

Terms of Reference for a consultant: To conduct Vulnerability and Adaptation Assessment on Health Outcomes of Climate Change.

1. Introduction

The following Terms of Reference establish the steps and issues to be taken into account by a the consultant in conducting a study on Vulnerability and Adaptation Assessment of public health to climate change impacts in Bhutan.

2. Background

The World Health Organization (WHO) along with UN Development Program (UNDP) have been granted a project for Piloting climate change adaptation to protect human health, from the Global Environment Fund (GEF) administered Special Climate Change Fund (SCCF). This project will assist the Ministry of Health, Bhutan to define health adaptation measures to meet the anticipated health impacts from Climate Change. www.who.int/globalchange/projects

As a part of this project, the Ministry of Health of Bhutan will be taking the lead to conduct a National Health Vulnerability and Adaptation Assessment to Climate Change.

3. Purpose: Why is the study being done?

The mountain ecosystem of Bhutan is one of the most pristine in Asia with clean air, water and primeval forest. However, with increasing population density, rural urban migration, rapid increase in imports of cars and rising demand for fuel wood, roads and building constructions, the future suggest many negative effects on environmental assets, which can further expose the population to climate change vulnerabilities. Risk to properties and human lives from Glacial Lake Outburst and Flood (GLOF), flash floods and landslides remains a significant concern for Bhutan. Besides, public health vulnerabilities have accentuated with climate change. It is anticipated that there will be expansion of vector borne diseases (Malaria, Dengue and Encephalitis) to otherwise non-endemic districts and increase in seasonal diseases related to water and sanitation like diarrhoeal diseases, skin and respiratory infections.

Studies show that temperatures for 1998-2002 were above the 1990-2003 mean value. On average, air temperatures in the Himalayas are 1°C higher now than in the 1970s, rising by 0.06°C per year¹. During the period 1990-2003, there was high rainfall in the years 1998, 2000, and 2002. Both extremes of rainfall stress the need to plan for greater future climate variability². With increasing seasonal precipitation variability, the threats of

¹ Shrestha A.B. *et.al.*, Maximum temperature trends in the Himalayas and its vicinity, *Journal of Climate*, Vol.12, 2775-2787, 1999.

² Dewan Abdul Quadir, Md. *et.al.*, Climatic Characteristics of Temperature and Precipitation of Bhutan, SAARC Meteorological research Center, Dhaka, Bangladesh.

monsoonal rain flooding and rain triggered landslides have increased. Bhutan experienced massive flooding and landslide disasters in 2000, 2003 and 2004³.

However, no extensive studies were carried out on health outcomes of climate change in the country and therefore lack baseline data to plan for adaptation measures. Therefore, the intended study is the first critical step for Bhutan to assess the populations and regions which are most vulnerable to different kinds of health effects; identify weakness in the systems and specify intervention to respond. The assessment aims to improve evidence and understanding of the linkages between climate and health; serve as a baseline analysis to provide information on the extent and magnitudes of likely health risks attributable to climate change against which protective measures can be monitored.

4. Objectives of the assessment:

4.1. Broader Objective:

To assess national vulnerability and impact of climate sensitive diseases in Bhutan; find out effective adaptive measures in the context of climate change impact on health.

4.2. Specific Objectives:

1. To assess the country's vulnerability including the populations and regions that are most vulnerable to different kinds of health effects.
2. To establish baseline conditions by describing the human health risks of current climate variability and recent climate change.
3. To describe the current capacity of health and other sectors to manage the risks of climate sensitive health outcomes.
4. To estimate the possible additional burden of adverse health outcomes (future risk) likely to change over the coming decades due to climate change.
5. To describe and estimate the risk of climate sensitive health outcomes which may change over decades irrespective of climate change.
6. To identify and prioritize adaptation options to address current and projected health risks.

³ Centre for Research on the Epidemiology of Disasters (CRED) Em-Dat database for Natural Disasters.

5. Methodology

In general, in order to undertake this vulnerability, impact and adaptation assessment, the identified consultant shall follow the steps prescribed by the WHO draft document entitled, *“Guidance for Conducting Vulnerability and Adaptation Assessments; protecting Health from Climate Change”*. The methodology should be laid out in detail for every step of the study in the project proposal.

The study shall encompass all the following phases:

1. Framing and Scoping the assessment

The following steps shall be followed:

1.1. Defining the geographic range and health outcomes of interest

1.2. Identification of the goals of the assessment

1.3. Identification of the policy context for the assessment

1.4. Establish the project team and management plan

Establish the study team comprised of Ministry of Health and the technical expertise and develop the management plan including the assessment timeline, roles and responsibilities and budget.

1.5. Identification of the stakeholders to be included in the assessment

Stakeholders include policy and decision-makers, program managers (from ministries, departments, NGOs and those most likely to be affected by the health risks of climate change).

1.6. Develop a communication plan

The Plans for communicating the assessment process and results should be formulated at the start of the process. The mechanisms for communicating the results need to be identified and the assessment results shall be informed and shared with the stakeholders.

2. Conducting the Vulnerability assessment

Firstly, a baseline data needs to be generated and established on the current burden of climate-sensitive health outcomes including the populations and the regions that are most vulnerable. The data then needs to be analyzed and should identify factors other than climate that increases or decreases the vulnerability to weather and climate.

Additionally, a general assessment of the current programs and activities, if any, related to climate change as well as planned changes to such programs should be undertaken. An evaluation of the effectiveness of these programs in terms of strengths, weaknesses and their flexibility for addressing the additional health risks of climate change will then needs to be conducted.

The following three steps should be included:

1. Describing the current risks of climate-sensitive health outcomes, including for the most vulnerable populations and regions.
2. Analyzing the relationships between current and past weather/climate conditions and health outcomes.

3. Describe the current capacity of health and other sectors to manage the risks of climate-sensitive health outcomes

3. Projection of the Health Impacts of Climate Change

The identified consultant shall analyze the future health risks and impacts under climate change and shall make projections of likely impacts of climate change on public health in Bhutan. Such analysis should include the following two main steps:

- i. a description of how the risks of climate sensitive health outcomes, including the most vulnerable population and regions may change over the coming decades irrespective of climate change; and
- ii. Estimation of the possible additional burden of adverse health outcomes due to climate change.

4. Identification and Prioritization of Adaptation Options to Address Current and Projected Health Risks

Based on expert judgment and stakeholder inputs, should list and prioritize all possible (reasonable) adaptation options that are feasible contextualized to the country which may include:

- i. Identifying all possible additional public health and health care policies and programmes to prevent likely future health burdens.
- ii. Prioritizing public health and health care policies and programmes to reduce likely future health burdens.
- iii. Identifying resources for implementation and potential barriers to be addressed.
- iv. Estimate the costs of action and inaction to protect Health and
- v. Determine the potential health risks of adaptation and mitigation measures implemented in other sectors and identify possible interventions to reduce any identified risks.

6. Scope of Work

1. Responsible for coordinating engagement plan in collaboration with the project management unit to organize and conduct stakeholder meetings to present the assessment goal, identify feedback mechanisms and develop a communication plan.
2. Responsible for the development and management of study work plan.
3. Responsible for identifying and resolving bottlenecks, sourcing additional support where needed.
4. Responsible for developing questionnaires/study tools and seeking feedback from the stakeholders for primary data collection.
5. Responsible for primary data collection, entry, analyze and training the enumerators on data collection and continuously monitoring to have quality data.

6. Responsible for building the national capacity on GIS mapping in the process.
7. Facilitate data sourcing, sharing, verification and quality assurance of the data.
8. Conduct meetings to share progress and review results.
9. Responsible for preparing the draft report and assemble comments and feedbacks.
10. Responsible for making presentations on the findings/study report of the V&A conducted to the Ministry of Health and Project Steering Committee.

7. Health outcomes of interest to be explored:

Health outcomes of interest to be explored:

1. Water borne diseases due to water scarcity and quality.
2. Vector borne diseases (Malaria and Dengue)
3. GLOF events/risk (mortality and injuries)

7.1. Geographic range of the study: National level study

8. Project Deliverables and Time Line

The study shall be completed in over a two to three months period beginning from December, 2011.

The consultant shall provide two deliverables:

1. A **first draft of the V&A assessment report** two weeks ahead of the projected completion date and
- 2) The **final V&A assessment report**.

9. Budget

Detail budget shall be calculated once the ToR is accepted.