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# Disaster Risk Management in Bhutan (2019-2023)

## *Greater resilience to natural disasters and climate change*

### Bhutan Hazard Overview

Bhutan is vulnerable to a myriad of natural disasters including earthquakes, floods, glacial lake outburst floods (GLOF), landslides and forest fires. Compounding exposure to natural hazards are the underlying vulnerabilities of Bhutan, including poor construction techniques, rapid urbanisation and low levels of understanding in disaster management practices. Despite these challenges, the Royal Government of Bhutan (RGOB) has made substantial progress in disaster risk management (DRM).

The 2013 Disaster Management Act established the National Disaster Management Authority and Disaster Management Committees in all 20 dzongkhags (districts). Nevertheless, Bhutan lacks the necessary data information systems, response plans and coordination systems to adequately prepare for and respond to emergencies.

### WFP DRM Overview

With strong support from the RGoB, the World Food Programme (WFP) has been present in Bhutan since 1974 supporting a range of food security, nutrition and DRM goals. The WFP Country Strategic Plan (CSP) identifies enhancing resilience to natural disasters and climate change as a core area of focus for 2019-2023 with the Strategic Outcome 2: *Government has strengthened capability to address food security and nutrition challenges and prepare for and respond to crises.*

As part of WFP's new role, WFP has taken the lead for the UN in DRM and climate change related disasters to support the Government in **coordination and capacity strengthening, data preparedness, logistics, emergency telecommunications and food security.**

Accordingly, the following lists the key focus areas for WFP's support to develop stronger national resilience to disasters and climate change over the period 2019-2023.

### Coordination and Capacity Strengthening

Following an earthquake simulation and logistics capacity assessment in 2018 and discussions with the RGoB, WFP has supported the Government in developing a *Roadmap for Disaster Risk Management in Bhutan.*

The Roadmap, developed in 2019, sets out priority actions for Government, UN agencies and other developmental partners to respond to identified gaps in DRM. The Roadmap has six focus areas: **Disaster Awareness; Data Preparedness; Governance; Coordination; Resourcing; and Sector Preparedness.** Under each of these

sectors, a set of actions with corresponding timeline, budget, outcome and partners are articulated.

WFP assists the Department for Disaster Management (DDM) in updating and implementing the Roadmap for Disaster Risk Management as an instrument to guide and reinforce national DRM priorities of the stakeholders involved in DRM.

In addition, WFP in consultation with DDM, will work on a long-term capacity strengthening plan for DRM in Bhutan for DDM and Incident Command System (ICS) desk leads including training and exposure trips to neighboring countries to enhance national capacity for DRM.

Technical inputs to the district-based disaster management and contingency plans will also be provided by WFP as well as coordination with government partners in developing national contingency plans for a food response to a potential disaster.

To test national disaster readiness including the Government's ICS, national disaster simulation exercises (SIMEX) will be carried out.

### 72 Hours Rapid Assessment Approach

To strengthen **data preparedness**, WFP supports the RGoB in setting-up and implementing the "72 Hours Rapid Assessment Approach" to estimate the likely impacts of a disaster and enable a response within 72 hours. The 72 Hours Approach provides critical information to fill the initial information vacuum in the first three days after a disaster based on the most recent information and pre-disaster secondary data.

This offers a solid basis to make operational decisions even in extremely complex situations with information being refined through continuous updates as new data becomes available. The methodology is further designed to rank affected areas based on geographic impact and population's vulnerability by overlaying layers of information on to Spatial Data Infrastructure (SDI).

The complete transfer of the approach to the RGoB is estimated to take two years: to establish the SDI and train government staff to ensure strong ownership and sustainability of the system. One-year into this project, a geo-referenced central data depository in DDM has been strengthened, data availability and information gaps mapped and vulnerability indicators selected with stakeholders and a data analyst hired by WFP to support staff at DDM. Key milestones to establish the 72 Hour Approach include:



- A geo-referenced, regularly updated database hosting all available secondary data established within the Disaster Management Information System (DMIS) of the DDM;
- In-depth training of WFP and DDM staff on rapid analysis and field data collection immediately following a disaster;
- Simulation exercise and finalised mapping of different stakeholder's roles in each phase of the 72 Hours Approach.

### Earthquake Impact Assessment Modelling

To further strengthen **data preparedness**, WFP is partnering with Durham University to research the potential impact of earthquakes on Bhutan. This Earthquake Impact Assessment is currently utilised in Nepal to inform earthquake preparedness and contingency planning. For Bhutan, the modelling is expected to be completed by March 2020 and will develop a range of possible seismic scenarios, with corresponding impacts across different districts. The key outcomes of the modelling will be:

- A suite of detailed earthquake scenarios at Dzongkhag (district) level covering a range of plausible magnitudes (M7.0 – M8.6+), including information on probabilistic building damage and casualties;
- Dzongkhag-level risk scores based on summary statistics (i.e. least to most at-risk Dzongkhags);
- Provide authorities at both national and Dzongkhag level with recommendations in contingency planning and DRM to most effectively reduce risks associated with earthquakes.
- A national workshop with participants from ministries, local governments and development partners will be held to disseminate the finding of Earthquake Impact Assessment and recommendations.

### Glacial Lakes Outburst Flood Research (GLOF)

The third component of WFP's strategy to enhance Bhutan's **data preparedness** is a collaboration with Newcastle University on the impact of GLOFs. With 2,674 glacial lakes in Bhutan, GLOFs occur relatively regularly causing both casualties and infrastructural damage. Thus, the project seeks to quantify potential triggers, and subsequently undertake numerical modelling to translate GLOF hazards to downstream flood risk. This is vital in Bhutan, as the population and infrastructure are concentrated in the main river valleys, which originate in glaciated catchments. Bhutan is particularly vulnerable to GLOFs as some 79% of Bhutan's population are employed in agriculture, which is predominantly subsistence farming and highly vulnerable to flooding.

There is a unique opportunity to quantify downstream flood risk in collaboration with the RGoB. Newcastle University is seeking sponsorship for this research and have requested WFP support for the field work to study the glacial lakes in the northern regions. This research thus aims to provide vital information to support early warning and prevention activities to take place and further feed into the 72 Hours Approach database.

### Emergency Logistics

WFP is supporting **sector emergency logistics** preparedness and capacity in Bhutan.

In collaboration with government partners, WFP will develop a Strategic Logistics Capacity Strengthening Plan, based on capacity needs mapping of national humanitarian supply chain. In coordination with the Global Logistic Cluster, this will be complemented by setting up a national Logistic Cluster to support

Bhutanese authorities to increasingly engage and contribute to enhanced coordination and oversight of in-country logistics.

In the coming months, WFP will focus on facilitating an inter-sector response planning workshop. This will use the results of the Earthquake Impact Assessment modelling at the sector level by understanding probable logistical requirements by sector in the aftermath of a large-scale emergency. This information will then be synthesised to assess the implications for logistics as part of disaster preparedness with the aim of supporting DDM in establishing a humanitarian staging area and potential regional hubs, determine core relief item prepositioning needs, and stock management plans. This process will be fundamental to sensitise both the Government and partners to fully understand the complexity and requirements of a possible earthquake or large disaster response.

### Emergency Telecommunications

Bhutan's connection to the international telecommunications system is via two cables to India, which are highly vulnerable to a strong earthquake. Based on the telecommunication gaps identified by the logistic capacity assessment, WFP conducted an Information and Communications Technology Capacity Assessment to identify priority actions to ensure the continuity of telecommunications activities during an emergency. Accordingly, WFP has initiated activities to transfer essential technical skills and operational knowledge to national responders.

Through WFP's leadership of the Emergency Telecommunication Working Group, WFP will further strengthen **sector emergency telecommunications**. Thus, with the Government and development partners, WFP will develop a National Road Map for Emergency Telecommunications with focus on strategic components and operational requirements to ensure uninterrupted telecommunications during disasters.

With national partners, WFP will develop a Strategic Emergency Telecommunication Capacity Strengthening Plan based on capacity needs mapping of national humanitarian supply chain.

Moreover, in collaboration with national partners, WFP will establish a national Emergency Telecommunication Cluster to support the Government to increasingly engage and contribute to enhanced coordination in emergency telecommunication.

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