Asian Disaster Reduction Center

Natural Disaster Databook 2023
An Analytical Overview

Natural Disaster Databook 2023

Table of Contents

List of Figures

1. Background

ADRC publishes the Natural Disaster Databook annually to provide statistical and analytical overview of disaster and COVID-19 data. For 2023, datasets from the Emergency Event Database (EM-DAT) and the World Health Organization (WHO) were respectively downloaded on 25 March 2024 and 10 July 2024 for analytical overview. With regard to natural disaster, the analysis covers occurrences of disaster events, deaths, people affected, and economic losses focusing on seven disaster types: drought, earthquake, extreme temperature, flood, storm, wildfire, and volcanic activity. With regard to COVID-19, the analysis shows the trend of confirmed cases and deaths (Annex 1: Notes on the Sources of Data).

In general, the statistical overview is focused on comparing the trend in 2023 with the trend in the past 30 years, and presented in three parts:

- Section 2 compares the natural disaster data of 2023 with the annual average of the last 30-year (1993-2022)
- Section 3 compares the climate-related disaster data of 2023 with the annual average of the last 30-year (1993-2022)
- Section 4 analyzes COVID-19 data up to 2023 since the World Health Organization declared it as a global pandemic on 11 March 2020 by comparing the global trend with the situations of ADRC member countries

Of the 374 disaster occurrences recorded in 2023, the Türkiye-Syria earthquakes of 6 February was the most notable event due its massive impacts: over 55,000 deaths, more than 23 million people affected, and staggering economic losses of over USD100 billion. While this Databook can show the general data on deaths, people affected, and economic losses, it cannot show the detailed disaggregated data of impacts by gender, location, or sector. In other words, this Databook will not show how many of the deaths are male or female, how many of the houses destroyed are in rural or urban areas, or which sector accounts for the greatest economic losses. Instead, this Databook simply shows an overview of trends (whether increasing or decreasing) on disaster occurrences and its impacts. By providing an overview of the trends, readers may gain curiosity to investigate the reasons behind them.

If we look at the disaster occurrences in 2023, the recorded number of events (374 events) is higher by 13% compared to the annual average for the past 30 years (1993-2022), which is 330 events/year. The most frequent occurrences were floods (44% or 163 events), storms (37% or 139 events), and earthquakes (9% or 32 events). As observed, devastating floods were experienced in India, Guatemala, Tanzania, Nigeria, Yemen, Somalia, Philippines, Italy, and Congo. Storms affected Libya (Daniel), Malawi (Freddy), India (Michaung), China (Doksuri), and Mexico (Otis). Earthquakes struck Türkiye Syria, Morocco, and Afghanistan

while droughts lingered in Indonesia and United States of America. Remaining as the most prone region in the world, many of these disasters were in Asia. Data in the region shows an increasing number of disaster occurrences in 2023 with 152 events compared to the annual average for the past 30 years (1993-2022), which is 132 events/year. We observed that in terms of deaths, there is an increasing trend both globally and in Asia. In terms of people affected, there is a decreasing trend both globally and in Asia, which can be attributed to the improvements in disaster risk reduction (DRR) measures. In terms of economic losses, the data shows an increasing trend both globally and in Asia. However, one significant observation in 2023 is that while economic losses generally show an increasing trend, it is not the case for flood. Globally, economic losses from floods in 2023 is lower (USD 20.37 billion) compared to the annual average of the past 30 years (USD 30.06 billion/year). Similar trend is observed in Asia, where economic losses from flood in 2023 (USD 0.17 billion) is lower compared to the 30-year average (USD 18.21 billion/year).

Since climate change is attributed as one of the reasons for the increasing disaster trend (i.e., rising temperature increases the moisture the atmosphere can hold, resulting in more storms and heavy rains), this Databook also looks at the trend of climate-related disasters, particularly drought, storm, flood, and extreme temperature. In 2023, global temperature reached exceptionally high, close to 1.50C limit. In particular, temperatures from June onwards made 2023 the warmest year on record, overtaking by a large margin 2016, the previous warmest year. Globally, climate-related disasters in 2023 recorded 322 events, which is higher than the annual average of the last 30 years (1993-2022) of 286/year. If we break it down by disaster type, it shows flood with 151 events, storm with 101 events, extreme temperatures with 18 events, and drought with 16 events. As recorded, the frequency of flood and storm occurrences consistently increase since 1993. Like the global trend, climate-related disasters in Asia are higher in 2023 with 121 events compared to the annual average of the last 30 years (1993 to 2022) with 111 events/year. If we breakdown the climate-related disasters of 2023, it shows flood with 61 events, storm 41 events, extreme temperatures with 5 events, and droughts with 4 events.

COVID-19 data (i.e., confirmed cases and deaths) provides useful information for governments and stakeholders to decide whether to sustain early warning, surveillance, and travel advisories. Since the cases and deaths remarkably declined in May 2023, many countries around the world had lifted all COVID-19 travel restrictions (e.g., proof of vaccination to enter the country). Consequently, a number of countries had discontinued reporting the COVID-19 situations to the World Health Organization (WHO). Using such limited information, we noted that in 2023, a cumulative total of 773,940,523 confirmed cases and 7,015,982 deaths were reported. The data showed that the highest number of confirmed cases on a

single day was reported on 19 December 2022 with 44.20 million cases, and this drastically declined in the beginning of 2023 until the end of the year. Likewise, the number of deaths had also significantly declined in 2023. The explanations for these can be largely attributed to the improvements in treatments, health measures, widespread vaccination, and natural immunity. As far as the ADRC member countries are concerned, the number of deaths from COVID-19 also significantly declined since the beginning of 2023 until the end of that year.

2. Natural Disaster Data

In this section, we look at the trends (whether increasing or decreasing) of natural disaster data in terms of occurrence, death tolls, people affected, and economic losses. We compare the natural disaster data of 2023 with the annual average of the last 30-year (1993-2022) to examine the trends at the global level and in Asia.

2.1 Global Disaster Data

Based on the EM-DAT's records from 1900 to 2023, we can observe an increasing trend of disaster occurrence in the world with a noticeable leap that began in the 1960s (Figure 2.1). Between this period (1900–2023), the average number of disaster occurrence per year is 117. However, if we compare it with the last decade (2013-2022), the average number of disaster occurrence per year increases to 349.

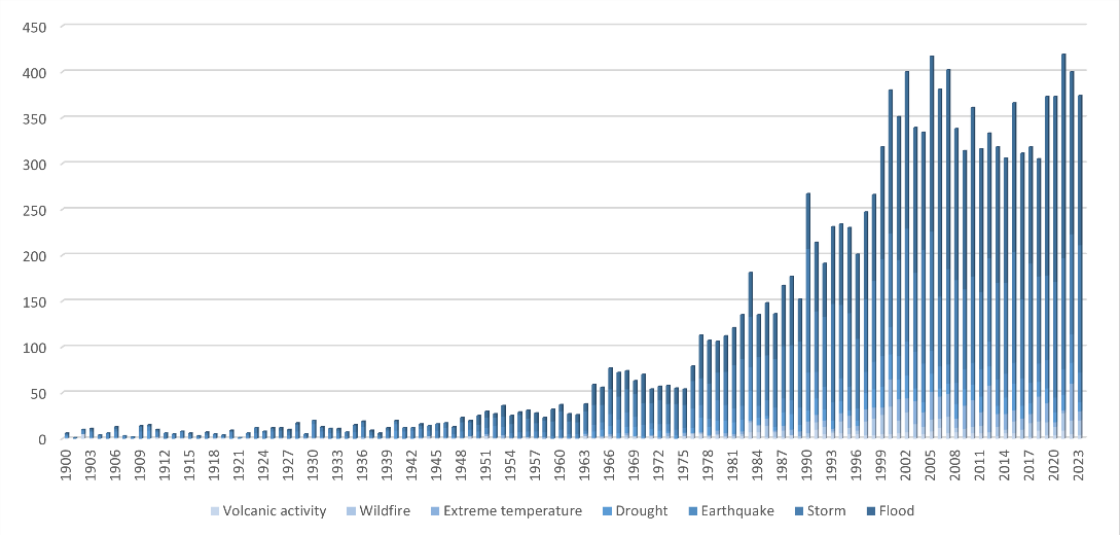

Figure 2.1 Global trend of natural disaster occurrence 1900-2023 (EM-DAT/CRED, 2024)

Since 1900, the top three disaster occurrences are floods (41% or 5,926 events), storms (33% or 4,731 events), and earthquakes (11% or 1,612 events).

2.1.1 Occurrence (Global)

HIGHER in 2023. If we look at year 2023 alone, the total number of disaster occurrence is 374 (i.e., considering only six disaster types: drought, earthquake, extreme temperature, flood, storm, wildfire, and volcanic activity). This number is higher by 13% compared to the annual average for the past 30 years (1993-2022), which is 330 (Figure 2.2). In 2023, the most frequent occurrences were floods (44% or 163 events), storms (37% or 139 events), and earthquakes (9% or 32 events).

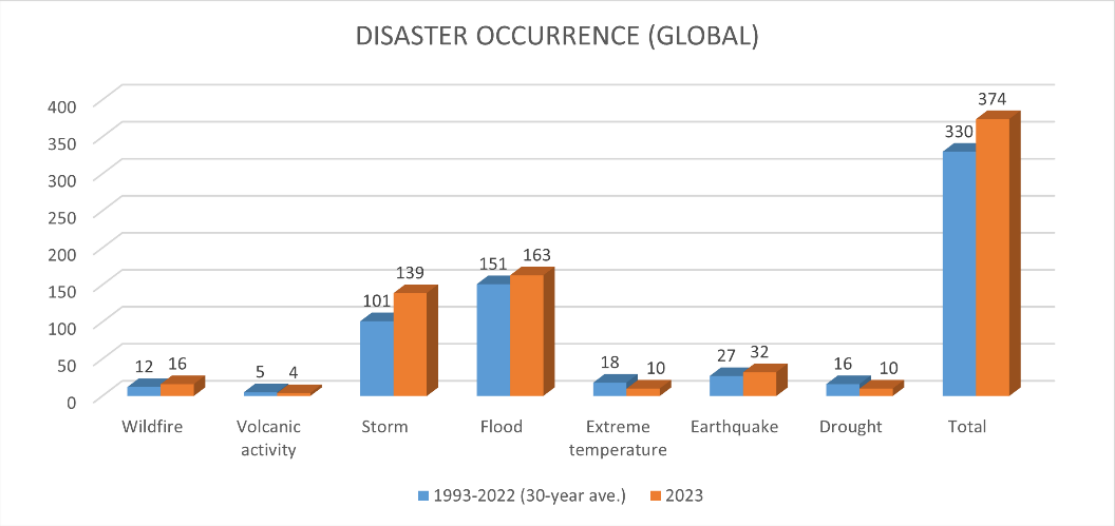

Figure 2.2 Global disaster occurrence by disaster type 2023 vs 1993-2023 (EM-DAT/CRED, 2024)

2.1.2 Deaths (Global)

HIGHER in 2023. The total number of deaths from disasters in 2023 is 85,641. This is approximately 1.7 times higher than the 30-year average of 50,691 deaths/year from 1993-2022 (Figure 2.3). In 2023, earthquakes caused the highest number of deaths with a total of 62,451 (73%). This increase is primarily attributed to the Türkiye-Syria earthquakes of 6th February 2023.

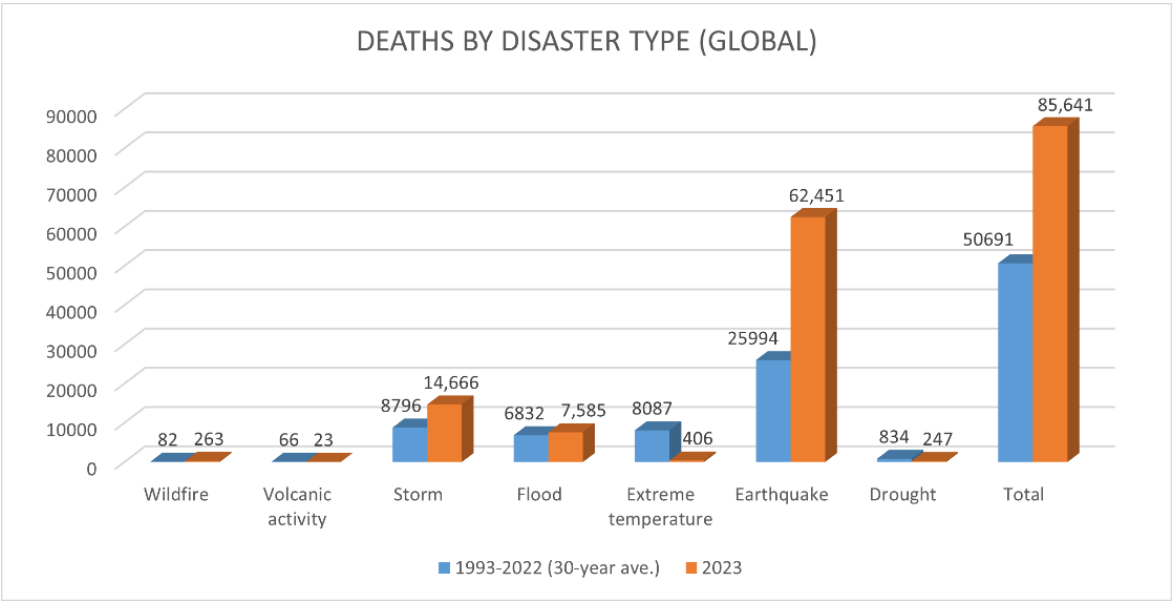

Figure 2.3 People killed by disaster type 2023 vs 1993-2022 vs 2023 (EM-DAT/CRED, 2024)

Deaths from storms in 2023 is 14,666. This is higher than the 30-year average of 8,796 deaths/year. One of the reasons for this notable increase in 2023 is due to the impact of storm Daniel in Libya, which resulted in 12,352 deaths. Regarding deaths from floods, the total number in 2023 is 7,585 higher than

the 30-year average of 6,832 deaths/year. This increase can be attributed to the flooding incidents in the Democratic Republic of Congo (3,014 deaths) and India (1,529 deaths).

2.1.3 People Affected (Global)

LOWER in 2023. In 2023, the estimated number of people affected by disasters is 92.81 million. This is lower than the annual average over the past three decades (1993-2022), which stands at 200.55 million people/year (Figure 2.4). However, considering the impacts of Türkiye-Syria earthquakes, 2023 shows more people affected by earthquakes compared to the annual average of the last 30 years, which was 4.85 million people per year affected by earthquake. The top three regions with the greatest number of people affected by disaster in 2023 are Asia (71% or 66.33 million people), Africa (14% or 12.54 million people), and the

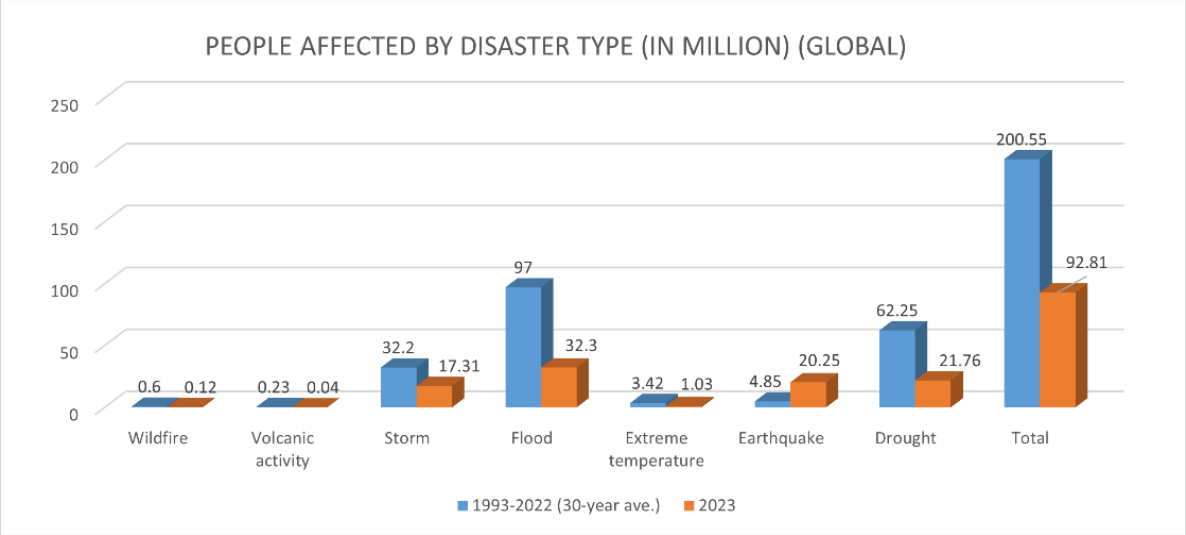

Figure 2.4 Number of people affected by disaster type 2023 vs 1993-2022 (EM-DAT/CRED, 2024)

Americas (12% or 10.73 million people). This signifies that Asia remains the most disaster-prone region in the world.

In 2023, floods affected 32.3 million people (35%), droughts affected 21.76 million people (23%), earthquakes affected 20.25 million people (22%), and storms affected 17.31 million people (19%).

2.1.4 Economic Losses (Global)

HIGHER in 2023. Economic losses from disasters in 2023 amounted to USD 202.11 billion, which is higher than the annual average for the past 30 years of USD 124.33 billion/year (Figure 2.5). About half (USD 100.85 billion) of the total economic losses in 2023 is attributed to storm disasters. Similar trend is shown over the last 30 years (1993-2022), where storms account for the most economic losses with an average of USD 56.86 billion/year.

Although we can observe an increasing trend of economic losses in wildfire, storm, earthquake, and drought, economic losses from flood (USD 20.37 billion) shows a decreasing trend in 2023 compared with the annual average of the past 30 years (USD 30.06 billion/year).

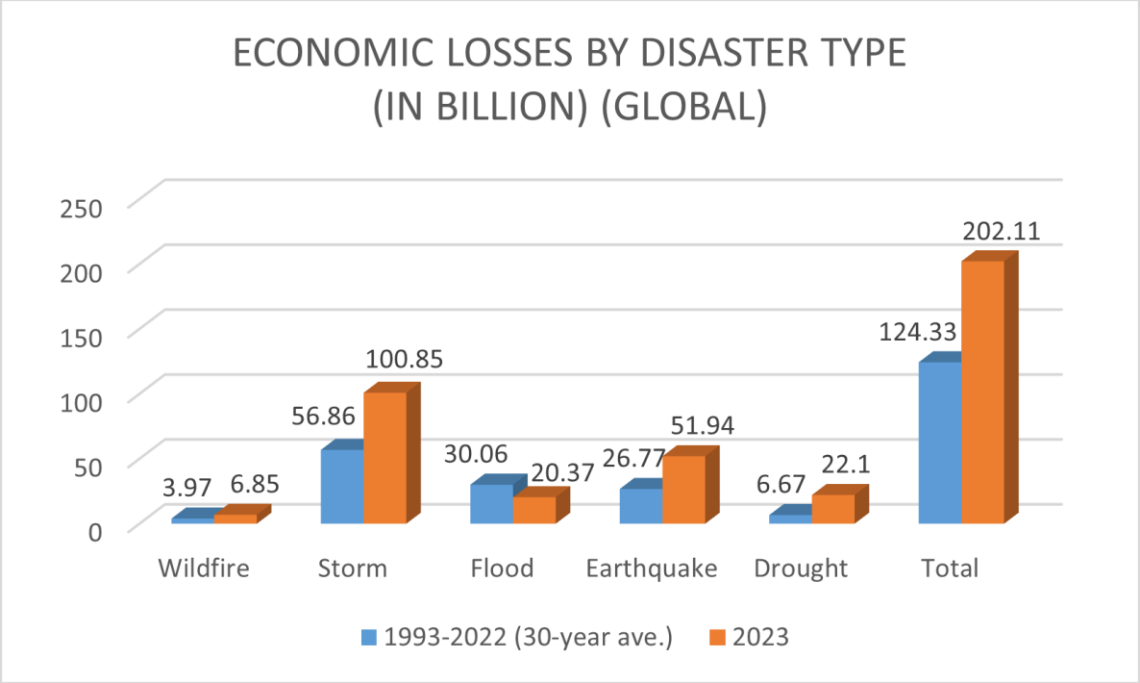

Figure 2.5 Economic losses by disaster type 2023 vs 1993-2022 (EM-DAT/CRED, 2024)

2.2 Asian Disaster Data

Similar to the global trend, disaster occurrence in Asia has been increasing during the period 1900-2023 (Figure 2.6). EM-DAT recorded a total of 5,946 disaster events in Asia with flood (2,455 events or 41%) as the most frequent occurrence followed by storms (1,968 events or 33%), and earthquakes (949 events or 16%). In this period (1900-2023), the average number of disaster occurrence is 48 events/year. However, if we look at the most recent decade (2013-

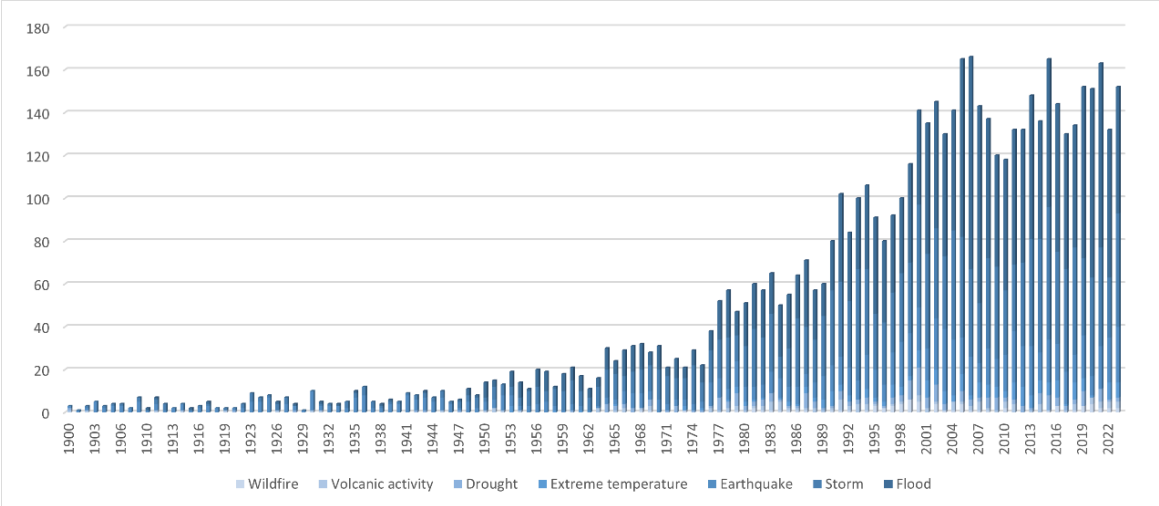

Figure 2.6 Trend of natural disaster occurrences in Asia 1900-2023 (EM-DAT/CRED, 2024)

2022), the average number of disaster occurrence has increased to an average of 146 events/year.

Historically, the top 10 countries in Asia with the highest number of disaster occurrences in the last 123 years are China (915), India (642), Philippines (638), Indonesia (518), Japan (361), Bangladesh (325), Islamic Republic of Iran (255), Vietnam (247), Pakistan (212), and Turkey (195) (Figure 2.7).

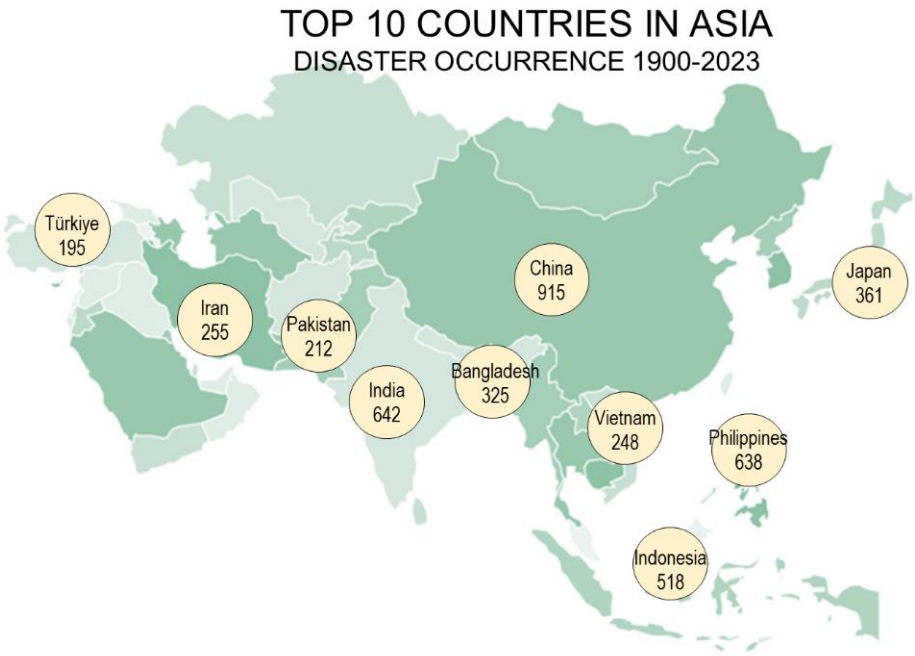

Figure 2.7 Top 10 disaster occurrences in Asia 1900-2023 (EM-DAT/CRED, 2024)

Many of the disaster events in 2023 occurred in Asia, including the floods in India, Yemen, and Philippines; storms in India (Michaung) and China (Doksuri); earthquakes in Türkiye, Syria, and Afghanistan; and droughts in Indonesia.

2.2.1 Occurrence (Asia)

HIGHER in 2023. In 2023, a total of 152 disasters occurred in Asia. This is 15% higher than the annual average for the past 30 years (1993-2022), which is 132 events/year. Flood (59 events or 39%) is the most frequent disaster followed by storm (53 events or 35%), and earthquakes (26 events or 17%) as shown in Figure 2.8. Occurrence of drought, wildfire, extreme temperature, and volcanic activity were also recorded, but their frequency is lesser compared with flood or storm.

Notably, there is significant increase in the occurrence of earthquake (26 events) in 2023 compared with the occurrence of earthquake in the last 30-year that has an average of 17 events/year.

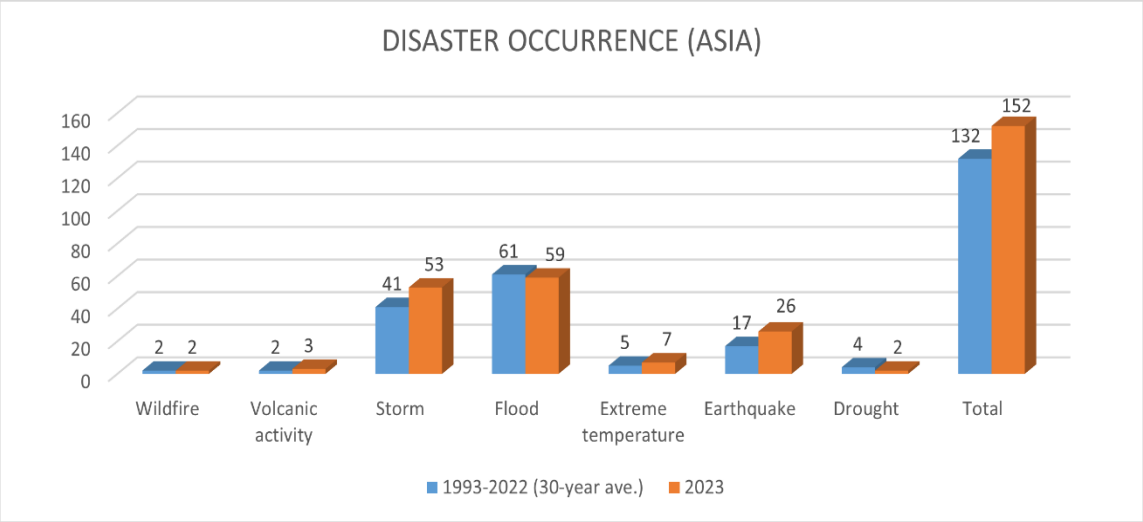

Figure 2.8 Disaster occurrence in Asia by disaster type 2023 vs 1993-2022 (EM-DAT/CRED, 2024)

2.2.2 Deaths (Asia)

HIGHER in 2023. Asia recorded a total of 63,017 deaths in 2023, which is higher than the 30-year annual average of 30,167 deaths/year (Figure 2.9). While floods and storms were the most frequently occurring disasters in 2023, earthquakes caused the most deaths. In particular, the Türkiye-Syria earthquake was the most catastrophic event of 2023 causing 56,683 deaths. This single event caused 90% of all disaster-related deaths in 2023 and was more than three times higher than the average annual earthquake deaths over the past 30 years, which is 17,978. The second major disaster was a flood in India, which caused 1,529 deaths.

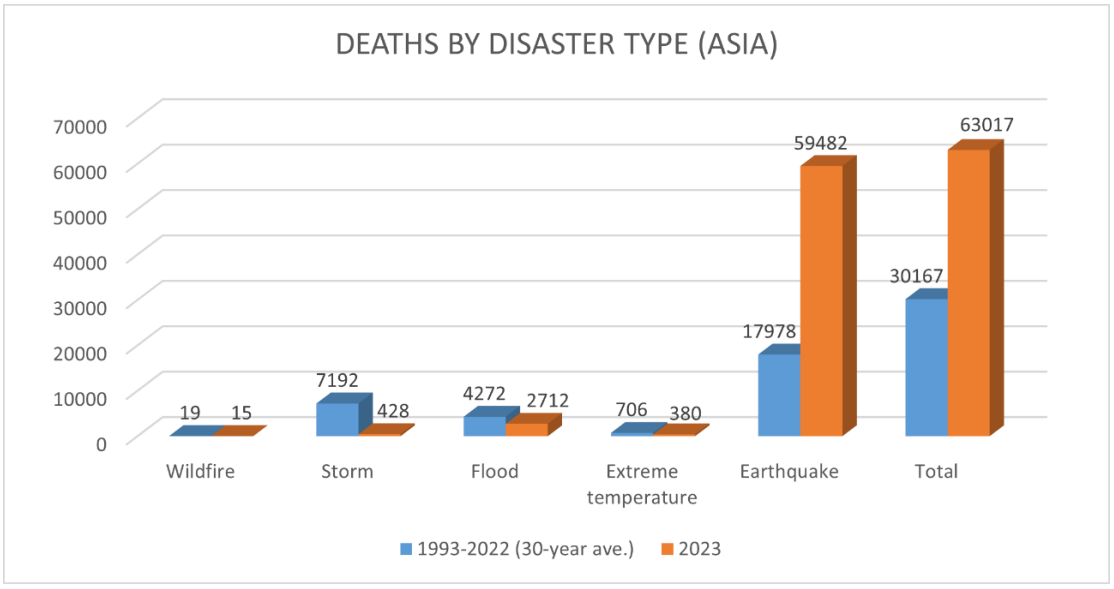

Figure 2.9 People killed by disaster type in Asia 2023 vs 1993-2022 (EM-DAT/CRED, 2024)

2.2.3 People Affected (Asia)

LOWER in 2023. An estimated number of 66.28 million people in Asia were affected by disasters in 2023, which is lower than the average of the past 30 years (1993-2022) of 168.88 million people/year (Figure 2.10). If we breakdown the number of people affected by disaster type, it shows the following: earthquake (19.25 million people or 29%), droughts (18.75 million people or 28%), floods (17.49 million people or 26%), and storms (9.76 million people or 15%). If we breakdown by region, it shows the following: Southeast Asia (22.97 million people), South Asia (20.04 million), and West Asia (19.81 million people).

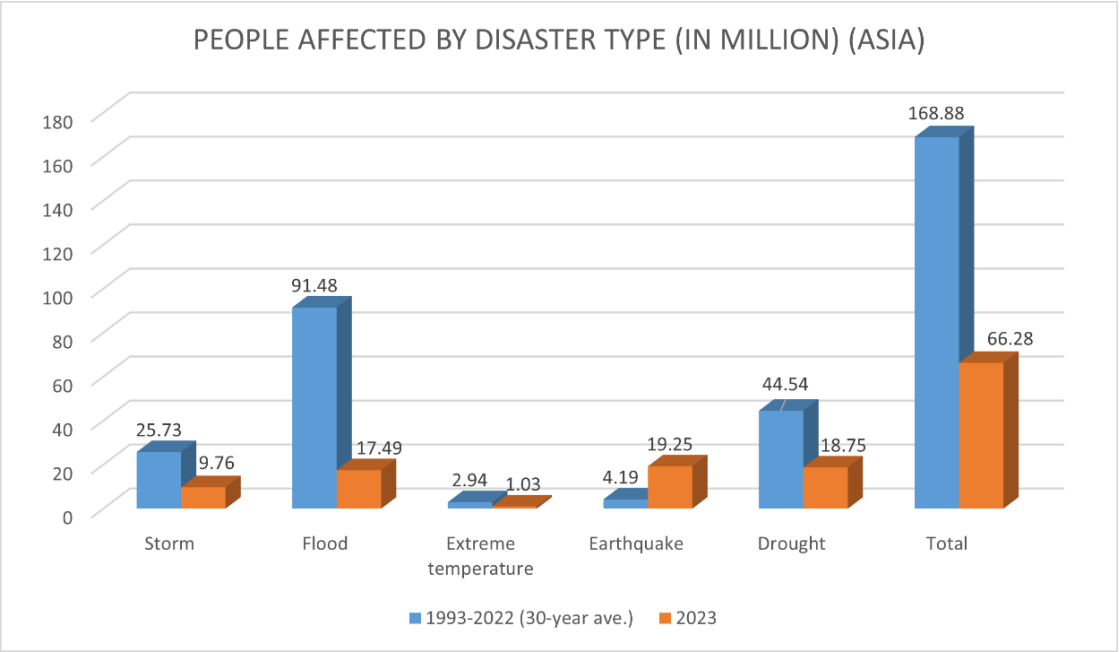

Figure 2.10 People affected by disaster type in Asia 2023 vs 1993-2022 (EM-DAT/CRED, 2024)

If we specifically look at earthquake, the number of people affected by this disaster type in 2023 (i.e., 19.25 million people) is four times higher than the past 30 years with an average number of 4.19 million people affected/year.

2.2.4 Economic Losses (Asia)

HIGHER in 2023. Economic losses from disasters in Asia in 2023 is approximately USD 75.92 billion, which is higher than the average annual economic losses for the past 30 years of approximately USD 52.25 billion/year (Figure 2.11). If we breakdown the economic losses of 2023 by disaster type, it shows: earthquake (USD 44.42 billion), storm (USD 28.63 billion), drought (USD 2.7 billion), and flood (USD 0.17 billion). If we lump all disaster types (i.e., drought, earthquake, extreme temperature, flood, storm, wildfire, and volcanic activity), the trend shows higher economic losses in 2023 compared with the annual average of the past 30 years. However, if we look only at flood alone, we will notice a lower amount of economic losses in 2023 (USD 0.17 billion) compared with the annual average of the past 30 years (1993 to 2022) which is USD 18.21 billion/year.

If we breakdown the economic losses by countries in 2023, it shows the following: Turkey (USD 34.03 billion or 45%), China (USD 29.55 billion or 39%), and Syria (USD 8.9 billion or 12%).

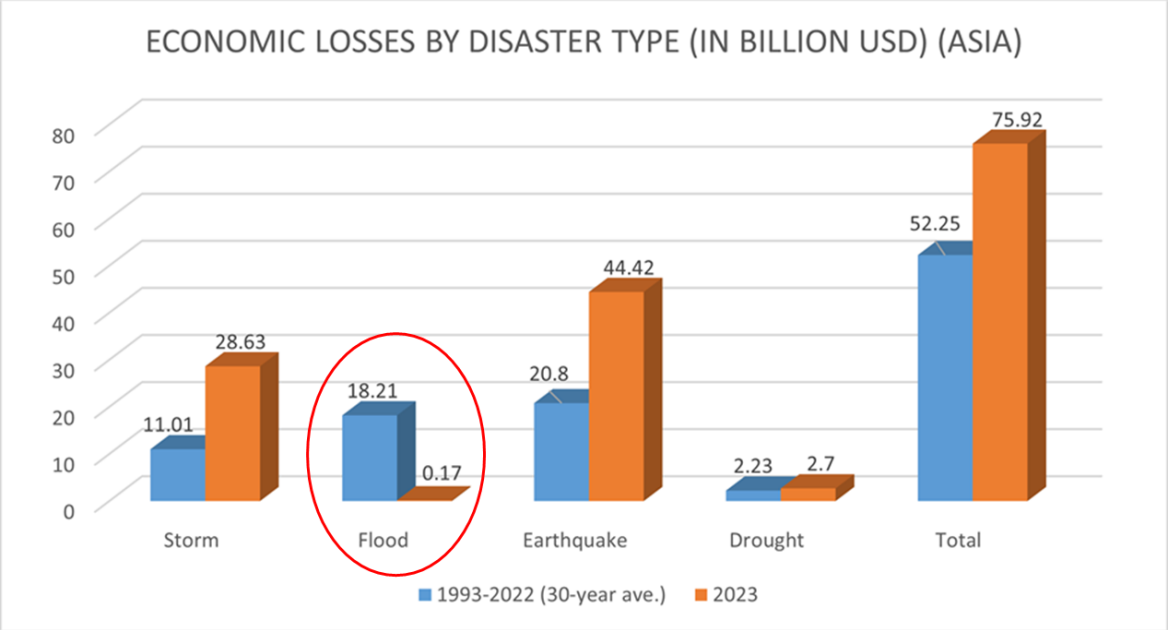

Figure 2.11 Economic losses by disaster type in Asia 2023 vs 1993-2022 (EM-DAT/CRED, 2024)

3. Climate-Related Disasters

Climate change is attributed as one of the reasons for the increasing disaster trend, such as the increasing frequencies and intensities of water hazards like flood and storm. In fact, it is mentioned the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report (AR6) that the frequency and intensity of extreme weather events are already increasing, and are expected to rise further with every additional increment of global warming. Rising global temperatures increase the moisture the atmosphere can hold, and this results in more storms and heavy rains.

According to Copernicus Climate Change Service, global temperatures reached exceptionally high levels in 2023 that was close to 1.5^0C limit. Unprecedented global temperatures from June onwards led 2023 to become the warmest year on record, overtaking by a large margin 2016, the previous warmest year. With every degree of global warning, flood risks and drought (as well as its impacts) are expected to increase. In this section, we look at the data on drought, storm, flood, and extreme temperature for an overview of climate-related disasters.

3.1 Global trend in climate-related disasters

HIGHER in 2023. Climate-related disasters (i.e., drought, storm, flood, and extreme temperature) in 2023 recorded 322 events, which is higher than the annual average of the last 30 years (1993-2022) of 286/year (Figure 3.1). If we break it down by disaster type, it shows flood with 151 events, storm with 101 events, extreme temperatures with 18 events, and drought with 16 events. As recorded, the frequency flood and storm occurrences consistently increase since 1993.

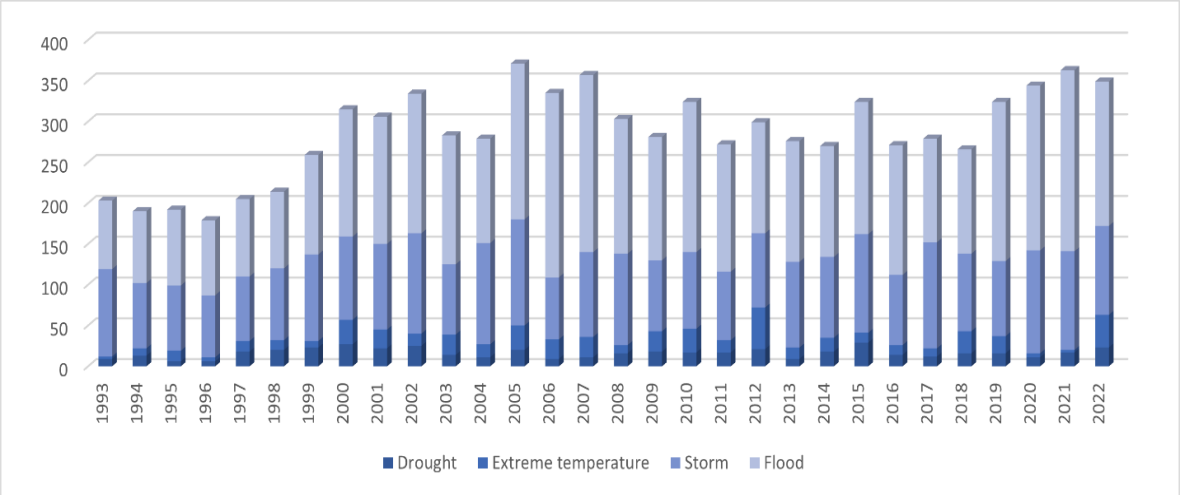

Figure 3.1 Global trend of climate-related disasters 1993-2022 (EM-DAT/CRED, 2024)

3.2 Asian trend in climate-related disasters

HIGHER in 2023. Like the global trend, climate-related disasters in Asia is higher in 2023 with 121 events compared to the annual average of the last 30 years (1993 to 2022) with 111 events/year (Figure 3.2). If we breakdown the climate-related disasters of 2023, it shows flood with 61 events, storm 41 events, extreme temperatures with 5 events, and droughts with 4 events.

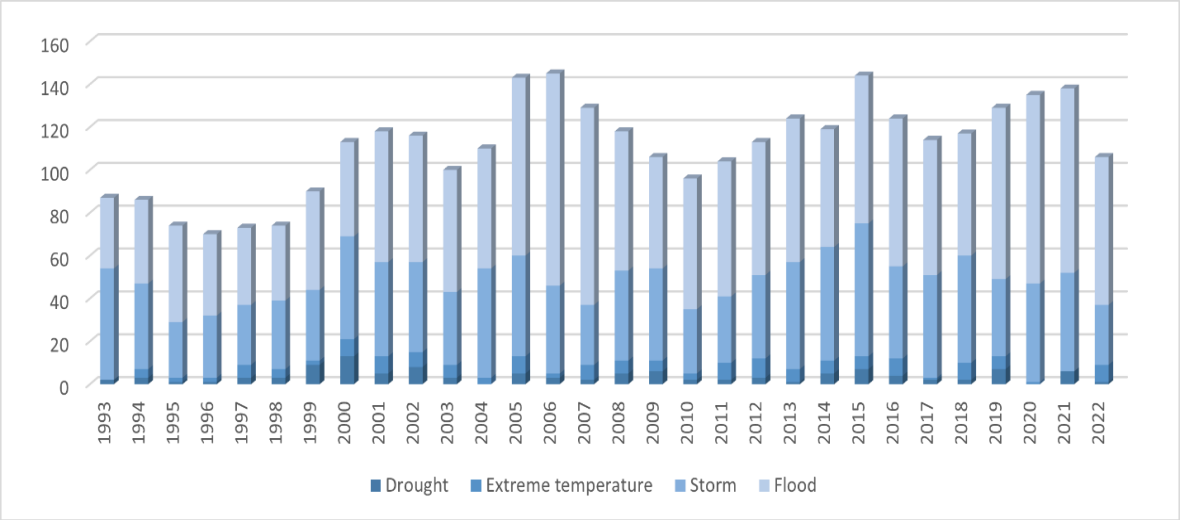

Figure 3.2 Trend of climate-related disasters in Asia 1993-2022 (EM-DAT/CRED, 2024)

As reported in the State of Climate in Asia (WMO, 2024), many parts of the region experienced extreme heat events in 2023 with Japan experiencing its hottest summer on record. Glaciers in High-Mountain Asia lost significant mass over the past 40 years, at an accelerating rate due to record-breaking high temperatures and drier conditions in the Eastern Himalayas and the Tien Shan (mountain range) in 2023. Moreover, the following climate change-related observations were noted in 2023: i) sea-surface temperature anomalies in the north-west Pacific Ocean were the highest on record; ii) South-west China suffered from a drought, with below-normal precipitation levels nearly every month; iii) essential winter precipitation was also below normal in the Hindu Kush region, and the rains associated with the Indian summer monsoon were insufficient. Similar to the global trend, over 80% of the hydrometeorological hazards in Asia were flood and storm events.

4. COVID-19 Data

In past three years, ADRC has been showing some COVID-19 data from the WHO COVID-19 Dashboard to report on the situation, such as confirmed cases, deaths, and health systems in member countries. Providing such information is useful to sustain early warning, surveillance, and travel advisories. In May 2023, many countries around the world, including Japan, had lifted all remaining COVID-19 travel restrictions (e.g., proof of vaccination to enter the country). Consequently, many countries discontinued reporting the COVID-19 situations to the World Health Organization (WHO) since 2023. In this Databook, we will show snippets of COVID-19 data from the WHO Dashboard, downloaded on 10 July 2024.

4.1 Global Situation

As of 2023, a cumulative total of confirmed cases of 773,940,523 (Figure 4.1) and deaths of 7,015,982 (Figure 4.2) from COVID-19 were reported. After observing the highest number of confirmed cases reported on single day at 44.20 million on 19 December 2022, COVID-19 cases had drastically declined from the beginning and until the end of 2023. Likewise, the number of deaths had also significantly declined in that year.

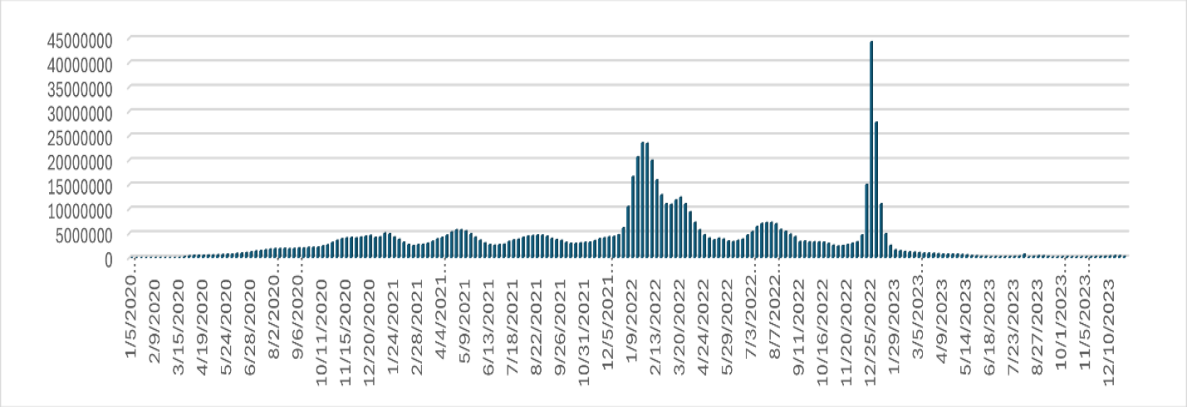

Figure 4.2 Cumulative number of confirmed COVID-19 cases as of Dec 2023 (WHO, 2024)

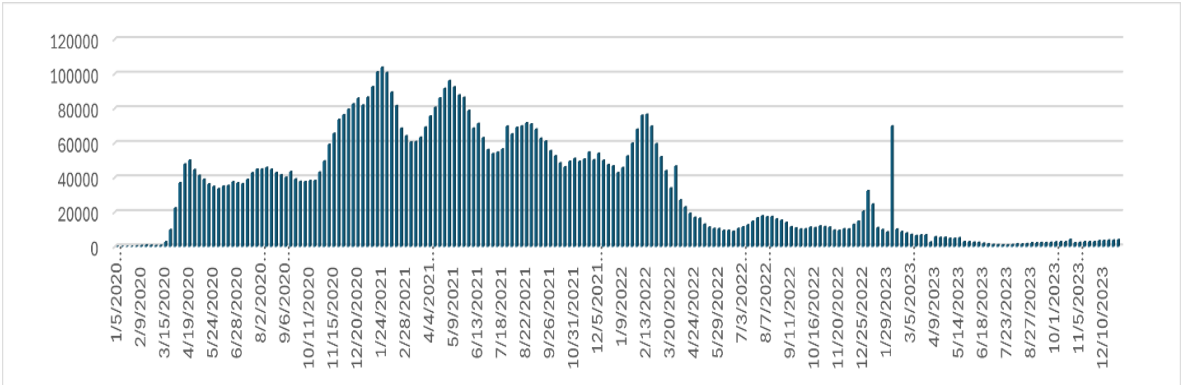

Figure 4.1 Cumulative number of COVID-19 deaths as of Dec 2023 (WHO, 2024)

Globally, the significant decrease in COVID-19 deaths is largely attributed to improved treatments, health measures, widespread vaccination, and natural immunity.

4.2 COVID-19 Situation in ADRC Member Countries

Similar to the global trend, COVID-19 situation in ADRC member countries showed significantly declining number of confirmed cases and deaths from COVID-19. Looking back at the end of 2023, the cumulative totals in the number of confirmed cases showed China reaching 99.32 million cases, India with 45.01 million cases, Republic of Korea with 34.57 million cases, Japan with 33.80 million cases, and the Russian Federation with 23.75 million cases (Figure 4.3).

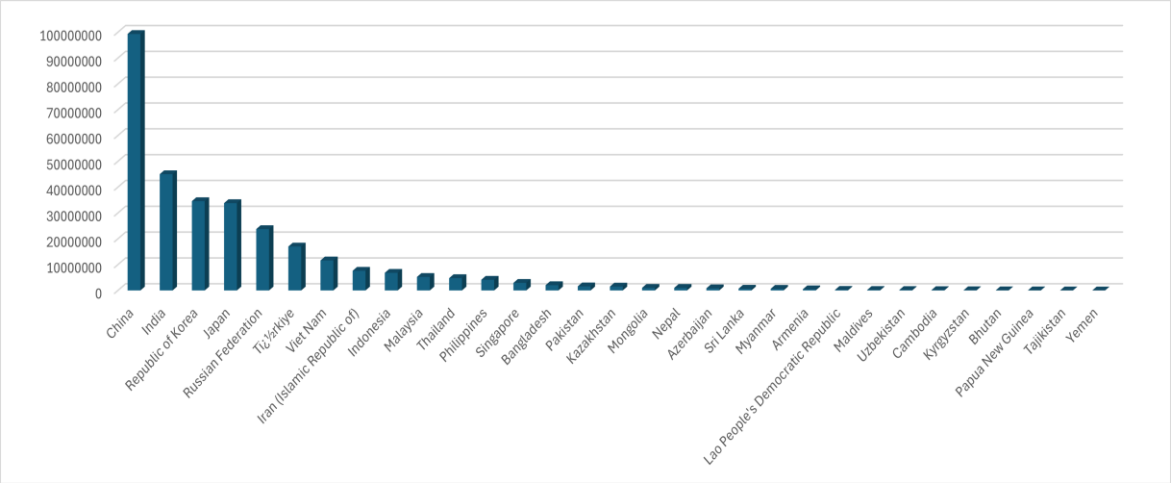

Figure 4.3 Cumulative COVID-19 confirmed cases in ADRC member countries (WHO, 2024)

Following the global trend, the number of deaths from COVID-19 significantly declined in ADRC member countries since 2023. Looking back at the end of 2023, the cumulative number of deaths showed India with 533,361 deaths, Russian Federation with 401,359 deaths, Indonesia with 161,972 deaths, Iran with 146,757 deaths, and China with 121,893 deaths (Figure 4.4).

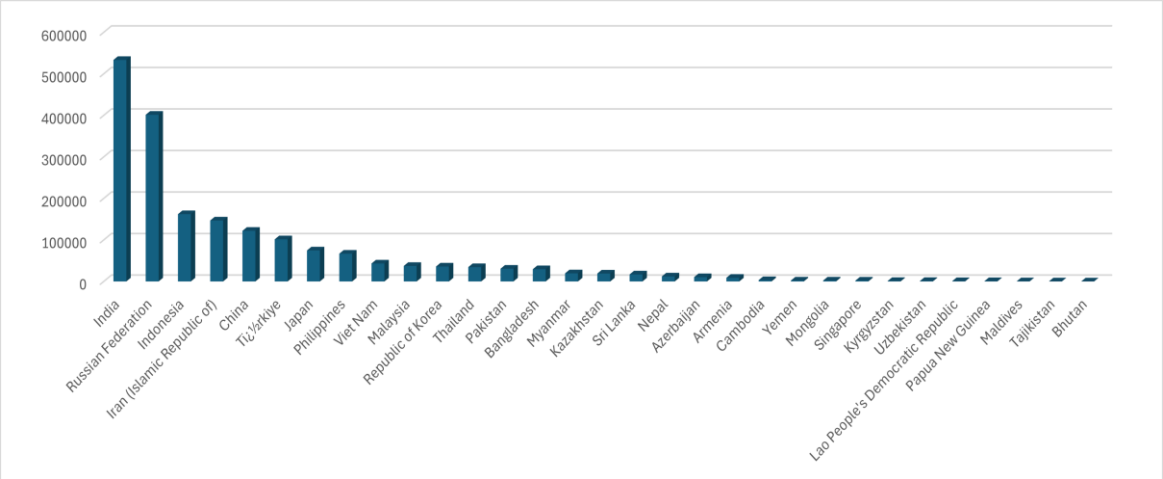

Figure 4.4 Cumulative COVID-19 deaths in ADRC member countries (WHO, 2024)

In hindsight, the declining trend of COVID-19 cases and deaths signals the greater control of the pandemic, lifting territories-imposed quarantines, entry bans, or other travel restrictions for citizens traveling to affected areas. Declining trend of COVID-19 cases also implies promising outlook for global tourism, business travels, markets, and economies.

Natural Disaster Databook 2023

Annex 1: Notes on Sources of Data

Natural Disaster Data

All disaster data are based on EM-DAT/CRED: The Emergency Events Database - Université Catholique de Louvain - CRED, www.emdat.be, Brussels, Belgium. Datasets were obtained on 25 March 2024, unless otherwise stated. The Natural Disaster Databook 2023 focused only on seven disaster types: drought, earthquake, extreme temperature, flood, storm, wildfire, and volcanic activity.

EM-DAT Criteria:

For a disaster to be entered into the database, at least one of the following criteria must be fulfilled:

- Ten (10) or more people reported killed
- Hundred (100) or more people reported affected
- Declaration of a state of emergency
- Call for international assistance

The Natural Disaster Databook 2023 follows the EM-DAT definitions of “people killed” as persons confirmed as dead and persons missing and presumed dead; “people affected” as the sum of injured, homeless, and affected requiring immediate assistance during the period of emergency and requiring basic survival needs such as food, water, shelter, sanitation and immediate medical assistance.

Disaster Terms:

Drought includes an extended period of unusually low precipitation that produces a shortage of water for people, animals and plants.

Earthquake includes ground shaking and tsunami.

Epidemic includes bacterial and viral infectious diseases.

Extreme Temperature includes heat wave, cold wave, and extreme winter conditions.

Flood includes general flood, and flash flood.

Insect Infection is pervasive influx and development of insects or parasites affecting humans, animals, crops and materials.

Landslide includes avalanche, debris, and rockfall.

Storm includes local storm, tropical cyclone, and winter storm.

Volcanic activity means volcanic eruption.

Wildfire includes bush/brush fire, forest fire, and scrub/grassland fire.

Classification of EM-DAT:

EM-DAT distinguishes between two generic categories for disasters: natural and technological. The natural disaster category is divided into 5 sub-groups, which in turn cover 15 disaster types and more than 30 sub-types. The technological disaster category is divided into 3 sub-groups which in turn cover 15 disaster types:

https://www.irdrinternational.org/knowledge_pool/publications/173

COVID-19 Data

All COVID-19 data used in the Databook 2023 is based from the World Health Organization Coronavirus (COVID-19) Dashboard, https://covid19.who.int/ accessed on 10 July 2024.

Data from the WHO COVID-19 Dashboard are from the official reporting to WHO through regional offices and also from public websites, not officially reported to WHO. Member States select the data and the reporting systems they prefer to use. Individual countries, areas, and territories may decline to allow country-level disaggregation.

In past three years, ADRC has been showing some COVID-19 data from the WHO COVID-19 Dashboard to report on the situation, such as confirmed cases, deaths, and health systems in member countries. Providing such information is useful to sustain early warning, surveillance, and travel advisories. In May 2023, many countries around the world, including Japan, had lifted all remaining COVID-19 travel restrictions (e.g., proof of vaccination to enter the country). Consequently, many countries discontinued reporting the COVID-19 situations to the World Health Organization (WHO) since 2023.

It is on this context that the COVID-19 data is presented in the Databook 2023.

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