# Climate and Disaster Risk Screening Report for Health Project in India: Hypothetical Health Project for India[1]

[1] This is the output report from applying the World Bank Group's Climate and Disaster Risk Screening Project Level Tool. The findings, interpretations, and conclusions expressed from applying this tool are those of the individual that applied the tool and should be in no way attributed to the World Bank, to its affiliated institutions, to the Executive Directors of The World Bank or the governments they represent. The World Bank does not guarantee the accuracy of the information included in the screening and this associated output report and accepts no liability for any consequence of its use.

# 1. Introduction

The project level **Climate and Disaster Risks Screening Tool** provides due diligence on climate and disaster risks at an early concept stage. The tool uses an **exposure – sensitivity –adaptive capacity framework** to consider and characterize risks from climate and geophysical hazards, based on key components of a project and its broader development context (Annex 1). The tool helps inform consultation, dialogue, and further work to be done in the course of project design.

The results of applying the project level tool to screen for climate and disaster risks for "Hypothetical Health Project" in India are summarized below.

# 2. Climate and Disaster Risk Screening Results Summary

## 2.1 Project Information Summary

Table 1 below provides key project information.

**Table 1: Project information**

| Project Information | |
|---|---|
| **Title** | Hypothetical Health Project |
| **Number** | P149340 |
| **Region** | South Asia |
| **Country** | India |
| **Type of Assessment** | Health Projects |
| **Purpose of Screening** | Screen a Project at the Concept Stage |
| **Current Project Phase** | Concept (Identification) |
| **Funding Source** | IDA |
| **Keywords** | Health System Reform |
| **Location** | Nagaland is a hilly state with undulating terrain and remoteness of villages. The State falls in the eastern Himalaya region and have undulating moderate to steep slopes. The project will be largely in rural locations in healthcare facilities in sub-districts and small towns/villages. The state faces moderate to heavy rains and is subjected to bad road conditions in the post monsoon months. |
| **Description of Location** | Nagaland is a hilly state with undulating terrain and remoteness of villages. The State falls in the eastern Himalaya region and have undulating moderate to steep slopes. The project will be largely in rural locations in healthcare facilities in sub-districts and small towns/villages. The state faces moderate to heavy rains and is subjected to bad road conditions in the post monsoon months. |
| **GPS Coordinates** | This is optional information which may be useful when searching for geospatial climate and hazard information from data sources. It is not directly used in the screening process. |
| **Description of Subsectors** | The project development objectives (PDO) are to improve health services and increase their utilization by communities in targeted locations in Nagaland. Communities in targeted locations will benefit from project activities at the community and health facility levels, while the population of the state as a whole will benefit from system-wide investments. Project activities at the health facility and community levels will be focused in a coordinated fashion on the same target locations in order to maximize impact. The Department of Health & Family Welfare has selected health facilities on the basis of objective criteria, specifically presence of relevant qualified health personnel and a minimum level of current service provision. This is intended to ensure that a basis currently exists on which the project can build. Targeting will be periodically reassessed on the basis of implementation experience. For more details please refer to PCN. |
| **Description of Outcome** | Climate change, along with socio-economic factors, is likely change some disease patterns in the state. The burden due to diarrheal disease, cardiorespiratory diseases and malaria may increase in the eastern Himalayan region due to the elevated temperatures, deteriorating water quality, increased air pollutants and increased spread of vectors. It must be acknowledged that after the successful implementation of the project, the health systems in the state would be improved. This would strengthen the state’s capacity in addressing the aforementioned issues. |
| **Sub Sectors** | Health Systems & Service Delivery |

## 2.2 Summary of Exposure to Climate and Geophysical Hazards

Table 2 presents a summary description of exposure to climate and geophysical hazards at the project location for the Historical/Current and Future time frames. The Future time frame is based on changes projected to occur between the 1980-1999 average and a future average. This future average is most likely the 2040-2059 average (i.e., the default in the Climate Change Knowledge Portal - CCKP), but the range is dependent upon the specific time frame that the user applied using the CCKP or other climate information. Again, these descriptions, if based on information in the CCKP, may be supplemented by national data sets.

**Table 2: Summary of Exposure to Climate and Geophysical Hazards at Project Location**

| Hazard | Time Frame | Description of hazards for your location |
|---|---|---|
| **Extreme Temperature** | Current | In summer the temperature ranges from 31 °C to 16 °C while during winter the same varies between 24 °C to 4 °C. Spring is warm and humid. On the whole the climatic condition of the state is cool and bracing. The analysis of temperature records for Nagaland shows a steady warming trend in both the minimum and maximum temperatures over the past 100 years shows. The districts of Wokha, Zunheboto, Tuensang and Phek have registered an increase in minimum temperature of more than 1.6°C. The minimum temperature in Mon has increased by about 1.4°C. The maximum temperature also shows an increasing trend all across Nagaland. |
| | Future | In the mid century (2020-2050), the state is projected to experience an increase in annual average temperature between 1.6°C and 1.8°C. Southern districts show higher increase in temperature, with Kohima, Wokha, Phek, Zunheboto and Tuensang showing an increase in temperature between 1.7°C and 1.8°C. The Northern districts of Mon and Mokokchung are projected to have an increase in average temperature of between 1.6°C and 1.7°C. |
| **Extreme Precipitation and Flooding** | Current | Climate of Nagaland is typical of a tropical country with heavy rain fall. The average rainfall of the area is about 2000mm to 2500mm. Rainfall is high during the monsoon from May to September/October; whereas during winter it is scanty. Extreme precipitation is possible if monsoon is restricted to limited number of days. Moderate to steep slopes could aid flash floods with possibilities of cloud bursts. |
| | Future | The projected mean annual rainfall is varying from a minimum of 940±149mm to 1330 ±174.5 mm. The increase with respect to 1970's is by 0.3% to 3%. The north-east also show a substantial decrease in rainfall in the winter months of January and February in 2030's with respect to 1970's with no additional rain projected to be available during the period March to May and October to December. In fact, recent data indicates the same pattern. However, the monsoon rainfall during June, July and August is likely to increase by 5 mm in 2030's with reference to 1970's. A rise of 0.6%. |
| **Strong Winds** | Current | Given the hilly terrain, strong winds are possible, especially when coupled with extreme weather conditions. Tropical cyclones could occur. Areas of low pressure are often created during monsoon. Storms and high speed wind are a recurring phenomenon every year. On the 29th of March 2008, a few buildings have been razed to the ground while electric poles and trees have been uprooted in Mokokchung District. |
| | Future | The maximum wind speed from tropical cyclones is expected to increase, but estimates are highly uncertain |
| **Earthquake** | Current | As per the Indian classification the State of Nagaland lies in Zone-V. This means that the state is highly vulnerable to earthquakes. As per the historical data, Nagaland experiences frequent low intensity earthquakes from time to time. In the past 12 months, Nagaland has experienced 9 earthquakes ranging from 4.1 to 5.9 intensity. Only one of these originated in Nagaland. |
| **Landslide** | Current | Landslides are common and can be severe during and post monsoons. Road disruptions are common. Damage to infrastructure is also common due to landslides. These could be particularly damaging when triggered during cloud bursts. |

## 2.3 Summary of Overall Project Risk

Tables 3A and 3B below summarize ratings for project components and/or project subsectors, and outcome/service level for *Historical/Current* and *Future* time frames. The ratings are derived on the basis of the hazard information, subject matter expertise, contextual understanding of the project, and the larger development context.

The results indicate where risks may exist and where further work may be required to reduce or manage these climate and geophysical risks. An ongoing process of monitoring risks, refining climate and other information, and regular impact assessment may also be appropriate

### 2.3.1 Results Summary - by Component

Table 3A summarizes the ratings for the project. The results provide a characterization of risks caused by climate and geophysical hazard on project sub-sector and components. The potential impact due to exposure from hazards is modulated by the project's non-physical components (enabling and capacity building activities) and the larger development context to determine overall risk to the intended project outcome.

**Table 3A: Results Summary - by Component**


| Hazard | Project Context | | | | | | Development Context | | | | Outcome | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Location | | Impacts to Target Beneficiaries | | Impacts to Project Activities | | Health Sector | | Broader Context | | | |
| Time Frame | Current | Future | Current | Future | Current | Future | Current | Future | Current | Future | Current | Future |
| Extreme Temperature | | | | | | | | | | | | |
| Extreme Precipitation and Flooding | | | | | | | | | | | | |
| Drought | X | X | X | X | X | X | | | | | X | X |
| Sea Level Rise | X | X | X | X | X | X | Slightly Reduces Impact | | Overall Slightly Reduces Impact | | X | X |
| Storm Surge | X | X | X | X | X | X | | | | | X | X |
| Strong Winds | | | | | | | | | | | | |
| Earthquake | | X | | X | | X | | | | | | X |
| Landslide | | X | | X | | X | | | | | | X |

### 2.3.2 Results Summary by Time-Frame

The matrix below depicted in Table 3B displays the same results as Table 3A, but does so by time frame.

**Table 3B: Results Summary - by Time Frame**

| Time Frame | Current | | | | | | Future | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hazard | Project Context | | | Development Context | | Outcome | Project Context | | | Development Context | | Outcome |
| | Location | Impacts to Target Beneficiaries | Impacts to Project Activities | Health Sector | Broader Context | | Location | Impacts to Target Beneficiaries | Impacts to Project Activities | Health Sector | Broader Context | |
| Extreme Temperature | | | | Slightly Reduces Impact | Overall: Slightly Reduces Impact | | | | | Slightly Reduces Impact | Overall: Slightly Reduces Impact | |
| Extreme Precipitation and Flooding | | | | | | | | | | | | |
| Drought | X | X | X | | | X | X | X | X | | | X |
| Sea Level Rise | X | X | X | | | X | X | X | X | | | X |
| Storm Surge | X | X | X | | | X | X | X | X | | | X |
| Strong Winds | | | | | | | | | | | | |
| Earthquake | | | | | | | X | X | X | | | X |
| Landslide | | | | | | | X | X | X | | | X |

| Insufficient Understanding | Not Exposed<br>No Potential Impact<br>No Risk | Slightly Exposed<br>Low Potential Impact<br>Low Risk | Moderately Exposed<br>Moderate Potential Impact<br>Moderate Risk | Highly Exposed<br>High Potential Impact<br>High Risk |
|---|---|---|---|---|

## 2.4 Key Drivers of Risks

Based on the results above, Table 4 highlights the key drivers of risks for each project component and/or subsector ratings. Specific consideration should be given to those which have high ratings, or are moving from moderate to high ratings. Note also the overall modulating effects of non-physical components and the broader development context to the project outcome.

**Table 4: Key Drivers of Risk**

| | Historical/Current Drivers | Future Drivers |
|---|---|---|
| **Hazards and Location** | Strong Winds<br>Earthquake<br>Landslide | * |
| **Physical Components** | Landslide - Impacts to Target Beneficiaries | * |
| **Outcome / Service Delivery** | * | * |

Key: High Risk  Moderate Risk 

* No high or moderate risks identified for this particular portion of the project.

- The Health Sector : **Slightly Reduces Impact**
- Overall, the Broader Development Context : **Slightly Reduces Impact**

## 3. Next Steps

Table 5A provides some general guidance on follow-up based on the risk ratings for the Outcome/Service Delivery. Table 5B lists some climate risk management measures for your consideration. Visit the "Next steps" page of the tool for guidance and a list of useful resources.

Please recall that that this is a high-level due diligence tool, and the characterization of risks should be complemented with more detailed work.

**Table 5A: General Guidance Based on Risk Ratings for Outcome/Service Delivery**

| | |
|---|---|
| **Insufficient Understanding** | Gather more information to improve your understanding of climate and geophysical hazards and their relationship to your project. |
| **No Risk** | If you are confident that climate and geophysical hazards pose no risk to the project, continue with project development. However, keep in mind that this is a high-level risk screening at an early stage of project development. Therefore, you are encouraged to monitor the level of climate and geophysical risks to the project as it is developed and implemented. |
| **Low Risk** | If you are confident that climate and geophysical hazards pose low risk to the project, continue with project development. However, keep in mind that this is a high-level risk screening at an early stage of project development. Therefore, you are encouraged to monitor the level of climate and geophysical risks to the project as it is developed and implemented. You may also consider gathering additional information to increase your level of confidence in your rating. |
| **Moderate Risk** | For areas of Moderate Risk, you are encouraged to build on this screening through additional studies, consultation, and dialogue. This initial screening may be supplemented with a more detailed risk assessment to better understand the nature of the risk to the project. |
| **High Risk** | For areas of High Risk, you are strongly encouraged to conduct a more detailed risk assessment and to explore measures to manage or reduce those risks. |

**Table 5B: Types of Climate Risk Management Measures for typical Health Projects**

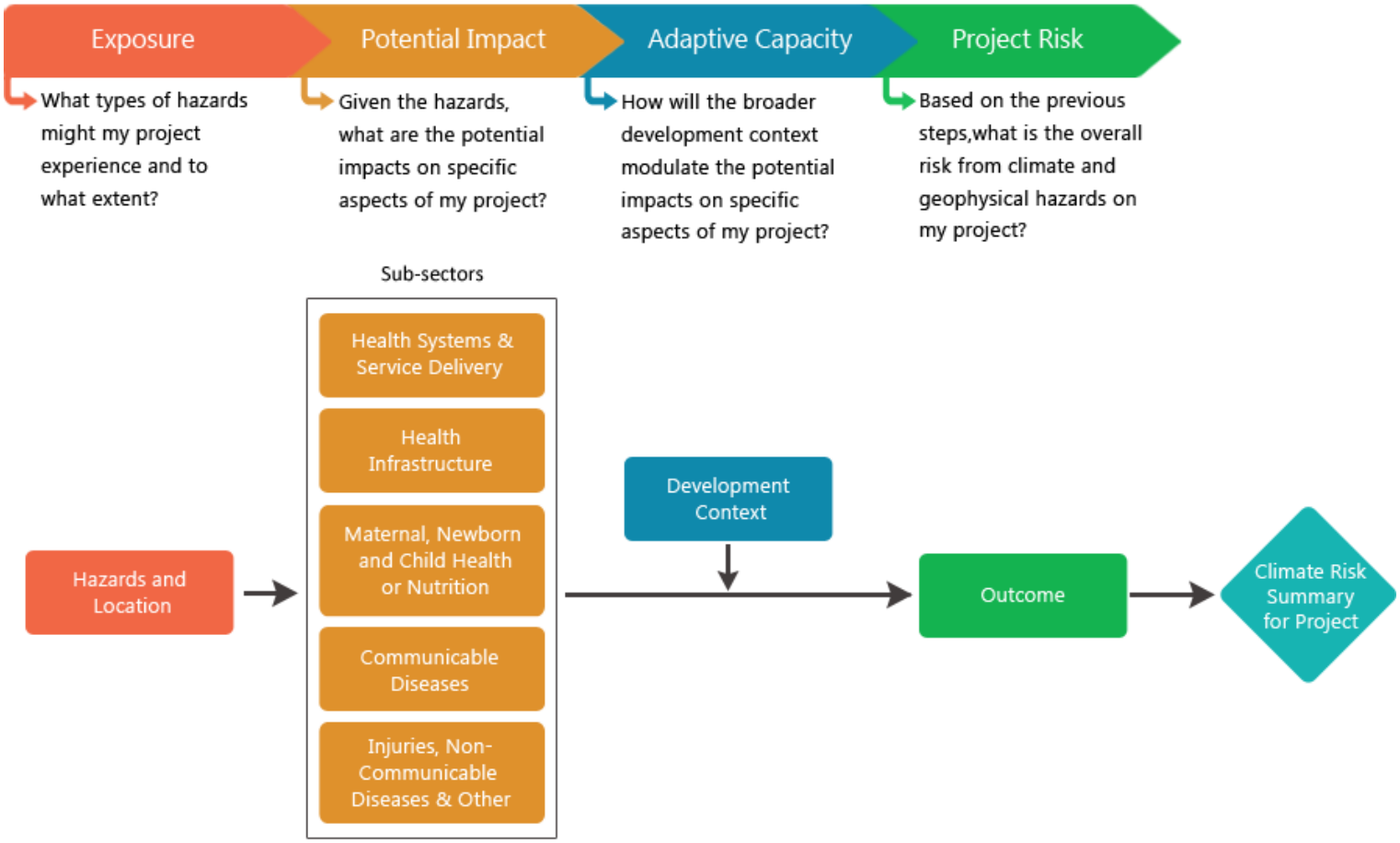
| CATEGORY | PROS | CONS | EXAMPLES |
|---|---|---|---|
| Improve Basic Public Health and Health Care Services | • Flexible<br>• Can improve baseline health conditions of the population<br>• Prevention can lower costs<br>• Cost of implementation can vary | • Cost of implementation can vary depending on the adaptation option | • Educating local communities about evacuation procedures to help reduce flood-induced injuries and mortality<br>• Expanding distribution of mosquito nets<br>• Improving disease surveillance systems<br>• Training staff to recognize and treat heat strain<br>• Monitoring health conditions of particularly vulnerable groups |
| Develop Early Warning Systems | • Utilizes weather forecasts<br>• Alerts public health authorities and the general public<br>• Prevention can lower costs | • Requires additional adaptation responses after public health authorities and the general public have been alerted<br>• Protects against incidences that mayarise in the short-term | • Developing heat wave early warning systems<br>• Enhancing early warning malaria forecast systems |
| Accommodate, Manage, Protect, and/or Relocate Health Infrastructure | • Can contribute to improved health service delivery | • Cost of implementation can vary depending on the adaptation option | • Ensuring essential medical supplies in anticipation for post-disaster distribution<br>• Upgrading health infrastructure to protect against physical damage<br>• Moving hospitals onto higherground<br>• Increasing ambulance repair and maintenance budgets |
| Foster Intersectoral and Cross-sectoral AdaptationStrategies | • Flexible<br>• Can provide more robust benefits | • Cost of implementation can vary depending on the adaptation option<br>• Requires greater coordination | • Educating local communities about potablewater quality impacts from high temperatures<br>• Implementing land-use changes that reduce the impact of mortalityfrom floods<br>• Facilitating coordination between health and other sectors to deal with shifts in the incidence and geographic range of diseases |

# Annex 1: Tool Approach

## Tool Approach

The framework below describes the approach taken to screen the project. Climate and natural hazards information used to screen the project is most likely obtained from the World Bank's Climate Change Knowledge Portal, which houses numerous global data sets with historical records and future projections as well as country-specific adaptation profiles.

**Figure 1: Project Level Climate and Disaster Risk Screening Tool: Approach for Health projects**



## Annex 2: Notes

Table A2-1 summarizes the sub-national locations of high risk noted during the assessment, if the user entered these sub-national locations. Table A2-2 summarizes all the notes entered by user for each section while completing the assessment, if the user elected to enter notes. These notes can help shed light on specific ratings as well as considerations and limitations of the user's expertise.

**Table A2-2 Summary of Comments by Section**

| Section | | Notes |
|---|---|---|
| **Hazards and Location** | Extreme Temperature | The temperature over the past 100 years shows a consistently increasing trend. However, this is unlikely to affect the project or its associated investments |
| | Extreme Precipitation and Flooding | Over the course of the next decade the increase in precipitation and flooding might lead to an increase in the incedence of certain vector borne diseases such as diarrhea and malaria. The project aims at strengthening health systems dilevery in the state, which in the long run would help address these issues. |
| | Strong Winds | While the limited data suggests that storng winds are likely to increase over the next few decades. There is no clear evidence of the quantum of increase. Given that the project is not investing into any new infrastructure creation, this should not be a significant cause of concern. |
| | Geophysical Hazards | Given that the precipitation might increase, the state's vulnerability to landslides would increase. |
| **Subsector** | Impacts to Target Beneficiaries - Extreme Temperature | The temperature rise may result in the increase of certain vector borne diseases. |
| | Impacts to Target Beneficiaries - Extreme Precipitation and Riverine Flooding | Increased precipitation might increase the number of events of flooding. This may have an impact on the beneficiaries' ability to access the health facilities. Another potential impact of increased precipitation may be an increase in the vector borne diseases. |
| | Impacts to Target Beneficiaries - Landslide | Access routes may get affected due to frequent occurrences of the landslide events due to the increase in the number of rainfall events. |
| | Impacts to Project Activities - Extreme Precipitation and Riverine Flooding | Increased precipitation may limit access of health workers to health facilities. |
| | Impacts to Project Activities - Landslide | Access routes may get affected due to frequent occurrences of the landslide events due to the increase in the number of rainfall events. |