 17 December 1981 **(A/RES/36/225)**
- **Served as the basis for UN agencies interacting with state governments.**

- **The resolution focused on a variety of issues like capacity-building measures and established the idea of the flow of information.**
- **This resolution also meant states were encouraged to consult the UN in the case of natural disasters. Delegates can use this aspect to build upon how the UN agencies can cooperate with NGOs for example to effectively deal with the situation at the ground level.**
- International Decade for Natural Disaster Reduction, 30 July 1999 (**E/1999/80)**
- **The Secretary-General published this report addressing the issue of preventing natural disasters through early-warning systems and information sharing.**
- **Emphasized the role of new-age technology and various actors in the backdrop of the 21st century.**
- **Made no explicit mention to define what technology will be shared or used by these actors in question.**
- **Even medical and research institutes were present in the meeting.**
- International Strategy for Disaster Reduction, 21 December 2001 **(A/RES/56/195)**
- **Talked about the implementation of the Yokohama strategy for natural disaster prevention in context, to mobilizing all the different resources available.**
- **It explored the impact various UN agencies can have in dealing with the crisis.**
- **A UN-designated task force was recommended to be formed ,however, how this task force will be formed was left ambiguous.**
- International Strategy for Disaster Reduction, 20 December 2006 **(A/RES/ 61/198)**
- **Mentions the Hygo Declaration which called upon cooperation between communities and the state but fails to assess how they will interact with the UN.**
- **Financial institutions are called upon in the resolution yet their role in providing loans to affected regions is not adequately addressed.**

Possible Solutions

Sub-Topic 1:

Clear channels of communication need to be established between the various actors involved. This system should be universal and time-efficient in order to respond to any sudden disaster. How this will be managed and by whom is up to the delegates to decide. Deciding how this will reach poorer states and other actors is also another problem that must be addressed.

A digital platform could be made to give a centralized communication medium to the different actors involved. Updates on natural disasters, resources and plans can be shared on it. The aim of the platform should be collaboration such that a variety of actors can give their input in the case of a natural disaster.

This platform should contain a centralized database with information about medical resources available, scientific data, and possible strategies, which can act as a guide for any emergencies.

Reduction of the barriers that are present within the system is essential when avoiding the loss of information. This includes adopting a common universal language and avoiding the use of Jargon when communicating information especially to rural areas. The Information should also be communicated in a manner such that even people with disabilities or no cell phone can access it. This can be done by providing information to one person in a settlement such as a village and ensuring they forward the message as well. Two-way communication especially in the case of emergencies would reduce the risk associated with such disasters.

Several safeguards can be taken to ensure that the exchange of information is as effective as possible. Constant real-time updates on the situation, evacuation routes and emergency must be provided. Even government agencies must have a smooth system of inter-agency communication such that the relevant resources can be mobilized quickly and in an equitable fashion. These government authorities must be linked within the system at a regional, local and national level. Even public and private corporations can collaborate to enhance communication infrastructure, through the help of financial incentives.

Sub-Topic 2:

The United Nations and the various involved governments could conduct joint training exercises for research and rescue personnel. This could be done city to city or state to state. It would include an interdisciplinary approach to understand each organization's role in the recovery process. The design of the training should be decided by the state itself with an ancillary role being fulfilled by the UN.

The UN could consider passing resolutions on standardizing the process of the recovery effort. Such as the norms that should be followed in the rescue missions and the appropriate technology that would be required. These procedures should be agreed upon by each stakeholder and should include their inputs as well. The roles and responsibilities of each stakeholder should be defined, and a mechanism to hold them accountable should be in order as well.

Capacity building through training of local populations is a step that governments and non-profits all around the world can take to enhance disaster management processes. Local populations should be taught basic survival skills and how to assist each other in time of needs. Even preparation efforts such as keeping first aid kits and communication channels open must be in place. Even practice drills and education efforts can assist in recovery and management processes.

Leveraging technological advancements is essential for a comprehensive solution to natural disaster management. Incorporating tools like remote sensing, IoT, and radar systems allows for improved

preparedness and response. Collaborative research initiatives between institutes, universities, and governments can explore innovative applications, such as using satellite imaging for damage assessment. To ensure widespread adoption, addressing distribution challenges, promoting affordability, and involving the United Nations in the process are crucial steps. Moreover, a balanced consideration of political factors, including budget allocation and cross-border cooperation, is vital for the successful integration of these technologies and public acceptance.

Sub-Topic 3:

Governments should establish a task force that would focus on bringing together representatives from different fields: including scientists, engineers, nurses, NGO volunteers, etc. The task forces would have to meet regularly to practice implementing the joint strategies as well. They should receive adequate funding the exact source can be debated by the delegates.

Improving collaboration in the wake of natural disasters would require adaptable financial sources. This would reduce bureaucratic delays by facilitating the quick distribution of resources. Encouraging donors to promote joint project guarantees would also be effective. This strategy aims to make it easier to coordinate efforts to solve the various problems that arise from disasters.

Non-state donors have taken a vital role when it comes to disaster management in recent years. Governments should encourage non-state donors to further increase donations through financial incentives like tax rebates and low interest loans. Moreover, governments can learn from such donors and their methods in order to adequately address the inequality which exists in disaster management. Integration of the fllexibility in the provision in aid non-state donors provide by the government can lead to a more efficient utilization of resources, since it will be provided at times when it is of paramount importance.

In addressing the complex choices during long-term disaster recovery, a key solution lies in establishing universally defined criteria for financial resource allocation. Current legislation lacks clarity, resulting in a disjointed mix of incentives, budget cuts, and loans with inconsistent procedures for funding requests. To ensure equitable outcomes, governments must prioritize coordination, especially considering the financial disparities between homeowners and renters. A streamlined approach, guided by a mutual understanding of underlying interests, can lead to cooperative resource distribution and eliminate redundant actions. Additionally, organizations adopting disaster resilience in pre-disaster funding criteria can serve as a positive indicator for effective and coordinated recovery efforts.

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