



GLOBAL IMPACT OF CLIMATE CHANGE(1)

Environment

River flooding, heat exposure, cold waves, droughts, landslides, and air pollution



Population health

Heat-related & Respiratory illnesses, Vector-borne & Water-borne diseases, Communicable & Non-communicable) diseases, Mental health impacts



Health system

Strain on healthcare system, Increased disease burden, Increased financial burden to address the increased morbidity levels, Disruption of healthcare services, Exacerbation of Health Inequities



Nepal

CLIMATE TRENDS

Increase of **0.02°C** in annual temperature since 1980 (2) and a projected rise of **1.2°C to 4.2°C** by 2080(3)

Increase in floods, landslide, monsoon period from **106 to 120 days**(4)

To enhance health system climate resilience, improved planning and resource management are needed in alignment with the existing “Nepal Government Health National Adaptation Plan(s).”

HEAT, EMISSIONS, VULNERABILITY

4 Million Nepalese exposed to the dangers of extreme heat(5,6)

0.027% global greenhouse gas emissions & ranked as 139th out of 182 countries with low capacity to adapt to climate change(7)

4th among global climate-affected countries(8)

SUSTA MUNICIPALITY NAWALPARASI WEST DISTRICT LUMBINI PROVINCE



Population: 386,868 (2021)

In 2023, the **Nawalparasi District** recorded the **highest temperature in 44 years**, at 44 degrees Celsius(9).

Climate change vulnerability Index- Moderate

CLIMATE CHANGE, HEALTH VULNERABILITY AND ADAPTATION ASSESSMENT

The study's main objective was to assess the **area's vulnerability** to climate change by **analyzing temperature and rainfall (2011-2022)**, and **disease trends (2018 –2023)**, as well as **evaluating community and health system vulnerability**.



METHODOLOGY

Meteorological data gathered from **Semari station (index 0728)**, **Nawalparasi**, **infectious disease records** were reviewed from the Health Management Information System(HMIS), a **community survey** was conducted to **gauge vulnerability profiles**, **focus groups** were convened for **local expert knowledge**, and **healthcare facilities' susceptibility to climate change** was evaluated according to **WHO Checklists to Assess vulnerabilities in Health Care Facilities in the Context of Climate Change**.

PERCEPTIONS OF KEY STAKEHOLDERS ON CLIMATE CHANGE

STUDY POPULATION

MoHP
Nepal Health Research Council
Local government
Local health authorities
Local communities
NRCS
Climate Change activists
I/NGOs

THEMATIC QUALITATIVE ANALYSIS

Theme 1: *How Climate Change and Pollution Impact Health*

Theme 2: *Raising Community Awareness and Engaging with Climate Change*

Theme 3: *Developing Government Policies and Interventions for Climate Health*

Theme 4: *Building Capacity for Healthcare Professionals to Address Climate Health*

DATA COLLECTION

8 In-Depth Interviews(IDIs):

5 IDIs with fields/local experts

3 IDIs with national-level authorities

- MoHP
- Nepal Health Research Council
- Climate Change activists

Focus Groups(FGD): 3 FGDs

WHAT DO PARTICIPANTS THINK ?

- High water and vector-borne diseases
- Negative impact on agriculture
- Increase in malnutrition

“Unseasonal floods occur, due to climate change. Sometimes it is very cold, and sometimes it is very hot. When we plant rice, rainfall doesn't occur. During the time of harvesting of wheat, a flood occurs. That's the reason. Due to this unseasonable change due to the climate change, the environment became unseasonal.”

“To date, there has been no such thing from the higher level. Throughout my 20 months of employment here, I haven't come across any.”

- Lack of guidelines and protocols
- Need more coordination between local and central authorities
- Disparity in managing natural resources between neighbouring countries



- Lack of community awareness programs
- Lack of Skilled workforce
- Need for Collaborative effort to handle Emergencies

“There is also a lack of awareness programs in the community. And some even prefer to consult a private doctor instead of paying a visit here. There is a prevailing belief among some individuals that community health posts are ineffective we lack medications and all.”

“We should provide training to health staff related to the impacts of climate change on public health and give them the knowledge to mitigate it, to enhance their capacity, then they will do what they can and will refer if the referral is necessary”.



HEALTH FACILITY VULNERABILITY CHECK

In the assessment of the various health facilities, there is a general trend of significant risks across multiple areas. **Workforce protection** and **safety** emerge as critical concerns; **emergency response capabilities** are another prominent risk area. **Operational continuity** is uniformly at risk.

Additionally, **infrastructural adaptations** for emergencies and **mitigation measures** present challenges. While some variations exist, such as differences in water sanitation and energy safety measures, the overall picture highlights substantial vulnerabilities that need to be addressed across the board.

VULNERABILITY LEVEL

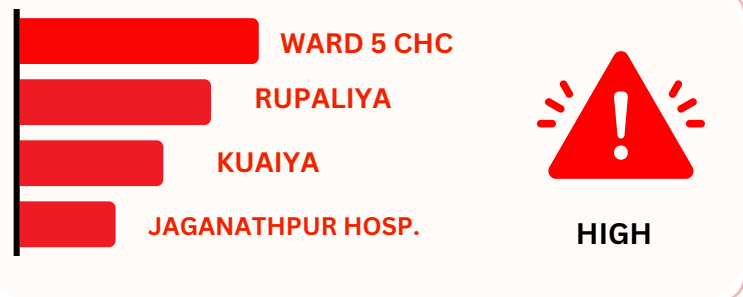
Low: Able to respond

Medium: Basic/Incomplete preparation

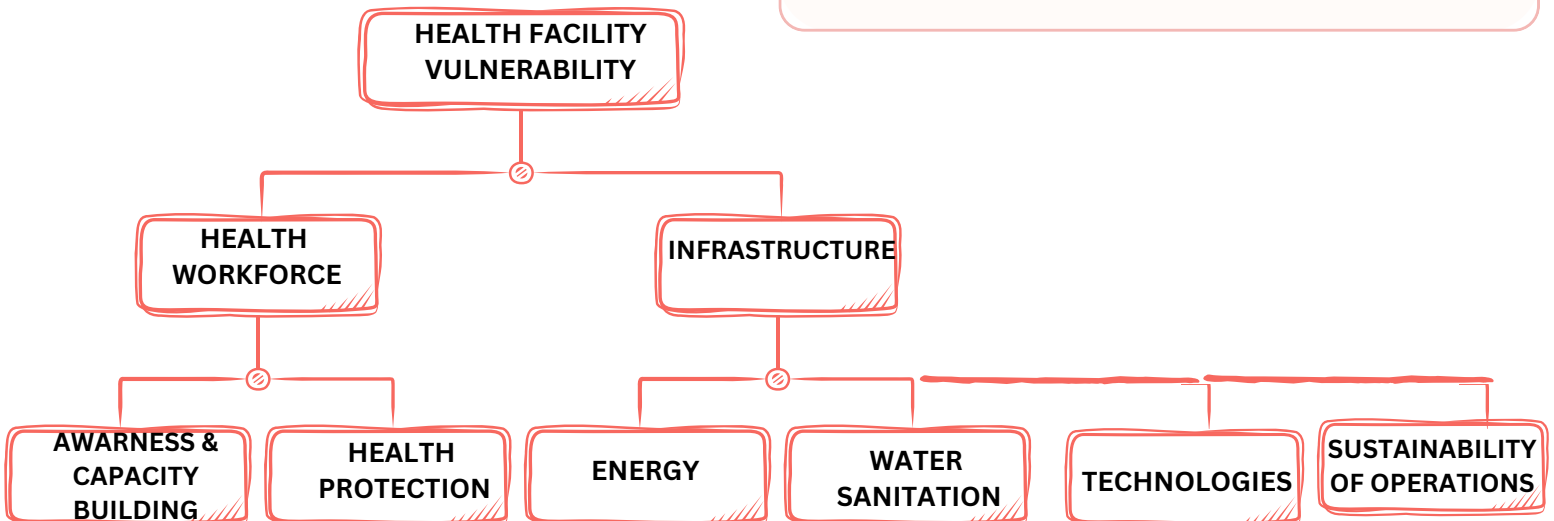
High: Unprepared



LEVEL OF HIGH RISK/UNPREPARED AREAS AT EACH HEALTH FACILITY



HEALTH FACILITY VULNERABILITY ASSESSMENT AREAS



HOUSEHOLD SURVEY OF 207 AND COMMUNITY VULNERABILITY ASSESSMENT

DEMOGRAPHICS

- **Over half** of the household heads had the education **of and lower than grade 5**
- About **2/3** of the households reported an **income lower than 14,000** Nepalese rupees (105 USD) per month
- **Over 2/3** of respondents reported livelihood on **agriculture**

PERCEPTIONS OF CLIMATE CHANGE

- **Most** of respondents had heard of climate change and believed climate change could affect human health
- **Over 3/4** respondents had participated in the survey reported the climate where they lived had changed in the past 15 years
- **Perceived reasons** of climate change according respondents were deforestation, industrialization, and natural reasons

ADAPTATION

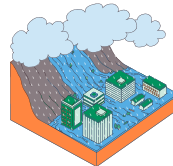
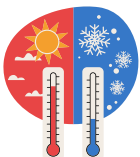
- **Over 3/4** of households **did not know** if their community was prepared for the next extreme weather event
- **Nearly 9 out of 10** respondents reported **to be unprepared** for the next climate disaster
- **Almost 3/4** households **did not have a plan** for natural disasters or extreme weather event

REVIEW OF CLIMATE TRENDS

A historical baseline from 1980 to 2010 was used to assess climate variation for the study period from 2011 to 2022.

Temperature

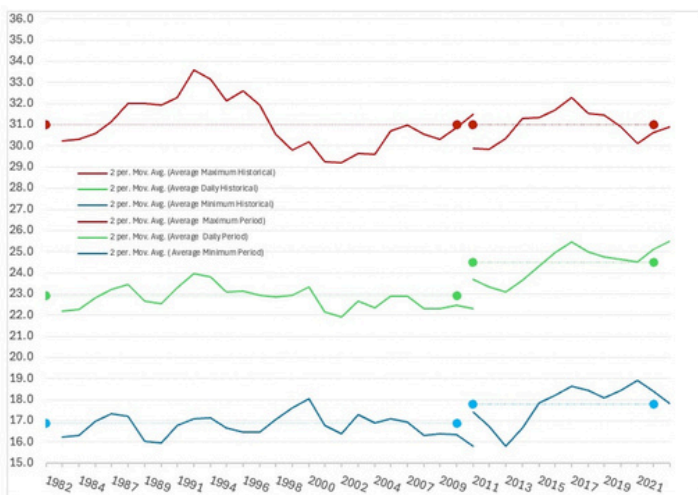
- Asymmetric warming trend daily minimum temperature increasing more rapidly than maximum



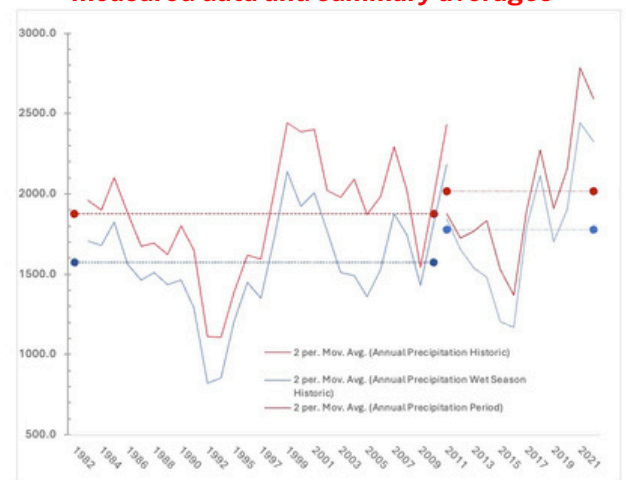
Rainfall

- Annual precipitation increased
- Annual precipitation in wet season increased

Temperature trends for the historical baseline (1980-2010) and study period (2011-2022): measured data and summary averages



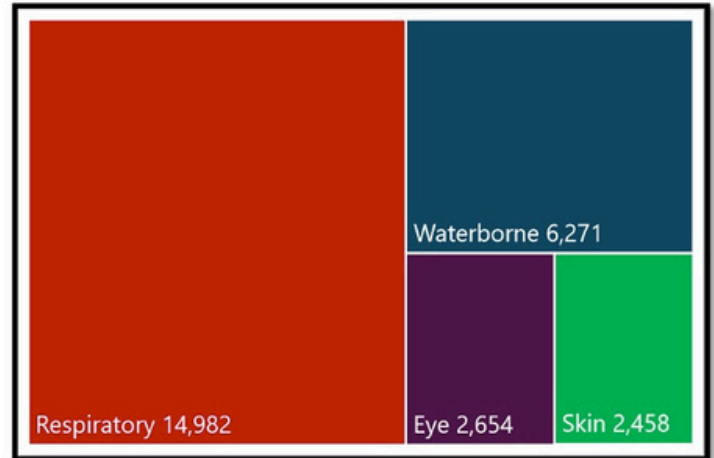
Rainfall patterns for the historical baseline (1980-2010) and study period (2011-2022): measured data and summary averages



EPIDEMIOLOGICAL TRENDS

INFECTIOUS DISEASE BURDEN : 2018-2023

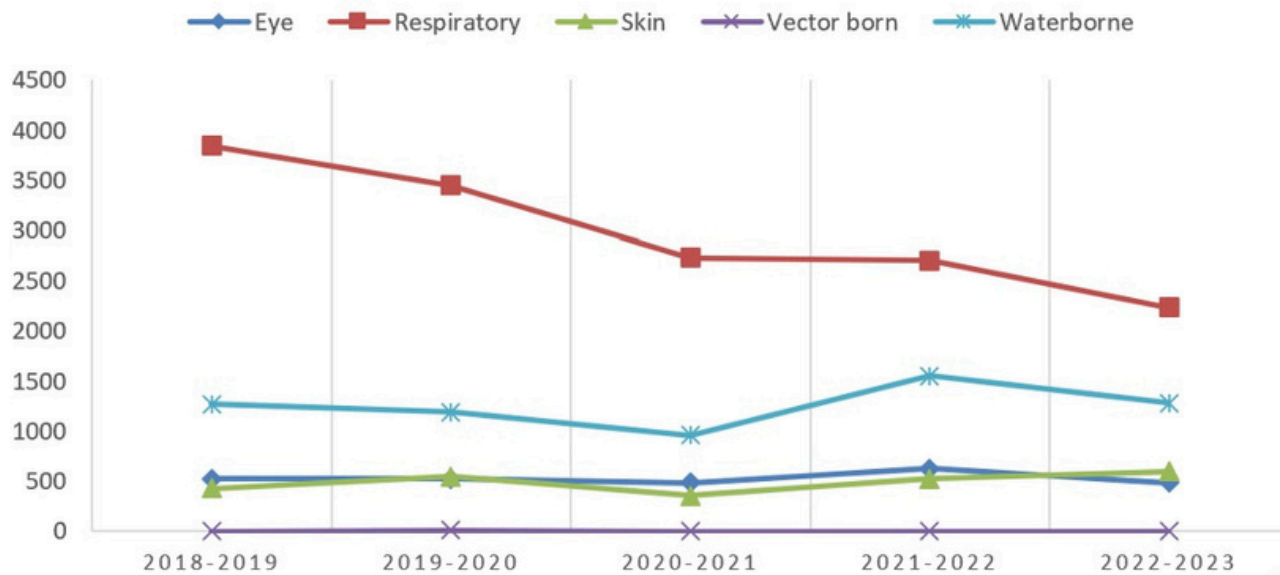
A proportional case analysis of climate-sensitive infectious diseases over the last 5 years revealed that **respiratory diseases** had the highest number of cases, followed closely by **waterborne diseases**. **Eye and skin diseases** had a comparable caseload, while **vector-borne diseases** exhibited the lowest burden in the area.



DISEASE TRENDS ANALYSIS: 2018-2023

Disease trends have remained relatively **stable over the past 5 years**, with the exception of a significant decrease in respiratory infections (under reporting may have influenced the report).

DISEASE TRENDS FOR SUSTA REGION 2018-2023



LIMITATION OF THE STUDY

Certain methodological factors may **limit the generalizability** of the results, thereby affecting the internal and external validity of the study. Consequently, some findings may vary from official Nepalese health and socioeconomic data, **further analysis is recommended**.

SNAPSHOT

Increase in minimal temperatures.



High Burden of climate sensitive diseases



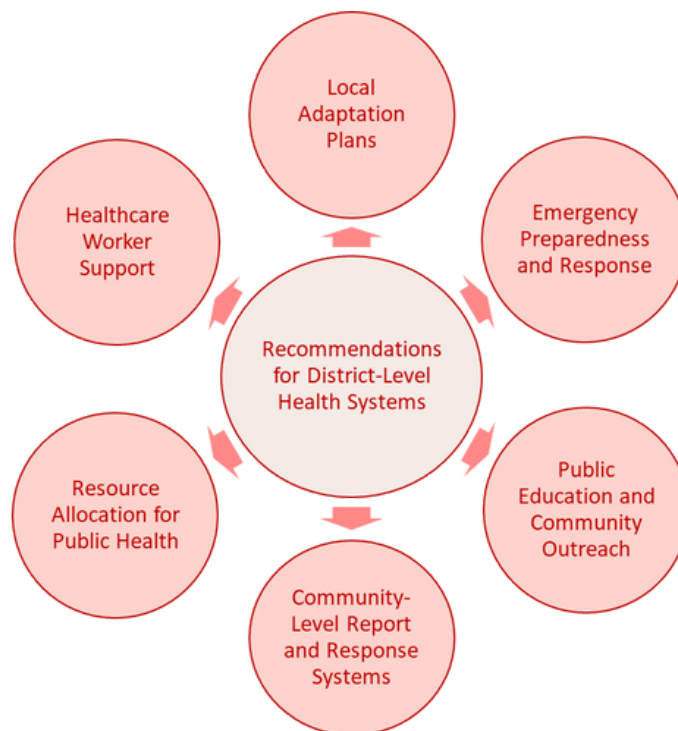
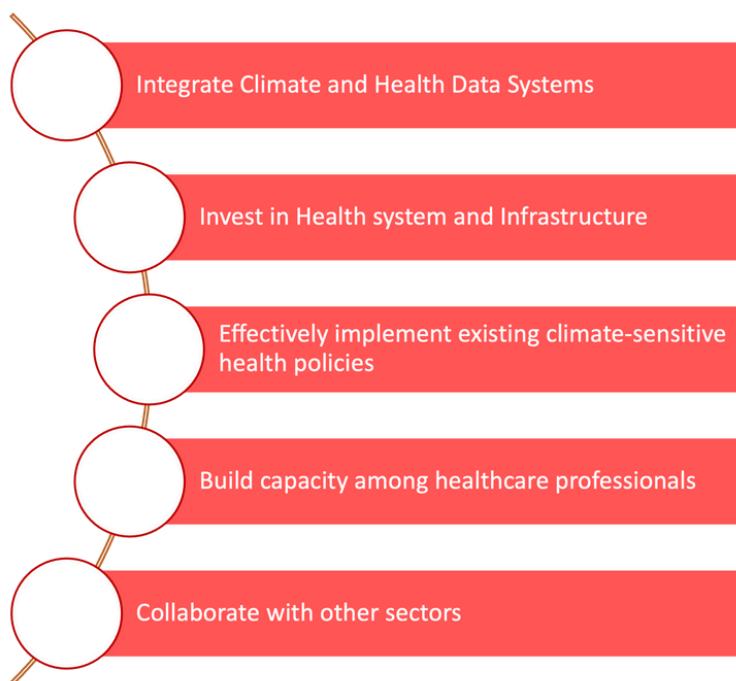
Disparities in community preparedness for climate event



Vulnerabilities in healthcare infrastructure



ESSENTIAL TAKEAWAYS



Recommendations for Health facilities

Carbon footprint assessments

- To enhance the understanding of greenhouse gas emissions and explore effective mitigation strategies

REFERENCES

(1)WHO. (2023). Climate change.
 (2)Society NRC. (2023). Climate and Environment Policy 2023. Kathmandu, Nepal.
 (3)Nepal Go. (2021). National Adaptation Plan (NAP) 2021-2050
 (4)Group WB. (2021). Climate Risk Country Profile Nepal.
 (5)Group WB. (2023). Climate risks, exposure, vulnerability and resilience in Nepal.
 (6)Nepal TR. (2022). 2023 the warmest year in Nepal in 13 years." The Kathmandu Post.
 (7)Dame UoN. (2023). ND-GAIN Country Index Scores.
 (8)Khatakho R, Gautam D, Aryal KR, Pandey VP, Rupakhety R, Lamichhane S, et al. (2021). Multi-Hazard Risk Assessment of Kathmandu Valley, Nepal. Sustainability, 13(10).
 (9)Poudel A. (2023). Changing climate raises alarm in Nepal. The Kathmandu Post.

***THE CLIMATE CHANGE, HEALTH VULNERABILITY, AND ADAPTATION ASSESSMENT REPORT CONTAINS ADDITIONAL INFORMATION AND COMPLETE REFERENCES.**