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Mitigating transboundary risks by integrating risk reduction frameworks of health and DRR:
A perspective from COVID-19 pandemic

Sivapuram V.R.K. Prabhakar\textsuperscript{a}, Rajeev Issar\textsuperscript{b},
Arpah bt. Abu Bakar\textsuperscript{c}, Mariko Yokoo\textsuperscript{a}

\textsuperscript{a}Institute for Global Environmental Strategies (IGES), Hayama, Japan
\textsuperscript{b}UNDP, Bangkok, Thailand
\textsuperscript{c}Universiti Utara Malaysia, Kedah, Malaysia

\subsection*{6.1 Introduction}

COVID-19 caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has emerged as a global pandemic of unprecedented scale. It has tested countries’ preparedness to manage disasters and pandemics with regional and global dimensions. Taking the shape of a transboundary risk, COVID-19 has belied the assumptions related to its linear impact on health and healthcare systems. With its impacts felt across countries, communities, socio-economic sectors and different walks of life, it has truly assumed the proportions of a global disaster requiring mobilization of resources and capacities going beyond what most risk management frameworks and systems are designed to manage.

The COVID-19 is not the first transboundary disaster that the countries have faced during recent years. Other notable transboundary disasters that preceded COVID-19 include the SARS outbreak of East Asia in 2003, the global food price crisis of 2008, Bangkok floods of 2011, and the Ebola outbreak in West Africa in 2014. All these disasters affected people and countries outside the countries and regions where they occurred and share similarities with the impacts of COVID-19. HIV/AIDS, though a global epidemic, doesn’t have distinct epidemic episodes unlike other events described here and doesn’t know to have distinct impacts, described in the following section, that can qualify it to be a transboundary risk. The lessons from these transboundary disasters indicated that the risk reduction frameworks and systems at the national, regional, and international level could not manage these disasters, and have failed to stop them from becoming regional and global disasters.

The disaster risk reduction systems and frameworks have been continuously revamped at the international and national levels inspired by the initiatives such as the Sendai Framework for Disaster Risk Reduction, and the Paris Agreement on Climate Change. Both came to existence in 2015. Despite these improvements, a large proportion of national-level risk management systems and frameworks have been designed to respond to and mitigate only those risks that emanate and affect within the borders of the countries. A very little emphasis has gone into mitigating the disaster impacts from spilling over beyond the national boundaries or toward managing the cascading effects of disaster or extreme events happening elsewhere across borders. This left the management of transboundary risks such as pandemics to much less known, less maintained, and archaic acts, such as Epidemic Disease Act 1897 of India, which were developed in an outdated context, while many countries do not have any such instrumentality to deal with the same. Since countries have not been facing epidemics and pandemics as frequently as other natural hazards, and due to the limited awareness on the transboundary risks in general (Prabhakar et al., 2018), developing national response measures...
for addressing such risks has not received sufficient attention. As a result, the expertise and capacities have not been well developed to manage contagious diseases, at the scale of the COVID-19 pandemic.

Keeping the above background in view, this paper first provides an overview of new and emerging transboundary risks and places the pandemics and epidemics as important emerging transboundary risks that countries are increasingly facing. It further presents the case of India and Japan in terms of how they responded to the pandemic, reflecting various priorities that these countries have taken up. In the end, the paper presents a risk mitigation and management framework that will help build the capacity of national and international systems and frameworks to manage transboundary risks.

6.2 Impacts of transboundary disasters

The COVID-19 and other transboundary disasters have wide-reaching consequences affecting most parts of human lives and national economies. In this section, a summary of the impacts of COVID-19 and other transboundary disasters is presented that also paints a picture of the effectiveness of the national risk management framework.

6.2.1 Impacts of health-related transboundary disasters

Prior to Covid-19, SARS, Ebola, and Zika epidemics had provided the initial experience of addressing transboundary health risks. Each of these had long-term impacts across countries and regions with high direct and indirect costs—although the scale and extent of impacts were much lesser than that of Covid-19. Each of these posed a profound equity challenge with a disproportionate impact on the poorest countries with weak health response systems as well as on socio-economically marginalized segments of society. During the Ebola outbreak, restrictions on transport, travel, and movement of labor resulted in nearly 40% of the land in Western Africa going uncultivated and sharp spike in prices of essential food items like rice (Thomas et al., 2014; Fuente et al., 2019). During the SARS outbreak in 2003, the incidence of hoarding of essential supplies such as food was witnessed in China while the spread of the epidemic inflicted wider socio-economic impact across the entire South-East Asian region (Hanna and Hung, 2004).

The most recent pandemic COVID-19 had major impact on health systems, employment and economies of countries across the world and in Asia. With more than 50% of the global population in lockdown, for the global economic activity was severely hampered. Some analysis suggested that the economic impact could be similar to that of the Global Financial Crisis of 2009 (GFC; IMF, 2020). In the Asia region, it has affected supply chains and aggregate demand with serious economic repercussions from extended lockdowns in most countries with almost no exceptions. The most affected were the daily workers, those engaged in temporary employment, and migrant workers.

Prolonged lockdown has affected all the businesses but the impact on the small and medium enterprises (SMEs) has been severe, with 1.3 billion informal workers affected. 6.7% working hours were reported to be lost globally, including 125 million workers in Asia-Pacific (ILO, 2020). Several of informal workers faced the dual challenge of safeguarding their lives and livelihoods. Others projected least 11 million people in East Asia and the Pacific to fall into poverty in an optimistic scenario (The World Bank, 2020). The nationwide lockdown has affected an estimated 100 million migrant workers in India as they suffered from lack of basic safety and livelihoods (UNDP, 2020). Informal workers were the most affected due to their poor reach to social security networks.

Agriculture is an important livelihood source for a majority of population in Asia and a discussion on the impacts of COVID-19 on agriculture is warranted here as an outcome of the decisions made by risk management institutions aftermath of COVID-19. The COVID-19 pandemic has exposed at least two important vulnerabilities of the current food systems, among many others: labor-intensive agriculture systems, and the development of specialized food production zones characterized by monocropping. Though mechanization is on the rise, agriculture is still a labor-intensive sector in many Asian countries, barring few highly mechanized pockets. During COVID-19, many Asian countries were having winter crops such as wheat in the fields, which were ready for harvesting sometime during Feb-April coinciding with the COVID-19. There is a direct linkage between large-scale monocropping and long-distance food transportation. Contiguous areas producing a single crop has increased the reliance on the transportation of food over long distances to fulfill diverse nutritional needs, among other factors.

Though statistics is yet to come by, emerging evidence indicates several negative outcomes in India and other countries: (1) The large-scale lockdown by governments has severely hampered the labor movement and crop operations in several countries in Asia and beyond (FAO, 2019; Pothan et al., 2020). This impacted the timely harvest, quantity, and quality of harvested produce with implications for food shortage and food prices in the immediate future. (2) The lockdowns have impacted the perishable food that is meant for long-distance transportation (Yaffe-Bellany and Corkery, 2020; Pothan et al., 2020). (3) The lockdown has led to a food deficit in many markets with an
impact on nutritional choices available to people in the short term (Yaffe-Bellany and Corkery, 2020; Pothan et al., 2020). (4) High risk of farmers facing economic hardship to invest in the following rainy season crop as the revenue from the preceding winter season crop was severely affected.

In Thailand, the farmers’ income was found to have reduced by 25% and savings by 29%, and debts increased by 25% during COVID-19 (UNESCAP, 2020). On the contrary, the exports of sugar, processed fruits and vegetables, freeze-processed meat, and pet food products grew by 11.9% during the first three months of COVID-19 compared to the previous quarter (January to March 2020).

A survey conducted by the Center for Sustainable Agriculture (CSA) in 200 districts in India reported yield loss by 60% of farmers due to the lockdown-related issues (Harvard et al., 2020). Ten percent of farmers couldn’t complete the harvest due to the lockdown-related issues such as labor shortages, low market prices, lack of access to markets, etc. Nearly 22% of farmers couldn’t market the product due to the lockdown and stored the produce. More than 83% of farmers in the states of Punjab, Bihar, and Rajasthan were able to harvest their winter crops, highest among all the states reported in the survey. While the cost of crop harvest was higher for the majority of farmers compared to the previous year, farmers who could engage in family labor reported positive income benefits. The COVID-19 also affected the ability of farmers to sow the following crop due to the high cost of inputs, low income from the previous crop, and labor shortages, on average. In another survey conducted in 47 districts in the northern states in India by the Vikas Anvesh Foundation revealed that 50% of households reduced their food consumption during the COVID-19 which was mainly possible since the majority of them received food supplies through the public distribution system (PRADAN, 2020).

These studies have also reported the significant contributions made by the direct cash transfers and employment guarantee schemes such as the National Rural Employment Generation Scheme of India to the purchasing power of the affected populations highlighting the need to put in place robust social safety nets to buffer income shocks.

Similar impacts of COVID-19 could be observed in the agriculture sector in Japan. The Annual Report on Food, Agriculture, and Rural Areas in Japan reported a slump in demand for agricultural produce due to school closures, the decline in the prices of flowers, ornamental plants as social events were canceled during the COVID-19 (MAFF, 2020). A significant impact on the labor supply for agriculture was also reported, constraining the agriculture production in the already aging agricultural population in the country. A greater deficit in women in the agricultural workforce was also reported due to the heavy demand in the health sector.

While the above impacts on food production and distribution can affect a large section of the society, agricultural laborers and those dependent on agriculture production and food supply chains are most vulnerable to the socio-economic and nutritional impacts. Food availability and price changes could continue to affect the food consumption of urban poor even after the COVID-19 episode until the economic impacts are stabilized and their purchasing power is restored.

Further, several compounding factors are expected to further stress the food availability in the short term. National governments have started using the available food buffer stocks to feed vulnerable sections of the society affected by lockdowns and hence very limited buffer stocks are available to stabilize the post-pandemic market prices. No clear strategic interventions by the governments on how to address this impending food shortage problem were apparent during the time of writing this paper.

The COVID-19 could have long-term impacts, setting a “new normal,” either planned or unplanned. (1) Emphasis may grow for local food production systems. Governments may rush to promote urban agriculture without robust studies on its impact on the local resources in terms of water, energy, and land especially in and around the urban centers. (2) The emphasis on farm mechanization may further grow with increased demand for off-farm energy inputs. (3) Governments may revamp food buffer stocks, public distribution policies, and related infrastructure with an emphasis on the expansion of cold storage facilities and real-time information on food stocks and food prices. (4) Countries may plan to reduce their dependency on imported food, which can have net positive environmental benefits for some countries. (5) On the contrary, such reduced food imports may have negative consequences for countries such as Japan with a high dependency on imported food and depleted farming population.

6.2.2 The impacts of nonhealth transboundary disasters

The impacts of COVID-19 have several commonalities with that of the impacts of other nonhealth transboundary disasters. Understanding such commonalities will help us to visualize the appropriate nature of risk reduction solutions to be developed. Several nonhealth-related transboundary disasters during the recent past provide us the needed understanding. These tsunamis and floods in economically vibrant regions of a country, regional droughts with widespread impacts, and include climate change as a threat multiplier.
Disaster risks such as tsunamis, cyclones, floods, and droughts are increasingly casting transboundary impacts due to various factors. On one hand, the magnitude and intensity of disaster events, especially climate-related ones, have amplified due to climate change and other underlying risk drivers. On the other hand, there is a greater interconnection between countries due to socio-economic imperatives. Trade and supply chains, the flow of people, shared natural resources, and linked economies connect countries (Benzie et al., 2018). To add to that, biophysical and socio-economic pathways of the transboundary flow of water resources, biodiversity and ecosystem services, human movement, and trade and supply chains further exacerbate the impact. One country’s adaptation efforts can also affect another country’s resilience and contribute to additional climate risks (Rebecca and Roberts, 2018). One of such transboundary impacts could include countries deciding to put curbs on food exports aftermath of a major flood or drought event that could exacerbate the food prices in the importing countries.

Just like health epidemics, disaster events such as the 2004 Indian Ocean Tsunami, droughts in the Horn of Africa and the Sahel, the hurricanes in the Caribbean have assumed trans-national nature with many affecting entire regions or subregions. With the widespread nature of impacts, these incidents highlighted the need for a greater interface between national and regional DM systems. Each of these disasters quickly overwhelmed the national systems and capacities requiring massive international effort and regional support to mount an effective response and recovery effort.

Among the interesting cases of disasters with significant transboundary impacts outside the country of disaster occurrence also include the eruption of Eyjafjallajökull volcano in Iceland in 2010 and the floods in Bangkok in 2011. The eruption of Eyjafjallajökull has disrupted air travel in the western and northern Europe. However, a minimal effect on farming in Iceland, the eruption disrupted the weather adversely affecting the flower farmers in Kenya (Justus, 2015).

The 2011 Bangkok floods were overwhelming for the people directly affected by the event. It was particularly noticeable for the extensive disruption it caused to the regional and global supply chains and the wide-ranging impacts on the private sector. These two disaster events were perhaps among the few examples of an increasingly evident trend of an in-country disaster causing cascading impact across many countries around the region and/or world. The immediate effects were compounded due to the sudden dislocation they brought to the globalized economy, creating ripple effects across sectors. The economic damage due to the Bangkok floods tantamount to 46.5 billion USD (The World Bank, 2012). The private sector took the largest share of the loss, 90% of total losses, where the multinational entities (MNEs) of Japan dominated (Hayakawa, et al., 2014).

Since many Japanese firms provide supplies to their factories in other countries in Asia, their impacts had ripple effects in the supply chains the Japanese companies were participating in. This has further aggavated the impacts of floods which were estimated to be in the range of 10–15 billion USD, where a significant proportion was covered by the Thai insurance companies (Meehan, 2012). The source countries of these MNEs were also severely affected. To regain the lost confidence, the Japanese government had to extend reinsurance support to Thailand (Bank of Thailand, 2012), offered Government of Japan bonds as collateral (BBC, 2011; METI, 2012), and extended other forms of credit and insurance facilities (METI, 2012). This signifies the major risks the MNEs face in the developing countries (Kato and Okubo, 2017).

Besides, Japanese insurers were the largest affected among all the foreign insurance companies (with an estimated loss of 1.8 billion USD) (The Institute of Actuaries of Japan, 2013). The impact on the industrial production of the world was estimated to be 2.5% (Haraguchi and Lall, 2015) and 16.2% reduction in industrial production of Japan as a combined effect of floods in Thailand and Great East Japan Earthquake (METI, 2012).

The 2008 global food price crisis can also be added to the list of transboundary risks faced by countries during recent years. The crisis was caused by a diversion of crop land to biofuel production Factors such as increasing population, changing consumption trends, and weather abnormalities, the culmination of which were reported to have contributed to the global food price crisis. Extreme measures such as restricting food exports and restricting biofuel production were taken to alleviate the impacts though it was not clear how effective they were (Katz, 2008; MacInnis et al., 2008).

The transboundary disasters discussed above have confirmed that we are facing a new paradigm in risks i.e. risks are increasingly becoming globalized and compounding than ever before. Contributing factors are climate change, globalization, and regional economic and social integration, socio-economic processes, livelihood constructs, etc. In all the instances of transboundary disasters discussed above, risks known to be local and to remain local assumed regional and/or global dimensions and impacted millions of people across the world. They overwhelmed national governance, financial, and risk management capacities to manage them and ensure sustainable recovery processes in their aftermath.
6.3 Existing risk reduction frameworks and their gaps/challenges

Over the years, several risk reduction frameworks have been put in place at the global to local level. Some of the important frameworks are The Sendai Framework for Disaster Risk Reduction (DRR) and the Paris Agreement on Climate Change. Increasingly “shared vulnerabilities” underscore the need for adopting a shared multihazard approach as espoused across different strands of the 2030 Agenda. The Sendai Framework for DRR recognizes the growing imperatives of transboundary risks and states that “...transboundary cooperation remains pivotal in supporting the efforts to... reduce disaster risk... Developing countries... need special attention and support to augment domestic resources and capabilities through bilateral and multilateral channels...” (UNDRR, 2015). One of the Guiding Principles calls upon each State to take “the primary responsibility to prevent and reduce disaster risk, through international, regional, sub-regional, transboundary and bilateral cooperation” and to address these, it calls to “foster more efficient planning, create common information systems and exchange good practices and programmes for cooperation and capacity development, in particular to address common and transboundary risks.” (United Nations, 2015: Page 7).

The Paris Agreement on Climate Change, while does not make a specific reference to transboundary risks, recognizes the “importance of support on and international cooperation on adaptation efforts, and the importance of taking into account the needs of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change.” (UNFCCC, 2015: page 9).

The Agenda for Humanity adopted at the World Humanitarian Summit (WHS) underscores the need “...to increase support to countries vulnerable to disaster risks or the negative consequences of climate change...” as part of the Core Responsibility to “Invest in Humanity.” At the same time, the “Commitment to Action” adopted at the WHS mandates the need to “ensure regional and global humanitarian assistance for natural disasters complements national and local efforts.” (UNHCR, 2017: Page 2).

At the national level, countries in Asia and elsewhere are developing or revising their national and subnational DRR strategies as envisaged under the Sendai Framework for DRR and their national adaptation plans (NAPs) under the Paris Agreement. However, the lack of a clear understanding of the nature and magnitude of transboundary risks limits their ability to address disaster and climate risks comprehensively. International cooperation on adaptation remains limited to the financing of local projects often ignoring the transboundary risks (Rebecca and Roberts, 2018). Hence, there is a need to relook at these frameworks and strengthen their implementation approaches to address the new and emerging risks such as transboundary risks.

Most developing countries in Asia have revamped their disaster management (DM) systems over the past decade or so inspired by global frameworks like the Hyogo Framework for Action (2005–2015) and Sendai Framework for DRR (2015–2030). The improvement in DM systems is significantly apparent with institutional mechanisms and policy frameworks, SOPs to manage postdisaster response, dedicated DM funds, focus on disaster risk mitigation among other measures being the key.

However, most of these DM systems are primarily oriented toward managing in-country or localized disasters and have not been designed to address transboundary risks. National disaster risk management approaches have either completely ignored or vaguely covered epidemics and pandemics leaving much to the ad hoc interpretation of DM laws—requiring special interventions to help with the COVID-19 pandemic. For example, India’s official definition of disaster doesn’t clearly cover diseases and its national DM plan talks about diseases as something that needs to be addressed in the aftermath of an event such as typhoons and floods.

6.4 A comparison of responses to COVID-19 by India and Japan

Different countries have responded differently to the COVID-19 pandemic. The responses were determined by factors such as the stage of detection of the pandemic, the government’s perceived capacity to manage emergencies as reflected in terms of disaster risk management capacity, health sector preparedness capacity, and the quality of governance. The quality of intervention outcomes was in turn determined by how their societies have responded to government measures. A comparison of approaches taken by India and Japan provides a good case study of responses by the Asian countries.

Table 6.1 presents a contrasting picture of how India and Japan responded to the pandemic. This is an emerging picture, valid at the time of writing this paper, and these differences may further emerge over time. Nevertheless, the initial differences in their responses warrant a discussion and provides an interesting case of how countries at different developmental stages may respond to such pandemics. While India has focused on saving the lives during the initial stages of the pandemic, Japan seemed to have focused on safeguarding the economy while minimizing
|                           | India                                                                 | Japan                                                                 |
|---------------------------|----------------------------------------------------------------------|----------------------------------------------------------------------|
| First case reported       | Jan 30th in Kerala state                                             | 16th Jan                                                             |
| Strategy (mitigation vs. suppression) | Mitigation                                                           | Mitigation                                                           |
| Level of stringency of actions [As on May 7, 2020, Hale et al, 2020] | 81.94                                                                | 47.22                                                                |
| National travel restrictions | Sealed the public movement and public transportation services between states and affected districts. | No internal travel restrictions between cities or prefectures imposed. |
| International travel restrictions | Started from 26th Jan, with 15 days mandatory quarantine Evacuation of Indian citizens stuck in China, Italy, Iran, etc. | Started from 1st January, no mandatory quarantine. Japanese were brought from Wuhan in several chartered flights. |
| Economic measures         | 1st package: 26 billion USD to support poor people (insurance for doctors, money transfer, food supply to the poor for 3 months) 2nd package: 2 million USD for emergency and health systems PM CARES Fund | 1st package: 4.5 billion USD for SMEs 2nd package: 9.6 billion USD for SMEs 3rd package: 1 trillion USD as an economic stimulus package |
| Public support measures   | Established Group of Ministers (GoM) on COVID-19 on 11th March.      | Established Novel Coronavirus Response Headquarters on 30th Jan.     |
|                           | Established national and state-level helplines, help desk, WhatsApp center, etc.     | Not relevant for Japan/Status not known Accommodations (or allowance) to healthcare workers |
|                           | Supply of cooked meals to the vulnerable people by the government and NGOs Accommodations to hospital doctors and support staff |                                                                 |
| Health: testing, therapy and cure | Targeted testing, limited to symptomatic patients. Comparatively less number of tests (137 per million population) than Japan, free in government hospitals. The first test kit approved on 24th March that takes 2.5 hours, based on reverse transcription-polymerase chain reaction (RT-PCR) and developed by Mylab. Antibody tests: ICMR validated the US-FSA method and issued guidelines on 4th April. Convalescent plasma therapy was first approved on 10th April. | Targeted testing, limited to symptomatic patients. A comparatively high number of tests (544 per million population) conducted, covered by health insurance. Employed PCR test starting from Feb 18, takes 4–6 hours for results. A new test has been developed by Wako Pure Chemical Corp that takes 2 hours. NIID is testing, no approvals are issued yet for antibody tests. |
| Regional and international initiatives | 10 Million USD support to the SAARC COVID-19 Emergency Fund proposed by India. Export of hydroxychloroquine to needy countries at least cost and large quantities. Commitment to support the G20 statement to fight COVID-19. | Japan is part of the ASEAN+3 mechanism for the health preparedness of the ASEAN region. It is not clear what specific support Japan has committed under the mechanism. |
| Communication             | Direct communication by the Prime Minister with the people of the country Mann Ki Baat, addressed the nation twice on TV. Daily updates by the national health ministry, state chief ministers, and city administration. Aarogya Setu smartphone app. Food and shelters on Google Maps. | The Prime Minister of Japan spoke on several occasions addressing the nation. Regular daily updates are provided by the Minister of Health, Labor and Welfare. |
| Use of disaster management laws | Activation of the National Disaster Management Act by declaring the COVID-19 as “Notified Disaster” to use disaster management funds at national and state levels. | Declaration of emergency, but not under the Disaster Countermeasures Basic Act, to provide governments special powers to regulate society and provide funding. |
| Use of health-related laws | Activation of The Epidemic Diseases Act to provide government special powers to regulate society. | Declaration of COVID-19 as infectious disease under the Infectious Diseases Control Law to facilitate treatment. |

Note: Most of numeral observations are valid until April 2020.
Based on Sources: Ministry of Health, Labor and Welfare, 2020; Ministry of Health and Family Welfare, 2020.
the human impacts of the pandemic. As the pandemic progressed, it was apparent that the complete lockdown policy of the Government of India early in the pandemic did not suit the Indian context as large-scale unemployment and retreat of migrant workers has disrupted the initial success in curtailing the pandemic.

In more than one way, the response by governments to COVID-19 reflected their priorities, whether explicitly stated or not. For example, the responses by the Government of India could be stated as decisive prioritizing the lives of people as opposed to livelihoods and economy. On the other hand, the initial responses by the Government of Japan could be stated as cautious, mostly prioritizing economic wellbeing. The differences in initial priorities are understandable. The Government of India recognizes the weakness of its health sector preparedness to manage pandemics. It knew that any delay in the complete lockdown can put enormous pressure on the health system with a snowball effect on people.

However, the priorities and responses changed throughout the pandemic. The Government of Japan has increasingly realized the need for stricter social distancing measures prioritizing human wellbeing. Similarly, India has seen the need to bring focus on the economy and livelihoods of people as negative impacts on livelihoods started to outweigh the benefits of the lockdown as the pandemic progressed. It was apparent that in the end, an equilibrium between economic and social priorities emerged, it became clear that both can’t be considered in isolation. In the case of India, the severe economic impact on the poor and migrant workers pushed the country to ease the restrictions at the cost of the spread of infections.

In terms of the mitigation strategy, the Indian government gave less emphasis on livelihoods and more emphasis on lives during the initial phases of the COVID-19. It practiced a complete lockdown of the country with no state-level exceptions from the midnight of 24 March 2020 (total cases 617) for the initial 21 days [Pilot nation-wide lockdown on 22 March 2020 implemented as “Janata curfew” (self-imposed curfew)]. The schools were “required” to close on 3 March 2020. On the contrary, Japan gave more emphasis on livelihoods and the economy. The emergency measures were effective only from 7th April (total cases 4257) for 1 month. No lockdown, in a strict sense, was announced. Schools were only “recommended” to close on 2 March 2020. Both the countries have considered COVID-19 as a special disaster and declared it as such, which is a common feature to note, to obtain special powers and resources that are otherwise not accessible to governments to manage the pandemic.

Several differences in approaches between the two countries are listed in Table 6.1. It is apparent that these differences reflected the respective differences in strengths and weaknesses in these countries in terms of institutions and socio-economic factors.

In terms of strengths, India has a young population, strong domestic economy, strong national government, direct cash transfer program for the poor, warm weather conditions, early and strict social distancing measures, isolation and contact tracing measures, less dependence on exports, and low crude oil prices (no reduction in retail prices helped the government with revenue that can be spent on social measures). Initial success achieved through “Bhilwara model,” which was identified as the best model to curtail the spread (involves 6 stages of isolation, mapping of hotspots, door-to-door screening, contact tracing using teams and disinfecting, establishing isolation wards, and help-line for rural areas) gave the country a model to emulate.

On the contrary, Japan has high levels of general hygiene, strong communication between local government and people, better rural infrastructure, strong disaster management capacity in general, and “limited impact” on food as Japan didn’t import large quantities from countries that have curtailed food exports due to COVID-19. A high rate of mask usage is common in Japan, especially during the pollen season has contributed to effective mitigation of the spread of the virus. The formation of cluster response teams and the cluster approach for isolation and contact tracing appears to have provided a good model for the country to emulate. More importantly, the standard of living, and cultural level of people, including the presence of strong social etiquette, termed as “mindo” was claimed to have contributed to the significantly low number of infections and death rates in the country.

These countries also have several vulnerabilities in terms of COVID-19. For example, India has a high population density, poor sanitation and hygiene conditions, large uneducated population and prevalence of superstitious beliefs, insufficient penetration of health facilities in rural India, insufficient health infrastructure and skills to manage pandemics, large migrant population, and a large number of poor people dependent on daily wages. In the case of Japan, important vulnerabilities include the constitutional challenge of the government to issue relevant countermeasures, dependency on exports, a large proportion of the old population including rural population, high population density in major economic centers, significant regional differences in the medical and welfare resources, lower remote working possibilities especially in small and medium sized enterprises.

These vulnerabilities and capacities reflected in terms of the nature of impacts during the course of the COVID-19. In the case of India, the impacts were mainly social that was underpinned by the economic impacts. Food security implication for millions of poor people, loss of livelihood for millions of people, loss of crops and perishable food,
the large flux of movement of poor people known during recent decades, disruption of the social fabric, fears of economic recession highlights some of the important impacts of COVID-19. In the case of Japan, the impacts were marginal and mainly economic in nature, i.e. fears of economic recession, impact on the tourism industry, and trade.

Both the countries have strived to play a regional role to the extent their circumstances allowed them. India has taken a lead role to support countries in the region as evident even during the COVID-19 crisis where it sent its medical teams, medicines and other health infrastructure support to countries like Maldives, Nepal, Bangladesh and others in the region. India has pledged a support of 10 Million USD to the SAARC COVID-19 Emergency Fund. It has helped countries with the export of hydroxychloroquine at least cost and large quantities. It has shown commitment to support the G20 statement to fight COVID-19. Similarly, Japan has increasingly played an important role in the Asia region. As a part of the ASEAN+3 mechanism for the health preparedness of the ASEAN region, it has provided necessary technical support to the group.

6.5 Measures for strengthening risk reduction frameworks

COVID-19 and other transboundary risks discussed in this paper highlight the need for integrated risk assessment frameworks. Despite the adoption of the Sendai Framework, further efforts can be taken to effectively manage the transboundary risks. The ISO 31000:2018 Risk Management and the ISO 22301:2019 Business Continuity Management Systems can help to further strengthen the existing international framework such as the Sendai Framework by providing guidelines on managing risks and effective response to both predictable and unpredictable risks. In a context of an organization, Business Continuity Management is part of the overall risk management program that kicks off when an incident occurs (Fig. 6.1). The framework calls for identifying a broad range of principles based on which risk assessments and risk mitigation strategies can be based upon. These principles were drawn from the vast risk reduction experiences based on the available evidence for their effectiveness. The major challenge is in translating these principles into a workable framework that institutions can use for operational purposes. The framework should provide the opportunity to be able to continuously review and revise based on the experiences and emerging new scientific information. It is to be recognized that leadership plays a vital role in determining the effectiveness of the framework and its implementation and hence is considered as central to the process. The ensuing process needs to make sure that procedures and quality measures are implemented for operational effectiveness.

ISO 31000 provides a structured risk management process starting from understanding the context of an organization i.e. its business environment, to continuous monitoring of the program. In the implementation of a robust risk management program, leadership roles and commitment are vital, as well as upholding principles to ensure value creation and protection. As more organizations expanding their business globally, transboundary risks are a threat to business sustainability. Safeguarding organizations ensures healthy economic growth of a country. While risk management emphasizes on preparedness, i.e., efforts to manage risks before the occurrence of losses, business continuity management centers on responding to and recovering from post loss incidents. Organizational resilience can be achieved by establishing a risk management program and implementing business continuity management.

The principles and the framework as outlined in the ISO 31000 provides a strong foundation in developing effective risk management program to address transboundary risks. The idea of an integrated program centers on the
fact that risk management has to be an integral part of organization activities. Risks have to be assessed and treated in accordance to the context of the business environment. Similarly, translating this idea to managing transboundary risks, developing such an integrated risk assessment paradigm should recognize the shared risks/interlinkages of risk and exerts collaborative efforts in analyzing and evaluating the shared risks. In addition, coordinated solutions is vital in ensuring effective risk response.

Fig. 6.2 reflects the fact that risks are interlinked at different levels. The interconnected nature of risks is a great source of complexity and uncertainty in our understanding of the risks. Our inability to understand and model complex risks continue to be a major limitation to fight new and emerging risks. Our limitation in unearthing hidden vulnerabilities before they “surface” deserves urgent attention. Vulnerabilities form the basis for pressures to translate into adverse impacts. However, our vulnerability assessments are still emerging, and current methods does not factor in the interconnected nature of vulnerabilities and mutually reinforcing nature of seemingly disconnected risks. As a result, vulnerability assessments, and hence the risks assessed, are largely incomplete and fragmented. From this point of view, we are under-estimating risks, and as a result, under-preparing for them at global, regional, and national levels.

6.5.1 Identify and recognize the shared risks

Though it has been evident, the interlinked nature of risks from the local to global level has not influenced our way of conducting risk assessments and mitigating risks. This could be due to several issues that are mainly related to limited understanding and data on external or transboundary risks. However, countries are aware of transboundary risks that they are exposed as countries experienced a range of such risks during the recent past as discussed in this paper. There is a need to transform the recognition into action such that the risk identification conducted at the local or national level are informed of the regional and global risks. Recognizing the interconnected nature of risks requires a change in the willingness of policymakers to think beyond boundaries and to provide a mandate to institutions to invest in increasing their understanding of such risks.

6.5.2 Analyze the shared risks that considers hidden vulnerabilities

First, analyzing shared risks requires information sharing among countries and regions and sectors within countries. Secondly, the analysis of shared risks should move from factoring “obvious” vulnerabilities and expand to include “hidden vulnerabilities.” Integrated risk assessments are required that factor in the risks across sectors and geographical boundaries which is the major gap in the existing risk assessments that are largely sectoral in nature and seldom consider the risks emanating from outside the “boundaries.”

6.5.3 Share the risk information

In addition to integrated risk assessment, sharing of risk information and leadership can further enhance the existing risk management frameworks. Sharing risk information across boundaries has not been done transparently and smoothly. Such sharing of risk information is even more limited with corporations and private entities. The national disaster risk reduction mechanisms and national adaptation planning are designed to address risks that emanate
from within their boundaries. The risks emanating from outside the national boundaries are largely not recognized and solutions have not been developed because of the difficulty in understanding these risks and assessing their trajectory, manifestation, and impact. The information that forms the basis for understanding such risks either doesn’t exist or is not being shared across the board. For example, the 2008 food price crisis has demanded to develop a food price early warning mechanism at the global level. Despite the efforts by several international development agencies, a reliable price early warning system couldn’t be developed so far largely because either the required information doesn’t exist or countries are hesitant to share risk information. It is even harder to expect corporations to share information on the risks they are subjected to. Hence, it is suggested that the private companies are encouraged to make risks disclosure in their annual report. A must do for financial risk and for nonfinancial risk is voluntary.

Information technologies have been employed to a great extent during the COVID-19 to a scale never seen before and it made a significant difference in the way the information has been shared. This experience has shown the importance of information technologies in managing pandemics. There is a need for a consensus agreement to share risk information and to allow access to risks data freely across countries. A global platform such as Asia-Pacific Economic Cooperation (APEC) may provide an avenue for sharing of risk information. With the right leadership and support from member countries, a more coordinated risk management can be achieved.

### 6.5.4 Develop globally coordinated solutions

Just like the way the risks are increasingly interconnected and globalized, the solutions also need to be connected from the global to regional, national and local scale. This calls for an increased need for seamlessly coordinated risk management processes and instruments from global to a local level based on a universal risk information sharing framework.

At the national level, the risk management systems need to be much more coordinated. Some progress has already been taking place at the national level. For example, the disaster risk management systems and the climate change adaptation systems are being well-coordinated in some countries while many other countries are still developing their own approaches. However, coordination of risk mitigation in other areas is far from being satisfactory. For example, the coordination between health and DRM systems deserves great attention, as our experience from COVID-19 suggests. Health systems need to be coordinated with national DM systems so that the capacity of health systems is improved in synchronization with the rest of the DM systems. “Extreme event” is the keyword here where both systems converge. Such coordination also means that health emergencies deserves greater attention in the future than what they have been given so far. Looking at the frequency of pandemics during recent years, the national health systems have to be improved on the same scale as that of the DM systems—and of course, interconnected at all levels. This requires laws and institutional systems for epidemic management at par with the national DM systems. It also means that there is a need to mandate conducting emergency drills and simulation games for epidemics and pandemics: There are no known emergency drills and simulation games for managing pandemics being conducted by governments on a regular basis. It is time for national DRM systems to include pandemics in their emergency drills and simulation games.

The overall governance in general and the risk governance in particular assumes importance for managing transboundary risks such as COVID-19. Governments at the national and subnational levels do not have the capacity to manage extreme events. Similarly, in-country systems need to have some coordination platform for interface with subregional, regional, or global systems to benefit from their frameworks, information, capacities, and resources (technical and financial).

Different stakeholders in the country including local governments would have to realize that a greater role for the national governments is necessary to help local and regional governments to improve their capacity to manage pandemics. This is important in countries where health is considered as a state subject and national governments do not have much leverage in health matters. Many countries are able to successfully manage COVID-19 when the national and local governments are able to work together putting aside political differences.

Building the capacity of different stakeholders forms an integral part of the strategy to develop and implement globally coordinated solutions. The COVID-19 pandemic has caught most NGOs unawares, more than the governments. Usually, NGOs play an important role in managing natural disasters. With the right capacity and predetermined roles, they can come handy in managing future pandemics. The ability of the national and local governments to directly engage with the local communities to follow measures such as self-isolation, self-declaration, and self-quarantine needs to be strengthened and the trust of people in the government to manage pandemics needs to be reinforced through enhancing the quality of risk governance.
6.6 Conclusions

There is an evidentiary increase in extensive risks while intensive risks have not been effectively mitigated. Factors like climate change, unplanned urbanization, socio-economic issues like inequality, marginalization, discrimination, poverty, etc. coupled with increasing exposure and deepening vulnerabilities are magnifying risks across hitherto “safe” regions and sectors. The greater interaction of risks is leading to an expanding multidimensional risk landscape while weakening governance contexts and inadequate capacities are aggravating the destructive potential of disasters. Addressing one risk at the cost of the others is resulting in skewed risk management practices with diminishing returns as it is leading to elevating the unaddressed risks. Commonalities in the socio-economic processes and developmental constructs are contributing to expanding the geographical occurrence of disaster/climate risks and are magnifying their impacts.

COVID-19 is just one of the several transboundary risks that countries have faced during recent times. These experiences have proved that transboundary risks can undermine the capacities of countries to manage risks with short- and long-term consequences. In the short-term, the serious socio-economic effects were apparent on the poor in urban and rural areas. In the long-term, these risks have questioned the risk management practices of governments and institutions and called for reforms in risk management.

However, not all is lost. The strengthened DM systems have come to help with the COVID-19, either in terms of using DM funds or using provisions under the laws laid out for DM albeit on an ad hoc basis. There is also evidence to suggest that the national response has been much faster due to improvements in DRM laws, SOPs, and communication systems. Yet, it is true that there is no recent pandemic of a similar scale to compare how best the systems responded. Likewise, COVID-19 has stress-tested the capacity of national risk management systems calling for changes in the way we assess and manage risks.

One of the key lessons emerging from the transboundary epidemics and disaster events was that they underscored the need for strengthening national, regional, and global preparedness and response capacities—with the active engagement of local authorities and affected communities—and the need to ensure greater inter-linkages across countries, sectors, and stakeholders. This brings us to the need to consider and analyze the underlying processes, risk drivers, and factors that are increasingly causing high-magnitude multicountry disasters or aggressively contributing to making even the seemingly “localized” or in-country disasters assume regional or global dimension.

With risks becoming increasingly systemic, interconnected, and cyclical, many countries are faced with pandemic as well as disaster events like in the Pacific, the Caribbean and the Indian Ocean Rim countries. COVID-19 has added to and aggravated the realized risks with several countries having to manage and recover from multiple disasters. This calls for integrating pandemic as well as disaster preparedness and response in global, regional and national frameworks.

Management of transboundary risks requires robust information systems that feed into strategic and integrated risk assessments to identify effective preparedness, response, and mitigation actions. Since the transboundary risks can unearth hidden vulnerabilities, there is a need to identify ways and means of factoring such vulnerabilities into risk assessments. Sharing of risk information is an important part of managing transboundary risks and countries have a long road ahead in establishing a seamless risk information-sharing paradigm.

Strengthening risk governance frameworks, systems, and mechanisms at all administrative levels will help augment capacities to manage multidimensional risks. This requires building dedicated institutional capacities backed by a robust and agile policy, legislative, and operational frameworks. Empowering local governments and fostering active community participation can help build trust in the governments and enhance transparency in terms of information sharing for effective risk management.

Expanding and deepening impacts across a range of socio-economic sectors has underscored the need for stronger socio-economic preparedness to mitigate the effects. This includes devising and operationalizing contextual social protection measures to build a financial and economic cushion to help communities and development sectors absorb such risks and shocks.

Public participation makes a difference and the role of civil society organizations is paramount in fighting against pandemics and other transboundary risks. The criteria to restart economies and “normal lives” should be governed by the principle of building back better and natural wellbeing, realize that human wellbeing is a consequence of natural wellbeing. Prioritizing any other strategy could mean we have not learned a lesson from the pandemic.

Another crucial dimension relates to harnessing the potential offered by innovation and rapidly evolving technological landscape with tools such as AI, machine learning, satellite imagery, drone technologies, GIS and other platforms being used to monitor, track, analyze and manage risks in a more timely and coordinated manner than hitherto afforded by the technological limitations and geographical spread.
The transboundary nature of disasters is underlining the need for fostering a more seamless interface between national, regional, and global risk management systems and practices. Just like the close in-country vertical integration of DM systems across administrative levels, there is a need to put in place proper protocols and mechanisms for information sharing, early warning, response and recovery coordination including wider risk management practices at the regional and international levels connecting all countries.

In the light of this experience, India and Japan’s role in South-Asia, South-East Asia and the wider Indian Ocean Rim countries becomes crucial. Given their investments over the years in risk monitoring, early warning, search, rescue etc., these countries have taken a lead role to support countries in the region and beyond as discussed in the paper. This can justifiably be scaled up by these countries through further strengthening existing mechanisms or promoting newer ones to help cross-fertilize technical expertise, capacities, and systems for risk monitoring, comprehensive multihazard risk management, early warning, early action, etc. with agencies and institutions in the countries in the Asia region.

Given the recognition for the leading role in international affairs, as evidenced by the recent unopposed election of India to the UN Security Council, it will be in keeping with India’s growing global stature that it assumes the leadership mantle to help countries and communities address an increasingly manifesting threat of transboundary disasters of multiple origins, be it natural hazards or pandemics or food security issues. After all, the ancient wisdom and philosophy that inspired India for millennia call for considering the world as one family (Vasudev Kutumbakam).

The COVID-19 experience has also shown the social and economic resilience of Japan in the wake of the pandemic. The presence of a high standard of living, cultural values, high level of disaster preparedness, hygiene standards, and willingness to engage for the benefit of the society helped the country to become a model for other countries to emulate.

The country has made a significant impact on development assistance in the areas of infrastructure, disaster risk reduction, and environmental protection. These experiences and contributions by India and Japan are expected to contribute to strengthening the risk management frameworks and systems in Asia and beyond so that capacity of countries is enhanced to manage and mitigate future pandemics and impacts of other transboundary disasters.

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