Crisis Preparedness Gap Analysis
Bhutan Briefing Note

I. Introduction

1. **Crises threaten to roll back development gains and undermine efforts to end extreme poverty.** Not all crises can be prevented, and governments must therefore be ready to manage residual risk. Doing so requires a comprehensive approach to crisis risk management—one based on investments to reduce exposure and vulnerability. It also requires coordinated and pre-agreed contingency plans backed by effective, efficient, and transparent financial protection measures. When governments invest in preparedness, they are better equipped to deploy the necessary technical and financial resources to reduce the potential impacts of crises and enable timely and effective crisis response efforts, ultimately reducing impacts on people and economies.

2. **IDA20 identifies crisis preparedness as a policy priority, with the goals of enhancing countries' understanding of key crisis risks, strengthening countries' capacity to manage a range of shocks, and informing International Development Association (IDA) programming.** The Crisis Preparedness Gap Analysis (CPGA) was developed by a cross-sectoral team of World Bank experts to support these efforts. It aims to (a) provide a high-level assessment of crisis preparedness for different types of shocks, (b) identify gaps and opportunities to improve crisis preparedness at the country level, and (c) inform policy dialogue and technical and financial support on crisis preparedness as part of country and regional programming. By identifying priority interventions, the CPGA can be a useful tool to inform Country Partnership Frameworks[1] and country programming more generally.

3. **This briefing note presents a summary of findings from the CPGA in Bhutan and is intended to inform policymakers to integrate crisis preparedness across different sectors.** The CPGA provides a shock-agnostic assessment of Bhutan's capacity to deal with crisis events whether driven by natural hazards, food insecurity, disease outbreaks, or other threats. Following a brief description of the CPGA methodology and an overview of the risk context in Bhutan, this note showcases high-level insights from the preparedness gap assessment of the country, focusing on entry points and opportunities to strengthen crisis preparedness. A detailed report on the CPGA findings is provided in an accompanying Technical Annex.

II. Applying the CPGA in Bhutan

4. **To provide a holistic assessment, the CPGA analyzes crisis preparedness across five core components**, which can be seen as the essential foundations of crisis preparedness—relevant in most contexts and useful to prepare for a range of shocks. These are (a) Legal and Institutional Foundations, (b) Understanding and Monitoring Risks, (c) Financial Preparedness, (d) Primary Response, and (e) Social and Livelihood Support. Each component is further broken down into subcomponents and indicators, resulting in a three-tiered system with maturity levels assigned to each. Levels of maturity range from *unmet* (little to nothing has been done to actively promote crisis preparedness) to *advanced* (typically true of a regional leader in crisis preparedness that takes a comprehensive and multi-sectoral approach that uses significant

[1] Under IDA20, all new Country Partnership Frameworks are to be informed by appropriate crisis-preparedness assessments, including the CPGA.

resources and has significant capacity). The assessment focuses on identifying entry points for targeted technical and financial support to strengthen crisis preparedness across these five components.

5. **The CPGA assessment of Bhutan builds on and complements a number of sector- and crisis-specific diagnostics.** These include documents produced by the World Bank such as the *Bhutan Water Status Assessment Report*; *Bhutan Agricultural Sector Review*; *Modernizing Weather, Water, and Climate Services: Roadmap for Bhutan*; *Bhutan Country Environmental Analysis*; *Revised estimates of the impact of climate change on extreme poverty by 2030*; *Poverty mapping in Bhutan*; *Small area estimation: Gewog (block) and Town Level Results 2023*; *and the draft Report on the Adaptivity of Social Protection Systems in Bhutan, which contributed to the World Bank 2023 publication on Responsive by Design: Building Adaptive Social Protection in South Asia*[2]. The CPGA does not replace or duplicate these in-depth assessments. Rather, it offers a holistic, high-level perspective on key country systems that contribute to crisis preparedness for different types of shocks and across sectors. Where available, these sector-specific diagnostics constitute the starting point of the CPGA. When sector-specific diagnostic tools are yet to be deployed, the CPGA points to knowledge gaps that could be filled with follow-up work and more in-depth analyses.

Bhutan: Country Risk Profile

6. **A first step in the CPGA process is gaining a detailed understanding of a country's risk profile.** Doing so is crucial in tailoring the evaluation to levels of exposure and sensitivity specific to the unique set of threats facing a given country. Table 1 provides a summary of key risks and vulnerabilities. The detailed profile that follows draws on insights from national risk assessments and information from wider multi-hazard risk repositories. Discussions on the country's capacity to prepare for these threats are further outlined in the section that follows.

Table 1. Summary Statistics Related to Key Risks and Vulnerabilities in Bhutan

Natural hazards[3] 	River flood	High risk
	Urban flood	High risk
	Landslide	High risk
	Extreme heat	High risk
	Wildfire	High risk
	Earthquake	Medium risk
	Water scarcity	Medium risk
	Cyclone	Low risk
Food 	Value of food imports in total merchandise exports (2019–2021 average)[4]	24 percent
	Prevalence of insufficient, poor, and borderline food consumption score (percent of population) (World Food Programme [WFP])[5]	29.14 percent
	Percentage of children under 5 years of age who are stunted[6]	22.7 percent

[2] World Bank. Responsive by Design : Building Adaptive Social Protection Systems in South Asia (English). Washington, D.C. : World Bank Group.
http://documents.worldbank.org/curated/en/099192003212311865/P17869108018a10c50822c05d3eea25a5e9

[3] ThinkHazard! 2020. Bhutan. https://www.thinkhazard.org/en/report/31-bhutan.

[4] Food and Agriculture Organization (FAO): Suite of Food Security Indicators. https://www.fao.org/faostat/en/#data/FS.

[5] Global Food and Nutrition Security Dashboard. https://www.gafs.info/country-profiles/?state=Advice&country=BTN&indicator=FCSP.

[6] FAO: Suite of Food Security Indicators. https://www.fao.org/faostat/en/#data/FS.

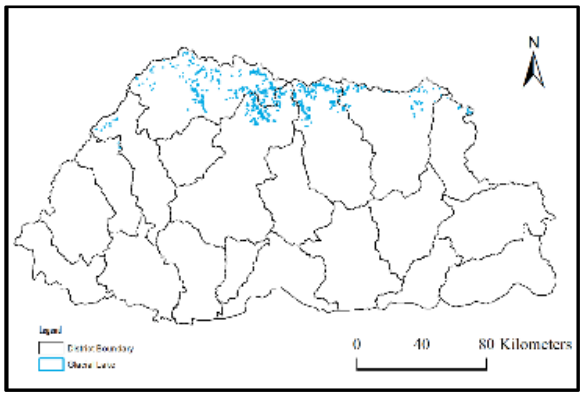
	Share of the population who cannot afford a healthy diet (percent) (World Bank)[7]	7.5 percent
Health	Current expenditure on health, as a percentage of gross domestic product (GDP)[8]	4 percent
	Physician density (per 10,000 people)[9]	5.6
	Nursing and midwifery personnel density (per 10,000 people)[10]	22.1
	Malaria incidence (per 1,000 people at risk)[11]	0.01
Macro-fiscal[12]	GDP	US$2.77 billion
	GDP growth rate	4.4 percent
	Central government debt, total (percent of GDP)	111 percent
Socioeconomic vulnerability	Poverty rate[13]	12.4 percent
	Human Development Index rank[14]	127/191
	Human Capital Index score[15]	0.66
	Population covered by at least one social protection benefit (2020)[16]	8.8 percent
	Vulnerable persons covered by social assistance (2020)[17]	5 percent
Fragility, conflict, and violence[18]	Fragile and conflict-affected situations (FCS) status	Not on FCS list

7. **Bhutan is exposed to a myriad of natural hazards, including floods, landslides, cloudbursts, windstorms, cyclones, river erosion, earthquakes, glacial lake outburst floods (GLOFs), wildfires, and droughts.** Projected increases in days with heavy precipitation could increase the risk of flooding and impact runoff, erosion, and river discharge rates. Between 1994 and 2016, around 87,000 people were affected and over 380 died due to natural disasters. Most of the country's infrastructure is located along drainage basins that are highly vulnerable to flooding caused by heavy monsoon rains and glacial melt. The urban areas are vulnerable to flooding and extreme heat in the south. In July 2023, devastating flash floods in Gelephu, Phentsholing, and Lhuentse damaged assets, including roads, public properties, and a bridge. They washed away 23 people and a section of the Yungichhu Hydropower Plant. Risks of local dry spells are expected to increase for large parts of the country, while extreme 7-day consecutive rainfall events would heighten flood and landslide risks.[19] Increased drought conditions and lightning risks can worsen the risk of forest fires. Climate change is expected to affect water resources through loss of storage in the form of ice and changes in precipitation and flow patterns, causing more floods and droughts. The

[7] Global Food and Nutrition Security Dashboard. https://www.gafs.info/country-profiles/?state=Advice&country=BTN&indicator=FCSP.
[8] World Health Organization (WHO) Global Health Expenditure database. https://apps.who.int/nha/database.
[9] WHO. 2021. "Density of Doctors (per 10,000 people) - Bhutan." https://data.who.int/indicators/i/217795A.
[10] WHO. 2021. "Nursing and Midwifery Personnel Density (per 10,000 Population) – Bhutan." https://data.who.int/indicators/i/5C8435F.
[11] WHO. 2021. "Malaria Cases - Bhutan." https://data.who.int/indicators/i/442CEA8.
[12] World Bank Group. 2024. Data Bank. Country indicators. https://data.worldbank.org/country/bhutan.
[13] World Bank. 2023. "Poverty Mapping in Bhutan, Small Area Estimation: Gewog and Town Level Results 2023."
[14] UNDP (United Nations Development Programme). 2021. https://hdr.undp.org/data-center/specific-country-data#/countries/BTN
[15] UNDP. 2021. https://hdr.undp.org/data-center/specific-country-data#/countries/BTN.
[16] ILO (International Labour Organization). 2020. https://www.social-protection.org/gimi/WSPDB.action?id=19
[17] ILO. 2020. https://www.ilo.org/shinyapps/bulkexplorer52/?lang=en&segment=indicator&id=SDG_0131_SEX_SOC_RT_A.
[18] World Bank. 2022. "Classification of Fragile and Conflict-Affected Situations." https://www.worldbank.org/en/topic/fragilityconflictviolence/brief/harmonized-list-of-fragile-situations.
[19] Assessment of Climate Risks on Water Resources for the National Adaptation Plan (NAP) in Bhutan (2021).

risk of potential disasters induced by GLOF is pronounced, as the country is home to 700 glaciers and 567 glacial lakes, of which 17 are expected to pose medium to high risks (Figure 1).

Figure 1. Distribution of Glacial Lakes in Bhutan



Source: NCHM (National Center for Hydrology and Meteorology). 2021. *Bhutan Glacial Lake Inventory*.

8. **Further, Bhutan is highly vulnerable to earthquakes of more than 8 on the Richter scale.** In 2009 and 2011, two high-magnitude earthquakes caused damage and loss of US$52.6 million[20] (4.3 percent of GDP) and US$24.5 million[21] (1.4 percent of GDP), respectively. A study estimates 9,000 fatalities with 10,000 serious injuries and 40,000 people displaced throughout the country in the worst-case seismic scenario.[22]

9. **Bhutan's economy is highly dependent on climate-sensitive sectors such as agriculture and hydropower.** Half of the country's workforce is in agriculture, which is highly vulnerable given its concentration in rain-fed dryland and wetland farming. The rainfall in October 2021 affected 17 *Dzongkhags* (districts) and 2,500 acres and resulted in the loss of around 2,400 metric tons of crops. Bhutan's economy is shaped by hydropower development including the sale of electricity to India. While its abundant water resources created ideal conditions for hydropower development with a full hydropower generation potential estimated at 30 GW, the sector is also vulnerable to climate change, including changes in rainfall patterns, melting glaciers, and increasing occurrence of weather events.

10. **The COVID-19 pandemic highlighted the economy's susceptibility to external shocks and underlying structural issues.** The pandemic caused a contraction of 10 percent of Bhutan's economy in 2020. While the hydropower sector saw growth, the non-hydro industries and services suffered due to supply chain disruptions, shortages of foreign labor, and a decline in tourism. Despite these challenges, Bhutan graduated from the Least Developed Country status in December 2023, though it still grapples with economic and environmental vulnerabilities. Additionally, unemployment surged post pandemic, particularly in urban areas, leading to a notable increase in emigration. According to media reports, the average number of Bhutanese migrating increased significantly with the reopening of the borders in mid-2022, to more than 5,000 per month in early 2023 compared to less than 500 before the pandemic.[23] Push

[20] RGoB (Royal Government of Bhutan), World Bank, and UN (United Nations). 2009. *Bhutan Earthquake September 21, 2009: Joint Rapid Assessment for Recovery, Reconstruction and Risk Reduction.*

[21] RGoB, World Bank, and UN. 2011. *Bhutan Earthquake September 18, 2011: Joint Rapid Assessment for Recovery, Reconstruction and Risk Reduction.*

[22] Newcastle University, Durham University, and WFP. 2020. "Bhutan Earthquake Impact Planning (EquIP)."

[23] Migration is assumed for Bhutanese who exited but have not reentered the country. Data are restricted to Paro Airport and do not include other land exits. https://kuenselonline.com/migration-of-bhutanese/.

factors like limited job opportunities and civil service reforms may have contributed, alongside pull factors such as relaxed visa policies abroad. This wave of emigration raises concerns about brain drain, potentially impeding the country's efforts in economic diversification and knowledge-intensive activities.

11. **Rapid economic growth has substantially reduced poverty over the last two decades, but vulnerability to poverty and spatial inequality remains high.** Bhutan's economy grew at an average annual rate of 7.2 percent between 2000 and 2019, and its per capita income increased threefold in purchasing power parity terms over the same period. As a result, extreme poverty was nearly eliminated by 2022, and the population living below the US$6.85/day poverty line for upper-middle-income countries decreased from 36.8 percent to 18.6 percent between 2017 and 2022. The COVID-19 pandemic disrupted economic activity and affected production, livelihoods, and worker earnings, resulting in a higher poverty incidence. Poverty is more prevalent in rural areas, and significant disparities exist across *Dzongkhags*. While national inequality is lower than the regional average in the South Asia Region, spatial inequality across districts remains an issue.[24] Vulnerability to poverty due to climate-related shocks is high. Climate change can reduce the income of the poorest 40 percent by more than 6.5 percent by 2030.[25]

12. **Bhutan is highly vulnerable to health emergencies, precipitated by climate variability and change.** There is increasing evidence of the impacts of climate change on vector-borne and waterborne diseases that present increased health risks.[26] Bhutan faces risks of increased geographical range and incidences of vector-borne diseases, particularly malaria and dengue, and waterborne diseases due to drying up of water sources or contamination from flooding.[27] Climate conditions are projected to become significantly more favorable for transmitting the most virulent infectious, vector-borne, and tropical disease outbreaks, including the emergence and reemergence of different bacterial and viral diseases. The porous border in the south and proximity to livestock and wildlife increases the risks of pandemics triggered by zoonoses. Bhutan is also facing a demographic transition with a significantly aging population and a changing disease burden with a sharp increase in noncommunicable diseases (NCDs). Six out of the ten most prevalent disease conditions are NCDs, requiring chronic care. Lifestyle modifications and preventive health care with supportive health promotion are critical to stall the risk factors for NCDs before they present as conditions requiring interventions at health facilities. These novel challenges are exacerbated by increasing demand and expectations for quality health care, challenges in the provision of effective and essential health services, and significant regional disparities in health care utilization.

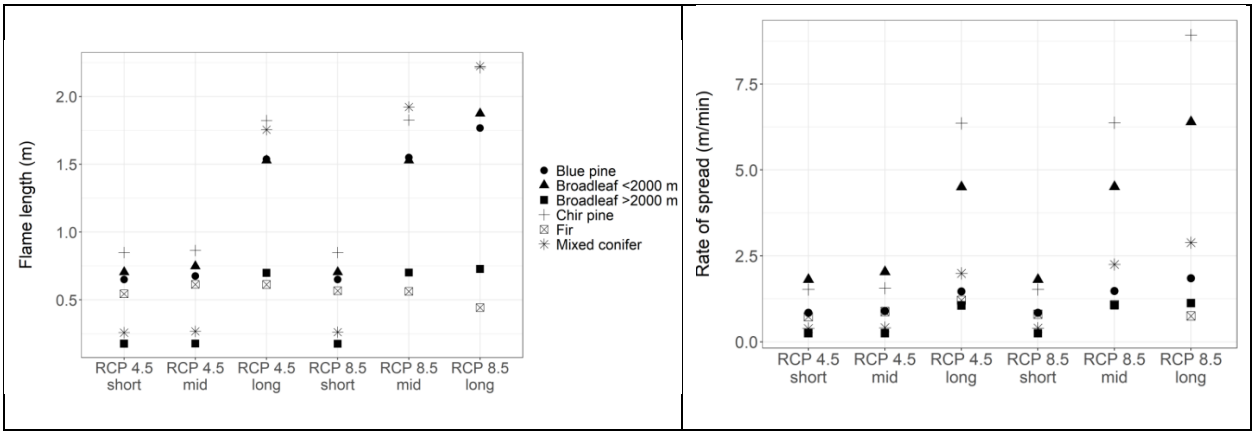
13. **Bhutan faces significant risks with poor nutrition and malnutrition, in addition to food insecurity, as Bhutan's population heavily depends on the import of food items.** The import volume and value of the key imported commodities (rice, maize, vegetables, cooking oils, potatoes, fruits, nuts, and citrus) increased from 70,867 tons in 2013 to 120,246 tons in 2017. Similarly, the import of cereals increased considerably from 54,031 tons in 2013 to 90,021 tons in 2017.[28] Furthermore, 22.1 percent of children under 5 years are subject to stunting, impairing cognitive and physical growth and predisposing the child to metabolic diseases later in life. It is estimated that 34.95 percent of children 6–59 months of age and 43.8 percent of women of reproductive age are anemic or iron deficient.[29] The agriculture sector

[24] The Gini index that measures inequality is recorded at 0.29 in 2022 in Bhutan.
[25] Jafino, B. A., B. Walsh, J. Rozenberg, and S. Hallegatte. 2020. "Revised Estimates of the Impact of Climate Change on Extreme Poverty by 2030." Policy Research Working Paper WPS 9417, World Bank, Washington, DC.
[26] UNDP. 2022. *Assessment of Climate Risks on Health for National Adaptation Plan (NAP) Formulation Process in Bhutan*. https://www.undp.org/bhutan/publications/assessment-climate-risks-health-national-adaptation-plan-nap-formulation-process-bhutan.
[27] National Environment Commission. 2021. "Assessment of Climate Risks on Health for NAP Formulation Process in Bhutan."
[28] RGoB. 2021. *Low Emission Development Strategy for Food Security*, Ministry of Agriculture and Forests
[29] National Nutrition Survey, 2015.

in Bhutan faces various challenges including labor shortage, feminization of agriculture and aging farming population, human-wildlife conflict, fallow land and land fragmentation, low usage of modern agriculture and livestock inputs and technologies, predominantly subsistence farming, weak value chain and marketing logistics, poor private sector engagement, climate change, inadequate biosecurity, loss of valuable traditional crops and native animal genetic resources, and increasing soil loss.[30] In addition, climate change and disaster impacts and inadequate pre-harvest and post-harvest measures result in high proportions of food and crop losses, adding to the challenges in the agriculture sector. Changes in precipitation patterns further stress biodiversity, making them more vulnerable to diseases and pests.[31] With no safety nets such as crop insurance, the farmers face a significant risk of losing their income and food security due to climate change and disasters. These challenges contribute to food security in terms of availability, accessibility, utilization, stability, safety, and access to adequate nutrition.

14. **Climate change is expected to heighten forest fire risk through increasing the frequency of severe lightning**, altering forest fuel moisture contents, and prolonging and intensifying droughts that make fuel beds dry and receptive, making it easier to trigger ignitions (Figure 2). While the Constitution stipulates that forests must cover 60 percent of all land at any time, large forest areas are lost due to fires every year and both flame length and rate of fire spread will increase as climate becomes more extreme. On average, 7,000 ha of forest were burnt every year during 1994–2020.[32] The most recent forest fire incident in Chang Debsi in Thimphu in February 2023 claimed four lives. The main cause of forest fires includes new pasture development, agriculture debris burning, and lemongrass harvesting. Over half of the broadleaved forests (over 9,000 km^2) are projected to be at high fire risk from 2021 to 2050.[33]

Figure 2. Predicted Flame Length and 'Rate of Spread' under Representative Concentration Pathway (RCP) 4.5 and 8.5



Source: NEC (National Evaluation Capacities)/UNDP. 2021. *Assessment of Climate Risks on Forests and Biodiversity for NAP Formulation Process in Bhutan*.

15. **Bhutan's exposure to multiple weather- and water-induced disasters and earthquakes increases the compound risks, which pandemics can amplify.** For example, the regional offices of the Department of Surface Transport (DoST) under the Ministry of Infrastructure and Transport (MoIT) faced severe challenges in clearing roadblocks during monsoon when movement restrictions were at their peak during

[30] RGoB. 2023. *Food and Nutrition Security Policy of Bhutan 2023*.
[31] World Bank and Asian Development Bank (ADB) Climate Risk Country Profile: Bhutan (2021).
[32] National Forest Inventory 2023.
[33] Assessment of Climate Risks on Forests and Biodiversity for NAP Formulation Process in Bhutan, NAP Readiness Project, Thimphu 2022.

the COVID-19 lockdowns in 2021. The DoST's field officers had to seek approval from the Incident Commanders of respective districts, delaying the road restoration works. In addition, while the Building Code and Building Regulation include structural fire safety and protection provisions, they are not rigorously implemented, and no clear guidelines exist for rural buildings. This could trigger widespread structural fires in case of a major earthquake.

III. Summary: Crisis Preparedness Assessment for Bhutan

16. **Findings from the CPGA shed light on the barriers and opportunities for promoting crisis preparedness in Bhutan.** Insights are based on information gathered from a desk review and extensive consultations with relevant stakeholders from Bhutan and the sector experts across a range of World Bank Global Practices (GPs). Below, we present technical insights from the CPGA exercise in Bhutan. The CPGA categorizes the maturity levels of the five preparedness components and their subcomponents by evaluating the number and variety of positive responses to the relevant guiding questions: unmet, nascent, basic, good, and advanced.

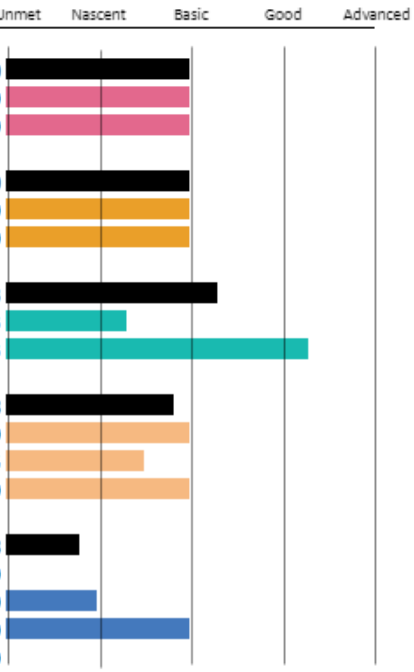
Table 2. Crisis Preparedness Maturity Levels for Components and Subcomponents of the CPGA in Bhutan

Crisis Preparedness Gap Analysis
Bhutan
Completed on 3/22/2024
Completed by Bhutan CPGA Team

CPGA

Unmet	Nascent	Basic	Good	Advanced
0	1	2	3	4

Component Summary		
1. Legal & Institutional Foundations	**Basic**	**2.0**
1.1 Legislative frameworks, strategic plans and policies	Basic	2.0
1.2 Governance and institutions	Basic	2.0
2. Understanding & Monitoring Risks	**Basic**	**2.0**
2.1 Risk assessment	Basic	2.0
2.2 Risk monitoring and early warnings	Basic	2.0
3. Financial Preparedness	**Basic**	**2.3**
3.1 Crisis risk financing	Nascent	1.3
3.2 Public Financial Management	Good	3.3
4. Primary Response	**Nascent**	**1.8**
4.1 Public health systems	Basic	2.0
4.2 Critical infrastructure	Nascent	1.5
4.3 Civil protection and Emergency Management Systems	Basic	2.0
5. Social and Livelihood Support	**Unmet**	**0.8**
5.1 Coverage and scalability of social protection	Unmet	0.0
5.2 Food security and livelihoods	Nascent	1.0
5.3 Continued access to education	Basic	2.0
5.4 Crisis induced displacement	Unmet	0.0



Legal and Institutional Foundations - Aggregated Score: 2.0 (Basic)

17. **The Disaster Management (DM) Act of 2013 is the overarching legal foundation, supported by the DM Rules and Regulation (R&R) 2014 for the establishment of governance and institutional mechanism and implementation of disaster risk management (DRM) in the country.** The DM Act 2013 emphasizes both ex ante and ex post activities, expressed as functions and mandates of the

institutions/committees to be set up at various levels in the government. The act emphasizes the roles of the National Disaster Management Authority (NDMA), the highest decision-making body for DM chaired by the Prime Minister, in approving hazard and vulnerability maps and guidelines and Standard Operating Procedures (SOPs) for DM and directing agencies to mainstream disaster risk reduction (DRR) and allocate resources. The Inter-ministerial Task Force (IMTF) is responsible for reviewing hazard zonation and vulnerability maps; DRR and DM activities; and national standards, guidelines, and SOPs for DM. In addition, the act mandates the establishment of Disaster Management Committees (DMCs) at the *Dzongkhag* (district) level and DM Subcommittees at the *Thromde* (municipality), *Gewog* (a group of villages), and *Dungkhag* (subdistrict) levels.

18. **However, the Royal Government of Bhutan (RGoB) has not implemented the following mechanisms defined in the act and R&R due to the lack of enforcement, awareness across sectors and government levels, and political leadership.**

- **Declaration of Type I–III disasters.** The DM Act includes the provision to declare a Type III (national-level) public emergency or calamity by the Druk Gyalpo (His Majesty) on the written advice of the Prime Minister. It also includes the provision to declare Type I (*Thromde* and *Gewog* levels) and II (*Dzongkhag* level) disaster by the Chairperson of the Dzongkhag Disaster Management Committee upon approval by the NDMA. However, Type I–III disasters have never been declared due to the lack of awareness, enforcement of the act, clear evaluation criteria for the degree of a disaster, and SOPs. As a result, the National Disaster Response Coordination Committee (NDRCC) has also never been activated.
- **NDMA and DMCs at the local levels.** These entities are not activated for every disaster event. In fact, the NDMA was activated only twice since the enactment of the act and was not activated during the COVID-19 pandemic. The activation of the NDMA depends on the Prime Minister's decision, while that of local DMCs depends on the head of local governments' decision. As they are not activated as per the act to manage floods and landslides during the monsoon season, there are limited opportunities for the NDMA and local DMCs to test, review, and improve their functions and emergency communication protocols, in the absence of regular training and disaster simulations. This poses a significant concern to their capacity to effectively respond to severe disasters such as earthquake and GLOFs.
- **IMTF.** The first meeting of the IMTF was held in 2018. However, it has not held any meetings since then to fulfill its roles and responsibilities in the absence of SOPs and clear leadership from the MoHA in convening the IMTF regularly.

19. **The Department of Local Governance and Disaster Management (DLGDM) is planning to incorporate lessons learned from COVID-19 and past disasters by amending the DM Act 2013 and DM R&R, with technical and financial assistance from the World Bank.** The amendments to the act shall define natural disasters including disease outbreaks, define the conditions for activating NDMA and DMCs, revisit the definition of Type I–III disasters to incorporate the scale of loss and damage, link the declaration of Type I–III disasters with the level of financial and technical assistance from the central government to the affected local governments, and mandate the adoption of National Disaster Response and Coordination Process for all hazards. Other recommendations involve incorporating provisions on enhancing understanding of risk with focus on data, hazard assessments, climate change projections and scenario building, risk and vulnerability assessments for current and future hazard profiles, sectoral applications (land-use planning, agriculture, water, and so on), and enhanced coordination between

public health and DM. In the R&R, it is recommended to define protocols for sharing risk information, details on how agencies (including the private sector) are identified to be notified and what the notification process entails, clarity on non-state actors' involvement, monitoring and evaluation (M&E) of Disaster Management and Contingency Plans (DMCPs), and process of rehabilitation.

20. **The sectoral and local DMCPs need to be reviewed and updated using scientific multi-hazard risk information and made relevant to the institutional changes and capacities.** Although all 20 *Dzongkhags* and four *Thromde* administrations have prepared and published DMCPs with support from the DLGDM about a decade ago, they are predominantly prepared based on qualitative disaster risk assessments, including visual and consultative assessments, and historical information rather than quantitative assessment. The plans need to be updated based on up-to-date climate and disaster risk information with a stronger emphasis on ex ante measures. Furthermore, key sectors such as telecommunication, power, and water supply do not have sectoral DMCPs in place. In addition, most of the DMCPs have yet to be implemented due to resource and capacity constraints. In addition, there is no mechanism to monitor and evaluate the implementation.

Understanding & Monitoring Risks - Aggregated Score: 2.0 (Basic)

21. **Risk assessments in Bhutan are conducted at sectoral and subnational levels for specific purposes, yet comprehensive nationwide impact-based assessments are lacking.** These assessments cover various areas such as climate risks on agriculture, forests, health, and water resources, as well as flood, landslide, and earthquake risks. No government agency has yet conducted a probabilistic risk assessment for earthquakes or floods across a range of infrastructure classes and economic sectors due to its limited technical capacity. Therefore, prioritization of investments even based on deterministic scenarios is limited.

22. **The lack of a suitable online portal for sharing geospatial data on hazards, exposure, and vulnerability and unclear roles and responsibilities of government agencies hinder the generation and use of critical multi-hazard risk information.** Past and ongoing engagements demonstrate that relevant agencies are willing to collaborate and share information but lack protocols, data standards, and a 'fit-for-purpose' online portal to facilitate data sharing for risk-informed decision-making.

23. **As the designated 'Hydromet Hazard Early Warning Service Provider', the NCHM provides qualitative extreme weather advisories and flood and GLOF early warning, and faces infrastructure and technical capacity challenges.** The NCHM currently produces qualitative weather forecasts for three days ahead. However, the physical facilities of the NCHM do not adequately support its operational needs, lacking essential infrastructure such as laboratory facilities for equipment maintenance and calibration. It does not have any meteorological stations that are of synoptic standard, and data are manually transmitted to the headquarters. All 80 automatic weather stations (AWS) are prone to frequent interruptions of service mainly due to challenges in communication and network connectivity. In addition, Bhutan's precipitation network faces challenges in adequately representing higher elevations and remote areas. The NCHM's weather forecasts are deterministic, and currently, they do not have the capability to produce probabilistic forecasts. No data from AWS are used for forecast preparation. Based on a qualitative analysis, flood warning stations are located mainly along major rivers, and the network is sparse in smaller rivers. The NCHM does not conduct regional climate research or operational climate forecasting due to limited capacity and resources. It does not operate a lightning detection network and does not subscribe to lightning data services from a service provider. Furthermore, it does not have a quality management system in place to govern its management and technical operations. The NCHM does

not implement the World Meteorological Organization's requirements for public weather services personnel and thus does not meet the appropriate education and competency requirements.

24. **While NCHM is planning to integrate flood forecasting into the early warning system (EWS) to gain more lead time, at present, GLOF EWS is based on flood detection and issues warnings as a result of an outburst.** The NCHM carries out an annual program of monitoring the snow and glaciers including glacier mass balance calculation for three benchmark glaciers[34] and bathymetry surveys of glacial lakes at the source of Chamkhar Chhu and Lunana regions every two years or whenever it is needed. Comprehensive, real-time, and routine monitoring of snow and glaciers is not currently conducted by the NCHM due to the limited human capacity with only three glaciologists and an inadequate budget. The GLOF EWS along the Punatsangchu and Chamkhar-Mangde basins does not use any models for quantification but relies mostly on measured water levels using automatic instruments and telemetry.

25. **There are no multi-hazard risk monitoring and EWSs in place, except GLOF and flood EWS operated by the NCHM.** At present, the EWS operates based on detecting and issuing warnings, but the NCHM is planning to integrate flood forecasting with more lead time into the EWS. While the Department of Geology and Mines (DGM) is responsible for seismic monitoring of the country, it faces challenges in properly maintaining the monitoring stations due to limited budgets. There is a need to establish a robust forest fire monitoring system leveraging remote sensing and cutting-edge technologies and based on research on fuel load data in Bhutan. However, limited technical capacity and financial constraints hinder the development of such a system. The National Disease Surveillance and Epidemiology Unit of the Royal Center for Disease Control (RCDC) under the Ministry of Health (MOH) monitors and notifies the spread of diseases/syndromes; however, capacity constraints persist. Bhutan has risk monitoring systems for nutrition and zoonic diseases; however, surveillance of wildlife is inadequate. There are no systematic EWS for food security and landslides in place.

26. **Comprehensive risk communication on various hazards is limited mainly due to the scarcity of reliable risk assessments and lack of targeted communication.** Although some kinds of risk communication about earthquakes, GLOFs, and floods are conducted by the DLGDM and NCHM, there is no location-specific and targeted risk communication. There are EWSs in the form of advisories for the public regarding extreme weather events. However, the warnings tend to be more scientific than simple and actionable for the public with expected impacts. Risk information is usually disseminated through television, mainly in Dzongkha and English. People in rural areas typically prefer and understand messaging better in local dialect, which is limited. In addition, there is no consolidated national risk communication system where people can look for alerts and warnings.

Financial Preparedness - Aggregated Score: 2.3 (Basic)

27. **Bhutan's crisis risk financing is limited to the General Reserves as a risk retention measure, and there is currently no risk transfer mechanism in place.** With an estimated average annual loss of US$169.3 million from disasters, Bhutan remains vulnerable to climate change scenarios. While the country primarily relies on General Reserves for disaster relief, there is currently a lack of contingent or post-disaster credit lines, except for the World Bank-financed Development Policy Credit with a Catastrophe Deferred Drawdown Option (Cat DDO) which is under preparation. A General Reserve kept with the Ministry of Finance (MoF) serves as the emergency fund. However, the funding allocated is not

[34] Thana glacier at the source of Chamkharchhu, Ganjula glacier at the source of Phochhu, and Shodug glacier at the source of Thimphuchhu.

adequate in case of a major disaster or catastrophic event, and the budgets made available are seldom adequate to meet different disaster preparedness and response initiatives.

28. **The Operational Guidelines for Disaster Financing 2017 provides guidance for using the general Reserve Funds for (a) emergency response and relief, (b) immediate restoration of essential public infrastructure and services, and (c) recovery and reconstruction.** However, when the COVID-19 pandemic started, there was confusion among government agencies about resource mobilization and access to funds. Furthermore, the guidelines lack procedures to request funds from development partners, hindering efficient resource mobilization during an emergency.

29. **The Bhutanese health care system, predominantly government driven, is likely to face challenges to ensure adequate financing for emerging health care needs.** Concerns have arisen regarding the system's sustainability due to the escalating costs of health care, rising public expectations, and the emergence of more complex and expensive NCDs. The RGoB has already seen the decline in preparedness-related allocation from 70 percent in FY21 to 60 percent in FY23. This is likely the result of various factors, including slow economic growth following the COVID-19 pandemic. To address these challenges, there is a pressing need to diversify health care financing sources, with a gradual integration of the private sector.

30. **Only 18 percent of households have insured their properties and assets,**[35] **while no public buildings and infrastructure, except hydropower plants, are insured.** The insurance business in Bhutan derives its legislative framework from the Financial Services Act 2011 and detailed in the R&R for Insurance and Reinsurance Companies and the R&R for Licensing of Insurance Companies in Bhutan 2018. The population has access to several life and nonlife insurance products such as life, travel, health, and housing. One of the insurance companies, BIL, offers insurance products for small and medium enterprises. However, only 18 percent of households have insured their properties and assets, posing challenges to financial resilience in times of severe disaster. The government's initiatives to promote rural house insurance and pilot crop insurance demonstrate progress, yet awareness as well as acceptance remain a challenge.

31. **While R&R for Insurance and Reinsurance Companies requires the valuation of assets in accordance with the Bhutan Accounting Standards, land and property valuation in the country is not based on international valuation standards (IVS).** The core challenge for valuation is the poor real property market transparency. Land transaction prices are commonly underdeclared, and land leases are not registered in a public record. There are no reliable sources available for verifying market values. The public sector and financial institutions' valuations are interlinked and circulate same valuation by and large, and both are based on poor data. The building valuation practices perform better but may not reflect adequately the locational impacts to building values. Also, it is exceptional that there is no regulated valuation profession in the country, and standards and methods applied to private sector commercial valuation vary. Such a weak valuation infrastructure has negative impacts to financial system resilience and insurances.

32. **While challenges remain, the core elements of a basic public financial management (PFM) system are in place.** The positive trajectory of improvements in financial management stems from the recent PFM reforms, which include the launch of a countrywide electronic government payment system and electronic procurement system which was particularly helpful during the COVID-19 pandemic, issuance of quarterly budget execution reports, integration of various PFM and non-PFM systems to

[35] National Statistics Bureau. 2022. "Bhutan Living Standard Survey."

achieve an Integrated Financial Management Information Systems (IFMIS), and implementation of Cluster Finance Services offices in *Dzongkhags* to enhance internal controls and bring efficiency at the national and subnational levels. The challenges include an absence of a sound public investment management system, the lack of integration of payroll and personnel records, and a lack of data on expenditure arrears. The recent Public Expenditure and Financial Accountability 2022 assessment confirms that Bhutan's PFM systems continue to be sound.

33. **The government introduced flexibilities in the Procurement Rules and Regulations (PRR) in March 2020, especially for emergencies, and issued Simplified PRR in 2021.** The PRR 2020 was issued to address emergency needs and expedite the implementation of the COVID-19 emergency response. The Simplified PRR, applicable to all public procurement, has streamlined processes, including reduced time for advertising and increased thresholds for the use of simplified procurement methods. The Electronic Government Procurement (e-GP) System was launched in July 2020 to help facilitate the procurement during the COVID-19 pandemic.

34. **The DM Act enables the NDMA to conduct emergency procurement with the MoF's approval**, emphasizing a direct and efficient procurement approach and mandating post-response financial audits by the Royal Audit Authority (RAA) to ensure accountability. Bhutan has a reasonably well-functioning government external audit system. The RAA conducts financial audits at two tiers: the consolidated annual financial statements of the RGoB at the national level and at the individual agency level. The report contains the result of the audit of the government's annual financial statements and recommendations to improve the economy and efficiency and effectiveness of the government. The latest RAA audit report is unqualified, and the RAA also conducts the financial audits of the donor-assisted projects and performance audits.

Primary Response - Aggregated Score: 1.8 (Nascent)

35. **The RGoB has exhibited a strong political commitment toward strengthening the health care system; however, capacity and resources remain constrained.** Bhutan has a comprehensive public health strategy aligned with the International Health Regulations, including robust emergency preparedness and response plans. Mandated by the National Health Policy 2012 and DM Act 2013, Bhutan has developed the Health Emergency and Disaster Contingency Plan 2016. Amidst COVID-19, the RGoB implemented the National Preparedness and Response Plan for Outbreak of Novel Coronavirus and the Bhutan Pandemic Preparedness and Response Plan 2020, aiming for a whole-of-government approach. The Department of Public Health underwent a reorganization to consolidate efforts and address fragmented health care approaches, with specialized divisions like the Communicable Diseases Division and the RCDC established. Bhutan has a strong focus on disease surveillance and laboratory systems to detect and respond to public health threats effectively. The country emphasizes a One Health approach to mitigate epidemic risks from human-animal-environment convergence. However, challenges persist in areas like human resources, capacity for risk communication, and community engagement. Additionally, Bhutan's health care system faces challenges in emergency response services, patient referral systems, and health care financing sustainability, necessitating urgent attention to ensure efficient and equitable health care delivery.

36. **While an inventory of most of critical infrastructures[36] is maintained by responsible government agencies, it does not function as a risk-based asset management system.** Although the MoIT and local governments maintain inventories of infrastructure in Excel format, it is not used for risk-based operations

[36] Critical infrastructure typically refers to energy, transport, water, information and communication technology (ICT), and health.

and maintenance (O&M) nor for emergency preparedness, response, and restoration. Sectoral inventories lack comprehensiveness across the asset life cycle as they fail to capture infrastructure and asset values, replacement costs, current conditions, and maintenance history. Thus, there is a pressing need to introduce a life cycle cost approach for infrastructures and develop a risk-informed asset management system for each critical infrastructure sector.

37. **Bhutan is developing the National Spatial Data Infrastructure (NSDI), which could be utilized to map critical infrastructure assets.** The National Disaster Management and Contingency Plan (NDMCP) outlines the role of the National Land Commission Secretariat (NLCS) in infrastructure mapping and the utilization of geographic information system (GIS) technology to delineate critical infrastructures. The NLCS is leading the development of the NSDI with support from Japan International Cooperation Agency (JICA) to share reliable and precise geospatial information with relevant organizations including the private sector. Through this initiative, various agencies work closely with the NLCS in mapping all infrastructure assets in the country.

38. **There are no backup systems for critical infrastructure.** The NDMCP 2023 emphasizes the importance of ensuring the continuity of key public services through various funding mechanisms. At present, there are no adequate backup infrastructure systems, and there is no alternative source of water and energy or an alternative mode of transportation in the country. For the road infrastructure, the DoST is preparing a Road Infrastructure Master Plan with the assistance of Asian Development Bank (ADB), which may include redundant road networks. For critical infrastructure such as hospitals, the energy backup system is insufficient as it depends on diesel generators, which may not last for more than three hours.

39. **There is an urgent need to conduct comprehensive structural vulnerability assessments and retrofitting of critical buildings constructed before the introduction of new seismic codes in early 2000s.** Any critical buildings such as health, education, fire departments, and government offices constructed before the 2000s do not comply with the current seismic building codes, which were introduced in the early 2000s, following the Indian Standard codes of practice for buildings and bridges. These include 720 school infrastructures. Therefore, it is imperative to undertake detailed vulnerability and structural assessments of critical buildings in Bhutan to ensure the continuity of medical, education, and public services in times of a disaster.

40. **Bhutan's Civil Protection and Emergency Management Systems are not capable of responding to severe disasters due to limited budgets and lack of technical capacity, adequate equipment and facilities**, and inherent vulnerabilities of digital infrastructure**.** Fiscal constraints and limited technical capacity further restrict the response capabilities, especially at the local government level, which struggles to address anything beyond low-intensity disasters effectively. The absence of dedicated and fully functional Emergency Operation Centers (EOCs) from the national to local levels exacerbates these challenges, with inadequate equipment, ICT infrastructure, and technical capacity hindering response efforts. Moreover, the lack of specialized equipment and trained personnel within government emergency services poses significant limitations, necessitating urgent procurement and training initiatives, especially for high altitudes. While the DM Act and NDMCP provide a framework for resource deployment, the current equipment and resources are insufficient to meet the demands of severe disasters. Further, Bhutan's heavy reliance on India for digital connectivity poses a significant risk to communication systems during emergencies, highlighting the need for diversification of cross-border and domestic network infrastructure to create redundancy and develop robust business continuity plans (BCPs) among telecom service providers, Bhutan Power Corporation, and the Government Technology

Agency that operates the Druk Research and Education Network (DrukREN) and Government Network (GovNet) that connect government institutions, higher education institutes, and hospitals to the Internet Building resilience in digital infrastructure and strengthening accountability, budgetary allocations, maintenance plans, and procurement strategies is imperative to enhance the resilience of Bhutan's digital infrastructure, including emergency management systems, in the face of evolving challenges and increasing reliance on digital solutions.

Social and Livelihood Support - Aggregated Score: 0.8 (Unmet)

41. **Social protection efforts in Bhutan are fragmented and have low coverage, with limited capacity to respond to crises.** Bhutan's formal social protection system is nascent, with a strong foundational system as civil registration and national ID systems. Social protection efforts are mostly relying on social insurance (contributory schemes) for public servants and for few private sector employees, which has the largest budget allocation; a set of active labor market programs to improve skills and employability as TVET and Skills Development programs; and basically no social assistance programs (non-contributory schemes) to protect the poor and vulnerable. The Accelerated Maternal and Child Health Program (AMCHP), which was recently approved, and the Kidu program under His Majesty's Secretariat are the two social assistance programs to highlight. The AMCHP is expected to start registration of pregnant and lactating women in its system in August 2024, and those deemed socially and economically vulnerable will receive monthly cash transfers of BTN1,500 from registration to the completion of the second birthday of the child. The Kidu is a sort of emergency response against shocks led by His Majesty's Secretariat that offers some economic support for those affected. During COVID-19 response, the existing social protection system was shown ineffective to support the response, and His Majesty set up the National Resilience Fund in April 2020 that financed the new relief program, the Druk Gyalpo's Relief Kidu (DGRK), under the Kidu program to provide income support and loan interest payment support for the most impacted section. The RGoB promptly secured food stocks and provided direct cash transfers to the affected population through DGRK. [37]

42. **The absence of an integrated social protection system in the country impedes adaptability during shock responses.** An adaptive system should be built around robust data systems such as National ID system, Civil Registration and Social Registry, and with programs that are flexible enough to prevent people from falling into monetary poverty, food insecurity and social vulnerability. Such system would allow integrating existing databases, increase transparency and governance, increase real time monitoring and coordination, and enhance delivery systems, particularly in rural areas. Such system would require having a comprehensive national social protection strategy to not only streamline the delivery of social protection programs but also to ensure effective resource utilization and coordination, maximizing the benefits for Bhutan's vulnerable populations.

43. **While efforts to improve nutrition and provision of agromet services to mitigate climate-related risks and enhance agricultural productivity are under way, the agriculture sector in Bhutan faces numerous challenges as it strives to meet the demands of a growing population by 2034.** These challenges include labor shortages, land fragmentation, human-wildlife conflicts, weak value chains, and climate change impacts such as extreme weather events and pests. In addition, food safety concerns pose

[37] While the country has implemented various noncontributory cash and in-kind transfer programs across sectors, their scope remains limited, with a predominant focus on free health and education services. These initiatives constitute a mere 0.7 percent of the GDP, predominantly allocated to social insurance, social assistance, and labor market programs.

significant risks to health and economic productivity. The Food Act and Food and Nutrition Security Policy outline measures to enhance food production, strengthen value chains, and ensure food safety.

44. **Although domestic food production was enhanced during COVID-19, which contributed to increasing food sufficiency, the increase in production and price stimuli led to the dumping of excess output on local markets.** Through the Ministry of Agriculture and Livestock (MoAL) and the Food Corporation of Bhutan Limited (FCBL), the government made essential food items available for the public during the COVID-19 pandemic with the support of the Dzongkhag Administration and Desuung volunteers and private wholesalers. An agriculture stimulus plan with a total budget of BTN 944 million was initiated to strengthen food security through domestic production, creating employment and income opportunities during COVID-19. This made the agricultural sector remarkably resilient during the pandemic, demonstrating growth, in contrast to the shrinking industry and services sectors. Measures including distribution of 594 prefabricated greenhouses to farmers, rehabilitation of 2,070 acres of land through sustainable land management, and machine hiring services to 6,450 households covering 14,785.97 acres resulted in achieving 84 percent self-sufficiency in vegetable production in the country. However, in summer, when borders were still closed, the increase in production and price stimuli led to the dumping of excess output in local markets. Therefore, there is a need to review the supply chain of food import, export, and internal consumption during emergencies, including pandemics.

45. **The Ministry of Education and Skills Development (MoESD) in Bhutan has made concerted efforts to ensure the continuity of education, particularly during crises such as the COVID-19 pandemic.** While DMCPs have been developed for all schools, public and private colleges, and Early Childhood Care and Development (ECCD) centers, there is a pressing need to update these plans to address multi-hazard risks comprehensively. Despite a focus on earthquake hazards, other potential threats like disease outbreaks, floods, and GLOFs must be incorporated into these plans. Initiatives such as the National Earthquake Mock Drill Day and mock drills on International Disaster Day have been instrumental in raising awareness and preparedness among students and staff. Moreover, the MoESD, as outlined in the NDMCP 2023, plays a crucial role in ensuring the delivery of educational services during crises, including the activation of the Education in Emergency Operation Center (EEoC) to coordinate emergency responses. During the COVID-19 pandemic, the implementation of the Education in Emergency (EiE) plan facilitated remote learning through various platforms and provided psychosocial support to affected individuals and families. To further enhance access to education, the MoESD has developed the Sherig Learning Management System (LMS) as part of the Digital Flagship Programme, aimed at providing uninterrupted learning opportunities from preschool to high school. Despite these efforts, challenges such as limited internet connectivity, frequent changes in focal personnel, and the emigration of teachers pose ongoing obstacles to ensuring continued access to education during crises. Addressing these challenges requires adequate financial, human, and infrastructure resources, along with strategic interventions to support the education sector's resilience to crises.

46. **Challenges remain in recognizing and addressing protracted displacement and lacking specific provisions in national and local disaster plans, as well as lack of standardized documentation for such events in Bhutan.** While internal displacement is not a prevailing issue in Bhutan, significant events like the 1994 GLOF incident, floods in 2000, Cyclone Aila in 2009, and the 2011 earthquake have led to the displacement of thousands of people. Disasters like Cyclone Amphan in 2020 and landslides in the same year have also contributed to displacement on a smaller scale. In response, affected individuals are relocated to safer areas where temporary camps are established, providing essential provisions like food, water, and sanitation facilities. Local governments oversee settlement activities and service delivery, with support from the central government in terms of technical expertise, financial aid, and relief assistance.

However, challenges persist in recognizing and addressing protracted displacement, as existing national and local DM plans lack specific provisions for the needs and vulnerabilities of displaced populations. Additionally, there is a lack of standardized documentation for crisis-induced displacement, with data collection and maintenance primarily managed at the local level, posing obstacles to comprehensive disaster response and management.

IV. Cross-Sectoral Challenges in Promoting Crisis Preparedness in Bhutan

47. **A recent surge in emigration is amplifying the challenges in the enforcement and implementation of existing crisis preparedness-related policies and plans due to human resource shortage across sectors** including DRM, infrastructure, hydrometeorology, finance, and agriculture. According to media reports, the average number of Bhutanese emigrants increased significantly with the reopening of the borders after the COVID-19 pandemic in mid-2022, to more than 5,000 per month in early 2023 compared to less than 500 before the pandemic. This has led to a significant shortage of human resources and a brain drain including the mass resignation of mid-level professionals across the public and private sectors in the country with a population of approximately 735,600 as of 2017, amplifying the existing shortage of technical capacity for crisis preparedness and response across sectors and from the national to local levels.

48. **While Bhutan has relatively coped well with frequent and less severe disasters, the country is not prepared for more severe disasters such as earthquakes and GLOFs.** The RGoB has been responding to frequent and localized disasters such as landslides and floods during the monsoon season in an ad hoc and reactive manner due to a lack of SOPs, challenges in coordination, and limited simulation exercises to test the response plans.

49. **Due to the lack of nationwide multi-hazard risk information and fiscal constraints, evidence-based crisis preparedness and response plans have not been prepared and implemented across sectors and government levels.** At present, the RGoB's capacity for scientific risk assessments is constrained by limited data, technical capacity, financing, and sectoral coordination and unclarity in the roles and responsibilities of government agencies in generating and regularly updating risk information. Furthermore, there is no systematic registry of vulnerable populations. The DMCPs of the 20 *Dzongkhags* (districts) and four *Thromdes* (municipalities) are not informed by scientific risk assessments, and DRM measures are not targeted for the specific needs of vulnerable groups. While the Ministry of Home Affairs (MoHA) has formulated the NDMCP in 2023 adopting a whole-of-government approach, not all the sectoral government agencies have prepared their detailed DMCPs. In addition, there is a critical need to allocate adequate budget to implement the DMCPs and put in place an M&E mechanism.

50. **The country's high dependence on small-scale external aid, without adequate budgets allocated from the MoF for the DRM sector, has led to a piecemeal approach leading to ad hoc implementation of activities and difficulty in sustaining efforts.** Across sectors and government levels, Bhutan faces fiscal constraints and a lack of adequate infrastructure and systems for crisis preparedness and response. Inadequately equipped and capacitated EWSs for weather and hazards, including disease outbreaks, adversely affect the timely dissemination of critical information. Additionally, the lack of a GIS-based asset management system for critical infrastructure such as transport, water, and energy makes it challenging to prioritize risk-based O&M and resource allocation during crises. Lastly, the limited capacity of the EOCs at all government levels adds to the overall challenges faced by Bhutan in its efforts to enhance crisis preparedness and response capabilities.

51. **The Bhutan CPGA underscores the critical need for a multi-faceted approach to enhance the country's resilience and readiness in facing crises.** It identifies strategic entry points and recommendations across five core components and cross-sectoral challenges as summarized in **Error! Reference source not found.** to bolster Bhutan's DM and response capabilities. Implementing these comprehensive recommendations requires concerted efforts from the government, civil society, and international partners. By fostering cross-sectoral collaboration and allocating adequate resources, Bhutan can significantly enhance its crisis preparedness, building a more resilient nation capable of effectively responding to and recovering from various crises. **Error! Reference source not found.** presents a list of entry points for strengthening crisis preparedness in Bhutan. It also shows the timeline for the recommendations—short term (S, under 12 months), medium term (M, 1–2 years) and long term (L, 3–5 years). Notably, some of the activities recommended here are already being initiated.

Summary of Entry Points	Timeline[a]
Legal and Institutional Foundations	
Amend and enforce the DM Act and the DM R&R, and allocate adequate budget to address the implementation bottlenecks and define the scope more explicitly to include climate change impacts and disease outbreaks and be read as all-encompassing except for the specifically excluded ones. The amendments could include the following (ongoing): • Department of Local Governance and Disaster Management (DLGDM) to define the conditions for activating NDMA and DMCs to enable an objective activation independent from political decisions. • DLGDM to redefine Type I–III disasters to incorporate the scale of loss and damage to make an objective declaration independent from political decisions. • DLGDM and MOF to link the declaration of Type I–III disasters with the level of financial and technical assistance from the central government to the affected local governments. • DLGDM to propose to NDMA to mandate the adoption of NDRCC and DRCP for all hazard types, including disease outbreaks. • DLGDM to review and amend the DM R&R to elaborate provisions on the clauses in the DM Act, with clear definition of responsibilities and processes. • MOF to allocate dedicated resources for implementation of priority activities in the NDMCP	M
Understanding Risks	
Risk Assessments	
Strengthen a more integrated approach to risk assessments, bringing together different sectors and hazard types to improve the utilization of assessments in planning and response (ongoing): • DLGDM to develop a geospatial DSS. • DLGDM to develop Risk Information Guidelines and NLCS to amend the Geo-Information Policy 2018 to define the roles and responsibilities of relevant government agencies in generating and maintaining risk information including data standards and sharing protocols.	M
Risk Monitoring and Early Warnings	
The National Center for Hydrology and Meteorology (NCHM) to build its capacity for medium-term weather forecasting (ongoing)**, impact-based forecasting, flood forecasting, and sector-specific services**, including the establishment of the new NCHM HQ, National Weather, and Flood Warning Centre to modernize the equipment. Formulate the Hydromet Act and its R&R.	L
The Department of Forests and Park Services (DoFPS) to develop a near real-time forest fire surveillance system that integrates a forest fire danger rating system, a forest fire simulation/prediction model, and a forest fire monitoring system, which is currently hosted by ICIMOD, leveraging satellite technologies.	L

The Ministry of Health (MoH) to strengthen monitoring of communicable and vector-borne diseases through enhanced technical and human resources capacity of the National Disease Surveillance and Epidemiology Unit of RCDC and expanding training for health care professionals.	M
The Department of Geology and Mines (DGM) and Department of Surface Transport (DoST) to enhance seismic and landslide hazard mapping (ongoing) **and pilot a landslide EWS** in critical landslide hot spots.	L
Financial Preparedness	
Crisis Risk Financing	
MoF and DLGDM to develop a Disaster Risk Financing and Insurance Strategy for risk retention and transfer mechanisms to reduce the financial impact of disasters, including health emergencies. • Revise the Operational Guidelines for Disaster Financing 2017 for more transparent and efficient budget allocation and utilization for DM, including clear procedures for accessing and deploying the General Reserves in emergencies. • Access a contingent line of credit through the Second Cat DDO under preparation, including a Climate Resilient Debt Clause (CRDC), which offers countries in an eligible event the option of deferring principal and/or interest repayments for up to two years. • Consider establishing a dedicated contingency fund for health emergency management. • Consider a sovereign risk transfer mechanism such as a Cat Bond and accessing international markets (for example, Green Bonds) in the long term after exhausting the use of concessional funding from International Development Association (IDA) and other donors and upon confirmation of its fiscal viability. • Pilot crop and livestock insurance schemes (ongoing).	S
MoF and NLCS to improve property and land valuation profession and services for accurate disaster risk insurance (ongoing): • Establish the Property Valuation Division in the MoF. • Establish national valuation standards adhering to IVS and designate an agency as a regulatory body for property valuation. • Provide access to an educational program on valuation at postgraduate diploma and master's levels. • Establish professional standards, code of conduct, accreditation, and oversight for valuation profession.	M-L
Public Financial Management (PFM)	
MoF to conduct a comprehensive assessment of the public procurement system for emergencies using the internationally recognized Methodology for Assessing Procurement Systems tool	S-M
Primary Response	
Public Health Systems	
Strengthen emergency public health services through the following: • MoH to update the HEDCP to streamline, integrate, and incorporate lessons learned from the COVID-19 response and the BPPRP (ongoing). • MoH to strengthen diagnostic capabilities to cater to emerging needs such as health pandemics, including climate-induced health threats. • MoH to develop an HR management plan for health care workforce, including retention strategies.	S-M

Critical Infrastructure and Services	
Strengthen the legal and regulatory foundations for mandating a resilient built environment (ongoing)**:** • RGoB to formulate the National Construction and Surface Transport Act and its R&R to enforce strict quality standards and mandate the resilience of critical infrastructure services, including timely emergency preparedness and response planning. • MoIT to revise the Building Code 2018 to strengthen the regulatory framework for ensuring the resilience and safety of all buildings in the country. • MoENR to formulate the National Energy Policy and revise the Hydropower Dam Design Guidelines to promote integrated dam safety and geohazard management of hydropower plants.	M-L
RGoB to develop geographic information system (GIS) based asset management systems for critical infrastructure to enable risk-based O&M planning and ensure service continuity, leveraging the NSDI and the Multi-hazard Risk DSS that are under development. Integrate resilience into the proposed RAMS under the ACCESS project.	L
MoIT to develop and implement a retrofitting investment plan for critical buildings and infrastructure based on detailed multi-hazard vulnerability assessments. • Prioritize infrastructure assets built before the introduction of the new seismic codes in the early 2000s, including 315 schools. • Enhance the resilience and efficiency in water infrastructure, focusing on NRW losses through strategic investments and capacity-building measures.	L
MOIT to conduct a freight network vulnerability assessment to determine the critical freight network and identify a suitable adaptation and resilience approach for critical assets.	S
GovTech to conduct a comprehensive assessment focusing on digital connectivity resilience and recovery as well as data infrastructure resilience and recovery options, with a particular emphasis on exploring technical options for diversifying network infrastructure, including considerations for alternative technologies such as Low Earth Orbit (LEO) satellite technology, among others, to enhance international connectivity beyond existing links through India and strengthen domestic connectivity.	M-L
DoAT to improve emergency preparedness and flight safety of PIA: • DoAT to continue with GARD program and strengthen the Aircraft Accident and Incident Investigation Unit, and develop the National Airport Infrastructure Plan. • NCHM to enhance aviation met services and establish a Quality Management System in compliance with the International Civil Aviation Organization requirements.	M

Civil Protection and Emergency Management System	
Strengthen emergency response systems across all sectors, with clear action plans and resource allocation. • DLGDM to facilitate RBP and Desuups to strengthen SAR equipment, develop SOPs for its timely mobilization, and train the responders to build their capacity especially for severe and high-altitude disasters. • DLGDM to improve coordination for delivery of emergency services between health service providers and emergency responders such as RBP SAR teams, emergency medical responders, and Desuups to deliver essential services efficiently to the affected communities. • DLGDM, in coordination with local governments, to establish and operationalize EOCs at all government levels and institutionalize the ICS. • DLGDM to enhance community-based preparedness and response initiatives, including local training and engagement programs to build resilience.	M
Social and Livelihood Support	
Coverage and Scalability of Social Protection	
Improve social protection coverage and strengthen governnance with well-established data and information. • The Cabinet Secretariat in collaboration with Ministry of Industry, Commerce and Employment (MoICE) and other relevant ministries to formulate the Social Protection Policy, Social Protection Act, and Social Protection R&R to protect, prevent and promote resilience and mitigate vulnerabilities in order to promote economic growth of those population and mitigate the worst effects of a disaster on socially and economically vulnerable households.	L
• The Cabinet Secretariat in collaboration with the MoICE to develop an expanded data system strategy that contains information on population pre and post shock and relies on an ISPS encompassing interoperable and dynamic social registries and interoperable beneficiary registries, benefiting from robust National Identification Systems.	M
Food Security and Livelihoods	
The Ministry of Agriculture and Livestock (MoAL) to develop its DMCP and finalize the Agri-Food Sector Strategy 2030 as strategies for improving food security and sustainable livelihoods, particularly in disaster-prone areas, to reduce the impact on the most vulnerable. • Finalize the Agri-Food Sector Strategy 2030 to guide the implementation of the FNS Policy 2023 and sectoral programs in the 13th FYP. • Develop adequate storage and distribution infrastructure and facilities and capacity building of MoAL and FCBL. • Review the supply chain of food import, export, and internal consumption during emergencies and use the to-be-developed national farm registry to identify and track vulnerable farm population. • Enhance resilience in agricultural systems at the farm level with the operationalization of agromet advisories to manage risks from extreme weather conditions, pests, and diseases. • Promote investment in modern technologies, improved agronomic knowledge, climate-smart agriculture, market information systems and animal and plant health systems would further strengthen agricultural resilience at farm level and sustainable value addition throughout the agrifood value chain. • Assess the need and feasibility of an early warning system for food and nutrition security, seeking guidance of the World Bank's expertise in establishing high frequency food and nutrition security risk monitoring	M

The MoAL to finalize the Agriculture Bill to simplify some of the legal and regulatory issues to the modernization and resilience building in the agricultural sector.	M
MoAL to de-risk the agrifood sector by reviewing and assessing the potential and cost-effectiveness of national agricultural insurance products • Based on the ongoing pilots to introduce index-based insurance in Bhutan, assess its potential and cost-effectiveness of national agricultural insurance products in the longer term. In the short term, consider alternative risk mitigation measures such as financial incentives to invest in climate smart agriculture technologies and build farmers financial literacy.	L
Continued Access to Education	
The Ministry of Education and Skills Development (MoESD) to review and update existing DMCPs for the education sector addressing multi-hazard risks. • Sustain and expand the use of technology in delivering school education curriculum and services in times of crisis.	S
Crisis-induced Displacement	
RGoB to develop a policy and strengthen governance structure for providing financial support on housing reconstruction in case of protracted displacement, raise public awareness about GLOF EWS and the location of temporary relocation zones, and develop a system for recording and tracking crisis-induced displacement.	S
Cross-Sectoral Challenges	
Improve cross-cutting aspects to enhance preparedness and response. • Strengthen coordination and collaboration among all stakeholders involved in DM, including government agencies, civil society, development partners, and the private sector. • DLGDM to strengthen M&E mechanisms to assess the effectiveness of preparedness and response measures planned and implemented by local governments and sectoral agencies, with clear key performance indicators and regular reporting. • RGoB to enhance mechanisms for information sharing and public communication, ensuring that risk information and warnings are disseminated effectively and reach all population segments.	M-L

Note: a. Short-term (S), Medium-term (M), and Long-term (L).