

Lessons from the COVID-19 pandemic for the Hindu Kush Himalaya countries to prepare for future shocks and disruptions



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Abbreviations and acronyms

CO	carbon monoxide
COVID-19	coronavirus disease (previously known as ‘2019 novel coronavirus’)
HKH	Hindu Kush Himalaya
ICIMOD	International Centre for Integrated Mountain Development
IRENA	International Renewable Energy Agency
LGBTQIA	lesbian, gay, bisexual, transgender, queer, intersex, asexual
NDC	Nationally Determined Contribution
NGO	non-governmental organisation
NO ₂	nitrogen dioxide
PM	particulate matter
PPE	personal protective equipment
RMC	Regional Member Country of ICIMOD
RT-PCR	reverse transcription polymerase chain reaction
SAARC	South Asian Association for Regional Cooperation
SARS-CoV-2	severe acute respiratory syndrome coronavirus 2
SDG	Sustainable Development Goal
SO ₂	sulphur dioxide
USD	United States Dollar
WHO	World Health Organization

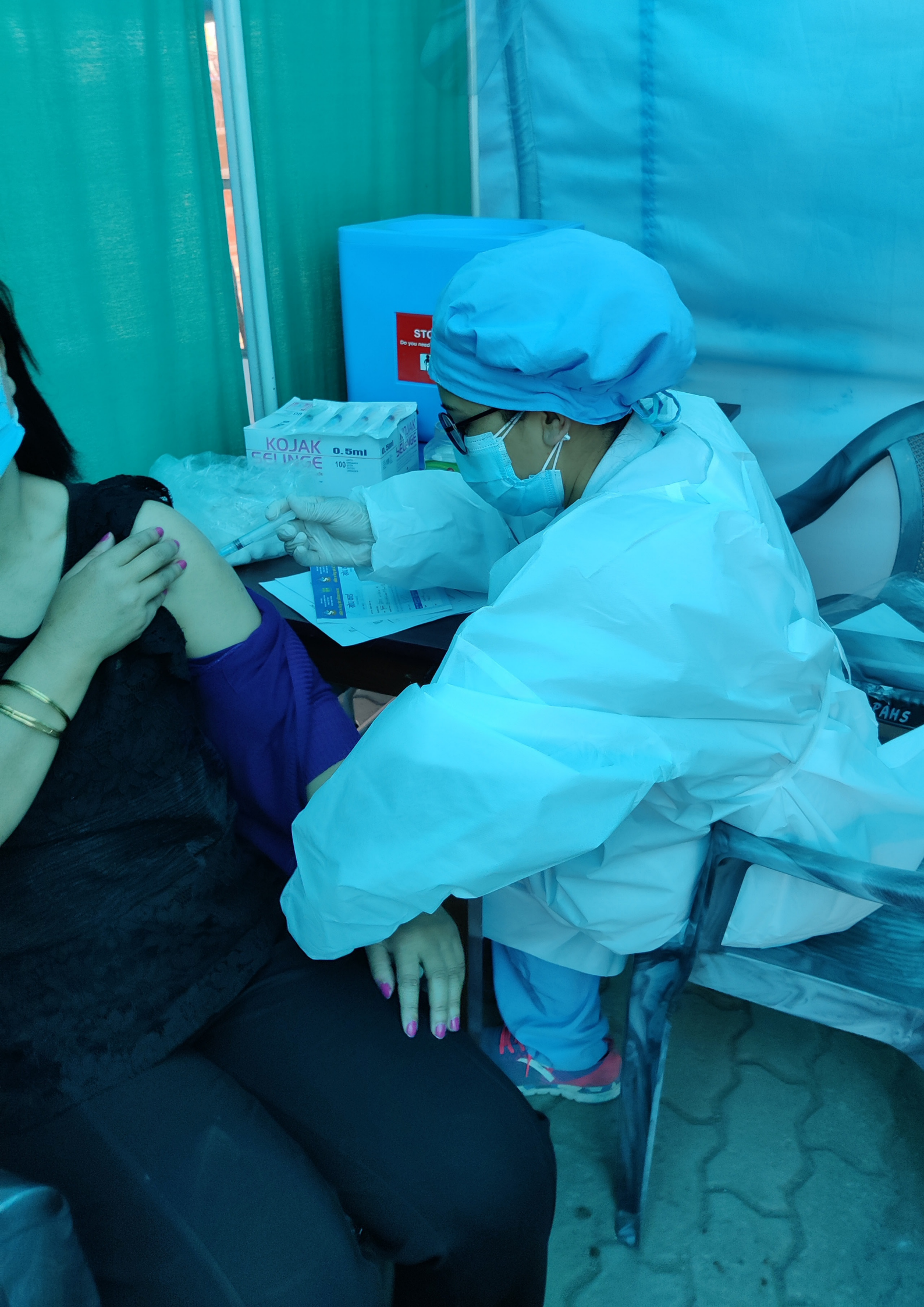
CHAPTER 1

**COVID-19 pandemic impacts,
responses, and lessons from the
Hindu Kush Himalaya region
– an introduction**

Lead Authors

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1.1 Introduction

The COVID-19 pandemic took the world by surprise with devastating consequences on the health and well-being of people all over the world. The Hindu Kush Himalaya (HKH) region was no exception. Almost 150 million (149,856,678) infections were recorded, and 753,173 lives were lost in the region due to COVID-19-related illness in the three years of the pandemic. The public health crisis put enormous stress on healthcare systems and infrastructure in the HKH countries and exposed their initial unpreparedness in testing and diagnostic capacity, treatment, logistics, and medical waste management.

The Regional Member Countries (RMCs) of ICIMOD – Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan – responded to the pandemic with a range of measures to prevent the spread of COVID-19 and minimise the loss of life. Measures include implementing mobility restrictions to varying degrees to contain the spread of the disease; equipping and capacitating healthcare institutions for effective testing, diagnosis, and treatment; and deploying mass vaccination campaigns across their countries. Governmental measures include reorienting budgetary arrangements, shifting to digital governance, securing public and international assistance, and harnessing the synergy between the public sector, private sector, and civil society to save lives and enhance the delivery of public services.

In general terms, the health impacts of the COVID-19 pandemic extended beyond the direct effects of infection by the novel disease. Prolonged periods of mandatory quarantine disrupted routine healthcare services for many in the general population, including for outpatients with pre-existing conditions and other vulnerable people, and resulted in stress, anxiety, and depression

across all demographic and geographic groups. The social isolation that resulted from strict lockdowns led to psychological and sociocultural effects in many groups, with indirect impacts on social harmony, religious and cultural beliefs, and societal processes. In many cases, kin-based communities and social groups provided critical safety nets and moral support.

With the global tendency towards higher levels of economic integration and interconnectedness among countries and sectors, the consequences of COVID-19 were similarly widespread before its containment. Although COVID-19 started as a health shock, it soon developed into a grave threat to the world economy. The HKH region with its large aggregate population, high rates of poverty, poor health infrastructure, and inadequate social protections, faced unprecedented challenges during those times (Rasul et al., 2021). Despite measures being put in place to reduce the infection, the HKH countries faced three waves of infections, with the second wave causing the greatest loss of life. However, during all the three waves, the lives and livelihoods of nearly 2 billion people living in the HKH countries were impacted. COVID-19 negatively impacted both the health and economy of even the remotest locations of the HKH region (ICIMOD, 2020).

One positive aspect for the South Asian region during the pandemic period was the cooperation that materialised among the SAARC (South Asian Association for Regional Cooperation) countries to deal with the crisis. It started with a video conference of SAARC leaders on 15 March 2020, which was followed up with concrete measures aimed at easing the suffering of the people in the region. The SAARC health ministers then held a video conference on COVID-19 hosted by Pakistan on 23 April 2020 where most SAARC countries were represented. A SAARC COVID-19 Emergency Fund was established with voluntary contributions from

all the member countries, including an amount of USD 10 million as an initial contribution from India. A dedicated website was developed by the SAARC Disaster Management Centre (SDMC-IU), allowing networking and interactions by health and trade officials in real time. India developed the 'SAARC COVID19 Information Exchange Platform (COINEX)', for use by all the SAARC countries.

The COVID-19 pandemic inflicted deep scars on the economies of the region (ICIMOD, 2020; Khan et al., 2021). The HKH countries continue to grapple with issues of rising inflation, fiscal deficits, trade deficits, and balance of payments issues. The recovery process continues to remain uneven across countries, sectors, gender, and population groups. While digital services experienced growth during the pandemic, and the agriculture sector remained stable, other sectors such as construction, transportation, and tourism were badly affected by the lockdowns during the pandemic (Pradhan et al., 2021). A large proportion of high-skilled workers in urban centres were able to retain their jobs during the pandemic through work-from-home arrangements and stable internet services; but a vast population of low-skilled workers, particularly engaged in the informal sector, faced lay-offs (ICIMOD, 2020). Additionally, many small-scale enterprises, particularly those owned by women, faced financial setbacks due to closure of their businesses.

The HKH mountain economy is very much dependent on agriculture, tourism, and remittances. While the agriculture and remittance sectors remained stable, the tourism sector was badly affected by the lockdowns. Furthermore, rising inflation took a heavy toll on household incomes, particularly in mountain areas that rely on food imports. The cost of these imports has since increased because of the Russia-Ukraine conflict, thereby exacerbating the situation. Around 60 per cent of the food consumed in the mountain areas of the HKH is supplied from the plains (Rasul et al., 2021), so that even stable local agriculture was insufficient to offset the significant impacts of supply chain disruptions (Kumar et al., 2021). Food security was primarily affected at the household level by the need to allocate larger proportions of household income for health, reducing food expenditures and resulting in a shift towards lower quality and less diverse food options (Sulser & Dunston, 2020). So, although agricultural activities

in the mountainous areas were minimally affected by the pandemic-induced lockdowns, disruptions in the supply chain of food commodities and price hikes had an adverse effect on overall food security (Adhikari et al., 2021) in the HKH region.

The COVID-19 pandemic disproportionately impacted women and the elderly, minority groups including people living in poverty, and those without access to water and sanitation. The consequences of this uneven impact extended across multiple sectors, from food security and healthcare to education and employment, and exposed systematic vulnerabilities. Healthcare professionals, especially female frontline health workers, experienced adverse impacts on their mental health and well-being. Moreover, despite representing a large proportion of the health sector, women remained under-represented in the public decision-making processes related to COVID-19.

The COVID-19 crisis also disproportionately affected poor and vulnerable internal migrant workers in many parts of the HKH (ICIMOD, 2020; Pradhan et al., 2021). Many found themselves stranded and unable to return either to their places of work or their communities of origin. An example of this was at the height of the pandemic outbreak in 2020, when a large number of migrant workers in India had to walk hundreds of kilometres on foot in the absence of public transport. More positively, in place where gender-sensitive and social inclusion measures, were introduced such as cash transfers and other forms of support, this provided more equitable access to public services. This is a welcome start to address the issue of exclusion from formal policy and social protection mechanisms.

The COVID-19 pandemic left behind a mixed legacy. While it exposed the weaknesses of the public healthcare systems and underscored the pre-existing socio-economic inequalities and inequities, it also provided valuable lessons that could be taken forward in building resilience and preparedness for effective response to a global crisis. Chief amongst these are the shift to digital governance and the embrace of digital technologies in education and other sectors, the strengthened public-private relationship and civil engagement, and an illustration of the practice and benefits of regional and international cooperation.

1.2 Objectives

COVID-19 will not be the last pandemic. As we exploit natural (forest and agricultural) frontiers and climate change affects weather patterns and local ecosystems, the risk of zoonotic disease remains high, and the appearance of new strains of previously encountered pathogens is always possible. Therefore, the overall objective of this report is to learn from the COVID-19 experience and to be better prepared for similar disruptions in the future. As the pandemic has ended and life is gradually returning to pre-pandemic rhythms, it is important to evaluate the impacts the pandemic had on society, the economy, and the environment of the HKH countries. A broadly scoped assessment of the COVID-19 pandemic will help us to understand how a system-wide and global disruption affects lives and livelihoods, whilst also helping us to identify the response measures that worked well to mitigate the adverse impacts, and those that didn't.

Specifically, the objectives of this report are:

- To understand the impacts of COVID-19 on diverse sectors of interest in the HKH region.
- To scope out responses from governments towards different sectors and their comparative effectiveness.
- To identify major gaps and lessons for future preparedness against similarly disruptive events.

1.3 Methodology

Several institutions have conducted studies on the impacts of the COVID-19 pandemic and the resulting lockdowns on various sectors such as agriculture, health, education, tourism, and the economy; studies have also been conducted on the pandemic's effect on the social fabric of countries. This report uses a mixed methodology to review this existing literature. Some sections have looked at thematic areas to conduct a systematic review by using keywords through SCOPUS and Google Scholar, whereas others have used a deep scoping review of literature. Primarily, peer-reviewed publications and official documents from organisations and governance agencies were used for this study, but in some cases, grey literature, including newspaper articles (a major source of information during the pandemic), are also quoted. Some sections draw upon

primary data/information collated from various sources as a basis for analysis and from which to draw a narrative.

As the report is based on the availability of peer-reviewed literature and grey literature covering the relatively short duration of the pandemic, it was challenging, despite best efforts, to find studies focusing solely on mountain contexts in the HKH countries. It proved to be a major challenge to tease out mountain-specific impacts and responses, and for drawing lessons specific to mountains. Secondly, due to the lockdown measures, primary data on impacts at household and individual levels were reduced. Thus, many studies report *ex post facto* rather than experienced impacts.

This report focuses on the impacts of the pandemic and the responses of governments, non-governmental organisations, and local communities in the HKH, and covers a wide range of aspects such as food security, society, culture, agriculture, tourism, migration, economy, finance, and ecosystems. Gender and social inclusion are considered throughout but particularly in Chapter 2. A list of lessons learnt was also extracted to prepare better for future disruptions or shocks.

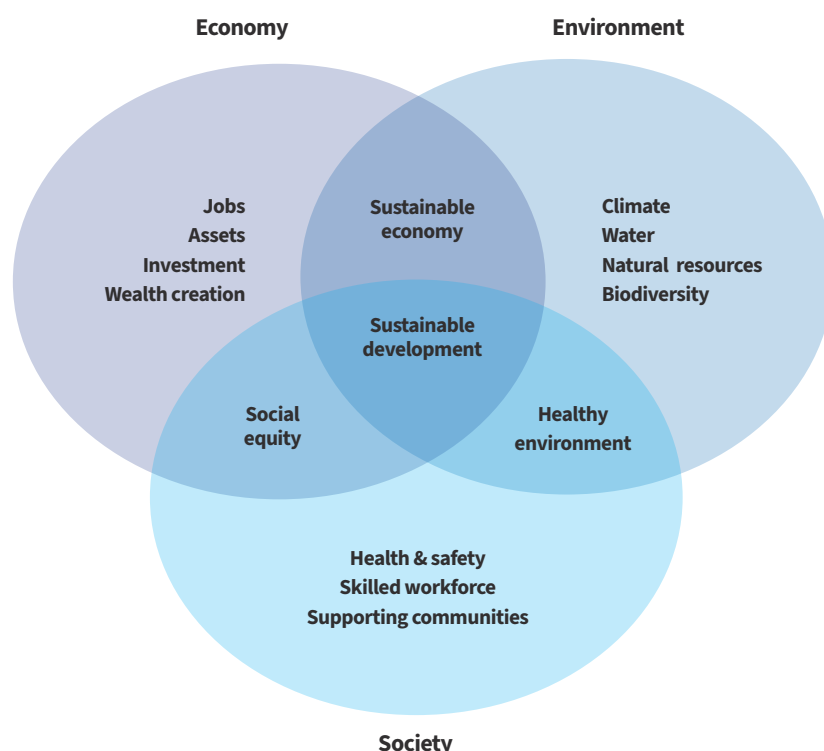
1.4 Report outline

Conceptually, this report aims to cover the social, economic, and environmental sectors impacted by the COVID-19 pandemic. Although this treatment by sectors is most useful for the review approach adopted, it is apparent that the effects of such a broad-based challenge to countries also depends on an understanding of intersectionality, or events that lie at the nexus of domains. Figure 1.1 is illustrative of this conceptualisation and presents the key components within each sector and also the expected (positive) outcomes from each intersectionality. COVID-19 has 'rocked the boat', and forced us, for instance, to orient our health regulatory framework to address risks to human health at the human-animal-environment interface, which is consistent with the 'One Health' approach (Zinsstag et al., 2020).

The chapters of the report are presented as follows. Chapter 2 looks into the impacts, responses, and lessons learnt in the social sector. Within the social sector, the chapter covers health

FIGURE 1.1

A CONCEPTUAL FRAMING SHOWING KEY SECTORS AND THE POTENTIAL OUTCOMES OF THEIR INTERSECTIONALITY



and well-being; social institutions and cultures; education; and women and vulnerable groups. Chapters 3 and 4 analyse the impacts, responses, and lessons learnt related to the economic sector. Given that ‘the economy’ encompasses many areas, it is divided in this report into two chapters, Chapter 3 covers the macro economy, finance, energy, transportation, tourism, and migration aspects; and Chapter 4 focusses on agriculture, employment, enterprises, manufacturing, and the digitalisation aspects. Chapter 5 assesses the impacts, responses, and learn learnt related to the environment sector, focussed on air quality, water, and ecosystems. Finally, Chapter 6 covers the implications of COVID-19 in terms of achieving the Sustainable Development Goals in the region as well as listing the lessons learnt for better regional preparation for the future.

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CHAPTER 2

**COVID-19 and Society
– Health and wellbeing, social
institutions and culture, women and
vulnerable groups, and education**

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Key messages

The COVID-19 pandemic exerted significant pressure on the existing healthcare systems and infrastructure in the countries of the HKH. It exposed the inherent weaknesses in their capacities for testing, diagnosis, treatment, logistics, medical waste management, and pandemic awareness. Governments in the region responded by enforcing restrictions on the mobility of people and goods to varying degrees to contain the spread of the disease; they equipped and built the capacities of healthcare institutions for effective testing and treatment, and also deployed mass vaccination campaigns in their respective countries.

The fear, anxiety, uncertainty, and social isolation that resulted from the lockdowns had significant psychological and sociocultural effects on people and indirectly impacted social harmony, religious and cultural beliefs, and societal coordination processes. The stigmatisation and distrust of migrant workers, healthcare professionals, and infected people eroded cohesion and weakened the social fabric of communities. However, families, kin-based groups, and social networks provided practical and moral support in times of mandatory quarantines and isolation.

The pandemic disproportionately impacted women and other vulnerable groups. The consequences of such uneven impacts extended across multiple sectors, from food insecurity and healthcare to education and employment, exposing systemic vulnerabilities.

Education was among the hardest-hit sectors. Prolonged school closures and the shift in the modalities of the delivery of education to online avenues had significantly adverse impacts on the academic calendar, the content and quality of the education delivered and its uptake, and on the psychological wellbeing of students and their families.

The COVID-19 pandemic left behind a mixed legacy. While it exposed the weaknesses of public healthcare systems across the HKH and underlined pre-existing socio-economic inequalities, it also prompted positive developments such as a shift to digital governance, the wider use of digital technologies in education and other sectors, stronger public–private cooperation, and better regional and international collaborations. These gains have contributed to building community resilience and improving each country's preparedness for effectively responding to a global crisis.

2.1 Introduction

The outbreak of the COVID-19 pandemic in the Hindu Kush Himalaya (HKH), as in the rest of the world, brought to the fore the interaction of biological and socio-economic processes, the impacts of health and socio-economic inequities on personal and societal wellbeing, and the structural ramifications of public health and healthcare governance. The pandemic tested the resilience of local communities in terms of their ability to not only survive but also to maintain their cohesion, values, and meaning throughout the turmoil. This chapter examines, as far as secondary sources allow, the impacts of the pandemic in the areas of public health and wellbeing, social cohesion, education, and governance in the HKH. It highlights the experiences of women, children, and marginalised groups across these sectors and areas. While discussing the enormous challenges faced by the countries in the region, it also draws attention to the positive impacts on society and polity – the drives for collective action, the strengthened political will and leadership in the region, and the heightened awareness of self-reliance factors that sustain communities.

2.2 Health and wellbeing

The impacts of the COVID-19 pandemic on the health and wellbeing of the people in the HKH were felt far beyond the infection and the health consequences caused by the novel virus itself. The situation put significant pressure on the healthcare system and infrastructure of each country. The restrictions on mobility that were imposed during the waves of the pandemic disrupted routine healthcare services accessed by the general public, including affecting outpatients with existing medical conditions. Social isolation during the prolonged lockdowns affected the

mental health of large numbers of people. On the other hand, experiencing a large-scale health emergency led to increased health consciousness and positive changes in health-related behaviour, including dietary habits, among some segments of the population. The pandemic and the ensuing lockdowns had other positive impacts too: key environmental health risk indices decreased in some major cities in China and India for a brief period due to the reduction in the emission of air pollutants and the consequently better air quality during the lockdowns.

Below, we discuss the specific impacts of COVID-19 on the healthcare system, biomedical waste generation, routine health services, women's wellbeing, mental health, and education in the countries of the HKH.

2.2.1 Impacts

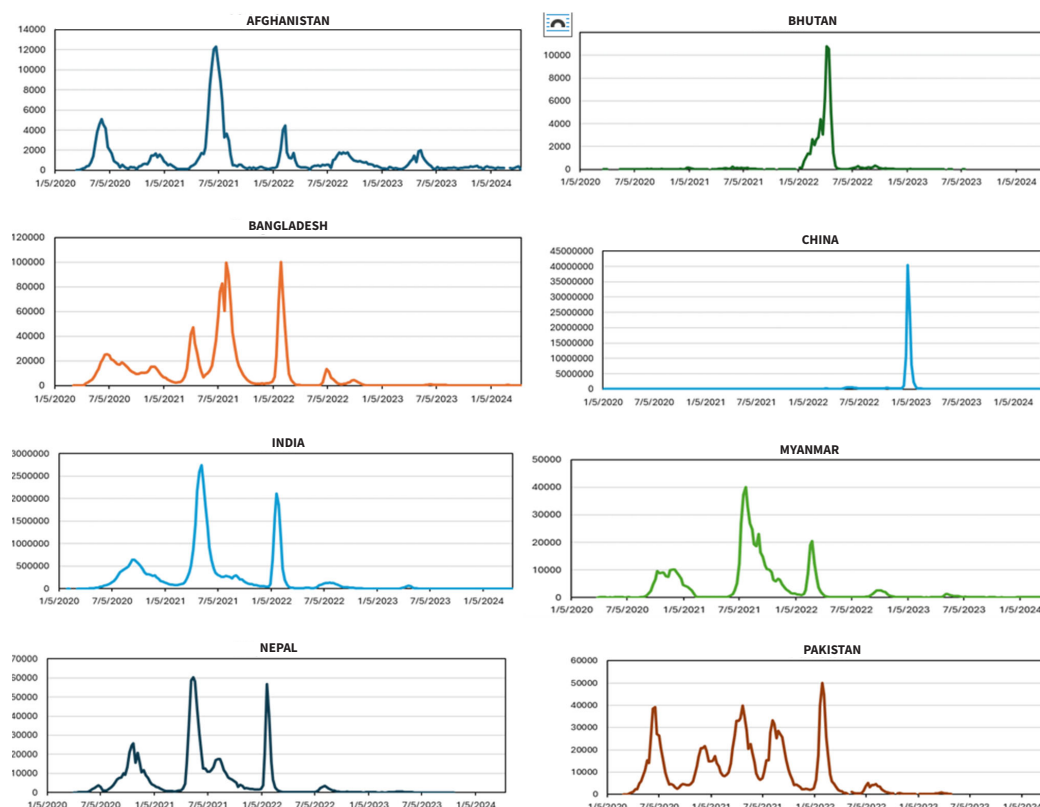
The timing and duration of the pandemic varied from one country to another in the HKH (Figure 2.1). The first wave hit Nepal in July 2020 and peaked in October 2020. This was followed by a second wave due to the Delta variant of SARS-CoV-2 in April 2021, which peaked in May 2021. There was a third wave in December 2021 from the Omicron variant, which peaked in January 2022 (Pandey et al., 2022). Among the Regional Member Countries, India reported the highest number of deaths, while Bhutan recorded the lowest (Table 2.1). Across these countries, males were consistently more affected than females, and the elderly suffered the highest number of fatalities (Babu et al., 2021).

Healthcare systems

The healthcare systems of countries in the HKH faced significant challenges during the COVID-19 pandemic (Rasul et al., 2020). Countries such as

FIGURE 2.1

COVID-19 DAILY CASE TRENDS IN THE REGION



Source: WHO (2024)

TABLE 2.1

THE NUMBER OF INFECTED CASES, DEATHS, AND VACCINATIONS IN THE HKH COUNTRIES

Country	Population ^a (million)	Cumulative number of infected cases ^b	Cumulative number of deaths ^b	Vaccination roll-out date ^c	Percentage of the total population vaccinated with a complete primary series of a COVID-19 vaccine ^d
Afghanistan	41.13	233,472	7,985	22/02/2021	47
Bangladesh	171.19	2,049,728	29,493	27/01/2021	86
Bhutan	0.78	62,697	21	27/03/2021	88
China	1,412.18	99,350,327	122,153	22/07/2020	87
India	1,417.17	45,035,573	533,574	16/01/2021	69
Myanmar	54.18	642,013	19,494	27/01/2021	66
Nepal	30.55	1,003,450	12,031	27/01/2021	84
Pakistan	235.82	1,580,631	30,656	3/02/2021	64

Sources: ^a World Bank (2022)^b WHO (as of 14 April 2024)^c WHO (2024)^d WHO (as of 26 November 2023)

Bhutan and Nepal were unprepared in terms of diagnosis of the disease due to a shortage of laboratories skilled in molecular techniques. The first case in Nepal was confirmed by a laboratory in Hong Kong (Bastola et al., 2020). Poor infrastructure, including limited diagnostic capabilities, widespread poverty, and limited healthcare budget allocations are among the major reasons for the weak healthcare systems in the region (Salman et al., 2022; Irfan et al., 2023)¹.

Initially, most of the cases in Nepal were identified among young male migrants returning home. They were often asymptomatic. The initial case fatality rate in Nepal was 0.5%, rising to 1.4% during the second wave, in 2021. After the second wave, the National Public Health Laboratory (NPHL), the country's reference diagnostic laboratory, established RT-PCR facilities, with over 100 such facilities operational as of 2022. However, diagnostic challenges persisted during the pandemic, including logistical difficulties, a severe shortage of laboratory reagents, and a shortage of skilled personnel to operate the facilities (Pandey et al., 2022).

Within countries in the region, there were disparities between urban and rural areas in terms of access to good quality health facilities and services. Though the health facilities were better in the urban areas, cities were at the epicentre of the pandemic (Salman et al., 2022), most likely due to the higher population densities and frequent movement of people in urban areas. The finding could also be due to higher levels of testing and tracing in urban areas as compared to rural ones (Islam et al., 2021a).

Overall, the national health care systems and institutes were under-resourced but remoteness itself is an issue. In the Himalayan region of Jammu and Kashmir, India, the lockdown presented distinctive challenges, as its mountain communities, largely isolated from the rest of the country, had to rely heavily on social networks for their daily necessities. Implementing social distancing proved particularly challenging, contributing to the difficulties in curbing the transmission of the virus (Jahangir et al., 2022).

The absence of essential healthcare facilities at high altitudes compounded the challenges (The Third Pole, 2021).

The pandemic also imposed a financial burden on people across the region, particularly on the poor and marginalised communities. The estimated average costs of the clinical treatment of COVID-19-infected persons in Myanmar were USD 717 for an asymptomatic patient, USD 869 for those with mild-to-moderate symptoms, and USD 4,290 for the critically ill (Thant et al., 2021).² At the time of writing this chapter, there were no research publications on the financial debts incurred as a result of the medical costs for COVID infection treatment and/or funeral costs in the countries concerned. However, popular media pointed to the stress of the extraordinary costs brought about by the pandemic.

Routine health services

Routine health services, including maternal health and sexual and reproductive health services, experienced substantial disruptions during the pandemic. Smaller numbers of patients sought healthcare services due to the lockdowns, and fewer medical services were offered. In Nepal, around 21% of pregnant women and lactating women with children found it difficult to access health centres for immunisation and check-ups (World Vision, 2021). Access to menstrual hygiene products, contraceptives and medicines posed a challenge for many women (ILO, 2020a). The lesbian, gay, bisexual, transgender, queer, intersex, asexual (LGBTQIA+) community faced difficulties in gaining access to regular health check-ups and counselling during the pandemic, and experienced increased levels of stress, anxiety, and depression (Devkota et al., 2021). In Afghanistan, women faced formidable challenges in accessing health services, which was predominantly attributed to the limited number of female health practitioners (Essar, 2023), the difficulties involved in having to travel long distances, and cultural constraints. In Myanmar, the military takeover exacerbated the challenges posed by the pandemic for women and children to access healthcare services (Rocha et al., 2023).

¹ In 2020, the number of doctors per 10,000 people in the HKH countries was 2.5 for Afghanistan, 6.6 for Bangladesh, 4.8 for Bhutan, 8.4 for Nepal, and 23.9 for China; while in 2018, that number was 6.8 for India, 6.9 for Myanmar, and 9.5 for Pakistan (rounded to one decimal place). Source: [https://www.who.int/data/gho/data/indicators/indicator-details/GHO/medical-doctors-\(per-10-000-population\)](https://www.who.int/data/gho/data/indicators/indicator-details/GHO/medical-doctors-(per-10-000-population)).

² GDP per capita of Myanmar was USD 1,231.7 in 2021 (World Bank, 2022).

Neuropsychiatric disorders and respiratory infections or influenza following a COVID-19 infection were widely reported (Kandikattu et al., 2021). Restrictions in mobility disrupted routine care for outpatients with chronic diseases. A telephonic survey of 213 caregivers of paediatric patients with epilepsy in Pakistan revealed cancellations of follow-up visits, worsening of seizures, job loss, caregivers facing the extra burden of having to pay for anti-epileptic drugs, higher costs of medicines, and patients discontinuing medication. It showed that the incomes of the poor suffered because of the lockdowns, which resulted in them not being able to afford or continue medication, indicative of the health consequences of income inequalities (Saleem et al., 2020).

Female health workers

Although comprehensive data on the gendered impacts of COVID-19 on healthcare workers are limited, there is enough evidence to infer that women in the healthcare workforce were particularly affected. Women constitute a significant proportion of the HKH's frontline medical staff, comprising community health workers, vaccinators, and community midwives. In Pakistan, almost 70% of the frontline health workers are women, including a substantial number of female doctors (Tariq & Bibler, 2020). In China, a study found that health workers, including female nurses, faced a 2.7-fold higher risk of contracting SARS-CoV-9 (Lai et al., 2020). Some publicly available images showed female healthcare workers in China shaving their heads (*China Daily*, 2020) to reduce the risk of infection and receiving donated supplies of sanitary pads while working in hospitals during the lockdowns (Gender and Public Health Emergencies, 2023b). In Myanmar, women make up over 75% of the country's healthcare workforce and first responders, and so faced a higher risk of infection (UN Women, 2020f).

Health consciousness, behavioural changes, and mental health

For millions of people, the conditions of the pandemic and lockdown caused uncertainty and anxiety and induced behavioural changes. For instance, a study in China showed that, regardless

of sub-regional, age, and socio-economic differences, residents across 31 provinces appeared to adopt healthier dietary habits after the pandemic's outbreak, consuming more grain, eggs, dairy, and white meat compared to red meat (Zheng et al., 2022). On the other hand, a nationwide survey among youth in Chinese cities found an increased average body mass index (BMI) and the prevalence of excess weight and obesity after the outbreak of COVID-19, especially among high-school and undergraduate students (Young et al., 2022). In India, more than half (57%) of the participants in a survey among information technology professionals in Pune reported having gained weight during the lockdown. There was a significant positive correlation between the consumption of ready-to-eat snacks, instant noodles, easy-to-cook foods, Indian sweets, and confectionery, and high levels of stress, anxiety, and depression (Animish et al., 2023).

The pandemic-related control measures including social distancing, isolation, home quarantining, and the widespread economic distress which attended the interruption of employment, affected large numbers of people psychologically in Bangladesh, India, Nepal, and Pakistan (Bhuiyan et al., 2020; D'Souza et al., 2020; Mamun & Ullah, 2020). An analysis of posts from 17,866 users on the microblogging site Weibo at the start of the first lockdown in China, on 20 January 2020, indicated an increase in negative emotions and sensitivity to social risks (Li et al., 2020). Anxiety and depression were prevalent due to fear of infection; social isolation; economic losses; personal losses; and the spread of misinformation about the pandemic (Gender and Public Health Emergencies, 2023a; Hossain et al., 2021; Tran et al., 2020). In Bhutan, despite a strong healthcare system and a small population, the COVID-19 pandemic triggered a rise in the prevalence of depression and anxiety within the population (The Third Pole, 2021; Tsheten et al., 2023). In Nepal, the number of suicides surged by 20% during the first two months of the lockdown (Poudel & Subedi, 2020). In Bangladesh, a large proportion of women suffered from depression (48%) and anxiety (71%) associated with psychological concerns such as suicide ideation (Sarker et al., 2022).

A large-scale, cross-sectional, nationwide study in China pointed to the adverse psychological effects of quarantining, especially among vulnerable

groups. These included people with pre-existing mental disorders or chronic physical diseases, frontline workers, residents of the most severely disease-affected areas, infected patients or those suspected of being infected, and the less well-off. Fewer mental health issues were associated with individuals who were able to take part in their usual work and who had an adequate understanding of, or information related to, the outbreak (Wang et al., 2021). Healthcare professionals experienced psychological distress such as anxiety, depression, and burnout due to the scarcity of medical resources, lengthy duty hours, and challenges in providing adequate care for their families (Huang et al., 2024). Stigma and social discrimination against healthcare professionals, individuals in quarantine and isolation, and cured patients (Devkota et al., 2021; Poudel & Subedi, 2020) also added to the emotional burden of isolation and contributed to people's anxiety, depression, and mental stress.

In response to the need for mental healthcare support among the public, some health practitioners and institutions shifted to 'telehealth' during the lockdowns. Ninety per cent of 1,206 clinicians from 100 countries who registered with WHO's Global Clinical Practice Network reported shifting to, or increasing their telehealth services, using the telephone or videoconferencing (Montoya et al., 2022).

The challenge of biomedical waste

A serious consequence of COVID-19 has been the significant increase in biomedical wastes (Chand et al., 2021; Rajak et al., 2022), particularly non-biodegradable surgical masks, gloves, gowns, face shields, syringes, sharps, vials, and biological specimens such as saliva and nasopharyngeal swab (Shammi et al., 2021; Rayhan et al., 2022; Tandukar et al., 2022). The presence of SARS-CoV-2 RNA was identified in sewage and wastewater samples collected from Bangladesh, India, Pakistan, and Nepal (Islam et al., 2021b; Tandukar et al., 2022), indicative of the circulation of the virus in the environment, and perpetuating the risk to public health.

Countries in the HKH lack the necessary infrastructure and labour power to manage solid waste (South Asia Co-operative Environment Programme – SACEP, 2019). The improper

disposal of untreated biomedical waste leads to it contaminating the environment and entering the food cycle through the soil and water (Islam et al., 2021b), increasing the likelihood of spreading infectious disease. The lack of effective medical waste management mechanisms exposed waste workers, along with their families and communities, to a greater risk of infection (Chand et al., 2022). The utilisation of non-biodegradable materials worsened plastic pollution, harming terrestrial and aquatic ecosystems.

Some gains

Not all the consequences of the pandemic were negative for people's health. Some environmental and health risks lessened during the lockdowns due to reduced levels of air pollution (see section 5.2 in Chapter 5). The calculated environmental health risk indices (in relation to sources of air pollutants) fell by 41%, 31%, 17%, and 19% respectively in the Indian cities of Delhi, Bengaluru, Hyderabad, and Kolkata, between 2019 and 2020. Compared to 2019, Bengaluru recorded significant declines in eutrophication potential, the risk of cancer, and the chronic health index by 67%, 59%, and 59%, respectively, in 2020. Kolkata recorded the largest decrease in acidification potential, falling by 57% in 2020 (Ambika et al., 2021). Similarly, a study of 278 cities in China in 2020 indicated a drastic reduction in air pollution levels for all pollutants except ozone. It was estimated that in these cities, 50,800 premature deaths associated with exposure to fine particulate matter (PM_{2.5}) may have been avoided (Li et al., 2020).

2.2.2 Responses

There were varied responses from central and state/provincial governments in the HKH in terms of controlling and managing the spread of COVID-19, as well as enhancing the capacity of health institutions, and vaccinating people. Countries such as India, Nepal, and Pakistan set up high-level task forces at both national (Madkaikar et al., 2021; Rayamajhee, 2021; Rizwan et al., 2023) and sub-national levels (Akhtar et al., 2021) to curb the spread of the virus and minimise fatalities.

Firstly, governments in the region imposed nationwide lockdowns, with restrictions on mobility, public gatherings, and social interactions. They also issued and implemented mandatory health and hygiene guidelines (Rautela et al., 2022; Rayamajhee et al., 2021; Thant et al., 2021). Bangladesh, India, and Nepal involved their security forces to enforce compliance with restrictions on mobility and public gatherings (Irfan et al., 2023). Pakistan implemented a national plan with 'smart localised lockdowns' (Rizwan et al., 2023).

Secondly, governments responded swiftly with contact tracing, surveillance, and widespread testing to contain the rapid transmission of SARS-CoV-2. They initiated various preventive measures and strategies, such as issuing guidelines on hygiene and social distancing, enforcing quarantine and isolation, and creating protocols for the safe management of dead bodies (Jan et al., 2021; Rayamajhee et al., 2021; Salman et al., 2022). In the region, Afghanistan, Bhutan, and India implemented health emergency plans to respond to the COVID-19 crises (Babu et al., 2021). The Government of Nepal formulated the Health Sector Emergency Response Plan (HSERP) in May 2020 (Rayamajhee et al., 2021). Institutional mechanisms were also established at the sub-national level to promote PCR testing, contact tracing, and the management of quarantine and isolation centres (Rautela et al., 2022; Rayamajhee et al., 2021; Than et al., 2021).

National and sub-national governments also rolled out COVID-19 insurance schemes. In Nepal, the government fully subsidised COVID-19 insurance for civil servants, while the rest of the public had to pay a premium to purchase an insurance policy worth NPR 100,000 against the possible effects of coronavirus infection (Pandey et al., 2021).

Thirdly, governments carried out massive vaccination drives across their countries. They initiated vaccination campaigns, prioritising high-risk groups and frontline workers. They also restructured economic budgets and secured public and international financial assistance (Rayamajhee et al., 2021; Rizwan et al., 2023; Thant et al., 2021). Institutions affiliated with the Government of India conducted research into developing rapid diagnostic test kits, portable ventilators, plasma therapy techniques, and vaccines (Mandkaikar

et al., 2021). India became one of the largest exporters of vaccines in the world, which benefited other HKH countries (Koller et al., 2021).

There was also considerable regional (and global) cooperation in responding to the pandemic. By early 2021, all the eight countries of the HKH had begun vaccinating their citizens against COVID-19, with China the first to do so. India's 'Vaccine Maitri' initiative delivered 9.5 million doses to Nepal and half a million to Bhutan. Similarly, China donated about 3.6 million doses of the vaccine to Nepal, 2.6 million to Pakistan, and 1.6 million doses to Bangladesh. The donation and sale of Indian and Chinese vaccines to other countries of the HKH significantly boosted those countries' vaccination campaigns and coverage (Hayat et al., 2022).

The member countries of SAARC agreed to establish a COVID-19 Emergency Fund to mitigate the risks associated with the pandemic in the South Asian region (Haque & Islam, 2022). India pledged USD 10 million to the fund, Bhutan contributed USD 100,000, Pakistan USD 3 million, Bangladesh USD 1.5 million, and Nepal and Afghanistan pledged USD 1 million each. As of 11 April 2020, the Emergency Fund had a sum of USD 21.8 million from seven member countries.

Besides governments, the private sector and civil society organisations played a significant role in controlling the unprecedented pandemic in the HKH. The private sector expanded diagnostic and healthcare facilities such as testing laboratories and general and intensive care units (Thant et al., 2021). The print and electronic media were vital in disseminating health information and advisories. Non-governmental organisations provided crucial support in two ways. They provided direct support to the people, particularly the poor and marginalised groups. They bolstered governments' efforts, such as by setting up community centres for quarantining and isolation (Ghimire, 2022). Religious and faith-based charities in the region mobilised resources and volunteers to provide medical supplies, personal protective equipment (PPE) kits, and oxygen cylinders to underequipped hospitals (Rasul et al., 2021). They also partnered with health officials to disseminate information about COVID-19 prevention and the maintenance of hygiene, thereby bridging the gap between the formal healthcare system and remote communities (Rocha et al., 2021; Bhattacharyya et

al., 2023; Soni et al., 2023). Village elders and local committees, such as panchayats in India, worked with government agencies to enforce lockdown restrictions and quarantine measures, particularly in rural areas where formal supervision tends to be limited (Gupta et al., 2021; Rizwan et al., 2023).

But these responses also reflected the following problems:

Under-representation of women in decision-making bodies: There was a notable under-representation of women in COVID-19 task forces and committees in the HKH countries. This lack of gender³ diversity and inclusion in decision-making bodies raised concerns regarding the inclusiveness and overall effectiveness of the pandemic response strategies. For instance, in Myanmar, women were significantly under-represented in the public decision-making processes established to respond to COVID-19. In India, only 13% of the members of the national COVID-19 task force were women, highlighting a significant gender disparity among those leading the response (UN Women, 2020d). In Nepal, despite women constituting more than 66% of the health workforce, including a third of the medical doctors and an overwhelming 99% of nurses (United Nations Development Programme – UNDP, 2020a), they were not represented in the government's COVID-19 Crisis Management Centre. The near-absence of women in the public health governance system and in Nepal's COVID-19 response committee contributed to the absence of a gender-specific response to the crisis (Gurol & Lurchsinger, 2021). In Pakistan too, female representation in the national COVID-19 committee was just 5.5%, resulting in a significant exclusion of a gendered perspective in the pandemic response (Tariq & Bibler, 2020).

Challenges in implementing public health measures, including vaccination: During the initial stage of the pandemic, obtaining face masks, sanitisers, and PPE kits proved to be a challenge due to a surge in demand and disruptions in the supply chain. Despite governmental efforts, people in the region underestimated the virulence of the SARS-CoV-2, possibly due to their limited health knowledge. News reports and the social media reveal lax behaviour, such as crowded markets with little

or no distancing. This neglect, compounded by ineffective remedies spread by some practitioners, undermined the efforts to contain the SARS-CoV-2 (Rayamajhee et al., 2023).

There was a significant hesitancy towards the vaccine in the region, particularly in the rural areas (Ennab et al., 2022; Hayat et al., 2022; Rizwan et al., 2023). Misinformation about the safety and efficacy of vaccines, distrust of the government, and cultural beliefs (such as vaccination being prohibited by religion) were identified as major reasons for vaccine hesitancy and low acceptance (Jacob, 2021; Kumar et al., 2021; Kanozia & Arya, 2021; Qasim et al., 2022; Ennab et al., 2022;). The most common misinformation about COVID-19 vaccines included claims that they were not safe, not effective, or that they would cause serious side effects. These claims were often spread through social media and online forums and were convincing to people already unsure about vaccination (Hayat et al., 2022; Kanozia & Arya, 2021). Some also believed that to vaccinate oneself was a sin, or that it would interfere with spiritual beliefs (Ennab et al., 2022; Kanozia & Arya, 2021).

The high-altitude landscapes within the HKH, such as in Nepal, Bhutan, Pakistan, and Afghanistan, made it very difficult for campaigners and healthcare staff to distribute vaccines (Yarlagadda et al., 2022). The lack of road networks and the poor quality of existing roads posed a hurdle to the supply of vaccines, medicines, medical equipment, diagnostic kits, and other medical supplies to communities living in the remote areas of the HKH. This was particularly the case for vaccines that required cold-storage facilities and transport vehicles with the appropriate, temperature-controlled storage units (Wouters et al., 2021).

2.2.3 Lessons learnt

The array of challenges posed by the pandemic demanded tremendous efforts from the governments and the whole of society. Governments in the HKH displayed strong political will and leadership; they implemented lockdowns effectively and other restrictive measures to contain the rapid spread of the disease; strengthened their healthcare systems for effective diagnosis

³ Gender refers to qualities or characteristics, roles and responsibilities, resource access and control that society ascribes to each sex, which becomes the basis for and shapes differentiated well-being among different gender groups. In all cultures, gender determines power and resource allocation for women and men. Gender is generally associated with unequal power and access to choices and resources. (Adapted from Gender Equity Policy, ICIMOD, 2019.)

and treatment; and procured and distributed vaccines in very large numbers. In India and Nepal, attention was paid to vulnerable groups to ensure an equitable distribution of vaccines and fair access to healthcare services (Bhattarai et al., 2022; Singh et al., 2022; Karki et al, 2023).

There was also an active shift to digital modes in governance to deliver services and communicate with citizens, a necessary response in the context of mobility restrictions. This also provided an opportunity to improve efficiency and transparency but raised concerns about data privacy and security.

The scale and intensity of the pandemic brought civil society and governments together: national and local non-governmental organisations (NGOs), religious and charity groups, and civil society networks actively worked with government agencies at different levels in distributing supplies, providing accurate information, and delivering relief to the most needy and vulnerable groups in society.

2.3 Social institutions and culture

Just as every individual responds slightly differently to the SARS-CoV-2 virus, so too does every society – experiencing, making sense of, and navigating the public health crisis in its own way, shaped by the foundational culture and institutions that make up its social fabric. In the HKH, social institutions and culture, in particular individual belief systems, customs, habits, and religions played an important role in shaping people's day-to-day experience of the pandemic.

In Nepal, the fear, anxiety, uncertainty, and social disconnect that resulted from the nationwide lockdown that lasted almost six months, and which was followed by partial lockdowns, are believed to have had more significant psychological and sociocultural effects and indirect impacts on social harmony and religious and cultural beliefs, than the actual health effects of COVID-19 (Devkota & Paudyal, 2022).

In the face of calamity and uncertainty, people sought to seek comfort from their societal safety nets and spiritual reserves. For instance, in China, within two weeks of the first lockdown in January 2020 in Wuhan, individual Weibo users focused more on 'home'. The attention to social groups, religion, and emotions became more prevalent

in Wuhan as compared to the attention paid, for example, to leisure by Twitter users in Lombardy, Italy (Su et al., 2020). In the absence of definitive answers regarding the prevention and treatment of COVID-19 in the early stages, many communities in the HKH region turned to traditional knowledge and home remedies to prevent and treat the symptoms of COVID-19. They reported taking hot food and drinks with ginger, lemon, black cumin, or honey, and basking in the sun to kill the virus (Akhter et al., 2022). It is important to understand religious and indigenous beliefs and practices since they play a huge role in influencing preventive and help-seeking behaviour (Dubé et al., 2018; Mull & Mull, 1988).

2.3.1 Impacts

Religious coping

Studies have indicated that positive religious coping is associated with reduced stress and depression during pandemics (Mariam & Saro, 2021; Oman & Syme, 2018; Pargament et al., 2000, 2011) due in part to its emphasis on self-control and self-regulation (Pirutinsky et al., 2020; Thomas & Barbato, 2020; Ting et al., 2021). A study carried out in Bangladesh, India, Nepal, and Pakistan demonstrated the role of religion and culture in people coping with the pandemic (Memon et al., 2023). People's responses were varied; some communities adhered to the strict protocols enforced by governments, staying within the confines of their homes, and altering their daily routine and spiritual and cultural practices (Sijapati et al., 2020), but others believed that the virus would not spread in sacred places and carried on visiting such spaces, forcing the government to relax their restrictions (Akhter et al., 2022; Mubarak, 2020). Some people attributed their infection and its severity (or lack thereof) to a perceived curse from God due to their sins (or, alternatively, to divine protection).

Gupta et al. (2022) have noted that actions designed to promote social cohesiveness (in the form of mass gatherings and international travel) were also major factors in the rapid spread of SARS-CoV-2. Religious tourism and mass religious gatherings posed a significant public health risk, leading to the spread of the disease within communities and across borders. For instance, in March 2020, 250,000 people from 80 countries attended a

religious gathering in Raiwind, Pakistan. The gathering proceeded despite the government's objections, resulting in over 2,000 COVID-19-positive cases in Pakistan in the following month, leading to Raiwind being declared a COVID-19 hotspot (Mubarak, 2020). Half of the local cases reported in Punjab (Pakistan) in April were attributed to that gathering.

Although mass gatherings propagated the spread of the disease, it was argued that governments and religious institutions ought to have devised ways of maintaining and harnessing social cohesion to ensure psychological support for people and provide positive religious coping. It was proposed that governments and responsible agencies ought to set standards to implement preventive measures, but yet harness ways of positive religious coping to help the citizens deal with such a crisis in a better manner (Gupta et al., 2022; Thomas & Barbato, 2020). Authors have argued that digitalisation and stratification of pilgrimage sites, integrated with traditional planning and design methods, could have been adopted, as demonstrated in Mecca, Saudi Arabia, to enable positive religious coping while minimising health risks during the pandemic period (Aina et al., 2023).

Social stigma and its effects on social cohesion

Studies on elderly people who had travelled from the epicentre of the disease in China revealed that stigmatisation, social avoidance, and fear of disclosure of having been infected, or having come into contact with the infected, had a clear association with stress (Li et al., 2020). Across countries of the region, as across the world, the mass media were a trusted source of information. The behaviours of people at large were influenced by authentic sources, modulated by digital and e-health literacy, as well as by misinformation and misconceptions about COVID-19 from a range of sources. Religious preventive methods, advice on consumption of daily supplements, risks of infection, disease statistics, treatments, and conspiracy theories were identified as additional factors in moulding behaviours. Interpretation of available knowledge and understanding about the disease, often led to negative attitudes, and non-compliance with preventive measures. Such varied perceptions surrounding the disease

could lead, on the one hand, to the stigma of discrimination and psychological distress and, on the other, to increased observance of hygiene (Chakraborty et al., 2021).

A lack of accurate information, and a surfeit of exaggerated information, fuelled health-related fears that sometimes grew into the sort of hysteria associated previously with AIDS, Ebola, and SARS. It led to the stigmatisation of, and discrimination against, certain communities, particularly those which were the most vulnerable (Link & Phelan, 2001, Des Jarlais et al., 2006; Kanozia et al., 2021; Malecki et al., 2021; Naeem & Bhatti, 2020; Regmi et al., 2022; Sotgiu & Dobler, 2020). The perceived or experienced stigma and fear of being discriminated against and excluded (which clearly violates the three core elements of social justice: agency, respect, and association) changed people's behaviour, including help-seeking behaviour (Bailey et al., 2015; Kane et al., 2019; Sotgiu & Dobler, 2020). For example, there were many cases of Chinese becoming victims of racist and xenophobic attacks all over the world (Sotgiu & Dobler, 2020; UNESCO, 2022a, b).

Stigmatisation occurred along the lines of ethnicity/race, religion, and because of migration. Muslims in India and Nepal found themselves being stigmatised due to social media stereotypes. Nepali Muslim minorities, who hitherto coexisted peacefully with other communities, were beset with fear of being ostracised. Due to the strict nationwide lockdown in Nepal, Muslims were forced to pray at home during the holy month of Ramadan, depriving them of the much-needed feeling of solidarity and comfort (Regmi et al., 2022; Sijapati et al., 2020).

Nepali migrants returning home found themselves being stigmatised and discriminated against as 'COVID-19 carriers' (*Nepali Times*, 2020; Regmi et al., 2022). The 'othering' of the migrants was not confined to Nepal; there were cases of migrants being stigmatised, ostracised, and in some cases even physically assaulted across the HKH. In Bangladesh, migrants returning home reported being mistreated by their community, government officials, and healthcare and other service providers based on their socio-economic, ethnic, and cultural backgrounds, as well as the country of migration (Haque & Rahaman, 2021; Parvez, 2021).

The standard constraining protocols, and the apprehension and stigma they faced, changed the behaviour of both the victims and community members, creating a rift in the usual communal bonding and relationships between people. Slow or inadequate institutional responses by the governments concerned, and non-governmental institutions, added to the negative responses of the communities towards vulnerable groups, thereby exacerbating the latter's vulnerability (Haque, 2021; Regmi et al., 2022).

It was felt that educational materials, and clear, simple, transparent, and authentic communication from credible sources using non-discriminatory language, and the constant monitoring of various media channels were all required to address the fear and anxiety stemming from misinformation. Effective communication, it was thought, would significantly improve attitudes and behaviour and reduce the social stigma associated with COVID-19 (Malecki et al., 2021; Naeem & Bhatti, 2020). Where governments proactively sought to influence public opinion, as in China, it was found that increased governmental efforts can enable the spread of positive sentiment among the people. Likewise, positive individual behaviours of 'netizens' contribute to an increase in positive sentiment among the public at large (Huang et al., 2021). Although technology enables social connectedness, combats loneliness, and helps maintain social and psychological wellbeing, it remains accessible primarily to the wealthy and middle classes in society (Bran et al., 2023).

2.4 Women and vulnerable groups⁴

In the HKH, poverty, exclusion, and gender disparities are prevalent, creating differential vulnerabilities shaped by caste, gender, age, marital status, disability, etc. The intensity with which an individual is impacted by a health crisis is influenced by the persistent social, gender, economic, and educational vulnerabilities among families. When these factors intersect and overlap, they make certain individuals more vulnerable,

thereby influencing their ability to cope with adverse effects on their health and overall wellbeing. Women often suffer disproportionately due to socio-economic constraints and inequalities, including limited access to resources and decision-making bodies, as well as due to their gender-specific roles and responsibilities. Owais et al. (2023) suggest that the COVID-19 pandemic disproportionately impacted women and other vulnerable groups, further exacerbating pre-existing socio-economic disparities in South Asia. Underprivileged women, migrants, refugees, stateless and displaced persons, Indigenous People those living in poverty, people without access to adequate water, sanitation, or housing, persons with disabilities, the elderly, children, LGBTQIA+ people, and people in detention or in a similar situation, all faced heightened challenges due to their limited access to essential public health services, basic sanitation, or digital resources.

The impact of social disruption caused by COVID-19 must be considered in the context of these pre-existing vulnerabilities, including gender inequality and marginalisation (Goodrich et al., 2019), economic hardship, and a history of adversity.

The consequences of these uneven impacts of COVID-19 extended across multiple sectors, from food security and healthcare to education and employment. It made visible the systemic vulnerabilities, including exclusion from formal policy and social protection mechanisms, which exacerbated the challenges that the disadvantaged groups faced during the pandemic (Economic and Social Commission for Asia and the Pacific – ESCAP, 2020).

2.4.1 Impacts

Food insecurity

A combination of the COVID-19 pandemic, the commodity cost implications of the Russia–Ukraine war, and natural disasters exacerbated by climate change, significantly disrupted the food security system in South Asia, leading to a marked increase in undernourishment in the

⁴ Vulnerable groups are those who cannot access various rights, opportunities, and resources because of their situational disadvantage. People are 'vulnerable' when deprivations result from a particular situation that reduces their ability to withstand shocks and access various rights, opportunities, and resources. In a person's life cycle, vulnerability is most experienced in old age and young age, especially by older people (65 and above) and disadvantaged youth. Vulnerability can also be because of climate change or disasters or migrant status. They experience situational disadvantage. (Adapted from ICIMOD Gender Equality and Social Inclusion Policy 2024, 2020; UNICEF Glossary of Terms and Concepts, 2017; and Framework for Integrating Gender Equality and Social Inclusion in the Asian Development Bank's South Asia Operations, 2023.)

region. According to the *Global Food Policy Report* 2023, between 2019 and 2021, undernourishment was most prevalent in the region in Afghanistan (30%), followed by Pakistan (17%), India (16%), Bangladesh (12%), and Nepal (6%), with a higher incidence of it among women and children (International Food Policy Research Institute – IFPRI, 2023). The pandemic disrupted supply chains, trade, and labour markets, leading to a rise in food prices and reduced incomes, a situation worsened by disrupted agricultural activities - in which women's labour was concentrated (World Food Programme – WFP, 2020).

This escalation of challenges significantly worsened food insecurity in Afghanistan, particularly impacting women via a loss of livelihoods and rising food prices, with many women unable to provide adequate food for their families. In Bhutan, the pandemic worsened food insecurity among disadvantaged groups, with poorer communities with dwindling incomes further altering their diets to choose cheaper, less nutritious foods, during the crisis (UNICEF Bhutan, 2021). In the Chittagong Hill Tracts (CHT) in Bangladesh, 61% of the people reported inadequate access to food and essential dietary items (The Third Pole, 2021). Indigenous communities in the CHT also faced food shortages and lacked access to healthcare facilities to manage COVID-19 infections effectively. In China, though a significant producer of food, the pandemic's impact on global trade affected food supply in the country (Huang, 2020). Research in India revealed uneven impacts of the pandemic-induced lockdowns, with the resulting food insecurity disproportionately affecting disadvantaged communities and minorities (Kaicker et al., 2022). In Myanmar, households that reported COVID-19-related income losses were more likely to have experienced food insecurity (Food and Agriculture Organization – FAO, 2020). In Nepal, food insecurity increased among households with low educational levels, households having persons with disabilities, and among those living in rural areas (World Food Programme Nepal – WFP, 2021). In Pakistan, rising prices of food, combined with reduced incomes, led to households cutting down on the quantity and quality of their food consumption (Khan, 2021).

Women's employment and livelihoods

The pandemic profoundly affected women's employment and livelihoods across the South Asian region, particularly impacting daily-wage workers, small businesses, and those engaged in informal or casual employment. These vulnerable groups suffered considerable setbacks in terms of economic stability and opportunities throughout the course of the pandemic. The pandemic impacted 47.7 million jobs in the travel and tourism industry, many of which were carried out by women and vulnerable communities in the informal sector in South Asia (World Bank, 2020). In the countries of the HKH, women are predominantly involved in family businesses, seasonal work, and informal and low-paying jobs that mostly require physical presence at the workplace. As a result, they were particularly vulnerable to job losses. They also lacked social protection and safety nets to cushion the blow of the economic crisis. The disruption of social and protective networks, loss of income, and decreased access to services for low-income families, and limited access to social protection measures for women in the informal economy where there is no real provision for sick leave, or few safeguards against dismissal, further intensified their hardships during those challenging times (Alon et al., 2020; Vaz et al., 2022).

In Afghanistan, the political and military situation under the new government reduced healthcare capacity, and a humanitarian crisis caused by the political instability posed serious risk of exacerbating the already severe threat posed by COVID-19 (Irfan et al., 2023). Roughly 55% of the country's population lived below the poverty line even before the pandemic (World Bank, 2020), a situation which worsened after the pandemic hit. A survey revealed that 63% of women working in the informal sector in Afghanistan lost their jobs during the pandemic (UN Women, 2020b).

In Bhutan, data revealed that female employment rates declined significantly during the pandemic, with women being disproportionately affected by job losses and reduced work opportunities (Bhutan Labour Force Survey, 2020).

Bangladesh had significantly reduced poverty over the preceding decades, with its poverty rate decreasing from 50.4% in 1990 to 20.5% in 2019. But the repercussions of COVID-19 severely

disrupted the country's macroeconomic stability and increased the poverty rate to 40.9% in 2020 (UNDP, 2020). This increase has been attributed to vulnerabilities within the health system, the education sector, and the public sector, which became more acute during the period of the pandemic (UNDP, 2021). The vast majority (91.8%) of the employed women in Bangladesh are engaged in the informal sector (UN Women, 2020). This category encompasses various roles such as vendors, shop assistants, massage therapists, domestic workers, and caregivers. Unfortunately, these women experienced income reduction, or unemployment and complete loss of income as a result of the pandemic. Moreover, they had minimal access to social security schemes and government stimulus packages, thereby exacerbating their financial vulnerabilities (UN Women, 2020). The garments industry, a crucial contributor to Bangladesh's gross domestic product (with a share of 11.2%) and the largest employer of women's labour (61%), faced disruptions during the lockdown, further impacting the economic stability of female employees (ILO, 2020e).

In China, there was a significant loss of employment in the manufacturing sector (WTO, 2020), affecting women, who comprised 34% of the sector's workforce. In a survey in China, 70% of the women from marginalised communities reported a deterioration in their financial situation and 60% reported an increase in household spending (Statista, 2022).

In Myanmar, women encountered a wide range of challenges as internally displaced persons, garment workers, unpaid labourers, and victims of overarching conflict. Data indicate that a little over 90% of working women in Myanmar are part of the informal economy and lack access to social protection schemes. In fact, half of the 700,000 female workers in the garment sector lost their jobs (UN Women, 2020d).

Similarly, in Pakistan, women employed in the informal sector faced significant hardships due to job losses and because they were not covered by social insurance or unemployment benefits; thus, as many as half of these women were forced to sell their assets to meet household expenses (Bari et al., 2020). The situation was worse for around 20 million home-based workers, 12 million of them women, as they lacked legal coverage, thereby hindering their access to government relief (Shaikh, 2016).

In India, the economic impact of the first lockdown in March 2020 was disproportionately severe on women, with 47% of them losing their jobs, compared to 7% of men (UN Women, 2021). Among those affected, rural women engaged in informal jobs accounted for 80% of the job losses. As a result, women, on an average, experienced a reduction in their incomes by over two-thirds, even as their unpaid workload increased by nearly 30% (Dalberg, 2021; UN Women, 2021).

The scenario was no different in Nepal, where workers in low-paying jobs and in the informal sector were the hardest hit (UNDP, 2020). According to a study reported by the Government of Nepal, there was a large, 337%, increase in the number of women engaged in unpaid work (Dahal et al., 2020). In Nepal, informal-sector workers, a majority of whom are women, are not part of social safety nets (Mandal, 2020). Moreover, the lack of data on those in Nepal's informal economy also became a significant barrier to these women receiving any assistance during the pandemic.

In countries heavily dependent on remittances, such as Myanmar and Nepal, the return of migrant workers created substantial challenges for households. Before the onset of the COVID-19 crisis, an estimated 10% of Myanmar's population lived abroad, with women constituting one-third of the international migrant population (Lambrecht et al., 2020). Even though overall remittances did not decline during the pandemic period (see Chapter 3, section 3.5), there were instances where migrants lost their sources of income. This hit families in poverty and impeded them from repaying loans or investing in children's education and health (Poudel et al., 2020), creating a burden on the women who remained in the home locality.

The burden of unpaid care and domestic work

In societies in the HKH, there was an increase in women's unpaid care work, as they were burdened with additional responsibilities during the pandemic (Rayamajhi & Fehr, 2021). Even before the pandemic, women in Afghanistan spent an average of 18.7 hours a week on unpaid care and domestic work, far exceeding the 5.6 hours reported by men (UN Women, 2020g). This burden on women intensified during the pandemic. In Bhutan, the workload of household chores surged, particularly for women (National Commission for Women and Children,

2021), as households tried to grapple with the new challenges posed by the pandemic. The situation was particularly difficult for families with differently abled children. The lockdowns confined such children to their homes, making it even more difficult for families to provide the necessary care and adequate support that they required. Similar patterns emerged in other countries of the HKH. In Myanmar, working mothers had to manage home-based work, home schooling, childcare, and housework during the pandemic. In India, the burden of caring for sick family members fell primarily on women, further exposing them to the risk of infection (UN Women 2021). In Nepal, two-thirds of the approximately 73,000 people employed in private households as domestic help were women, many of whom were single and the sole earners in their families. The extended lockdown led to loss of jobs for over 85% of these domestic workers, thereby intensifying the economic burden on these individuals and their families (The Asia Foundation, 2021).

Child abuse and mental health, escalation of domestic violence, and child marriage

In the HKH, as is the case in underdeveloped and developing countries anywhere in the world, underprivileged children face acute nutritional deprivation and lack overall protection. These children might be working on farms in rural areas or on the streets in urban areas. The lockdowns left them without a source of income, putting them at a high risk of abuse and vulnerability to mental disorder. During the time of lockdown, an increasing number of poor families had no source of daily wages which led to frustration and feelings of helplessness. The frustration and conflicts in family manifested itself in the form of violence towards children. The sudden death of family members and the long absence of parents or familiar caregivers due to imposed quarantines disrupted primary social relationships, leaving young children sad, anxious, fearful of death, fearful of separation, and isolated (Singh et al., 2020).

There was an alarming rise in domestic violence during the pandemic, with over 37% of women in South Asia experiencing intimate partner violence. This was largely attributed to conflicts arising from the loss of livelihoods, economic pressures, food insecurity, and uncertainty in many households

(Hossain et al., 2021). The forced confinement imposed by the lockdowns, coupled with economic hardship, created an environment that resulted in increased domestic violence. Limited access to support services and social networks exacerbated the challenges that poor women faced. For instance, it was found that there was an alarming increase in the severity and frequency of domestic violence across Afghanistan during the pandemic (UN Women, 2020h). In Bhutan, the pandemic led to an alarming surge in gender-based violence, particularly women experienced physical violence, sexual violence, emotional abuse, and economic violence during the pandemic. The loss of a job, alcohol consumption by men, and drug use contributed to this distressing rise in gender-based violence, which disproportionately affected women and vulnerable populations (WHO & Ministry of Health, Bhutan, 2022).

The situation was further compounded when women's access to gender-based violence response services was compromised (UN Women, 2020i). In China, there was a disturbing rise in reports of domestic violence during the pandemic; in some areas, the number of cases escalated two- to threefold. Women found themselves in vulnerable situations due to limited options to escape from such contexts and with weak social support networks (UNDP, 2020b). In Myanmar, which has over 241,000 internally displaced people in camps, of which 77% are women and children, women were exposed to heightened risks of gender-based violence, human trafficking, sexual slavery, discrimination, harassment, and compromised maternal care (Neranjana & Shetty, 2020). Overall, trafficking, child marriage, and gender-based violence increased in Myanmar due to the economic and social disruptions caused by the COVID-19 pandemic (UN Myanmar, 2020). In Pakistan too, there was a distressing increase in gender-based violence, child marriage, and child abuse (Adnan et al., 2021). According to a government report, incidents of domestic violence in Punjab province rose by 25% during the lockdown, with the authorities registering 3,217 cases in just three months in 2020 (Shakil, 2020). In India, there was a rise in complaints of domestic violence during the lockdown with reported cases increasing by almost 60% in a year (Ghosh, 2022). In Nepal, 885 complaints of domestic violence were received during the initial three months of the nationwide lockdown on a 24-hour toll-

free helpline operated by the National Women Commission. This was twice the number of complaints received over the same period before the lockdown, indicating a distressing increase in domestic violence during the pandemic in Nepal (Dahal et al., 2020).

The grave situation exacerbated other social ills. With schools closed and economic hardships affecting families, the risk of child marriage increased (Uddin, 2020). For instance, in Afghanistan, school closures and the socio-economic crisis increased the risk of child marriages during the first few months of the pandemic (UN Women, UNICEF, & UNFPA, 2020). In Bangladesh, the percentage of girls who registered for marriage increased from 12% in April 2020 to 23% in September 2020 (UNESCO, 2021). In India too, the disruption of livelihoods led to an increase in forced and early marriages and pregnancies among adolescent girls (Cousins, 2020).

2.4.2 Responses

There was a significant divergence in the gender-specific responses of different countries in the HKH due to variations in pre-existing policy frameworks, the differential presence of active women's groups, differing political commitments, and budgetary capacities. In many countries in South Asia, governments, in collaboration with development organisations, responded to the increase in gender-based violence during lockdowns and provided support by setting up helplines, establishing online reporting mechanisms, setting up shelters for victims, and conducting awareness campaigns in multiple places, especially in remote areas. In the domain of education, efforts were made to sustain remote learning through television and radio broadcasts, as well as through online platforms which faced challenges due to uneven access to the internet and digital technology, which greatly impacted the wellbeing of women and children.

The Government of Nepal implemented several measures to cushion the impacts of the pandemic, including raising outlays on public health, in particular supporting those testing positive for COVID-19. Furthermore, an insurance package of NPR 2.5 million was extended to the healthcare workers (of whom a large share were women) and

security personnel who were directly involved in handling the patients (ILO, 2020d). The government also passed an executive order in May 2020 to facilitate the repatriation of Nepali citizens needing to return home. It prioritised pregnant women, migrant workers who had lost their jobs, those with chronic illnesses other than COVID-19, and individuals who had lost a family member back home (Baniya et al., 2020).

The Bangladeshi government introduced a stimulus package of BDT 50 billion in March 2020 for employees in different garment industries and thereby indirectly supported internal migrant workers. However, as many as 85% of the workers, both men and women, engaged in the informal economy were not covered by the stimulus programme. Migrants working in the informal sector in urban areas were also largely excluded from accessing social safety nets (Sohel, 2020). However, the country's Vulnerable Group Development programme provided assistance to women from poor households who were involved in micro, small, and medium-sized businesses (UNDP, n.d.); but to gain access to the funds transferred through mobile phones proved to be a challenge for the women. Similar hurdles were faced by female entrepreneurs who owned small or medium-sized enterprises in Pakistan as they could not access the emergency cash allocated to vulnerable households. Many women were unable to avail of the entitlements and services as they either did not have the required documentation or were not recognised as beneficiaries in the government system (Bari, 2020).

In China, older adults living alone and requiring care were provided home-based services and temporary residential care, which helped those whose family caregivers were in quarantine or engaged as health workers (Irving & Bloom, 2020). The Chinese government also supported workers and the poor during lockdown by providing them with social assistance and unemployment benefits, and social protection programmes were extended to cover migrant workers in the cities (World Bank, 2020).

In India, INR 500 each was transferred to 200 million women between April and June 2020 under the Pradhan Mantri Jan Dhan Yojana (HT Correspondent, 2020). Additionally, the Small Industries Development Bank of India (SIDBI) provided loans for entrepreneurs to establish

medical facilities; this positively impacted women's employment and overall wellbeing since many healthcare facilities employed a significant number of women (Press Trust of India, 2020). Moreover, under the government's Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), special quotas were established for female workers and the daily-wage rate was raised (UNDP, n.d.).

In Afghanistan, public-sector subsidies were provided mainly in the health and agriculture sectors where women constitute the majority of workers.

In general, women's self-help groups and community coping mechanisms played an important role in helping women deal with the pandemic disruptions. Even though women were reported to be more likely to experience the psychological impacts caused by the pandemic than men, women in large cities, such as Shanghai, were more likely to prioritise their mental health and spent more time resting, exercising, and relaxing during the pandemic. They were also more likely to get greater support to share their feelings from family and friends (Cao et al., 2022).

2.4.3 Lessons learnt

Strengthening data collection: National data-collection systems must be strengthened with sex- and/or gender-disaggregated, age-related, disability, and ethnicity data. This applies to the health sector, but also other sectors. This can help in the making of better policies and in the planning for better preparedness during future health crises. Understanding the specific impacts of the pandemic on women, children, adolescents, and vulnerable groups in the informal sector will help guide targeted interventions for more equitable and rapid responses.

Investing in sustainable livelihoods: Investment has to be increased to support the livelihoods of vulnerable communities and informal-sector workers, with an emphasis on sustainable solutions that would have multiple socio-economic and environmental benefits.

Enhancing digital access: Special provisions have to be made for affordable internet access to bridge the digital divide and to ensure access to critical services and accurate information.

Building regional cooperation: There is a need to strengthen regional cooperation beyond the borders and build resilience through coordinated actions across the health, economic, social, and environmental sectors for unified policy responses to future health challenges.

Strengthening GESI-responsive policies, systems, and mechanisms: There is a need to strengthen GESI-responsive policies, systems, and mechanisms by adopting a holistic approach that integrates healthcare, education, and employment support. This would build the resilience of women and other disadvantaged groups and strengthen their capacity to cope effectively with public health crises.

Promoting gender-inclusive decision-making: This involves ensuring the equal participation of women in decision-making bodies and formulating policies and interventions that consider their specific needs and challenges, thereby paving way for more effective and prompt responses to future pandemics.

Promoting GESI and shock-responsive social protection system: This entails establishing a GESI and shock-responsive social protection system to ensure easy access for women, especially those working in the informal sector; this means helping them gain access to healthcare services, education, insurance, government subsidies, and livelihood options. Measures should be also in place to prevent gender-based violence.

2.5 Education

The COVID-19 pandemic severely interrupted the education of millions of students in the HKH and its effects extended well beyond the initial weeks of school closures. After the initial days of forced school closures to curb the spread of the disease, schools began replacing the standard in-person classes with digital education, despite the lack of preparedness of the education system in this regard and inadequate infrastructure to support its deployment. Governments attempted to address the inequalities among diverse groups of students with differing levels of digital access across their countries by diversifying the delivery of education, for instance via educational radio and television programmes and take-home educational packages. However, the disruption and shift to remote education have had far-reaching impacts that go beyond the immediate loss of learning (see below).

2.5.1 Impacts

The field of education was one of the sectors most affected by the global outbreak of COVID-19 in early 2020. Restrictions on mobility led to closure of educational institutions. Between April 2020 and March 2022, South Asian schools experienced full or partial closures, for approximately 83% of the time, affecting students' progress in learning and overall education. This was significantly higher than the global average of 52% for the same period (World Bank, 2023).

Closures, disruptions, and having to drop out

The prolonged school closures and the shift in how classes were taught had significant impacts on the academic calendar, the content and quality of the education delivered and its uptake, and on the psychological wellbeing of schoolchildren and their families. By the end of March 2020, educational institutions in the HKH had fully closed (see Table 1, Annexe). From February 2020 to March 2022, educational institutions in the HKH remained closed, either partially or fully, on an average, for 70 weeks (Figure 2.2). Full school closure lasted for 25 weeks in India (27% of total school closure). Bangladesh and Myanmar underwent the longest duration of full school closure (approximately 60 weeks). Bhutan, Pakistan, and Afghanistan had the shortest

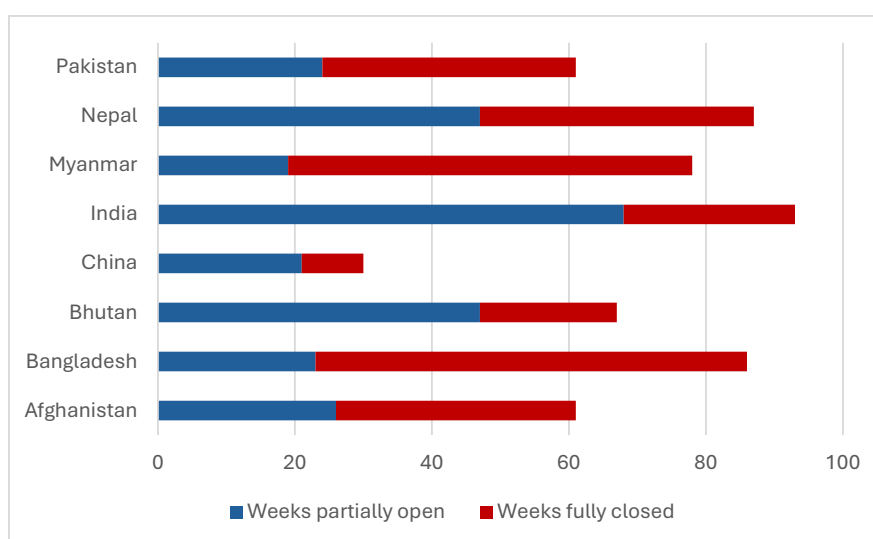
duration of school closures, besides China (Asian Development Bank – ADB, 2021; UNESCO, n.d.) (see Figure 2.2). In Nepal, all educational activities that required face-to-face interaction were suspended from 23 March 2020, during its first lockdown. The pandemic and lockdown kept an estimated 8.5 million children in Nepal away from their day-to-day classrooms (UNICEF, 2021). In Pakistan, the pandemic prevented almost 50 million children from attending school (Zacharia, 2020).

In Afghanistan, the education system, which was already affected by decades of conflict, humanitarian crises and poverty, suffered further disruption from the pandemic (Human Rights Watch, 2020). Remote learning was rendered ineffective due to the lack of access to digital devices and online resources, and due to high costs (Sarwari et al., 2020).

In Bhutan, the closure of schools resulted in severe disruption of education for thousands of children. A significant number of these students had limited access to digital devices and internet connectivity, which impeded their ability to engage effectively in e-learning programmes. In Bangladesh, 22.7% of the children (of the 77.5% attending school) discontinued their schooling after their schools were closed, which had myriad negative consequences, including raising the risk of child labour, early marriage, and adolescent

FIGURE 2.2

NUMBER OF WEEKS SCHOOLS IN THE HKH WERE CLOSED DUE TO COVID-19



Sources: UNESCO map on school closures (<https://en.unesco.org/covid19/educationresponse>) and UIS, (March 2022). <http://data.uis.unesco.org>

pregnancies (Uddin, 2020). In China, the pandemic exacerbated pre-existing inequalities in access to education and learning (UNESCO, 2022a). Like in other countries, children in China with limited access to remote learning technologies were the most affected, as they were unable to continue with their education effectively (UNESCO, 2022b). In Myanmar, the number of children not in school more than doubled in just two years, with approximately half the children dropping out due to school closures and increasing economic insecurity (Save the Children, 2022b). School enrolment dropped by about 80% in some regions in Myanmar, resulting in approximately 7.8 million children being out of school. In Nepal too, the closure of schools resulted in children being unable to attend classes due to lack of access to devices and internet connectivity, further exacerbating educational disparities (ILO, 2020a). In Pakistan, many girls lacked access to digital devices, hindering their participation in distance learning during this period (Organisation for Economic Co-operation and Development – OECD, 2018). In India, the lockdown further aggravated educational disparities, as only a third of the girls were able to attend online classes (Save the Children, 2022a). In what is an issue of grave concern, as many as 65% of the parents surveyed in 14 states and 10 urban areas of India expressed reluctance to send their daughters back to school, leading to an increase in child marriages as a measure to save costs (UN Women, 2021). Girls faced additional barriers to remote learning since women on average were 26% less likely to own a basic mobile phone and 70% less likely to own a smartphone connected to internet (OECD, 2018) than men (who would have to use their phones for their own work purposes). This lack of access to devices contributed to an increase in girls dropping out of school and being pushed into early marriage. Consequently, the number of adolescent pregnancies is expected to rise within this cohort of girls.

The shift to online learning and its challenges

With educational institutions partially or fully closed, distance learning via online platforms became the best alternative mode of delivering education. However, access to digital technology and the internet proved to be a big challenge for the HKH communities (UNICEF, 2020). According to the World Bank, less than half the population

of the HKH countries have internet access (see Chapter 4: Table – Individuals using the internet). Bhutan and China have the highest percentage of their population with internet access. In the other countries of the HKH, it is less than half. Students in the region's remote areas faced the most difficulties in accessing online learning, as they had to travel long distances to even have mobile/internet connectivity. Even those with access complained about the quality of the internet connections (see Chapter 4: Digitalisation). The low internet penetration in South Asia (Khan et al., 2023) compelled educators to use fewer interactive mediums to teach students and made them shift to a greater use of television, the radio, and take-home educational packages.

The quality of education and its retention status

The quality of education delivered in the HKH was significantly compromised during and even after the COVID-19 pandemic. A strong foundation in learning empowers children to grow into capable individuals, equipping them with lifelong competencies and opportunities to thrive. Studies from neuroscience, psychology, education, and economics have found the early years in a person's life to be the most crucial for human capital accumulation (Glick & Sahn, 2010; Lagakos et al., 2018; Thompson & Nelson, 2001; Walker et al., 2011). Even a short disruption in education has dire effects on academic attainment and opportunities in the long run. Disruptions in education, especially for those of a working age, may result in their dropping out of school. The likelihood of students dropping out of school got amplified by the additional financial pressure that households faced because of job losses due to the pandemic (see Chapter 4 – Unemployment rate).

Studies have found that the prolonged closure of schools adversely impacts students' retention capacity and performance in the short term as well as educational attainment in the long term (ADB, 2021; Cooper et al., 1996; Marcotte & Hemelt, 2008). Understandably, due to the prolonged closure of schools and universities, students forget parts of what has been taught. The longer the closures, the greater is the extent of loss of learning. Learning-adjusted years of schooling (LAYS) is an indicator that captures both the quantity and quality of education and can be used to measure learning loss. It has been estimated that school closures

due to the COVID-19 pandemic resulted in a decrease in LAYS by 8.5% in South Asia, which, in turn, can reduce the potential average incomes of each student by 4% per year (ADB, 2021). Cohen et al. (2022) have projected a decrease in GDP in Bangladesh, India, Nepal, and Pakistan of between 1.4 and 4.9% by 2030 due to the COVID-19-induced school closures. Nepal is projected to have the highest GDP decline among these four countries due to a reduction in skilled and unskilled employment caused by the loss in learning. Disruptions to the continuity of learning adversely affect a young student's psychological state, educational attainment, long-term development and learning and earning capacity.

A challenging situation for parents

Parents' involvement and support are crucial for children's education, achievement, and development (Henderson & Berla, 1994; Hoover-Dempsey & Sandler, 1995; Sapungan & Sapungan, 2014). Parents play a dynamic role in nurturing a child's educational journey by providing financial and emotional support and motivation, as well as other resources to facilitate their educational achievements (Jaiswal, 2017).

The role of parents and guardians became very important in the transition to remote learning during the pandemic. Some educational institutions provided parents and caregivers support to improve home-based learning in the form of guidance materials and regular follow-up calls, but such engagement and support were significantly lower for low-income households due to resource constraints (UNESCO, UNICEF, & World Bank, 2020). The increased burden of fulfilling work obligations and the added household responsibilities compelled parents to make a choice between fulfilling commitments to their employers, household duties, and providing adequate support and guidance to the children engaged in remote learning. The additional workload of spending more time with their children and providing inputs into their overall development fell overwhelmingly on mothers, along with fulfilling their household and employment responsibilities. Often, these added responsibilities caused women to withdraw from paid employment (Aaronson & Alba, 2021).

A household's socio-economic status has a significant bearing on a child's learning and academic achievements (Davis-Kean, 2005); this was made even more evident during COVID-19. Households that prioritised their children's education, and had the resources to do so, supported the continuation of their educational pursuits. A majority of the children from poorer households did not have the financial means, or access to resources, to continue their education, forcing them to withdraw temporarily or drop out. The additional shock of the loss of wage incomes in low-income households exacerbated student drop out (Azevedo & Goldemberg, 2020; Shuja et al., 2022).

The closure of the face-to-face mode of teaching in schools also deprived children from low-income households of mid-day meals. In countries where students are provided free meals it serves to combat malnutrition and stunting, as well as providing an incentive to attend school (ESCAP, 2020). Thus, the shift to remote learning became another factor that widened the learning disadvantages of relatively poorer school-aged children.

Students' mental health and wellbeing

A survey of 7,145 students at Changzi Medical College in Hubei, China, indicated that about one-fifth (21.3%) of them experienced mild anxiety at the beginning of the pandemic (Cao et al., 2022). Another survey, of 3,137 postgraduate students in China, showed a similar percentage who experienced depression (34% of respondents) or anxiety (21% of respondents) due to rolling lockdowns implemented throughout the pandemic (Liang et al., 2021). The mental health status of students differed between subgroups based on majors, classes, degree types, and advisor-student communication methods. Another study in China that consisted of two surveys, one during the first wave of COVID-19 and the other during the second wave, pointed to a decrease in fear over time but an increase in depression levels during the second wave (Duan et al., 2020). It indicated that younger people and individuals with higher initial stress responses tended to show more hostility. Another survey, conducted towards the second half and tail end of the prolonged restrictions in China, showed significant positive correlations between social

isolation, smartphone addiction, and academic anxiety (Zeng et al., 2022). In Pakistan, a survey that interviewed 494 students aged 19–25 years highlighted online teaching, concerns about academic performance and being able to complete the semester, and uncertainty related to exam dates as some of the most prominent stressors (Baloch et al., 2021).

2.5.2 Responses

In response to school closures, educational systems that used to rely primarily on traditional face-to-face teaching–learning methods pre-COVID-19 had to quickly adopt information and communication technology (ICT)-based methods and digital tools to deliver education (Khan et al., 2023). Government response was one of the major factors affecting a country's ability to adapt to a digital or hybrid model of teaching–learning pedagogies.

The Bhutanese government facilitated Google Classrooms, which reached 170,000 students (UNDP, 2023). Bhutan also introduced the self-instructional materials (SIM) technique, a printed version of tele-education that does not rely on the internet or access to television (Khan et al., 2023). The Government of Pakistan shifted to an online learning system as early as 13 March 2020. However, digitisation of education proved to be a challenge in Pakistan due to the lack of technical equipment and because only about a third of its population had access to the internet (Khan et al., 2023). Pakistan's Ministry of Federal Education and Professional Training (MoFEPT) launched an educational television initiative, TeleSchool. By April 2020, Punjab province's School Education Department launched an initiative called Taleem Ghar, which aimed to provide multimedia lessons online, in collaboration with civil society and education technology companies, to overcome the low access to the internet (Zacharia, 2020). Universities in Bangladesh that were closed due to a lack of ICT knowledge and management information systems (MIS) were able to hold online classes after the University Grants Commission (UGC) of Bangladesh revised the relevant policies (Khan et al., 2023).

India's University Grants Commission shifted the academic session in 2020–2021 and worked jointly with the Ministry of Human Resource Development (MHRD) to offer e-resources to students and to launch virtual teaching platforms. Additional educational content provided through television and radio channels enabled students without an internet connection to continue their educational activities (Jena, 2020). India provided students access to thousands of national e-learning portals which offered courses in multiple languages to cater to the country's diverse population. China mobilised national- and provincial-level online platforms so that students' education could continue uninterrupted. To facilitate online learning, it adopted a flexible teaching method and mobilised human and material resources such as by providing psycho-social support and upgrading the internet bandwidth of major platforms (Azzi-Huck & Shmis, 2020; Dawadi et al., 2020). In Nepal, despite the initial challenges, the education system shifted from classroom learning to new methods of e-learning (Khan et al., 2023).

Barring Myanmar and Afghanistan, governments in the HKH increased their total expenditure on education in 2020 to cope with the structural changes required to be able to continue providing education. Among these HKH countries, Bhutan (6%), Nepal (4.21%), and India (4.9%) spent the highest share of their GDP on education. In the years following COVID-19, Nepal, Pakistan, and China lowered their share of government expenditure on education, while Bangladesh and India increased theirs. Bhutan also increased its share significantly, despite already having the highest percentage of government expenditure on education in the HKH (UNESCO Institute for Statistics, n.d.).

The modifications in the education system, catalysed by changes in government policy and due to steps taken by educational institutions, supported remote learning and enabled diverse methods of delivering education. All eight countries of the HKH embraced various channels to provide education, such as online platforms, television, and radio, and take-home educational packages (Table 2.2 and Annexe Table 2). Online platforms and the television were the most prominent modes. Online meeting platforms such as Zoom, Microsoft Teams, and

TABLE 2.2

REMOTE LEARNING MODES ADOPTED BY THE HKH COUNTRIES DUE TO COVID-19

Country	Online platforms	Television	Radio	Take-home packages
Afghanistan	√	√	√	
Bangladesh	√	√	√	
Bhutan	√	√	√	√
China	√	√	√	√
India	√	√	√	√
Myanmar	√	√	√	√
Nepal	√	√	√	√
Pakistan	√	√	√	√

Source: ADB (2021); Khan et al. (2023); UNESCO map on school closures (n.d.); UNESCO Institute for Statistics (n.d.)

Google Meet enabled students and teachers to have interactive sessions. Television channels and platforms such as YouTube allowed for the replication of classroom teaching. Educators in developing countries in Asia reportedly received specialised training and guidance on remote teaching. In some cases, they were provided access to communication tools and free internet connectivity to facilitate teaching (UNESCO, UNICEF, & World Bank, 2020). However, this provided little-to-no benefits for communities with limited internet access or those without digital infrastructure.

Challenges to the adaptative shifts in education

The primary challenges to remote learning in the HKH region included limited household access to essential equipment, inadequate infrastructure and technology, uneven connectivity, incomplete readiness and planning of educational institutions for delivering remote learning, and economic constraints preventing many households from supporting their children's education.

The Remote Learning Readiness Index (RLRI) is an indicator devised by UNICEF to measure a country's readiness to deliver remote learning as a response to school closures or a disruption to in-person learning. UNICEF (2021) report RLRI has been calculated for seven of the eight HKH countries: Afghanistan, Bangladesh, Bhutan, India, Myanmar, Nepal and Pakistan. Despite initiatives by governments and educational institutions in the HKH, the RLRI indicates low readiness on the part of the HKH countries to facilitate remote learning (Table 2.3). The index indicates that Bangladesh,

Bhutan, India, and Myanmar were more prepared in this regard than Afghanistan, Nepal, and Pakistan. The readiness of a country to enable remote learning is substantially influenced by its level of digital infrastructure development.

There is a clear link between a country's RLRI and its gross national income per capita – the higher the gross national income per capita, the higher its level of readiness (UNICEF, 2021). In general, most countries, including Bangladesh, Bhutan, India and Nepal, increased their spending on education during COVID-19. The governments of the countries that were more conducive to remote learning were found to have increased their investment in education during the first year of COVID-19 (see Figure 2.3). Not surprisingly, the countries with 1–2 stars (indicating a low level of readiness) had the longest duration of school closures between March 2020 and September 2021 (UNICEF, 2021). Overall, greater efforts need to be made and investment has to be increased towards building remote/digital tools and infrastructure to deliver effective digital-based remote learning.

Learning losses caused by the closure of schools can be mitigated by remote learning. However, online models, especially in large-scale online learning environments, have a higher level of attrition and that students fare less well compared to hybrid or traditional face-to-face learning modes, even in developed economies (Kizilcec & Halawa, 2015). Remote learning during COVID-19 was less effective than classroom learning, especially in the lower-middle income and low-income countries with limited digital infrastructure (ADB, 2021). Effective remote

TABLE 2.3

REMOTE LEARNING READINESS INDEX BY LEVEL OF EDUCATION IN THE HKH COUNTRIES

Country	Pre-primary	Primary	Lower secondary	Upper secondary	Total
Afghanistan		2 Stars	2 Stars	3 Stars	2 Stars
Bangladesh	3 Stars	3 Stars	3 Stars	3 Stars	3 Stars
Bhutan	3 Stars	3 Stars	3 Stars	3 Stars	3 Stars
India		3 Stars	3 Stars	3 Stars	3 Stars
Myanmar	3 Stars	3 Stars	3 Stars	3 Stars	3 Stars
Nepal	1 Star	3 Stars	2 Stars	2 Stars	2 Stars
Pakistan	1 Star	2 Stars	2 Stars	2 Stars	1 Star

Note: '5 stars' indicates the highest level of readiness, and '1 star', the lowest.

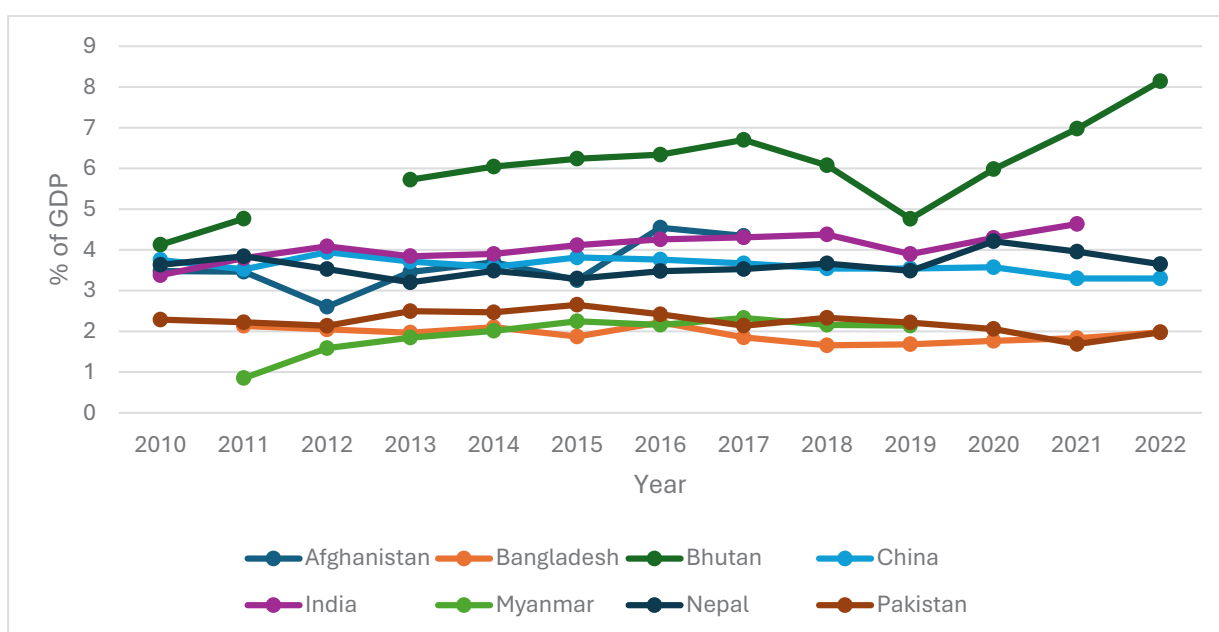
China RLRI not available

 No data

Source: UNICEF (2021)

FIGURE 2.3

GOVERNMENT SPENDING ON EDUCATION, AS A PERCENTAGE OF GDP OF THE HKH COUNTRIES, 2010–2022



Source: UNESCO Institute for Statistics(n.d.)

learning materials and platforms can only be produced through careful strategies and planning. The sudden closure of schools and the hasty, poorly planned switch to digital mediums for education has had a significant impact on the quality of education of those continuing with remote learning throughout the world. The overall interventions for remote learning have been unable to ensure the continuity of learning for all children, prevent dropouts, and mitigate learning loss in children (Conto et al., 2021). Importantly,

the loss in literacy caused by COVID-19 was found to be significantly higher among girls, especially those in rural areas and belonging to disadvantaged groups (Nandi et al., 2023).

When schools were finally allowed to reopen for in-person learning by the government, there was inadequate adherence to the implementation of health and hygiene guidelines by the schools. Income levels of households also had a bearing on the level of adherence to health and hygiene

guidelines, with the lower income communities demonstrating lower adherence. The key bottlenecks in adherence to WHO guidelines were a lack of resources to implement health measures, a lack of commitment to public safety from the public itself, poor health safety culture, a lack of medical facilities, and the lack of strict enforcement (Chang et al., 2021).

2.5.3 Lessons learnt

Diversification in the modes of delivering education:

Despite the efforts by governments and educational institutions to shift to digital learning through the internet, their effectiveness remained limited due to the relatively low readiness for remote learning. Expanding the delivery to alternatives like television, radio, and take-home educational packages allowed students from diverse backgrounds, especially disadvantaged students with limited resources, to access education equitably.

Improving remote learning readiness: The shifts in the delivery of education during the COVID-19 period posed major challenges for students, due to their lack of access to technology and the internet, inadequate digital infrastructure, haphazard and unplanned implementation of virtual learning programmes, and the unpreparedness of both parents and students to engage with the digital education being delivered. While digital mediums have not replaced the role of the teacher (Muralidharan et al., 2019; Stringer et al., 2019; Tomasik et al., 2021), they have provided an alternative solution. However, improvements need to be made in infrastructure and systems to enhance learning outcomes to their maximum potential; they should be further developed in tune with ongoing technological advancements. The existence of viable digital alternatives will provide a means to adapt to shocks such as the COVID-19 pandemic. Such digital platforms could also be used in the normal course to increase access to education services, including targeting students in remote and resource-limited areas.

Support remote learning mechanisms: The provision of remote learning must be coupled with other mechanisms to maximise interactions between education providers and the recipients, which can then pave way for an environment that encourages and fosters the active involvement of all concerned.

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TABLE 1 FIRST FULL CLOSURE DATE OF SCHOOLS DUE TO COVID-19

Country	Date
Afghanistan	14 Mar 2020
Bangladesh	17 Mar 2020
Bhutan	18 Mar 2020
China	21 Feb 2020
India	25 Mar 2020
Myanmar	16 Mar 2020
Nepal	19 Mar 2020
Pakistan	14 Mar 2020

Source: UNESCO map on school closures (<https://en.unesco.org/covid19/educationresponse>) and UIS (March 2022). <http://data.uis.unesco.org>

TABLE 2 DISTANCE LEARNING MODALITIES OF THE HKH COUNTRIES

Country	TV	TV channel name(s)	Online	Link(s) to online channel	Radio	Radio channel name(s)
Afghanistan	Yes	Educational Radio and Television (ERTV), Radio Television of Afghanistan (RTA), and private networks	Yes	Maarif	Yes	ERTV, RTA, and private networks
Bangladesh	Yes	My School at My Home	Yes	eDigital Content	Yes	Ghore Bose Shikhi
Bhutan	Yes	Bhutan Broadcasting Service (BBS)	Yes	Bhutan eLearning	Yes	Bhutan Broadcasting Service BBS
China	Yes	China Education Network Television	Yes	National Network Cloud - Platform for Educational Resources and Public Service	No	
India	Yes	Swayam Prabha	Yes	National Digital Library of India (NDLI)	No	
Myanmar	Yes	Education Channel DAE-Myanmar School Education Lessons	No		Yes	Education Channel
Nepal	Yes	NCED Virtual	Yes	Learning Portal	Yes	Radio Jingle
Pakistan	Yes	Taleem Ghar	Yes	Open Courseware	Yes	RadioSchool
		TeleSchool				

Source: UNESCO map on school closures (<https://en.unesco.org/covid19/educationresponse>) and UIS (March 2022). <http://data.uis.unesco.org>

CHAPTER 3

COVID-19 and the economy – macro economy, finance, energy, migration, tourism, and transportation sectors

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Key messages

Economies in the Hindu Kush Himalaya (HKH) region were severely impacted by the COVID-19 pandemic, with most countries recovering to some extent in 2021, except Afghanistan and Myanmar. The governments of these nations adopted expansionary fiscal and monetary policies to support economic activities.

The pandemic has accelerated the pace of digital advancement, clearly signalling the onset of the era of digital transformation in the financial sector. It has shown that a strong digital infrastructure and widespread internet connectivity are essential components of a reliable financial system. Capitalising on this experience, and with commitment from both the private and public sectors developing nations can embrace the potential of digital transformation to advance the operation of their financial systems.

The lockdown-induced economic slowdown significantly impacted the energy sector, hindering progress towards attainment of the UN Sustainable Development Goals (SDGs) and Nationally Determined Contributions (NDCs). Both global and regional energy consumption plummeted, exacerbating challenges like supply chain disruptions, demand fluctuations, revenue loss, and construction delays. Comparatively, renewable energy sources demonstrated greater resilience throughout the pandemic as they are less susceptible to operational cost fluctuations linked to energy demand. This highlights the critical need for robust energy infrastructure and accelerated adoption of renewables for a more resilient energy system.

Despite the significant contributions of migrants to the urban economy (through internal migration) and the national economy (through international migration), historically they have remained largely external to policymaking. This situation changed during the COVID-19 pandemic and the implementation of lockdown measures. Although the COVID-19 pandemic had a direct negative impact on the wellbeing of migrants and migrant households, the concomitant visibility of migrants during the pandemic has enabled their inclusion in policy making.

Tourism is a key driver of growth and prosperity in the HKH region as it contributes significantly to employment and the GDP of these economies. However, the COVID-19 pandemic dealt an unprecedented blow to the tourism and hospitality sectors, with travel and mobility restrictions causing both macro- and microeconomic challenges.

Harnessing digital automation solutions presents transformative opportunities for safer, contactless, movement of goods and services, especially during times when physical mobility is restricted because of the pandemic.

3.1 Introduction⁵

Countries in the Hindu Kush Himalaya (HKH) region were hit hard by the COVID-19 pandemic with almost all socioeconomic sectors impacted negatively. This chapter provides an overview of the impacts of the COVID-19 pandemic on the overall economy of the HKH countries as well as the key sectors of finance, energy, migration and remittances, travel and tourism, and transportation. The main objective of the chapter is to understand the impacts of the pandemic and the effectiveness of policy responses, identifying any critical gaps and drawbacks that carry lessons of relevance for key economic sectors in the HKH region.

The review and analysis are primarily based on secondary information, combining a literature review with an analysis of existing global and regional databases – primarily because the literature on the impacts of the COVID-19 pandemic on the HKH region is still too thin for the purpose of a comprehensive assessment or a systematic review.

The first section of the paper covers the impact of the pandemic on key macroeconomic variables, such as the gross domestic product (GDP) and per capita income, followed by a more specific focus on its impact on selected sectors in the HKH countries. The chapter also summarises the key policy responses by all countries in the region in an appendix (Appendix 3.9)⁶.

3.2 Macroeconomic sector

3.2.1 Impact

Global economy: In 2020, the global economy suffered a recession as the COVID-19 pandemic led to negative growth (-3.1%). While a similar situation was observed in 2009, due to the global financial crisis, the resulting economic contraction (-1.3%) was smaller than experienced in 2020 (Figure 3.1).

After a sharp decline, there was a V-shaped recovery in 2021 with the global GDP growing by 5.9%, which is around 9.0% in comparison to the growth in 2020 (Figure 3.1a). However, the global economy has been struggling to maintain and sustain momentum due to both the lingering and lagged effects of the COVID-19 pandemic, as well as the war in Ukraine and climate-related disasters due to extreme events (AghaKouchak et al., 2020).

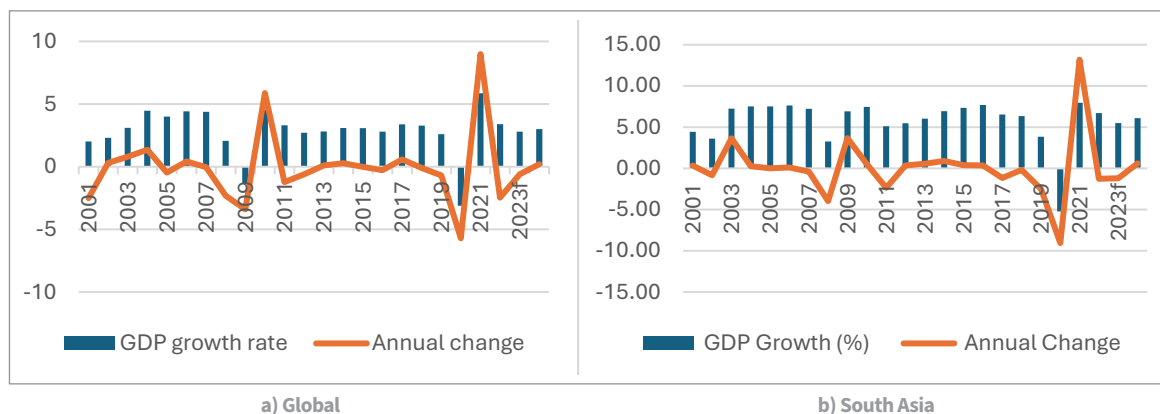
South Asia: South Asia's economy followed a similar pattern to that of the global economy and suffered a major setback in 2020 – when the contraction was much larger (-5.2%) than the global average (-3.1%). However, the region's economy rebounded quickly in 2021 with 7.9% growth (Fig 3.1b). The South Asian economy could grow at a slightly lower rate in 2023 (5.5%) and 2024 (6.1%). High inflation, tighter financial conditions, weak private consumption, and external imbalances are the factors anticipated to negatively impact growth in 2023 (United Nations, 2023).

Hindu Kush Himalaya region: The trend in GDP (Gross Domestic Product) growth before the onset of COVID-19 was positive for most of the countries in the HKH region, except Afghanistan, but

⁵ Contribution – Mani Nepal: Macroeconomic sector; Shekhar Ghimire: Financial sector; Abhishek Malla: Energy; Amina Maharjan: Migration; Anu K Lama: Tourism; and Mewang Gyeltshen: Travel and transport.

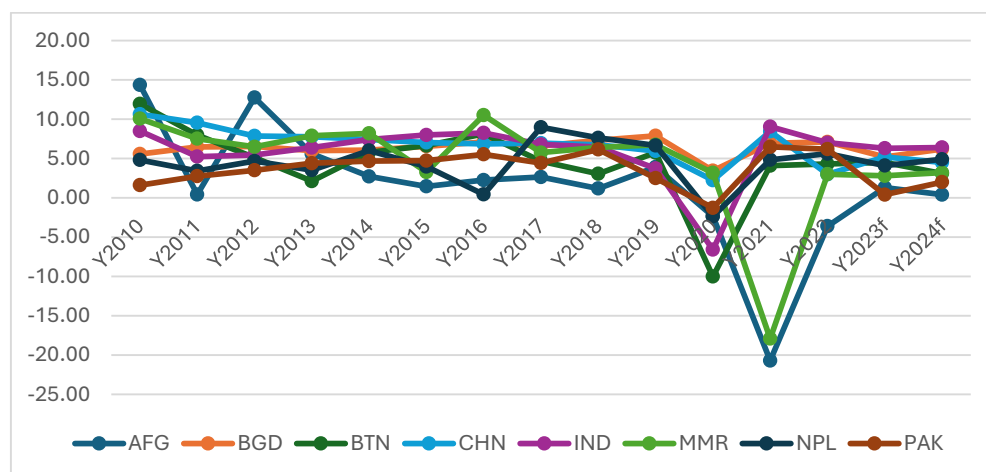
⁶ The cut-off date for the information included in this chapter is October 2023.

FIGURE 3.1 GDP GROWTH RATE (2001–2024)



Source: Constructed from the World Bank Development Indicators (2001–2021), International Monetary Fund Financial Statistics (2022–2024), and Asian Development Bank Key Indicators Database (2022–2024); f = forecast.

FIGURE 3.2 ANNUAL GROWTH RATE OF GDP (2010–2024), HKH COUNTRIES



Sources: Constructed from the World Bank Development Indicators (2010–2021) and World Bank Macro Poverty Outlook and World Bank staff calculations (2022–2024); For China, Textor (2024); For Myanmar, ADB (2023c); For Afghanistan, United Nations Development Programme (UNDP, 2023).

COVID-19 led to a deceleration in all the economies albeit at different rates. For example, Bangladesh, China, and Myanmar still achieved positive - albeit lower - growth rates in 2020 while the growth rates of the other economies were negative (Figure 3.2). Although most of the countries in the HKH region showed a V-shaped recovery path in 2021, the economies of Afghanistan and Myanmar contracted even further. While recovery in these two countries commenced in 2022, Afghanistan still recorded a negative growth rate in 2022.

Per capita GDP/GNI: The COVID-19 pandemic led to the decline of not only the overall growth rate but also per capita income (GDP and GNI, Gross National Income) in all HKH economies in 2020

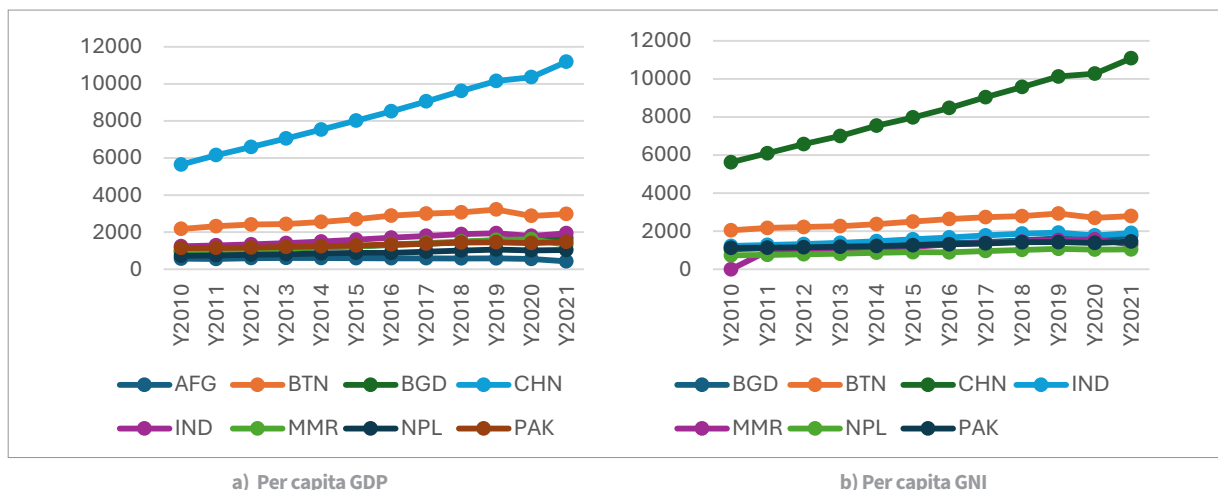
(Figure 3.3). For China, which enjoys the highest per capita GDP among the HKH countries, the per capita GDP continued to grow in 2020 but by a very small margin. All other countries experienced a reduction in per capita income in 2020 compared to 2019. The per capita GNI followed a similar pattern for all the countries.

3.2.2 Responses

Since no country was prepared for a global health disaster of this scale, the immediate response was to close businesses that required in-person interactions. The lockdown hit low-income households, people involved in informal sectors

FIGURE 3.3

PER CAPITA INCOME (2015 CONSTANT PRICE \$), HKH COUNTRIES



Sources: Constructed from the World Bank Development Indicators (2010–2021), World Bank Macro Poverty Outlook, and World Bank staff calculations (2022–2024); For China, Textor (2024); For Myanmar, ADB (2023c); For Afghanistan, UNDP (2023). Note: Per capita GNI was not available for Afghanistan.

with no regular income, small businesses, travel and tourism, and education sectors the most. The countries in the region came up with a variety of relief packages to aid those badly impacted despite low fiscal space. The governments in the HKH region also responded with the following main policies (please refer to Appendix 3.9 for more details on government policies):

- Lockdown and closure of in-person business activities to reduce the transmission of the virus;
- Provision of relief packages (e.g., subsidised food distribution) and social safety nets for low-income households and informal sector workers who lost their jobs and did not have access to formal support systems;
- Granting incentives to businesses and industries by reducing interest rates, deferring taxes and loan-payment deadlines, and restructuring business loans; and
- Easing of any policy and quantitative restrictions in place on importing essential medical supplies, and massive increases in healthcare expenditure (thus making basic health supplies available, including masks, sanitizers, testing kits, vaccines, etc.).
- Appendix 3.9 summarises fiscal, monetary, and exchange rate policies adopted by the countries in the HKH region in 2020 and 2021 to minimise the impacts of the COVID-19 pandemic.

Effectiveness of policy interventions: A global pandemic like COVID-19 is not only rare but carries with it a high level of uncertainty as the type, intensity, and spread of the disease cannot be known in advance. Hence, no amount of preparation can fully insure us against the impacts of a pandemic (Morse, 2012). As generally recognised in the literature, the burden of the pandemic fell disproportionately on the least privileged (Mongey et al., 2021).

From an economic perspective, the pandemic created a widespread scarcity of essential goods and services, which not only affected consumption and investment but also reduced the level of production as the lockdowns disrupted the supply chains of both raw materials and final products (Chetty, 2020; Nicola, 2020). The chain reaction that followed led the entire global economy into recession including the HKH region economies (Figure 3.2). As a response to the lockdowns, HKH region governments came up with relief packages adopting various fiscal, monetary, and exchange rate policy measures (see Table 3.1). Such policies seemed to be effective in applying breaks on economic recession in the HKH region. As Figure 3.2 shows, the economic recession due to the COVID-19 pandemic (negative GDP growth rates) experienced a V-shaped recovery in 2021 in most of the HKH countries, indicating that the policies adopted for addressing the impacts of the COVID-19 pandemic have worked well to halt the economic recession in most of the economies.

However, a closer look at the income as well as wealth distribution suggests that the recovery process has further exacerbated the enormous gap between the rich (top 1%) and the poor (bottom 50%) in these countries. Such distributional effects are more pronounced in China and India compared to other similar middle-income countries such as Brazil and South Africa and high-income countries such as USA, UK, and France (Figure 3.4b). (Ghatak et al., 2022) suggest that although the inequality was slightly reduced in aggregate during the pandemic (2020), the rich nevertheless became richer (at more than the pre-pandemic level for the top 1%), as they have been able to seize the opportunity created by the pandemic, whereas the masses in general became poorer. This phenomenon is not unusual as there are bound to be winners and losers during an unexpected high-intensity shock (Chancel et al., 2022). The critical question is how to design policies and institutions in such a way as to address such issues and minimise the potential harm to the underprivileged sections of societies.

In the HKH region, governments adopted an unprecedented economic stimulus package to support the poor and the vulnerable (Table 3.A1). However, targeting has always been a challenge when reaching out to those most in need (Gerard, 2020), especially in remote areas. Those working in the informal sector as well as the poor are often left out of such efforts due to a lack of proper mechanisms to reach them (Nanda, 2020). The economic stimulus packages during the pandemic not only benefitted target groups. It also fuelled businesses that engaged in producing essential goods, such as safety gear, testing kits,

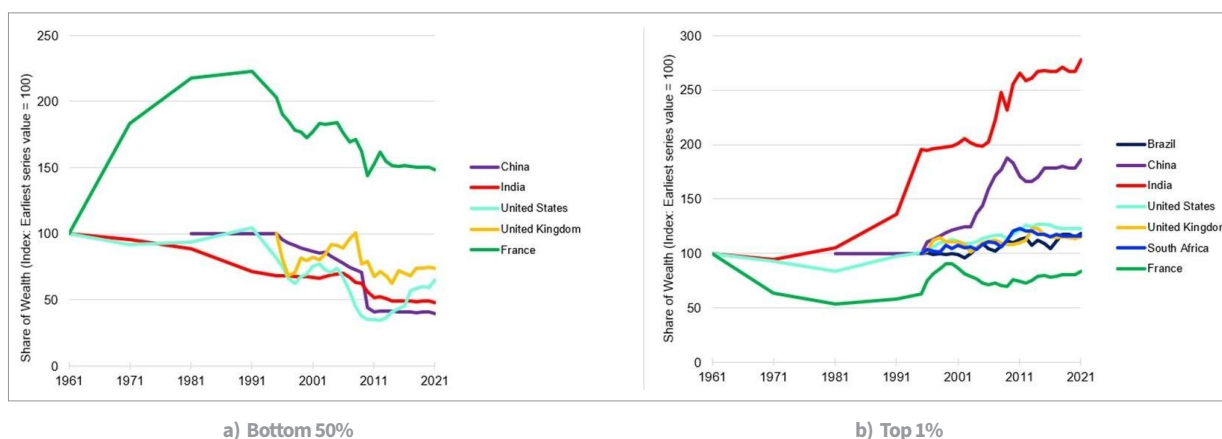
vaccines, protective equipment, and essential medical and food supplies, and had the effect of concentrating new wealth in the hands of a few who were involved in supplying essential goods (Gneiting, 2021). These ventures were risky but the rewards were substantial.

The COVID-19 pandemic, followed by the Russia-Ukraine war, have derailed the global supply chains for food and energy, leading in turn to soaring prices (Luhby, 2022). The household budgets of the majority of people who worked in the informal sector and lost their jobs during the pandemic have been negatively affected by the rising food and energy prices while the companies involved in producing and supplying food and energy are enjoying unprecedented record-high profits. For example, by the end of 2021, close to a fifth of the job losses due to COVID-19 had not been recovered in Nepal, with jobs held by women and those in agriculture and lower-skilled occupations recovering more slowly than the rest (Hadad-Zervos, 2022). In general, over 85% of the working population, (90% for working women), are engaged in the informal sector in a majority of the countries in the HKH region and are relatively more vulnerable to shocks (Human Rights Watch [HRW], 2023).

In Bangladesh, the decline in global demand for ready-made garments (RMG), among other things, led not only to rapidly falling foreign exchange reserves, but also high unemployment in this vital sector of the country's economy. Consequently, Bangladesh borrowed USD 4.5 billion from the IMF in July 2022 to stabilise the volatility of the Bangladeshi *Taka* and to finance energy imports

FIGURE 3.4

PER CAPITA INCOME (2015 CONSTANT PRICE \$), HKH COUNTRIES



Source: Ghatak et al (2022)

(Bhowmick, 2023). Pakistan has been facing a similar challenge of low foreign reserves. Nepal, too, faced a similar situation in the summer of 2022 when foreign remittances declined drastically, but managed to recover with some restrictions on imports and a boost in remittance receipts (Withers et al., 2022). Sri Lanka, on the other hand, failed to overcome the pressure and the economy collapsed. Additionally, the pandemic led to the deglobalisation of the economies (Goldberg & Reed, 2023). The pandemic (accompanied by the Ukraine-Russia war) led to a leftward shift in the marginal cost curve of globalisation amidst growing uncertainty, and, as supply chains got disrupted, countries started moving towards more protectionist policies. India, for example, restricted the export of certain items such as vaccines during the pandemic and has since then (August 2023), restricted the export of rice other than basmati (Ibrahim, 2021; Singh, 2023).

3.2.3 Lessons learnt

To generate resources to provide much-needed support to affected and vulnerable people hit hardest by the pandemic, and to address the rising income inequality, taxes could be imposed on excess profits and wealth accumulated by industries and individuals as a result of the pandemic.

During the pandemic, lockdowns were used as a medical tool by all countries to prevent the transmission of the virus. But not only is such a tool extremely costly to implement (see Figures 3.1-2), it also requires compliance and restraint among the citizenry, which is not easy to bring about and maintain. Lockdowns also disrupt supply chains creating shortages in daily essential goods while seemingly destabilising citizens. From an economic perspective, the opportunity costs of such disruptions are not known yet though they are bound to be high (Van Bergeijk, 2021).

Preventing future pandemics may not be possible, but society can be better prepared to meet challenges. Flexible contingency strategies are needed to reduce the impacts of pandemics in the future. Evidence suggests that the impact of the pandemic varies by culture, based on how the society is organised, its institutions and socioeconomic policies (Van Bergeijk, 2021). Since cultures cannot be changed in the short

to medium run, institutions and policies can be designed to make national populations and their component communities more responsive, with improved capacity to address immediate needs arising from future pandemics, and to minimise potential harm.

The COVID-19 pandemic has taught us that it is everybody's responsibility to minimise the impacts of a pandemic. Van Bergeijk (2021) summarised the key responsibilities of different actors when confronted with a pandemic such the COVID-19 pandemic:

- *At the individual level:* Washing hands (assuming that safe water and soap is available), not shaking hands, using facemasks in crowded places, stocking emergency supplies for a few weeks, and maintaining savings for emergency situations, which helps if someone loses his/her job or business due to the pandemic. Since seasonal flu impacts millions of people every year, the simple hygiene measures adopted during the pandemic (washing hands and wearing masks) can also help reduce the impact of flu.
- *At the business/office level:* Provision of remote working (a form of social distancing, which is useful even during normal times to help reduce the carbon footprint and traffic congestion), use of cards not cash for business transactions, placing shields at counters where face-to-face interactions are needed, diversifying reliance on suppliers and providing good warehousing facilities for storing products, and home delivery systems for essential items (promoting online business).
- *For cities and communities:* Redesigning cities to increase local provision of services, and management of green spaces, which would allow neighbourhood-level management of lockdowns and reduce cross city travel – this might include reorganising the timing of school and business hours to schedule access to the road/transport system; promoting walking and cycling, and using road closures as means of controlling crowds; involving citizens and leaders with local knowledge in planning for a pandemic; and re-designation of healthcare facilities to allow new disease management and minimize disturbance to regular services.

- *At the national level:* Defining strategy and implementation plan(s) to deal with a future pandemic or large-scale disaster is necessary. The challenges are multidimensional, and a plan requires multidimensional approaches, with inputs to government, from medical experts, health workers, and from social and other scientists⁷.

Overall, countries in the region will face a key post-COVID-19 challenge: how to cope with increasing fiscal constraints, rising debt, and economic uncertainty. Long-term progress of any country depends on better management of the economic sector but also on improved management of natural capital and the environment since humanity is embedded in nature (Dasgupta, 2021).

3.3 Financial sector

This section is somewhat different from other sections, since the literature on the impact of COVID-19 pandemic has been in the news and government portals, but there has been limited academic literature on this issue. Therefore, we rely heavily on the databases of the international organizations such as the Asian Development Bank, and the World Bank.

3.3.1 Key financial indicators in the HKH region

Depreciation of local currencies against the US Dollar. The COVID-19 pandemic had a significant adverse impact on the exchange rates of the countries in the HKH region except China, with the depreciation in currency ranging from 6% for countries like India, Nepal and Bhutan to 27% in the case of Pakistan (Table 3.1).

While the depreciation in the currency severely affected import-based trade and commerce, this had a positive impact on export-based businesses in these economies. Exports became more competitive with the stronger value of the US Dollar and boosted the earnings of export-oriented companies (Chen et al., 2023).

Growth of money supply in the economy and reduction in interest rates: The pandemic had a strong impact on the money supply as a percentage of GDPs in the HKH countries. A comparison of figures for 2019 and 2021 shows that all the economies in the HKH region saw an unprecedented increase in money supply. In the bigger economies of the region, such as China and India, it increased by 3% and 4%, respectively, which is very substantial in monetary terms. The smaller economies in the region like Bhutan,

TABLE 3.1 OFFICIAL EXCHANGE RATES (LOCAL CURRENCY UNIT PER USD, PERIOD AVERAGES)

Country	2018	2019	2020	2021	2022
Afghanistan	72.1	77.7	76.8	82.9	90.4
Bangladesh	83.5	84.5	84.9	85.1	91.7
Bhutan	68.4	70.4	74.1	73.9	78.6
China	6.6	6.9	6.9	6.4	6.7
India	68.4	70.4	74.1	73.9	78.6
Myanmar	1,429.8	1,518.3	1,381.6	1,615.7	1,905.8
Nepal	108.9	112.6	118.3	118.1	125.2
Pakistan	121.8	150.0	161.8	162.9	204.9

Source of Data: Asian Development Bank - Key indicators database
<https://kidb.adb.org/themes/regional-tables/rt-3-money-finance-and-prices>

⁷ During the pandemic, some important decisions were made without considering the behavioral responses and economic consequences of the decisions. For example, in the early days of the pandemic in Nepal, shops were allowed to open during a short window of time in the morning or evening, which compelled everyone to visit the stores at the same time (the opposite to what was intended), thus increasing the probability of virus transmission.

Bangladesh, Nepal, and Afghanistan, too, recorded a significant increase in money supply as a percentage of their respective GDPs (Table 3.2).

The increase in money supply in the market was complemented by the corresponding fall in the interest rates of banks on deposits, especially in the smaller economies of the HKH region (see Table 3.3).

In Afghanistan, Bangladesh, Myanmar, Nepal, and Pakistan, the bank interest on deposits fell considerably from 2019 to 2021. However, the data from China shows that the interest rate on time deposits remained uniform throughout the pandemic years.

Generally, an increase in money supply in the economy leads to a reduction in interest rates. A rise in money supply equates with increased availability of funds for borrowing within the

economic framework. This escalated supply, guided by the principles of demand and supply, typically results in a decrease in the cost of borrowing money. However, it is difficult to pinpoint the exact correlation between these two parameters, especially during the pandemic years, as there were many other factors which had a similarly high impact on economies.

Fall in tax revenue and increase in government expenditure: The COVID-19 crisis adversely impacted tax revenue collections in almost all the countries in Asia, including the HKH region except India. For example, countries like Bangladesh, Bhutan, China, Nepal, and Pakistan witnessed sharp contractions in tax revenue (Table 3.4).

In 2020, numerous developing Asian nations faced budget deficits. The primary reason for this was the notable decline in government revenue

TABLE 3.2 MONEY SUPPLY AS PERCENTAGE OF GDP

Country	2018	2019	2020	2021	2022
Afghanistan	36.6	35.0	37.2	41.5	-
Bangladesh	42.1	41.3	43.3	44.3	48.4
Bhutan	70.3	70.2	82.6	100.2	103.0
China	198.7	201.4	215.8	207.3	220.2
India	81.7	83.6	95.0	87.3	82.0
Myanmar	58.9	60.0	66.2	-	-
Nepal	89.5	92.8	108.8	120.5	113.5
Pakistan	40.2	39.8	43.4	42.4	40.0

Source of Data: Asian Development Bank - Key indicators database

TABLE 3.3 INTEREST RATES ON TIME DEPOSITS (% ANNUAL, PERIOD AVERAGES)

Country	2018	2019	2020	2021	2022
Pakistan	4.63	8.05	6.17	5.23	9.10
Bangladesh	7.40	8.20	6.50	5.70	6.20
Nepal	10.42	9.83	8.96	7.34	10.10
Afghanistan	2.29	3.37	2.44	-	-
Bhutan	7.75	7.75	7.55	7.80	-
India	-	-	-	- W	-
Myanmar	8.00	8.00	5.83	5.00	5.00
China	1.50	1.50	1.50	1.50	1.50

Source: ADB (2023a)

TABLE 3.4

INTEREST RATES ON TIME DEPOSITS (% ANNUAL, PERIOD AVERAGES)

Country	2018	2019	2020	2021	2022
Afghanistan	9.46	8.36	7.47	-	-
Bangladesh	7.41	8.88	7.69	8.51	-
Bhutan	16.58	15.71	12.99	11.48	13.50
China	17.01	16.02	15.20	15.00	13.80
India	6.97	6.76	7.20	7.63	7.64
Myanmar	7.37	7.04	-	-	-
Nepal	19.08	19.81	15.77	17.79	-
Pakistan	10.83	9.66	9.28	9.44	10.14

Source: ADB (2023c)

coupled with the simultaneous surge in expenses incurred to address the health and economic ramifications of the pandemic. However, the government expenditures remain stable in many countries except in Bhutan and India. Table 3.5 shows government spending before, during and after the COVID-19 pandemic.

Impact on the stock market: The stock markets in Asia saw unprecedented growth during the pandemic year 2020, especially those of the two big economies in the HKH region, China and India. Table 3.6 shows the marked increase in stock market capitalisation as a percentage of the GDP in selected economies in the HKH region.

The unexpected growth in the stock markets during the COVID-19 pandemic can be attributed to a combination of factors. Market behaviour is complex and, hence, while the lack of alternative

investment options played a role, the growth was also the result of multiple interacting factors, among them, economic, financial, and psychological (Nelson et al., 2020).

Many central banks in Asia, as in other parts of the world, implemented significant stimulus packages and aggressive monetary policies to counter the economic fallout from the pandemic (Cant et al., 2021). These policies included interest rate cuts, increased government spending, and direct financial support to individuals and businesses (see Appendix 3.9). These measures are aimed to prevent a severe economic downturn and alleviate financial stress. All these interventions boosted investor confidence and injected liquidity into the financial system and made equities more attractive compared to fixed-income investments like bonds, which offered lower yields (Long et al., 2022).

TABLE 3.5

GOVERNMENT EXPENDITURE AS PERCENT OF GDP, 2018–2022

Country	2018	2019	2020	2021	2022
Afghanistan	29.05	28.59	28.53	-	-
Bangladesh	10.17	14.95	13.85	13.87	-
Bhutan	34.46	25.47	32.82	39.49	36.11
China	24.03	24.21	24.20	21.40	21.50
India	12.25	13.38	17.73	16.03	15.33
Myanmar	16.85	14.23	-	-	-
Nepal	28.00	27.96	25.03	25.13	-
Pakistan	18.98	18.91	20.38	18.49	19.72

Source: ADB (2023c)

TABLE 3.6

STOCK MARKET CAPITALISATION AS PERCENT OF GDP

Country	2018	2019	2020	2021	2022
Bangladesh	24.1	18.3	24.0	26.1	9.3
Bhutan	21.1	28.8	27.5	25.0	-
China	45.5	59.6	83.2	80.7	63.6
India	84.4	80.7	97.2	-	-
Pakistan	15.6	15.8	16.7	12.4	7.6

(Source of Data: Asian Development Bank - Key indicators database)

TABLE 3.7

NET OFFICIAL DEVELOPMENT ASSISTANCE AND OFFICIAL AID FLOWS IN USD BILLION

Country	2018	2019	2020	2021	% increase in 2020 compared in 2019
Afghanistan	3.79	4.14	4.21	4.66	2%
Bangladesh	3.04	4.38	5.37	5.04	23%
Bhutan	0.11	0.18	0.20	0.13	13%
China	-	-	-	-	
India	2.46	2.55	1.79	3.12	
Myanmar	1.71	2.04	2.87	1.49	40%
Nepal	1.45	1.33	1.76	1.57	32%
Pakistan	1.39	2.01	2.59	2.70	29%
South Asia	12.22	14.95	16.59	17.64	11%
World	167.11	162.83	193.24	202.11	19%

Source: World Bank (n.d.b)

Investor sentiment is influenced by various psychological factors, among them, fear, greed, and risk appetite. While unprecedented pandemic situations can initially cause panic, markets often rebound when market sentiments adjust to and accommodate new situations and information. But it is worthwhile noting that while the stock markets in Asia did experience gains during the pandemic, the situation was complex and multifaceted (Gil-Alana & Claudio-Quiroga, 2020). Not all Asian

markets experienced the same level of growth, and there were periods of volatility as well (Table 3.6).

Surge in official development assistance (ODA) in the HKH countries: Official development assistance and aid surged globally after the outbreak of the pandemic. Aid and assistance focused primarily on health and the economy as areas that suffered the immediate impacts of the COVID-19 pandemic. Globally, the amount of ODA increased by 19% between 2019 and 2020 while in South Asia it increased by 11%, as shown in Table 3.7.

Countries like Myanmar, Nepal, Pakistan and Bangladesh saw substantial increases in ODA at the rate of 40%, 32%, 29% and 23%, respectively, during the first year of the COVID-19 pandemic (2020), compared to the previous year (2019). Four HKH countries were among the highest recipients of ODA in 2020, with Bangladesh ranking 1st, Afghanistan 3rd, Myanmar 10th and Pakistan 13th (Development Initiatives, 2022).

Financial accountability and value for money are ways to ensure that ODA is channeled effectively towards sustainable development outcomes, empowers local communities, and fosters mutually beneficial partnerships between the donor and recipient nations. However, the evidence from Africa (Zandile, Z., & Phiri, A., 2022) suggests that with larger amounts of development funds, there has been increasing concern about the effective use of resources, proper financial transparency, and strong accountability in the countries receiving these funds.

3.3.2 Responses

Big Leap in Access to and use of internet in the HKH region.

Digital technologies play a pivotal role in driving progress and are presenting exceptional opportunities for countries to expedite economic advancement while facilitating citizens' access to services and employment opportunities. During times of adversity, spanning from natural calamities to global pandemics like the COVID-19 outbreak, digital technologies have proven to be the backbone sustaining connectivity between individuals, governments, and enterprises.

A notable and enduring outcome for the global economy in the aftermath of the COVID-19 pandemic has been the widespread integration of digital technology into a variety of business activities. Digital technologies served as a pathway to maintain productivity and create new employment during the pandemic's tumultuous period and many countries that were previously trailing behind hastened to embrace technological advancements (see Chapter 2, section 2.5 and Chapter 4, section 4.6).

According to recent World Bank data, more than 63% of the world's population, i.e., nearly 5 billion people, now use the internet. In the South Asia region, 43% of the population use the internet, although all the eight countries of the HKH region have seen an unprecedented rise in the use of the internet during the pandemic and after. Among these countries, Bhutan, China, India, and Nepal have witnessed substantial growth in their user

base. In contrast, Bangladesh and Pakistan have a comparatively lower percentages of their populations with access to, and using, the internet (see Table 4.6 in Chapter 4).

COVID-19 as catalyst for growth in the use of digital financial instruments.

The COVID-19 pandemic has acted as a catalyst for advancing financial inclusion by enabling a significant upsurge in digital payments alongside the worldwide growth in formal financial services. According to the Global Findex Database (World Bank, 2021), this expansion has paved the way for fresh economic prospects and enhancing household ability to effectively navigate financial challenges.

Increase in financial inclusion through access to and use of bank accounts.

Financial services, including payment systems, savings accounts, and credit options, play a fundamental role in driving development. These accounts, whether held with a bank or a regulated entity like a credit union, microfinance institution, or mobile money service provider, serve as a secure and cost-effective means for individuals to store, transfer, and receive funds for their daily needs. They also enable effective preparation for unforeseen situations, such as emergencies, while also facilitating strategic investments in critical areas like healthcare, education, and entrepreneurial endeavours.

The Global Findex Survey (World Bank, 2021) has shown that the percentage of adults worldwide holding accounts with banks, other financial

TABLE 3.8

PERCENTAGE OF THE HKH POPULATION WITH AT LEAST ONE BANK ACCOUNT, 2011–2021

Country	2011	2014	2017	2021
Afghanistan	9%	10%	15%	10%
Bangladesh	32%	31%	50%	53%
Bhutan		34%		
China	64%	79%	80%	89%
India	35%	53%	80%	78%
Myanmar		23%	26%	48%
Nepal	25%	34%	45%	54%
Pakistan	10%	13%	21%	
South Asia				21%
Grand Total	175%	276%	317%	351%

Source: World Bank (2021)

institutions, or mobile money providers rose to 76% (2020), which marks a notable increase from 68% for 2017 and a significant leap from 51% for 2011. In the HKH region, there has been an increase in the percentage of the population holding at least one bank account in almost all countries. In big economies like China and India, the percentage stands at 88% and 77%, respectively, a noteworthy increase.

A new era of digital transactions. The COVID-19 pandemic contributed greatly to the increased adoption of digital payments, with almost two-thirds of adults across the globe engaging in digital transactions - either making or receiving payments electronically. Notably, mobile money accounts played a pivotal role in driving substantial advancements in financial inclusion across several countries in South Asia.

In the HKH region, countries like Bangladesh, Nepal, and Myanmar have seen a huge increase in digital financial transactions during the pandemic and thereafter. In Myanmar, the percentage of users increased from 8% in 2017 to 40% in 2021. In the case of Nepal, it increased from 16% in 2017 to 29% in 2021. The most advanced digital economy in the region is China with almost 86% of the population making or receiving a digital payment in 2021.

Exponential growth in the use of digital payments and funds in the banking system. In developing economies, 18% of adults paid utility bills directly from an account in 2021 (Table 3.10). About one

third of these adults did so for the first time since the onset of the COVID-19 pandemic. The share of adults making a digital merchant payment also increased after the outbreak of COVID-19. For example, in India more than 80 million adults made their first digital merchant payment during the pandemic. In China, 82 percent of adults made a digital merchant payment in 2021, among them over 100 million adults (11%) did so for the first time after the onset of the pandemic.

In Bangladesh, the percentage of the total population who made utility payments digitally rose from 11% in 2017 to 25% in 2021. This is nearly 24 million additional people using digital payments in Bangladesh alone. Similarly, in India, Nepal, and Myanmar, there has been a significant increase in digital financial transactions since the pandemic compared to before.

These statistics underscore how the pandemic and the implementation of social distancing measures have expedited the acceptance of digital transactions. The proliferation of mobile money accounts has introduced novel prospects for enhancing support for women, impoverished individuals, and other segments of the population that have traditionally been marginalised from the established financial framework.

The COVID-19 pandemic had a tremendous impact on the growth of formal financial transaction channels. One of the main reasons for this is the

TABLE 3.9

PERCENTAGE OF POPULATION WHO MADE OR RECEIVED DIGITAL PAYMENTS

Country	2014	2017	2021
Afghanistan	6%	11%	8%
Bangladesh	8%	34%	45%
Bhutan	17%	0%	0%
China	49%	67%	86%
India	22%	29%	35%
Myanmar	4%	8%	40%
Nepal	10%	16%	29%
Pakistan	9%	18%	18%
South Asia	19%	28%	34%
World	44%	52%	64%

Source: World Bank (2021)

TABLE 3.10**PERCENTAGE OF POPULATION WHO MADE DIGITAL UTILITY PAYMENTS, 2014–2021**

Country	2014	2017	2021
Afghanistan	1%	1%	4%
Bangladesh	1%	11%	25%
Bhutan	1%	0%	0%
China	15%	24%	22%
India	3%	7%	10%
Myanmar	0%	0%	3%
Nepal	0%	2%	5%
Pakistan	1%	9%	7%
South Asia	3%	8%	11%
World	17%	22%	27%

Source: World Bank (2021)

TABLE 3.11**PUBLIC SECTOR WAGE RECIPIENTS WHO RECEIVED WAGES IN FINANCIAL INSTITUTION ACCOUNTS**

Country	2014	2017	2021
Afghanistan	32%	43%	31%
Bangladesh	30%	41%	48%
China	45%	77%	
India	47%	62%	68%
Myanmar	1%	5%	15%
Nepal	26%	68%	60%
Pakistan	47%	84%	98%
South Asia	46%	63%	67%
World	61%	79%	84%

significant increase in the deposits of public sector wages by governments directly into the financial institution accounts of employees.

Globally, this percentage has grown from 79% before COVID-19 (2017) to 84% of the total public sector wage recipients after the initial outbreak of COVID-19 (2021). The COVID-19 pandemic has paved the way to financial inclusion and independence through the digitalisation of financial transactions in Bangladesh, India, and Pakistan.

3.3.3 Lessons learnt

The pandemic has accelerated the pace of digital financial advancement, clearly signaling the onset of the era of digital transformation. It has shown that a strong digital infrastructure and widespread

internet connectivity are fundamental components of a resilient and adaptable society. It presents an opportunity, and demands a reinvigorated commitment from both the private and public sectors to ensure that developing nations embrace digital transformation.

A substantial number of adults who lack access to banking services receive payments in physical currency – such as salaries, government disbursements, or earnings from agricultural sales. Transitioning these payments into digital accounts has the potential to serve as a gateway for boosting account ownership among the unbanked population. Similarly, encouraging the adoption of digital payments holds the potential to enrich the utilisation of financial services among individuals who are already account holders. Collaborative efforts involving entities like

governments, telecommunications providers, and financial service providers are essential in creating an ecosystem where secure, cost-effective, and user-friendly products and features appear more enticing than traditional cash transactions.

The significant reduction in fiscal revenue caused by the pandemic indicates that HKH region governments can no longer depend exclusively on public funds to support economic and social recovery. Instead, they must increasingly seek to engage private capital and be innovative in the generation of funds, such as through the issuance of green and social bonds. The post-pandemic recovery phase offers a chance to recalibrate economic expansion, infusing it with environmental consciousness and a people-centric focus. This encompasses areas like clean energy and transportation, in addition to social investments in healthcare, education, and employment opportunities.

3.4 Energy

3.4.1 Impact

During the unprecedented COVID-19 pandemic, the energy sector was hard-hit by the widespread lockdowns, due to the cessation of major economic activities, transportation, and trade. As a result, global energy consumption plummeted by 4% during this period (International Energy Agency [IEA], 2020a). The pandemic served as a stark reminder of the critical nature of energy security, the energy sector's potential vulnerability and the need for resilience during such turbulent times. Moreover, it provided further illustration of the urgent need to prioritise clean energy, placing greater emphasis on sustainable and environmentally friendly solutions (IEA, 2020b).

The HKH countries' experience was similar to that of the world at large, including a slump in energy generation and demand. Although the recovery was heterogeneous across the region, the HKH countries faced similar challenges in the energy sector, such as disruptions in the supply chain, fluctuations in energy demand, revenue loss, and construction delays. In addition to impacts on large-sized renewable energy (RE) projects, COVID-19 also posed risks to investments made by individuals and small-to medium-sized

enterprises in renewable energy applications, such as distributed PV, solar thermal water heaters, heat pumps, and biomass boilers. These investments ran a higher risk of delay or even cancellation compared to large-scale projects [International Renewable Energy Agency (IRENA), 2022].

Overall, the energy sector was severely affected by the economic slowdown caused by the lockdown (IRENA, 2022). In turn, this has further delayed the HKH countries' progress towards their SDG and NDC energy targets (IEA, 2020b). The following is a summary of the impacts of COVID-19 on the energy sector across the HKH countries.

Impacts on energy demand in the HKH

countries: The COVID-19 lockdowns resulted in a significant decrease in both energy consumption and demand in many HKH countries. Bangladesh and Pakistan decreased their gas and oil-fuelled power production while India decreased its coal-fuelled power production in response to the decreased demand. Additionally, Bangladesh and Nepal decreased their electricity imports from India. Nepal intermittently spilled hydroelectricity generation during the lockdown period. Only Bhutan was spared a reduction in power generation because of an agreement between India and Bhutan, which guarantees the purchase of the generated power by the former (Integrated Research and Action for Development [IRADe], 2021).

Mobility restrictions across the HKH countries at various periods during the COVID-19 pandemic saw shifts in the pattern of electricity consumption with one common feature: a reduction in electricity consumption in the industrial and commercial sectors and an increase in consumption in the residential sector. In Bangladesh, for example, various restrictions imposed during the lockdowns resulted in a decrease of up to 19% in electricity demand (Hasan et al., 2023). The situation was somewhat different in Bhutan. Its quick response to the pandemic exempted power generation, transmission, and distribution services, which were deemed essential (Department of Revenue & Customs, 2021). Although the country-wide lockdown from August 2020 led to a decline in peak demand due to the closure of industries and businesses leading to a decrease in domestic electricity demand by 14%, the resultant electricity surplus enabled increased exports to India which earned the country record-

high earnings of USD 329 million in 2020 (Kuensel Online, 2022). Moreover, the country was able to increase its electricity generation by 30% during the same period with the commission of the Mangdechū project (Dorji, 2022).

The lockdown resulted in a decline in overall energy demand in China, too. The country, which is the largest importer of liquified natural gas globally, experienced a 20% drop in purchases in 2021 compared to 2020 (Chen, 2023) with the domestic electricity demand declining by 6% in the first quarter of 2020 (IEA, 2020b). Similarly, stringent lockdown measures were implemented in India from March 25, 2020, onwards, effectively prohibiting all non-essential commercial, religious, and social activities. The immediate consequence of these restrictions was a significant decline in electricity demand, with a remarkable 25-30% reduction within just ten days of the lockdown's initiation (Deshwal et al., 2021).

Pakistan also faced a 7% reduction in electricity demand after three months of lockdown, reflecting the broader regional trend of decreased energy consumption during the pandemic. The COVID-19 lockdown period witnessed a 15% decrease in electricity demand compared to the amount for the same month in the pre-pandemic year (Aslam et. al., 2021).

After the lockdown enforcements in September 2020, Myanmar recorded a year-on-year energy demand drop of 9.6% in October, and a growth of 3.7% and 7.0% in November and December 2020 with the resumption of factories (Wang et. al., 2021). In the case of Nepal, the lockdowns led to a significant decline in energy demand, with a 70% decrease in fuel demand (Poudyal, 2021) and a 28% decrease in electricity demand in the country (Bhushal, 2020). As Bhushal (2020) further noted, this resulted in a substantial loss for the Nepal Electricity Authority as the lack of cross-border trade led to energy spillage.

The energy sectors in several HKH countries faced challenges during their recovery after the COVID-19 lockdowns. The reduction in energy demand led to the loss of revenue in the energy sector in several countries. In Bangladesh, as the lockdown measures were relaxed after May 2020, electricity consumption returned to levels similar to those before the pandemic for the corresponding periods (Hasan et al., 2023). Yet, most utilities in the other countries have not

been able to respond to increased demand after the lockdowns as there was a drop in energy generation. In the case of Myanmar, a 30% drop in electricity generation was recorded between 3 October 2021 and 7 March 2022, leading to power outages even in major cities like Yangon (World Bank, 2022).

In contrast, China has been leading the global rebound in electricity demand to pre-COVID-19 levels with a 22.5% increase in the first quarter of 2021 (IEA, 2021). While the demand for other fuel sources decreased during 2020, renewable energy grew by 3%. In fact, in 2022, China continued to be the global leader in RE investments, accounting for 55% of the total (IEA, 2020b).

Impact on supply side management in the

HKH countries: Many electricity plants in HKH countries rely heavily on fossil fuels and fluctuations in demand mean corresponding fluctuations in the daily fuel requirement for their operation (Rana et al., 2022). The COVID-19 lockdowns posed risks to the supply side of power system operation, e.g. in the access to fuel for power stations and spare parts for maintenance (IRENA, 2022).

Lockdown measures also led to a decline in the demand for gas in many HKH countries, particularly for gas-powered power plants (Khan & Sahabuddin, 2021). Bangladesh continues to face significant challenges in the energy sector even after the pandemic, primarily due to the inflation in fuel prices, power cuts and economic slowdowns (Al Jazeera, 2022). It is worth noting that the electricity sector in Bangladesh is heavily reliant on fossil fuels, which account for approximately 97% of power generation (Khan & Sahabuddin, 2021). Although the unit fuel cost for electricity generation (\$/kWh) decreased during the full lockdown period, the idling of power plants faced with lower demand resulted in revenue losses for utility companies (Gharib et al., 2021). However, the downward trend per unit fuel cost was short-lived, as it increased by over 20% during the post-pandemic period compared to before the pandemic (Arshizadeh et al., 2020).

In India, the situation was similar, as power plants across the country were underutilised, leading to historically low load factors that had not been seen in years, leading in turn to substantial financial

losses (Deshwal et al., 2021). This chain reaction also impacted the revenues of power distribution companies (DISCOMs) (Deshwal et al., 2021).

Compounding these challenges to the energy sector across the HKH, were operational difficulties, such as shortages of labour and disruptions in the supply chain for inputs and equipment for power plants under construction (Deshwal et al., 2021). Even the renewable energy sector experienced a slowdown during this time, primarily due to disruptions in the supply chain (Deshwal et al., 2021).

Impact on project execution: The pandemic has caused project delays in the power sector throughout the HKH countries, largely due to setbacks in the delivery and installation of equipment, as well as the shortage of personnel available for commissioning. Such interruptions increase project expenses, presenting a substantial challenge for the expansion of the sector. Limitations on travel and disruptions in the supply chain also affected the prompt implementation of power-related projects.

In Bangladesh, several power generation projects under construction were delayed during COVID-19, such as two nuclear power plants, with a capacity of 1320 MW and 2400 MW, respectively, which were supposed to be commissioned by 2021 (Saif, 2023; Kabir et al., 2023). Bhutan too has modified its original renewable energy strategies in light of the challenges posed by the COVID-19 pandemic and is currently prioritising the implementation of its solar energy projects, with a plan to exploit 300 MW of solar energy in the period following the COVID-19 pandemic, in line with its dedication to sustainable and resilient energy solutions (Gyeltshen, 2022).

In India, the COVID-19 pandemic period disrupted the plan for renewable energy implementation to achieve annual installation growth. For example, the Indian government had proposed in 2014 a target of 175 GW of renewable energy by 2022. But approximately 2500 MW of wind and 3000 MW of solar projects were delayed during the COVID-19 period (Deshwal et al., 2021).

In Nepal, the construction of new hydro plants, with a combined capacity of 1200 MW, was pushed back by at least 2 years, causing a reported loss of USD 99 million over a 6-months period (Nepali

Times, 2020). Furthermore, the developers faced an additional 15-20% increase in construction costs potentially making the venture unprofitable. The project completion timeframe was prolonged due to delays in equipment procurement and installation, as well as a dearth in trained commissioning workers (Nepali Times, 2020). Thus, the actual and knock-on effects of the pandemic have led to financial difficulties and uncertainty. Flexible methods are needed to reduce the risks related to project delays and adapt to the increased costs in the electricity sector of the HKH countries.

3.4.2 Responses

Government responses to address the impacts of the COVID-19 pandemic on the energy sector are listed, in Table 3.12.

3.4.3 Lessons learnt

Vulnerabilities exposed: The pandemic revealed vulnerabilities in the energy sector, which manifested themselves as disruptions in supply chains for materials, equipment, and fuel, and led to operational challenges and significant revenue losses. This underscored the susceptibility of traditional energy systems to such events, raising concerns about the overall system's resilience.

Need for resilience and sustainability: Vulnerabilities highlight the urgent need for a more resilient and sustainable energy system with a greater emphasis on renewable energy sources, energy diversification, and improved supply chain management to enhance operational efficiency and agility during future crises.

Fossil fuel reliance challenges: A large percentage of the energy supply in the HKH countries still relies on fossil fuels (Rana et al., 2022). Bangladesh is a good example of the pitfalls of relying too heavily on fossil fuels as the country faced a power crisis due to escalating global fuel prices, leading to plant shutdowns and economic slowdown (Al Jazeera, 2022). The economic growth rate was expected to decrease due to this crisis, prompting in turn a substantial increase in government subsidies on electricity (Bangladesh Power Development Board [BPDB], 2022).

TABLE 3.12

GOVERNMENT RESPONSES TO THE IMPACTS OF COVID-19 PANDEMIC ON THE RENEWABLE ENERGY SECTOR IN THE HKH REGION

Countries	Government responses
Bangladesh	- Bangladesh launched a USD 218.75 million soft loan programme – Green Transformation Funds – to accelerate the deployment of renewable energy (Global Renewables Congress, 2021). - A target has been set for the distribution of 40,000 free solar home lighting systems in the three hilly districts in the Chittagong Hill Tracts (Shinde et al., 2021).
Bhutan	For high voltage and medium voltage electricity customers, the demand charge was deferred for three months if approved by the government (Department of Revenue & Customs, 2021).
China	- In the 33-measure stimulus package to provide COVID-19 relief and boost the economy, the following were specific to energy: - Expansion of tax relief measures through a VAT credit rebate policy, which included industries related to electricity (Huld, 2022b). - Implementation of a six-month deferment period for utility payments, with no late fees during this period. Local governments were given the option to extend the period to meet local needs (Huld, 2022a). - Emphasis on increasing investment in and construction of clean energy projects including hydropower, wind, and solar projects and inter-provincial power grids. To expedite fundraising for investments, the central government allocated USD 547.5 billion through the issuance of special purpose bonds. These bonds are specifically designated for nine key areas, including energy (Huld, 2022b).
India	- To address supply chain challenges, the Ministry of New and Renewable Energy (MNRE) introduced a provision to treat COVID-19-related project commissioning delays as ‘force majeure’ and a blanket 70-day extension was granted to all solar and wind projects in the pipeline (Deshwal et al., 2021). - MNRE instructed DISCOMS to prioritise power scheduling from renewable energy sources under a ‘must-run’ status. Additionally, MNRE has made it mandatory for all electricity vendors to procure electricity from renewable projects, irrespective of costs (Deshwal et al., 2021). - The Ministry of Power has alleviated the burden on DISCOMS by reducing the required Letter of Credit (LC) amount to 50% of the power procured (Deshwal et al., 2021). - The Central Electricity Regulatory Commission (CERC) decreased the late payment surcharge rate owed to power generators by DISCOMS from 18% per annum to 12% if the payment due date fell between 24 March 2020 and 30 June 2020. This measure by CERC aimed to alleviate financial strain on state DISCOMS (Deshwal et al., 2021). - The Reserve Bank of India (RBI) announced a three-month moratorium grant on the payment of instalments for all term loans and working capital loans (Deshwal et al., 2021).
Myanmar	As part of the COVID-19 Economic Relief Plan (CERP), the government announced in April 2020 that the first 150 kWh on every monthly bill of a residential electricity customer would be given free of charge to assist those impacted by the pandemic (World Bank, 2023a).
Nepal	- As a part of COVID-19 relief, the government announced the following in March 2020: - Granting of a 25% discount for users consuming up to 150 units of electricity per month from the Nepal Electricity Authority (The Kathmandu Post, 2020). - Extension of the payment deadline for electricity, drinking water, telephone, and internet bills with no additional fines for delayed payments until 13 May 2020 (The Kathmandu Post, 2020). - Extension of the deadline for procurement agreements made before the COVID-19 outbreak by one month (The Kathmandu Post, 2020). - Extension of the survey license for projects, power purchase agreements, and the deadline for financial closure (New Business Age, 2021).
Pakistan	- The country’s economic recovery plan included the following: - All industries would receive a 25% relief on additional electricity usage for the next three years (Dawn, 2022). - Granting of approval by the Economic Coordination Committee (ECC) of the Cabinet, under the government relief package, for the postponement of monthly and quarterly fuel adjustments in electricity bills for power consumers by three months until June 2020 (KPMG, 2020).

Resilience of renewable energy: In comparison to fossil fuels, renewable energy sources showed greater resilience during the pandemic as their operational costs were less affected by fluctuations in energy demand. Their source being nature, they were less susceptible to generation costs, thus emphasising the need for governments to prioritise robust energy sources and accelerate the adoption of renewable energy solutions for a more resilient energy system (Hoang et al., 2021). This can be achieved by implementing supportive financing mechanisms and policies that facilitate the widespread adoption and integration of renewable energy technologies (IEA, 2020b).

3.5 Migrant workers and remittances

It is estimated that there were about one billion migrant workers globally in 2019, out of which about 763 million were internal migrants while the rest (272 million) were international migrants (United Nations Department of Economic and Social Affairs [UN DESA], n.d.). The countries of the HKH region record high migration, both internal and international, and have the largest diaspora population in the world (Rajan et al., 2023). Thus, remittance income is one of the most important sources of household finance in the region as

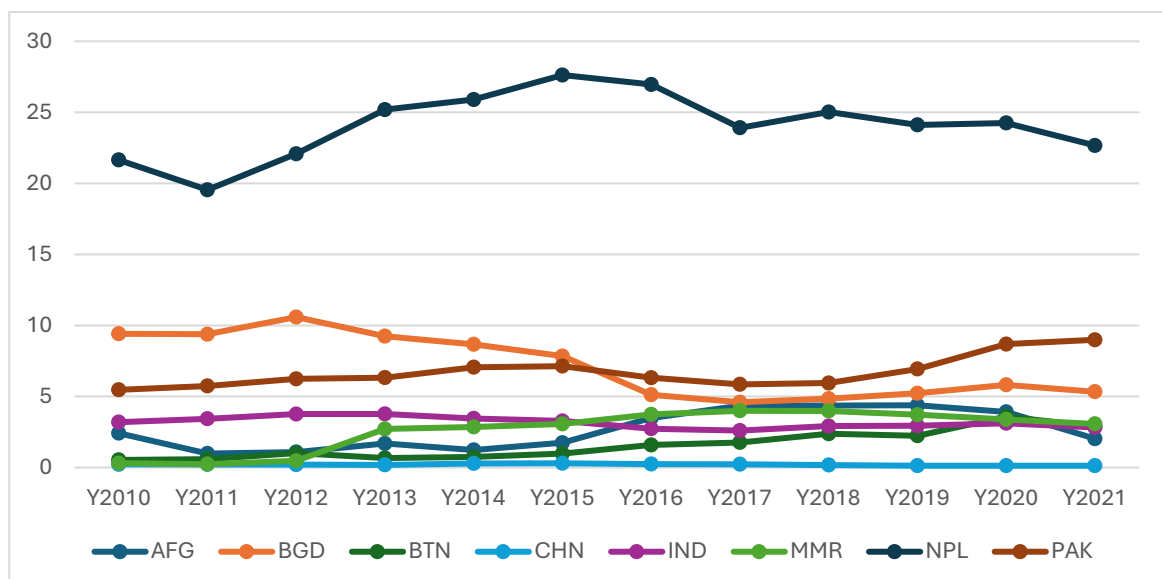
shown in Figure 3.5, especially for Nepal (24% of GDP), Pakistan (8.7% of GDP), and Bangladesh (5.8% of GDP) in 2020 (UN DESA, n.d.).

The travel bans associated with COVID-19 both within and between countries during the pandemic had a direct impact on the mobility patterns and intensity of migration flow, with the international migrant stock reducing by around two million by mid-2020 globally (UN DESA, n.d.)

3.5.1 Impact

Impact on migrant mobility: One of the most enduring images of COVID-19 is that of thousands of Indian migrant workers walking hundreds of kilometers to return home on foot in the absence of any other means of transportation (Rahman, 2020). A similar situation afflicted thousands of Nepali migrant returnees from India who were stuck at the India-Nepal border for more than a month before they could continue their onward journey to reach home. International migrant workers from the region were also hit hard by the abrupt ban on international travel in their home countries (International Organization for Migration [IOM], 2020). Many migrant workers were left stranded at their destinations waiting for the international travel restrictions to be lifted. Migrants found themselves in a precarious

FIGURE 3.5 PERSONAL REMITTANCES (AS % OF GDP)



Source: Constructed from the World Development Indicators (World Bank, 2023)

situation as they had to face job loss, wage theft, discrimination in host countries and on the journey to return home (Adhikari et al. 2023a; Rajan & Pattath, 2023).

The absence of a strong governance mechanism for internal migrants, including a mechanism to collect information on the migrant population, posed a challenge when providing services to them in urban destinations (Ahamed, 2020). The absence of such information makes attempts to estimate the migrant population at any given time challenging, and as a result, this important segment of the population is not factored into planning in urban destinations. Furthermore, most internal migrants work in the informal sector without social and occupational safety nets (Jayaram & Varma, 2020; Wang et al., 2011). The Nepal Labour Force Survey 2017/18 estimated the internal migration population to be about 2.6 million with about 1.7 million working on a daily wage basis and another million on temporary contracts and in informal sectors (Central Bureau of Statistics [CBS], 2019).

Typically, migrant workers (particularly low-skilled temporary migrant workers), maintain social, emotional, and economic ties with their home and harbour intentions to return home at some point in time (Rungmanee, 2016). Migration spreads households and livelihoods over two or more locations within or outside the country while it links migrants to the left-behind members, natal households, and source communities and countries through the process of ‘translocality’ (Sakdapolrak et al., 2016). The abrupt ban on travel and closure of national and sub-national borders as a measure to control the virus disrupted this connectedness. In the absence of formal support mechanisms in the destinations, migrants were forced to depend on disrupted translocal familial connections (Tang & Li, 2021) but disruptions due to the pandemic illustrated the limits to the resilience of translocal livelihoods (Sakdapolrak et al., 2023).

Impact on personal remittances: As the pandemic affected all countries around the world, there was widespread fear that remittance flows might decline significantly, and remittance-receiving households would suffer the most (Kikkawa et al., 2020). However, in 2020, the flow of remittances, as a percentage of the GDP, did not decline as expected (Figure 3.5). Instead, remittance income

increased in several countries in 2020, with Nepal, Pakistan, and Bangladesh experiencing higher growth of remittances (percentage of the GDP). One of the reasons for this registered increase is believed to be the formalisation of remittance transfer channels (Dinarte-Diaz et al., 2022). But since travel was disrupted globally and new recruitment of labour in destination countries was also halted, the remittance flow actually declined in 2021 in several countries in the HKH region except Pakistan. In 2022, remittances increased, in absolute numbers, in all countries except Afghanistan and Myanmar. Thus, despite a system-wide disruption of global scale, remittances remained an important lifeline for many households in the HKH region.

Impact on migrants’ wellbeing: International migrants from the region faced job terminations, under-payment or non-payment of wages for work already carried out, wage theft, delayed wage payment, and forced wage reductions (Human Rights Working Group [HRWG], 2021; Foley & Piper, 2021). The lockdown measures and closure of businesses and offices also resulted in many contract-based regular migrants turning into irregular workers in the Gulf countries and Malaysia, as their visas had expired but they were unable to return home (IOM & NIDS, 2020). Among international migrant workers, unregulated migrants (those whose visas and job contracts had expired) and women domestic workers were more vulnerable than other categories of migrant workers (Azeez et al., 2020).

Low-skilled internal and international migrants are often housed in unhygienic and crowded rooms with shared toilets (Song et al., 2008). ‘Social distancing’ and the use of personal protective equipment were not feasible options for migrant workers staying in packed slums and dormitories and working in close proximity to each other at work sites, which made them more susceptible to contracting COVID-19 (Guadagno, 2020).

An overwhelming majority of low-skilled internal migrants work in the informal economy, in low-paid jobs without any employee protection benefits (Song, 2014). Moreover, the daily-wage-earning internal migrants and contract-based international migrant workers tend to not have sufficient savings to cushion themselves against loss of work for even a short period of time. Yet, migrant workers were the first to be laid off

from work. A rapid assessment by International Organization for Migration (IOM) & Nepal Institute of Development Studies (NIDS) (2020) found that 50% of male migrant workers and 42% of female migrant workers reported having lost their jobs due to COVID-19 in Nepal. Similarly, Che et al. (2020) reported that, in China, at least 30-35 million internal migrant workers had lost their jobs by mid-March 2020.

Despite being heavily affected, migrant workers were not able to benefit from occupational and social protection benefits such as unemployment benefits, emergency cash transfers, etc. (Kikkawa et al., 2020; He et al., 2022). In addition, they lacked social networks or resources at destinations to help them during times of distress, such as lockdowns imposed to mitigate the spread of the virus. All these factors – the fear of contracting the virus, lack of social safety nets, loss of incomes, and uncertain extensions of lockdowns – led the migrants to make the desperate choice to return home in search of social security (International Labor Organization [ILO], 2021). Overall, COVID-19 and its mitigation measures had a severe negative impact on the wellbeing of migrant workers.

Facing discrimination and ostracisation:

Arranging quarantine facilities for returning migrant workers and testing them before they were safely repatriated to their respective homes was also an important process. However, mismanagement and misinformation resulted in stigmatisation, ostracism, and dehumanisation of migrant workers as carriers and spreaders of the disease (Haque & Rahaman, 2021; Dhungana, 2020; Rahman, 2023). Absence of clear communication regarding the risks associated with the virus created fear and anxiety in communities, eroding the culture of care and sensitivity towards other members of the community (see Chapter 2 for more on the social implications of the COVID-19 pandemic).

Visibility of the invisible workforce: The positive side of the migrants' plight was the visibility that the group received in terms of their contribution to household and informal economies. Most migrants work in the informal sector with little or no occupational or social safety nets. With their forced departure, the absence of the migrant labour force was keenly felt at the household level (e.g., absence of household help, security guards, etc.) as well as

at the level of the informal economy in food and hospitality, tourism, and the manufacturing and construction sector (World Bank, 2020a). Among the factors that built the resilience of migrant workers is the health insurance coverage provided by employers. Health insurance coverage was reported as one of the major factors contributing to a sense of security and eased access to medical facilities (IOM & NIDS, 2020).

3.5.2 Responses

Repatriation and reintegration of migrant

workers: The majority of international migrants were stranded in their destination countries and had to wait for prolonged periods to return home due to restrictions on international travel (Suhardiman et al., 2021). The safe and successful repatriation of millions of returnee migrants was a major and immediate challenge for HKH country governments.

India, Nepal, and Pakistan organised special programmes to bring home migrant workers from various destinations. The government of Nepal issued repatriation guidelines that offered financial support to Nepali migrant workers who were unable to get their tickets paid for by their employers, the host country government, or the recruitment agent (Mandal, 2020). By December 2020, about 200,000 Nepali migrant workers had been repatriated via chartered and regular flights (IOM, 2020). Although there were legal provisions both in Nepal and the destination countries for either the government or employers to bear the cost of repatriation, a vast majority of the migrants had to pay their own repatriation costs, with some employers footing the bill fully or partly for some migrants and the government paying for repatriation of only a handful of migrants (Bhattarai et al., 2022). Similarly, India introduced the “Vande Bharat” program to repatriate its migrant citizens in May 2020, under which over 5 million Indian migrants were repatriated by 10 March 2021 (Ministry of External Affairs [MEA], 2021). Pakistan, too, repatriated 90,300 workers between April and June 2020 (State Bank of Pakistan, 2020) and Bangladesh repatriated 272,000 of its workers between April and November 2020 (ADB et al., 2021).

Although international migration management is the charge of designated institutions, patchy and incomplete data-keeping created a challenge in calculating the exact number of the migrants needing repatriation in various destinations, and national governments in the region were obliged to create platforms to register them (Khan & Arokkiaraj, 2021). Repatriation of internal migrants were taken up by the migrants' states of origin, such as Bihar and UP in India, after media attention highlighted the hardships and arduous journeys of migrants returning home on foot over long distances. In India, chartered trains were organised for repatriation purposes with around 4,621 "*Shramik*" [workers] special trains transporting around 6 million stranded persons and migrants to their states of origin (Ministry of Railways, 2020).

In addition, the governments took steps towards economic reintegration of the returnee migrant population (Withers et al., 2022). The government of India (GOI) announced the employment scheme "*Garib kalyan rojgar abhiyaan*" [Poor Welfare Employment Campaign] for returnee internal migrants. For the reintegration of international migrants, GOI launched a skill-mapping initiative called the Skilled Workers Arrival Database for Employment Support (SWADES) (ILO, 2020). In Nepal, provisions were made to include returnees, and those processed for international migration but who were unable to depart, in the Prime Minister Employment Programme, which provided a minimum of 100 days of wage work (Kafle, 2020). The government also allocated funds for skills training for informal sector and migrant returnee workers (Mandal, 2020). But a majority of returnee migrants were reported to engage in self-employment in the agriculture sector followed by the hospitality sector (Bhattarai et al., 2022). In Bangladesh, the government focused on soft loans, enhancing the skills of returnee workers, and strengthening welfare services for their reintegration (Siddiqui, 2021).

Efforts by destination countries: Some of the Gulf countries and Southeast Asian countries made efforts to ease the situation of international migrants. Singapore, a popular destination for migrants from India and Bangladesh, made provisions to protect its migrant population from the virus by establishing quarantine facilities for infected migrants. Moreover, job losses during the

pandemic were fewer and workers continued to receive basic salaries even when under quarantine (Suhardiman et al., 2021; Iau, 2020). In South Korea, another popular destination for South Asian migrants, there was no discrimination between the migrant and native population in terms of health care or even social security support during the pandemic. Qatar provided access to free health care for migrant workers affected by the virus (World Bank, 2020) and the UAE Government required employers to provide accommodation for migrant workers until they left or were permitted to work for another party (Weeraratne, 2020). Kuwait provided amnesty to irregular migrants from 1 to 30 April 2020, allowing them to leave the country without paying a fine, with the option to migrate legally to the country in the future. The Government of Kuwait also offered to bear the cost of repatriation via Kuwait Airways but given the lack of facilities to test the migrants before departure this may have resulted in the spread of the virus in the migrants' areas of origin (Migrant-Rights.Org, 2020).

Despite these positive responses, there was also a general tendency among destination countries to shift the health burden of its migrant population onto the countries of origin – an issue that would need attention in the future (Weeraratne, 2020). Overall, the general experience was one of neglect of migrant populations in host countries, leaving them without protection and safety nets (Khan & Arokkiaraj, 2021).

Inclusion of migrants in social protection:

The COVID-19 pandemic exposed not only the poor health infrastructure of the HKH countries but also the exclusion of marginal population groups from access to health and social safety nets (refer to Chapter 2 for more details). The COVID-19 pandemic has, however, helped in the expansion of health and social security coverage and the inclusion of migrant workers in these plans. Changes for the better that have resulted subsequent to the pandemic include food support to the urban poor, irrespective of citizenship or place of permanent residence in Nepal, and cash transfers to migrant workers in Pakistan and India. India and Pakistan have taken steps to improve universal health coverage since the COVID-19 pandemic. Despite the progress made, the effective implementation of these programmes remains challenging (Agarwal, 2022).

3.5.3 Lessons learnt

The pandemic has highlighted the lack of data on internal, cross-border, and international migration in the region. Having a reliable database is critical when it comes to preparedness for dealing with crisis situations such as pandemics, or with climate-related and other disasters. The pandemic has also highlighted the need for policy and regulatory oversight for internal and cross-border migration in the region. The discourse of 'safe and regular migration' as envisioned in SDG 10, target 10.7, should expand to internal and cross-border migration. For this to happen, regional dialogues for cooperation are required.

Responses from various destination countries towards the migrant population during the pandemic have been different. There are some good examples of non-discrimination between migrant and native populations in terms of healthcare and even social security support. These examples serve to showcase the ways that host countries can protect migrants who contribute significantly to local economies.

Similarly, more efforts need to be made to improve the working and living conditions of migrant workers and to implement employee protection measures. SDG 10 and its provisions, particularly target 10.7, the Global Compact for Safe, Orderly and Regular Migration, and other global frameworks to extend protection to migrant workers and the share responsibility between countries of origin and destination countries, should be implemented in earnest.

Labour migrants continue to play an important role in the economies of their destinations (both internal and international), particularly in low- and medium-skilled jobs. But it is important to have measures in place to transform this sector of the labour market from 'insecure, uncertain, and precarious' to 'secure and sustainable'. Steps towards formalising the current 'informal' sector of employment are necessary - and should expand beyond revising minimum wages to include measures aimed at spreading risk, such as insurances.

The pandemic highlighted the precarity of poor urban migrants and the need for social safety nets that take into consideration their specific situation. There have been some good examples

of the expansion of the social safety net to migrant populations during the pandemic. It is imperative to expand access to basic social services to migrant workers in urban destinations and include them in urban planning.

Job losses in destinations (both internal and international) as a result of disruptions will take time to recover. Improving economic opportunities locally to reintegrate returnee migrants is therefore an important aspect of migration management in the near future. Important steps such as mapping the acquired skills of migrant returnees, assessment of skill requirements in the market, and improving the existing 'Labor Market Information Systems' that were implemented during the pandemic need to continue and are relevant for identifying local economic opportunities for migrant workers.

3.6 Tourism and hospitality sector

Tourism is one of the most important sectors for livelihoods in the eight Hindu Kush Himalaya countries. Tourism is credited to have pulled millions of people out of poverty (Gantait et al., 2020; Yang et al., 2022). Tourism contributes to wider economic growth through small and medium enterprises (SMEs) and linkages with other sectors such as hospitality. However, tourism and hospitality were severely impacted by the COVID-19 pandemic (ICIMOD, 2020; UN Tourism [UNWTO], 2020).

A comprehensive understanding of the severity of the impact of the COVID-19 pandemic on the tourism and hospitality sector as well as of the responses by the HKH countries and tourism stakeholders – and gaps therein – provides important lessons for post-pandemic recovery and policy design.

3.6.1 Impact

The COVID-19 pandemic had cascading impacts on the tourism and hospitality sector in the HKH countries. The immediate impacts, felt in the form of travel restrictions and lockdowns, resulted in ripple effects which were observed in the macro- and micro-economic environment, administering a severe shock to the overall tourism and hospitality sector.

Travel restrictions and lockdowns: All destinations in the Asia and Pacific region, including the HKH, adopted travel restrictions (UNWTO, 2020). From the suspension of flights to restrictions on public gatherings, entertainment, and economic activities, these wide-ranging measures had a massive impact on travel, tourist numbers, and earnings from the tourism sector.

Tourist numbers: Travel restrictions impacted overall tourist arrival growth in the region (Figures 3.6 and 3.7). Bhutan, China, India, Myanmar and Nepal experienced the lowest number of tourists in 2020. The setback was worse in the HKH countries compared to global and regional levels (Asia-Pacific and South Asia) (Figure 3.6). In 2023, tourists arrival in the South Asian region was at 96% of pre-pandemic levels. Several HKH countries (Bangladesh, India, and Nepal) also showed signs of recovery. In Nepal, tourist arrivals in 2022 increased by 307%, compared to the previous year (MoCTCA, 2023).

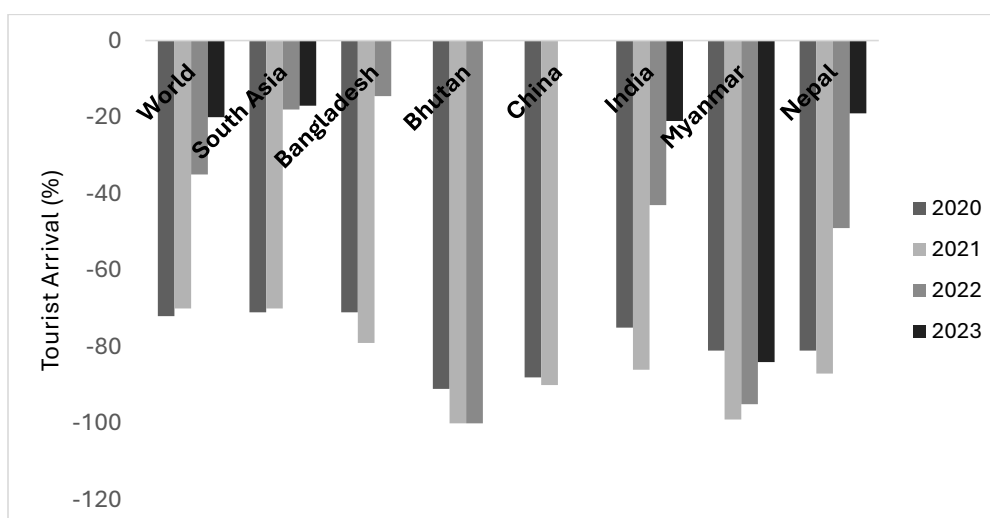
The macroeconomic level impact of COVID-19 is widespread and wide-ranging due to the dynamic relationship with gross tourism receipts, GDP, and balance of payment. Gross earnings from tourism declined significantly in all the RMCs with the onset of the pandemic. Bhutan suffered a loss of over 92% in gross receipts, earning only USD 19.84 million in 2020 compared to USD 225.87

million in 2019 (Tourism Council of Bhutan [TCB], 2021a). Tourism contribution as a share of the GDP declined in 2020 and 2021 in all the RMCs, but is on a path of recovery beginning 2022 (Figure 3.8).

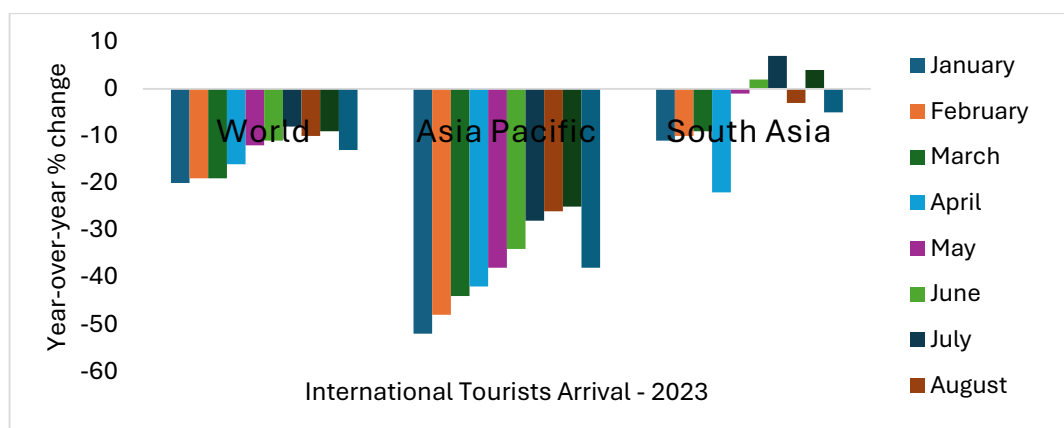
Impacts of COVID-19 were both severe and disproportionate on the hospitality sector, with SMEs and their workforce among the worst affected. In Bhutan, this was evident in enterprise disruption and business shutdown. Those associated with hotels, handicraft shops, restaurants and other supply chains lost their livelihoods due to mass layoffs (TCB, 2021a). In Bhutan's tourism sector 50,737 people suffered job losses during the outbreak in 2020 (TCB, 2021b). In Bangladesh, accommodation, restaurant and food services were negatively impacted (Haque, 2021), with their outputs declining by 34.8% and 18.4%, respectively (Amin et al., 2021). In India, around 14.5 million tourism jobs were lost during the COVID-19 pandemic (National Council of Applied Economic Research [NCAER], 2023). For example, in Ladakh, there was a complete halt to businesses and services of the hospitality sector (Sharma & Dolkar, 2020). Such impacts were disproportionately felt by women, youth, and marginalised communities operating SMEs such as homestays and lodges. These communities have no minimum wage structures or social security and safety nets to cushion them against shocks.

FIGURE 3.6

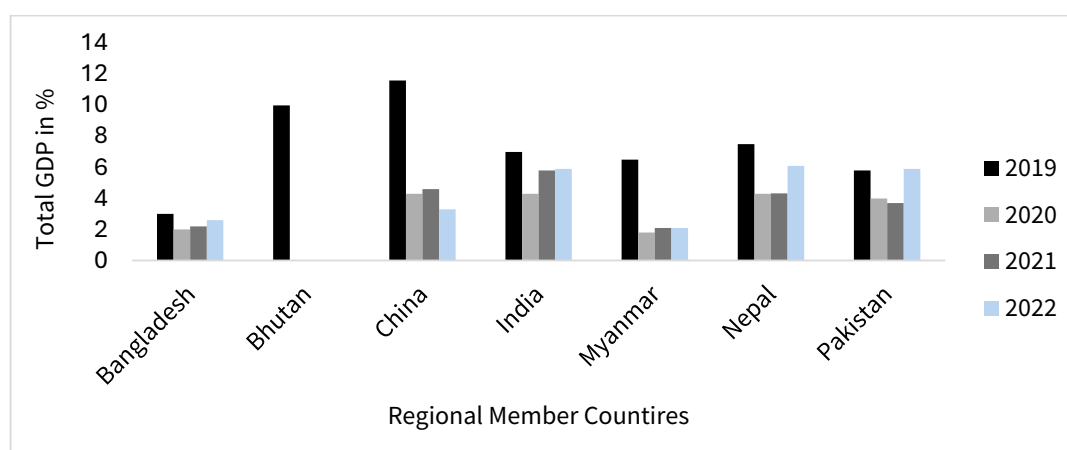
TOURIST ARRIVAL TRENDS 2020–2023 COMPARED TO 2019, GLOBAL, SOUTH ASIA, AND HKH COUNTRIES



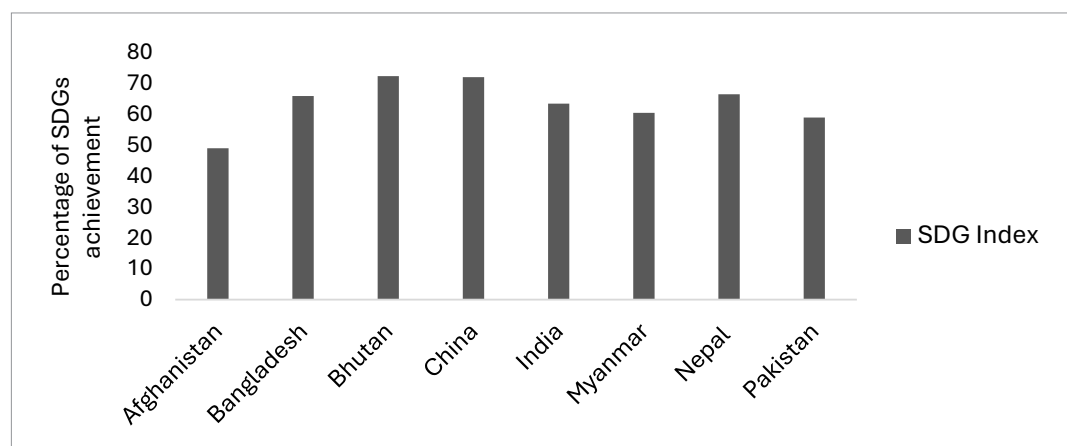
Source: Adapted from UNWTO (2023a), International Tourism and COVID-19 data.

FIGURE 3.7
TOURIST ARRIVALS IN FIRST EIGHT MONTHS OF 2023 COMPARED TO 2019


Source: Adapted from the UNWTO (2023b), Tourism recovery tracker dashboard (2019 and 2023)

FIGURE 3.8
TOURISM CONTRIBUTION AS A SHARE OF TOTAL GDP IN THE SELECTED RMCS


Source: WTTC (2023 a,b,c,d,e,f) Country-specific annual research (2019–2023). Bhutan, Tourism Satellite Account (TSA) (2022).

FIGURE 3.9
SDG ACHIEVEMENT INDEX, HKH COUNTRIES, 2023


Source: Adapted from Sustainable Development Report dashboard. Overall score measures the total progress made towards achieving all 17 SDGs. The score is interpreted as a percentage of SDG achievement. A score of 100 indicates that all SDGs have been achieved.

The COVID-19 pandemic has not only triggered a pronounced setback in the fight against poverty (UN, 2022), but also slowed progress towards achieving the Sustainable Development Goals (SDGs) (Yuan et al., 2023). This has threatened to reverse the SDG outcomes in the HKH region (Joshi et al., 2022; Rasul et al., 2021). The SDG achievements of HKH countries range between 49% to 70% (Figure 3.9). According to Yuan et al. (2023), the COVID-19 pandemic has resulted in significant negative impacts on SDGs 1, 8, and 10, the achievement of which rely substantially on the tourism and hospitality sector.

3.6.2 Response

Tourism stakeholders (government and private sector) were quick to recognise the economic, health, and social costs of the COVID-19 pandemic, and showed agility in responding to

impacts. The responses can be broadly categorised as policy, fiscal and monetary and market responses (Table 3.13).

Policy response: A range of policy measures, such as regulatory, policy, and operational frameworks, and guidelines were put in place to deal with COVID-19, some of which were focused on the tourism sector. India established the National Tourism Taskforce with provisions for the revival of the tourism and hospitality sector and to support affected stakeholders (MoT, 2023). In Bhutan, the king ordered the formation of the National COVID-19 Taskforce headed by the prime minister that included measures to support the airlines, hotels, and tourism companies. In China, the government issued epidemic prevention and control guidelines, and public health standards targeting tourists, tourism businesses/service providers, destinations, and various organisations. Health and travel protocols through social

TABLE 3.1.3 ENABLING ENVIRONMENT FOR PREPAREDNESS, PLANNING AND RESPONSE ACTIONS

Preparedness, planning and response actions	Policy response							Fiscal and monetary response		Market response		
	Law/guidelines	Public/private sector taskforce/centres	Action plan for COVID-19 recovery	Social distancing advisory	Travel advisory	Visa restriction	SOP/Operational Guidelines for Tourism Service providers	Economic stimulus package	Monetary support	Brand building, promotion and marketing	Readiness and recovery	Investment
Afghanistan												
Bangladesh		X	X	X	X	X	X	X	X			
Bhutan		X	X	X	X	X	X	X	X	X		X
China			X	X	X	X	X	X		X		
India	X	X		X	X	X	X	X	X		X	X
Myanmar		X	X	X	X	X		X				
Nepal	X	X	X	X	X	X	X		X	X	X	X
Pakistan			X	X	X	X	X	X				

Sources: The enabling environment viz, preparedness, planning and response actions are assembled from a number of sources. 'X' in the table indicates the available enabling environment. Wang et al., (2022); World Bank (2020b); SUNWTO (2020); Royal Monetary Authority of Bhutan [RMA] (2023); Bangladesh Tourism Development Board [BTB] (2020); TCB (2021 b) Ministry of Tourism, India [MoT] (2020, 2023); Nepal Tourism Board [NTB] (2020); Pakistan Tourism Development Board [PTDC] (2020); Ministry of Health and Family Welfare, India [MoHFW] (2023); Ministry of Finance [MoF] (2020, 2022); Ministry of Foreign Affairs [MoFA] (2021); MoHP (2022); Centre for Policy Impact in Global Health [CPIGH] (2020); Amin et al., (2021); TCB (2022); Ministry of Health, Bhutan [MoH] (2021); Yang et al. (2022); Zhang et al. (2022); Zreik (2024); Dongxiang et al. (2021); UNDP (2022); Dash and Sharma (2021); ADB (2021).

distancing and travel advisories, visa restrictions, Standard Operating Procedures (SOPs) for operating and reopening businesses, and guidelines for tourism service providers were also put in place in almost all HKH countries.

Fiscal and monetary response: The HKH countries provided economic assistance in the form of relief for daily wage workers and the workforce. Bhutan offered relief packages through the Druk Gyalpo's Relief Kidu initiative to support members of the workforce that had been laid off and placed on unpaid leave, as well as self-employed individuals, while the Employment Support Scheme for Tourism and Hospitality Employees provided support to fulltime employees with temporary jobs during the travel restriction period. In China, the vulnerable and needy sections of the tourism workforce and SMEs were provided with economic assistance in the form of tax cuts and reduction in financial costs and office rents.

Monetary and financial policies were introduced to salvage tourism and businesses in countries such as Bangladesh, Bhutan, China, India, Myanmar, and Nepal. Policies included deferral of loan repayments for a defined period, issuing inclusive credit loans to SMEs and provision of term-based soft working capital (Appendix 3.9). In India, a Loan Guarantee Scheme for the COVID-affected tourism sector was set up to provide monetary support to severely impacted businesses and tourism service providers. This is a collateral free loan scheme under which loans up to USD 12,000⁸ could be secured by affected tourism businesses and service providers. In Nepal, tourism was earmarked as a priority sector for sectoral credit flows from banks and financial institutions. A total of 72 firms, of which more than 55% were tourism-related businesses, received refinance loans worth Nepalese Rupees (NPR) 8.99 billion (USD 66 million⁹) in the first four months of 2021. Loans up to NPR 1.5 million (USD 11,500) were provided to those who had lost their jobs in the tourism sector to encourage them to become self-employed. A business continuity loan of NPR 1.10 billion (USD 8.2 million) was established to support the payment of wages of workers and employees.

Market response: To boost market confidence and speed recovery of the tourism sector, the HKH countries initiated multiple market measures.

Branding, promotion and marketing: Bhutan capitalised on its wellbeing philosophy and came up with a new promotional tagline 'happiness is a space' (#happinessisaspace) under the Unlock Happiness Campaign. Similarly, capitalising on Bhutan's image as a clean, green, and safe destination, the country increased the Sustainable Development Fee (SDF) of tourists from USD 65 to USD 200 per day in September 2022. In September 2023, the SDF was reduced to USD 100 per day, in response to an outcry from tourism service providers and businesses. In India, the Market Development Assistance Scheme was revised to boost domestic tourism and provide maximum benefits to local tourism stakeholders. Films on confidence building and reassurance themes were produced and aired, as part of a promotional strategy for the post-COVID period.

Readiness and recovery: Policies were formulated and partnerships forged to enhance readiness and recovery of jobs and business in the tourism sector in China, India, and Nepal. Schemes such as 'Swadesh Darshan', 'PRASAD', and 'Dekho Apna Desh' in India, and paid holiday leave for public servants to travel in Nepal came into effect to revitalise rural and domestic tourism, re-boosting local tourism through financial support, vocational training, short-term employment, and financial assistance. To restart inbound tourism and attract foreign tourist, India announced that it would give 500,000 free visas to international tourists.

Investment: Initiatives and schemes such as the 'Economic Contingency Plan' in Bhutan, 'Assistance to Central Agencies' in India, and 'Sustainable Tourism for Livelihood Recovery Project' in Nepal attracted investment to develop tourism infrastructure and facilities in rural areas. Tourism and hospitality are the top service sector with the highest Foreign Direct Investment (FDI) in Bhutan (Ministry of External Affairs [MoEA], 2021) and Nepal (Ministry of Industry, Commerce & Supplies [MoICS], 2022). Hotels remain the sector with the highest amount of FDI (38%) in Bhutan while they account for 37% in Nepal (MoEA, 2021; MoICS, 2022).

⁸ 1 USD = 83.45 INR (as of 25 March 2024)

⁹ 1 USD = 133.80 NPR (as of 25 March 2024)

3.6.3 Lessons learnt

The pandemic was not only a health emergency but also a socio-economic crisis (Yuan et al., 2023). It is imperative to comprehend, plan and manage the complex risks posed by shocks such as the COVID-19 pandemic and other socio-economic crises.

Travel restrictions and lockdown measures proved remarkably successful in containing the spread of the virus. Mountain areas had the lowest fatality rates during the period of the pandemic. Lockdown measures helped the Northwest Indian Himalayan region to contain the contagion quickly (Haq et al., 2023). In Nepal, the mountain region had the lowest percentage of deaths: 3.3% as opposed to 58.4% in the Hills and 38.3% in the Terai (Adhikari et. al., 2023b). A study done outside the HKH region also showed a decreased case-fatality rate in higher altitudes (Bridgman et. al., 2022). Although actual disease incidence and other factors in the different geographical regions of Nepal were not available to interpret these statistics, these reports have added to the positive image of mountain destinations as safe, and these regions profited from the recovery of tourism as soon as countries decided to ease travel restrictions.

The current approach to promoting recovery of the ailing tourism and hospitality industry is focused on numbers and GDP-driven growth. However, such short-term action is a survival and revival strategy. A long-term strategy is needed to build resilient tourism economies. For this, it is critical to also prepare for the post-pandemic phase and enhancing environmental, social, and economic wellbeing. The tourism sectors' ability to add more broadly to prosperity is more likely to happen if the sustainability of all aspects to the sector are addressed.

The tourism and hospitality sector economy intersects with nature, culture, and agri- and community-based economies so that planning for the sector should give due regard to these influences and supply chain linkages. The disruptions in supply chains caused by the pandemic and associated government actions, posed a systemic challenge across interconnected economic, social and financial spheres. As the risks from crisis situations, such as the COVID-19 pandemic, have broader and dynamic

implications, solving them requires a holistic and integrated approach to address such crises, and for mounting a recovery.

3.7 Travel and transport

The COVID-19 pandemic posed similarly major challenges to the global travel and mobility sector, as governments implemented strict measures like social distancing, lockdowns, and travel restrictions. This section aims to identify the specific impacts on the civil aviation, road, and railway industries, as well as the responses from governments and the transport sector in the HKH countries during the COVID-19 pandemic (March 2020 - May 2023) (Cucinotta & Vanelli, 2020; WHO, 2023).

3.7.1 Impacts

Impacts on the aviation industry

With the majority of countries worldwide imposing immigration controls, closing borders, and enforcing people to stay at home to reduce the burden on the healthcare system and curb the pandemic spread, the aviation industry was hit hard, putting many airline operators under extreme financial stress (Dangol, 2020). For example, in Bangladesh, Biman Bangladesh Airlines lost Tk 300 crore (USD 35 Million) and cut 70% flights on international routes by March 2020. The number of passengers fell by 25% to 30% on the domestic routes putting travel agencies in a severe crisis (Alo, 2020). In Bhutan, hotels received a huge number of cancellations; one of the hoteliers received as many as 295 room to cancellations during the peak tourist season (Chhetri, 2020). In Bhutan, to contain the COVID-19 spread, airports introduced containment protocols for all incoming travelers with screening facilities and shuttled them between the quarantine facilities and airport. By May 2021, the government had spent 610 million Ngultrums (USD 8.2 million) on quarantine facilities for both incoming and high-risk travelers (Tenzin Tamang et al., 2021)

According to the International Air Transport Association Annual Review (IATA, 2020) the airline industry faced a net loss of USD 118.5 billion globally. Revenue passenger kilometers (RPKs) dropped by 66.5%, available seat kilometers (ASKs)

decreased by 57.6%, and cargo ton kilometers (CTKs) fell by 11.5%. The return on invested capital (ROIC) was negative 17.7%. This collapse in air travel put the livelihoods of 46 million people at risk globally (IATA, 2020).

When the pandemic started spreading across India, all scheduled international flights and domestic passenger flights were suspended from March 23 and March 25 respectively. Limited scheduled domestic flights were resumed from May 25. The effect of this disruption was reported in net losses of USD 606 million by Indigo and Spice Jet airlines in the first half of the 2020-21 (MINT, 2020). As per Statista (2023), the number of international tourist arrivals in the Asia and the Pacific region peaked at 360.15 million in 2019, and dwindled to 59.12 million in 2020, hitting 24.6 million in 2021 at the peak of the pandemic and again increased to 95.38 million in 2022.

Impact on roads and the railway industry

In India, one of the major difficulties was that trucks were stopped at state borders, or not being allowed to enter, due to lack of transparency over the classification of essential and non-essential goods. This resulted in long lines at the borders, with some drivers being scared of the virus and abandoning their vehicles. This had a direct impact on the income of 4-5 million drivers, who were paid on the basis of kilometres driven. Considering the extended families of the drivers, this meant about 30-40 million people struggled to get by from this cause alone.

Disruptions to global supply chains

The pandemic caused major disruption to global supply chains, ranging from availability and supply of raw materials to intermediate goods and finished products across multiple sectors (Xu et al., 2020). Research findings by Xu et al. (2020) revealed that the cancellation of flights, unavailability of labour, trade restrictions, and sealed borders adversely impacted all forms of international logistics – air, ocean, and land – on both the supply and demand sides. On the supply side, there were declines in the availability of medicines, medical services, automobile parts, high-tech products such as smartphones and accessories, and shortages of spare parts, as well

as declines in food supplies. Conversely, on the consumer side, the demand for drugs, medicines, personal protective equipment, and ventilators increased, while demand in the airline industry, textiles, apparel, and retail decreased (Xu et al., 2020). The Covid-19 pandemic severely impacted the profitability, operation, employment, and capital expenditure of the transport industry (Bandyopadhyay & Bhatnagar, 2023).

3.7.2 Responses

Administrative responses

Some of the transport policy response measures taken by the national and international authorities included the provision of detailed guidance on the use of personal protective equipment, relaxation of restrictions on operation of heavy goods vehicles during weekends and public holidays, extension of validity of licenses and certificates, deployment of a convoy system for transiting freight trucks, and redirection of incoming international flights to dedicated airports (ITF, 2020). Other measures included the conversion of trains into rolling hospitals and mandating automotive and aircraft manufacturers to reconfigure their production lines to manufacture urgently needed medical equipment, work from home for non-essential workers, transport for employees, integrating social distancing norms into operational plans, supply of protective gears (PPE) for working staff, staggered work time to reinforce social distancing, collaboration with different agencies for sharing resources, and quarantine facilities/health clinics at work premises (ITF, 2020).

Additional response measures included embracing digital transformation to improve operation efficiency, use of technology to develop contactless procedures, adoption of remote working facilities, and offering incentives for working in adverse conditions (Bandyopadhyay & Bhatnagar, 2022).

By the end of August 2021, IATA (2021) reported that governments worldwide had pledged USD 52.2 billion to assist the aviation industry, in addition to the \$177.5 billion provided in 2020. Support varied, with smaller funds given as direct, non-refundable cash injections. The report states that financial aid, mainly in the form of wage support or loans, prevented many imminent

airline bankruptcies. However, loans increased the industry's debt from USD 430 billion in 2019 to USD 650 billion in 2021, making it harder for airlines to invest in new routes, refurbish aircraft, and to re-engage employees. The report recommended that governments cancel or restructure airline debt to ensure financial stability for the industry's recovery. Additionally, the report asserted that further relief for the air transport industry would be a solid investment, as each airline job saved supports another 24 jobs in the wider economy. Preserving airline networks and skilled industry jobs is crucial for maintaining global supply chains and fostering economic growth (IATA, 2021).

Fiscal policy responses

To sustain the operation of the essential transport services, many governments announced funding assistance and fiscal support (Li, 2021; Appendix 3.9). For example, some of the funding support announced by the Government of India included payment of staff salaries, vendor payments, working capital, maintenance expenses, medical and insurance requirements. The fiscal support included collateral-free loans to SMEs, relaxation of statutory and regulatory compliance requirements related to income tax and GST, direct cash transfers, easing of working capital financing, equity infusion through a SME fund, subordinated debt to stressed SMEs, reduction of 25% of existing rates of tax deductions and tax collection at source, provision of fund for payment support to employees, project completion extension of up to 6 months without cost to contractors (Bandyopadhyay & Bhatnagar, 2023). SMEs in the transport sector mainly include logistics services, third-party logistics (3PL), and services and warehousing companies (Rifai, 2023).

3.7.3 Lessons learnt

Aviation industry

Globally, the biggest challenge for airlines was in parked or stored aircraft, which ran the risk of cabin deterioration due to the extreme humidity and temperature buildup inside the cabins during the summer months. This prompted airlines to take aggressive maintenance and rigorous testing regimes to bring the aircraft to service, often far beyond prescribed maintenance requirements (Shay, 2022). Boeing's biggest lesson learnt was reported to be in maintaining consistent communication with operators, who had unique challenges given their locations and operations, which required proper storage and reactivation processes (Shay, 2022).

Public transport industry

As countries implemented COVID-19 mitigation measures, several barriers, including challenges in communicating guidelines, ensuring individual compliance, managing vehicle capacity and costs, and workforce pressures from COVID-related absences, as well as a lack of transmission data were noted as major barriers in implementation (Gartland et al., 2023).

For transport providers, interpreting messages from government and advisory bodies was not always straightforward. Messages were subject to quick change and not easily practicable or detailed enough, or often arrived with very short notice, causing confusion. Frequently moving from published guidance to operational practice was complex and time consuming (Gartland et al., 2023).

Maintaining minimum stocks of essential goods in case of disruption of supply chains and transportation is an important lesson for resilience from future disruptions.

3.8 Concluding remarks

In this chapter, we reviewed and analysed available information (published articles, media reports, as well as global databases) to understand the impact of COVID-19 on macroeconomy, finance, energy, migration and tourism, and transportation sectors in the HKH countries. The existing literature and major global databases suggest that the COVID-19 pandemic inflicted damage in almost all these sectors of the HKH economies. Economic contractions, massive job losses, influx of returnee migrant workers (both from foreign countries as well as from cities to the rural areas), decline in tourism revenue, business closures, high level of unemployment, less energy demand both in industry and transportation sectors, supply chain disruptions and resulting shortages of essentials goods, including machineries for renewable energy, are some of the major challenges that the countries in the region experienced. All these elements have distributional impacts resulting in rising inequality as well as higher poverty, reversing the gains that were achieved in the past several years to meet the SDGs, especially in poverty reduction.

For the HKH region and for the individual countries, the COVID-19 pandemic taught us several lessons including the need for robust digital infrastructure, emergency healthcare plans, urban planning to make services available in the vicinity without having to travel across the city, social safety nets for vulnerable groups in the informal sector including migrant workers, maintaining minimum stocks of essential goods in case of disruption of supply chains and transportation, diversification of trade in goods and services, diversification of destination countries for short-term employment, and the promotion of regional cooperation so that trade and non-trade barriers remain at the lowest level when there is a need for moving goods and services from one country to the others.

Moving towards nature-based solutions that help a country rely less on imported goods and machinery (in case of global supply chain disruption) as well as promoting green growth would generate employment, especially local rural employment. This could help countries from the region cope better if similar shocks occur in the future.

3.9 Appendix

Fiscal, monetary, and exchange rate government policies in the HKH countries

Country	Fiscal policies	Monetary policies	Exchange rate & BoP policies
Afghanistan	- Spent 2.2% of the GDP for fighting COVID-19 in 2020; - Free bread to the poor; - Waiving electricity bills and house rent for 2 months; - Extended tax-filing date and waiving penalties for certain period.	Frequent meeting of the Central Bank's board to monitor the situation, waiving penalties and fees for late payment of loans, etc.	The Central Bank adopted flexible exchange rate and focused primarily on price stability.
Bangladesh	- USD 4.6 billion fiscal stimulus package (2020-2021) was used to provide subsidised food, housing for the poor, health insurance, wage compensation, etc. - Suspended duties and taxes for importing medical supplies, protective equipment, and test kits.	To ensure liquidity, the Central Bank (BB) took several measures: lowered interest rates, purchased treasury bills; increased export development funds; refinanced facilities; waived penalties and deferred loan and tax payment dates.	BB relaxed foreign exchange rules - to keep rate stable and provided forex whenever needed.
Bhutan	- Introduced social safety nets; - Employed youth in physical infrastructure projects; - Waived rent and other waivers for the tourism sector; - Deferred dates for paying taxes.	- Introduced national credit guarantee scheme; - Waived interest for loans; - Extended soft loans; - Promoted digital banking system.	- Suspended import of certain items- e.g., motor vehicles; - Established preferential trade agreement with Bangladesh.
China	- Fiscal measure of 4.7% of GDP to support (i) spending on epidemic prevention and control, (ii) production of medical equipment, (iii) unemployment insurance and extension to migrant workers, (iv) tax relief and waiver of social security contributions, and (v) additional public investment; - Reduction of fees and tariffs for different sectors; - Expansion of social safety nets.	- Action by Central Bank (PBC) to stabilise the financial market; - Expansion of re-lending and re-discounting facilities; - Reduction in different (interest) rates; - Introduction of zero-interest funding for lending schemes; - Easing of housing policy.	- Allowing exchange rate to adjust flexibly; - Removal of investment quota for foreign institutional investors.
India	- Introduction of two types of fiscal support amounting to 8.8% of GDP¹⁰ for social protection (e.g., subsidised food, housing, electricity, etc.); enhancement of health-care facilities and services; and support for businesses and shoring up credit provision; - Interest-free loans to states, and deferred payment of taxes and duties to support business; - Targeted support to agriculture sectors – increase in fertilizer subsidy and concessional credit to farmers.	- Reduction of (interest) rates by the Central Bank (RBI) to ease liquidity in the market; - Provision of (i) a collateral-free lending program, (ii) subordination of debt for stressed MSMEs with partial guarantee, and (iii) partial credit guarantee scheme for public sector banks.	- Removal of restrictions on non-resident investment in specified securities issued by the Central Government; - Foreign exchange swap amounting to USD 4 billion.
Myanmar	- Introduced energy subsidy (electricity), deferred payment of income tax, and exempted different types of taxes; - Introduced social safety nets for needy households; - Introduced soft loans to the business sector; - Diverted 10% of budget of each ministry for COVID-19 control.	Reduction of all kinds of (interest) rates by the Central Bank.	Adoption of a flexible exchange rate with minimum intervention to control volatility in exchange rate.
Nepal	- Increased health and social spending; - Free food for vulnerable groups, subsidised utility bills, deferred tax-filing deadlines, and partially compensated lost wages to those who lost formal sector jobs; - Offering public sector job opportunities to those who lost their informal sector work with minimum wage; - Supported SMEs, provided skills-training to workers, and created jobs in the construction sector.	- Lowered all kinds of (interest) rates by the Central Bank to maintain liquidity in the market; - Deferred loan payment deadlines; - Provided additional loans to firms if needed.	Temporarily banned import of luxury items (gold, silver, and high-end motor vehicles).
Pakistan	- Introduced a relief package worth 2.9% of the GDP: eliminated import duties on emergency medical supplies, introduced cash transfers to daily wage earners and low-income groups, gave tax refunds, and additional support to SMEs; - Introduced supportive fiscal measures (cash grants to low-income households, tax relief, and additional health spending).	- Reduced (interest) rates by the Central Bank; - Deferred deadlines for loan payments, restructured loans, incentivised investments; - Avoided any layoffs, and provided mandatory credit to the construction sector.	Eased restrictions on the import of essential health-related equipment and raw materials.

Source: Extracted and summarised from IMF (2021)

¹⁰ Srinivas Junuguru and Singh (2023) estimated that the total amount could reach up to 10% of the GDP.

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CHAPTER 4

COVID-19's impacts on agriculture, employment, enterprises, the construction industry, and digitalisation

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Key messages

In the HKH, agriculture and livestock are the prominent sources of food security and livelihoods. In addition, remittances, small businesses, wage labour, tourism, and collection of medicinal plants contribute to the livelihoods and food security of the mountain communities. The pandemic significantly impacted the food systems and food security of millions of people in the HKH countries. Governmental measures focused mainly on immediate relief efforts and paid less attention to the resilience of food systems in the medium and long terms. These measures were mainly blanket approaches for all types of geographies within countries and did not pay special attention to more vulnerable areas such as mountains. Future strategies should pay special attention to mountain areas and need to focus on medium- and long-term measures - such as skill development of workers to avoid lay-offs, development of physical infrastructure (in terms of storage facility, road networks, and processing units), and providing equal income opportunities for women and marginal groups in agriculture and non-agriculture sectors.

The pandemic exposed gaps in the provision of social protection measures in most of the HKH countries; the crisis especially affected urban informal workers, middle-income households, and the unemployed. The ineffective enactment and enforcement of pro-poor social protection mechanisms, and the lack of comprehensive social security measures aimed at urban informal workers, middle-income households, the unemployed, and the larger mountain community, need to be addressed to improve resilience against future crises and shocks of this nature.

In the face of the pandemic, the MSMEs (micro-, small-, and medium-sized enterprises) in the HKH region showed resilience and innovation. Governments, financial institutions, and support services came together to provide assistance by offering financial relief, extending tax deadlines, and encouraging digitalisation. Despite the daunting challenges, MSMEs played a crucial role in shoring up economies through community collaborations and setting up of sustainable business models. However, persisting gaps in financial support, technical capacity, market access, physical and social infrastructure, and social protection mechanisms call for inclusive strategies in the future. Integration of advances across these several areas is needed to fortify MSMEs and strengthen their pivotal role in driving innovation, community development and building sustainable and resilient mountain economies in the post-pandemic context.

The process of digitalisation gained sudden momentum with the rapid spread of the coronavirus, and digital technologies became the prime instruments through which the challenges of the pandemic were tackled. The digital platform was the means of choice in the adaptation to the “new normal” brought about by the pandemic. This acceleration of digitalisation was observed in the areas of healthcare, office work, education, business, entertainment, and leisure. However, the sudden shift to digitalisation by almost all sectors made the digital divide more prominent; this affected vulnerable groups like low-income households, those with less education, and the elderly and the disabled. Issues like lack of access, low bandwidth, and paucity of skills came to the fore. There is a wide digital divide between advanced and emerging-market economies, urban and rural areas, large and small firms, and high- and low-skilled individuals in the HKH region. COVID-19 underlined that digital readiness should be a national priority and countries need to build enabling e-commerce ecosystems, public policies, stronger legal and regulatory frameworks, and encourage private investment. Moreover, regional cooperation is vitally important for sharing best practices, developing digital transformation strategies, and bolstering the overall digital economy.

4.1 Introduction

The COVID-19 pandemic impacted the global economy and triggered the most severe economic crisis in more than a century. The traditional patterns and networks of economic interaction and behaviour were drastically disrupted by the pandemic. The crisis led to an increase in inequality within and across countries. Poor countries and disadvantaged groups within countries took more time to recover from losses of income and livelihoods. Some countries are still struggling with the after-effects of the pandemic.

The emergency responses in poor countries created new economic risks – such as dramatically increased levels of private and public debt – which challenged equitable recovery from the crisis. In the HKH region, the pandemic affected both formal and informal economic activities and labour markets, leading to numerous business closures and unprecedented job losses in agriculture, and in enterprises and industries. Millions of people slipped below the poverty line, leading to a decline in their food-purchasing power and poorer food intake.

Despite serious economic challenges, some service industries (such as digital services) and sectors benefited from the pandemic-induced crisis. This chapter specifically examines the impacts of COVID-19 on key sectors and industries such as food systems, labour market and employment, enterprises, the construction industry, and digital services.

4.2 Food systems

4.2.1 Impacts

COVID-19 severely impacted food systems across the globe. For instance, in 2021, at the peak of the pandemic, global food prices rose significantly, primarily due to widespread supply chain disruptions. In the case of many low-income countries, particularly those with weak currencies and heavily reliant on food imports, when the borders closed, domestic food inflation surged significantly. The pandemic also resulted in widespread unemployment and income losses, which had a severe impact on the purchasing power of the poorest households, leading to either transitory or chronic food insecurity among millions of households (GNAFC & FSIN, 2022) in the HKH region.

Mountain food systems in the HKH are very vulnerable to climatic, natural, and economic shocks. While there is heavy dependence on local natural resource systems at all elevations, the potential of these systems to provide food and nutritional security vary considerably. Agriculture and livestock are the prominent sources of food security and livelihoods in the HKH. Additionally, remittances, small businesses, wage labour, tourism, and collection of medicinal plants contribute to livelihoods and food security (Hussain et al., 2016). In the HKH mountain areas, farmers and ordinary people are dependent on other areas for adequate supply of food and other materials. For example, in Pakistan, around 30–60 per cent (varying across mountain subregions) of the food demand in the mountain areas is met from the plains (Hussain & Routray, 2012). In such cases, any disruption in supply can lead to severe food shortages, hikes in food prices, and overall food insecurity. Similarly, any disruption or delay in the supply of agricultural materials (like seeds

and fertilisers) and healthcare items (like vaccines for children and basic medicines) can further aggravate the issue of food and health insecurity in the HKH mountain areas (ICIMOD, 2020).

During the pandemic, restrictions on the movement of people and vehicles posed a significant challenge, reducing the availability of labour, food, and agricultural inputs. Migrant workers traditionally play a vital role in labour-intensive activities like planting and harvesting (FAO, 2021; Gregorio & Ancog, 2020; IFPRI, 2020a) and their absence had obvious repercussions for local economies and food supply chains. According to a report of the World Food Program (2020), in Nepal, the pandemic significantly impacted the labour market. Traders found it difficult to find labour for their daily business activities and, in many instances, they had to close down their businesses. In Nepal, because of the shortages of labour and agricultural materials during the summer of 2021, many small farmers in the Terai region could not cultivate paddy. Similarly, in the hills, the cultivation of millets and maize was severely affected. Thus, around 40% of Nepalese cereal farmers were cultivating a reduced area compared to pre-pandemic times, and around 20% of agricultural households reported job and income losses (Wasti et al., 2022). In Bangladesh, farmers had to pay 10 times more for transport and labour in 2020 compared to the pre-pandemic period. In the case of India, farmers lost an enormous USD 2.81 billion during the lockdown period in 2020, while in Pakistan, during the same year, farmers lost rabi (rice) crops worth a staggering USD 3.6 billion (Ahmed et al., 2021).

Vegetable and fruit farmers of the HKH countries faced additional challenges compared to other farmers during the pandemic (Ahmed et al., 2021) because the short shelf-life of vegetables and fruits forced farmers to sell their products at much lower prices than normal (Ahmed et al., 2021; Ghosa et al., 2021). For example, in Bangladesh, vegetable and fruit farmers sold their products at a quarter of their normal price. Ullah et al., (2022) characterise the factors which accompanied lockdowns and disruptions in the supply chain in Upper Dir district, a mountainous area of Pakistan as labour shortages in agriculture, poor support from the private sector, inadequate access to input and output markets, weakening of credit and extension services, and poor access to machinery.

The HKH countries also had to deal with millions of livestock workers being laid off. In India, for instance, around one million people working in poultry ranches lost their jobs. In Pakistan, approximately 110 million farmers (directly and indirectly associated with the production and delivery of livestock milk and meat) have faced income losses due to a decline in the consumption of meat and milk (a drop by 70%) (Ahmed et al., 2021); the country's cattle markets were also closed.

In China, being the first country affected by COVID-19, GDP dropped by 6.8% in the first quarter of 2020, compared to 2019. The country's agri-food system faced losses worth 7% in terms of value addition, i.e. around CNY 0.26 trillion (~USD 37 billion)¹¹. Moreover, during the lockdown, over 46 million agri-food system workers, constituting about 27% of China's total workforce, lost their jobs (Zhang et al., 2020)

In Bhutan, the initial repercussions of the pandemic were particularly pronounced among the urban populace, a section that is heavily reliant on imports from neighbouring countries and supplies from the domestic rural farming community. With the closure of international borders and restrictions on in-country movements, the flow of essential supplies such as vegetables, fruits, and livestock products came to a halt, much to the discomfort of urban residents (UNICEF, 2021). The closure of borders also had a severe impact on farmers, leading to significant deterioration and damage to unharvested and undistributed crops (Kuensel, 2020).

Not only did the pandemic have an adverse impact on food security, it also affected the availability and purchase of quality food products. People experienced significant budgetary constraints and had to make changes to their financial plans, and their options for procuring and consuming quality food were substantially reduced (FAO, 2021). During the lockdown periods, food prices escalated, with fruits, vegetables, staple cereals, and meat being the most expensive (Jafri et al., 2021). Overall, the stringent security protocols implemented in the initial phase of the pandemic had a profound effect on the dietary patterns of the people of the HKH region.

¹¹ In this chapter, average exchange rates of 2019 are used to convert national currencies to US dollar.

4.2.2 Responses

The governments of the HKH countries focused mainly on short-term relief measures to address the pandemic-induced challenges to agricultural production, household income, and financial and physical access to essential food items. Some of the measures undertaken by the HKH governments to deal with the crisis faced by the food system of their countries are presented below.

In the area of food aid, for instance, the Bangladesh government increased the subsidy on consumer food items. In India, the government supported 800 million poor people by supplying essential food items (5 kg grain and 1 kg of preferred pulses per month) for free for three months during the pandemic. The government of Pakistan subsidised and supplied 19 key food items through utility stores in parts of the country (IFPRI, 2020b).

To cope with the challenges related to loss of income, the Bangladesh government announced a package worth USD 2.94 billion to support (through credit and other incentives) the youth and returnee migrants who had lost their jobs due to the pandemic. In India, the government provided financial relief (through cash transfers) to around 200 million poor women and 30 million poor senior citizens, poor widows, and poor disabled citizens. In Myanmar, the government made cash transfers to the most vulnerable households, and to those who were internally displaced. In Pakistan, the government distributed money to women heads of 12 million poor and vulnerable households under the Ehsaas Emergency Cash (EEC) programme. The government also announced a package of PKR 75 billion (PKR 12,000 per household which depended on daily wages) to support daily wagers who lost their jobs during the pandemic. In addition, some provincial governments (like that of Punjab's, which released PKR 10 billion) announced relief packages to support vulnerable households and daily wagers. In China, the government launched a campaign – by tapping into urban wallets – to promote the sales of farm produce and thus improve rural income. It also supported the creation of trading platforms and maintained the market order to ensure smooth supply chains (IFPRI, 2020b).

Further, in the case of Bangladesh, to compensate for the losses and disruptions in the agriculture production systems, its government allocated around USD 1.7 billion for the agriculture sector to support the production of livestock and agronomic and horticultural crops, and also to rehabilitate farmers and improve mechanisation in the sector (Ahmed et al., 2021). The Bangladesh government also prioritised subsidies on fertilisers to sustain agricultural production. It also announced a refinancing scheme to disburse loans to small and medium farmers at a subsidised interest rate (of 5%) for improved capital flow to the agriculture sector to enhance production of crops, fisheries, and livestock (IFPRI, 2020b). In the case of India, the government allocated a budget of USD 29 billion for direct cash transfers to farmers covering improved production; investment in the livestock sector; achieve 100% vaccination of all ruminants; support non-timber products; and develop overall agricultural infrastructure (Ahmed et al., 2021).

In Myanmar, the government announced a COVID relief plan amounting to MMK 92 billion (≈ USD 60 million) for the agriculture sector to improve the quality and utilisation of inputs and to generate temporary employment for unskilled and semi-skilled labour forces (IFPRI, 2020b). Meanwhile, the Pakistan government tried to rehabilitate its farmers through different relief and subsidy packages (Ahmed et al., 2021). It allocated USD 1.3 billion for a relief package for agriculture which involved subsidies on loans and inputs to farmers (Ahmed et al., 2021). In China, the government promoted and strengthened its financial services in rural areas to support innovative development of modern seed industries and to enhance the integrated development of rural primary, secondary, and tertiary industries. Additionally, credit amounting to CNY 41.4 billion (≈ USD 6.0 billion) was provided to crop farmers and CNY 10.6 billion (≈ 1.50 billion USD) was provided to swine farmers (IFPRI, 2020b). The government of Bhutan, budgeted BTN 944 million (≈ USD 14 million USD), for an agriculture stimulus plan aiming to strengthen food security through domestic production, while also attempting to create employment and income opportunities. Moreover, from April to June 2020, the Bhutanese government spent BTN 160 million (≈ USD 2.3 million) to involve farmers and corporate farms in the large-scale production of food commodities like cereals, pulses, oilseeds, vegetables, milk, eggs, and meat (Kuensel, 2020).

The pandemic caused disproportionate impacts on women and different social groups (Southasiadisasters.net, 2021). Mobility-related restrictions amplified women's workloads owing to social norms and heightened care responsibilities (see Chapter 2 for details on the gender implications of COVID-19). Moreover, women employed across the informal and formal nodes of the agricultural value chains suffered job losses and income reductions. In Nepal, the lockdown resulted in an increase in the unpaid care workload of women in agriculture and other sectors (UN Women, 2020). The reach and coverage of agricultural extension services diminished, limiting women farmers' access to timely advice and support. In a comparative study between Gujarat (India) and Dang (Nepal), data from surveys conducted at different stages of the lockdown revealed adverse effects of the pandemic on women farmers' access to agricultural extension services, and consequently, on agricultural productivity. The study also identified variations in these impacts based on factors such as caste, region, education, and crop type (Alvi et. al., 2021).

4.2.3 Gaps and lessons learnt

The lessons learned require governments, even as they deal with emergencies to be forward-looking

- The loss of employment and income suffered by millions of households in the HKH, along with their reduced access to adequate and diverse food, highlights the need for medium- and long-term livelihood support beyond immediate relief packages. Future response strategies should also focus on measures such as skill development, creation of alternative income sources, and financial support through social safety nets over the long term.
- The closure of borders during the pandemic disrupted established supply and trade routes, which affected those farmers who were dependent on agricultural exports for their livelihoods (OECD, 2020; Hamid et. al., 2021). Governments must invest in necessary infrastructure such as cold storage facilities, processing centres, and road networks, particularly in the mountains.

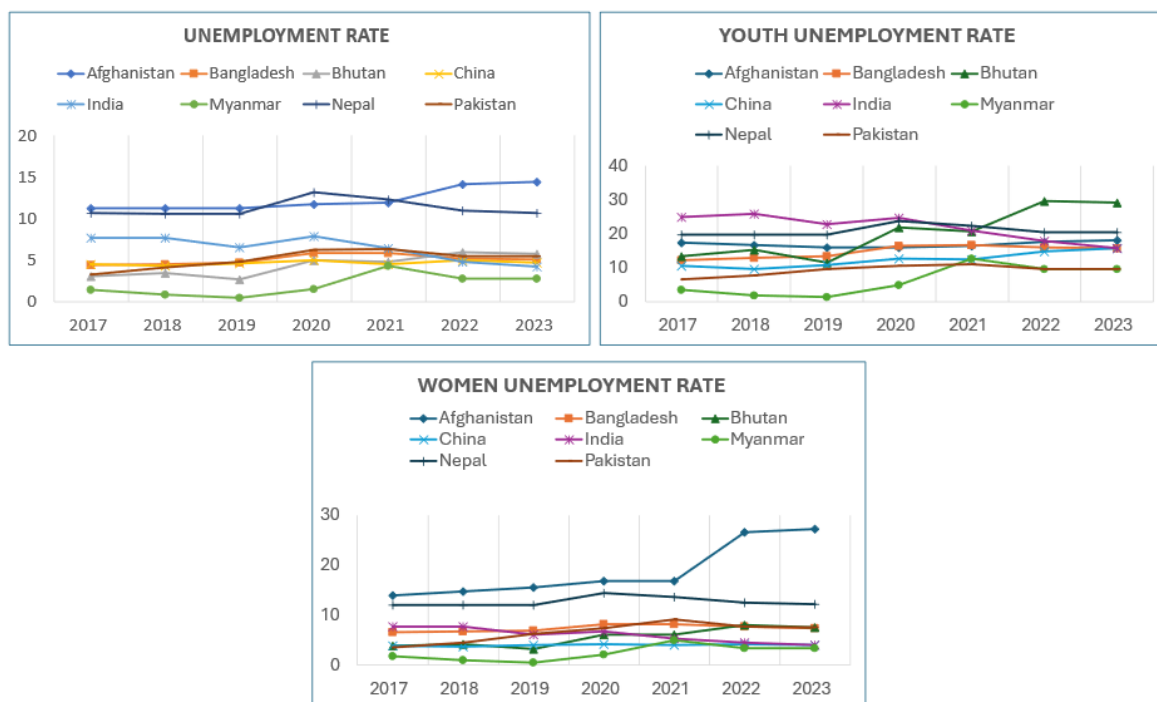
4.3 Labour market and employment

4.3.1 Impacts

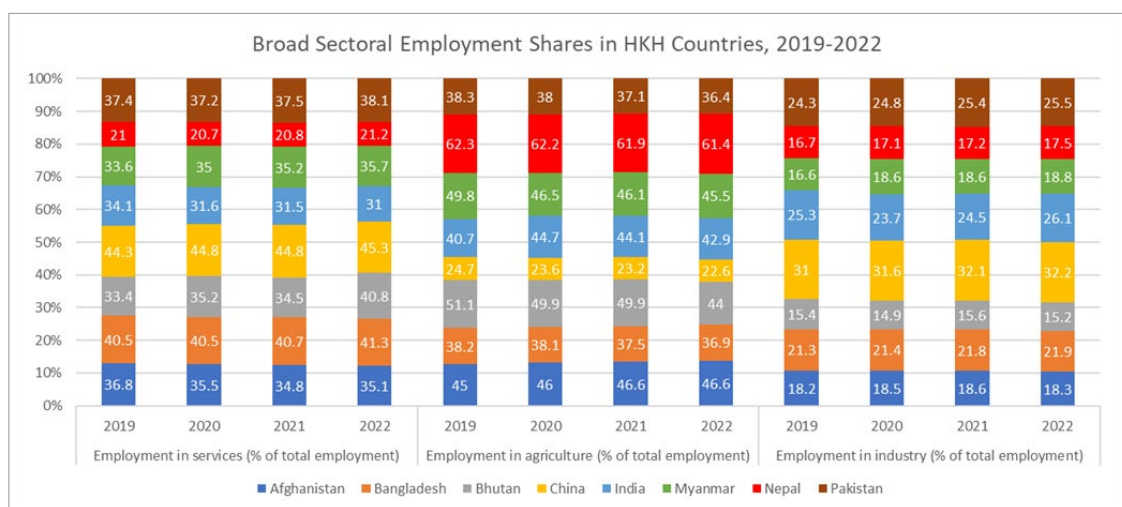
Employment trends in the HKH countries showed an increase in the unemployment rate during the pandemic onset year of 2020 and a slow reversal in subsequent years. The countries that were hit the hardest in the region were Nepal, Bhutan, and India, with 2.6%, 2.3%, and 1.4% increases, respectively, in their overall unemployment rate (Figure 4.1). On an average, the unemployment rate increased by 1.3% in the region in 2020 as compared to 2019. The unemployment rate among the youth in Bhutan (10.4%), Nepal (4%), and Myanmar (3.7%) was the highest in the region during the pandemic. Overall, youth unemployment rate in the region increased by 3.2% in 2020 compared to the previous year. Women unemployment rate in the region also increased in 2020, compared to 2019, with an average increase of 1.5%. Furthermore, the employment to population ratio also declined in 2020 (compared to 2019) due to the pandemic, with Afghanistan, Bhutan, and India recording the highest percentages of decline in the region – 5.5, 3.7, and 2.8% respectively (Figure 4.1).

The period of 2019–2022 also showed some cross-sectoral shifts in employment in the HKH countries. These shifts were from industry and services towards agriculture, with India registering the highest such shift with 4% increase in agricultural employment. Afghanistan shifted away from the services sector towards industry and agriculture, showing a combined increase of 1.3%. On the other hand, Bhutan shifted from agriculture and industry towards the services sector, with the latter showing a 1.8% increase in employment, while employment in Myanmar, China, and Bangladesh experienced shifts from the agriculture sector towards the services and industry sectors during this period. In the case of Pakistan, employment shifted away from the services sector towards the industry sector, with an increase of 0.5% employment in the latter (Figure 4.2).

Importantly, a major impact was felt in the informal sector. According to the ILO, informal employment constitutes the major portion of total employment in much of the HKH region (ILOSTAT,

FIGURE 4.1
UNEMPLOYMENT RATE IN THE HKH REGION BEFORE AND AFTER THE COVID-19 PANDEMIC


Source: International Labour Organization (ILOa), 2023

FIGURE 4.2
BROAD SECTORAL EMPLOYMENT SHARES IN THE HKH COUNTRIES (2019–2022)


Source: International Labour Organization (ILOb), 2023; World Bank, 2024

2023). It is estimated that a majority of the informal workers were affected by the pandemic – about 410 million workers in India, about 64.4 million workers in Bangladesh, and about 5.7 million workers in Nepal. Similarly, an estimated 95, 90, and 80% of the informal workforce in Afghanistan, Bhutan, and Pakistan, respectively, were adversely affected by the pandemic (IPC-IG & UNICEF ROSA, 2020a).

4.3.2 Responses

To cope with the volatility of the labour market during the pandemic, various social protection and labour measures were undertaken by the HKH countries including social assistance, social insurance, and labour market interventions. The social assistance measures comprised conditional or unconditional cash-based transfers, generation of employment in public works, facilitation of in-

kind schemes, and utility and financial support. The social insurance measures consisted of paid leave/unemployment insurance, health insurance support, pensions, disability benefits, and social security contributions. Direct interventions in the labour market were in the form of wage subsidy, activation measures (job training and placement assistance), labour regulation adjustment, and reduced work-time subsidy. These measures are summarised by country in Table 4.1.

While the social assistance schemes provided immediate respite, labour market interventions were also made to support the employment situation over the short and long terms. In this context, activation-related measures like job training and placement assistance were carried out in four HKH countries – Afghanistan, China, Nepal, and Pakistan. These included vocational training support for SMEs and migrant workers, and support for youth labour and

entrepreneurship. There were also adjustments made in three HKH countries – Bangladesh, India, and Pakistan – regarding labour regulations. Government notices were issued by India and Pakistan directing all the public- and private-sector employers not to terminate their employees, particularly informal and contractual workers. In the case of Bangladesh, a World Bank programme, “Second Programmatic Jobs Development Policy Credit”, supported the government’s response mechanism by extending help in the recovery process and building the resilience of not only the economy but also of the workers and other vulnerable populations; this also involved improving job quality through targeted reforms and strengthening the implementation of existing laws and standards. Another intervention – by Bhutan and Bangladesh governments – came in the form of wage subsidies. While the Build Bhutan Project (BBP) provided a wage top-up for employees working in the construction sector, a stimulus package worth

TABLE 4.1 MAJOR SOCIAL ASSISTANCE MEASURES FOR WORKERS IN THE HKH COUNTRIES

Country	Major social assistance measures
Afghanistan	In July 2020, the Government of Afghanistan announced a programme, “Dastarkhan-e-Milli”, which combined two World Bank projects – Citizens’ Charter Afghanistan Project (CCAP) and Relief Effort for Afghan Communities and Households (REACH). It provided a relief package for Afghan households with incomes of USD 2 per day or lower, and included the delivery of staple food and hygiene products.
Bangladesh	In Bangladesh, cash-based assistance of BDT 12.50 billion was disbursed in May 2020, which covered five million poor families. In July 2020, the government distributed 10 kilograms of rice for free for over 10 million ultra-poor and destitute families.
Bhutan	In Bhutan, the Druk Gyalpo’s Relief Kidu (DGRK) was launched in April 2020 to provide immediate financial support for people who had been laid off. During this time, the government also initiated stocking of essential items to last for four months, with their worth amounting to BTN 104 million.
China	In March 2020, a government policy directive in China instructed local governments to extend the coverage of “Dilbao” (Minimum Livelihood Guarantee Scheme) and also announced temporary assistance programmes for those affected by the pandemic. This was among the series of measures that were passed to support the impacted population.
India	The Indian government announced a relief package, the Pradhan Mantri Garib Kalyan Yojana (PMGKY), to mitigate the impacts of the first nationwide lockdown; this covered the vulnerable and disadvantaged segments of society.
Myanmar	The Myanmar government launched the COVID-19 Economic Relief Plan (CERP) in April 2020 which involved cash transfers to the most vulnerable and affected households.
Nepal	In March 2020, local and provincial outlets were established by the government to provide food aid for poor families and informal-sector workers who were facing livelihood problems.
Pakistan	In March 2020, the Punjab government of Pakistan announced a PKR 10-billion relief package for financial support of 2.5 million families of daily-wage earners; this was in addition to the financial support packages announced by the federal government. Under the Punjab government’s scheme, each family was to be given PKR 4,000 (lump-sum). In April 2020, the Government of Pakistan introduced the EEC programme which aimed to reach 12 million households, with each household to receive PKR 12,000 in a one-off transfer; the total expenditure of the programme was PKR144 billion.

Source: Social Protection and Jobs Responses to COVID-19: A Real-Time Review of Country Measures (World Bank, 2022)

TABLE 4.2

SOCIAL INSURANCE MEASURES IN THE HKH COUNTRIES

Country	Social insurance measures
Afghanistan	The provision of pension for martyrs and the disabled was amended to include in its coverage the descendants of deceased health professionals. The government also ensured smooth delivery of pensions.
Bangladesh	A package of BDT 7.5 billion was announced to provide health insurance for government employees.
Bhutan	Information is not available
China	Government subsidies for basic medical insurance were increased to no less than CNY 550 (≈ USD 79) per person per year. A 5 per cent hike in the basic pension of retirees was also announced. The finance ministry cut social insurance payments by CNY 1 trillion (≈ USD 145 billion) as an incentive for companies to retain their employees. Between February and June 2020, all enterprises enrolled in China's social security schemes were exempted from making employer contributions to pension, unemployment doles, and work-related injury insurance schemes. The conditions to receive refunds for unemployment insurance contribution were relaxed to allow for extended coverage of the benefits.
India	Norms on collection of premiums for health insurance were relaxed to provide relief to the premium payers. The Employees' Provident Fund Organisation (EPFO) and the National Pension Scheme (NPS) permitted partial withdrawal as a relief measure for those in financial need. The government stepped in to pay the employee provident fund contributions on behalf of both employees and employers for three months starting from March of 2020. After the three months, the contributions to be paid were reduced from 12 to 10 per cent.
Myanmar	Sick workers or laid-off workers previously insured under the Social Security Board (SSB) became entitled to sickness cash benefits amounting to 60 per cent of previous salaries. Healthcare benefits for unemployed SSB members were extended from six months to one year from the date of unemployment. The Myanmar government also announced a three-month deferral for SSB contributions (for both individuals and firms).
Nepal	The government announced an insurance scheme for persons diagnosed with COVID-19. For companies that were closed due to the lockdown, the government made payments into the Social Security Fund on their behalf (to avail this, employers had to keep paying their employees their salaries).
Pakistan	The government's "Sehat Sahulat" programme provided free healthcare services (through public and private hospitals) in more than 90 districts of the country. The Ministry of Communications and Postal Services enabled door-to-door delivery of pensions for government pensioners across the country.

Source: Social Protection and Jobs Responses to COVID-19: A Real-Time Review of Country Measures (World Bank, 2022)

BDT 50 billion (≈USD593 million) was announced by the Bangladesh government for its export industry to cover the salary of the workers. Another labour-related policy intervention was invoked by the Chinese and Pakistan governments by way of provisions for reduced work-time subsidies (where reduction in working hours was supported by the subsidies introduced by the government). These provisions were made to support flexible employment arrangements in the form of work from home, part-time employment, etc.

Protective, social insurance measures, such as alterations in the mode of provision and availability of pension money, were a common response to the pandemic-induced distress in four HKH countries – Afghanistan, China, India, and Pakistan (Tables 4.2 & 4.3). In Afghanistan, India, and Pakistan, the provision of pension was made easier for financially troubled retirees. In China, a 5% increase in the basic pension of

retirees was announced. Additionally, premium contributions towards the Social Security Fund were deferred in China, Myanmar, and Nepal to lessen the overall burden.

4.3.3 Gaps and lessons learnt

Social protection and labour measures were the major responses made by governments towards the pandemic-induced losses of employment. But the pandemic revealed many gaps in the existing social protection structures and labour market interventions in the HKH countries:

- Social assistance (consisting of cash transfers, in-kind contribution, and financial support) was the most common and widely used social protection measure in the HKH countries. However, unemployed workers seemed to have been left out of social insurance measures.

TABLE 4.3

OVERVIEW OF SOCIAL PROTECTION MEASURES BY COMPONENT

Coun-tries	Social assistance				Social insurance				Labour markets			
	Cash trans-fers	Public works	In-kind	Utility and finan-cial sup-port	Paid leave/ Un-employ-ment	Health insur-ance support	Pen-sions and dis-ability bene-fits	Social secu-rity con-tribu-tions (waiv-er/sub-sidies)	Wage subsi-dy	Acti-vation (train-ing)	Labour regu-lation adjust-ments	Re-duced work-time subsi-dy
Af-ghani-stan	✓		✓	✓			✓			✓		
Ban-gla-desh	✓		✓	✓		✓			✓		✓	
Bhutan	✓	✓	✓	✓					✓			
China	✓		✓	✓		✓	✓	✓		✓		✓
India	✓	✓	✓	✓		✓	✓	✓			✓	
Myan-mar	✓	✓	✓	✓	✓	✓		✓				
Nepal	✓	✓	✓	✓		✓		✓		✓		
Paki-stan	✓	✓	✓	✓		✓	✓			✓	✓	✓

Source: Social Protection and Jobs Responses to COVID-19: A Real-Time Review of Country Measures (World Bank, 2022)

- Social protection programmes seemed to have excluded middle-income household members working in vulnerable conditions. The available data on South Asia shows that workers from middle-income households were largely excluded from the overall social protection coverage. The World Bank's ASPIRE database points to the fact that most South Asian countries' social protection and labour market programmes seem to be relatively more focused on the poorest and richest quintiles compared to households in the middle quintiles (IPC-IG & UNICEF ROSA, 2020b).
- Ineffective enactment and enforcement of pro-poor social protection systems resulted in a failure to address the vulnerabilities and uneven capacities of the informal workers to recover from the crisis. For instance, a lack of comprehensive social security schemes resulted in reverse migration from many cities like Hyderabad (India) and Dhaka (Bangladesh) as thousands of migrants lost their livelihoods in urban areas and were forced to return to their villages (Recio et al., 2023).

- Overall, a well-functioning social protection system with a more integrated social registry system which has well-defined targets is needed in most of the HKH countries to respond to future crises; only then can exclusion be reduced, leading to properly inclusive coverage.

4.4 Enterprises: MSMEs, industries, and the service sector

4.4.1 Impacts

Micro, small, and medium-sized enterprises play a significant role in the economies of the HKH region. In Nepal, they contribute 22% to the country's GDP and create over two million jobs (Shrestha, 2020). Bhutan's cottage and small industries, equivalent to the MSME sector, account for more than 90% of the total industries in the country and generate almost 100,000 jobs (Royal Government of Bhutan, 2019, 2020). In the Himalayan state of Uttarakhand in India, MSME

employment witnessed a seven-fold increase between 2000–01 and 2018–19 (Government of Uttarakhand, 2019). As of 16 May 2021, there were approximately 63 million MSMEs in India (Singh et al., 2023). In Bangladesh, SMEs contribute 25% to the total GDP (SME Policy, 2019) and play a vital role in nearly 50 per cent of the country's exports. However, the MSME sector faced significant challenges during the pandemic, grappling as it did with its limited resources and narrow operational scale (Bhalla, 2023; Singh et al., 2023).

The most common challenges that MSMEs face are related to market access, overall productivity, and availability of additional financial resources (Agarwal et al., 2023). These were exacerbated by the enduring social and economic effects of COVID-19. This has impacted the progress towards several UN Sustainable Development Goals, with positive effects on SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action), SDG 14 (Life below Water), and SDG 15 (Life on Land), while potentially negatively impacting SME-relevant goals such as SDG 1 (No Poverty), SDG 2 (Zero Hunger), SDG 3 (Good Health and Well-being), SDG 8 (Decent Work and Economic Growth), and SDG 10 (Reduced Inequalities) (Joshi et al., 2021).

The COVID-19 pandemic has had a significant bearing on the economies of the HKH region, especially in relation to MSMEs. Many MSMEs are at the brink of closure or have already exited, and the situation is better as two years after the pandemic. Those still in business remain highly vulnerable as they have to navigate a changed business landscape marked by altered sales patterns, distribution methods, and consumer behaviour (Gao et al., 2023; Sawada & Sumulong, 2021; Sopha Arvianto & Tjahjono, 2022).

Lockdowns, travel restrictions, and transportation disruptions severely impacted MSMEs' supply chains. Procuring raw materials, accessing the markets, and fulfilling orders became challenging, leading to reduced production and revenue losses. Consumer demand also declined, particularly in sectors such as tourism, hospitality, retail, and non-essential goods and services (Khatri, Kothari, & Paliwal, 2023; Mishra, Chatterjee, & Thakkar,

2023). Moreover, disruptions in transportation and increased shipping costs affected the timely movement of goods (International Finance Corporation, 2022).

Impacts on consumer demand were experienced to varying degrees by Bangladesh, India, and Pakistan. In Pakistan, the pandemic negatively impacted business operations, with the commerce and retail industries being the hardest hit; the services sector reported sales declines of more than 50% (Aftab, Naveed, & Hanif, 2021; CAREC, 2021). According to the All-India Manufacturers' Organisation, around 35% of the self-employed Indian MSME units faced challenges in running their businesses, with approximately 11% of them showing a decrease in business volume during the 2021 lockdown (Tripathi, 2021; Reddy et al., 2022). In Bangladesh, sectors like textiles, ready-made garments, and retail faced significant challenges due to disruptions in global supply chains.

The MSMEs in the HKH region faced financial challenges during the pandemic, especially because of their limited financial reserves. The macroeconomic shock dealt by the pandemic resulted in decreased cash flows, difficulties in accessing credit, and problems in maintaining working capital. In the case of Nepal's economy, sectors like tourism, trade, production and supply logistics, and health, suffered heavy blows. The country's foreign employment sector¹² also came under severe stress, and government revenue collection decreased by 7.45% (Thomas & Hari, 2021; Joshi et al., 2021). In Bangladesh, MSMEs faced a financial gap¹³ of approximately BDT 2.8 billion, while in Bhutan, a survey by the Royal Monetary Authority in 2021 indicated that 98% of the MSMEs were experiencing some level of impact in the form of declining sales and limited access to financing (Ma, Liu & Gao, 2021).

However, the pandemic also acted as a catalyst that accelerated the transformation towards the uptake and use of digital technologies in the MSMEs. Increased adoption of digital technologies in turn improved connectivity, allowing businesses to overcome geographical barriers and tap into broader markets. Online platforms for sales, marketing, and communication became integral

¹² Foreign employment sectors are areas of a nation's economy that include activities related to imports, exports, and the flow of capital in and out of the country.

¹³ A financial gap is the difference between the funds that are currently available and the funds that are required to cover expenses or investments.

and ubiquitous, enabling MSMEs who could engage directly to reach customers beyond their immediate vicinity. However, in the HKH region, the digital divide that prevailed at the time of the pandemic acted as a major barrier. Most MSMEs lacked the necessary digital infrastructure, skills, and online presence to adapt to the changing business landscape, hindering their ability to shift to e-commerce, and resulting in missed opportunities. Limited digital literacy, prevented MSMEs from following the changing technology and related market arrangements. For areas with ready internet access, the surge in online activities put a strain on bandwidth and the overall telecommunications infrastructure (see section on Digitalisation).

Another aspect to note is that while the urban centres in the HKH witnessed the retention of high-skilled workers who could seamlessly transition to remote work, a significant proportion of low-skilled workers, predominantly engaged in the informal sector, experienced lay-offs during the pandemic (ICIMOD, 2020).

4.4.2 Responses

In response to the economic disruptions faced by the MSMEs, collaborations took place among governments, financial institutions, and support services to implement various measures aimed at providing relief and fostering resilience.

The governments in the HKH region were quick to recognise the crucial role played by the MSMEs in their economies. Thus, stimulus packages were introduced to address immediate financial needs and to sustain business operations. And in order to alleviate liquidity constraints, the governments allocated funds for MSMEs in the form of low-interest loans, grants, and subsidies. Tax deadlines were also extended and certain tax obligations were deferred, offering much-needed relief to the MSMEs grappling with financial uncertainties. Besides, tailored packages were designed to address the unique challenges faced by the sector's different businesses. In a bid to encourage the MSMEs to adopt digital technologies, the governments came up with incentives, training programmes, and capacity-building initiatives (ADB, 2021a).

In Bangladesh, the government prepared a wide range of short- and medium-term economic stimulus packages, amounting to BDT 956.2 billion (USD 11.2 billion), which came to about 3.3% of the GDP as of 15 April 2020. It also promoted skill development, improved productivity in domestic industries, and created employment opportunities. In fact, some SMEs saw increased sales during the pandemic, especially those reliant on digital technologies (OECD, 2020). In a similar vein in Myanmar, corporate income tax payments for the MSMEs were deferred for three months (Shinozaki & Rao, 2021).

Banks and other financial institutions in HKH countries played a pivotal role in economic recovery by implementing measures to ensure the financial stability of the MSMEs. Special credit facilities were introduced with favourable terms, ensuring that the MSMEs had access to capital for sustaining operations and for adapting to new business norms. Financial institutions worked with the MSMEs to restructure existing loans, providing flexibility in repayment schedules and alleviating short-term financial burdens. Moreover, to facilitate contactless transactions and business operations, banks expanded their digital services, thereby enabling the MSMEs to conduct transactions remotely.

In Bangladesh, loans were provided by commercial banks and other financial institutions to the affected cottage, micro, small, and medium enterprises (CMSMEs) with an annual interest rate of 9% (Amin et al., 2024; ADB, 2021b). Out of this, businesses paid 4% and the remaining 5% was subsidised by the government from its budgetary resources (ADB, 2021a). In Nepal, according to Dangol, Chitrakar, and Yoo (2020), the government allocated a loan fund of USD 42 million with a 5% interest rate in its fiscal plan for the 2020/21 financial year. To stimulate the economy, the Nepal government allocated a further USD 84 million for refinancing, with a 5% interest rate. The example of Indonesia shows that a credit restructuring programme (the Pemulihan Ekonomi Nasional, PEN) had a significant impact on the sales, liquidity, and profitability of MSMEs (Supari & Anton, 2022). However, provision of new loans only improved liquidity, not sales or profitability. Consequently, it has to be noted that loan restructuring alone is insufficient to enhance the resilience of MSMEs in the absence of additional assistance.

In the HKH mountain areas during the pandemic, shared challenges prompted businesses to unite, thereby fostering collaborations and collective problem-solving mechanisms, which enhanced individual enterprises and contributed to the overall socio-economic development of these areas. Moreover, NGOs and support services complemented government efforts by offering targeted assistance and initiating training programmes to boost the digital and entrepreneurial skills of the MSME owners. Governments and NGOs also accorded priority to creating an enabling environment with emphasis on building a start-up ecosystem which focused on innovation, youth engagement, and smooth access to finance. Meanwhile, support services facilitated information dissemination, networking, and collaboration through digital platforms, thus fostering a sense of community and shared learning, resulting in a positive recovery impact through increased community engagement among the MSMEs (Purnomo & Purwandari, 2025; Basak & Bhaumik, 2024).

The MSMEs in the mountainous regions also adopted novel business models. Creativity flourished, leading to inventive product offerings and expanded market reach. The accelerated digital transformation enabled improved connectivity which broke geographical barriers and leveraged online platforms for sales and communication. MSMEs diversified their portfolios, thereby reducing vulnerability. In Nepal, online business platforms like Daraz, Kirana, Sastodeal, Foodmandu, Bhojdeals, Hamrobazar, Muncha, NepBay, SmartDoko, and Metrotarkari were able to improve their sales and expand their businesses despite the several challenges created by the pandemic (Shamim, 2022). In the HKH region as a whole, in the post-pandemic scenario, the technological ecosystem of fintech, agro-tech, logistics businesses, and e-commerce has been able to gain momentum and bridge the gaps in access to finance, technology, and services. There has also been a notable shift towards businesses embracing eco-friendly practices to preserve mountain ecosystems. This not only aligns with global environmental goals but also attracts conscientious consumers, thus creating new market opportunities for these trailblazing enterprises.

4.4.3 Gaps and lessons learnt

During the pandemic, despite the implementation of several financial support programmes by both governments and the private sector, the MSMEs in general, across the HKH region, still faced challenges in accessing financial assistance due to cumbersome application processes, limited awareness, and stiff eligibility criteria. This was especially so in the mountainous regions where the one-size-fits-all instruments and packages were insufficiently inclusive. A summary of the gaps and lessons learnt from the pandemic are listed below:

- Many MSMEs lacked the technical skills and knowledge to adopt digital technologies and implement online business models effectively. Capacity-building initiatives are necessary to bridge this gap.
- The MSMEs in the HKH region faced challenges in accessing domestic and international markets during the pandemic. So, there is a need to address issues such as trade barriers, enhancement of market linkages, and promotion of e-commerce platforms.
- Inadequate digital infrastructure and unreliable internet connectivity hampered the digital transformation of the MSMEs. Improving digital infrastructure, especially in the remote areas, is crucial for expanding digitalisation and online business activities.
- The MSMEs faced difficulties in ensuring social protection for their employees during the pandemic. Strengthening social safety nets and providing multidimensional support for the workers in the informal sector should be a priority.

4.5 Construction industry

4.5.1 Impacts

The construction sector is one of the major drivers of social and economic development at the global level (Giang & Sui Pheng, 2011). The sector serves as a major source of employment for millions of people and makes substantial contributions to the economies of countries worldwide (Kirchberger, 2020). The construction sector is associated with social and economic development in times of

crises as many construction activities are deemed to be essential services, such as construction of emergency facilities, hospitals, roads, and bridges. With some countries opting for only partial lockdown of construction sites during the pandemic, the construction sector played an indirect role in supporting employment creation during the crisis (ILO, 2021a).

In general, the construction sector is classified into three major categories: residential building; non-residential building; and engineering construction¹⁴. In the context of the HKH countries, the construction industry has become a major factor behind economic growth, in supporting expansion of GDP, creating employment opportunities and sustaining livelihoods. The construction industry responds to the requirements of rapid urbanisation which is accompanied by increase in demand for housing, transportation networks, energy facilities and utilities. Initiatives like the Pradhan Mantri Awas Yojana in India that aims to construct 20 million affordable houses are expected to give a stimulus to the construction industry. The sector also promotes regional integration and cooperation, as well as cross-border trade and connectivity, thereby paving the way for greater economic

collaboration among the HKH countries (ADB, 2013). However, the outbreak of the COVID-19 pandemic caused significant disruptions in the global construction industry and the HKH region was no exception (Rani et al., 2022b). Table 4.4 summarises the context of the construction sector, enumerates its total workforce, and catalogues the percentage of GDP shrinkage in each of the HKH countries during the pandemic.

The construction industries of India and China, contributing 8–10% and 15–20%, respectively, to their respective GDPs, exert significant economic influence, and employ a massive workforce of 52 million and 50 million individuals, respectively. However, the pandemic posed unprecedented challenges, resulting in a 7.3% GDP shrinkage in India and a 6.8% contraction in China's GDP in the first quarter (FYQ1) of 2020. China's decrement in construction activities was notable at 5.7% during FYQ1, but it rebounded with a 2.9% growth in the second quarter (FYQ2). In the case of Bangladesh, construction maintained a steady 7–8% contribution to GDP, despite a 3.8% shrinkage in overall GDP and a 5.2% decrement in construction activities.

TABLE 4.4 CONSTRUCTION INDUSTRY: GDP CONTRIBUTION, TOTAL WORKFORCE AND PANDEMIC IMPACTS

Country	GDP contribution (%)	Work force (in million)	GDP shrinkage (%)	Changes in construction activities (%)	References/ Data sources
Afghanistan	8–10	0.2	NA	NA	Ali et al., 2021
Bangladesh	7–8	3.5	3.8	–5.2	Bangladesh Bank, 2020
Bhutan	10–11	0.026	6.1	NA	Royal Monetary Authority of Bhutan, 2022
China	15–20	50	2.3	–5.7 (FYQ1) and +2.9 (FYQ2)	United Nations Development Programme, 2022
India	8–10	52	7.3	–13.2	Dixit et al., 2017
Myanmar	8–10	1.1	NA	NA	(ILO, 2021b)
Nepal	9–11	1.5	1.99	–10–15	Ministry of Finance, 2020
Pakistan	2–3	6.8	0.4	–8.4	Pakistan Bureau of Statistics, 2022

NA = no data available

¹⁴ The residential building category encompasses detached housing, medium- and high-density dwellings. The non-residential building sector includes private projects such as commercial retail and industrial construction, as well as public and social endeavours in education, health, and community facilities. The engineering construction sector involves significant infrastructure undertakings like bridges, ports, rail systems, mines, electricity generation, roads, water and sewerage systems, dams, and telecommunication networks. (United Nations, 2008).

On the other hand, Bhutan where the construction sector contributes 10–11% to GDP, there was a notable 6.1% shrinkage in GDP. Nepal's 1.99% shrinkage in GDP was due in part to a substantial 10–15% decrement in construction activities. Pakistan experienced a 0.4% reduction in GDP and a 8.4% decrement in its construction sector activities, which contribute 2–3 per cent to its GDP.

The pandemic led to significant disruptions in the construction workforce across the HKH region. Lockdowns, travel restrictions, and labour shortages resulted in delays on construction sites. For example, in India, the sudden reverse exodus of migrant workers from cities to rural areas during the nationwide lockdowns in 2020 left many construction projects understaffed and delayed (World Bank, 2020). Similarly, in Pakistan, travel restrictions and worker safety concerns led to a decline in construction activities (ADB, 2020a). In Nepal, out of the 1.7 million workers in this sector, 1.33 million workers lost their jobs during the lockdown (The Asia Foundation, 2020). A study from Pakistan reveals that around 20 per cent of the workers (around 1.36 million) in the construction sector lost their jobs due to the pandemic (Ali, 2023). A study conducted in Bangladesh reports that around 0.20 million construction workers lost their jobs due to the pandemic (Islam, 2020).

The disruption of global supply chains affected the availability and cost of construction materials in the HKH region. The closure of factories, export restrictions, and challenges to transportation broke the supply chain of essential construction materials. For instance, in Nepal, the closure of the border with India, a major source of construction materials, resulted in material shortages and increased costs (ADB, 2021b). Similarly, in China, the disruption of global supply chains affected the import of construction equipment and materials (World Bank, 2022).

Construction projects in the HKH region faced suspensions and delays due to the uncertainties. Lockdown measures and financial instability led to project cancellations, contract renegotiations, and overall delays (World Bank, 2020). In Bangladesh, many infrastructure projects faced delays as workers were unable to travel to construction sites, while financial constraints impacted project financing (UNCTAD, 2021b). In Afghanistan,

the pandemic disrupted critical infrastructure projects such as roads, dams, and power plants (Ali et al., 2021).

Supply chain disruptions, labour shortages, and the implementation of health and safety measures were key factors that contributed to project delays and increased costs as reported for Myanmar ADB, 2020a) and Pakistan (World Bank, 2021). Moreover, the slowing down of activities in infrastructure projects caused disturbances in allied sectors like transportation and energy (UNCTAD, 2021).

The pandemic put tremendous financial strain on construction companies in the HKH region. Reduced revenues, increased costs, delayed payments, and disruptions in the cash flow put firms under severe financial pressure. This resulted in project cancellations, business closures, and job losses, some of which have persisted beyond the pandemic period. For example, in Bangladesh, many small- and medium-sized construction firms faced severe financial challenges, with some going out of business (Giroud & Ivarsson, 2020). Similarly, in India, construction companies experienced financial stress due to reduced cash flow and delayed payments (Rani et al., 2022a). Further, the decline in construction activities led to reduced property transactions and to a fall in sales and rental prices in major cities (World Bank, 2021; Bhoj, 2020). In the case of Nepal, its real estate sector experienced a slowdown, which affected property sales, rental prices, and overall investment in the sector (ADB, 2021b).

The pandemic also disrupted skill development programmes and reduced or delayed the availability of skilled labour in the construction sector in the region. Training programmes and vocational courses were affected, leading to skill shortages and gaps in the workforce in Nepal (ILO, 2021a) and China (World Bank, 2022).

The disruptions in the construction sector caused by the pandemic had far-reaching implications in terms of employment and livelihoods (see cases of Nepal in Table 4.5 and Box 4.1). Reduced construction activities and project suspensions led to job losses, income reductions, and increased economic vulnerabilities. In Pakistan, the slowdown in the construction industry reduced employment opportunities, affecting daily-wage workers, skilled labourers, and the broader

TABLE 4.5

IMPACT OF COVID-19 ON NUMBER OF BRICK KILN WORKERS

Indicators	Number of impacted workers
*Nepali-origin workers	51,140
*Indian-origin workers	58,824
Workers identified as female	30,103
Workers identified as male	76,967
Total male and female workers	107,070
Total number of children (both countries)	15,523
Total number of workers from Nepal and India	109,964
Total number of people impacted (workers plus children)	125,487

*Number includes those workers whose gender identity was not mentioned.

Source: FNBI data cited in Ghimire et al., 2020

Box 4.1: A case study from Nepal's brick sector

The COVID-19 pandemic had a severe impact on Nepal's brick industry, affecting production, workforce, and supply chains. Government safety measures, including transportation shutdowns and quarantine guidelines, left many low-income workers stranded at brick factories without access to public transport. During this time, several brick entrepreneurs stepped in by providing their workers with food and shelter for an extended period. Besides, the Federation of Nepalese Brick Industry (FNBI), by constantly coordinating with the government, was able to send the workers back to their villages. However, the evacuation of over 50,000 Indian workers across the border led to a significant labour shortage. Brick manufacturing came to a halt due to the shutdown orders, resulting in widespread supply losses and idling of machinery and raw materials.

Over 50,000 Nepali workers reliant on daily wages from the brick industry were affected. In response, the FNBI, in collaboration with ICIMOD, proposed various coping strategies. These included capacity building of local workers, technology transfer to reduce reliance on external labour, and tax breaks for machinery to decrease labour costs. The FNBI also laid emphasis on training and educating workers through digital mediums and advocated for training low-skilled, unemployed labour in brick production.

The FNBI sought to reduce dependence on foreign labour by training local engineers in automation; it also provided financial assistance to brick entrepreneurs. Additionally, it focused on safety protocols and social distancing to protect the workers. Through these efforts, along with the support provided by brick entrepreneurs, the FNBI was able to revitalise the sector and made a positive impact on the prospects of both workers and other stakeholders.

informal labour market (World Bank, 2020). Similarly, in India, the migrant workers employed in the construction sector faced unemployment and income uncertainties (ADB, 2020b; Rani et al., 2022a).

The COVID-19 pandemic had profound effects on the construction sector in the HKH region. Workforce disruptions, supply chain challenges, project suspensions, and health and safety

concerns significantly impacted construction activities. However, governments implemented various policies and measures to mitigate the impacts and support the industry during those challenging times. Interestingly, the pandemic also shed light on the intersection of COVID-19 and air pollution (with air quality parameters improving during the periods of lockdown), pointing to the importance of sustainable construction practices and strategies to address construction-related air

pollution in the HKH region. As the construction sector moves forward, it is essential to prioritise health and safety, embrace technological advancements, promote sustainable construction practices, and develop long-term strategies to address the environmental impact of construction activities. By doing so, the construction industry in the HKH region can emerge stronger, more resilient, and environmentally conscious in the post-pandemic era.

4.5.2 Responses

Governments in the HKH region implemented support measures to mitigate the impact of the COVID-19 pandemic on the construction sector, particularly to provide financial assistance, facilitate project continuity, and support economic recovery. In India, the government introduced an economic stimulus package that included financial assistance for construction workers and contractors, wage subsidies, and extension of project timelines (Prusty et al., 2021). Similarly, in Bangladesh, the government provided financial support and stimulus packages such as wage support and tax incentives (UNCTAD, 2021a).

The governments also introduced regulatory flexibilities and permit extensions to address the disruptions caused by the pandemic. These measures aimed to accommodate delays, ease administrative burdens, and ensure project continuity. For instance, in Nepal, the government extended the validity of construction permits and provided flexibility in project timelines to mitigate the pandemic's impact on the construction sector (ADB, 2021b). In China, temporary relaxations were announced to facilitate the resumption of construction activities; these included extension of project deadlines and streamlined permit processes (World Bank, 2022).

Governments also issued guidelines and protocols to ensure the health and safety of the construction workers and facilitated the resumption of construction activities. These guidelines provided directions on implementing health and safety measures at construction sites to prevent the spread of the virus. The directives issued by the Chinese government laid stress on personal protective equipment, regular disinfection, and health monitoring (UNCTAD, 2021a). In India, the government released specific guidelines for

construction projects which emphasised hygiene practices, social distancing, and sanitation measures (ADB, 2020b).

4.5.3 Gaps and lessons learnt

- The construction industry in the HKH had made limited use of digital technologies before the COVID-19 pandemic. Two countries have taken substantial measures to enhance the use of digital technology in the construction industry. For instance, in China, the use of Building Information Modeling (BIM) technology, virtual collaboration platforms, and remote monitoring systems, has enhanced project management and coordination, while also reducing the need for on-site presence (Wang et al., 2021). Similarly, in India, the construction industry has leveraged digital solutions for remote project management, virtual meetings, and real-time tracking of progress (Dhopte & Daga, 2022).
- The pandemic has brought about a renewed focus on health and safety in the construction industry. Construction companies and regulatory authorities have implemented comprehensive safety protocols and promoted awareness about personal hygiene and sanitation at construction sites. In Bhutan, the construction companies adopted strict safety measures, including regular temperature checks, social distancing protocols, and mandatory use of personal protective equipment (PPE) to protect workers' health (Ministry of Health, 2022). Similarly, in China, health and safety guidelines have been established for construction sites, emphasising measures such as regular health checks, sanitisation, and the provision of protective equipment (APEC, 2021). Brick kiln workers have started wearing masks.
- The pandemic has presented an opportunity to promote sustainable construction practices in the HKH region. With the renewed focus on resilience and environmental considerations, construction projects have started incorporating sustainable design principles and energy-efficient technologies. For example, in Nepal, construction projects have started to accord priority to green building practices, integration of renewable energy

and water conservation measures to create more sustainable infrastructure (ADB, 2020b). In Bhutan too, the construction industry has embraced sustainable construction practices, including the deployment of locally sourced materials, energy-efficient designs and waste-reduction strategies (Verma et al., 2021; World Bank, 2021).

4.6 Digital services

4.6.1 Impacts

Digitalisation is the process of leveraging digital technologies and systems to develop new organisational procedures, business models and services (Amankwah-Amoah et.al 2021). Access to digital technologies such as mobile and smartphones, cloud computing, the internet and the Internet of Things (IoT), and artificial intelligence (AI), have provided unprecedented platforms and opportunities for innovations in service design and delivery.

In the HKH region, the process of digitalisation was already picking up pace prior to the pandemic, with cell phone networks expanding rapidly. The process gained sudden momentum with the rapid spread of the coronavirus in early 2020 and the subsequent lockdowns that disrupted lives and lifestyles globally. Digital technologies then enabled national governments to expedite

economic advancement, while facilitating citizens’ access to governance-related public services and employment opportunities.

During the COVID-19 outbreak, digital technologies served as the backbone that sustained connectivity among individuals, governments, and enterprises. Globally, the acceleration of digitalisation was observed in the areas of healthcare, work, education, business, entertainment, and leisure in order to adapt to the “new normal” brought about by the pandemic (Barnes, 2020; IIDS/NIPoRE, 2022). Ushering in digitalisation was the immediate response of governments and societies to cope with the challenges brought about by COVID-19. All the eight countries of the HKH region saw an unprecedented rise in the use of internet during the time of COVID-19 and afterwards (Table 4.6).

One of the first uses of digital platforms which caught global attention was the tracking of COVID-19 by Johns Hopkins University. The near-real-time maps of COVID-19 incidences provided insight into the spread of the virus from across country borders into towns and villages (Dong et al., 2020). The university’s portal became a primary tool in tracking and monitoring COVID-19 cases in coordination with WHO and national governments. Although these maps initially created some panic among the public by highlighting the spread of the disease, the maps supported better understanding

TABLE 4.6	PERCENTAGE OF INDIVIDUALS USING THE INTERNET IN THE HKH COUNTRIES			
Individuals using the Internet (% of population)				
Country	2018	2019	2020	2021
Afghanistan	16.80	17.60	18.40	n.d.
Bangladesh	23.44	27.76	32.87	38.92
Bhutan	63.50	74.18	79.87	85.64
China	59.20	64.08	70.05	73.05
India	20.08	29.52	43.41	46.31
Myanmar	28.70	30.64	41.95	44.02
Nepal	28.60	34.81	45.85	51.63
Pakistan	15.34	17.07	18.93	21.04
South Asia	20.23	27.99	39.24	42.85
World	49.16	53.75	59.64	63.10

n.d. = no data Source of Data: World Bank Database, 2023

and monitoring of spatial trends of COVID-19, leading to decision-making on lockdowns and preparation of social distancing guidelines. The maps also helped governments to monitor the surge of COVID-19 and assess the capacities of the healthcare systems in different locations. Later, the university's application was used to monitor the vaccinated population.

As access to hospitals and clinics was restricted and other health conditions were pushed into the shadows by COVID-19, online consultation services with doctors and specialists were initiated to help those in need. Mobile apps and services emerged to provide help for prevention and care of COVID-19 cases. There were massive social campaigns on prevention and care on most TV channels, which were spearheaded by governments, international agencies, and health organisations. For their part, the mobile service providers played COVID-19 awareness caller-tunes every time a call was made. Stress, from fear of catching the virus and due to isolation (Lee et al., 2022), as well as owing to the overwhelming number of online meetings demanded by the new work-from-home culture, prompted the appearance of online psychological counselling services which helped to connect mental health workers with those who needed them.

4.6.2 Responses

The pandemic provided new opportunities for “social robots” to demonstrate their value by providing assistance to people in real scenarios (Aymerich-Franch, 2022). In Nepal, students and engineers created such robots to deliver medical supplies to infected patients to reduce the risks to frontline health workers (UNDP, 2020; NIC Nepal, 2022). Similarly, a Medcart robot was built in Bangladesh to safely deliver food, medicines, and other essentials (TBS, 2020), while Pakistan opened the first robot-operated COVID-19 testing lab (Deccan Herald, 2020). India developed advanced robots to carry out tasks ranging from disinfecting surfaces to answering patient queries and enabling video consultations with doctors (CNN, 2021).

The education sector was the worst hit by the pandemic as all the schools in the region closed by April 2020. The lockdown, which was initially planned to last for a few weeks had to be continued indefinitely with no signs of the virus coming

under control. Although tools like Blackboard and Moodle had been available for more than a decade, and educational technologies, such as massive open online courses (MOOCs), had been in use in distance learning programmes, these were mostly limited to open universities. The schools in the major urban centres of the HKH shifted to virtual classes by adopting tools like Zoom, Google Classroom, and Teams. Thus, an entire generation of children had to start managing and mastering digital tools to participate in the basic education process. This required significant adjustments not only from the children and their teachers, but also from their families, the school administration, and, essentially, the entire society. Few were prepared for it, or had the requisite knowledge, skills, finances, or infrastructure to participate effectively at first. It also amplified the problem of digital divide (Gurung & Paudel, 2021) between students from urban and rural areas, as well as between students from rich and poor families. In such a situation, high-school students from poor communities who did not have access to digital devices were deprived of their basic right to education, potentially affecting their prospects in life.

Moreover, the quality and effectiveness of the online lectures came under scrutiny as did the communication level between the teacher and the students. In many cases, student participation in online class activities was impaired due to technical constraints. While in several cases online classes succeeded in engaging teachers and students, there were no standard evaluation procedures in place to assess the efficacy of these classes. Courses that were taught on government-run TV networks of the HKH countries, followed a one-way method of communication by the teachers. Consideration was also not given to the students' and parents' convenience as far as the timing of the lectures was concerned.

The strict regulations on social distancing and restrictions on in-person businesses precipitated the culture of working from home, which had not been common in South Asia. Many offices took to a range of collaborative platforms and video-conferencing tools for engaging with colleagues and clients. Long hours of online meetings from home became a daily routine for office workers. They also had to bear the additional responsibility of taking care of their children whilst they too attended online classes from home.

The lockdowns completely halted in-person businesses like restaurants, movie theatres and gyms. With the closure of stores and shortage of supplies, there was extreme pressure on businesses to find new ways of survival, and this pushed them to explore and utilise digital platforms to sustain their operations. As a desperate response to the crisis, almost every business and service provider, including small businesses, were forced to automate their supply chain management, sales, customer services, marketing, delivery, and payments. In such an environment, e-commerce businesses found their opportunities multiplying as retailers started embracing emerging technologies for online sales. Thus, online outlets and home delivery services mushroomed within a short period of time, bringing a paradigm shift to the businesses dealing in groceries and other household items. Consequently, consumer behaviour too changed, which now showed more trust in online buying. Taking advantage of this high demand for online retail services, several social media platforms started adapting quickly by adding commercial features to their portals. Overall, online home delivery services boomed during the pandemic, to the advantage of third-party delivery providers who entered into partnerships with stores to accelerate and smoothen delivery services, and creating novel business models and new opportunities.

As a consequence, amid the overall slowdown in economic activities, there was a big surge in e-commerce and an acceleration in digital activities (UNCTAD, 2022). The share of e-commerce in global retail trade rose from 14% in 2019 to about 17% in 2020 (ITA, 2021). Banks and other financial institutions, which had been aggressively opening up new branches before COVID-19, changed their strategies and focused on digital services. Thus, mobile banking became a mainstream mode of transaction, while e-wallets and mobile phone payments using a QR code became rather common even in small grocery shops in Bangladesh, India, and Nepal.

With strict restrictions on social gatherings, movie theatres were one of the avenues which lost their business completely. Home streaming services like Netflix filled the gap and grew (ACCA, 2020) to become available in over 190 countries and adding more than 26 million global subscribers in the first half of 2020.

As people were largely confined to their homes and with limited contact with others, social media became a pastime as well as an important means of interaction and for maintaining relationships. As a source of humour and distraction from the pandemic, it relieved the mental stress of both children and adults. However, excessive time spent during the pandemic on social media platforms was associated with increased anxiety and depression symptoms (Lee et. al., 2022).

Social media platforms were used by government health organisations to convey information quickly to a wider population. However, social media was also responsible for circulating rumours and dubious information which had the effect of influencing individual behaviours. It was this state of affairs that led to the WHO declaring an “infodemic” in the midst of the pandemic, signalling the spread of health disinformation as a global concern.

While the whole world was fully focused on COVID-19, people suffering from other health conditions and diseases were given reduced priority when it came to treatment. A strong need was thus felt for the development and delivery of cost-effective telemedicine services at large scale to make healthcare available and affordable for all. Having taken these steps, it is likely that digital technologies have a huge role to play in delivering healthcare services in the future. Unfortunately, the efforts to develop innovative healthcare solutions using robots, sensors, and artificial intelligence seem to have lost momentum in the post-pandemic period in countries such as Bangladesh, Nepal, and Pakistan.

4.6.3 Gaps and lessons learnt

- The sudden move to digitalisation by most sectors as a desperate response to the COVID-19 crisis brought to light many gaps. The existing digital divide became more prominent as the dependence on digital services grew overnight with regard to many daily activities (Iivari et. al., 2020). This disproportionately affected vulnerable groups of low-income households, those with less education, the elderly, and the disabled; this was because they mostly lacked access to digital technology and were mostly without digital skills (Barnes, 2020). There is a wide

digital divide between advanced and emerging-market economies, urban and rural areas, large and small firms, and high- and low-skilled individuals (Barnes, 2020; OECD, 2021).

- As it was the first time that many organisations and employees were adopting the work-from-home practice, a key challenge lay in maintaining organisational culture in virtual environments. Specifically, senior managers in many organisations who were previously hesitant about adopting new technologies were forced to do so. The shifts towards digital offices and new business models were also hindered by factors such as organisational inflexibility, digital illiteracy, and employee discomfort at changing work practices.
- As people spent more time online during the pandemic, cases of cyberattack saw a spike, which called for new forms of policing and law enforcement (Lallie et. al., 2021). One study found that during the pandemic, around 47% of online users fell for phishing scams (Sood et. al., 2021). There were those, who, in their eagerness to collect information on the virus, were exposed to malicious websites of cyber criminals. W
- The education sector in the HKH region needs to develop strategies to ensure high-quality, accessible, and affordable digital technologies, both in urban and rural schools. The pandemic has demonstrated that digitalisation provides a crucial opportunity for change in the health sector. The efforts made by young engineers and technicians during COVID-19 on developing innovative healthcare solutions need to be sustained through conducive policies and incentive mechanisms so that quality healthcare services are made accessible and affordable for all.
- During the pandemic, businesses and governments took the opportunity to digitalise and automate their processes. However, without the stimulus of the pandemic, weak institutional memory among the region's public and its governments does not rule out the possibility of businesses and customers regressing towards the old manual processes. Digital readiness should be a regional priority so that more local businesses can become producers in the digital economy and not just consumers. The HKH countries need to build enabling e-commerce mechanisms to support and facilitate digital trading and payments.
- Although there is an increased need for moving the information technology infrastructure from on-premises systems to cloud platforms, such shifts from old routines, values, and processes have been rather limited and will take time in the case of the developing countries (Amankwah-Amoah, 2021). They also have to be equipped with better capabilities to capture and harness data, and require stronger legal and regulatory frameworks for creating and capturing value in the digital economy (UNCTAD, 2022). This should be supplemented with relevant changes in public policies and the establishment of appropriate regulations for secure online transactions.
- To support universal digital transformation, governments should encourage private investment in underserved areas through fiscal incentives and make investments where private investment is not commercially viable. The importance of regional cooperation cannot be overstated, since it will help platforms to share best practices and enable the development of digital transformation strategies; it will also promote digital economy-led development and prioritise investment in regional ICT infrastructure projects (Liu & Fan, 2022).

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CHAPTER 5

COVID-19 and the environment – air pollution, water, and ecosystems

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Key messages

After the temporary reduction in air pollution during the COVID-19 lockdown, it has returned to pre-pandemic levels. The abundance of research and data generated during, and about the pandemic played a crucial role in advancing our understanding of COVID-19 and in informing public health responses. However, there is limited research specifically examining the changing relationship between COVID-19 and air pollution, including on the main sources of air pollution reduction during the pandemic.

The pandemic forces us to rethink biodiversity conservation development- dominant models and reset human–nature relations through the One Health approach, a new paradigm that recognises the interconnections between people, wild and other species, and ecosystems. There is an urgent need to collaborate and restore degraded ecosystems with greater investments, including through comprehensive ecological research to understand the complexity of these interconnections and study the impacts of the pandemic via a multidisciplinary regional team so that in the future there would be better preparedness and relevant action.

The COVID-19 pandemic has highlighted the critical need for a more resilient water sector in facing future challenges. The crisis also emphasised the importance of community engagement, public health education, and the preservation and effective management of freshwater ecosystems. However, progress in bolstering the resilience of the water sector in the Hindu Kush Himalaya region has been slow. Governments in the region need to prioritise investments towards resilient water resource management, going beyond mere infrastructural development and towards comprehensive, adaptive, and GESI-responsive strategies.

5.1 Introduction

Following COVID-19's first confirmed outbreak in Wuhan, China in December 2019, COVID proved to be a highly transmittable and pathogenic viral infection caused by the severe acute respiratory syndrome, coronavirus 2 (SARS-CoV-2) (Lamers & Haagmans, 2022; Markov et al., 2023; Sanders et al., 2020; Wu et al., 2020) and the World Health Organization declared it a global pandemic in March 2020 (WHO, 2020a). This health crisis emerged soon after the *Global Assessment Report on Biodiversity and Ecosystem Services* from the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), which highlighted increased biodiversity loss and extinction risks threatening human civilisation (IPBES, 2019, following Lewis & Maslin, 2015; Running, 2012). It highlighted Tollefson's (2020) concern that human interventions, in the form of forest degradation and infrastructure development, had disrupted natural habitats and exposed humans and domesticated animals to new disease agents, raising the risk of zoonotic diseases. The IPBES report also indicated how humans have crossed several planetary boundaries, including an accelerating rate of biodiversity loss (Finn et al., 2023; Willcock et al., 2023), increasing land, water, and air pollution (Akimoto, 2003), and triggering hydrological disruptions and water crises (Scanlon et al., 2023). The COVID-19 pandemic has added to these challenges with impacts across all spheres of human life – social, economic, and environmental (Gibbons et al., 2022; Zizek, 2020) and has slowed attainment of commitments to the Sustainable Development Goals (Wang & Huang, 2021), the Convention on Biological Diversity (Ortiz et al., 2021), and the Paris Agreement (Reilly et al., 2021), among others.

The standard response to containing the coronavirus globally was lockdowns – complete or partial suspension of movement of people and goods, international travel, economic activity, and public gatherings (Onyeaka et al., 2021). The lockdowns had notable environmental consequences, with positive effects, including reduction in pollution, an overall improvement in air quality (Diffenbaugh et al., 2020; Le et al., 2020), and a drastic decrease in global and regional carbon footprints (Molintas, 2020). However, the reduction in air pollution was a temporary event (Mishra & Kulshrestha, 2021; Saha et al., 2022). In many regions, air pollution levels have returned to pre-pandemic levels, or have come back with greater vigour due to phenomena such as forest fires (Upadhyay et al., 2022).

The varied impacts of the pandemic have been documented in biodiversity research and conservation (Cooke et al., 2021) literature. In some instances, researchers have shown how the 'anthropause' benefitted wildlife and the larger biodiversity (Rutz et al., 2020). Reduced human movement and activity near national parks lowered the stress on wild animals, leading to an increase in their sighting in the vicinity of humans (Zellmer et al., 2020). However, the negative impacts of the lockdown on the global economy, including an increase in global poverty, food insecurity, and loss of income, led to adverse environmental impacts as well, such as in the form of accelerated deforestation and an increase in wildlife crime (Diffenbaugh et al., 2020). Several studies have suggested that greater human confinement and limited conservation enforcement may have increased the likelihood of poaching of wildlife (Aditya et al., 2021; Ghosal & Casey, 2020; Koju et al., 2021) and the consumption of wild species, as people sought food or saleable commodities (Paxton, 2020). Further indirect consequences were the postponement of major

global environmental meetings – such as COP15 and COP26 – which stalled key global decision-making processes (Chasek, 2021; Ortiz et al., 2021).

The Hindu Kush Himalaya, characterised by dynamic and fragile mountain ecosystems, acute poverty, inaccessibility, and poor health infrastructure, was affected by COVID-19 in all spheres of life (ICIMOD, 2020; Rasul et al., 2021). As the pandemic spread in the region, it elicited diverse responses from the HKH countries – Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan – which tried to use the available resources in the best way they could to address the crisis. As was the case globally, lockdown was used as an effective strategy, but it had mixed impacts (ICIMOD, 2020). A preliminary analysis of the overall impact of COVID-19 on the HKH region shows some short-term gains in sectors like the environment but major setbacks to the economy (ICIMOD, 2020; Joshi et al., 2022).

However, after several years of the pandemic, the response mechanisms of the HKH countries to the disease pandemic still await a comprehensive analysis. In this chapter, we highlight the analyses that are available, primarily seeking to bring to the fore the lessons learnt in the environment sector, with a special focus on air pollution (5.2.1), biodiversity (5.2.2), and water management (5.2.3).

5.2 Air pollution

Air pollution is a pressing environmental issue globally, and currently 91 per cent of the world's population live with air pollution levels above WHO-recommended air quality standards (WHO, 2019, 2022). Energy production and consumption have a significant impact on air quality and the climate, and the two are linked (Khan & Hou, 2021). Most industrial processes, transportation, and residential heating and cooking around the world rely on burning fossil fuels such as coal, oil, and natural gas, or on the use of non-fossil solid biofuels. The combustion of fossil fuels and solid biofuels releases various air pollutants, including greenhouse gases (GHGs), into the atmosphere, resulting in poor air quality that has detrimental effects on human health, ecosystems, and the climate (Jacobson, 2010). At the same time, changing climatic conditions can also influence air pollution levels and its composition. For example, higher temperatures and changes in

atmospheric conditions can affect the formation and dispersion of pollutants (Manisalidis et al., 2020). Furthermore, some climate change-induced events, such as more frequent and intense wildfires, release large amounts of smoke and pollutants into the air, worsening the health challenges from air pollution (Requia et al., 2021).

Before the COVID-19 pandemic, global air quality was characterised by varying levels of pollution, depending on the region (Pal et al., 2022). In the Indo-Gangetic Plain and the Himalayan foothill region (IGP–HF), including parts of the HKH, air quality was poor primarily due to the burning of solid fuels for heating and cooking, and also due to industrial emissions, vehicular pollution, use of chemicals, and burning of agricultural residues (Ravindra et al., 2020, 2022). Cross-country transport of pollution from biomass burning in cities like Delhi and Kolkata in India also contributed to pollution before the pandemic (Chatterjee, 2019; Ghosh et al., 2019). Though air pollution reduced during the lockdowns, cities like Delhi and Kolkata continued to suffer from pollution (Chatterjee, 2019; Ghosh et al., 2019). Li & Managi (2022) have published a correlation analysis suggesting a relationship between COVID-19 case fatalities and areas of long-term pollution.

During the pandemic, global air quality saw significant improvement due to restrictions on the movement of people and on economic activities (He et al., 2020; Diffenbaugh et al., 2020; Le et al., 2020). With reduced industrial activity and transportation, air pollution levels reduced sharply in both urban and rural areas worldwide. Satellite images and air quality monitoring stations reported a significant drop in key pollutants like nitrogen dioxide (NO₂), carbon monoxide (CO), sulphur dioxide (SO₂), and particulate matter (PM). However, the reduction in air pollution in South Asia during the initial phase of the pandemic was a temporary phenomenon (ICIMOD, 2020; Mishra & Kulshrestha, 2021; Saha et al., 2022; Upadhyay et al., 2022).

Even as the air quality in the IGP–HF region improved to some extent during the pandemic due to reduced economic activities (Srivastava et al., 2021; Bahukhandi et al., 2023), air pollution often remained at elevated levels, especially over the eastern and central Himalaya and their foothills due to forest fires and increased biomass

burning. According to a study by Upadhyay et al. (2022), during the lockdown, there was an overall decline (around 14–18 per cent) in aerosol optical depth (AOD) – a proxy for atmospheric particulate loading in Bangladesh, India, and Pakistan whereas an increase (around 40 per cent) was observed over Myanmar and other mountainous regions in the north, including Nepal. Overall, the reduction in vehicular and industrial emissions levels observed during lockdown led to a decrease in fine particulate matter by approximately 20–50 per cent at the city scale. At a regional scale, however, these positive impacts of COVID-19 lockdowns were less noticeable due to the influence of other significant factors, such as biomass burning, which were not constrained by the lockdown measures (Upadhyay et al., 2022).

When viewed by sector, a significant proportion of emissions in the IGP–HF region emanates from the residential sector. During the pandemic, there was no curtailment of activities in this sector. It seems probable that as people were confined to their homes, they cooked more and burnt more litter and waste. Additionally, the temporary reverse migration of people from urban centres to rural areas resulted in a shift in high emission patterns from the urban residential sector to the rural residential sector (Upadhyay et al., 2022). Urban areas also experienced a fall in air pollution due to restrictions on construction activities.

The pandemic shed light on the dynamic nature of air-pollutant emissions, raising the case for the collection of increased data for a better understanding of the sources and patterns of

emissions in the IGP–HF region (Upadhyay et al., 2022). Upadhyay et al. (2022) had used satellite data and in-situ data where this was available (mostly for Nepal). However, in the wider HKH region, there is inadequate air quality monitoring infrastructure, especially in rural and peri-urban areas. While ICIMOD has been instrumental in addressing this challenge by promoting air quality monitoring via the use of ground-based, satellite-based, and numerical model-based approaches covering the entire HKH and its surrounding regions (ICIMOD 2023a), there is yet more scope for enhanced regional cooperation and knowledge sharing in this area.

5.2.1 Impact

Most of the HKH countries witnessed a notable decrease in air pollution during the pandemic (He et al., 2020; Singh et al., 2020a; Mishra & Kulshrestha, 2021; Upadhyay et al., 2022). This temporary reduction in pollution levels meant clearer skies (Girdhar et al., 2021) and picturesque views of the Himalayan ranges even from the IGP. This development fostered a sense of optimism regarding the possibility of addressing the long-standing issue of air pollution in the region.

Data on PM_{2.5} for the eight HKH countries between the years of 2019 and 2020 are presented in Table 5.1. Between 2019 and 2020, China witnessed a 57 per cent decrease in air pollution, Myanmar 53 per cent, Afghanistan 39 per cent, India 38 per cent, Pakistan 37 per cent, Bangladesh 36 per cent,

TABLE 5.1

A COMPARISON OF AIR POLLUTION LEVELS IN THE HKH COUNTRIES BETWEEN 2019 AND 2020

Country	PM _{2.5} concentration in 2019 (µg/m³)	PM _{2.5} concentration in 2020 (µg/m³)	Percentage change
Afghanistan	22.92	14.04	-39%
Bangladesh	70.44	45.26	-36%
Bhutan	25.49	18.93	-26%
China	48.28	18.88	-57%
India	49.90	30.99	-38%
Myanmar	51.17	24.21	-53%
Nepal	37.21	28.85	-22%
Pakistan	43.96	27.76	-37%

Source: Karkour and Itsubo (2020)

Bhutan 26 per cent, and Nepal the least with 22 per cent. Any assessment of the impacts of COVID-19 on air quality needs to consider the various phases of the pandemic – pre-, during, and post-, as it is the two latter phases that collectively contributed to a reduction of activities and the global economic slowdown, exacerbated by other financial factors and instability (Leclerc, 2023). All these challenges also had direct or indirect impacts on air quality.

In the post-pandemic period, as fossil fuel-based energy prices increased, there has been a decrease in the use of high-quality fuels and a greater use of low-quality energy sources, especially by the poorer sections of society. Even during the pandemic, they depended on low-quality fuel for household energy needs, thereby exposing themselves to higher concentrations of indoor air pollutants (Ferreira & Barros, 2022). Thus, despite the fact that emissions from transport and industry reduced significantly, there were concerns about the increased use of low-quality fuels for household energy needs (OECD, 2020a).

5.2.2 Responses

In the light of the varied impacts that COVID-19 had on human societies worldwide, the scientific community took the opportunity to learn more about air pollution. Scientific journals played a crucial role during the pandemic as a means of disseminating critical research on the severity of COVID-19, its transmission dynamics, and the interconnection between COVID-19 and air pollution.

The *Sixth Assessment Report* (AR6) of the Intergovernmental Panel on Climate Change (IPCC), which discusses COVID-19, highlights the fact that the containment measures implemented to address the pandemic had clear and observable effects on air quality across many regions (Szopa et al., 2021). Notably, global anthropogenic nitrogen oxide (NO_x) emissions also decreased, contributing to improved air quality in various parts of the world. The pandemic also led to a reduction in global fossil carbon dioxide (CO₂) emissions, primarily due to decreased emissions from the transportation sector (Martinez-Soto et al., 2021). However, the IPCC report concludes that

in terms of their impact on global and regional climates, there were no noticeable changes in the natural emissions of Short-Lived Climate Pollutants (SLCPs).

The United Nations Environment Programme (UNEP, 2021a) outlined a way forward after the pandemic¹⁵, and emphasised the importance of supporting the ban on open biomass burning and investing in environmentally sound treatment methods to reduce air-pollutant emissions. It urged countries to enhance their air quality monitoring capacities, promote data generation and access, strengthen legal and policy frameworks on air pollution, and invest in relevant technology and infrastructure. Further, a UNEP resolution highlighted the need to continuously strengthen the enforcement of existing air pollution regulations to safeguard human health (UNEP, 2019b, 2021b, 2022a). It also urged the inclusion of air quality considerations and COVID-19 modelling endeavours in future research (UNEP, 2021a, 2021b, 2021c, 2022b).

Between 2020 and 2024, a significant number of research papers were published in different parts of the world investigating the correlation between air pollution and COVID-19 (Addas & Maghrabi, 2021; Mehmood et al., 2022). In 2020 alone, 830 research articles were published with 16,600 citations; this figure increased to 990 research articles in 2021. Over 483 articles were published on the subject between 2022 and 2023 (<https://www.research4life.org>), with the largest number coming from China, followed by the US and India. Pakistan and Bangladesh contributed 16 and 11 articles respectively on the topic of air pollution and COVID (Mehmood et al., 2022). The later papers were able to assess the impacts of air pollution on public health both during and post COVID (e.g. Chinnasamy et al., 2023; Gao et al., 2023; Ma et al., 2024).

Reputed newspapers dedicated significant space to air pollution and COVID-19 (including those from South Asia) and reached wider audiences beyond those of scientific journals. Both the electronic and print media also raised awareness about the connections between air pollution, respiratory health, and susceptibility to diseases like COVID-19.

¹⁵ in accordance with Resolution 7 (Environmentally Sound Management of Waste) and Resolution 8 (Sound Management of Chemicals and Waste) of the fourth session of the United Nations Environment Assembly (UNEA) that took place in March 2019 in Nairobi (UNEP, 2021a).

However, it is important to observe that the direct impact of scientific journals on policy and eventual mitigation action might have been limited. Policy decisions are usually influenced by various factors beyond scientific research, including political considerations, economic implications, and societal dynamics (Jakob et al., 2020). While significant support was provided by governments, development partners, development banks, non-governmental organisations, and other entities to respond to the crises caused by COVID-19, this is not evident specifically in activities related to addressing air pollution during the intensive phase of the pandemic. Governments and partners in the HKH were concerned with vaccine distribution, healthcare provision, food supply, and safe passage home with provisioned transport and the distribution of medicines, but limited emphasis was placed on addressing air quality concerns within the context of the pandemic. An exploration of the websites of different development partners and governmental agencies shows that policies or projects specifically targeting air quality management during the COVID period were scarce (OECD, 2020b). Government capacity to monitor and manage air pollution at the local level remains unchanged before, during, and after COVID.

During the pandemic, there was widespread acceptance and a positive response from the public regarding measures such as wearing masks, practising sanitisation, and maintaining cleanliness. People recognised the significance of improved air quality and the role of masks in protecting individuals from exposure to the virus. With restrictions on in-person gatherings and travel, many events were shifted to online platforms. While theoretically, this shift during the COVID period constituted a positive step towards reducing carbon emissions, it is important to note that no credible study has specifically looked at the net reduction in air quality and carbon footprints resulting from this transition. Business travel has already reverted to pre-COVID levels. Moreover, the greater use of virtual platforms plus in-person as well as hybrid meetings may in fact increase net energy consumption, leading to increased carbon footprint and air-pollutant emissions, a suggestion which needs to be examined further.

5.2.3 Lessons learnt

During the pandemic, the use of COVID dashboards (WHO, 2019) became widespread as a means of disseminating real-time data and knowledge. These dashboards were utilised in various countries to provide up-to-date information about new COVID-19 cases, deaths, testing, and other relevant matters. These dashboards proved to be an efficient tool for visualising and understanding the evolving situation, thereby enabling timely decision-making and also enabling the public to gain information about the status of the pandemic. The dashboards enhanced transparency, promoted data-driven approaches, and facilitated a coordinated response to the crisis.

The period of the pandemic enabled people to witness first-hand what clean air 'looked' and felt like, which created a newfound emphasis on cleaner air. Prior to the pandemic, the significance of improving air quality was not widely recognised or given high priority, given the absence of data or evidence. This shift in perspective can lead to increased efficacy of advocacy efforts and actions towards achieving and maintaining cleaner air in the future.

Studies of the relationship between COVID-19 and air pollution have focused mostly on ambient air quality monitoring and observations (IPCC, 2021). The lockdown measures reduced human activities and temporarily decreased air pollution levels; however, there is limited research examining the main sources of air pollution reduction during the pandemic (Fan et al., 2020; Adam et al., 2021). To develop effective policies, it is important to consider other factors besides air pollution and COVID-19 per se, and to include socio-economic considerations, changes in demography, healthcare infrastructure, and public health strategies (Jakob et al., 2020; Shekhar 2022).

During the pandemic, there was an abundance of papers and information available on the crisis, some that were published even before undergoing peer review or expert scrutiny (Machin-Mastromatteo et al., 2021). While some of these papers proved to be valuable and informative, some were later considered unreliable or of low quality. However, despite the challenges posed by unverified information, the abundance of research and data during the pandemic helped

in advancing understanding of COVID-19 and informing public health responses. There is a need to generate evidence for the HKH region, especially for the IGP-HF region, at a similar speed and scale, to enhance our understanding of air pollution, given the hazardous conditions under which tens of millions live. For several of the air pollution sources, evidence needs to be collected and disseminated while still relevant.

After temporary reduction during the lockdowns, air pollution levels have returned to pre-pandemic levels (Kumar et al., 2020) in the HKH. Mandated government agencies are now facing the same set of challenges in managing and controlling air pollution as was the case before the pandemic. Evidence-based, cost-effective solutions need to be promoted requiring collaboration between governments, industries, communities, academics, and other stakeholders for their development and effective implementation. Since air pollution is a national, regional, and global challenge, governments require policies to address this issue at these nested levels. Furthermore, raising awareness and educating the public about the harmful effects of air pollution and laying emphasis on the importance of actions at the individual level can also contribute to reducing pollution.

Although the pandemic created opportunities to study air pollution in the region, many of the studies that were conducted focused primarily on urban areas or highly populated areas, leaving a gap in understanding the relationship between air pollution and COVID-19 in rural regions across the globe, including the HKH region (OECD, 2021). Similarly, the interlinkages between air pollution and biodiversity, air pollution and society, and especially its health and economic impacts on marginalised and vulnerable communities, remain largely unknown and unexplored.

To reduce air pollution in the region, there is a continuing need to promote a shared understanding of air pollution issues among the HKH countries through collaboration and sharing of knowledge and to enhance individual and institutional capacities (Koziell & Gyamtsho, 2023; Shrestha et al., 2022). Continuous and near-real-time monitoring of air quality in situ, satellite-based observations, and model-based analyses are required. The data could be presented using dashboards to help provide policymakers and the

public with real-time information on air quality to inform decision-making and to raise awareness about the impacts of air pollution. Employing data-driven approaches and promoting access to reliable information can contribute to the overall understanding of environmental health and support the development of effective policies and interventions in this area.

5.3 Biodiversity

People have been changing the world's ecosystems to meet their growing demands for land, water, food, shelter, and health (IPBES, 2019). We are at a juncture in history where rampant development has resulted in the Triple Planetary Crisis of climate change, biodiversity loss, and pollution (Hellweg et al., 2023). Our actions have significantly impacted more than three quarters of the Earth's land surface, destroyed more than 85 per cent of its wetlands, and dedicated more than a third of all land and almost 75 per cent of the available freshwater to crops and livestock production (Settele et al., 2020). Increasing deforestation, uncontrolled expansion of agriculture, intensive farming, mining, and infrastructure development, as well as the exploitation of wild species, have created a 'perfect storm' for the spillover of diseases from wildlife to people (FAO, 2020a; Settele et al., 2020), and have led to the emergence of infectious diseases (Lawler et al., 2021; Rulli et al., 2017).

An FAO brief (FAO, 2020b, 2000c) noted disruptions or shifts in international trade in timber and supply chains already early in the pandemic, and that people engaged in forest-based enterprises faced lay-offs. The pandemic was projected to impact local harvesting patterns of forest biodiversity and the livelihoods of the poorest and marginalised communities dependent on forest resources.

The HKH region was already facing challenges to its rich biodiversity. Roughly 70 per cent of its original ecosystems have been modified over the last century and more than 85 per cent of its people still directly depend on nature-based primary activities for subsistence (Xu et al., 2019). The rich faunal diversity of the HKH (Allen et al., 2017), and the higher rate of ecosystem degradation (Venter et al., 2016) potentially make the region a hotspot for a range of zoonotic disease hosts, and exposure of people to novel diseases (Pongsiri et al., 2009).

5.3.1 Impacts

The large diversity of potential mammalian hosts (Han et al., 2016) and trade in wildlife (Upreti et al., 2021) could serve to make the HKH a hotspot for zoonotic diseases. As the HKH is the most fragile mountain ecosystem in the world and extremely sensitive to climate change (Bahukhandi et al., 2023), the increasing degradation of the contiguous habitats of many host species makes it a pandemic-prone region (ICIMOD, 2020; Xu et al., 2019).

During the last four years (since March 2020), the HKH region has witnessed a range of impacts of COVID-19 on its biodiversity and these seem to vary at different elevations and in different ecosystems. The impacts of COVID-19 also slowed biodiversity research and conservation actions (Ramvilas et al., 2021). In the following discussion, we explore the impacts of COVID-19 on rangeland ecosystems, forest ecosystems, wetland and riverine ecosystems, and on the prevalence of zoonotic diseases in the HKH.

Rangeland ecosystems

Rangelands constitute a fragile ecosystem covering nearly three-fourths of the HKH. It is a potentially vulnerable ecosystem in which a wide range of globally significant animals live and move and where there is a strong interaction with pastoral communities (Luxom et al., 2022; Mishra et al., 2010), who depend on the ecosystem for their subsistence livelihoods (Aryal et al., 2014).

The recorded impacts, in the first instance, were economic. The COVID-19 pandemic significantly impacted not only the collection of resources by the HKH pastoral communities but also their routine activities in the high-altitude rangelands. When the health and sanitary guidelines were imposed, collection of the caterpillar fungus (*Ophiocordyceps sinensis*) was disrupted. It is a high-value product that is an important ingredient in traditional medicine and a significant source of income for the mountain communities (Paudel, 2022).

Impacts were felt more acutely in Bhutan and Nepal where the fungus is a primary source of income for collector households. In Nepal, the collectors defied a ban on collection as well as health and sanitary precautions and continued to

collect the cordyceps (Devkota et al., 2022; Paudel, 2023; Singh, 2020). Although the restrictions did reduce the competition among the collectors (Paudel, 2022), there was still an increase in the per capita collection of cordyceps in Nepal, from 0.94 grams in 2019 to 2.01 grams in 2020 (Paudel, 2023).

Bhutan monitored cordyceps collection strictly to ensure compliance with the guidelines (Dorji, 2020; Pem, 2020), although it also extended the collection period by two weeks during the pandemic, keeping in mind the economic needs of the collectors. Furthermore, the usual practice of selling cordyceps at auction yards was discontinued in the middle of 2020 and direct sale to buyers was permitted as a temporary measure (Bhutan Times, 2020).

The pandemic had diverse effects on the HKH's semi-nomadic pastoralists, depending on their source of income (Centre for Pastoralism, 2021). For instance, those pastoralists who relied solely on selling milk were hit harder than those with multiple sources of income. Market closures also disrupted the sale of animals, while the restrictions on movement reduced access to pasture, especially in forested and protected areas. The lockdown also affected migration patterns due to delays and interruptions. In such a situation, herders not only had to pay more for animal feed (Long, 2020) but also faced difficulties in obtaining it from the markets due to reduced accessibility. However, in some parts of the HKH, civil society organisations intervened to help herders and distributed rations to them. ICIMOD proposed relevant policy recommendations to help the HKH mountain communities become more resilient to shocks from future pandemics (ICIMOD, 2020).

Forest ecosystems

Forests cover less than 15 per cent of the HKH's geographical area. However, 75–80 per cent of its rural residents depend directly on forest resources for their daily subsistence needs (Xu et al., 2019). Forest fires are one of the major causes of ecosystem degradation and carbon emissions, and adversely affect the health and livelihoods of forest-dependent communities. Interestingly, there was a reduction by 83.4 per cent in the cumulative incidence of fires in the HKH region between 24 March and 5 May 2020 as compared to the corresponding 2006–2020 average (Gupta et al., 2020). Some of the RMCs witnessed a notable

TABLE 5.2

A COMPARISON OF THE NUMBER OF FIRE INCIDENTS IN HKH COUNTRIES BETWEEN 2019 AND 2020

Country	Number of incidents in 2019	Number of incidents in 2020	Percentage change (%)
Afghanistan	856	2,164	152.8
Bangladesh	10,965	11,054	0.81
Bhutan	605	478	-20.99
China	NA	NA	NA
India	531,727	470,667	-11.48
Myanmar	377,443	409,866	8.59
Nepal	31,299	8,409	-73.13
Pakistan	52,647	50,865	-3.38

Source: Vadrevu et al. (2023)

decrease in forest fires, such as Nepal (73 per cent), followed by Bhutan (20 per cent), while greater incidences of forest fires were reported from Afghanistan, Bangladesh, and Myanmar (Table 5.2; Vadrevu et al., 2023). As millions of migrant workers returned home, forests also became a source of both basic and additional income, leading to their overexploitation (Upreti et al., 2021).

The pandemic year of 2020 was subject to higher precipitation than in the immediate previous years and the clearer skies during the lockdown enabled canopies to sustain and be more active, leading to more productivity (Ranjan et al., 2022). In China, there was an advancement of monsoon by 8.4 days and the vegetation was 17.5 per cent greener in 2020 compared to 2015 (Su et al., 2021). Such evidence underlines the fact that anthropogenic activities play a major role in forest ecosystems in this region.

One major activity that came to a halt during the pandemic was timber trade; however, that proved to be a double-edged sword – while it may have provided relief from logging, it hardly provided relief to the businesses and labour communities involved in the trade (Basnyat et al., 2020). Gandaki province in Nepal lost USD 9.6 million in earnings and 3.2 million person-days of employment during the lockdown period. The additional forest-related economic costs of the lockdown in the province, were USD 1.73 million for traders of non-timber forest products (NTFP), USD 1.26 million for ecotourism entrepreneurs, USD 0.55 million for community forest user groups, and USD 0.24 million for smallholder or private owners of forest land (Laudari et al., 2021).

Wetland and riverine ecosystems

COVID-19 affected the entire wetland and riverine ecosystems of the HKH in various ways. The reduction in pollutants resulted in reduced melting of glaciers in the western, central, and eastern Himalaya, thereby preserving 27 million tonnes of ice and snow (Hou et al., 2023). As the pandemic reduced industrial activities and movement of people, it led to a substantial improvement in water quality due to reduced pollution (Lokhandwala & Gautam, 2020; Sharma & Gupta, 2022), which had positive impacts on wildlife and fisheries (Singhal & Matto, 2020). The quality of river water also improved (Sarkar et al., 2021). The Ganga River, India's lifeline, with 97 towns along its course, receives 3,500 million litres per day of sewage, of which about 9 per cent are industrial effluents. However, water quality in the Ganga was estimated to have improved by 40–50 per cent during the lockdown period (CPCB, 2020; Mani, 2020) with parameters like pH, dissolved oxygen (DO), biochemical oxygen demand (BOD), and total coliform (TC) showing improvement (Chakraborty et al., 2020; Dhar et al., 2020; Mukherjee et al., 2020). A similar improvement was observed in the Yamuna River, mainly due to the absence of industrial discharge and agricultural run-off, as well as the reduced influx of domestic wastewater (Roy & Chaube, 2021). With the lockdown, the DO levels in the Bagmati River Basin in Nepal increased 1.5 times, and the BOD and chemical oxygen demand (COD) decreased by 1.5 and 1.9 times, respectively. Such improvements in water quality confirm the potential for degraded aquatic ecosystems to recover remarkably once anthropogenic activities are limited (Pant et al., 2021). In Bangladesh, the surface water quality

improved by 20 per cent and the quality of river water improved by 62 per cent, resulting in reduction in carcinogenic risks to children and adults by 53 per cent and 52 per cent, respectively (Haque et al., 2023).

Wildlife and zoonotic diseases

Many positive effects were observed on wildlife in the HKH during the pandemic, particularly during the lockdown phase, as animal habitat use increased and the animals had more free territory for themselves (Koju et al., 2021; Rutz et al., 2020). In some areas, wild animals were seen on roads and in residential areas. Less traffic, less human intervention, and reduced pollution enabled wildlife to thrive (Koju et al., 2021). Birds were heard and seen as seldom before in the urban centres, while wildlife was undisturbed with the reduced flow of tourists and other human activities (Rutz et al., 2020).

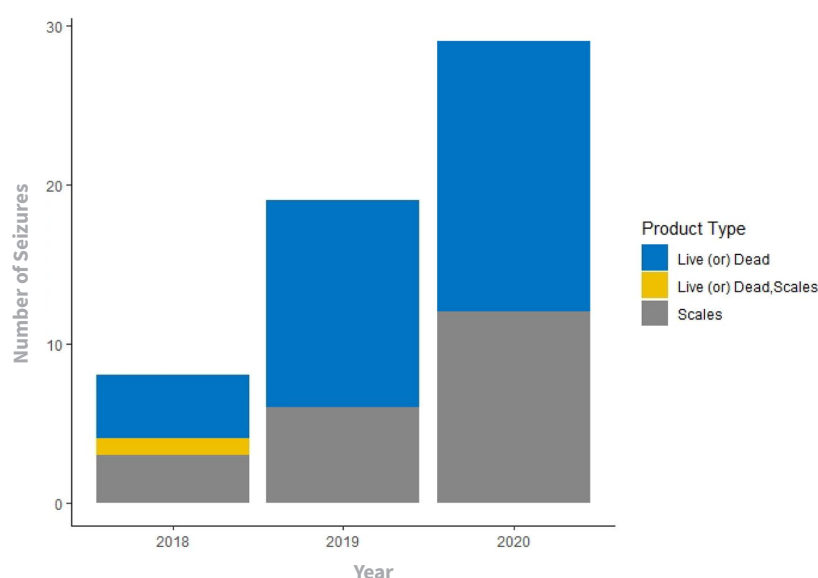
However, this was accompanied by increased poaching and illegal trade in wildlife (Koju et al., 2021) during the lockdown period, especially in unprotected areas or those not specifically marked as wildlife areas. Left unregulated, the poaching of ungulates and small animals has the possibility of depleting the prey base for predators and, in turn, resulting in increased human–wildlife conflicts (Badola, 2020).

However, these impacts, both positive and negative, were transient in nature and were largely observed during the phase of complete lockdowns. On the one hand, there was reduced pressure on natural resources and increased wildlife sightings in human-inhabited areas, while on the other, management efforts to control poaching, forest fires, and wildlife attacks on crops and livestock were seriously compromised (Koju et al., 2021). Wildlife protection is largely carried out through effective protected area management by using revenues generated from tourism. As these declined sharply, the corollary was the reduction in the source of income for many protected areas. For instance, the Annapurna Conservation Area in Nepal reported a 36 per cent reduction in conservation funds in 2020 and a massive 96.5 per cent reduction in 2021, which adversely impacted management and wildlife protection activities (Shrestha et al., 2023).

Reduced law enforcement and patrolling during the lockdown was the primary reason that enabled the illegal killing of wildlife (Jones & McGinlay, 2020), as reported for pangolins in India (Figure 5.1; Aditya et al., 2021). Similarly, rhinoceros- and elephant-poaching syndicates expanded their operations into areas that earlier had too many wildlife-viewing tourists for poachers to operate undetected (Save The Rhino Foundation, 2020). The sudden absence of tourists has also

FIGURE 5.1

REPORTED PANGOLIN SEIZURES BY AUTHORITIES IN INDIA BETWEEN MARCH AND AUGUST OF 2018, 2019, AND 2020



Source: Aditya et al. (2021)

been cited as a factor in the rise in poaching incidents in India (Karmakar, 2020). This increase in wildlife smuggling in the HKH during the pandemic potentially aggravated the risk of outbreak and spread of zoonotic diseases across national boundaries.

5.3.2 Responses

One of the effects of travel restrictions and regulated permissions was, in theory, to minimise the chances of over-extraction of resources, destruction of habitats, and extensive damage to biodiversity (Ahmad et al., 2020). However, illegal trade in wildlife remains an important undermining trend. Based on a growing body of evidence linking wildlife trade and consumption with zoonotic events, many conservationists, epidemiologists, and virologists had issued warnings of zoonotic disease outbreaks with pandemic potential if such practices were not halted (Wikramanayake et al., 2021). These warnings, however, have largely gone unheeded. The COVID-19 pandemic adversely affected every country in the world and there are renewed calls for urgent controls and even outright bans on wildlife trade and consumption (Yang et al., 2020). China, arguably the country with the largest wildlife consumption and trade, imposed a broad ban on wildlife trade and markets on 24th February 2020 (Huang et al., 2021).

However, there has also been opposition to wildlife trading bans from several quarters, citing reasons such as restrictions on livelihood opportunities, reduced access to food for the local communities dependent on wildlife, and concerns that the trade will be driven underground (Roe et al., 2020). Since some taxonomic groups (for example, primates, bats, pangolins, civets, and rodents) are high-risk reservoirs of more virulent pathogens, it was suggested that their trade be tightly regulated and monitored (Dobson et al., 2020).

During the pandemic, curbing wildlife crime became one of the main tasks for the HKH nations. NGOs such as the Trade Records Analysis of Flora and Fauna in Commerce (TRAFFIC) brought together various law enforcement agencies to halt poaching and the illegal trade in protected wildlife in the Himalaya. The law enforcement agencies were also provided training to curb wildlife trafficking across the Himalaya (TRAFFIC, 2021).

There are documented uses of traditional knowledge and medicinal and aromatic plants in addressing COVID-19 and other infectious diseases (Chhetri et al., 2021; Shinwari et al., 2020; Singh et al., 2021; Unuigbo, 2021; Walters et al., 2021). The use of traditional medicines for the treatment of diseases is an age-old practice, and the treatment of diseases such as SARS and H1N1 influenza in China with these medicines has been reported (Luo et al., 2020). Some research also found that the use of medicinal plants and herbs boosts immunity and prevents COVID-19 (Baral, 2021; Lata & Jamali, 2020). One of the studies from India found *ficus* as a dominant species used as an immunity booster, followed by *amaranthus*, *oxalis*, *rumex*, and *citrus*. Activity is assumed to be associated with their nutritive values, like richness in antioxidants, and their ability to act as a body cleanser and cure common cold, cough, and fever – symptoms similar to COVID-19 (Sen 2021). In Nepal, some of the studies revealed the use of 40 to 60 species of medicinal plants for treating COVID-19, with *Zingiber officinale* and *Curcuma longa* being the most used species (Chhetri et al., 2021; Khadka et al., 2021). Medicinal plants are promoted both for immunity boosting and treatment of ailments with traditional knowledge and practices mostly used in the remote areas where access to other alternatives was limited. The government and conservation authorities must benefit from the traditional knowledge of the Indigenous People and local communities, and conserve these species effectively (Barron et al. 2022).

There are three important considerations that should be central to the large-scale recovery and economic stimulus plans. First, the strengthening and enforcement of environmental regulations must be ensured, and only those stimulus packages that offer incentives for more sustainable and nature-positive activities ought to be deployed. Second, the 'One Health' approach should be adopted at all levels of decision-making – from the global to the most local – recognising the complex interconnections between the health of people, animals, plants, and our shared environment. Forestry departments, for example, usually set policy related to deforestation, and profits accrue largely to the private sector – but it is the public health systems and local communities that often pay the price for disease outbreaks. The One Health approach would ensure that better decisions are made that consider long-term costs

and consequences of development actions – for people and nature. Third, health systems should be properly funded and equipped with proper resources (Settele et al., 2020).

HKH countries are seeking technical and advocacy services in implementing their stimulus plans, post COVID-19. Among the significant measures would be a global ban on wildlife trade and consumption (Yang et al., 2020) – as adopted by China nationally (Zhou et al., 2020) – and developing strict transboundary regulations (Millington, 2024). ICIMOD values the collaborative sharing of information, recognising and preserving a country's natural assets, and multidisciplinary research that focuses on and integrates biological, social, and economic aspects as a priority (Hobeika et al., 2023).

5.3.3 Lessons learnt

Lessons learnt from the pandemic help create public awareness and a conducive political environment for countries to reinforce actions and policies to avoid any future resurgence. Loopholes and challenges in dealing with a pandemic have been identified so that future enforcement mechanisms could ensure effective control. The pandemic has also forced greater reflection about prevalent development models and the need to reset human–nature relations through transformative policy changes for a more sustainable world. Our present understanding of the linkages between wildlife trade and zoonotic diseases presents an opportunity to prepare the next generation of research questions. Future studies should include collecting and analysing data on the diversity, abundance, and capacity of taxa to transmit zoonotic pathogens to humans. Research should also focus on how such metrics change in response to human impacts on the environment, and how human behaviours can mitigate those effects (Keesing & Ostfeld, 2020). Restoration of biodiversity is an important frontier in the management of zoonotic disease risk. Here we present some lessons learnt from COVID-19 which could be used to minimise future threats to biodiversity from pandemics.

Research disparities during the pandemic:

There is a variation in the level of information, documentation, and data available from the HKH countries in relation to the linkages between

COVID-19 and biodiversity. A major proportion of the available literature on these linkages is from India, followed by Nepal; but there is very little in this regard from the other countries. Focus should be in gathering data in areas and countries that are under researched to have a better regional understanding. Moreover, a large portion of the biodiversity information is focused on either wildlife poaching or the sighting of animals but missing on the impacts on freshwater biodiversity and on wildlife in the forests; the same is true in the case of rangelands and riverine ecosystems (Dorji et al., 2023). Literature from the HKH is also thin with regards to COVID-19 impacts on biodiversity in terms of its implications for attaining the Sustainable Development Goals and adhering to the Convention on Biological Diversity and Paris Agreement, among others (Ortiz et al., 2021; Watson et al., 2022; Yuan et al., 2023) – and see Chapter 6. These are missed opportunities to better understand links between economic slowdown and changes in biodiversity.

Custodians of mountains are not adequately recognised:

Though a quarter of the land surface and 40 per cent of the protected areas in the HKH are managed by Indigenous People and local communities, appreciation and recognition of such contributions is rather limited (Garnett et al., 2018). The sporadic nature of documentation of these groups restricts the drawing of a holistic picture about the impact of COVID-19 on the HKH region's biodiversity. The knowledge and contributions of Indigenous People and local communities needs to be better recognised, appreciated, and recorded in future research.

Minimising anthropogenic impacts and the

need for rewilding: Since prehistory, humans have been dramatically transforming their living environment. Co-evolution with pathogens has arguably generated much of Earth's biological diversity (Everard et al., 2020). However, increasing human population and rapid development activities indicate that present changes are not sustainable, and they promote the risk of emergence and host-switching of animal viruses (Dubey et al., 2023). The HKH lost more than 70 per cent of its original ecosystems in the last century and this fragmentation has been linked with pandemics in several studies (for example, Venter et al., 2016). Since the ecosystems of the HKH are contiguous across borders and the transboundary

spillover of pandemics is a major threat (Vora et al., 2022), transboundary collaboration is required to restore degraded ecosystems. Traditional practices, the transboundary landscape approach, and Nature-based Solutions (NbS), including by way of REDD+, can play a significant role in ecosystem restoration in the HKH (Xu et al., 2019; Chaudhary et al., 2023).

Understanding complex interactions and their impacts: Infectious zoonoses emerge from complex interactions between people and ecological systems. We now realise that altered human behaviour, environmental changes, and inadequate global public health mechanisms, can turn previously unknown animal viruses into existential human threats (Morens et al., 2020). The COVID-19 pandemic has created opportunities for human societies to prepare better for other frequent challenges (such as dengue which is highly prevalent in many parts of the HKH – Tsheten et al., 2021). We need investment in ecological research to understand the complex interactions and their impacts within and among different systems; such research could be done by multidisciplinary regional teams.

Promotion of the One Health concept: The proposition is that healthy ecosystems lead to a healthy human civilisation (Barroso et al., 2023). The One Health approach, a new paradigm that recognises the interconnections between people, animals, and shared ecosystems, should be prioritised and integrated strongly into policy and governance mechanisms (Barroso et al., 2023; Gallo-Cajiao et al., 2023; Lefrançois et al., 2023), and widely advocated (Zinsstag et al., 2021). This is critically important for societies in the HKH where there is a high interdependence of human beings with nature.

Mainstreaming a pandemic-proof mountain policy: Mountains are rich in biodiversity and there are intricate interactions between nature, wildlife, and humans (Wester et al., 2019). Many of the subsistence livelihood practices in the HKH such as agroforestry, pastoralism, and collection and use of wild edible and medicinal plants are subject to risks. Cross-border wildlife trade adds to these challenges with the threat of disease spillover (ICIMOD, 2020; Wester et al., 2023). Overarching global policies such as the Kunming-Montreal Global Framework, and the provision

to customise a National Biodiversity Strategy and Action Plan (NBSAP), are opportunities for the member countries. There should also be a call for the revival of the Programme of Work on Mountain Biodiversity, which recognises the significance of mountain biodiversity, its vulnerability, and the need for investments. A coordinated approach aimed at synergy with conventions such as the UNFCCC could also be a good policy option to address these complex challenges together.

5.4 Water

Water is a necessity and having sufficient access to it is an important indicator of the socio-economic status of every country in the world (Shit et al., 2019; Singh & Turkiya, 2013). In any country, the quality of life of a community is directly influenced by the availability of safe drinking water. Increasing population increases demand, which is creating a huge pressure on the available water resources (Mukherji et al., 2015; Singh et al., 2020b). At the same time, climate change and environmental degradation are adversely affecting the global hydrological cycle and groundwater storage, particularly in confined aquifers, leading to reduced availability of safe drinking water (Bera et al., 2021). A stable supply of potable water plays an important role in ensuring the health of a population. In the case of an epidemic, safe water is essential to prevent its spread (WHO, 2020b).

The status of water and sanitation services varies significantly among the HKH countries (Table 5.3). The people of Afghanistan and Pakistan have relatively low access to potable water, with only 28 per cent (Afghanistan) and 36 per cent (Pakistan) of them being able to avail of it. Bangladesh and Myanmar show around 59 per cent access. In terms of hand-washing facilities, Bhutan has the best record at 92 per cent. While Pakistan is not far behind (80 per cent), overall water stress in the country is a critical issue (118 per cent). Integrated water resource management is being implemented to a moderate degree in these countries, with China's implementation status at 80 per cent. Changes in the extent of surface water are a concern in both Pakistan and China. Figures vary for official aid for the water sector with India receiving the most (USD 374 million). Overall, in the surveyed countries, community participation in water management was found to be low, except

TABLE 5.3

SUMMARY OF PROGRESS REGARDING SDG 6 IN THE HKH COUNTRIES

Country	Proportion of population using safely managed drinking water services (%)		Proportion of population using safely managed sanitation services (%)		Proportion of population with a hand-washing facility with soap and water at home (%)		Level of water stress (freshwater withdrawal as a proportion of available freshwater resources) (%)		Degree of integrated water resources management implementation (0–100)		Proportion of hydrological basins showing large changes in surface water extent (%)		Amount of water- and sanitation-related official development assistance received (million 2018 USD)		Number of sub-sectors with a high level of participation by users/communities	
	Status (2020)	Trend	Status (2020)	Trend	Status (2020)	Trend	Status (2018)	Trend	Status (2020)	Trend	Status (2020)	Trend	Status (2019)	Trend	Status (2018)	Trend
Afghanistan	28	+	NA		38	+	55	=	12	=	11	+	143	+	4	+
Bangladesh	59	+	39	+	58	+	5.7	=	58	+	25	-	330	+	3	+
Bhutan	37	+	65	+	92	+	1.4	=	33	+	12	=	22	+	2	-
India	NA		46	+	68	+	66	=	45		22	-	374	-		
Nepal	18	-	49	+	62	+	8.3	=	37	=	17	-	145	+	1	-
Pakistan	36	-	NA		80	+	118	+	56	+	33	-	176	-	0	=
China	NA		70	+	NA		43	=	80	+	37	-	83	+	1	+
Myanmar	59	+	61	+	75	+	5.8	=	33	+	18	-	142	+	0	=

Source: UN-Water (2021)

for Afghanistan and Bangladesh, which reflect increasing involvement of non-local stakeholders (Nandan et al., 2021).

During COVID-19, several countries faced great challenges in ensuring community access to clean water (Brauer et al., 2020). Water played a particularly important role in controlling the spread of COVID-19 – with the WHO’s advice that “one of the most effective ways to reduce one’s chances of being infected or spreading the virus was to wash one’s hands regularly and thoroughly with soap and water or clean them with an alcohol-based sanitiser” (WHO, 2020b). Developing and underdeveloped parts of the HKH were at a particular disadvantage since they had limited access to water even for the most basic needs such as drinking, sanitation, and hygiene. Mitigating or controlling the spread of COVID-19 was highly challenging in areas with high population and high population densities. Considering India, as a case in point, with a population of over 1.4 billion, even a small amount of additional water for more frequent hand washing would increase water demand by at least a few billion litres. With the already significant demand for water in the agricultural sector, which uses more than 70 per cent of the water consumed globally (and more than 90 per cent in some regions), there was enormous pressure on the HKH’s

water resources (Bera et al., 2022). This raises an important question: where and how can we find additional water resources?

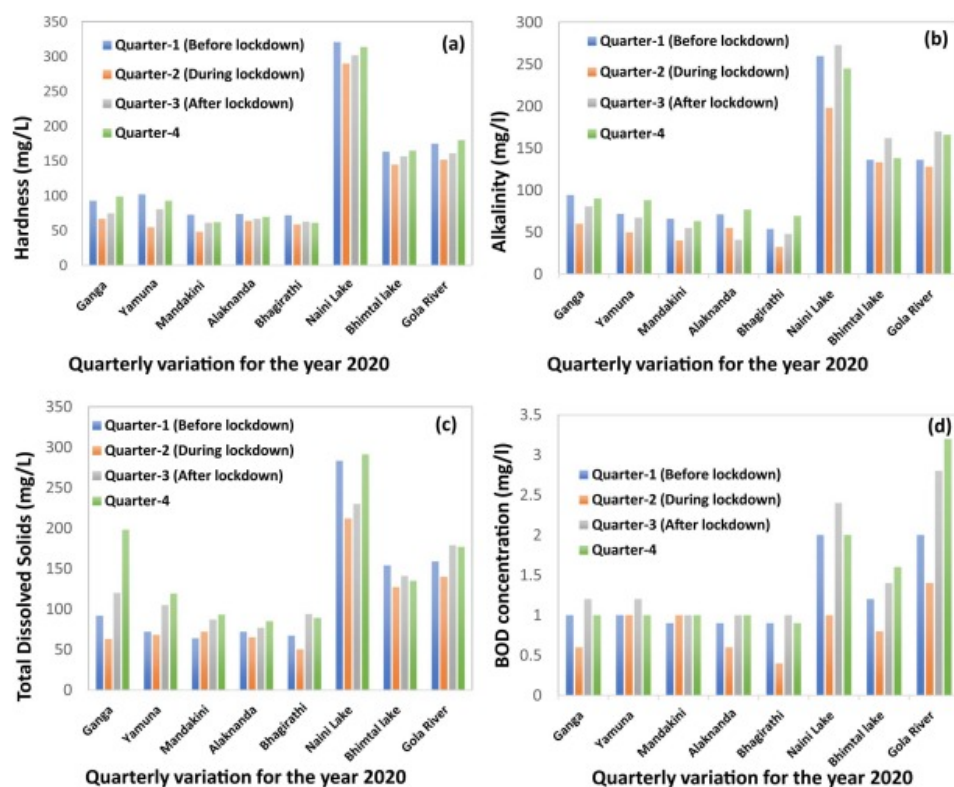
Freshwater ecosystems, including rivers, springs, and wetlands in the HKH, are depleting in terms of both quantity and quality, in a context where their health underpins social and economic ambitions in the HKH region. According to a recently published HI-WISE report, glacier and snow mass have been decreasing in the region due to global warming, while the degradation of permafrost has become a matter of concern (ICIMOD, 2023b). Climate-induced extreme weather events create additional challenges – forest fire, floods, landslides, and droughts disrupt water facilities and compound difficulties in gaining access to water. This is especially the case of the vulnerable communities residing both in the upstream and downstream areas of the HKH.

5.4.1 Impacts

Access to clean and adequate water has been a long-standing challenge in both the rural and urban areas of the HKH even before the COVID-19 pandemic (Wester et al., 2019). With the onset of the pandemic, there was a notable surge in water consumption due to the need for more frequent

FIGURE 5.2

THE WATER QUALITY OF SELECT WATER BODIES IN UTTARAKHAND, INDIA, BEFORE, DURING, AND AFTER THE COVID-19 LOCKDOWN



Source: Nandan et al. (2021)

washing of hands and other hygienic practices. For instance, water usage nearly doubled during the pandemic in India, including in its hilly and mountainous areas (Bera et al., 2022).

At the same time, the quality of water bodies improved due to the lockdowns in the HKH. For instance, hardness, alkalinity, total dissolved solids (TDS), total coliform, and pH levels improved for all the water bodies in the state of Uttarakhand, India, during the lockdown, mainly due to minimal or no discharge of industrial effluents, less urban run-off, and very little pilgrimage- and tourism-related waste in water bodies. As mentioned, [see section on Wetland and riverine ecosystems, this Chapter], there was a significant improvement in the water quality of the Ganga River during the lockdown (Chakraborty et al., 2021). However, the water quality started to deteriorate once the lockdown was lifted (Figure 5.2; Muduli et al., 2021; Nandan et al., 2021).

Water, sanitation, and hygiene (WASH) play a vital role in the well-being of women and girls. Access to clean water is crucial to women for maintaining care and hygiene during menstruation, pregnancy,

and post-partum periods (Adams et al., 2021). The lack of toilets in many households increases the risk of infections among women and girls, especially in shared sanitation spaces.

In the HKH region, women and girls bear the primary responsibility for water collection and community sanitation. They endure long-distance walks to fetch water and spend hours in water queues. With the heightened hygiene requirements due to the pandemic, women and girls were compelled to make more frequent trips to collect water, particularly those from poor households which lacked sufficient resources to purchase storage containers. WASH insecurity significantly worsened the impact of COVID-19 on females in the low-income countries of the HKH region.

The countries of the HKH have ratified the Ramsar Convention that provides a framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. The Government of India has launched a special scheme, Amrit Dharohar (2023–2026), with budgetary support to enable the conservation

of Ramsar sites (Jha, 2023), with a focus on demonstrating, replicating, and upscaling good wetland management practices across the country.

The multiple needs and uses of the water meant that the water sector was important in the immediate response to the pandemic, as well as during the recovery and rebuilding phases (Neal, 2020).

5.4.2 Responses

In response to the challenges thrown up by the pandemic, the HKH governments recognised the need for comprehensive policies and legal measures to address the heightened vulnerabilities faced by communities in terms of access to water. For instance, India has carried out a significant policy shift since the pandemic by revising its 2012 water policy. The updated draft policy places emphasis on safeguarding watersheds against the impacts of climate change and adopting an ecosystem-centred approach.

India also introduced the Atal Bhujal Yojana, a sustainable groundwater management scheme to be applied in water-stressed areas across seven states – Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, and Uttar Pradesh. The scheme emphasises the need for active involvement and participation of local communities and demand-driven strategies. The scheme aims to double farmers' income and foster behavioural changes for efficient water use within communities, and the implementation of improved agricultural practices.

Additionally, institutional arrangements are being put in place to develop watershed development projects in India, specifically emphasising sustainable springshed management. For example, India's Ministry of Rural Development has introduced guidelines for new-generation watershed development projects. These guidelines envision the creation of national-level nodal agencies for springshed revival and management, with a particular focus on the Himalayan states, referred to as the 'springscapes' of India. Additionally, the Indian government is working towards amalgamating the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, and the Environment (Protection) Act, 1986,

into a unified Environment Management Act. This strategic step aims to address overlapping regulatory areas and introduce compensatory measures to ensure more effective environmental management (MoEFCC, 2014).

Nepal has demonstrated commitment to crafting a post-COVID Green Recovery Plan, focusing on safeguarding watersheds and establishing sustainable water management strategies involving Nature-based Solutions that leverage the potential of ecosystem-driven and community-centric approaches to water management (UNDP, 2021). In the aftermath of the COVID-19 pandemic, Nepal has effectively enacted several policies aimed at advancing multifaceted water conservation and management practices. Notably, its Water Resources Policy of 2020 promotes sustainable, community-grounded methodologies for conserving water. Its Irrigation Master Plan of 2019 integrates climate adaptation principles into mountain-centric irrigation practices, and advocates the responsible development of storage mechanisms in the Greater Himalayan Region. Moreover, approximately USD 1.9 million was allocated for COVID-19-specific projects in Nepal's WASH budget 2022–2023, with support from the Japan Fund for Poverty Reduction (WaterAid Nepal, 2023). Furthermore, Nepal's National Climate Change Policy of 2076 (2019) emphasises the establishment of benchmarks for developing sustainable groundwater resources in urban areas. In addition, its National Adaptation Plan (2021–2050) underlines the importance of embracing ecosystem-based strategies in both water management and conservation practices (GoN, 2021).

The Government of Bhutan, recognising the significance of climate change and water-related concerns in its developmental trajectory, integrated the concepts of 'climate and disaster resilience' and 'sustainable water' as critical national focal points within the framework of its 12th Five-Year Plan (2018–2023). In alignment with these objectives, its Water Flagship Program (WFP) has been conceptualised to comprehensively bolster water security. Strategic initiatives will be undertaken under the WFP to enhance the overall performance of the water sector and to ensure consistent access to secure supplies of potable and irrigation water. In tandem with these efforts, its Climate Change Policy of 2020 identifies and

prioritises the essential principles, duties, and benchmarks for navigating the complexities of water management while concurrently addressing the challenges posed by climate change. Moreover, Bhutan's Water Vision 2025 regards streams and springs as essential drinking water sources, and there is an explicit commitment to the safeguarding and conservation of these sources, and to allocate the best available water sources for drinking purposes.

In 2022, Bangladesh adopted the National Adaptation Plan (2023–2050), which prioritises water resources as a key component among the eight sectors – including related sectors like agriculture, fisheries, and wetlands – earmarked for targeted adaptation efforts. The plan emphasises the implementation of community-based springshed management aligned with the broader goal of ecosystem restoration in the HKH region. Revitalising natural springs and sustainably managing water bodies are measures aimed at mitigating water scarcity – with co-benefits for biodiversity and the climate and a pilot project on springshed management has commenced in the Chittagong Hill Tracts with governmental support. It includes the restoration and preservation of ecosystems, such as safeguarding village common forests and other critical biodiversity.

With the objective of solving the pressing issue of water scarcity in both urban and rural areas, ICIMOD (2020) provided a comprehensive set of recommendations, spanning short-, medium-, to long-term strategies relevant to policy makers in the HKH. The paper emphasised the need to combine both traditional and modern best practices in water harvesting, spring and springshed management, watershed management, and in the maintenance of irrigation systems. A focus of the recommendations was to ensure adequate water supply for people living in water-scarce areas, for which the preservation and restoration of water sources and recharge areas were highlighted as crucial steps. It also drew attention to monitoring glaciers. Further, the paper lays stress on an integrated approach to managing river basins, by incorporating local, transboundary, upstream, and downstream considerations, in order to ensure effective water resource management. These recommendations also align with the goals of several water-related SDGs.

Spring revival and springshed management is gaining recognition as a component of water management, especially in the eastern Himalayan region (Sen et al., 2019; Tambe et al., 2012; Zimik et al. 2022). Springs often constitute the primary source of water for drinking and irrigation purposes, but they are also drying up rapidly due to land-use intensification, climate change, and other anthropogenic factors. As in other parts of the HKH, communities in the western Himalayan region also depend on springs for their water security. Bhutan has taken a significant step by incorporating spring revival into its flagship programmes for drinking water and irrigation water security, including in its 12th Five-Year Plan. In India, the Department of Land Resources, Ministry of Rural Development, has incorporated hydrogeology-based springshed management in its next-generation watershed management guidelines (DOLR, 2021).

ICIMOD has prioritised springshed management as one of the key interventions under its Medium-Term Action Plan (2023–2026). It is regarded as one of the Nature-based Solutions for addressing water insecurity and has biodiversity and climate co-benefits for the HKH. The plan is being implemented with support from the Government of the United Kingdom and the Swiss Agency for Development and Cooperation (SDC). Subsequently, in Nepal, a few local municipalities – such as Dhankuta municipality in Dhankuta district and Namobuddha municipality in Kavre district – have been integrating spring revival into their annual plans and budgets (ICIMOD, 2021).

5.4.3 Lessons learnt

The COVID-19 pandemic has highlighted the critical need for a more resilient water sector in order to address future challenges. It underscored the vital role of clean and safe water in maintaining hygiene and preventing the spread of diseases. Additionally, it has emphasised the necessity for universal access to water, particularly for vulnerable communities.

The crisis also underlined the importance of community engagement, public health education, and the preservation and effective management of freshwater ecosystems. However, progress on bolstering the resilience of the water sector in the HKH region has been slow. Governments in the

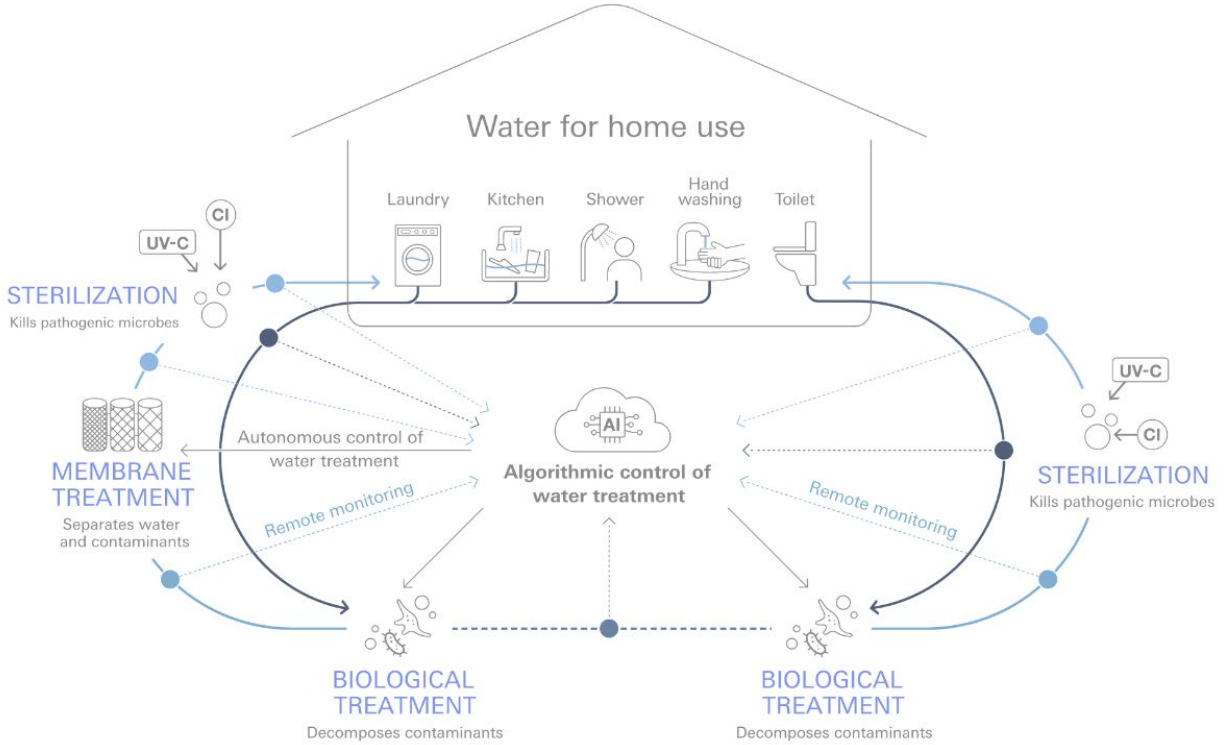
region need to prioritise policy and investments in order to sustain and enhance the capacities for resilient water resource management and go beyond mere infrastructure development. This approach necessitates an urgent shift towards comprehensive, adaptive, and GESI-responsive strategies. The focus should not be solely on increasing water supply through infrastructure development and spring-revival interventions, but it should also encompass efficient use of water and the recycling and reuse of wastewater (Figure 5.3).

Traditional water infrastructure follows a ‘use and dispose’ model where ‘water is drawn from natural sources and treated wastewater is discharged into rivers or seas’. In contrast, WOTA, has created a cyclical model where ‘wastewater is reimagined as the most accessible water source and is recycled on-site for repeated domestic use’. Japanese company, WOTA is developing an innovative household

mechanism called ‘small-scale decentralised water recycling system’, which aims to turn ‘water recycling at the household level’ into a reality, using technology driven by autonomous water treatment controlled by sensors and data science.

Scaling up investments in NbS like springshed and watershed management is crucial. Presently, global financial support for NbS is approximately USD 200 billion, a third of what is estimated is required to meet climate, biodiversity, and reduction of land degradation goals by 2030. This is in sharp contrast to nature-negative financial flows, which total almost USD 7 trillion annually. Unless the world’s financial systems pivot away from funding nature-negative endeavours, investment in NbS (that is, specifically financing sustainability) will fall short in addressing the pressing crises of climate change, biodiversity loss, and land degradation (UNEP, 2023), and the recovery after the COVID-19 pandemic (ICIMOD, 2020).

FIGURE 5.3 WOTA (WATER FREEDOM FOR EVERYONE, EVERYWHERE) FOCUSES ON ‘WATER RECYCLING’.



5.5 Conclusion

The global community has recognised the positive as well as the negative impacts of COVID-19. On the one hand, the pandemic brought about a visible positive change in air quality and a breathing space for natural resources; on the other, it created a planetary crisis, leading to new challenges in resources and human suffering (Ibn-Mohammed et al., 2021; IPBES, 2019; Yilmazkuday, 2022). The lockdown added to the global recession, and, in all likelihood, enforced cuts in research funding in the HKH countries and elsewhere, loss of conservation jobs, and delays in generating new knowledge due to lack of budget (Corlett et al., 2020).

This chapter clearly indicates that there is limited and sporadic information and documentation available on how the HKH countries addressed environmental concerns provoked by the COVID-19 crises during 2020 and 2023. The available literature shows that while there was some respite from air pollution and biodiversity loss during the pandemic, water stress was also prevalent. There were some synchronised actions taken by the HKH countries to control the spread of infection by imposing lockdowns and restricting mobility. This resulted in a range of impacts. On the one hand, environmental indicators such as air quality and water quality improved; it was also good news for biodiversity. However, the socio-economic conditions deteriorated in almost all the countries of the HKH (Kadykalo et al., 2022; Talukder & Hipel, 2022). The chapter also indicates that diverse response mechanisms were put in place by these countries with policy formulations and practical actions having the potential for both short- and long-term impacts.

The COVID-19 pandemic taught us many aspects of life and brought us closer to our own selves and nature. The Ganga had a rare chance to 'breathe' during the lockdown, and the Air Quality Index (AQI) in Delhi, a city notorious for being one of the most polluted in the world, moved into the 'satisfactory' zone, from an AQI level of 161 in March 2019 to 93 during March 2020.

Forests, rangelands, and wetland ecosystems played an important role in providing vital ecosystem services for people during the pandemic. These ecosystems also capture carbon from the atmosphere, purify the air we breathe, clean the water we drink, and provide a variety of nutritious foods and medicines that are required for health and survival. Protecting and conserving these ecosystems is the only way that we can fight the defining challenges of the twenty-first century, be it global warming, groundwater depletion, air pollution, desertification, biodiversity loss or pandemic disease – as stable ecosystems and reduced human incursion minimise the spread of diseases (Coccia, 2021).

Given the global threats posed by infectious diseases, it is also time to re-examine our regulatory frameworks and national, regional, and global policy options, and broadly address health risks by keeping in mind the interconnectedness of human beings, animals, and the environment, which is consistent with the One Health approach (Zinsstag et al., 2021). The immediate priority in controlling the pandemic was to protect people and prevent its spread, but, in rebounding, our long-term strategy must be to tackle deforestation, biodiversity loss, and illegal trade in wildlife for prevention of future pandemics. There are numerous benefits in investing in Nature-based Solutions for the holistic well-being of ecosystems and countries. Not least, biodiversity conservation must necessarily involve a collective effort on the part of citizens and their governments.

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CHAPTER 6

Lessons from the COVID-19 pandemic for future preparedness and achieving the aspirations of sustainable development in the HKH region

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ROAD TO ANFIELD

BUY NEW BALANCE PRODUCTS WORTH £1000 GET A CHANCE TO WIN AN ALL EXPENSE TRIP TO ANFIELD, LIVERPOOL

LIVERPOOL FC VS CRYSTAL PALACE FC

PROMOTION PERIOD: 27 DEC 2019 TO 10 FEB 2020

महिला

6.1 Introduction

This chapter presents the wide-reaching consequences of the COVID-19 pandemic on the societal, economic, and environmental dimensions which impacted the HKH countries' progress on various targets of the Sustainable Development Goals (SDGs). The 2030 Agenda for Sustainable Development revolves around 17 SDGs designed for the global community, encompassing 169 targets to achieve multidimensional development. All the eight HKH countries – Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan – have signed up for the SDGs which were adopted in 2015 to address diverse social, economic, and environmental challenges worldwide.

The COVID-19 pandemic, a wildcard that initially posed a major public health crisis, quickly cascaded into a global economic challenge, ultimately triggering a wave of social, economic, and environmental issues. Although the HKH countries have made encouraging progress on the 17 SDG targets, achieving them remains a massive challenge, and the impacts of COVID-19 have exacerbated the challenge (Hughes et al., 2020; Malekpour et al., 2023; GSDR, 2023; Yuan et al., 2022).

A global system-wide disruption such as the one caused by COVID-19 was a rare occasion. From the hardships, losses, and disruptions to societies and economies, it is critical to learn valuable lessons for better future preparedness. A major objective of this assessment report is to take important lessons from the COVID-19 disruptions to ensure that communities and countries are better prepared for such future crises, not only in terms of another pandemic but also in terms of climatic and non-climatic disruptions.

6.2 Impacts on progress towards the SDGs

The 2023 Global Sustainable Development Report (GSDR) calculated the impact of COVID-19 on the SDGs by comparing the trend assessments from the Sustainable Development Goals 2020 Progress Chart and the later trend of progress on the 2030 goals. The findings indicate generally slow progress after 2020 on the indicators of: poverty (SDG 1); health and well-being (SDG 3); quality education (SDG 4); affordable and clean energy (SDG 7); decent work and economic growth (SDG 8); responsible consumption and production (SDG 12); and peace, justice, and strong institutions (SDG 16). However, the pandemic seems to have had a favourable influence on indicators such as research and development spending (SDG 9), safe and affordable housing (SDG 11), and implementation of development commitments (SDG 17). Mobility restrictions during the pandemic also pushed countries towards progressing on goals related to communication and connectivity, such as an increase in internet use and enhancement of mobile networks. The HKH countries are currently at different stages in achieving the 17 SDGs (see Annexe Table p 156). Overall, the progress made by Afghanistan, Bangladesh, India, and Nepal vis-à-vis the SDGs has slowed down considerably compared to the other HKH countries due to COVID-19 (Yuan et al., 2021).

This chapter synthesises the insights gathered from our assessment of the impacts of COVID-19 on the SDGs through the lens of nine mountain priorities (Wester et al., 2019). The assessment offers valuable lessons for governments and communities to navigate future system-wide disruptions effectively. These lessons underscore the importance of resilience, adaptability, and collaborative efforts in mitigating the impacts of crises on progressing towards the SDGs and fostering sustainable development pathways.

The following are the impacts of the COVID-19 pandemic on the SDGs, based on the mountain priorities:

End Poverty: SDG 1 – No Poverty; SDG 3 – Good Health and Well-being; SDG 4 – Quality Education

COVID-19's effects created ripples beyond the immediate health crisis; they exacerbated pre-existing conditions of economic hardship and poverty, increased food insecurity, disrupted the education system, imposed social isolation, and hindered overall well-being (Yuan et al., 2021). The goal of ending extreme poverty was making steady progress up until 2018/2019; however, between 2020 and 2023, the progress showed a backward trend, according to the 2023 GSDR. This was clearly evident in the case of most of the HKH countries which experienced a reverse course in their progress towards the No Poverty goal (SDG 1) during the pandemic years. Most of the HKH countries are lower middle-income countries, which witnessed the steepest decline in labour-force participation during the pandemic. The drop was accompanied by a reduced ratio of total weekly hours spent at work by the economically active population (ILO, 2022). There was a sharp increase in the unemployment rate across all the HKH countries, which affected progress towards SDG 8 – Decent Work and Economic Growth. The shortage of economic resources had a direct impact on the poverty headcount ratio Saunders, 2002. A study has estimated an addition of 150 million people into the poverty bracket, with a 5 per cent reduction in consumption due to the pandemic, in the case of India alone (Ram et al., 2024). In Afghanistan, the economic consequences of the pandemic, combined with conflict and instability, have increased the poverty rate (Irfan et al., 2023). Currently, the poverty headcount ratio of Afghanistan is the highest among the HKH countries (Sachs et al., 2023).

The pandemic added to the immense strain on the healthcare systems (Pandey et al., 2022) of the HKH countries, which had already been grappling with numerous challenges like obsolete infrastructure, lack of up-to-date diagnostic equipment, and limited budgetary allocation (Irfan et al., 2023). The primary focus during the pandemic was on containing the spread of the virus and providing medical care to the affected. This diverted attention and resources from

other health priorities, leading to disruptions in routine healthcare services and immunisation programmes. In a situation where the spread of the virus became overwhelming, governments opted to enforce stricter lockdowns which created more issues for the isolated mountain communities in terms of limited access to basic healthcare (Babu et al., 2021; ILO, 2020; World Vision, 2021). Pakistan, for instance, saw a significant decline in births attended by skilled health personnel during 2020, thereby affecting SDG 3 of Good Health and Well-being (Sachs et al., 2023). There was also a noticeable drop in the survival rate of infants who had received at least two WHO-recommended vaccines in countries such as Bhutan, India, Myanmar, Nepal and Pakistan (Sachs et al., 2023). The lockdowns and the social-distancing measures, resulting in isolation and increased economic burden, negatively impacted psychological well-being, especially among females, healthcare workers, and students (Bhuiyan et al., 2020; Chowdhury et al., 2021; Gupta et al., 2020; Islam et al., 2020; Usman et al., 2020). Countries with strong vaccination records fared better (ILO, 2022). In the case of the HKH region, the first vaccination rollout began in China in July 2020, while the other countries started receiving vaccines only from 2021. Currently, more than three-fourths of the HKH countries' population have been vaccinated at least once since the rollout (WHO, 2023).

School closures and disruptions to learning due to social distancing and lockdowns affected the education of billions of students worldwide. Schools in the HKH faced full or partial closure lasting between 30 and 93 weeks (UIS, 2022). The closures led to children missing out on formal education and many dropped out, some of whom went on to permanently discontinue education, especially girls, thereby inducing the risks of child labour and early marriage (Uddin, 2020; Save the Children, 2022). In response, governments increased public spending on education, and the education system expanded its learning delivery modalities (UIS, n.d.; UIS, 2022). The modalities of education delivery were influenced by local contexts and availability of infrastructure, particularly that of information and communications technology. The education system, traditionally reliant on face-to-face learning, switched to ICT-based methods of learning (Khan et al., 2022). The low readiness

for remote learning among the HKH countries compared with high-income countries, coupled with unequal access to online facilities, widened educational disparities – jeopardising the progress towards achieving the goal of inclusive and equitable quality education (Meinck et al., 2022; UNICEF, 2021a). The closure of educational institutions and lack of access to online facilities had implications that extended far beyond short-term learning loss to long-term effects such as career derailment, impairment of the ability to earn, and adverse consequences for health and well-being (ADB, 2021; Zeng et al., 2022). In terms of SDG 4 – Quality Education – countries such as Myanmar and Pakistan made only a little or no progress, while countries like Afghanistan and Nepal stepped backwards due to the lockdowns. In the case of Bangladesh, Bhutan, and India, they were able to make progress during the second year of the pandemic after the infrastructure to accommodate remote learning was set up and mobility restrictions were relaxed (Sachs et al., 2023).

Ensure Food Security: SDG 2 – Zero Hunger; SDG 12: Responsible Consumption and Production

COVID-19 has had a significant impact on achieving SDG 2: Zero Hunger. Between 2019 and 2020, the number of people living in hunger increased by 1.3 per cent globally (FAO et al., 2021). The pandemic pushed and trapped millions of people into poverty, and exacerbated food insecurity. The fragile mountain environment of the HKH faces unique challenges in ensuring food security, and the pandemic exacerbated those vulnerabilities. The lockdowns and disruptions affected the entire food supply chain which created issues not just in terms of food production but also in terms of food storage and distribution (UNICEF, 2021b; Ullah et al., 2022). Considering that agriculture is still the main source of livelihood for a substantial proportion of the population in the HKH, the disruptions to the food supply chain had dire and direct impacts on income, on food security and food availability (Poudel & Shaw, 2015; Rasul, 2021).

Lockdowns, high rate of unemployment, and inflation during the pandemic made severe dents in the purchasing power of HKH households resulting in food shortages, especially in the case

of low-income groups and the disadvantaged (GNAFC & FSIN, 2022; Singh et al., 2021; Shahzad et al., 2021; Mishra & Rampal, 2020). According to the FAO (2023), there was an increase in the prevalence of undernourishment in the HKH countries during 2020, except for Bangladesh and China (Sachs et al., 2023). Despite the promising positive trend of decreasing the prevalence of stunting in children below 5 years (SDG 2) and increasing crop yields (SDG 2), Afghanistan, Bangladesh, Bhutan, India, Myanmar, Nepal, and Pakistan are all still facing major challenges in achieving SDG 2 due to the lingering impacts of the economic shocks unleashed by the pandemic (Saccone, 2021; Sachs et al., 2023). While several HKH countries, including Afghanistan, Bangladesh, India, and Nepal have made considerable progress on achieving SDG 12 – Responsible Consumption and Production – Bhutan, China, Myanmar, and Pakistan are encountering varying degrees of challenge in achieving the goal, mainly due to waste production and sulphur dioxide and nitrogen emissions. For instance, China records one of the highest sulphur dioxide emission and waste generation rates, and these have been growing every year (Forti et al., 2020; Kaza et al., 2018; Lenzen et al., 2022; Sachs et al., 2023; Ullah et al., 2022).

Achieve Gender and Social Equity: SDG 5 – Gender Equality; SDG 10 – Reduced Inequalities; SDG 16 – Peace, Justice and Strong Institutions

COVID-19 had a disproportionate impact on disadvantaged groups, and especially on women, in the HKH countries. The pandemic was accompanied by a worrying increase in the cases of gender-based violence and a decline in access to education and economic opportunities for girls and women (National Commission for Women and Children, 2021; teacircleoxford, 2020; World Bank, 2020; UN Women, 2020). As lockdowns forced families to confine themselves to their households, the majority of the unpaid care tasks fell largely upon women, further affecting their participation in the formal workforce (Sarker et al., 2021; UN Women, 2021). This was underscored by the sudden decline (e.g. China and India) and stagnation (e.g. Bangladesh, Nepal, and Pakistan) in the ratio of female-to-male labour-force participation rate (SDG 5) in 2020 (Sarker et al., 2021). Women and girls in Afghanistan faced additional challenges during the pandemic which was reflected in the significant dip in the ratio of female-to-male labour-force participation

rate and in the seats held by women in the national parliament (Human Rights Watch, 2020; Sarker et al., 2021).

Other vulnerable groups in the HKH, such as migrant workers, ethnic minorities, internally displaced persons (IDPs), rural populations, low-income households, refugees, and people with disabilities faced heightened risks and challenges during the pandemic, especially due to pre-existing conditions of inequality. The Gini coefficients (SDG 10) of the HKH countries indicate the persistence of income inequality in the region (Sachs et al., 2023; World Bank, 2024). The pandemic exposed and exacerbated these inequalities. For instance, vulnerable groups such as migrant workers, and low-income populations in urban areas, were some of the most affected during the pandemic. Amongst entire populations dealing with the challenges brought about by mobility and contact restrictions, they faced additional challenges in accessing healthcare and social support due to social discrimination and fear, and were sometimes even ignored by government policies (Adhikari et al., 2022; Bolton & Georgalakis, 2022; Ram & Yadav, 2024). Given the obstacles added by COVID, the countries in the HKH, especially Afghanistan, India, and Pakistan, are continuing to face major challenges in achieving gender equality despite their efforts. China is the only country close to achieving the SDG 5 of Gender Equality (Sachs et al., 2023).

Peace, justice, and strong institutions are crucial elements in the pursuit of gender and social equity. Unfortunately, the HKH has not been able to make the desired progress towards achieving SDG 16. Apart from China, the other HKH countries, since 2020, have been regressing on attaining this goal. Even Bhutan, which was the closest to achieving the goal and had made the most significant progress, regressed after the onset of the pandemic (Sachs et al., 2023). Specifically, the progress towards the timeliness of administrative proceedings on SDG 16 declined in the HKH during the pandemic as it was hit by mobility restrictions, and this trend has persisted even after the pandemic (Sachs et al., 2023). India exhibited improvement in timeliness during 2020 which could be attributed to the use of pre-existing digital and network infrastructure; this was also aided by the government's digital policy response to COVID-19 (Mishra & Rampal, 2020). However, the improvement was short-lived

(Sachs et al., 2023). The low level of application of fundamental rights and justice, coupled with a high level of corruption, lack of open government, and lack of adequate regulatory enforcement presented major challenges for the HKH countries during the pandemic, and continue to do so (Sachs et al., 2023).

Build Resilient Mountain Communities and Mountain Infrastructure: SDG 8 – Decent Work and Economic Growth; SDG 9 – Industry, Innovation and Infrastructure; SDG 11: Sustainable Cities and Communities

Economic contractions and lay-offs during the pandemic significantly affected employment opportunities and economic growth worldwide. The global economy has still not been able to achieve full balance and the labour markets have not fully recovered from the shocks of the pandemic (Lee et al., 2020). Even in 2022, despite the decrease in mobility restriction compared to 2020 and 2021, the total working hours globally remained 2 per cent below the pre-pandemic level due to a reduction in labour force participation during the pandemic. Despite progress being made in South Asia, the unemployment rate currently remains higher than that in 2019 (ILO, 2022). The impact of the pandemic on the labour markets varied significantly across regions, based as it was on the different waves and the stringency of the containment measures adopted by various countries. South Asian countries like India and Nepal were hit hard during the second and third waves of the virus. The mobility restrictions imposed by governments heavily affected sectors such as tourism and hospitality, manufacturing, and wholesale and retail (ILO, 2021). In the HKH countries, business closures and reduced economic activity, especially in tourism and manufacturing, put further strain on already fragile economies, thereby affecting decent work opportunities. The informal sector and vulnerable populations were hit the hardest. Informal workers, such as migrant workers, became even more vulnerable during the pandemic (ILO, 2022, 2021). In 2020, the Pakistani economy reported a negative GDP growth rate of -0.05 for the first time in six decades (Wang et al., 2021). Likewise, the economies, of Bhutan and Nepal heavily reliant on tourism, suffered greatly due to mobility restrictions (Gyamtsho, 2022; Panthhe et al., 2021; Ulak, 2020). The economic impact of the pandemic was thus reflected in the dip in achievement of Bhutan and

Nepal of SDG 8 of Decent Work and Economic Growth scores during the first year of COVID-19 (Sachs et al., 2023).

The process of recovery from the pandemic has been progressing at an uneven pace, with high-income countries, which typically achieved higher vaccination rates and implemented more effective relief measures, bouncing back the quickest. Among the HKH countries, Bangladesh, China, and India have made more progress in achieving the goal of Decent Work and Economic Growth (Sachs et al., 2023). In China and India, while some sectors experienced disruptions and job losses, other sectors such as e-commerce and online services, saw growth during the lockdowns. Despite the challenges, China demonstrated resilience partly by scaling public investment and fiscal support (IMF, 2022).

Although achieving the goal of Decent Work and Economic Growth was hindered by COVID, HKH countries continued to make progress towards the SDG 9 goal of Industry, Innovation and Infrastructure, due principally to more people having broadband subscriptions (Sachs et al., 2023).

Securing access to basic natural resources and clean energy while enhancing ecosystem resilience, and ensuring sustainable adaptation SDG 6 – Clean water and Sanitation, SDG 7 – Affordable and Clean Energy, SDG 11 – Sustainable Cities and Communities, SDG 13 – Climate Action, SDG 15 – Life on Land.

The HKH countries display varying levels of results in their Climate Action (SDG 13) efforts. While most have made commendable progress and achieved the target set for carbon dioxide emissions, others, like China and Myanmar, still face major challenges that require specific solutions. Bhutan, a country with a strong focus and record on environmental conservation and sustainable development, has clearly shown its priority in action and achievements towards (SDG 13). However, throughout the HKH, progress towards achieving the ambitious environmental goals of Life on Land (SDG 15) (Sachs et al., 2023) is slow.

While the COVID-19 pandemic produced immense challenges and changed every aspect of our lives, its impact on the environment was multifaceted.

In most of the HKH countries, the pandemic caused a temporary reduction in air/water pollution and in greenhouse gas emissions due to reduced industrial activity and travel (Diffenbaugh et al., 2020; Le et al., 2020; Karkour & Itsubo, 2020). There were declines in the rate of carbon dioxide emissions from fossil fuel combustion and cement production during 2020 and 2021 (Sachs et al., 2023). The disruptions to industrial activity and restriction on mobility reduced pollution and extraction, which also positively affected water quality, wildlife, and fisheries (Lokhandwala & Gautam, 2020; Pant et al., 2021; Sarkar et al., 2021; Singhal & Matto, 2020; Sharma & Gupta, 2022). These changes were evident from the Ocean Health Index, a measure of the degree to which marine waters under national jurisdictions are contaminated by chemicals, excessive nutrients (eutrophication), human pathogens, and trash. There had been a significant decline in the Ocean Health Index between 2018 and 2019. In 2021, there was a slight improvement in the index, which could be attributed to the disruptions caused by COVID-19 (Sachs et al., 2023). However, despite the encouraging changes, these positive impacts were short lived (Upadhyay et al, 2022; Kumar et al., 2020).

The HKH boasts a rich biodiversity, some of which was modified or lost in the last century, thereby threatening those who rely directly on nature for their livelihoods (Xu et al., 2019). While the pandemic restrictions may have offered some unexpected benefits for the environment and its resident species, they also significantly disrupted the lives of people who rely on natural resources and wildlife, thus leading to unintended hardships. For instance, the trade related to the caterpillar fungus (*Ophiocordyceps sinensis*), which is traditionally collected and sold in Bhutan and Nepal for its medicinal value, was disrupted by the pandemic. The mobility restrictions resulted in its illegal collection and possibly over-extraction in Nepal (Paudel, 2023, 2022). Limited mobility also weakened patrolling and the enforcement of rules and regulations. This created opportunities for an increase in wildlife poaching (Aditya et al., 2021). A 2021 data from the Red List Index, an index measuring extinction risk across groups of species, indicated an increase in extinction risk in Bangladesh, China, India, and Pakistan. However, the index appears to have stabilised for most of the other HKH countries from 2022 onwards (Sachs et al., 2023).

The pandemic underlined the importance of resilient and sustainable urban planning. Issues like overcrowded living conditions, lack of access to healthcare, and limited green spaces became accentuated during the crisis. Access to clean and sufficient water and proper sanitation has always been an issue in both the rural and urban areas of the HKH (Wester et al., 2019), and despite improvements over the years, the region has not been able to achieve its SDG 6 targets. The pandemic aggravated this issue. Several HKH countries (Afghanistan, Bangladesh, Bhutan, China, and Myanmar) have been making progress in accessing improved water sources (piped), which is indicated by the steady rise in the percentage of urban population with access to improved drinking water on premises (SDG 11) (Silva et al., 2021). However, the system was put under strain due to the pandemic, which led to a surge in water demand due to official orders on improving hygiene and sanitation practices. This increase in water use exacerbated existing water scarcity issues (Bera et al., 2022). There was also an increase in plastic waste from personal protective equipment (PPE) used during the pandemic, thereby reversing global environmental progress (Silva et al., 2021).

While there was an increase in demand for water, the demand for energy dropped during the pandemic. In line with the demand, countries like Bangladesh, India, and Pakistan decreased their fossil fuel-based power production, and countries like Nepal reduced hydroelectric power generation, while also reducing energy imports (IRADe, 2021). Although there was a reduction in carbon emissions, the reduction in energy demand had financial implications for several of the HKH countries (Hasan et al., 2023).

Fortunately, most of the HKH countries have made significant progress regarding access to electricity and digital connection and services. Bhutan, China, and India have come the closest to achieving the SDG 7 target of affordable and clean energy (Silva et al., 2021). China and Bhutan successfully achieved the target related to electricity in 2013 and 2018 respectively, well before the pandemic broke out; this contributed to its coping strategies and recovery plans. Afghanistan, Bangladesh, and India are close behind in their pursuit of full coverage in terms of access to electricity. The pandemic may also

have given a big push for full electricity coverage due to the internet-based ICT solution adopted by the countries. However, even amongst the countries with over 90 per cent electricity coverage, they are lagging in terms of access to clean fuels and technology for cooking purposes (Sachs et al., 2023).

Enhancing Regional Cooperation for Mountain-specific Agendas: SDG 17 – Partnerships for the Goals

The pandemic has illustrated the importance of global collaborations and partnerships to address common challenges highlighted by the progress made towards achieving SDG 17 across all the countries in 2021 (Sachs et al., 2023). International cooperation and solidarity were crucial in developing and distributing vaccines and other resources. China and India were instrumental in sending aid to other HKH countries like Afghanistan, Bhutan, and Nepal (Kobierecka & Kobierecki, 2021; Pattanaik, 2021).

The HKH countries made some progress on some of the SDG 17 indicators. Understandably, government spending on health and education increased in Afghanistan, Bangladesh, Bhutan, China, India, and Nepal, especially during the pandemic (Sachs et al., 2023). Noticeable progress was also made in statistical performance in terms of data use, data services, data products, data sources, and data infrastructure, which could be attributed to enhanced investment in the digitalisation process (Sachs et al., 2023). However, the IMF (2023) reported a drop in government revenue in Bangladesh, China, and Nepal after the outbreak of COVID-19. Overall, it can be surmised that despite the regional cooperation and solidarity invoked by COVID-19, the HKH countries are far from achieving their mountain-specific collaborative agendas towards SDG 17

6.3 What have we learnt from the COVID-19 pandemic for future preparedness?

It is essential to recognise that the pandemic has had both direct and indirect effects on progress towards the SDGs. Some of the setbacks triggered by the pandemic may be temporary; however, even temporary reversals can have long-term impacts. While the pandemic presented new challenges, it also provided an opportunity to rethink and strengthen efforts to achieve the SDGs, with an emphasis on resilience, equitable recovery, and sustainable development. Policymakers and stakeholders must work together to Build Back Better' and ensure that no-one is left behind in the post-pandemic world.

In most of the HKH countries, the pandemic exerted a negative influence on all SDGs. Specifically, SDG 1 (No Poverty) suffered a significant setback, with poverty rates increasing from pre-COVID-19 levels. As the pandemic disrupted development trajectories and posed obstacles to achieving the SDGs, vulnerable populations bore a disproportionate part of the impacts.

Furthermore, several HKH countries witnessed adverse effects on sectors such as agriculture and tourism. The COVID-19 pandemic not only hampered progress but also posed a risk to recent development accomplishments, given its enduring social and economic repercussions that exacerbated earlier challenges.

The pandemic disrupted business transactions, sales revenue, and the availability of materials and manpower in many of the HKH countries. Maintaining a stable supply chain became a formidable challenge, leading to stress for managers of small and medium-sized enterprises. Such stressors can adversely affect entrepreneur-managers and mar their business confidence and overall performance. Therefore, the implementation of resilience strategies is paramount for effectively managing the stressors and instilling confidence in business operations.

The pandemic has taught us lessons which are critical for nations to be better prepared in the future. It has made us realise at all levels that there are challenges, gaps, and opportunities to deal with when a crisis such as this emerges.

There are lessons at individual, household, farm, national, and international levels which reinforce each other, and point towards more inclusive, innovative, transformative, and integrated approaches towards development.

The following is a summary of the key lessons learnt that were drawn while assessing the impacts of the COVID-19 pandemic on various sectors, people, and the environment. These key lessons learnt will help in being better prepared to face such a crisis in the future.

1. Agile institutions and adaptive policies are best suited for crisis situations that are disruptive, fast changing, and laden with high uncertainty: Although necessary, lockdown measures caused significant economic disruption and supply chain issues, highlighting the need for better preparation against future pandemics through institutional arrangements that are capable of anticipatory risk mitigation and adaptation. The varied impacts of the pandemic across cultures underscore the importance of adaptive institutions and policies for effective responses that are relevant to specific socio-ecological and cultural contexts, and so contributing minimally to future harm.

2. Prioritising resilience as a policy goal will nudge the HKH countries to calibrate development plans with a stronger emphasis on environment and equity: The pandemic clearly established the embeddedness of humanity in nature (Dasgupta, 2021) and added strength to the argument that long-term, resilient economic progress of countries requires not only better macroeconomic management, but also sustainable management of natural capital and the environment. In the context of the SDGs, it must be acknowledged that the pandemic – while introducing novel challenges – concurrently serves as a catalyst for re-evaluation and for fortification of endeavours directed towards achieving the goals. So, post-pandemic recovery planning can be seen as an opportunity to mobilise investment for accelerated progress on socially and economically transformative measures in areas like access to renewable energy and smart public transport, clean and green cities, and zero-waste production and consumption systems. Moreover, policymakers and

stakeholders must collaboratively strive to Build Back Better in a just manner, ensuring that no individual is marginalised in the transition to a resilient post-pandemic world.

3. Digital readiness should be a national priority for all the HKH countries and needs to be pursued with mission-mode zeal:

During the pandemic, governments in the HKH region implemented measures to control the virus, improve healthcare, and equitably distribute vaccines. They also accelerated a shift towards digital governance. In this process, however, the stark digital divide in terms of access, skills, and resources were exposed; this disproportionately impacted marginalised groups and also widened the gaps between various sectors and people. The education and healthcare sectors, especially of the HKH region countries, urgently require strategic plans and operational models to integrate digital systems that ensure enhanced reach and effectiveness in service delivery, but not at the cost of affordability. The pandemic certainly underscored the need for businesses and governments to digitalise for resilience, but there are persisting challenges that need to be urgently addressed, such as the vulnerability to cyberattacks and cybercrimes; infrastructure limitations hindering universal access to quality internet connectivity in the mountain areas; and regulatory gaps. The HKH countries face the challenge of building enabling e-commerce ecosystems with the latest digital infrastructure in rural and remote areas to support and facilitate digital trading and payments. Hence, national priorities should include fostering digital readiness, supporting local digital economies, and promoting transboundary cooperation in the HKH region for digital infrastructure development and related policy frameworks.

4. Fintech solutions must be deployed for the accelerated economic empowerment of the marginalised population groups:

Dealing with the pandemic brought in widespread confidence among people regarding online banking, digital payments, and other fintech applications. Building resilience is a challenge in HKH economies that continue to have a significant share of their populations without bank accounts, or where a significant volume

of financial transactions continues using physical currency. The transition to digital accounts has the potential to serve as a gateway to banking for the unbanked population. Similarly, encouraging the adoption of digital payments holds the potential to enhance the utilisation of financial services among individuals who are already account holders. Collaborative efforts involving entities like governments, telecommunications providers, and financial service providers are essential for creating an ecosystem where secure, cost-effective, and user-friendly products and features appear more enticing than traditional cash transactions.

5. Public finance has to support a 'green' recovery from the economic 'blues' caused by the pandemic:

In order to recover from the fiscal problems created by the pandemic, creative financing solutions, such as green and social bonds, are called for; such solutions prioritise environmental sustainability and social welfare through investments in clean energy, healthcare, and education.

6. Diversified modes of delivering education is the new normal, and measures for future preparedness must include appropriate tools for learning pedagogy and evaluation, especially for those population groups who are at a disadvantage due to the current digital divide:

Despite the efforts by governments and educational institutions to shift to online learning, their efforts have remained limited due to the relatively low readiness for remote learning in the rural and remote areas of the HKH countries. Expanding the delivery to alternatives like television, radio, and take-home educational packages has the potential to enable students from diverse backgrounds, especially disadvantaged students with limited resources, to access education equitably. While digital mediums have not replaced the role of the teacher, they have provided an alternative solution to an unforeseen crisis. However, there need to be improvements in infrastructure and systems to maximise potential and to enhance learning outcomes. The provision of remote learning must be coupled with mechanisms to optimise interaction between education providers and its recipients, and an environment must be created which promotes active involvement by parents or caregivers.

7. **Data-driven health-sector governance is essential for effective and equitable delivery of healthcare services:** The pandemic prompted the HKH countries to assess their institutional strengths in the health sector, and to establish response protocols and SOPs to deal with probable future outbreaks. One area in which public investment is necessary concerns the establishment of effective and comprehensive disease-monitoring and surveillance systems through use of advanced digital technology.
8. **Evidence-based migration policy containing crisis-time socio-economic safeguards for migrant workers, along with reintegration measures for returnees, is key to building labour market resilience in a just manner in the HKH region:** The pandemic highlighted the urgent need for detailed migration data and robust migration policies at subnational, national, and regional levels. Internationally, initiatives like SDG 2030 and the Global Compact for Migration guide the protection of migrant workers and stress the importance of shared responsibilities; however, actions to operationalise these commitments require a wide spectrum of country actions in areas like urban planning, labour market regulations, social protection, access to health and education, and skill/entrepreneurship development. Within the HKH countries, more efforts need to be made to improve the working and living conditions of the migrant workers, besides putting in place formal labour contracts, wage protection measures, and insurance coverage. Jobs that are lost due to disruptions take time to be restored, hence it is important to have dedicated economic or entrepreneurship opportunities to reintegrate returnee migrants. Important steps, such as mapping the acquired skills of the returnee migrants, assessing the skill requirements in the market, and improving the existing labour market information systems, that were taken during the pandemic need to continue and are relevant for identifying local economic opportunities for migrant workers.
9. **‘Clean water for all’ must be enshrined as a part of citizens’ fundamental right to safe and dignified living, which, in turn, will ensure policy priority towards sustainable**

water resources governance: Increased handwashing and hygiene practices during the pandemic led to a surge in water consumption, which rose to nearly double the usual rate of use. The COVID-19 experience spotlighted the critical importance of a resilient water sector that can provide universal access to clean water for hygiene and disease prevention. It also highlighted the need for community engagement, public health education, and freshwater ecosystem conservation. Despite its importance, the HKH region has made slow progress in strengthening water-sector resilience, and access to clean water continues to be a challenge for many mountain communities. It is imperative for governments in the region to prioritise comprehensive, adaptive, and GESI-oriented water resource management strategies that are aligned with current infrastructure development and spring-revival interventions.

10. **De-risking tourism during pandemics and pandemic-scale crises requires embedded capabilities in the hospitality and transport sectors to deploy risk-mitigation and confidence-building measures, including the capability of effective risk communication:** The pandemic highlighted the need for policy measures tailored to local contexts, particularly in the case of the tourism and hospitality sectors. The major issues that arose during the pandemic for these intertwined sectors were effective communication of risk mitigation measures, compliance monitoring, tourists’ mobility and access to vehicular transport, and pressures arising from a depleted workforce. Besides, rapidly changing governmental messages led to confusion among transport providers and tour operators. Common risk mitigation measures were also hindered by evolving work conditions in relation to the dynamics of the pandemic.
11. **Food supply chains need to be shielded from disruption in future crises through a combination of enhanced local capabilities for value chain development and storage, and regional-level institutional arrangements for pooling of resources; there also ought to be coordinated policy responses regarding food pricing and transport:** COVID-19 exacerbated employment and income loss in

the HKH region by badly affecting the food and agriculture system, thereby necessitating medium- and long-term livelihood support measures beyond immediate relief packages. Border closures disrupted trade routes, impacting farmers whose incomes depend on exporting agricultural products. Governments must invest in the necessary infrastructure such as cold storage facilities, food processing hubs, and food delivery networks, particularly in the mountain areas, to fulfil local food demand during a crisis. The pandemic disproportionately affected women – aggravating pre-existing inequalities – in terms of access to food and agricultural inputs. Future strategies should focus on skill development, creation of alternative income sources, and provision of financial and market support. Enhanced regional coordination and collaboration are vital for the smooth supply of food items. Collective resilience, too, should be built in the face of current and expected challenges arising in the HKH countries. All of this involves pooling of resources, sharing of knowledge, and implementation of best practices.

12. Smooth-running social protection

programmes are a critical component of any future preparedness mechanism, with the key criteria for programme efficacy being coverage, comprehensiveness, and capability (efficiency of the service providers): Social assistance, consisting primarily of cash transfers and financial support, is the primary social protection measure deployed in the HKH countries, with limited focus on social insurance for unemployed workers. Data from South Asia indicates that middle-income households are often overlooked in social protection coverage, with programmes mainly targeting the poorest and wealthiest sections. In the case of pro-poor social protection systems, they suffer from ineffective enactment and enforcement, such as by failing to address the vulnerabilities of informal workers. This ineffectiveness was glaringly exposed during the pandemic through the phenomenon of reverse migration from cities like Kathmandu in Nepal and Dhaka in Bangladesh, where lack of comprehensive social security measures led to urban migrants losing livelihoods and returning to their villages. Overall, there is a

pressing need for well-run social protection systems in the HKH countries that incorporate integrated social registries and systematic targeting mechanisms to enhance coverage and reduce exclusion during future crises.

13. Energy security and a shock-proof energy sector is of strategic importance during a crisis, both requiring, respectively, a transition towards reduced dependence on fossil fuels and improved energy systems management:

The pandemic brought to the fore critical weaknesses in the energy sector of most of the HKH countries, especially in terms of supply chain disruptions resulting from high fossil fuel dependency, which, in turn, triggered operational and financial setbacks. This state of affairs emphasised the importance of transitioning to a resilient and sustainable energy system, as renewable energy sources showed greater stability during the pandemic. So, there is an urgent need to shift towards renewables, backed by strong infrastructure, improved supply chain management, and supportive policies for clean energy technology adoption in order to bolster crisis resilience and mitigate economic repercussions.

14. Stronger and institutionally embedded mechanisms for cooperation between government and civil society is essential for last-mile connectivity during a crisis:

Cooperation between government and civil society strengthened during the pandemic, with government recovery efforts taking the help of civil society and community organisations to deliver supporting healthcare services (such as counselling) to the affected groups, especially in hard-to-reach areas. This not only helped in attaining last-mile connectivity but also ensured the mainstreaming of citizen science and social monitoring which were helpful in contexts characterised by conflicts and trust deficit between the local population and frontline government agencies.

15. Future pandemic preparedness mechanisms must have in place women-friendly protocols to ensure easy access for women to healthcare services, education, insurance, government subsidies, and livelihood options:

The HKH countries need to work towards adopting a holistic approach to future pandemic

preparedness that integrates healthcare, education, and employment support for ease of access by the vulnerable communities, including women. This would build the resilience of women and their capacity to cope effectively with public health crises. A prerequisite to such an integrated approach is the availability of gender-disaggregated, age-related, disability-related, and ethnicity-based data that can help in providing an understanding about the specific impacts of a public health problem on women, children, adolescents, and other vulnerable groups. This can support the planning process for better preparedness and lead to improved policies to face future health crises. More participation of women in decision-making bodies will ensure that interventions are designed to consider their specific needs and challenges in the event of future pandemics.

16. Appropriate risk communication is a necessity during a crisis and helps in raising people's morale as well as their compliance with crisis-time rules and restrictions: The pandemic years saw a flood of misleading and unverified information from diverse sources, which resulted in fear and anxiety among many people. During a crisis and its recovery aftermath, it is necessary to have rules and regulations that ensure constant monitoring of various media channels, including social media. Moreover, effective risk communication can significantly influence peoples' attitudes and behaviour, which will be helpful for public authorities in their risk-mitigation efforts.

17. Stronger environmental governance can be the 'gamechanger' in future risk preparedness and resilience-building initiatives: The COVID-19 lockdowns led to a temporary reduction in air pollution, thereby offering urban and rural residents a glimpse of cleaner air and fostering in them a desire for improved air quality. Achieving lasting solutions requires collaboration among governments, industries, communities, and stakeholders by focusing on evidence-based and cost-effective strategies rather than on populist measures. Public awareness campaigns and city-level multi-stakeholder forums can make people's participation in environmental governance a reality.

18. The shift towards the virtual office and heightened awareness of personal hygiene have brought the focus on workplace health and safety: The pandemic sparked a renewed emphasis on health and safety in workplaces, both indoors and outdoors. Rigorous safety protocols and sanitation measures were implemented in countries like Bhutan and China, including temperature checks, social distancing, and mandatory use of personal protective equipment (PPE) to protect workers' health. Some of the positive practices that have been carried forward from the pandemic which help reduce carbon footprint and traffic congestion, are: the provision of remote work; use of cards, not cash, for business transactions; placing shields at counters where face-to-face interactions are mandatory; and the home delivery system.

19. Enabling the informal sector and MSMEs to cope with the transition to a digital economy will bring in the much-needed impetus to revitalise rural economic development, arrest a rise in unemployment, and contribute to entrepreneurship among the mountain youth: Micro, small, and medium enterprises (MSMEs) play a significant role in the economies of the HKH region. COVID-19 significantly affected the business enterprises of the region, especially MSMEs. Many MSMEs had to close down or were on the brink of closure, a situation that was no better even two years after the pandemic. Many MSMEs lack the necessary technical skills and knowledge to effectively utilise digital technologies and online business models. Capacity-building efforts are essential to bridge this knowledge gap. During the pandemic, the HKH MSMEs encountered difficulties in accessing domestic and international markets. So, addressing trade barriers, fostering market linkages, and promoting e-commerce platforms are vital steps to plug the gaps. But inadequate digital infrastructure, including unreliable internet connectivity, poses a barrier to the digital transformation of the MSMEs. Thus, improving internet-related infrastructure, particularly in remote areas, is critical for facilitating digitalisation and online business operations.

20. Safe and environmentally conscious construction practices related to green buildings and infrastructure development:

The construction sector is one of the major driving forces of economic development in the HKH countries. During pre-COVID times, this sector made limited use of digital technologies, but in post-COVID times, the construction sector in some of the HKH countries have made significant strides in adopting them. China and India, for instance, are using Building Information Modeling (BIM), virtual collaboration platforms, and remote monitoring systems to improve project management and coordination, while also minimising on-site physical presence. The pandemic presented an opportunity to promote sustainable construction practices in the region. Projects now prioritise resilience and environmental concerns, and incorporate sustainable design principles and energy-efficient technologies. Bhutan and Nepal, for instance, are focusing on green building practices, renewable energy integration, and waste reduction strategies, aimed at more environmentally conscious infrastructure development.

21. Knowledge organisations of the HKH region can contribute to evidence creation and production of new knowledge to help policymakers and practitioners understand more clearly the problems arising from complex and interconnected nature–humanity relationships:

Since the pandemic generated multidimensional challenges, they had to be dealt with through multidimensional approaches, which included contributions from social scientists, medical personnel, and other scientific experts. So, there is an urgent need for investment in socio-ecological research to understand the complex interactions within and among different systems and their impacts; such research has to be carried out by multidisciplinary regional teams, aiming for better preparation and timely, coordinated actions to be made in future crises.

22. Regional cooperation has the potential to act as a force multiplier for future preparedness efforts by individual HKH countries, through unified policy response and collective risk management:

There is a need for unified

policy responses by the HKH countries and cross-country collaborations to build resilience through coordinated actions across the health, economic, social, and environmental sectors for better future preparedness to tackle pandemic challenges. The priority areas for regional cooperation include: restoration of degraded shared ecosystems; biodiversity monitoring and conservation; management of cross-border migration; pooling of resources and expertise in the provisioning of healthcare; and maintenance of stable food supply chains.

6.4 Integrated systems approach: The ‘One Health’ paradigm

There is a need to comprehensively overhaul the current disjointed nature of healthcare and pandemic response, and adopt an integrated systems approach towards the confluence of climate change, human health, and transboundary governance. Such an integrated approach can be defined as a holistic and transdisciplinary framework that seeks to clearly define, understand, and operate at the dynamic intersectionality and non-linear loops that exist between health, climate, and other social, economic, and environmental dimensions which affect health outcomes.

Such a system builds upon the WHO’s ‘One Health’ paradigm that seeks to present an ‘integrated, unifying approach to balance and optimize the health of people, animals and ecosystems’, and there are strong arguments to integrate this approach into policy and governance mechanisms (Barroso et al., 2023; Gallo-Cajiao et al., 2023; Lefrançois et al., 2023). In a complex and diverse region such as the HKH, we argue that our health systems should go further and employ elements of socio-economic and transboundary governance and co-operation in order to present a fully holistic approach to healthcare.

From a technical standpoint, such an approach recognises that there are inextricable linkages between ecosystems, society, and the health of animals and humans (Rapport et al., 1998; Rapport et al., 1999). Examples of such processes can be seen in how mercury poisoning of fish and its impeding health risks for downstream Amazon

communities were caused by soil erosion from deforestation (Forget & Lebel, 2001). Similarly, foreign policy interventions in South Asia and Central America have been linked to the changes in patterns of malaria (Waltner-Toews, 1999). Climate impacts, especially linked to pollution and habitat destruction, have had major influence on the occurrence and geographic distribution of infectious agents. Furthermore, lessons from the Ebola epidemic in Western Africa highlight that epidemics are not only limited to the circulation of viruses or related to contamination, but are also strongly influenced by history, political contexts, economic inequalities, and cultural phenomena.

There is a need, therefore, to develop a dynamic systems approach to build resilience to such conditions, where technical and policy interventions can allow ecosystems to rapidly shift and adjust to emergent crises. Within such a process, it is important to take into account the diversity (from genes to species), redundancy, and adaptability of the socio-ecosystems. Nature can help provide viable and cost-effective solutions that use and deploy the properties of natural ecosystems and their services. For example, eco-inspired strategies have been developed to control infectious diseases, while the promotion of afforestation and reforestation initiatives can ensure more robust human health by improving air quality and reducing heating effects. Such initiatives can be incremental and proactive,

rather than reactive. Other interventions that can help develop an integrated approach to healthcare include: raising awareness among health and allied workers on climate change's impacts on health; integrated risk-monitoring systems on climate change's effects on health; and early warning systems anchored in integrated information on climate change and health. Climate services for health, which is a collaborative exercise that uses climate information to improve decision-making on health, can promote Health in All Policies (HiAP), which acknowledges that health outcomes are affected by all explicit and implicit public health policies.

However, the development of such an integrated system of monitoring, proactive intervention, and healthcare focus would require significant intergovernmental collaboration and co-operation in the HKH region. Impacts in terms of climate change and health, as well as the benefits from such interventions, would transcend national boundaries and would require regional responses. Therefore, there is a need to develop co-operative mechanisms, capacities, and dialogues at the regional level to build systems that can promote proactive responses to such challenges. There is also a need for an intergovernmental HKH expert group on health and climate change, which can facilitate the development of further, more robust institutions and collaborations in the future.

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Annexe Table: Current SDG status of the HKH countries

Country	Afghanistan	Bangladesh	Bhutan	China	India	Myanmar	Nepal	Pakistan	World
2023 SDG Index Score	49.0	65.9	72.3	72.0	63.4	60.4	66.5	59.0	66.7
2023 SDG Index Rank	158	101	61	63	112	125	99	128	
SDG 1: No Poverty	red ↓	orange ↗	yellow ↗	Green ↑	orange ↑	orange →	orange ↗	orange ↗	orange →
SDG 2: Zero Hunger	red →	orange ↗	red →	Yellow ↗	red →	orange →	orange →	red →	red →
SDG 3: Good Health and Well-Being	red →	red ↗	orange ↗	Orange ↗	red ↗	red →	red ↗	red →	red ↗
SDG 4: Quality Education	red →	yellow ↑	yellow ↑	Green ●	yellow ↗	red ↑	orange →	red →	yellow →
SDG 5: Gender Equality	red ↗	orange →	orange ↗	Yellow →	red ↗	orange →	orange ↗	red →	orange ↗
SDG 6: Clean Water and Sanitation	red ↗	red ↗	orange ↗	Orange ↑	red ↗	red ↗	orange ↑	red ↗	orange ↗
SDG 7: Affordable and Clean Energy	red →	red ↗	orange ↗	Orange ↗	orange ↗	red →	red →	red →	orange →
SDG 8: Decent Work and Economic Growth	red →	orange →	red →	Orange ↗	orange ↗	red ↗	red →	red →	orange →
SDG 9: Industry, Innovation and Infrastructure	red →	orange ↗	orange ↗	Yellow ↑	red ↗	red ↗	orange ↗	red →	orange ↗
SDG 10: Reduced Inequalities	grey ●	orange ●	orange ●	Orange →	orange ↓	yellow ●	orange ●	yellow ↑	orange →
SDG 11: Sustainable Cities and Communities	red →	red →	yellow ↗	Orange ↗	red →	red →	red →	red →	red →
SDG 12: Responsible Consumption and Production	green ↑	green ↑	orange ↑	Yellow →	green ↑	yellow →	green →	yellow ↗	yellow ↗
SDG 13: Climate Action	green →	green →	green ↗	Yellow →	green →	yellow ↗	green →	green ↗	orange →
SDG 14: Life below Water	grey ●	red ↓	grey ●	Red →	red ↗	red ↓	grey ●	red ↗	red →
SDG 15: Life on Land	red ↓	red ↓	red ↓	Red ↓	red ↓	red ↓	red →	red →	red →
SDG 16: Peace, Justice and Strong Institutions	red →	red ↓	yellow →	Red →	red →	red ↓	red →	red →	red →
SDG 17: Partnerships for the Goals	red =	red →	orange ↗	Orange →	orange ↗	red →	orange ↗	red ↗	orange →

Major challenges; Significant challenges; Challenges remain; SDG achieved; Information unavailable

Decreasing ↓ Stagnating → Moderately improving ↗ On track or maintaining SDG achievement ↑ Information unavailable ●

SDG achieved = green; Challenges remain = yellow; Significant challenges = orange; Major challenges = red; Information unavailable = grey

Source: Sachs, J. D., Lafortune, G., Fuller, G., & Drumm, E. (2023). Sustainable development report 2023: Implementing the SDG stimulus. Paris: SDSN; Dublin: Dublin University Press. <https://sdgtransformationcenter.org/reports/sustainable-development-report-2023>

About ICIMOD

The Hindu Kush Himalaya (HKH) region stretches 3,500km across Asia, spanning eight countries – Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan. Encompassing high-altitude mountain ranges, mid-hills, and plains, the zone is vital for the food, water, and energy security of up to two billion people and is a habitat for countless irreplaceable species. It is also acutely fragile, and vulnerable to the impacts of the triple planetary crisis of climate change, pollution, and biodiversity loss.

The International Centre for Integrated Mountain Development (ICIMOD), based in Kathmandu, Nepal, is an international organisation established in 1983, that is working to make this critical region greener, more inclusive and climate resilient. For more information, read our [Strategy 2030](#) and explore our [website](#).

REGIONAL MEMBER COUNTRIES



AFGHANISTAN



BANGLADESH



BHUTAN



CHINA



INDIA



MYANMAR



NEPAL



PAKISTAN

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