



CLIMATE VULNERABILITY ASSESSMENT

OF PUBLIC HEALTH FACILITIES IN RAIPUR & KORBA DISTRICTS OF CHHATTISGARH FOR CLIMATE RESILIENT HEALTH INFRASTRUCTURE





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Acknowledgments

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About the Report

The climate vulnerability assessment report provides an understanding of the vulnerabilities of the healthcare infrastructure which is crucial to formulate adequate strategies to attain climate resilience in the healthcare systems. The vulnerabilities may include threatened or disaster-prone areas, where a society, infrastructure, service, geographic area, or ultimately people's health is likely to be affected or disrupted by the impact of special risk. According to Intergovernmental Panel on Climate Change's (IPCC) Fourth Assessment Report (2007), *Vulnerability is the degree to which a system is susceptible to and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity*¹.

To determine the experiences of health centers facing extreme weather events a vulnerability assessment questionnaire was developed. Data was collected using the pre-tested questionnaire. **The questionnaire had three major sections.**

Past history of experiencing extreme weather events

History of damage/ impacts of healthcare infrastructure/ services; and

Preparedness to tackle the impacts of extreme weather events (Annexure I).

Based on purposive sampling, two districts of Chhattisgarh namely – Raipur and Korba were purposely chosen for this study. A list of public health facilities (Urban and Rural) from selected districts was drawn from the website under the Department of Health & Family Welfare, Govt of Chhattisgarh². A total of 56 healthcare facilities (Dr. B.R. Ambedkar Medical College and Hospital; two District hospitals, six Community Health Centers, and randomly selected 47 Primary Health Centers) from these two districts were studied (Annexure - II). Data was collected using an Android-based mobile application – Kobo collect. Data was compiled and analyzed in Microsoft Excel 2013. Descriptive analysis was carried out and proportions were identified for the study variables.

KEY CHALLENGES/DISTURBANCES

faced by the 56 public health facilities identified through this assessment:

- ≡ Health services of 11% of public health facilities are interrupted due to climatic conditions.
- ≡ Staff of 13% of public health facilities are unable or find it difficult to report to duty during a climatic disaster.

1. https://www.ipcc.ch/site/assets/uploads/2018/03/ar4_wg2_full_report.pdf

2. cghealth.nic.in

- ≡ In 16% of public health facilities patients are unable to reach the health centre due to the situations created by the climatic conditions.
- ≡ Functionality of 52% of the public health facilities are interrupted due to electric failure (situation created by thunderstorms and lightning, most of the health facilities are solarized).
- ≡ Interruption in water supply and drought-like situations are reported by 32% of public health facilities.

RECOMMENDATIONS

- ≡ Energy audits and water audits must be routinely conducted by all the existing public health facilities. These audits should be taken up with the involvement of the health facility staff.
- ≡ Based on the audit findings the existing public health facilities must be retrofitted to become climate-resilient infrastructures and this should be considered while planning the new health facilities.
- ≡ Staff should be trained on the optimal utilization of solarization.
- ≡ Repair and maintenance of the electrical infrastructure including electrical wiring, equipment, earthing, and transformers should be systematized and taken up periodically
- ≡ When selecting locations for the new health facilities, it is important to consider policy guidelines. Facilities situated in close proximity to the mines are vulnerable to tremors that affect the infrastructure. Moreover, the facility located on the highways are lower than the road level, encounter water flow that could impede their operations and can negatively impact their functionality.
- ≡ Refresher training for the medical officers and health professionals for seasonal outbreaks including, but not limited to epidemics, thunderstorm, heat waves, snake bite should be a regular feature of capacity building.
- ≡ Scenario-based disaster management plans or climate resilient health action plan for health facilities must be drafted involving health facility staff and in consultation with the local communities
- ≡ Mock drills and frequent editions of plans must be done in coordination with the to the healthcare workforce.
- ≡ A backup plan for public health facilities should be done in participation of the panchayat/women/youth/civil societies.

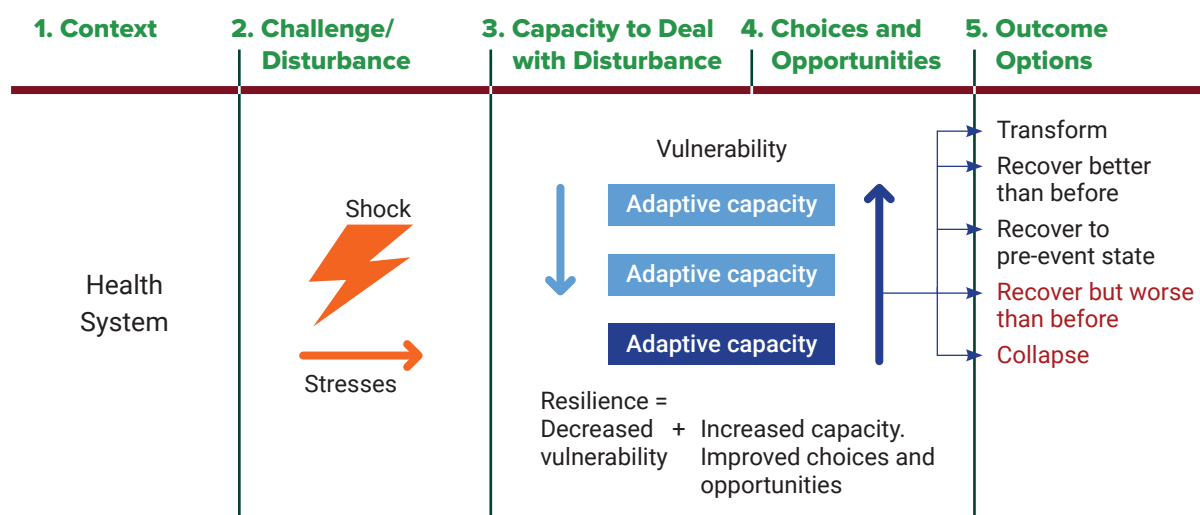
Highly prone to heat Public Health Facility



Introduction

The health sector's efforts over the last couple of decades to improve population health realized the risk of being eroded as the climate changes. Regional level impacts of climate change, including increasing severity and frequency of extreme weather events (EWEs) and changes in temperature and precipitation patterns, can lead to direct and indirect impacts on health and well-being through mediating factors such as social capital, age, gender, health status, demographics, and public health infrastructure. Health effects, including mental illness, malnutrition, allergies, cardiovascular diseases, infectious diseases, injuries, respiratory diseases, and food-, water- and vector-borne diseases, arise from direct pathways of climate change effects, such as increasing severity and frequency of storms, floods, droughts, and heatwaves, or indirect pathways through changes to water quality, air pollution, land use, and ecosystem changes (e.g., ocean health). These health impacts, particularly to those most vulnerable, can increase pressures on health systems, including damage to infrastructure and disruption of health services, thereby testing the resilience and capacity of the health system to withstand increased shocks and stresses^{3&4}.

The terms “**vulnerability**” and “**risk**” are often used to describe the potential (adverse) effects of climate change on ecosystems, infrastructure, economic sectors, social groups, communities, and regions. This report is structured based on the conceptual framework for resilience provided in the “Operational Framework for Building Climate Resilient Health Systems” developed by the World Health Organisation⁵. The findings of this assessment is provided under the components showed in the figure below:



Source: Adapted from *Defining disaster resilience: A DFID approach paper* (8).

- World Health Organization (WHO). WHO Conference on Health Climate Change, Geneva, Switzerland, 27–29 August 2014. Available online: <http://www.who.int/globalchange/mediacentre/events/climate-health-conference/whoconferenceonhealthandclimatechangefinalreport.pdf> (accessed on 15 September 2018).
- An Assessment of Climate Change and Health Vulnerability and Adaptation in Dominica Rebekka Schnitter,^{1,*} Marielle Verret,¹ Peter Berry,^{1,2} Tanya Chung Tiam Fook,³ Simon Hales,⁴ Aparna Lal,⁵ and Sally Edwards⁶ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6339242/>
- https://apps.who.int/iris/bitstream/handle/10665/189951/9789241565073_eng.pdf



With rapidly changing climatic conditions, people across the country are experiencing the impacts of climate change in terms of rising temperatures, extreme weather events like floods, cyclones, droughts, etc., and worsening air quality, and so on. These climate-induced events cause chronic stresses and acute crises in healthcare facilities as they directly tend to adversely impact human health. The Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) states with very high confidence that “the health of human populations is sensitive to shifts in weather patterns and other aspects of climate change”⁶. A recent climate vulnerability assessment conducted by the Department of Science & Technology in collaboration with the Swiss Agency for Development and Cooperation in 2019-2020, has identified 8 states including Chhattisgarh in India that are highly vulnerable to climate crisis⁷.

Climate Change affects various determinants of health such as clean air, water, food security, social security, etc., and contributes to the rise of communicable as well as non-communicable diseases⁸. These climate-sensitive health risks are disproportionately felt by the most vulnerable and disadvantaged, including women, children, ethnic minorities, poor communities, migrants or displaced persons, older populations, and those with underlying health conditions⁶. The increasing incidence of the diseases is striking the structure and function of the healthcare systems, especially during extreme weather events. When the public health facility gets adversely impacted by the effects of extreme climatic events, the communities get deprived of essential healthcare services, which also stands as the place of reference for safety.

The districts of Raipur and Korba are identified as ‘Relatively High Vulnerable’ and ‘Relatively Moderate Vulnerable’⁵. Raipur has experienced and is vulnerable to the following climatic events such as drought, heatwaves, intense rainfall, floods, and lightning. Similarly, Korba is vulnerable to floods, drought and forest fires. This assessment study was conducted to understand the vulnerability of healthcare centres in Raipur and Korba districts to extreme weather events and to explore the preparedness of healthcare infrastructure to mitigate the health impacts due to climate change. A total of 56 public health facilities were assessed for this study (Table 1).



6. https://www.researchgate.net/publication/307616041_How_do_we_assess_vulnerability_to_climate_change_in_India_A_systematic_review_of_literature. IPCC Fourth Assessment Report: Climate Change 2007]
7. <https://dst.gov.in/sites/default/files/Full%20Report%20%28%29.pdf>
8. <https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health>

Table 1: Details of Public Health Facilities (PHFs) and Respondents

Type of PHFs	No. of PHFs in Raipur	No. of PHFs in Korba	Total PHFs studied	Respondents
Medical College and Hospital	1	N/A	1	Medical superintendent
District Hospital	1	1	2	Civil Surgeon
CHC	6	5	11	BMO/ RMA/ Nursing Staff
PHC	18	24	42	MO/RMA/AMO/ Nursing Staff
Total	26	30	56	

CHALLENGES/DISTURBANCES

Chhattisgarh is a central Indian State a tropical climate. The state encounters hot and humid summers and pleasant/extremely cold winters due to its distance and altitude from the sea/ocean. In the last two decades, the state has experienced serious impacts from droughts and in 2017-18, 96 out of 150 tehsils in the state were affected and 22 affected tehsils were from Raipur. The state encounters frequent and severe flooding which is considered one of the most devastating disasters. According to the data from the Revenue and Disaster Department, the state receives more than 80% of the annual rainfall in a short span of 3 months which has resulted in poor drainage of heavy silt, and flood water and also damages the embankments. A total of 9 out of 27 districts have been identified as high flood-prone areas based on historical data. Lightning is also found to cause human casualties and loss of livestock. It was reported that between 2011-15, a total of 1058 people died due to lightning in Chhattisgarh and four districts – Korba, Raigarh, Mahasamund and Bastar are experiencing a high occurrence of lightning. The state is also vulnerable to the impacts of earthquakes, storms/cyclones, heat waves, (forest) fires, epidemics, cold waves and landslides⁹. Table 2 shows the occurrence of extreme climatic events reported in the last three years by the Public Health Facility (PHF).

The Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) states with very high confidence that “the health of human populations is sensitive to shifts in weather patterns and other aspects of climate change.”¹ These can be direct health impacts such as deaths and illness resulting from more intense heat waves, fires, floods, and droughts and damage to health infrastructure and indirect impacts caused by changing patterns of disease vectors, respiratory illnesses caused by declining air quality, and reduced food production thereby resulting in poor nutrition.(8)

Trending impacts of climate change, directly and indirectly, impacts health and cause unpredictable disasters leading to medical emergencies which makes it all the way more important for the health facility and its infrastructure to be well prepared to not only face the disasters but also deal with the aftermaths of the disaster on the population providing quality health services without interruption and stand firm as a center of security and safety.

9. <http://sdma.cg.gov.in/sdmp%20english.pdf>



Aim

To review the preparedness of public health facilities of Raipur and Korba Districts of Chhattisgarh in relation to disaster and climate vulnerability.



Objective

1. To determine the likelihood of disasters due to climatic conditions faced by the Public Health Facilities
2. To identify the types of interruption or damages in public health infrastructure due to climate vulnerability.
3. To assess the preparedness of public health facilities to face climatic emergencies.



Methodology

1. The cross-sectional assessment of the public health facility was conducted in the Raipur and Korba Districts of Chhattisgarh. As per convenience, two districts have been chosen: Raipur and Korba. (The cities have thermal power plants, so the likelihood of respiratory illnesses is inevitably higher.)
2. List of public health facilities (Urban and Rural) from selected districts is drawn from cghealth.nic.in [website under Department of Health & Family Welfare, Govt of Chhattisgarh.
3. Data was collected from Dr. B.R.Ambedkar Medical College and hospital; District hospitals (2), Community Health center Six (6), Primary Health Center (47) was randomly selected.
4. Data was collected with the pre-tested questionnaire capturing information related to identifying the likelihood of disasters, Infrastructure, and preparedness to face disasters due to climatic conditions. (see Annexure 1 for a detailed questionnaire)
5. Data was collected in Kobo collect the application – Kobo collects an Android-based Mobile Application tool to collect Answers with a GPS location tracker from the respondents.
6. The data collected were compiled and analyzed in Microsoft Excel 2013. A descriptive analysis was done. Frequency and proportions were identified for the study variables.

Results

Data were collected from 56 public health facilities Urban and Rural Primary Health centers (UPHC and PHC), Community Health Centres (CHC), District hospitals (DH), Medical Colleges, and hospitals from the districts of Raipur and Korba. The respondents were medical superintendents, Civil surgeons, Block Medical Officers (MO), Assistant Medical Officers (AMO), Rural Medical Assistants (RMA). The information was collected for the likelihood of the climate vulnerability faced, the event last occurred causing the interruption or damages in public health infrastructure due to climate vulnerability, and the preparedness of public health facilities to face emergency due to climate vulnerability as an impact of climate change.

Table 2: Public Health Facilities (PHFs)

Type of PHFs	No. of PHFs	Raipur	Korba	Respondents
Medical College and Hospital	1	1	N/A	Medical superintendent
District Hospital	2	1	1	Civil Surgeon
CHC	11	6	5	BMO/ RMA/ Nursing Staff
PHC	42	18	24	MO/RMA/AMO/ Nursing Staff
Total	56	26	30	

Table 3: Occurrence of Extreme Climatic Events Reported in the Last Three Years by the Public Health Facility.

Extreme Climatic Events	No. of PHFs affected (n=56)
Earthquakes	2 (3.6%)
Cyclone	3 (5.4%)
Flood	3 (5.4%)
Droughts	7 (12.5%)
Outbreak	8 (14.3%)
Fires/Forest fires	14 (25.0%)
Epidemic	26 (46.4%)
Thunderstorm & lightening	32 (57.1%)
Heat waves	41 (73.2%)
Snakebites	45 (80.4%)

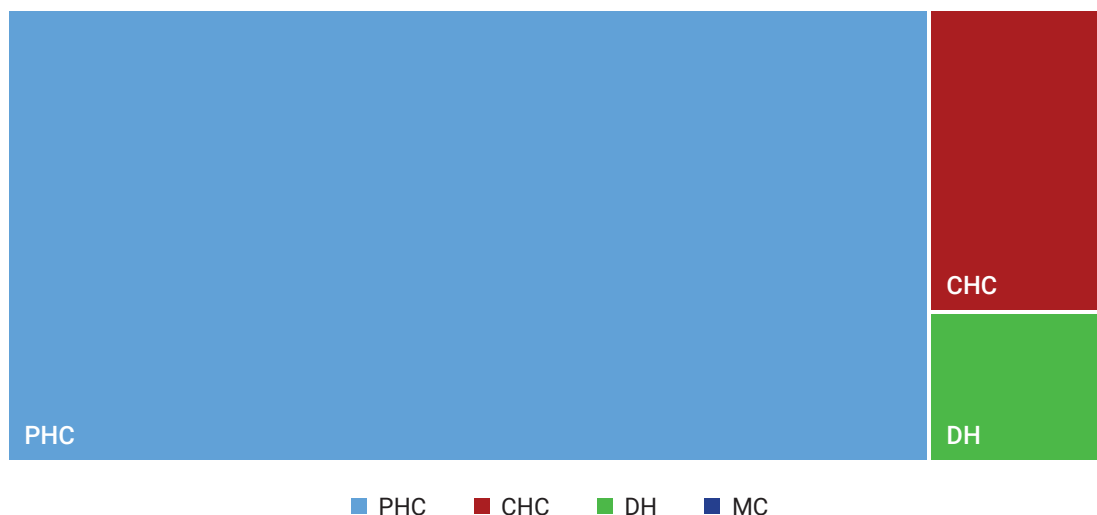
The above table indicates that the occurrence of snake bites is the highest among the other events. Based on the qualitative information collected during the study suggested that snake bites are reported during monsoon season. Heat waves are the second most occurred

climatic event followed by thunderstorms. In the times to come colors with ‘Sun Reflecting Index’ based paints can be considered to reduce the inside temperature of the facility. During thunderstorms, the PHFs receive burn injury cases but many a time they do not get reported as most affected people die in the fields and the villagers do not bring them to the health facility. Apart from that the health facilities’ equipment’s get affected by short circuit. This can be also due to poor quality of electrical wiring and maintenance which can pose a safety issue. During the above-mentioned extreme climatic events, the public health facilities reported damage to their properties (Table 4).

Table 4: Damages faced by Public Health Facilities (PHFs) in the past due to the Extreme Climatic Events.

PHF reported damage to property	No. of PHFs affected (n=56)
PHC	15 (26.8%)
CHC	2 (3.6%)
DH	1 (1.8%)
MC	0 (0.0%)
Total	18 (32.1%)

Figure 2: Health facility reported to damage to property in the past due to climate vulnerability



Out of the 18 PHFs reported damage to their facilities, four primary health centers reported damage to medical equipment and four PHFs (three primary health centers and one community health center) reported damage to medicines due to extreme climatic events. As the majority of the population in Chhattisgarh are from economically vulnerable backgrounds and tribal communities, they are more prone to loss and damage in case of any disasters. Damage to the health facility may affect the accessibility to these vulnerable populations. This demands the state health infrastructures to be more prepared to deal with imminent crises. During the extreme climatic events, PHFs have reported interruption of healthcare services due to the following reasons provided in Table 5.

Table 5: Assessment of outcomes following any disasters in the healthcare centre studied (N=56)

Outcomes	Healthcare centers	
	N	(%)
Death/injury to the healthcare center staff	5	(8.9)
Death/injury to the patients in the healthcare centre	4	(7.1)
Damage to a property of healthcare centre (eg: infrastructure, solar panel)	18	(32.1)
Health service interruption	6	(10.7)
Employees unable to/find it difficult to report to duty	7	(12.5)
Patients unable to reach hospital	9	(16.1)
Interruption in electricity supply	29	(51.8)
Interruption in water supply	18	(32.1)
Interruption in critical supplies of medicines to hospital	7	(12.5)
Damage to equipment	4	(7.1)
Damage to medicine and vaccine storage	4	(7.1)

The above table indicates that around 52% of the PHFs experience the interruption in delivering the health care services due to failure in the electric supply. The qualitative discussion revealed that most of the time during lightning the electric supply is interrupted and also damaged the facilities' equipment due to short-circuiting. About 16% of the PHFs reported that the patients were unable to reach the facility due to extreme climatic events. This is because of two reasons as shared in the qualitative discussion: 1) the location of the health facilities makes entry difficult for the patients, especially pregnant women, and 2) the links and bridges in the villages are constructed at a very low level which affects the mobility of the patients and also affects the reachability of the health care staff and supply chain of medicines.

The social vulnerabilities that get amplified due to healthcare disruption during extreme weather need to be given greater attention. With 32% of the healthcare facilities reporting infrastructure damage and 51% reporting power supply failure. This forces the marginalized population seek health care from private health services and gets into the trap of price gauging.

The early warning system needs to be strengthened. Rainwater harvesting and storage system to be implemented on a pilot basis in PHC and SHC. Traditional systems like wells and tanks are important for water security and this should be promoted in communities and around the public health facility to have less impact of heat around the PHF. The majority of PHC's have power cuts and this is still very common. Ponds in the communities can support lowering the temperature.

CAPACITY TO DEAL WITH DISASTERS

In general, the capacity to deal with disasters includes human resources, equipment, resilient infrastructure, action plans, etc. Inventory of the resources is crucial in providing organized responses to managing and mitigating the impacts at any phase of the disaster. As a first step to developing the required capacity, it is essential to identify the existing vulnerabilities and resources that are available already. Following that, based on the responses provided by the healthcare centres for the climate vulnerability assessment, maps were developed for the history of disasters versus the healthcare centres with/without any action plans. Out of 56 healthcare centres assessed, only four centres had reported having any action plans. A total of 16% of the healthcare centres had the likelihood of drought occurrence out of the 56 healthcare centres studied (Fig 2).



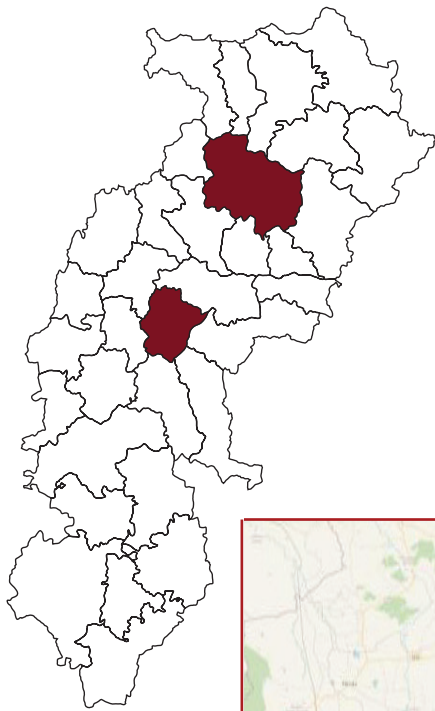
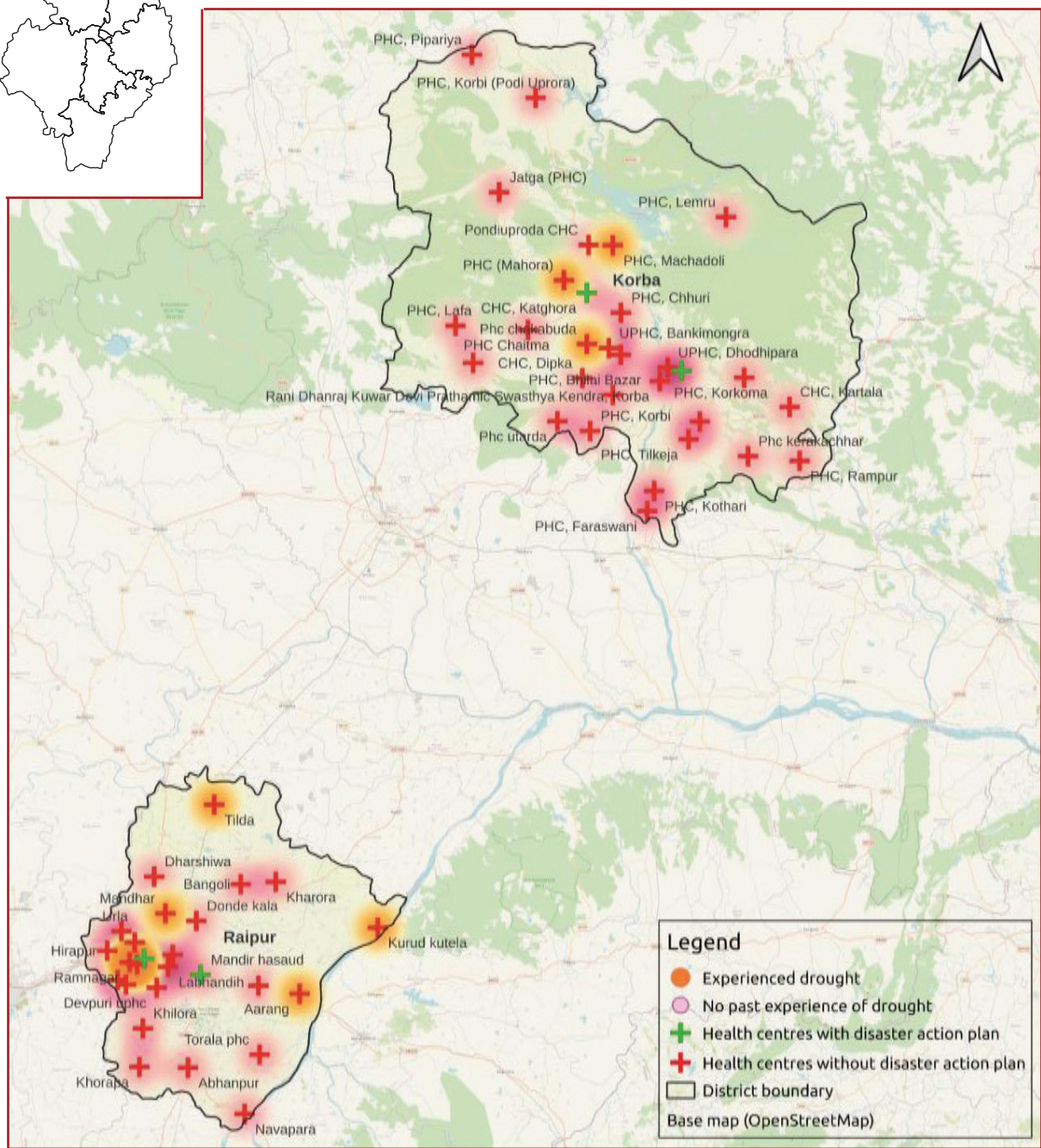


Figure 2
Healthcare center included in the study and
DROUGHT VULNERABILITY



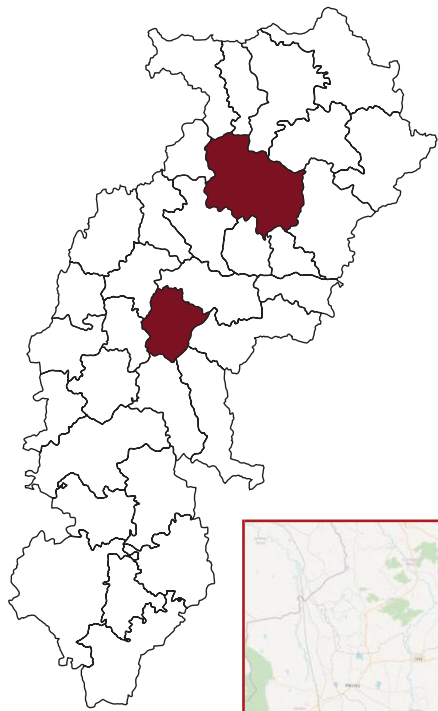
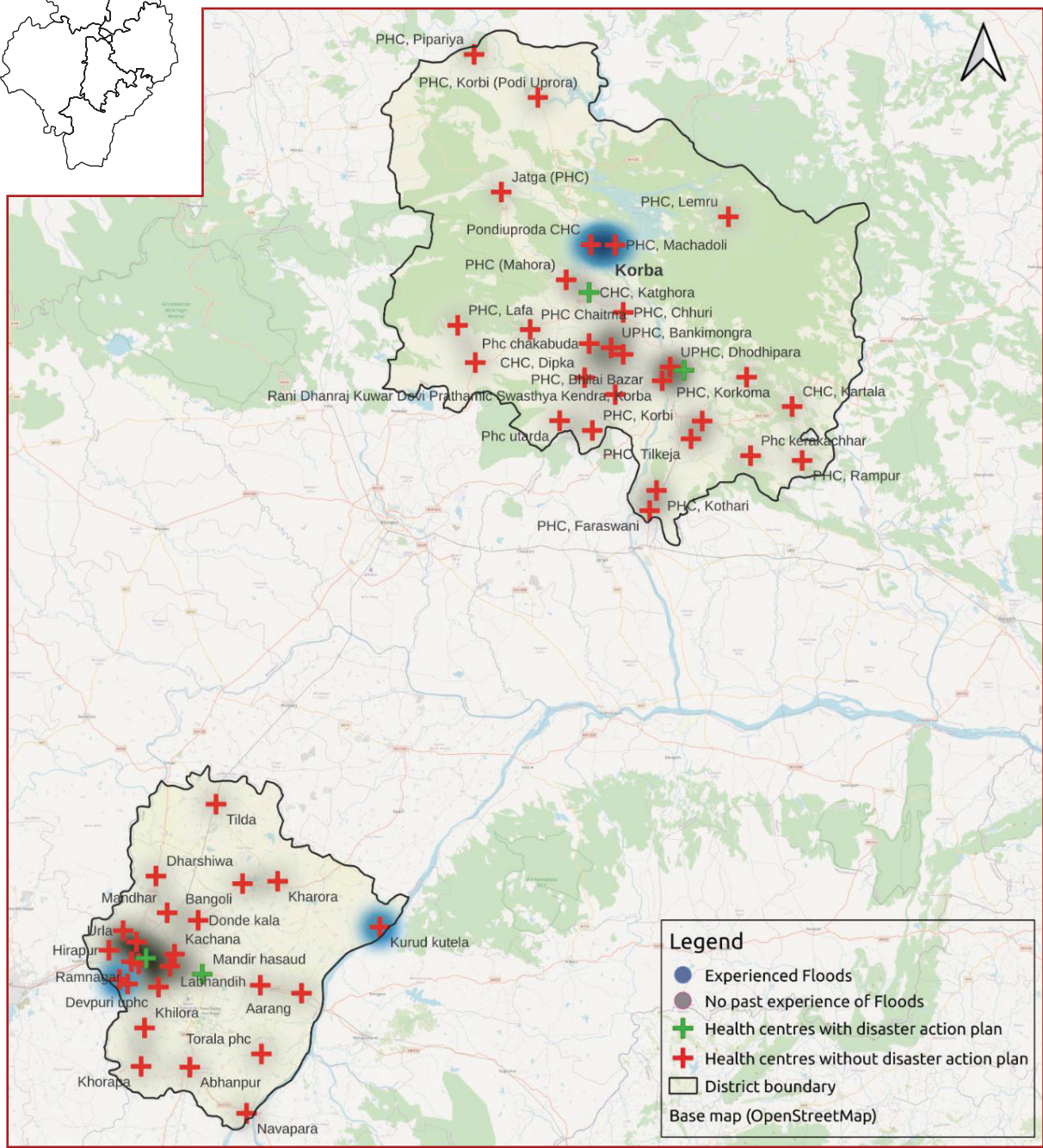


Figure 3
Healthcare center included in the study and
FLOOD VULNERABILITY



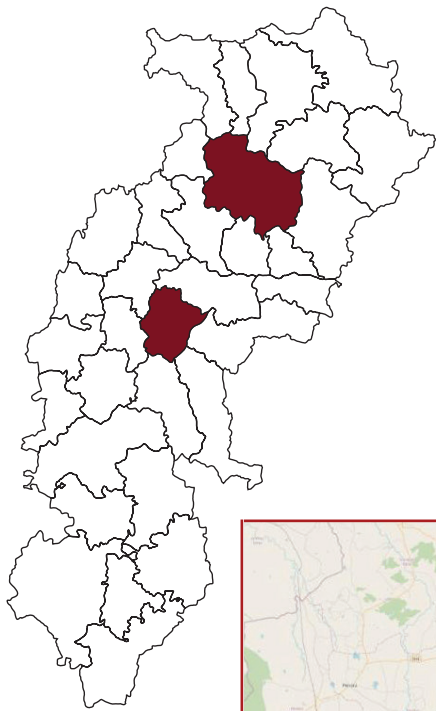
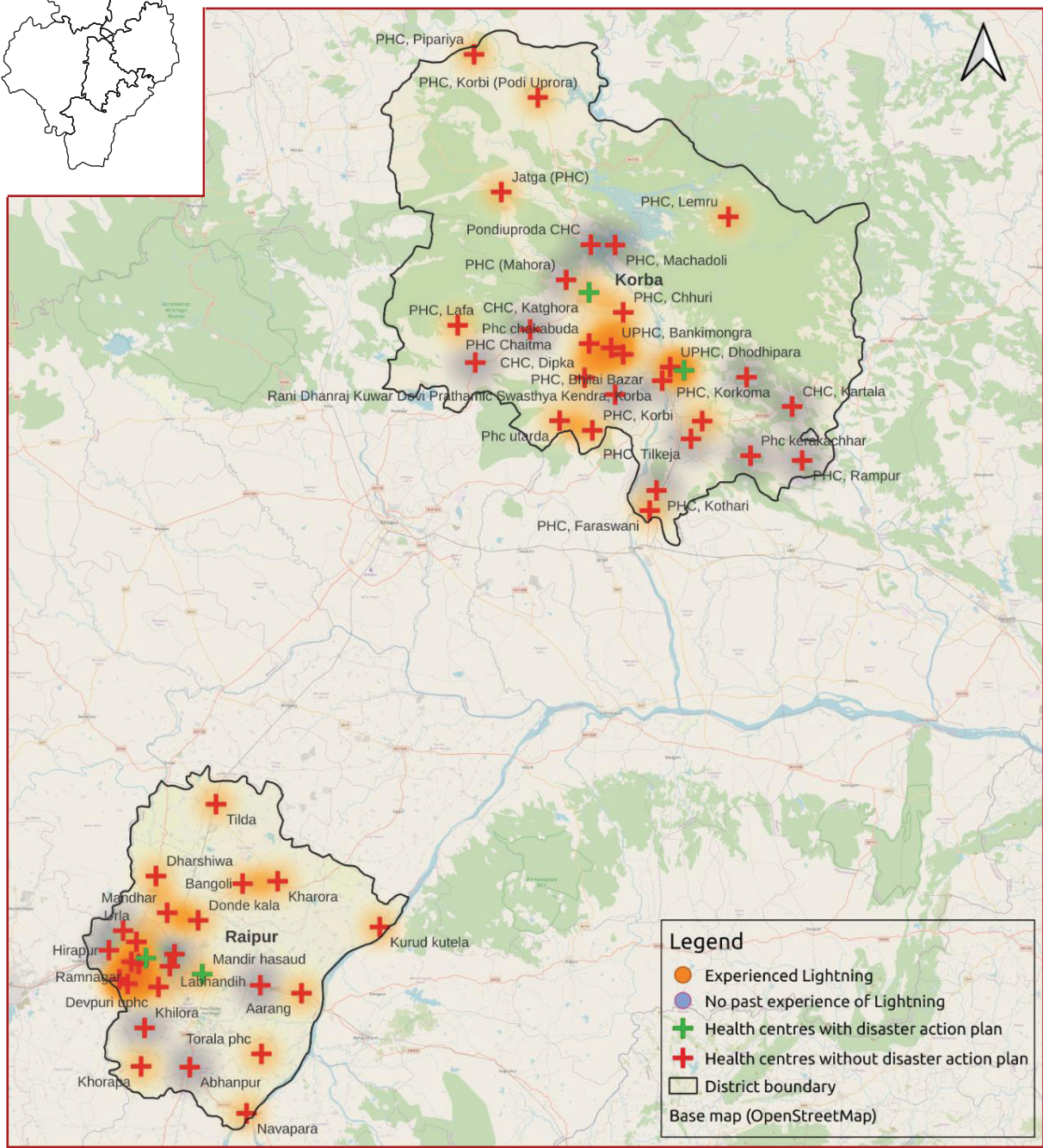


Figure 4
Healthcare center included in the study and
LIGHTENING VULNERABILITY



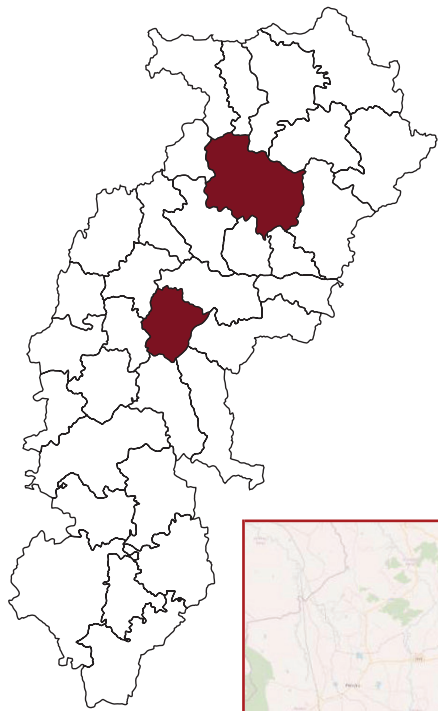
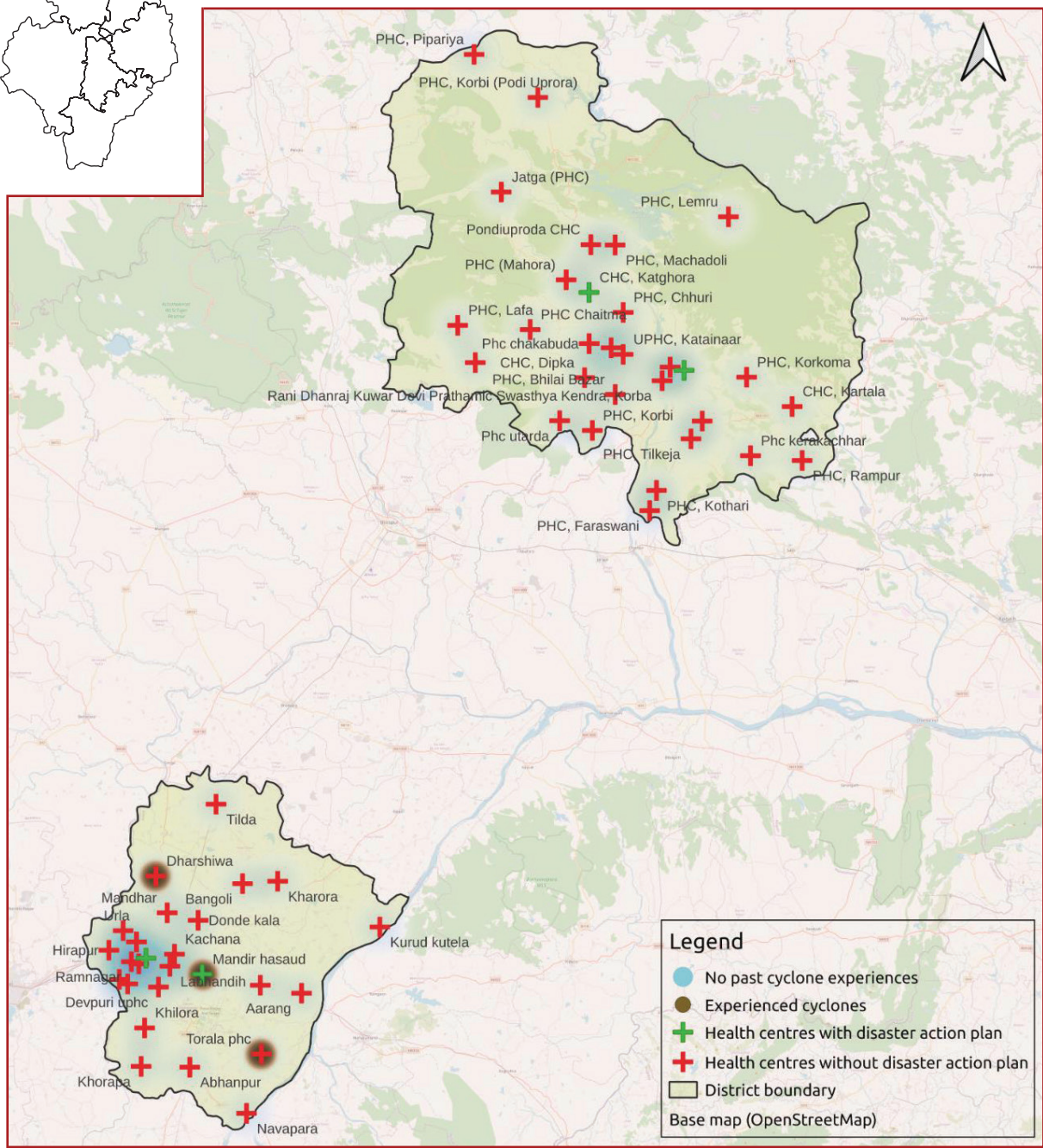


Figure 5
Healthcare center included in the study and
CYCLONE VULNERABILITY



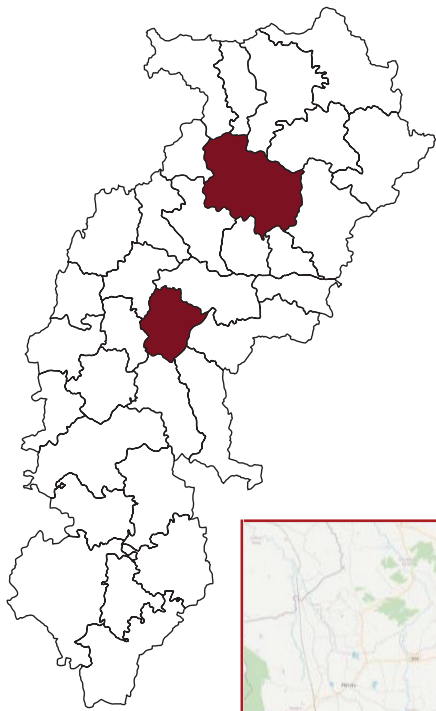
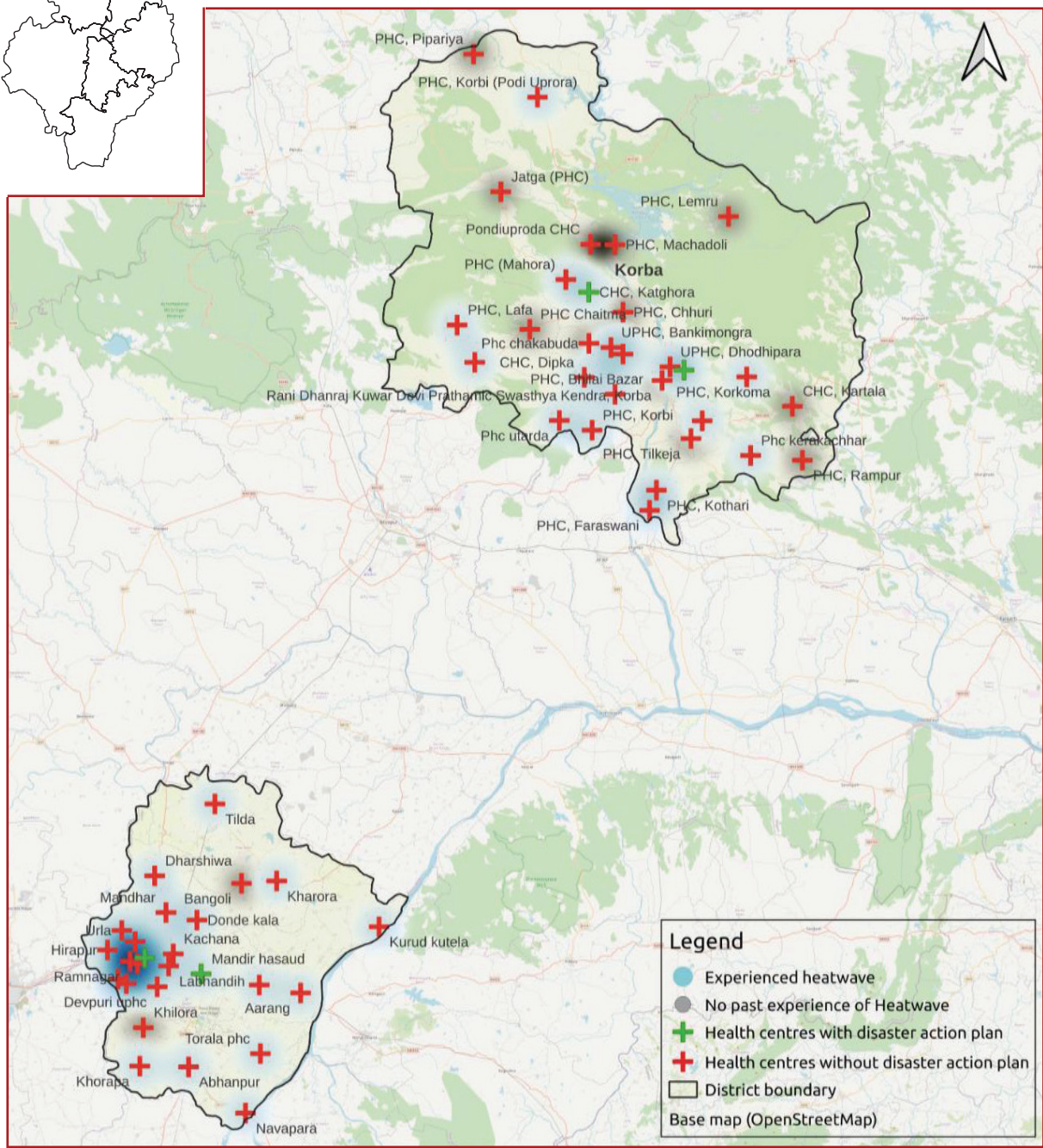


Figure 6
Healthcare center included in the study and
HEATWAVE VULNERABILITY AND
DISASTAR ACTION PLAN



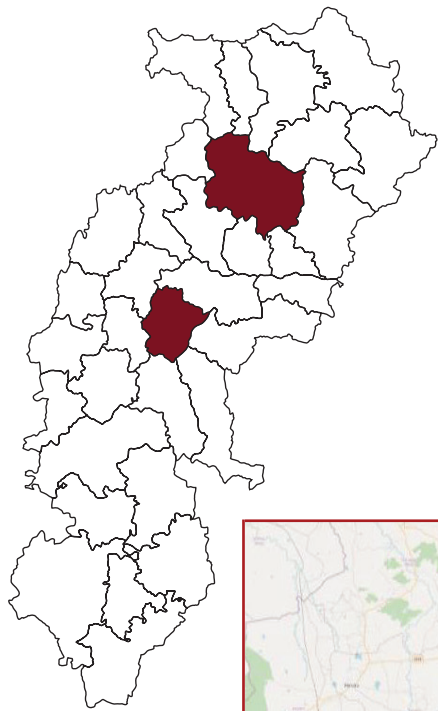
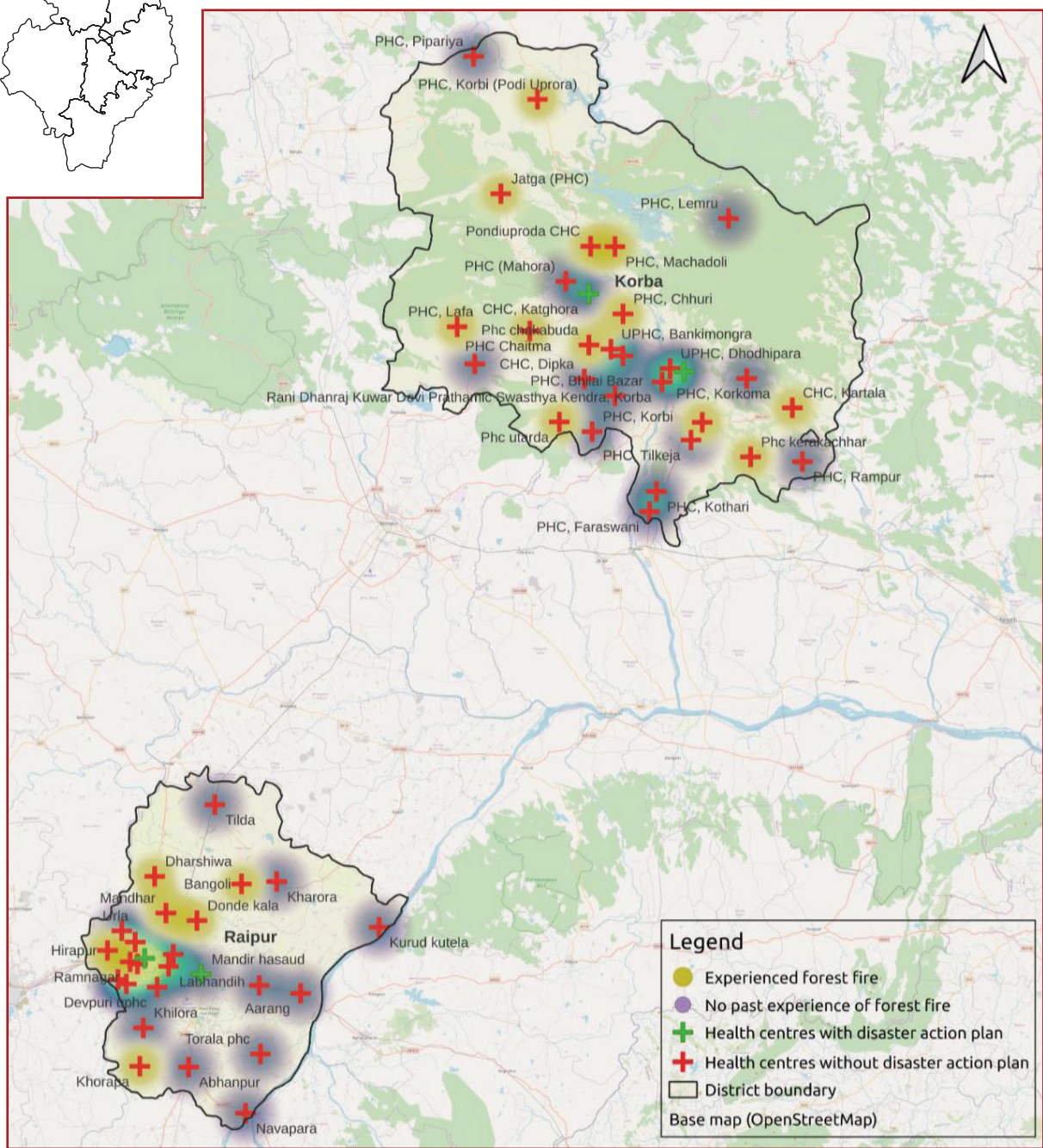


Figure 7
Healthcare center included in the study and
FOREST FIRE VULNERABILITY





Key Challenges

As mentioned in the conceptual framework for resilience, decreased vulnerability and increased capacity, as well as improved choices/ opportunities, result in resilience. In this study, only half of the healthcare centers studied had the opportunity to increase their capacities in the process of tackling future adverse events and their impacts. Based on the above four system processes, the outcome of any disaster can be categorized as recovery better than before, recovery to pre-event state, recovery but worse than before or collapse.

The following are some of the outcomes of the disasters in the healthcare centres and the surrounding communities.

- ≡ Health services of 11% of public health facilities are interrupted due to climatic conditions.
- ≡ The staff of 13% of public health facilities are unable or find it difficult to report to duty during a climatic disaster.
- ≡ In 16% of public health facilities patients are unable to reach the health centre due to the situations created by the climatic conditions.
- ≡ Functionality of 52% of the public health facilities were interrupted due to electric failure (situation created by thunderstorms and lightning, most of the health facilities are solarized).
- ≡ Interruption in water supply and drought-like situations are reported by 32% of public health facilities.



Scope of Work

In the process of building resilience, it is important to utilize the available knowledge/resources on disaster vulnerability and mitigation measures. This will ultimately create an impact on the outcome of building climate-resilient infrastructures. This includes developing and adapting disaster action plans, conducting mock drills/training, conducting training in collaboration with important stakeholders, etc. to deal with future stresses. The following table elicits the choices/opportunities utilized by the healthcare centres studied.

Table 6: Choices/opportunities adapted by the healthcare centres studied (N=56)

Choices/opportunities	Healthcare centers	
	N	(%)
Disaster action plan	4	(7.1)
Mock drills or training on particular events	17	(30.4)
Training in coordination with other agencies	13	(23.2)
Having a historical evaluation process	5	(8.9)
Coordination with local and state agencies	31	(55.4)
Coordination with nearby healthcare centres	44	(78.6)
Coordination with treatment-specific facilities	27	(48.2)

CONCLUSION

The vulnerability assessment of the public health facilities in the Raipur and Korba districts concludes that there is a need for climate-resilient health infrastructures to deliver uninterrupted healthcare services during extreme climatic events. Climate-resilient health infrastructures can be 1) In the best-case scenario, the response by the healthcare system to a disaster should be recovering better than before (disaster). By utilizing fewer choices/opportunities to improve the capacities of the disasters and their impacts, the outcome might be recovering to the pre-event state or recovering but worse than before, or 2) In the worst-case scenario, the healthcare system might not have the opportunities to recover back at all and resulting in a total collapse of the system, causing reduced resources to tackle disasters in the future. Site planning for the PHF premises is important.



Recommendations

- ≡ Energy audits and water audits must be taken up by all existing public health facilities. These audits should be taken up with the involvement of the health facility staff.
- ≡ Based on the audit findings the existing public health facilities must be retrofitted to become climate-resilient infrastructures and this should be considered while planning the new health facilities.
- ≡ Staff should be trained on the optimal utilization of solarization.
- ≡ Repair and maintenance of the electrical infrastructure including electrical wiring, equipment, earthing, and transformers should be systematized and taken up periodically.
- ≡ When selecting locations for the new health facilities, it is important to consider policy guidelines. Facilities situated in close proximity to the mines are vulnerable to tremors that affect the infrastructure. Moreover, the facility located on the highways are lower than the road level, encounter water flow that could impede their operations and can negatively impact their functionality.
- ≡ Refresher training for the medical officers and health professionals for seasonal outbreaks including, but not limited to epidemics, thunderstorm, heat waves, snake bite should be a regular feature of capacity building.
- ≡ Scenario-based disaster management plans or climate resilient health action plan for health facilities must be drafted involving health facility staff and in consultation with the local communities.
- ≡ Mock drills and frequent editions of plans must be done in coordination with the to the healthcare workforce.
- ≡ Backup plan for public health facility should be done in participation of the panchayat/women/youth/civil societies.
- ≡ The compensation for snake bites/heat waves/death due to lightening should be displayed in the health facilities as this would require certificates from the facilities.

Annexure 1

Some of the Pictures collected during the data collection



The health facility is highly prone to heat with no trees and green areas around it.



The choice of plants and trees around the health facility can be improved by focusing on the local climate and availability of plants/trees



Healthcare care facilities being affected by heavy rainfall and near mining areas which shakes the facility and impacts infrastructural damage.





The level of the health facility from the road level makes it vulnerable for water flooding in during heavy rains

PUBLIC HEALTH INFRASTRUCTURE

Annexure 2

Practical suggestions from improvement in the existing health facilities



- Sheet extensions to be encouraged – create space for use and also reduce heat gain
- Benches to be built along wall length for seating
- Solar photovoltaic for PHCs, Sub-centres – flat roof available and there is a need
- Ventilators missing in some building, present in some – standard drawing set to be verified
- Trees missing from campuses – fruit and native trees that will motivate people to take care of them to be planted



Terrace to have a single brick edge wall with rainpipes going to a soak pit



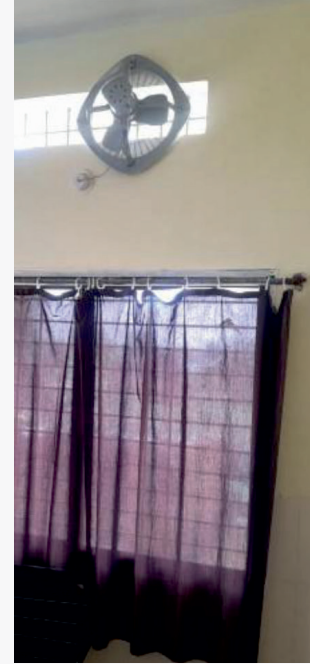
- Continuous chajja detail good however quality of construction and detailing poor
- Chajja lower side to have a drip strip – detail for the same to be developed and installed on trial basis
- Staircase to access terrace will ensure better use and maintenance of terrace space

Good design. Ventilators missing in some building (lower image) standard drawing set to be verified



Detail at roof door bottom is a good detail to keep rain water out

Provision of exhaust fan is a good detail



- Native and fruit trees to be planted – list of trees to be developed based on trees that are popular amongst people - Mango, Jackfruit (kathal), Kusum, Moringa (Drumstick), Peepal, Bargad (Banyan), Neem, palms – khajoor, tad, etc



- Tree guards to be used even if within a fenced compound
- Tree guard can be of thorny bushes
- Old sarees/ other such material to be tied around tree guard
- Responsibility of tree upkeep to be clearly defined



- A wide variety of trees, shrubs, creepers that provide food and nutrition have traditionally been cultivated in home gardens
- In addition they are important from the heat perspective
- There is greater variety in tribal areas and the same can inspire other areas
- Quality saplings to be provided for planting in homes and farms – tie up with Horticultural/agri/forest department
- In some areas Moringa leaves and flowers are not consumed, the same should be communicated, this may be the case with other species too

Annexure 3

Climate Vulnerability Health Facility Assessment

Name of the Facility:

Type of Health Facility

- Medical College and Hospital
- District Hospital
- CHC
- PHC

Location

latitude (x.y °)

longitude (x.y °)

altitude (m)

accuracy (m)



Photo of Health Facility

[Click here to upload file. \(< 10MB\)](#)

Designation of the Respondent

- Administrator
- Medical Superintendent
- Medical Director
- Emergency Consultant
- CMO /CMHO
- Nursing Supervisor
- BMO
- MO
- RMA GNM/ANM / Bsc. Nursetion 9

Number of Villages covered

Population Covered

Number of Beds

Number of staff at the health facility

Does the Facility have an ambulatory service

- 102
- 104
- 108
- Not Available

Likelihood of Cyclone

- Yes
- No
- Can't say

Cyclone Last occurred

- Every Year
- Last Year
- 2-3 years ago
- > 3 years ago
- Never Occured

Likelihood of Flood

- Yes
- No
- Can't say

Flood Last Occured

- Every Year
- Last Year
- 2 - 3 years ago
- > 3 years ago
- Never Occured

Likelihood of Heat Waves

- Yes
- No
- Can't say

Heat Waves Last occurred

- Last year
- 2 years ago
- 3-5 years ago
- > 5 years ago
- Never Occured

Likelihood of Drought

- Yes
- No
- Can't say

Drought Last occurred

- Every Year
- Last Year
- 2 - 3 years ago
- > 3 years ago
- Never Occured

Likelihood of forest fire / fire

- Yes
- No

Forest fire / fire last occurred

- Every year
- Last year
- 2 - 3 years ago
- > 3 years ago
- Never Occured

Likelihood of Earthquake

- Yes
- No
- Can't say

Earthquake Last occurred

- Every year
- Last year
- 2 - 3 years ago
- > 3 years ago
- Never Occured

Likelihood of Thunderstorm & Lightenings

- Yes
- No
- Can't say

Thunderstorm & Lightenings Last occurred

- Every year
- Last year
- 2 - 3 years ago
- > 3 years ago
- Never Occuerd

Likelihood of Industrial Accidents/ Gas Leaks/Slurry leakage

- Yes
- No
- Can't say

Industrial Accidents/ Gas Leaks Last occurred

- Every year
- Last year
- 2 - 3 years ago
- > 3 years ago
- Never Occured

Likelihood of Snakebites

- Yes
- No
- Can't say

Snakebites Last occurred

- Every Year
- Last Year
- 2 - 3years ago
- > 3 years ago
- Never Occured

Likelihood of Epidemics

- Yes
- No
- Can't say

Epidemic Last occurred

- Every year
- Last year
- 2 - 3 years ago
- > 3 years ago
- Never Occured

Likelihood of Outbreak

- Yes
- No
- Can't say

Outbreak Last occurred

- Every year
- Last year
- 2 - 3 years ago
- > 3 years ago
- Never Occured

What is the possibility of death or injury occurring due to this event to staff in the hospital surrounding?

- Minor injury
- Severe injury
- Life Threatening
- Never Occured

What is the possibility of death or injury occurring due to this event to patients in the hospital surrounding?

- Less than 10 deaths
- Less than 50 deaths
- Less than 100 deaths
- More than 100 deaths
- Never Occured

What is the scale of physical losses or damage to the hospital due to this event?

- Nil
- Low
- Moderate
- High

Describe the type of property damage.

- Building Infrastructure
- Office Equipment
- Lab Equipment
- Medical Equipment
- Solar Panels
- Others

Others

Health Services Interruption

- Sometimes
- Many Times
- Most of the times
- Never

Employees unable to / find it difficult to report to duty

- Sometimes
- Many times
- Most of the time
- Never

Patients unable to reach hospital

- Sometimes
- Many times
- Most of the tiems
- Never

Interruption in Electricity Supply

- Sometimes
- Many times
- Most of the times
- Never

Interruption in Water Supply

- Sometimes
- Many times
- Most of the times
- Never

Interruption in critical supplies of medicines to Hospital

- Sometimes
- Many times
- Most of the times
- Never

Damage to Equipment

- Sometimes
- Many times
- Most of the times
- Never

Damage to Medicine and Vaccine Storage

- Sometimes
- Many times
- Most of the times
- Never

Any disaster plan present to respond to this particular event?

- Yes
- No

If Yes, Please provide a copy.

[Click here to upload file. \(< 10MB\)](#)

Mock Drills or training done for this particular event?

- Yes
- No

Type of training

- Workshops/seminars
- Table top Exercise
- Mock Drills
- Others

How many times in a year?

- Annually
- Half Yearly
- Quarterly
- Monthly

Training in coordination with other agencies like police, fire, public health etc.?

- Yes
- No

Availability of backup systems

- Yes
- No

What is the response time in hours for the Incident commander and his team to be on scene? Hrs/Mins

Has there been any historical evaluation of response success.

- Yes
- No

List the resources: Volume of Supplies on Hand

- Yes
- No

Staff availability

- Yes
- No

Coordination with vendors for supplies

- Yes
- No

Coordination with local and state agencies:

- Yes
- No

Details

Coordination with near by health care facilities situated

Yes

No

Details

Coordination with treatment specific facilities

Yes

No

Details



State Health Resource Center

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<http://www.shsrc.org/>