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

[1] This is the output report from applying the World Bank Group's Climate and Disaster Risk Screening Project Level Tool (Global website: climatescreeningtools.worldbank.org; World Bank users: wbclimatescreeningtools.worldbank.org). 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

Building resilience to climate and geophysical hazards is a vital step in the fight against poverty and for sustainable development. Screening for risks from these hazards improves the likelihood and longevity of a project's success. The project level **Climate and Disaster Risks Screening Tool** provides early stage due diligence on climate and disaster risks at the concept stage of project development. 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).

This report summarizes the results of the screening process for the Hypothetical Health Project/India, which was applied to the following selected sub-sectors/components:

- [x] Health Systems & Service Delivery
- [ ] Health Infrastructure
- [ ] Injuries, Non-Communicable Diseases & Other
- [ ] Maternal, Newborn & Child Health or Nutrition
- [ ] Communicable Diseases

The potential risks flagged in this report were identified through the four screening stages by connecting information on climate and geophysical hazards exposure with the user's subject matter expertise and understanding of the project components and sensitivity to rate the impacts. The tool does not provide detailed risk assessments, rather it flags risks to inform consultations, enhance dialogue with local and other experts, and define further analytical work at the project location.

This early stage due diligence can be used to strengthen the consideration of climate and disaster considerations in key components of the project design, including the physical (e.g., health facilities/infrastructure, etc.) and non-physical aspects (e.g., capacity building of health practitioners, institutional strengthening at the community level, early warning systems, etc.). The broader sectoral (e.g., appropriate policies on healthcare, a robust health insurance system, etc.) and development context conditions (e.g., access to technology for health care administration, climate-related early warning systems, density of health care network in rural areas, etc.) could help modulate the risks to the delivery of the outcome/service level.

The results of the screening are presented below, with supporting narrative to guide their interpretation.

2. Climate and Disaster Risk Screening Results Summary

2.1 Project Information Summary

Table 1 below provides key project information including the location and key project development objectives. This information is provided by the task team. The activities within the components are important as their sensitivity to the climate and geophysical hazards will determine the level of potential impact from these hazards.

Table 1: Project Information

Project Information	
Title	Hypothetical Health Project
Number	Hypothetical
Region	South Asia
Country	India
Type of Assessment	Health Projects
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.
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

* Please note that this is based on user inputs and the coverage may not be comprehensive.

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[1] . Exposure to climate hazards is evaluated in two time frames, because past records are not necessarily indicative of future conditions.

The descriptions provide a summary of the key characteristics and some indication of the trends in exposure from each hazard, drawing on global, quality controlled data sets from the Climate Change Knowledge Portal (CCKP). It is useful, for example to understand the temperature range and the rate of annual or decadal increase in a region; or precipitation patterns for historical and future time frames and seasonality shifts. Understanding the trends of hazards is important as they act individually and collectively on components/sub-sectors of the project. Because geophysical hazards (such as earthquakes, tsunamis, landslides, and volcano eruptions) do not have associated future projections, exposure for those hazards is assessed only in the Historical/Current time frame.

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%.

[1]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). Users can choose to select another time frame, or choose to use national/local data sets, but if so, this should be reflected in the notes section of the tool (and summarized in Annex 2). The CCKP draws on global, quality-controlled datasets and is continually updated as new data become available. In some cases, the CCKP is supplemented with other sources of information. For more detail on the data used in this step, please refer to the Data Annex. Climate Change Knowledge Portal (http://climateknowledgeportal.worldbank.org).

Hazard	Time Frame	Description of hazards for your location
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.

Insufficient Understanding	Not Exposed No Potential Impact No Risk	Slightly Exposed Low Potential Impact Low Risk	Moderately Exposed Moderate Potential Impact Moderate Risk	Highly Exposed High Potential Impact High Risk

Please note that the colors shown in Table 2 are only for exposure at the project's location. Overall risk to project's outcome/service delivery, taking into account sensitivity of physical investments and adaptive capacity(non-physical components and development context), is depicted in Tables 3A and 3B.

2.3 Summary of Overall Project Risk

Tables 3A and 3B present the same results, with Table 3A highlighting the impact ratings on the project's component/subsectors, and the overall risk to the outcome/service level for both Historical/Current and Future time frames. Table 3B draws attention to how the climate impacts and risks shift from the Historical/Current to the Future time frame.

The ratings are derived on the basis of the hazard information, subject matter expertise, contextual understanding of the project, and modulated on the basis of adaptive capacity and the larger development context of the health sector and country. The results indicate what components are most at risk. The actual ratings themselves, while instructive, should inform further consultations, dialogue, and future planning processes. Keep in mind that the greatest value of the tool is that it provides a structured and systematic process for understanding climate and disaster risks.

2.3.1 Results Summary - by Component / Subsector

Table 3A provides a characterization of risks caused by climate and geophysical hazard on project subsector/components for both Historical/Current and Future time frames.

The results indicate where risks may exist within one or multiple components 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.

The potential impact on the key components due to exposure from hazards is modulated by the project's non-physical components (enabling and capacity building activities). The right kind of capacity building measures could increase preparedness and longer-term resilience and reduced the risks. An understanding of larger sector and development context with respect to key modulating factors helps to assess the climate risks in terms of adaptive capacity. For example, in the health sector, a robust health insurance system may help reduce risks; while a low density health care network in rural areas may aggravate the risks.

Table 3A: Results Summary - by Component / Subsector

Hazard	Project Components						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							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

2.3.2 Results Summary by Time-Frame

The results in Table 3B display the results by time frame. Potential impacts to the components are evaluated separately for the Historical/Current and Future time frames to capture changes in the exposure from climate hazards over time. For example, recent trends may indicate that temperatures are rising in such a way that they may to exceed the tolerable range for the elderly, significantly escalating the health impact on this vulnerable portion of the population over time.

For investments with long operational lifetimes, such as physical infrastructure, considering future climate variability and change is critical to avoid “locking in” designs and features that are only suited to current climate. For example, if recent trends indicate that temperatures are rising to exceed the tolerable range for the elderly, significantly escalating the health impact on this vulnerable portion of the population, then greater capacity to meet these additional health care needs would need to be designed into the human health system’s infrastructure decisions.

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 No Potential Impact No Risk	Slightly Exposed Low Potential Impact Low Risk	Moderately Exposed Moderate Potential Impact Moderate Risk	Highly Exposed High Potential Impact High Risk

2.4 Key Drivers of Risks

Based on the results above, Table 4 highlights the key drivers of risk for each project component/subsector ratings, in terms of hazards that are likely to pose the greatest challenge.

The ratings for the potential impact for each component/subsector reflect the aggregate rating across multiple hazards, drawing on all of the exposure information and their own expert judgment. For example, extreme heat may have a low impact on the activities and materials required to strengthen the delivery of child health services, but the same hazard may have a significant impact on the health of the target beneficiaries—children—who are more sensitive to heat than adults.

Specific consideration should be given to those hazards which have high ratings, or are moving from moderate to high ratings over time. For example, sea-level rise may not be a key risk driver in the Historical/Current time frame; but may emerge as a key driver across multiple sectors in the future time frame. Understanding which hazards are key drivers may help flag follow-on work to manage climate risks within the design and delivery of the project.

Table 4: Key Drivers of Risk

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

Key: High Risk Moderate Risk

* If a cell is blank it implies there is 'No high or moderate risks' identified for this aspect of the project.

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

3. Next Steps

By understanding which of your health project components is most at risk from climate change and other natural hazards on the basis of the screening, you can begin to take measures to avoid their impacts by:

- Enhancing the consideration of climate and disaster risks early in the design stage of the project.
- Using your risk screening analysis to inform follow-up feasibility studies and technical assessments.
- Encourage local stakeholder consultations and dialogues to enhance resilience measures and overall success of the project.

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

Note: 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

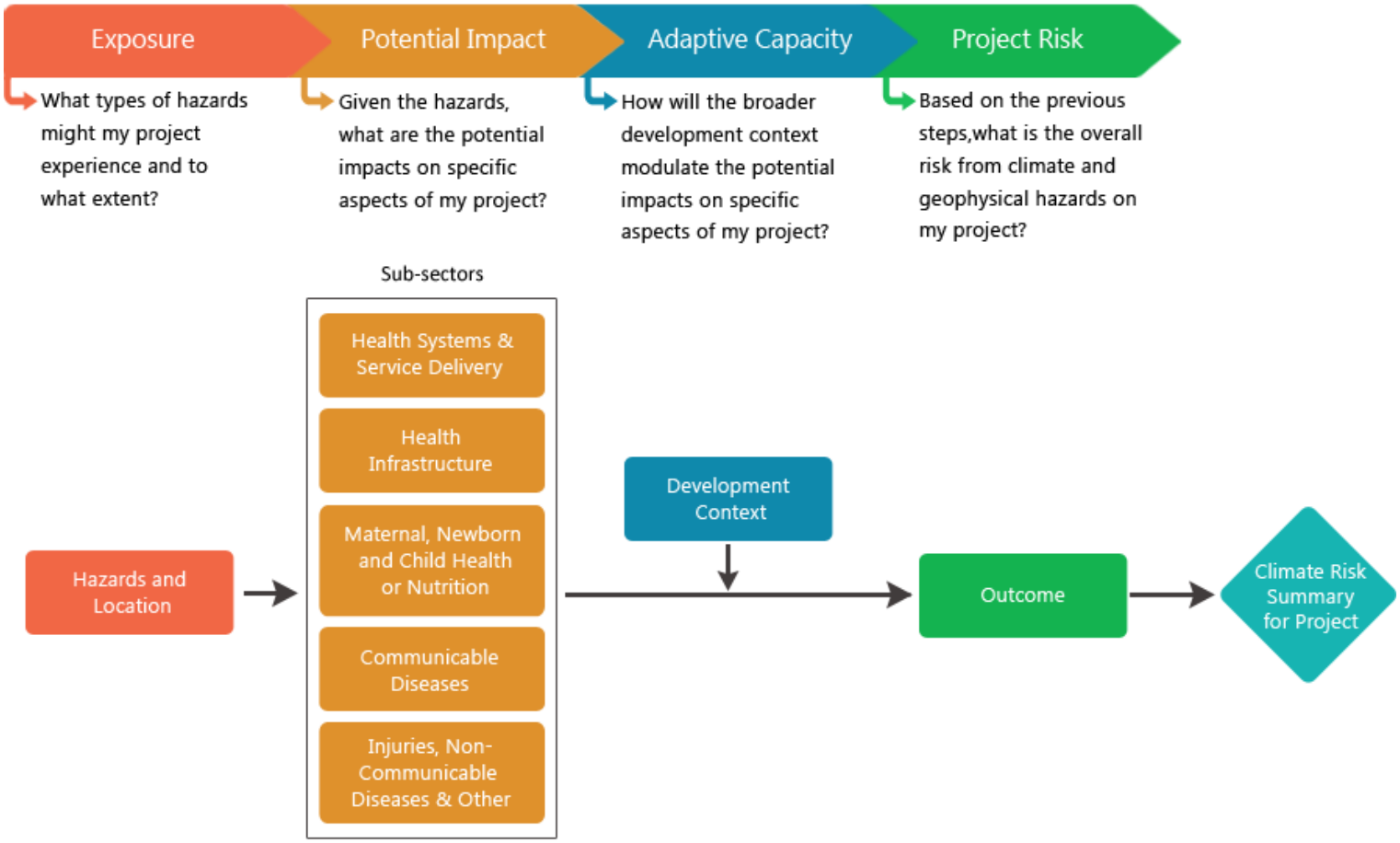
CATEGORY	PROS	CONS	EXAMPLES
Improve Basic Public Health and Health Care Services	• Flexible • Can improve baseline health conditions of the population • Prevention can lower costs • Cost of implementation can vary	• Cost of implementation can vary depending on the adaptation option	• Educating local communities about evacuation procedures to help reduce flood induced injuries and mortality • Expanding distribution of mosquito nets • Improving disease surveillance systems • Training staff to recognize and treat heat strain • Monitoring health conditions of particularly vulnerable groups
Develop Early Warning Systems	• Utilizes weather forecasts • Alerts public health authorities and the general public • Prevention can lower costs	• Requires additional adaptation responses after public health authorities and the general public have been alerted • Protects against incidences that may arise in the short-term	• Developing heat wave early warning systems • 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 • Upgrading health infrastructure to protect against physical damage • Moving hospitals onto higher ground • Increasing ambulance repair and maintenance budgets
Foster Intersectoral and Cross-sectoral Adaptation Strategies	• Flexible • Can provide more robust benefits	• Cost of implementation can vary depending on the adaptation option • Requires greater coordination	• Educating local communities about potable water quality impacts from high temperatures • Implementing land-use changes that reduce the impact of mortality from floods • 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 A1: 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.