

**Protecting the most vulnerable
to cascading risks from climate extremes and the COVID-19
in South Asia**



**COVID-19
RESPONSE**

Executive Summary

South Asia is at a crossroad of the cascading risks emanating from the rapid spread of the Coronavirus Disease-19 (COVID-19) and climate extremes in monsoon months. Every year, people in the subregion suffer from various climate hazards such as floods, droughts, tropical cyclones and heat waves. This is likely to continue this year in the middle of the COVID-19 pandemic.

Managing disaster risks amid the COVID-19 requires very different approaches from what used to be done. The 16th Session of the South Asian Climate Outlook Forum (SASCOF), held in April 2020, released the consensus seasonal forecast of the weather events from June to September 2020 – the Southwest monsoon period that coincides with peaking flood and drought events in a particular year. The seasonal forecast maps show the potential risk scenarios in terms of

low and high precipitations that may result in floods and droughts. The risk scenarios are overlaid with geospatial social and economic vulnerabilities as well as the COVID-19 outbreak zones to understand the potential impacts of cascading risks.

As the South Asian monsoon season begins, the spread of COVID-19 is also peaking, and more than 70 percent of the total confirmed COVID-19 cases are reported within the last one month in South Asia. The recent cyclones, Amphan and Nisarga, as well as desert locust swarms in the midst of the COVID-19 signal the complexities of cascading risks. Therefore, ESCAP's framework to support the socio-economic response of Asia and the Pacific to the COVID-19 pandemic highlights protecting people and enhancing resilience as one of the key priorities.¹

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Introduction

As we continue to experience ‘a whole new world’, COVID-19 has swept the globe from late 2019 infecting more than 10 million and killing around 500,000 people as of 29 June 2020. The COVID-19 pandemic is also rapidly spreading in South Asia accounting for approximately 8.5 percent of the global total confirmed cases and 4.2 percent of the total deaths.² ESCAP’s *report on the Impact and Policy Responses for COVID-19 in Asia and the Pacific* presents an initial assessment,³ while its subregional report - *COVID-19 and South Asia: National Strategies and Sub-regional Cooperation for Accelerated Inclusive, Sustainable and Resilient Recovery* provides a comprehensive situation analysis of South Asia.⁴ This unprecedented pandemic has enforced ‘social distancing’ practices in many parts of the world. Many countries declared State of Emergencies that closed schools, offices, places of worships and restaurants and locked down many other public places. The pandemic has also heavily restricted international and domestic travels.

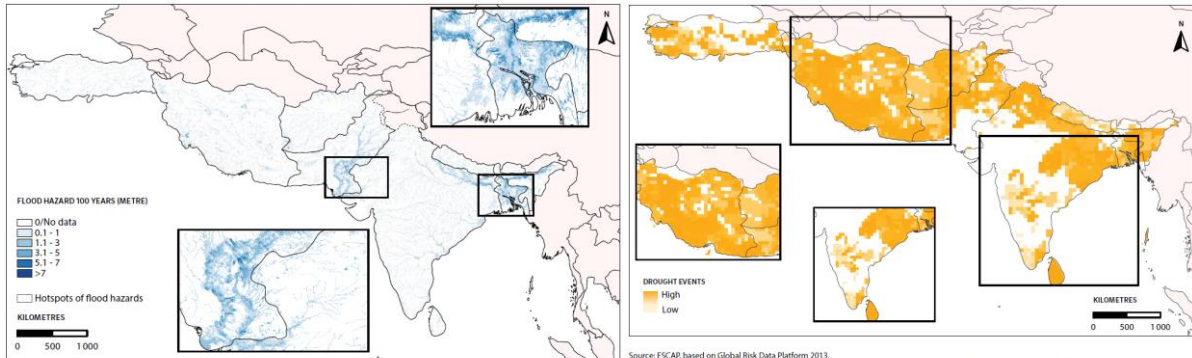
The measures enforced to prevent the spread of COVID-19 has led to dramatic changes in standard operation systems and the ordinary ways of doing businesses in all sectors that are established based on physical contacts and movements of people. **This change is no exception in addressing natural disasters and managing disaster risks during the COVID-19; and responses should be different from previous disaster responses.** To prepare for appropriate measures to address the cascading impacts of the COVID-19 and climate hazards, understanding the risk profiles and identifying hotspots, where the risk of climate disasters and the pandemic is converging, is a prerequisite. In line with the above, this policy study informs the impending climate risk scenarios and their intersection with the COVID-19 pandemic to facilitate policy actions that could ably protect communities at risk as well as to lay the foundations of resilient recovery of the poor and the vulnerable in South Asia.

Climate Extremes amid the COVID-19

During the COVID-19 pandemic, South Asia is likely to be exposed to the impending climate risk as manifested through the monsoon season. Across South Asia, floods and droughts often peak during the monsoon seasons. The Asia-Pacific Disaster Report 2019 identifies several areas in Afghanistan, Bangladesh, Bhutan, India, Nepal and Pakistan as high disaster

risk areas, where hazard risks are high, but have low Human Development Index (HDI) and high population density. Especially, located in the region’s major transboundary river basins, most of the countries of this subregion has high risk of both floods and droughts [Figure1]. Thus, extreme rainfall in these areas – too much or too little precipitation – may lead to severe disasters.

Figure1. High Risk Areas of Floods and Droughts in South Asia



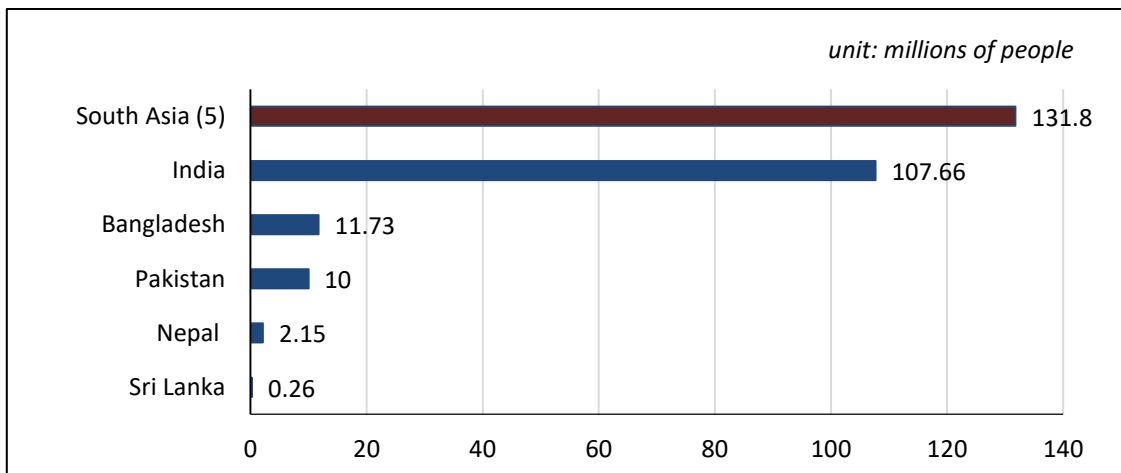
Source: ESCAP based on Global Risk Data Platform 2013.
 Disclaimer: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.
 Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.
 Note: Flood data consist of all categories of flood hazard height with a return period of 100 years.
 Note: In the map, individual drought events from 1980 to 2001 are indicated by light orange polygons. Darker colours appear where multiple polygons overlap, and therefore indicate areas with a higher frequency of previous drought events, while lighter shades indicate a lower frequency. Data is unavailable for areas shown in white.

Source: ESCAP (2020d), Figure 5 & 6

This year, the COVID-19 pandemic adds complexity and difficulty in managing natural hazards with possible convergence of the pandemic and climate hazards. For example, in late May/early June 2020, South Asia faced a ‘crisis on top of crises’ – COVID-19, intersecting with cyclone Amphan in the Bay of Bengal, Cyclone Nisarga in the Arabian Sea, floods in Assam, India, and desert locust affecting South-West Asia. Amphan, the most powerful cyclone struck India and Bangladesh in 20 years, claimed over 100 lives,⁵ and destroyed the homes and livelihoods of thousands of families

already struggling to cope with the COVID-19 crisis. The Asia-Pacific Disaster Report 2019 identifies these South Asia coastal regions as multi-hazard risk hotspot, and it is now further compounded with the fast spreading COVID-19 pandemic. The speed of spread in recent days is particularly worrisome as more than 70 percent of confirmed cases and deaths in South Asia were reported just during the last one month.⁶ In face of the cascading risks of natural hazards in the midst of COVID-19 pandemic, the challenge lies in protecting the most vulnerable, their lives and livelihoods.

Figure2. Number of People that could be pushed into Extreme Poverty due to COVID-19 related measures



Source: ESCAP (2020c), Figure 15

Unless properly managed, the convergence of climate risks and the COVID-19 pandemic can lead to serious consequences on poverty in South Asia.

While the Asia-Pacific Disaster Report 2019 demonstrates disasters widen inequalities and slow down poverty reduction, ESCAP report also suggests that up to 132 million people could be pushed into extreme poverty due to the COVID-19 related measures in 5 South Asian countries covered [Figure2].⁷ India accounts for the bulk of the potential new poor in South Asia with 108 million people. Bangladesh, Pakistan and Nepal are expected to account for the rest with Sri Lanka having 260 thousand people potentially pushed into extreme poverty.

Further, the cascading impacts of the COVID-19 and climate extremes can lead to malnutrition and food insecurity in the region. The COVID-19 has already caused disruptions in agricultural production and

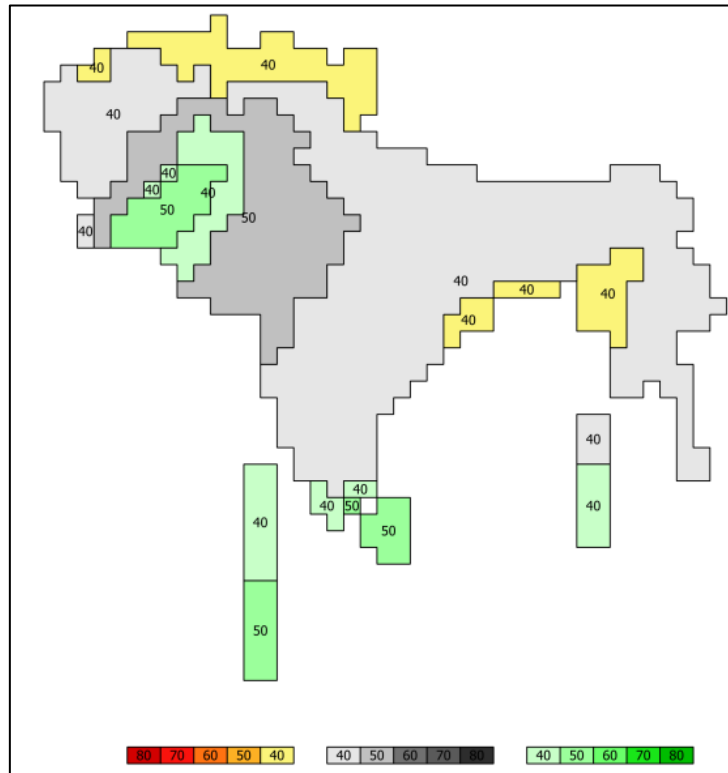
supply chains due to unavailability of seasonal workers, transport restrictions etc. The United Nations World Food Programme (WFP) projected that COVID-19 could increase the number of people facing acute food insecurity from 135 million in 2019 to 265 million in 2020.⁸ These shocks have the potential to lead to malnutrition and food insecurity with long-term health impacts, especially for women and children. Combined with the ongoing COVID-19 crisis, the climate hazards such as droughts, floods, tropical cyclones and heatwaves can adversely impact agriculture putting additional pressure on malnutrition and food insecurity. Coupled with the above, there are 600 million children in South Asia who are at risk of food insecurity and the disruption of immunization, nutrition and other vital health services; and these circumstances could push some disadvantaged students to join the nearly 32 million children who were already out of school in South Asia – a situation that **has a potential of disastrous inter-generational impacts in the region.**⁹

Identifying Hotspots of Cascading Risks

For protecting the vulnerable population from climate extremes amid the COVID-19 pandemic and building their resilience, understanding the cascading risks is essential. The impending climate risk is captured in the consensus seasonal forecast of rainfall during the monsoon period from June to September 2020 [Figure3]. The climate conditions during this season greatly impact the riskscape of the region. Thus, estimating the amount of rainfall during the period can provide valuable information on likelihood of water-related disasters.

Based on the above flood and drought risk maps, the consensus seasonal forecast presented here and the confirmed COVID-19 cases, Figure4 and Figure5 identify hotspots where there are high probabilities of climate extremes amidst the COVID-19 pandemic. Some of the key highlights of cascading risks are summarized below.

Figure3. Consensus Seasonal Forecast for Rainfall Deviation from Normal



Source: Provided by WMO Regional Climate Centre (RCC)-Pune of the India Meteorological Department (IMD)

Figure4. Hotspots of High Probability of Climate-related Disasters amidst the COVID-19

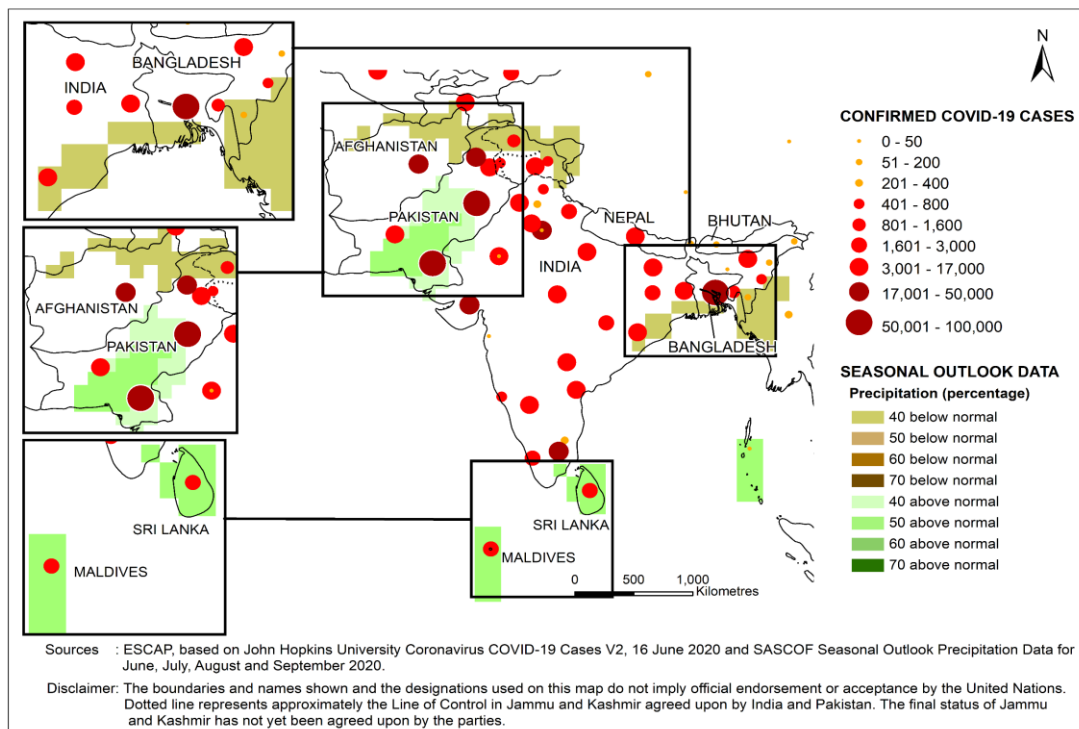
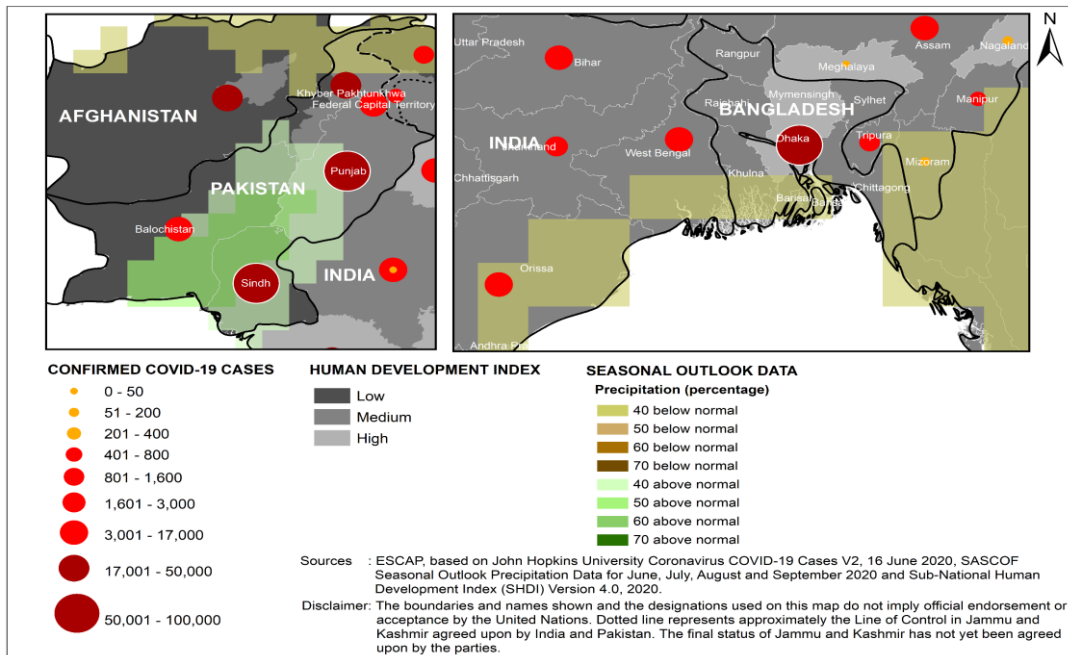


Figure5. Exposure and Vulnerability in Afghanistan, Pakistan and Bangladesh



Central and southern Pakistan, Sri Lanka and Maldives are expected to have above normal precipitation during this monsoon season, while also suffering from the COVID-19 pandemic. Attention should be paid to central and southern Pakistan. The spread of the COVID-19 is very active and around 132,600 confirmed cases (or 71.7 percent of the total) were reported during the last one month [Table1]. These include many cases from central and southern Pakistan including Karachi, which is also a high flood risk area.¹⁰ In addition, it is expected that this area has above normal precipitation during the monsoon season this year. Around 84.5 million people living in this area are potentially exposed to flood risk amidst the COVID-19 [Table2]. More precipitation does not necessarily lead to flood events, but it increases the probability of flood events. Thus, it is necessary to closely monitor a possible convergence of flood events and the COVID-19 in the area.

On the other hand, northern Afghanistan and southern Bangladesh are expected to have below normal precipitation during this monsoon season. Afghanistan and Bangladesh are also high drought risk areas, as identified in Figure1. Thus, substantially less precipitation during the monsoon season may lead to drought events. Afghanistan reported 29,481 confirmed COVID-19 cases as of 23 June 2020, and among these, approximately 20,000 cases were reported in the recent one month. Bangladesh is also greatly suffering from the COVID-19 with around 83,700 confirmed cases during the last one month (Table1).¹¹ Possible drought events in northern Afghanistan and southern Bangladesh could put additional economic burden on vulnerable farmers who may have been already affected by shocks related to the COVID-19. In Afghanistan, over 8 million people (or 21.4% of total population) are exposed to the potential cascading impacts of COVID-19 and drought events. In Bangladesh, over 20 million people (or 12.3% of total population) are exposed to the potential dual challenge.

Table1. Risk Profiles of Afghanistan, Bangladesh and Pakistan

	Disaster risk profile	Seasonal precipitation forecast	COVID-19 cases Total (last 30 days, %)	HDI rank	Lack of coping & adaptive capacities
Afghanistan	High drought risk	40% probability below normal	29,481 (66.5%)	170	Very High
Bangladesh	High flood risk, High drought risk	40% probability below normal	115,786 (72.3%)	135	Very High
Pakistan	High flood risk (south)	40-50% probability above normal (south)	185,034 (71.7%)	152	Very High

Source: Disaster risk from ESCAP (2020d); Seasonal precipitation forecast from SASCOF Seasonal Outlook Precipitation Data for June, July, August and September; COVID-19 cases from WHO COVID-19 Dashboard (Accessed on 24 June 2020); HDI from UNDP (2019); and Lack of coping & adaptive capacity from Bündnis Entwicklung Hilft and Ruhr University Bochum – Institute for International Law of Peace and Armed Conflict (IFHV) (2019)

Table2. Number of people exposed to potential drought and flood events in South Asia

Unit: thousands of people

Country	Population size	Exposed to 40% probability below normal	(%)	Exposed to 40% or 50% probability above normal	(%)
Afghanistan	38,928	8,322	21.4	129	0.3
Bangladesh	164,689	20,229	12.3	-	-
Bhutan	772	-	-	-	-
India	1,380,004	69,331	5.0	6,291	0.5
Maldives	540	-	-	540	100
Nepal	29,136	-	-	-	-
Pakistan	220,892	5,012	2.3	84,561	38.3
Sri Lanka	21,413	-	-	21,413	100
Total	1,856,374	102,894	5.5	112,934	6

Source: Population Data from ESCAP SDG Gateway, Number of people exposed calculated based on WorldPop 2020 population data, and SASCOF Seasonal Outlook Precipitation Data for June, July, August and September 2020.

Key Messages

The intersection of climate risks with the COVID-19 is critical to address multiple layers of the vulnerabilities in South Asia. ESCAP's framework to support the socio-economic response of Asia and the Pacific to the COVID-19 pandemic highlights protecting people and enhancing resilience as a key priority. While the risk transmission pathways of COVID-19 and extreme climate events are very different, many communities are exposed to the risk of and vulnerable to both. Thus, the interaction among climate extremes and the COVID-19 pandemic could exacerbate further the already critical vulnerabilities of South Asia. Enhanced preparedness to the complex and cascading disaster risks assumes significance not only to protect communities at risk, but also to strengthen their resilience to the future crises as well as lay the foundations of building resilient recovery. It is in this context the following key messages are suggested to support risk informed policy interventions.

A. Protecting the most vulnerable from the cascading risks

Early warning for early actions to protect

In response to the possible dual challenges, climate and the pandemic developments should be closely monitored, potential impacts of the dual challenge should be assessed, and response measures should be put in place for early action. Hotspots identified above are the areas with high probability of convergence of climate extremes and the COVID-19 pandemic. However, as this is a preliminary assessment, close monitoring of both climate conditions and the pandemic's evolution should follow to plan appropriate measures as early as possible.

When cyclone Amphan arrived in May 2020, India and Bangladesh were both struggling with the rising COVID-19 infections. India had already surpassed 100,000 infections [Figure6]. Lockdowns and travel restrictions complicated the response and evacuation processes. Furthermore, the cyclone struck densely populated low-lying coastal areas of Odisha, West Bengal and adjoining Bangladesh, where cyclone shelters, community buildings and schools, the typical evacuation centres, had been converted into quarantine facilities.

Many of these centres were also housing immigrant populations, who were undergoing mandatory quarantine processes after arriving from different cities and states during the lockdown periods. The challenge was to protect the vulnerable people within and outside emergency shelters from cyclone Amphan as well as the COVID-19.

The substantial lead-time of the early warning combined with potential impacts from the cyclone allowed the authorities of Bangladesh and India to repurpose the shelters to address diverse community risk profiles. Where the risk of COVID-19 transmission was high, shelters were kept only half full in order to facilitate social distancing, whilst shelters in areas with highest exposure to the cyclone operated at full capacity with possible preventative measures in place. Although it was reported that 59 members of India's National Disaster Response Force and 170 personnel who fought against cyclone Amphan tested COVID-19 positive,¹² the impact-based risk-informed early warning systems guided the large-scale evacuation that saved thousands of lives.

Figure6. Collision of cyclone Amphan with the COVID-19

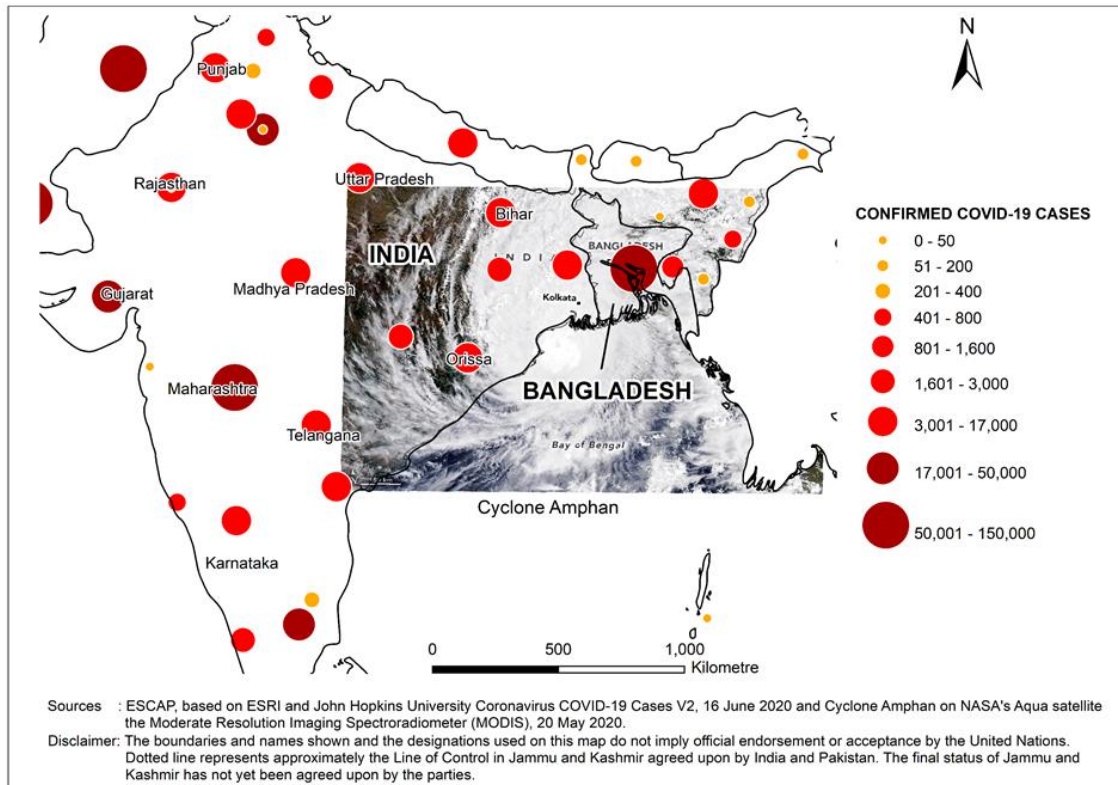
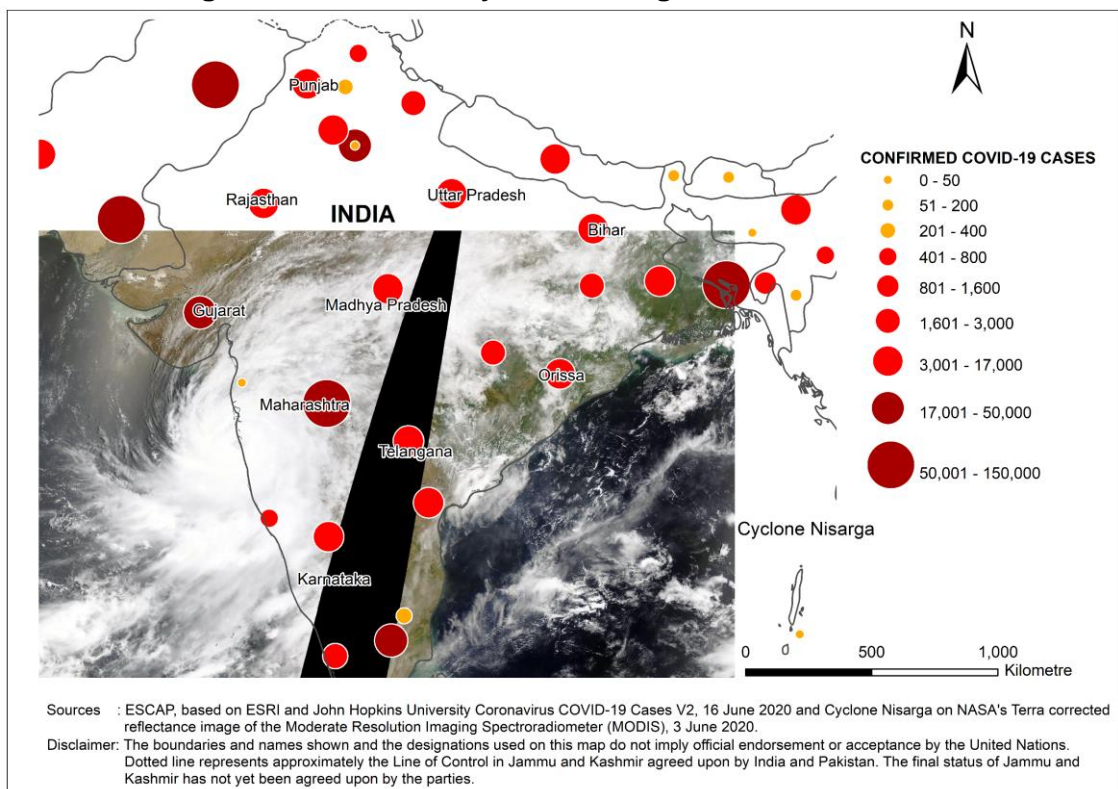


Figure7. Collision of cyclone Nisarga with the COVID-19



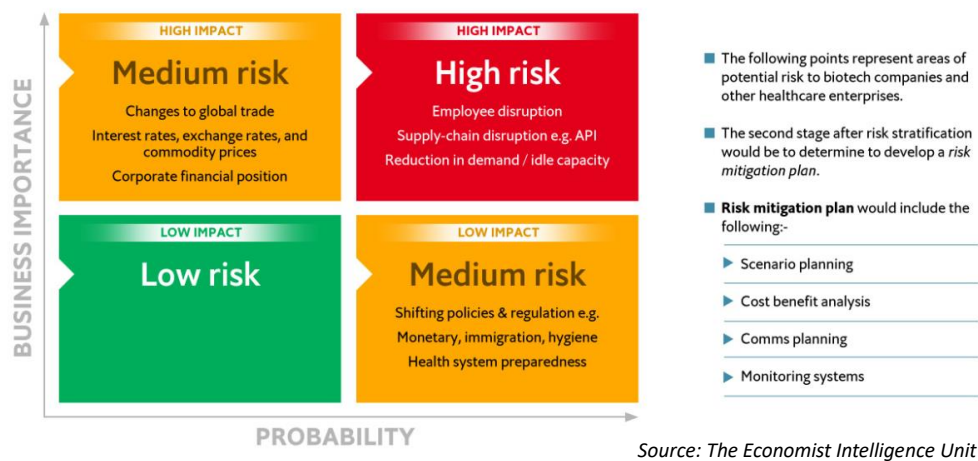
Another example was cyclone Nisarga that struck the west coast of India (Maharashtra/Mumbai) from the Arabian Sea in the first week of June 2020. The impacted regions coincided with densely populated and fast spreading COVID-19 risk zones of the western part of India [Figure 7]. The challenges of managing the cascading risks were the same as encountered in the case of cyclone Amphan. Here again, precise early warning

followed up by large scale evacuation helped in saving lives. However, the spread of COVID-19 not only continued but accelerated from 100,000 in May 2020 to 440,000 on 23 June 2020 in India. While there is no scientific evidence to attribute whether these two cyclones contributed to the exponential rise in COVID-19 cases due to disruptions in social distancing measures, it became evident that managing cascading risks is a challenge.

Figure8. Examples of Risk Matrix for Impact-based Forecasting – COVID-19 and Tropical Cyclone

Coronavirus risk matrix

Potential risks to health enterprises and needs requirements



A Weather Warning Matrix

Likelihood	High				
	Med				
	Low				
	Very low				
		Very low	Low	Med	High
Impact					

Source: UK Met Office

The complexity of cascading disasters needs risk informed response strategy. In specific context of tropical cyclone Amphan and Nisarga, a composite risk matrix approach that includes the impact parameters

of an extreme event as well as those of the COVID-19 was needed to help design a system of evacuation shelters, informed by specific vulnerabilities [Figure8]. That is where an intelligent risk analytics can help.

B. Building Resilience of the Most Vulnerable

Managing climate risks

Droughts and floods account for 89 percent of the total multi-hazard Average Annual Loss (AAL) of South Asia. Drought-related losses contribute to 76 percent, whilst floods account for 13 percent of the total AAL.¹³ According to the Asia-Pacific Disaster Report 2019, disasters widen inequalities in outcomes and opportunities, and disempower communities at risk. For example, a 1 percentage point increase in exposure to climate events increases the Gini coefficient by 0.24, increases under-five mortality rates by 0.3 and decreases education rates by 0.26.

In these situations, solution lies in reducing exposure to climate events and building climate resilience.¹⁴ **Therefore, managing climate risk is at the core of addressing vulnerabilities which are already compounded by the COVID-19 pandemic.**

The fiscal stimulus announced by the Governments of South Asian countries can help manage the impacts of COVID-19 on their livelihoods and reduce the risks of floods and droughts by climate proofing of land use and water resources management. For example, the Mahatma Gandhi National Rural Employment Guarantee in India, which has around 80 million participants, focuses on irrigation, afforestation, soil and water conservation, flood protection measures and watershed development. This supports resilience and adaptation by investing in

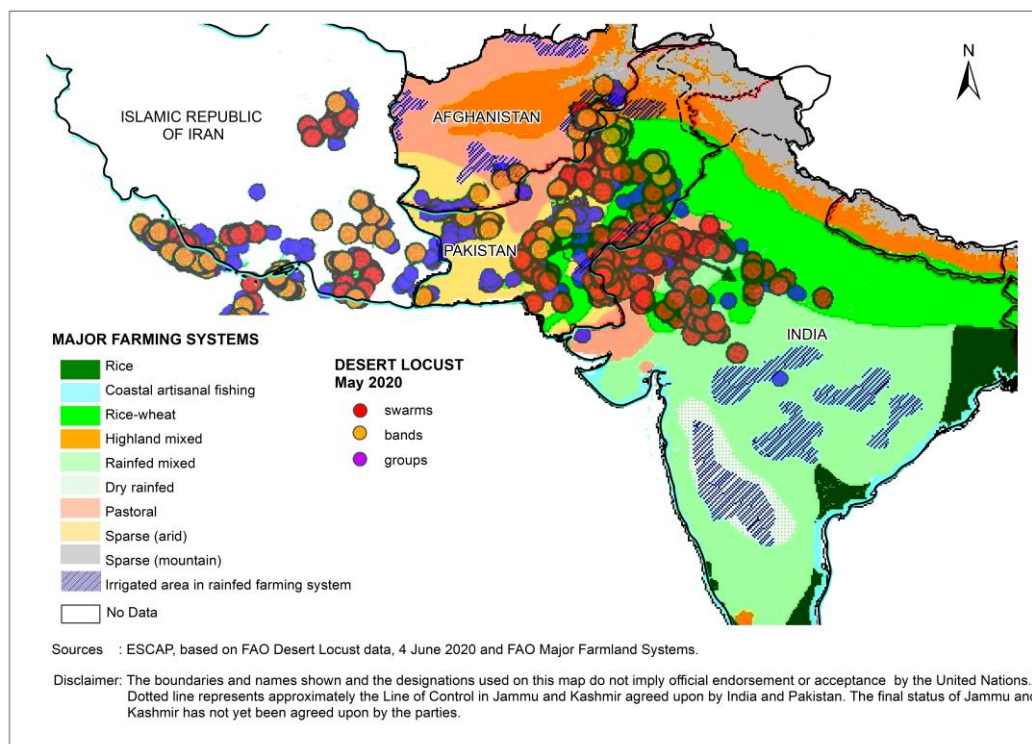
community assets and nature-based solutions to manage the flood and drought risks. The stimulus provides an opportunity to scale up such initiatives in South Asia to build community resilience.

Capitalizing on regional cooperation

Regional cooperation through WMO/ ESCAP Panel on Tropical Cyclones facilitated sharing of timely and accurate early warnings, helping to save thousands of lives in Bangladesh and India from cyclone Amphan. While early warning systems have been helpful in saving lives through timely evacuation of communities at risk before cyclone strikes, increasing economic impacts of climate hazards is a cause for concern. The economic impact of Amphan is estimated to be \$13 billion in India and 130 million in Bangladesh.¹⁵ This was largely from damages of social infrastructure (housing, schools, and hospitals), physical infrastructure (energy, transport, water and sanitation, ICT) and agriculture (crops, livestock).

Yet, another example on the gap of regional cooperation is the transboundary locust swarms that recently formed and are migrating east to the Indo-Pakistan border ahead of the monsoon rains of 2020 amid COVID-19 in India and Pakistan [Figure9]. The unprecedented Desert Locust threats to food security and livelihoods, particularly rice-wheat farm systems in both India and Pakistan.

Figure9. Swarms forming in the spring breeding areas of the Indo-Pakistan border ahead of the monsoon rains



Thus, the regional cooperation framework needs to be broadened with multi-hazard risk reduction, prevention and resilience building approaches. Accelerating ESCAP’s initiative of operationalizing Asia-Pacific Disaster Resilience Network (APDRN) will contribute to reducing the gaps. To broaden regional cooperation for building resilience, it is also critical to introduce a subregional initiative, the South Asia Hydromet Forum (SAHF).¹⁶ At the Third South Asia Forum on the Sustainable Development Goals (SDGs) held in December 2019 in Dhaka, Bangladesh, member States recommended that the SAHF contributes to the South Asia Forum on SDGs by developing an action plan to enhance disaster and climate resilience measures. Following this recommendation, ESCAP, in partnership with the World Meteorological Organization (WMO), Regional Integrated Multi-Hazard Early Warning System for Africa and Asia (RIMES) and UK Met Office, is supporting SAHF to develop the institutional mechanisms to strengthen the climate resilience in the sub-region. ESCAP also

organizes a series of webinars, jointly with SAARC Disaster Management Centre (SDMC) and the National Institute of Disaster Management (NIDM), and the Government of India on lessons from the COVID-19 pandemic – building resilience to cascading disasters through regional cooperation in South Asia in

Local specific customized solutions

There will be no one solution fit for all scenarios, and thus, adjustment and revisions should be done hazard by hazard. When floods occur during the pandemic, response should be different from when heat waves occur amidst the COVID-19. As such, depending on disaster profiles of the hotspots, it is necessary to design hazard specific measures. In preparation for flood events, for example, possible physical contacts during evacuation and recovery processes should be revisited with pandemic and health experts. In preparation for drought events, during the COVID-19, agricultural

sectors are going through many difficulties in mobilizing labor forces, finding customers through established markets, among others. Additional economic burdens to vulnerable farmers from possible drought events should be carefully assessed and appropriate financial and logistical support should be prepared. The Republic of Korea, for instance, facilitated electronic commerce and 'drive thru' markets for agricultural products to address logistical challenges from the COVID-19.¹⁷

Risk-informed social protection

The pandemic crisis exposed gaps in scope and coverage of social protection in South Asia, and 'social distancing' aimed at addressing COVID-19 can result in 'social isolation' for many. Lacking universal social protection, hundreds of millions of migrant laborers, daily wage earners and informal sector workers faced starvation in South Asia, following the lockdowns and other COVID-19 containment measures. Universal social protection systems can play the role of automatic stabilizers in the event of any crisis or threat to the livelihoods, by providing basic income security and help reduce the prevalence of multidimensional poverty.

Thus, **social protection systems need to be strengthened to support vulnerable populations and enhance their capacity to manage, mitigate and overcome shocks.** In the immediate term, the South Asian governments can rapidly scale up the existing social protection programmes. Once the pandemic is abated, it needs to build on these national programmes to move towards universal social protection systems and scaling them up in context of cascading risks in the future.

Scaling up index-based parametric insurance to target the most vulnerable

Official data collection systems often exclude the most vulnerable. To address this gap, it is recommended to capitalize on big data technologies, digital identity systems, risk analytics and geospatial data. For example, direct benefit transfer can target droughts affected small and marginal farmers through digital identifying systems and risk analytics.¹⁸ Similarly, satellite data and computer-based flood models can be used to deliver index-based flood insurance pay-outs. The Ehsaas emergency cash programmes of Pakistan to curb hunger and poverty of the vulnerable urban and rural groups is using digital technologies in identifying and integrating the most vulnerable people.¹⁹ Although new technologies can bring new risks, such as algorithmic bias, issues of privacy, and cybersecurity, they can reduce the barriers in information flows to include and empower communities at risk.

Many of the most vulnerable people in South Asia live in vast agrarian belts within the Indus, Ganges and Brahmaputra-Meghna river basins.

Climate extremes in these areas affect the poor and vulnerable populations who depend on agriculture for livelihoods and subsistence. While floods and droughts are frequently reported in this area, for example, in 2019, floods and landslides caused by torrential monsoon rains killed more than 2,000 people and affected 19.5 million in Bangladesh, India and Nepal.²⁰ Now, these vulnerable populations are subjected to the cascading risks emanating from monsoon extremes and the COVID-19 pandemic. **Scaling up index-based parametric insurance can help reduce the financial risks to smallholder farmers from climate extremes amid the COVID-19 as proven by multiple pilot projects in Bangladesh and India.**

C. Towards building the resilient recovery

The stimulus devoted to combating the economic consequences of the pandemic also provides an opportunity to build resilience in the most vulnerable subregion – South Asia. The stimulus packages should tackle both the impacts of the COVID-19 and the ongoing climate risks, especially by building resilience of the most vulnerable in multi-hazard disaster risk hotspots. This is also a pathway to ensure a green recovery that economic stimulus in the wake of COVID-19 should be dedicated to. Facing this historical challenge, governments could change the course of the future that prevents systemic risks, including those from climate change, drastically reduces emissions and improves societal resilience.

Investment for resilience to be promoted in the longer term:

Building resilience in high disaster risk areas can greatly help to better address not only climate extremes but also other shocks, including a pandemic. Even if the COVID-19 is over, pandemics can return anytime. Thus, **the benefit of investment in building resilience should be reassessed** including biological disaster scenarios such as the COVID-19, and more efforts are needed to build the resilience of risk hotspots.

We must capitalize on key opportunities for action

South Asian Countries have committed to the Sustainable Development Goals (SDGs) by 2030, to ensure that ‘no one is left behind’. **This cannot be achieved unless governments utilize new opportunities for breaking the vicious circle of poverty, inequalities and disasters.** The focus of disaster risk reduction should also shift from addressing disaster impacts towards a more coherent approach that addresses the drivers of disaster vulnerabilities and systemic risks. Governments should implement risk-informed policies and facilitate investments on building resilience supported by emerging technologies in order to empower the most vulnerable populations across the riskscape. Ultimately, this will require regional cooperation, through networks such as the Asia-Pacific Disaster Resilience Network (APDRN), essential for addressing transboundary disasters, and sharing best practices and policy innovations as all countries of the region should adjust to the new climate reality and cascading risks.

Endnotes

- ¹ ESCAP (2020a)
- ² WHO Coronavirus Disease (COVID-19) Dashboard
- ³ ESCAP (2020b)
- ⁴ ESCAP (2020c)
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- ¹³ ESCAP (2020d)
- ¹⁴ ESCAP (2019)
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