

NATURAL DISASTERS: A GLOBAL PICTURE

Anees Rehman A*

S Boopathi**

* PhD Research Scholar, Department of Economics Bharathiar University, India

** Professor and Head, Department of Economics Bharathiar University, India

ABSTRACT

Natural disasters may be defined as the catastrophic events with the atmospheric, hydrological and geological origins. It affects the humanity in the form human fatality, loss on property, and socio-economic and environmental disruptions.. The main focus of the study is to make a simple understanding of the economic damage faced by the countries across the world due to the different types of disasters between 2000 and 2019. The data used for this study were a secondary one retrieved from the total economic damage by EM-DAT (2020). The statistical tools like SUM, and percentage method were used for the data analysis for a simple understanding of the information from the data sources. These data sources are not only just numbers, visualising the large-scale disruptions of the disasters around the world. It should promote a wide level of understanding of the disaster risk reduction.

Keywords: natural disasters, disaster damages, economic damages, human fatalities, UNDRR

INTRODUCTION

Natural disasters may be defined as the catastrophic events with the atmospheric, hydrological and geological origins, as an example drought, landslides, hurricanes, flood, earthquakes and many more. It affects the humanity in the form of critical damages to human fatality, loss on property, and socio-economic and environmental disruptions. These losses can be distinguished under two heads, such as direct impact as well as the indirect losses. The direct loss is the directly quantifiable losses, more simply direct consequences from the disaster. It may be referred as the quantifiable losses such as the number of people lose their life, losses to the buildings and infrastructures, losses on the natural disasters. Secondly, the indirect loss, includes loss or reduction in revenue, disturbance in the well-being of people which generally occur due to the fluctuations in the flow of goods and services due to the calamity. According to UNDRR *'there is around an average of US \$ 250 billion to US\$ 300 billion has estimated as economic losses due to the natural calamities like earthquakes, tsunamis, flooding, cyclones, and the landslides.* It also claims that, the impacts from these events are non-predictable and it will be much farther reaching.

It should be needed to understand the terms loss and the damages as a consequence of the calamities. Considering the term loss, as said before, losses are the quantifiable measure expressed in terms of monetary measures (market value of an item damaged due to a calamity). On the other hand, damage is a generic term it is not quantified numerically, but it does not means completely not quantified like the damage to a house can be translated in to monetary terms according to its market value at present. According to GFDRR *'a full consideration of all direct, indirect and intangible losses would produce much higher loss estimates than the more easily quantified and commonly seen records of direct losses.*

WORLD SCENARIO OF NATURAL DISASTERS

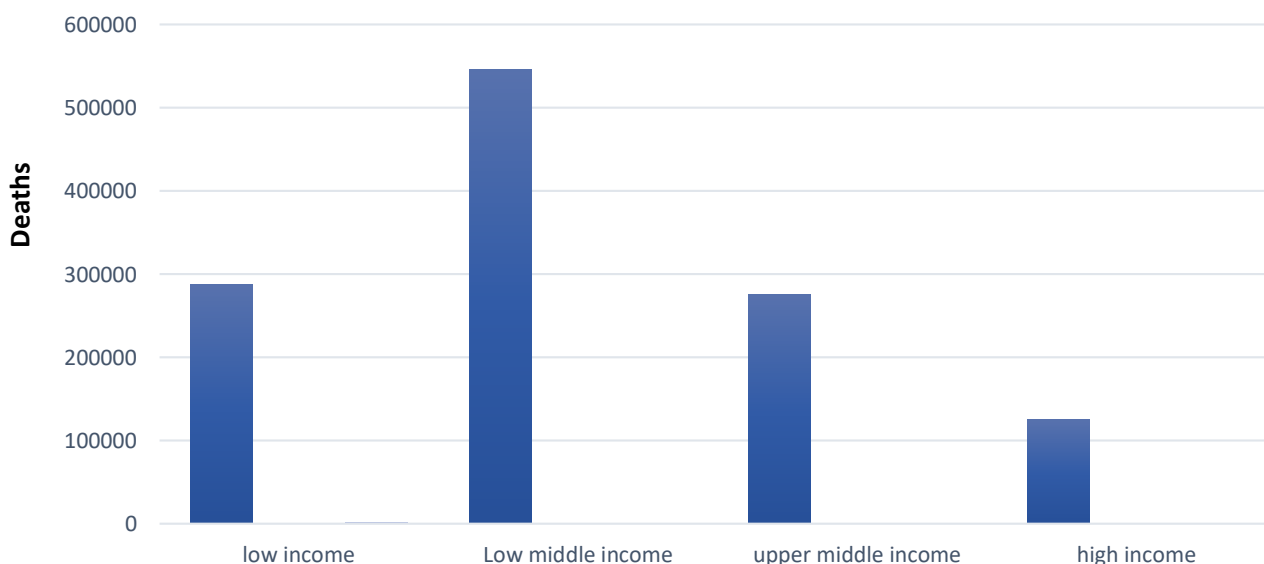
In the first six months of 2020, at least 207 natural disasters were record globally, it is above the 21st century average of disasters around 185. In all the regions, except some parts of Americas, the number of events has crossed its average (Down to Earth). According to the Catastrophe Report named as Global Catastrophe Recap released in 2020 *'all these disasters cost the world \$ 75 billion. This amount closed to the average of \$ 78 billion during 1986- 2019. In the first half of 2020, the natural disasters have claimed roughly 2200 lives majority of the life loss that is around 60% is due to the events of flooding all over the world'.*

The number of catastrophes has increased due to the combination of increase in the vulnerability condition and the drastic change in the climatic conditions (World Disaster Report 2016). In 2015, total 574 disasters were reported all over the world by earthquakes, floods, landslides and heat waves and almost 32500 people were killed and 108 million people were affected and 70.3 billion US \$ was estimated as damages (World Disaster Report 2016). One of the most international data bases for disaster events EM-DAT says that over the las 20 years 7348 disasters have been recorded all over the world, precisely, 1.23 million live lost, affected more than four billion people and these drastic calamities have made a huge economic loss of US\$ 2.97 trillion. The time period 2000-2019, Asia has suffered with the highest number disaster events. Totally, 3068 disasters followed by Americas 1765 and 1192 in Africa (UNDRR). Here, Asia is suffering more because of the size of the continent and it represents high risk of the natural disaster, such as flood plains, river basins and seismic fault lines. The UNDRR Report says that while comparing the countries globally, China (577 events) and the US (407) reported the highest of the events of disaster followed by India (321) and 304 events in Philippines and 278 events in Indonesia. There is a reason behind in all these countries which worst affected by the disasters, that is all these have large heterogeneous landmasses and population densities are very high in the areas of risk met by the inhabitants.

Over four billion people worldwide were affected by disasters and 1.2 million people lost their lives between 2000 and 2019 (UNDRR). 2002 and 2015 were the worst years in terms of affected peoples. The number of affected were 658 million and 430 million respectively. The report named Human Cost of Disasters by UNDRR says *'overall in the Past two decades the average number of people affected worldwide by disasters was approximately 200 million per year'*. In the case of death, the report says that *'the average number of deaths world- wide from 2000 to 2019 was approximately 60000 deaths per year'*.

The EM-DAT has been recorded the loss due to the disasters between 2000-2019 was US \$ 2.97 trillion. If break down this amount in different parts of the world like Europe \$ 271 billion, Americas 1.32 trillion \$, Africa 27 billion \$, Asia 1.26 trillion \$ and Oceania 82 billion \$ total of 2.97 trillion \$. The UNDRR report claims that *'Despite accounting for most the world economic losses, high income countries have the lowest level of losses as a percentage of GDP'*. However, there is a large and significance differences are existed among the nations on the basis of income levels. It can be noted that there is a lower amount of people were affected and killed by the disaster events in high income countries, but they have faced significantly high economic loss when compared to low-income countries, but the low-income countries have faced a huge amount of people who lost human life and other significant life problems.

Total number of deaths due to disaster by income group(2000-2019)



Source: The human cost of disasters: an overview of the last 20 years (2000-2019)

The figure picturised that the low and low middle income countries have larger death rate when compared to the high-income countries. The low-income countries have recorded 287,183 deaths in between 2000 and 2019. In low middle income countries 546288 people lost their life in the period of 2000 and 2019. Upper middle-income countries in the same time period have registered a death rate of 275811 and high-income countries 124855. In low-income countries, the area vulnerable to the natural disasters are highly densely populated, it is applicable in the case of some high-income countries but very low when compared to the poor nations. From this analysis, it is possible to infer that the natural disasters are hitting and making huge damages across the world without any discrimination. But some countries are vulnerable to these events, majority of them are belonging to the low income or underdeveloped countries. This is mainly due to some issues aroused in such countries in the forms of poor governance, external sanctions, poverty, unsustainable farming techniques, deforestation and the slope process (Matija Zorn, 2018). Another alarming issue is that in poor nations, the poor quality of houses and infrastructure built especially in the vulnerable and disaster-prone areas. These countries are not be facilitated with the early warning systems and only have a poor social network systems to help and to cope with the disasters. Matija Zorn from the Research Centre of the Slovenian Academy of Science and Arts says that '*Future adaptation to the increasing impact of weather-related natural disasters due to global climate change will also be more costly in these countries*' (poor countries).

MATERIALS AND METHODS

This paper mainly includes the natural disasters and its economic impact on a global level. The main focus of the study is to make a simple understanding of the economic damage faced by the countries across the world due to the different types of disasters between 2000 and 2019. Disasters like flood, landslide, earthquake, wildfire, drought were undertaken for finding the global economic damage from the time period of 2000-2019. The data used for this study were a secondary one retrieved from the total economic damage by EM-DAT (2020).

For the analysis of the data, the damages from the disasters were categorised into different heads of disasters in the order of flood, landslide, earthquake, wildfire, drought, and the total damage from these from 2000 to 2019. The statistical tools like SUM, and percentage method were used for the data analysis for a simple understanding of the information from the data sources. The results are presented in tabular columns.

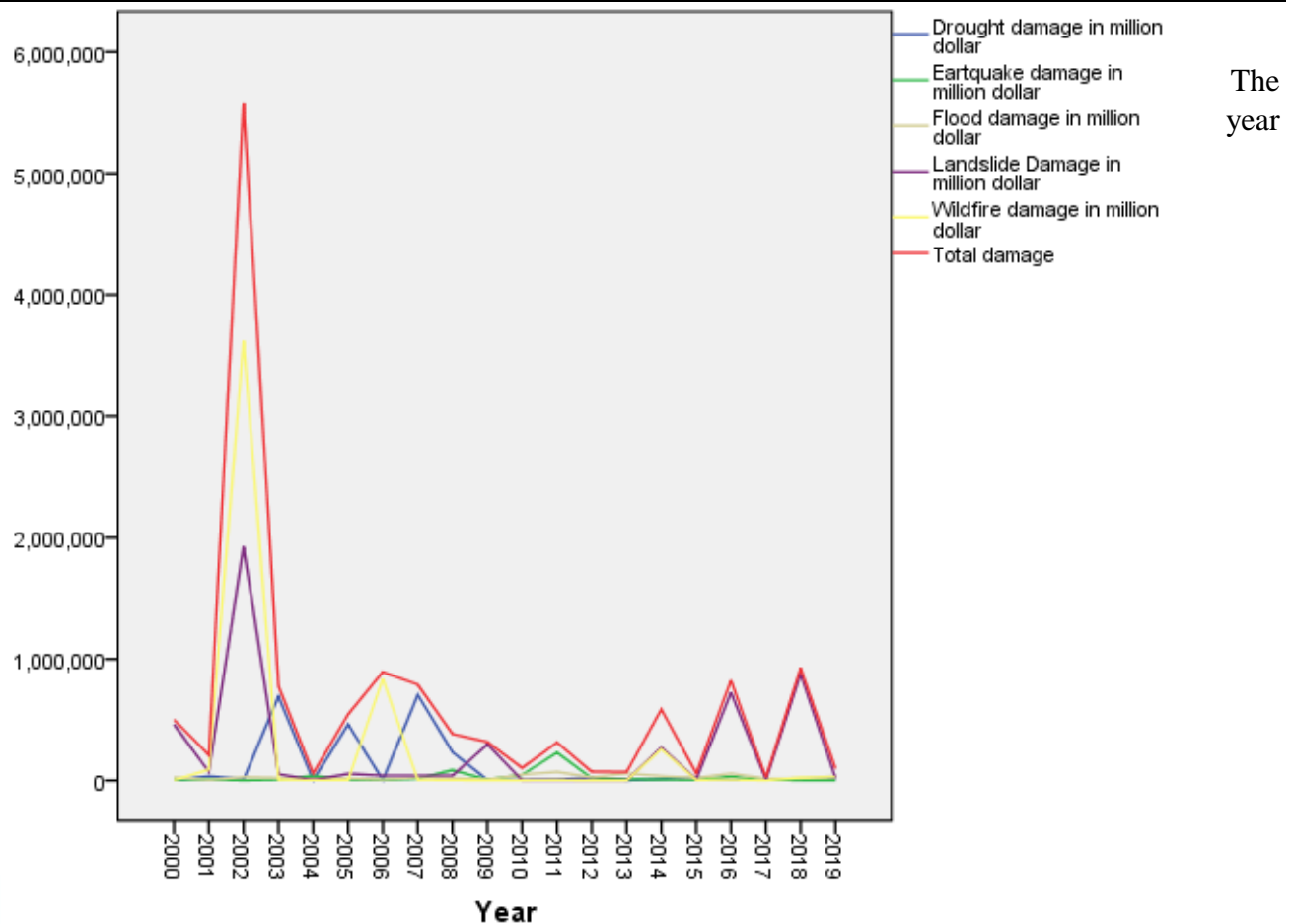
ANALYSIS AND DISCUSSIONS.

As seen before, in total, between 2000 to 2019, there were 3069 disasters were reported in Asia, 1756 in Americas, in Africa 1192 events were reported. (UNDRR). Flood is a common disaster across the globe that is 44% of the total events occurred in the time period of 2000-2019. It is a kind of hydrological events coincide with the landslide occurring 5% of the total events in the same time scenario. The second place holds by the storms and further the climatological disasters like drought and wildfires denoted as 5% and 3% of the total disasters respectively. At last, the geophysical activities like earthquakes contributes 9% of its share to the total catastrophic events across the world (including tsunamis).

According to the UNDRR '*overall the number of disasters per year and the distribution of disaster subgroups remained relatively stable between the year 2000 and 2019, with an average of 367 recorded events per year.*

In Million Dollar

Year	Statistics	Flood damage	Landslide damage	Earthquake damage	Wildfire damage	Drought damage	Total Damage	Flood damage	Landslide damage
2000	Sum %	25000 4.5	462000 9.4%	7750 1.4%	2560 0.1%	2000	Sum %	25000 4.5	462000 9.4%
2001	Sum %	4750 0.9%	70600 1.4%	7360 1.4%	90000 1.8%	2001	Sum %	4750 0.9%	70600 1.4%
2002	Sum %	26803 4.8%	1925000 39.3%	2070 0.4%	3621000 73.9%	2002	Sum %	26803 4.8%	1925000 39.3%
2003	Sum %	20870 3.8%	51960 1.1%	8250 1.5%	6090 0.1%	2003	Sum %	20870 3.8%	51960 1.1%
2004	Sum %	10380 1.9%	3500 0.1%	38770 7.2%	3000 0.1%	2004	Sum %	10380 1.9%	3500 0.1%
2005	Sum %	17940 3.2%	55000 1.1%	6710 1.2%	3850 0.1%	2005	Sum %	17940 3.2%	55000 1.1%
2006	Sum %	7810 1.4%	40150 0.8%	3430 0.6%	839000 17.1%	2006	Sum %	7810 1.4%	40150 0.8%
2007	Sum %	24590 4.4%	40150 0.8%	14970 2.8%	4600 0.1%	2007	Sum %	24590 4.4%	40150 0.8%
2008	Sum %	19620 3.5%	40150 0.8%	85800 16%	2530 0.1%	2008	Sum %	19620 3.5%	40150 0.8%
2009	Sum %	8000 1.4%	299000 6.1%	6030 1.1%	1510 0%	2009	Sum %	8000 1.4%	299000 6.1%
2010	Sum %	49140 8.9%	1280 0	47300 8.8%	2070 0.0%	2010	Sum %	49140 8.9%	1280 0
2011	Sum %	70760 12.8%	1280 0	230300 42.7%	3140 0.1%	2011	Sum %	70760 12.8%	1280 0
2012	Sum %	25790 4.7%	1280 0	18540 3.4%	1000 0.0%	2012	Sum %	25790 4.7%	1280 0
2013	Sum %	57780 10.4%	1280 0	9110 1.7%	1070 0	2013	Sum %	57780 10.4%	1280 0
2014	Sum %	36240 6.6%	273000 5.6%	7170 1.3%	259000 5.3%	2014	Sum %	36240 6.6%	273000 5.6%
2015	Sum %	21090 3.8%	8000 0.2%	6030 1.1%	3440 0.1%	2015	Sum %	21090 3.8%	8000 0.2%
2016	Sum %	57380 10.4%	725000 14.8%	32990 6.1%	6290 0.1%	2016	Sum %	57380 10.4%	725000 14.8%
2017	Sum %	15780 2.9%	6300 0.1%	2760 0.5%	1020 0.0%	2017	Sum %	15780 2.9%	6300 0.1%
2018	Sum %	17440 3.2%	878040 17.9%	2210 0.4%	22750 0.5%	2018	Sum %	17440 3.2%	878040 17.9%
2019	Sum %	35970 6.5%	20000 0.4%	1700 0.3%	25930 0.5%	2019	Sum %	35970 6.5%	20000 0.4%
Total	Sum %	553133 100%	4902970 100%	539250 100%	4899850 100%	Total	Sum %	553133 100%	4902970 100%



2000, the total damage was 500970 million dollars, out of the total damage 462000 million dollar was came from the landslide alone. That was 9.4% of the total SUM of 4902970 million dollar from 2000 to 2019. There were 376 landslides were occurred in this time period all over the world. In the year 2000, the total damage from all the events is 500979 million US \$. The wildfire is registered a smallest damage recorded 2560 million \$. But the scenario has changed in 2001, that was 90000 million US \$. The total damage was 209110 US \$ from all the events. The events of wild fire are less frequent but huge impactful disasters compared to the others. In the United States particularly in California, in the past two decades 26% of the wildfire caused an 9% of the economic loss. Besides the wildfire it makes some direct impacts like pollution, health hazards for the sensitive people.

In 2002, the total damage is very huge, that was 5582743 million \$. The wild fire caused most of the damage again, registered loss was 3621000 million \$. That was 74% of the total wildfire events happened over the period 2000-2019. The droughts, mostly affects the regions like Africa. There were 134 events (droughts) have been recorded in the same time span (EM- DAT). This is evident from the fact that, in 2003 drought hit more worse, that was 691000 million \$, then the total damage was just 778170 million \$. The main reason behind the drought was that the climatic changes, that is expected to increase the vulnerability to drought in many regions of the world, particularly the regions with vulnerable populations and challenges with food security. In 2004, earthquake damage was accounted largest one, that is the loss of 38770 million US\$. The year 2004, it has felt as good when compared to the previous years, no serious damages were reported. In 2005 drought was again hit, the damage was 462120 million \$, that was 20.6% of the total SUM from 2000 to 2019. In 2006, the total damage was 893530 million \$, the majority of the loss was coming from the wildfire made a damage of 839000 million\$. The year 2007 and 2008 were seen drought has made huge economic damages across the globe. The landslide, that was highlighted in the year 2009, the damage was 299000million \$, that was more than 90% of the total damage throughout the year 318170 million US\$. After that very notable events of disaster has happened in 2016, the landslide, that has made a huge economic loss that is 725000 million \$, 15% of the total SUM of landslide disaster from 2000 to 2019 and it holds the second place after the year 2002. In 2018 again the landslide worsens the situation, the recorded damage was 878040 million \$, that was 17.9% of the total SUM of the landslide disasters from 2000 to 2019. In 2019 flood has made a damage of 35970 million\$, in terms of flood, it has

occurred all the regions of the world, every year, but the loss or the damage is low while compared to the other disasters. Sometimes, the shares of landslides, earthquake wild fire, drought were recorded as even nearly 1%, but the total damages from those are very huge because of the destructive power.

CONCLUSION

According to EM- DAT '*between 1980 and 1999, 4212 disasters linked to natural hazards and 1.19 million live lost and affected over three billion people and economic losses totalled US\$ 1.63 trillion*'. This trend has made a drastic change in the period of 2000-2019, there were 510837 million live lost and 4 billion people affected due to the 6681 climatic related disasters. It has also responsible for the disruptions on livelihoods and economic activities in the fields of agriculture and other allied economic activities. All these damages mainly occurred in various sectors of the economies working as an engine of the world. These data sources are not only just numbers, visualising the large- scale disruptions of the disasters around the world. It should promote a wide level of understanding of the disaster risk reduction and other suitable measures to save lives and other economic activities.

BIBLIOGRAPHY

Bahinipati, C. S., Patnaik, U., & Viswanathan, P. K. (2016). What causes economic losses from natural disasters in India, *Advances in Environmental Engineering and Green Technologies*, 157-175. <https://doi.org/10.4018/978-1-4666-8814-8.ch008>

Botzen, W. J., Deschenes, O., & Sanders, M. (2019). The economic impacts of natural disasters: A review of models and empirical studies. *Review of Environmental Economics and Policy*, 13(2), 167-188. <https://doi.org/10.1093/reep/rez004>

EM- DAT, International Disaster Data Base, *Total Economic Damage- 2020*

Global Facility for Disaster Reduction and Recovery Report, Annual Report, *Bringing Resilience to Scale*, 2014

International Federation of Red Cross and Red Crescent Societies, *World Disaster Report- Resilience, Saving Lives Today, Investing for Tomorrow*, 2016

Prasad .S.Abhaya, Francescutti Hugo Louis, Natural Disasters, *International Journal of Disaster Risk Reduction*, second edition, 2017

Shah, A. J. (2011). An overview of disaster management in India. *Disaster Management and Human Health Risk II*. <https://doi.org/10.2495/dman110081>

Skidmore, M., & Toya, H. (2002). Do natural disasters promote long-run growth? *Economic Inquiry*, 40(4), 664-687. <https://doi.org/10.1093/ei/40.4.664>

Thattai, D. V., Sathyanathan, R., Dinesh, R., & Harshit Kumar, L. (2017). Natural disaster management in India with focus on floods and cyclones. *IOP Conference Series: Earth and Environmental Science*, 80, 012054. <https://doi.org/10.1088/1755-1315/80/1/012054>

The United Nations Office for Disaster Risk Reduction (UNDRR), *Global Assessment Report*, 2015

The United Nations Office for Disaster Risk Reduction (UNDRR), *Human Cost of Disasters- An Overview of The Last 20 Years*, 2020

Zorn Matija, Natural Disasters and The Developed Countries, *Nature Tourism, and Ethnicity as Drivers of Marginalisation*, 2018, pp 59-78