स्वास्थ्य एवं
परिवार कल्याण मंत्रालय
MINISTRY OF
HEALTH AND
FAMILY WELFARE

सत्यमेव जयते

छत्तीसगढ़ शासन

CHHATTISGARH

STATE ACTION PLAN ON CLIMATE CHANGE AND HUMAN HEALTH







National Centre for
Disease Control
Government of India

National Programme
on Climate Change
and Human Health

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2022-27

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Executive Summary

Climate change is a growing concern for sustainable development. The Sustainable Development Goal 13 emphasises taking urgent action to combat climate change and its impacts. Climate change poses several threats to the health of the population. The health effects of climate change occur either through direct effects (changes in temperature and precipitation and occurrence of heat waves, floods, droughts, fires, etc.) or indirect effects (ecological disruptions resulting in crop failures, shifting patterns of diseases' vectors, or displacement of the population).

National Action Plan on Climate Change and Health (NAPCCHH) proposed state-specific action plans. Adaptation challenges are experienced most acutely at the state level. The demographic, socio-economic, and physiographic situations in the states determine their specific vulnerabilities towards climate change and in such circumstances, it is imperative to work on precautionary and anticipatory measures for facing the expected changes and adapting to the changes in the long term.

The health impact of climate change is already evident in Chhattisgarh. Chhattisgarh also witnessed the emergence and re-emergence of many infectious diseases including vector-borne and zoonotic diseases. Acute Respiratory Infections (ARI) have increased in recent years remarkably. Due to epidemiological transition, a large proportion of the population in the state is susceptible to water-borne diseases like hepatitis leading to explosive outbreaks even with mild water contamination. In Chhattisgarh, the health of the human population is sensitive to the shifts in weather patterns and other aspects of climate change, rapid urbanization, depletion of forest cover, high energy consumption, variation in food production, vector-borne diseases, widespread water contamination, inadequate sewage, and waste management, and issues of inaccessibility to healthcare for some marginalised population. In view of the above requirement, the Government of Chhattisgarh has been working on a strategy for action in the state in response to Climate Change and Human Health.

The State Action Plan for Climate Change and Human Health (SAPCCHH) proposes a multi-pronged approach to address the health-related aspects of climate change. It envisions strengthening the health of citizens of Chhattisgarh against climate-sensitive illnesses. The goal is to reduce morbidity, mortality, injuries, and health vulnerability to climate variability and extreme weather. The objective is to build the capacity of healthcare services against adverse impact of climate change.

This SAPCCHH endeavours to seek coordination and synergies with other departments and initiatives. Chhattisgarh State Nodal Officer-Climate Change and Human Health is in-charge of overseeing the implementation of the state action plan and focusing on the following areas and programs; air pollution and health, heat and health, vector-borne diseases, climate resilient health infrastructure, and disaster- related illnesses and impacts.

PART I

Climate Change and its Health Impacts

CHAPTER 1

Introduction

Climate change is defined as, "*a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.*" It affects the social and environmental determinants of health like clean air, safe drinking water, sufficient food, and secure shelter.

Climate change may negatively affect human health in a number of ways, but the most commonly experienced are increased frequency and intensity of heat waves leading to a rise in heat-related illnesses and deaths, increased precipitation, floods, droughts, and desertification costing lives directly. High temperature is known to increase the level of 'ground level ozone' and other 'climate-altering pollutants' other than carbon dioxide, which further exacerbate cardio-respiratory and allergic diseases and certain cancers. Besides these, there is an increase in the transmission and spread of infectious diseases, changes in the distribution of water-borne, food borne, and vector-borne diseases, and effects on the risk of disasters and malnutrition.

The *United Nations Framework Convention on Climate Change (UNFCCC)* came into force on 21st March 1994. Since then many steps were initiated to reduce the effect of climate change at meetings like "Rio Convention 1992", "*Kyoto protocol 1997*", "*Male' Declaration 1998*", "*Convention of Parties*", "*Cancun Agreement 2010*", "*Durban Platform 2011*", and "Nationally Determined Contributions" (NDCs) at the Conference of Parties 21".

India is a signatory to the "*Male' Declaration*", which calls for strengthening the health sector so as to make it climate resilient. According to the Male Declaration, it is desired that healthcare facilities should be prepared to be climate-resilient, particularly to encourage that these are able to withstand any climatic event, and that essential services such as water, sanitation, waste management, and electricity are functional during such events. Further, for climate resilient healthcare, the health department has to undertake measures to initiate the greening of the health sector by adopting environment-friendly technologies and using energy-efficient services.

In this regard, the initiatives undertaken by the Government of India are, identification of the Ministry of Environment, Forest & Climate Change (MOEF&CC) as the nodal ministry, the formulation of the National Environmental Policy 2006, and formulation of the Prime Minister's Council on Climate Change for matters related to Climate Change.

MoEFCC led the initiative by developing the National Action Plan on Climate Change with eight missions. Later on, four new missions (including Health Mission) were identified. The *Health Mission* aims to reduce climate-sensitive illnesses through integration with other missions under the National Action Plan for

Climate Change (NAPCC) as well as through the programmes run by various ministries. As a follow-up action, the Ministry of Health and Family Welfare (MoHFW) constituted a National Expert Group on Climate Change & Health (NEGCCH) to prepare the National Action Plan on Climate Change and Human Health (NAPCCHH) and recommend strategies for adaptation, mitigation, capacity building, etc.

National Centre for Diseases Control (NCDC) is identified as the 'technical nodal agency' by the MoHFW for the proposed National Mission on Health. The Centre for Environmental and Occupational Health Climate Change & Health (CEOH&CCH), NCDC, Delhi, is implementing the National Programme of Climate Change and Human Health (NPCCHH), under which Chhattisgarh state has prepared its State Action Plan on Climate Change and Human Health (SAPCCHH). The SAPCCHH is a long-term vision and planning document prepared by the Department of Health & Family Welfare, Chhattisgarh, applicable up till the year 2027. Based on this document, district-specific action plans will also be prepared. The Chhattisgarh SAPCCHH highlights the current and future vulnerabilities to climate change in the state, the disease burden, and the initiatives to be undertaken by the state to reduce the disease burden and develop a climate responsive and sustainable healthcare ecosystem.

Geography and Demography of Chhattisgarh

Chhattisgarh is located in the centre-east of the country. It is the ninth- largest state in India, with an area of 135,192 km^2 (52,198 sq mi) and a population of 32.2 million as of 2020. Chhattisgarh is the 17th most populated state in the country.

The northern Rajnandgaon and southern parts of the state are hilly, while the central part is a fertile plain. The highest point in the state is the Gaurlata near Samri, Balrampur- Ramanujganj district. Deciduous forests of the Eastern Highlands Forests cover roughly 44% of the state. The natural environment in Chhattisgarh includes forests, mountains, rivers, and waterfalls.

According to NHFS 5 2020-21, the Fact Sheet Chhattisgarh for the health indicators is as follows:

Health Indicator	Rate (per 1000 population)
Crude Birth Rate	22.2 (C)
Crude Death Rate	7.3 (C)
Maternal Mortality Rate (MMR)	160 (Per 100000 Live Birth) (B)
Infant Mortality Rate (IMR)	44.3 (Per 1000 Live Birth) (B)
Neo Natal Mortality Rate	32.4 (A)
U-5 Mortality Rate	50.4 (A)
Total Fertility Rate	1.8 (A)

The Total Fertility Rate is 1.8 in Chhattisgarh. The IMR for the state has come down currently to 44.3%. This is a major achievement for the state considering the fact that any reduction in IMR requires synergistic efforts from several departments and improvement in the social status. The Maternal Mortality Rate is 160 which is higher than the national MMR i.e., 103 (SRS 2017-19). The sex ratio in the state is 1015.

Over the last ten years, the state has taken several strides to improve the delivery of health services and has been able to achieve some progress in bringing down the adverse health indicators.

CHAPTER 2

Climate Vulnerability

Chhattisgarh experiences a tropical type of climate. The state is situated in the central part of India. The geographical factors like distance from the sea and altitude of the state have influence on the climate. The climate of Chhattisgarh is mainly tropical, humid, and sub – humid. Due to the state's proximity to the tropic of cancer, it is mostly hot. May is the hottest month, while December, and January are the coldest ones. During summer, the climatic conditions experienced is hot weather with gusts of dry wind blowing over the state. During winters, the temperature falls to some extent. The period from November to March is generally pleasant except during a few spells when severe cold waves associated with western disturbances affect the northern parts of the state during winter months. April and May months are hot, very dry, and generally uncomfortable. Due to lower temperatures, some areas of the plateau and Northern Hills regions are however comparatively less uncomfortable in summer.

The climate of the state varies from subtropical monsoon, mild, and dry winter, hot summer over northern hilly areas and adjoining plains (Korea, Surajpur, Balrampur, Sarguja districts, and northern parts of Bilaspur, Korba, and Jashpur districts) to tropical monsoon, hot and seasonally dry over central and southern parts of the state. Some parts of the Dantewada district only comes under the tropical monsoon with hot weather and seasonally excessive rainfall.

Temperature

Pre-monsoon season is the hottest while winter is the coldest season. Day temperatures are more or less uniform over the plains except during winters when the temperature increases southwards.

May is the hottest month with mean maximum temperature of 39.4°C. In the plains, the temperature is recorded 1-3°C higher, while over the plateau region, due to elevation, the temperature is recorded 2-5°C lower. In May, the mean maximum temperature ranges from 31.8°C to 42.6°C in the state, the highest values are observed over central plain area. The highest maximum temperature ever recorded at any individual station was 49.3°C at the Bilaspur observatory on 22nd May 2017. On the same day, 44.9°C was recorded in Raipur. December and January are the coldest months. The lowest minimum temperature ever recorded at any individual station was 1-3°C at Jashpurnagar on 7th December 1971.

Humidity

Summer is the driest season of the year when relative humidity in the afternoon generally ranges between 26% and 31%. Whereas, the morning relative humidity ranges between 44% and 49%. During southwest and post monsoon season, relative humidity is generally high when morning humidity ranges between 68% and 87% and afternoon relative humidity ranges between 54% and 80%. During winter season, relative humidity is moderate and it ranges between 61% and 69% in the morning and between 39% and 51% in the afternoon.

Rainfall

The total annual precipitation for the state is about 1250-1300 mm. The precipitation in the state occurs in the form of rain. North eastern and southern parts of the state receive more rain than the central part of with large variation due to state's topography.

South west monsoon season is the main rainy season in the state. Of the total amount of rainfall, about 90% is received in the southwest monsoon season (June to September), 2% is received in the winter season (December to February), 3% in pre–monsoon season (March to May) and 5% in post monsoon season (October to November).

Table 1: Rainfall data

Sl. No.	Divisions	Districts	Rainfall
1	Raipur	Raipur, Mahasamund, Gariaband, Balodabazar, Dhamtari	1000-1300 mm
2	Durg	Durg, Balod, Bemetara, Rajnandgaon, Kabirdham	650-1200 mm
3	Bilaspur	Bilaspur, Korba, Mungeli, Janjgir, Raigarh	900-1250 mm
4	Sarguja	Sarguja, Jashpur, Surajpur, Balrampur, Korea	1100-1400 mm
5	Bastar	Bastar, Kanker, Kondgaon, Narayanpur, Dantewada, Bijapur, Sukma	1400-1900 mm

In recent years, the state is facing extreme threats of climate change, especially due to erratic weather and rainfall. This is greatly affecting the lives of people. As per several studies, Chhattisgarh is one of the most vulnerable areas to the impacts of climate change.

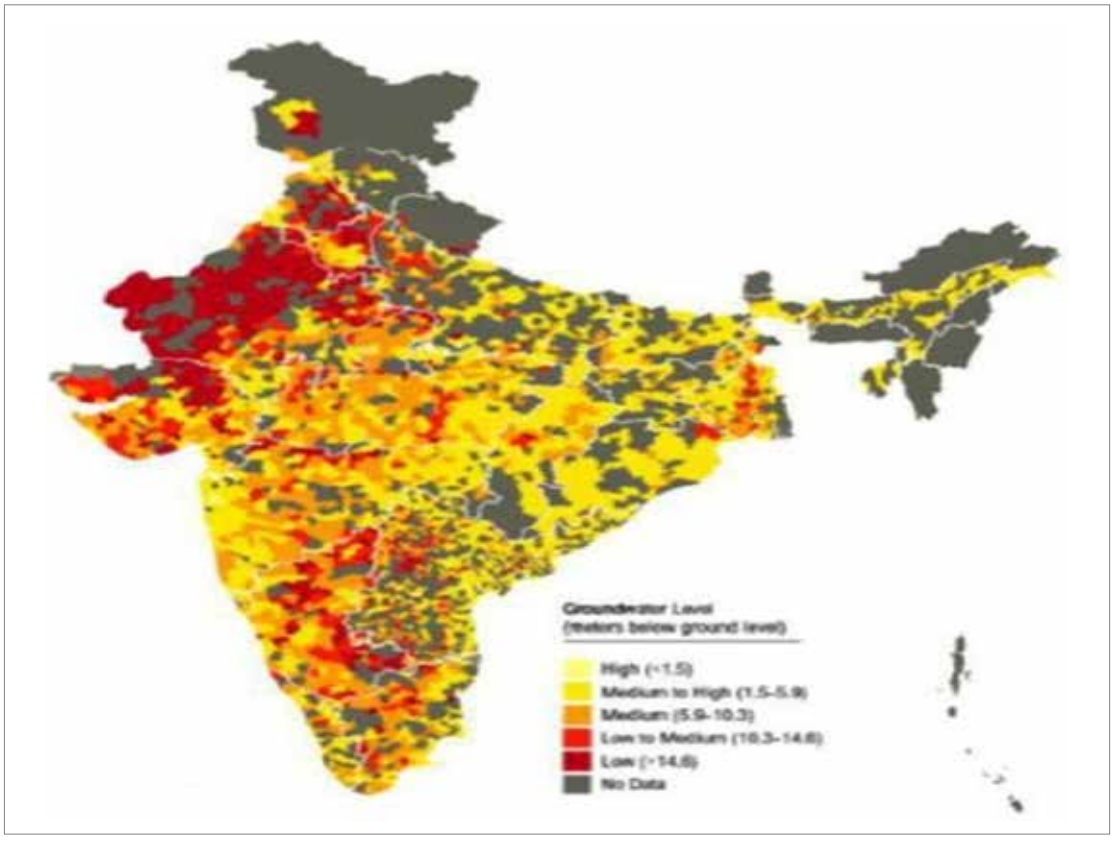
CHAPTER 3

Climate-Sensitive Health Impacts and Diseases

3.1 Food Security and Nutrition

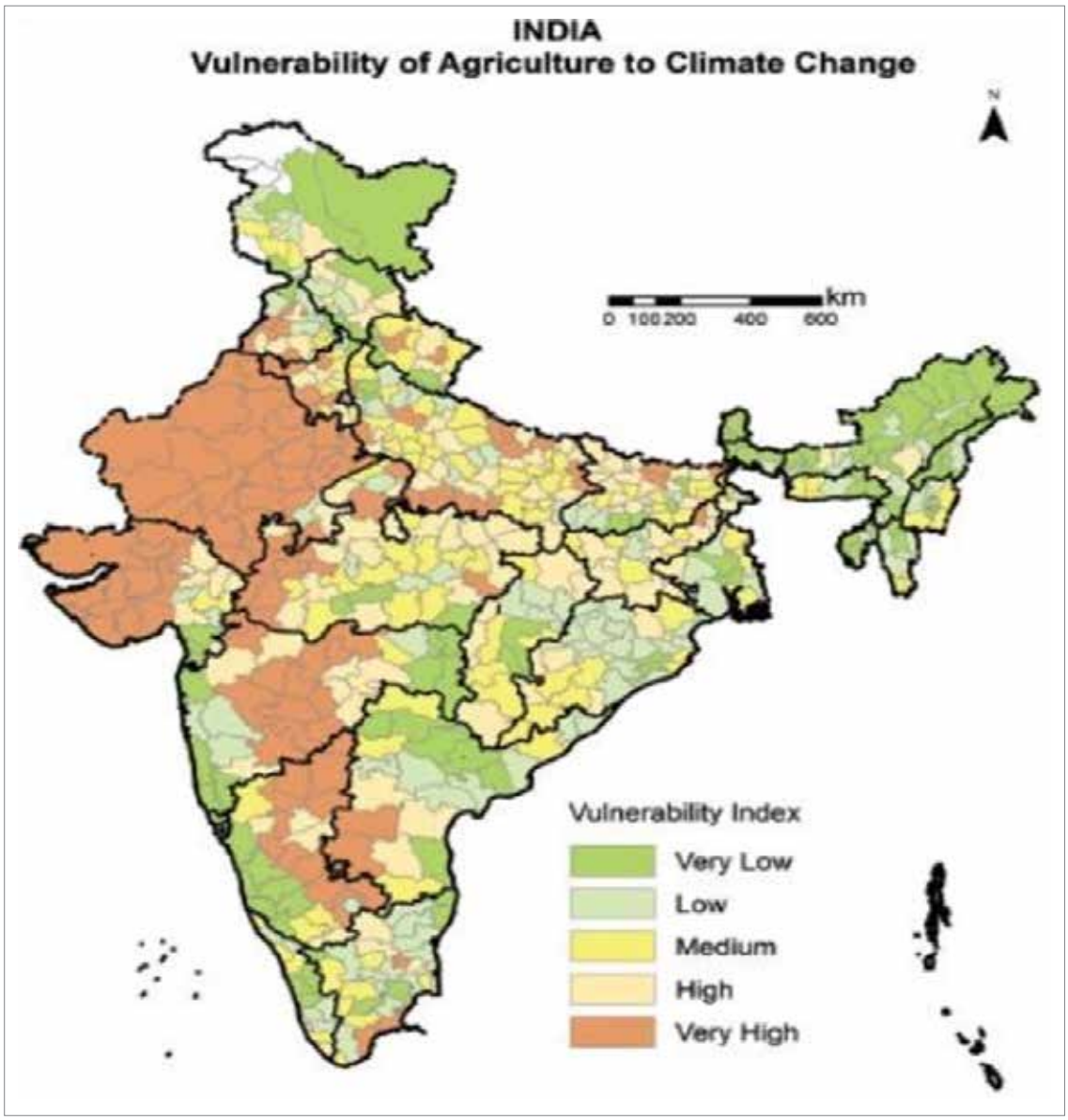
Climate change affects food security in complex ways. It impacts crops, livestock, forestry, fisheries, and aquaculture, and can cause grave social and economic consequences in the form of reduced incomes, eroded livelihoods, trade disruption, and adverse health impacts. However, it is important to note that the net impact of climate change depends not only on the extent of the climatic shock but also on the underlying vulnerabilities. According to the Food and Agriculture Organization (2016), both biophysical and social vulnerabilities determine the net impact of climate change on food security. The impact of climate change on water availability will be particularly severe for India because large parts of the country already suffer from water scarcity, and largely depend on groundwater for irrigation.

Groundwater level in India (meters below the ground level)



Source: World Resources Institute

Vulnerability of Indian agriculture to Climate Change (2021-2050)



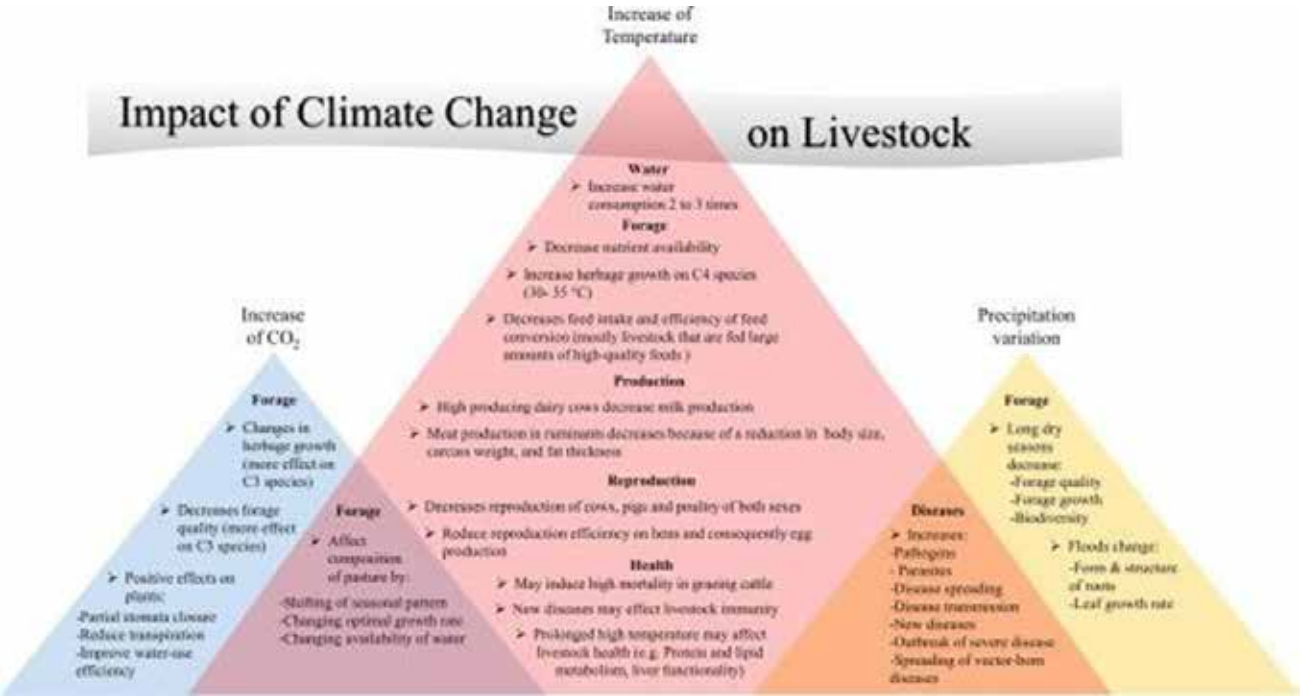
Source: CA Rama Rao et al (2013)

Climate change amplifies the economic drivers of food insecurity. Variation in the length of the crop growing season and higher frequency of extreme events due to climate change and the consequent growth of output, adversely affects the farmer's net income. India is particularly vulnerable because its rural areas are home to small and marginal farmers who rely on rain-fed monocropping, which provides barely a few months of food security in a normal year. Landless agricultural labourers, wholly dependent on agricultural wages are at the highest risk of losing their access to food.

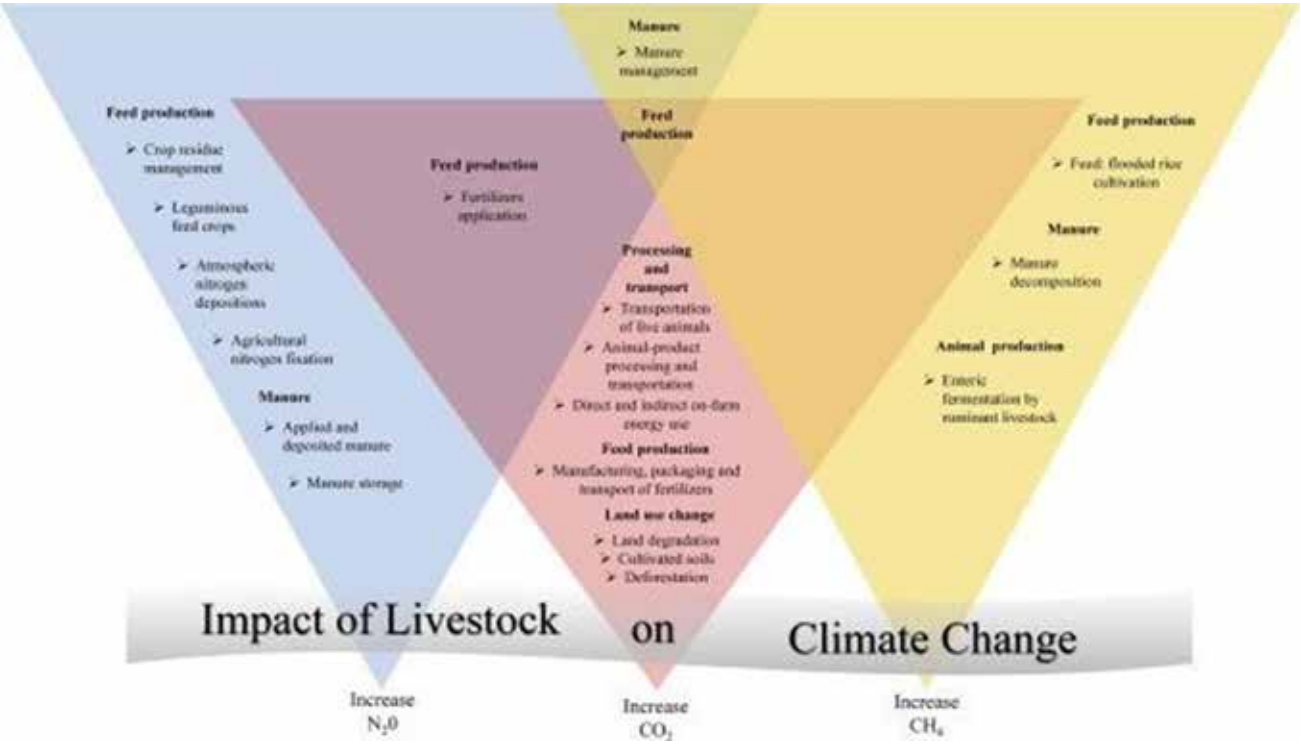
Yet the impact of climate change on food access is not limited to rural areas. Urban food insecurity is also a critical issue because poor households from rural and coastal regions typically migrate to urban areas for livelihood options. Ramachandran observes that hunger often triggers off a wave of migration towards cities, relocating entire families to urban slum. These migrants mostly join the ranks of poorly paid workers in the urban informal sector, where there is no security of tenure and wages fall below the legal minimum. India's urban food insecurity indicators present an alarming picture.

Given that food is the single largest expenditure for poor urban households, displacement, loss of livelihood or damage to productive assets due to any such extreme weather event will have a direct impact on household food security. It is estimated that 22.5 million people are displaced annually by climate or weather-related disasters, and these figures are expected to increase in the future. Climate-induced human mobility has a socioeconomic cost with mental and social problems to individuals and communities.

3.1.1 Livestock



Livestock Diseases, Heat Stress, Food nutrient utilization and food intake, Animal Production, Reproduction, Manure Production, Food security.



3.2 Air Pollution

Climate change can also have significant combined effect on the regional air quality as it affects the conditions that effect pollutant transportation like changes in chemical reaction rates and boundary layer mixing. Carbon-dioxide (CO_2), one of the major drivers of climate change can slow down the dispersal of air pollutants and increase the frequency of stagnation episodes, which results in the degradation of air quality.[1] It also enhances the production rate of pollutants such as Ozone and PM2.5, especially in the urban areas.

Chhattisgarh is a state with the highest number of mines and mineral based industries and air pollution is one of the biggest threats to the health of the population. Air pollution has a wide range of health effects, such as cardiovascular diseases, respiratory diseases, hypertension, diabetes, and obesity. In addition to all the big cities in the state, the districts of Raipur, Bilaspur, Korba, Durg, and Raigarh are particularly vulnerable to the effects of air pollution.

3.2.1 Acute Respiratory Illness

Acute Respiratory Illness (ARI) is a cause of death globally, causing approximately 19% of all deaths before the age of 5 years, according to a World Health Organization estimate. Indoor air pollution from biomass fuels, which is strongly poverty-related, has long been regarded as an important risk factor for ARI morbidity and mortality. Long-term exposure to high concentrations of PM2.5 may increase the risk for acute respiratory problems in small children.

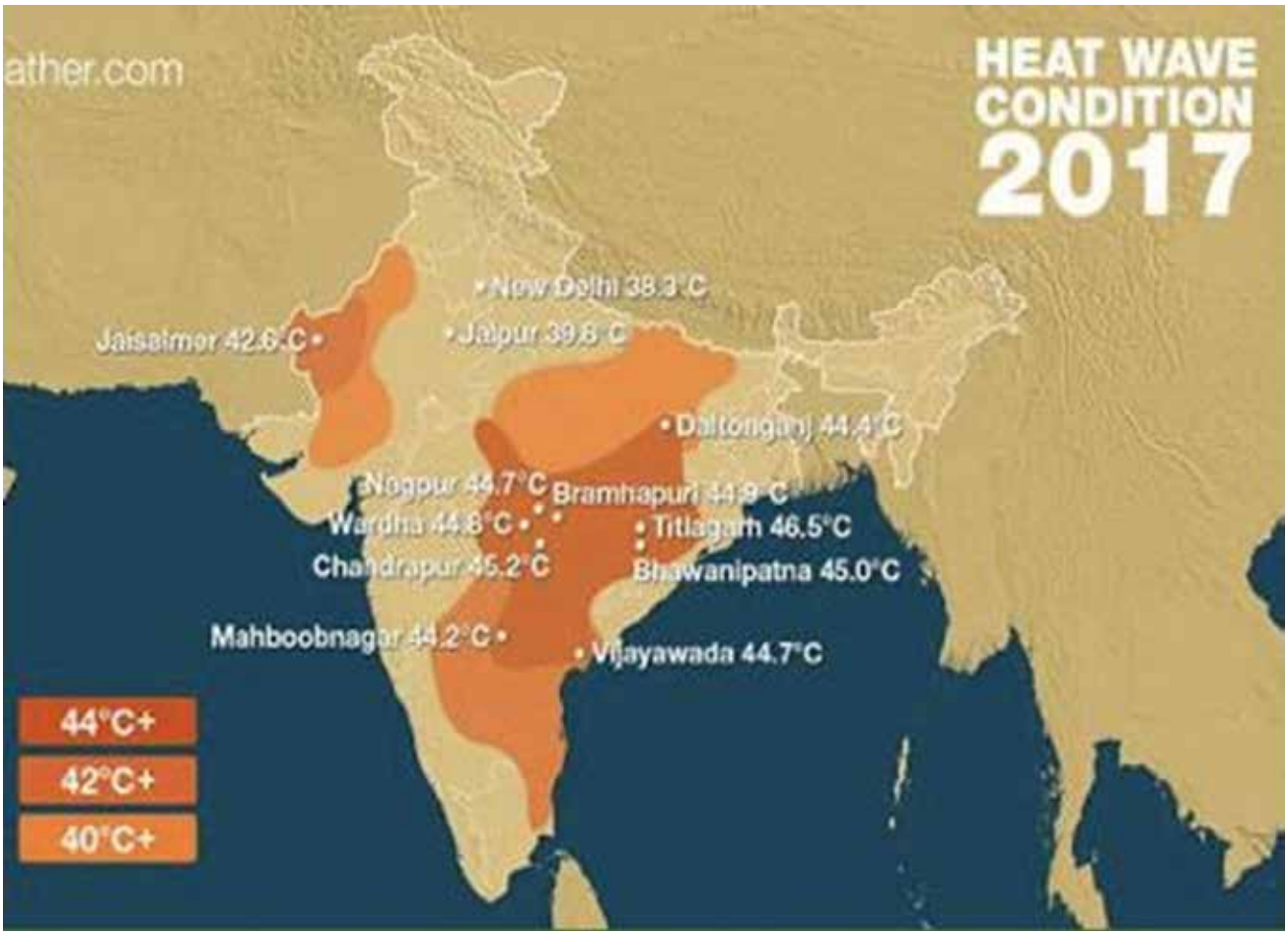
During the past few years, considerable progress had been made in understanding the ARI problem and its susceptibility to intervention. In particular, the importance of bacteria rather than viruses as the principal cause of mortality from severe acute lower respiratory infections in developing countries is now clear; the effectiveness of antimicrobial and supportive treatment may avert these deaths; existing clinical experience has been consolidated into simple case-management plans, and the primary health care (PHC) infrastructure required to utilize these plans is being strengthened rapidly.

National Clean Air Programme (NCAP), launched in 2019, is India's flagship program for better air quality in 122 cities. From the state of Chhattisgarh, Raipur, Bhilai, and Korba are included in NCAP. Chhattisgarh State National Program of Climate Change and Human Health has identified eight sites for ARI surveillance based on the poor air quality. Eight districts are proposed for ARI surveillance out of which presently seven are considered vulnerable in association with poor air quality, except Sarguja.

3.3 Heat waves and Heat-related morbidity and mortality

A heat wave is a period of unusually hot weather that typically lasts two or more days. The temperatures have to be outside the historical averages for a given area. The United Nations has warned of more heat wave deaths across the world, especially in tropical countries as climate change pushes up temperatures. 2016, closely followed by 2019 was declared as the top two warmest years by the World Meteorological Organization. In 2019 alone, more than 65% of Indians were exposed to heat waves. India will see a four-fold rise in heat waves if the global temperature rise is restricted to 1.5°C by the turn of this century, according to a 2018 study, conducted by Indian Institute of Technology-Gandhinagar.

1 M. Jacobson, "Enhancement of Local Air Pollution by Urban CO_2 Domes," *Environ. Sci. Technol*, pp. 44, 2497– 2502, 2010.



Source: http://www.skymetweather.com/content/weather-news-and-analysis/heatwave-to-persist-over-odisha-chhattisgarh-maharashtra-telangana/

Although health promotion and heat wave warning systems have been developed to address public health due to heat waves, the effectiveness of acute measures in response to heat waves have not yet been formally developed. Measures including adequate and safe housing, management of diseases, care for the elderly, and vulnerable in an institutional manner is said to be necessary to reduce health impacts.

In May 2019, almost all big cities in Chhattisgarh experienced heat wave-like situations. According to the news reports, high temperatures in some of the cities in May 2019 were:

- Bilaspur: 45°C
- Rajnandgaon: 45°C
- Raipur: 44.3°C
- Durg: 42.6°C
- Pendra Road: 41.5°C
- Ambikapur: 41°C
- Jagdalpur: 41°C

Raipur, Bilaspur, Raigarh, Janjgir, and Durg districts were particularly affected and all of them recorded a temperature of 46°C on the 9th and 10th May 2019. Additionally, the increase in temperatures exacerbates the heat island effect in urban areas causing additional stress to the urban population.

Heat Stroke statistics of Chhattisgarh from 2016 to 2019

The table below indicates cumulative number of cases admitted due to heat-related illnesses in the District Hospital. This has increased from 150 to 210 cases recorded between 2016 and 2019 in the months between April to June every year.

Directorate of Health Services, Chhattisgarh					
Heat related illness- Report dated 07.05.2016					
Sl. No.	Name of the District	New cases admitted due to heat related illness	Cumulative no. of cases admitted due to Heat Related illness	Deaths reported due to Heat Related Illness	Cumulative no. of deaths due to Heat Related Illness
1	Balod	0	3	0	0
2	Balodabajar	0	2	0	0
3	Balrampur	0	5	0	0
4	Bastar Jagdalpur	0	1	0	0
5	Bemetara	0	0	0	0
6	Bijapur	0	0	0	0
7	Bilaspur	3	15	0	0
8	Dantewada	0	0	0	0
9	Dhamtari	0	4	0	0
10	Durg	1	4	0	0
11	Gariyaband	0	27	0	1
12	Jangjir	1	2	0	0
13	Jashpur	0	31	0	0
14	Kabirdham	0	0	0	0
15	Kanker	0	5	0	0
16	Kondagoan	1	12	0	0
17	Korba	0	1	0	0
18	Korea	0	2	0	0
19	Muhasamund	0	5	0	0
20	Mungeli	0	1	0	0
21	Narayanpur	0	0	0	0
22	Rajgarh	0	9	0	0
23	Raipur	0	2	0	0
24	Rajnandgaon	0	6	0	0
25	Sukma	0	0	0	0
26	Surajpur	1	14	0	0
27	Surguja	Not reported	2	0	0
	Total	**7**	**153**	**0**	**1**

Directorate of Health Services, Chhattisgarh					
Heat related illness- Report dated 28.05.2019					
Sl. No.	**Name of the District**	**New cases admitted due to heat related illness**	**Cumulative no. of cases admitted due to Heat Related illness**	**Deaths reported due to Heat Related Illness**	**Cumulative no. of deaths due to Heat Related Illness**
1	Balod	4	33	0	0
2	Balodabajar	1	1	0	0
3	Balrampur	1	6	0	0
4	Bastar Jagdalpur	0	1	0	0
5	Bemetara	0	36	0	0
6	Bijapur	7	14	0	0
7	Bilaspur	0	3	0	0
8	Dantewada	0	4	0	0
9	Dhamtari	0	0	0	0
10	Durg	0	0	0	0
11	Gariyaband	0	2	0	0
12	Jangjir	0	0	0	0
13	Jashpur	0	19	0	0
14	Kabirdham	0	3	0	0
15	Kanker	0	0	0	0
16	Kondagoan	0	17	0	0
17	Korba	0	11	0	0
18	Korea	0	0	0	0
19	Muhasamund	0	8	0	0
20	Mungeli	0	0	0	0
21	Narayanpur	0	0	0	0
22	Rajgarh	5	7	0	0
23	Raipur	0	1	0	0
24	Rajnandgaon	0	33	0	0
25	Sukma	0	1	0	0
26	Surajpur	0	10	0	0
27	Surguja	0	0	0	0
	Total	**18**	**210**	**0**	**0**

3.4 Vector-borne Diseases

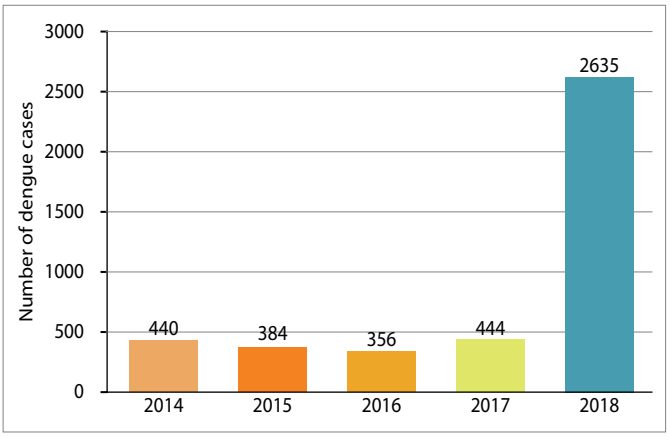
In Chhattisgarh the priority vector-borne diseases include:

3.4.1 Malaria

Malaria is caused by *Plasmodium* parasites. The parasites are spread to people through the bites of infected female *Anopheles* mosquitoes, called "malaria vectors." The southern and north eastern districts of the state including Bijapur, Dantewada, Bastar, Sukma, Kanker, Kondagaon, Jagdalpur, Sukma, Narayanpur, Jashpur, and Koriya are particularly vulnerable to malaria.

3.4.2 Dengue

Dengue is a mosquito-borne viral infection causing a severe flu-like illness and, sometimes causing a potentially lethal complication called severe dengue. Dengue Fever is caused by the dengue virus which is transmitted through the Aedes type of mosquitoes. Dengue is fast emerging pandemic-prone viral disease in many parts of the world. Dengue flourishes in urban poor areas, suburbs and the countryside but also affects more affluent neighbourhoods in tropical and subtropical countries. During the rainy season, survival of the virus increases which leads to outbreak of the disease, almost throughout the state. Dengue cases have increased 5 fold from 2014 to 2018[2] in the state and at least 15 deaths due to dengue were reported in Chhattisgarh in 2018.[3]



Source: www.statista.com

3.4.3 Filariasis

Filariasis is caused by several round, coiled, and thread-like parasitic worms belonging to the family filaridea. These parasites after getting deposited on skin penetrate on their own or through the opening created by mosquito bites to reach the lymphatic system. The disease is caused by the nematode worm, either Wuchereria bancrofti or Brugia malayi and transmitted by ubiquitous mosquito species Culex quinquefasciatus and Mansonia annulifera/M.uniformis respectively. The disease manifests often in bizarre swelling of legs, and hydrocele and is the cause of a great deal of social stigma.[4]

Filaria endemic districts in Chhattisgarh[5] are present in the districts of Ambikapur/Surguja, Bilaspur, Dhamtari, Durg, Janjgir, Jashpur Nagar, Mahasamund, Raigarh, and Raipur.

2 https://www.statista.com/statistics/865290/india-number-of-dengue-cases-in-chhattisgarh/
3 https://www.newindianexpress.com/nation/2018/aug/14/chhattisgarh-15-dengue-deaths-surpasses-five-year-record-of- twin-cities-durg-bhilai-1857830.html
4 https://www.nvbdcp.gov.in/index4.php?lang=1&level=0&linkid=450&lid=3727
5 https://www.nvbdcp.gov.in/WriteReadData/l892s/15482335681533040303.pdf

3.5 Water-borne Diseases

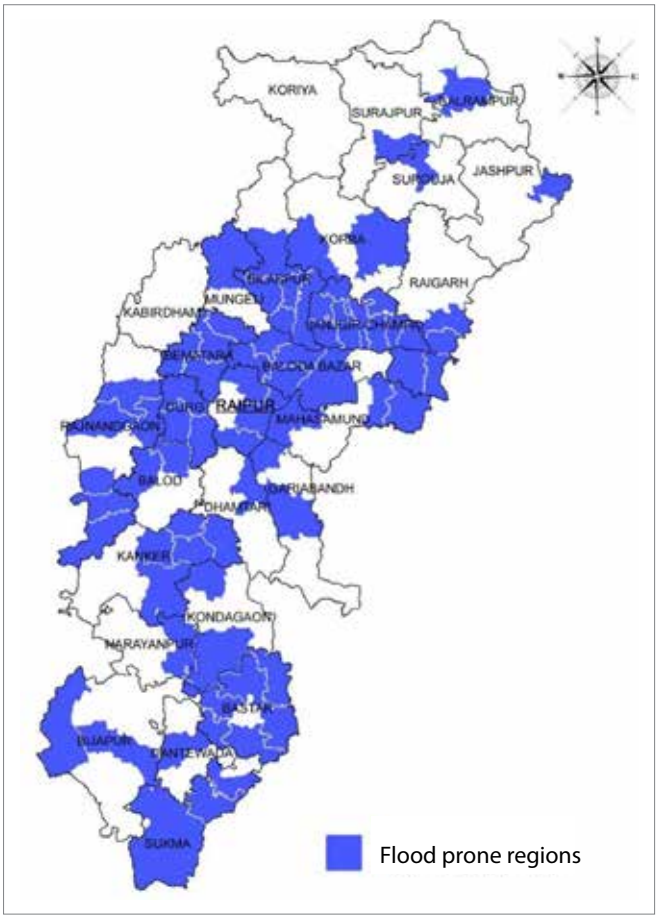
Water-borne diseases are caused by the toxic contaminants and micro-organism in the water.[6] During the rainy season and floods, the outbreak of water-borne diseases occurs. Common water-borne disease in Chhattisgarh is Acute Diarrheal Disease (ADD).

3.5.1 Acute Diarrheal Disease (ADD)

Diarrhea is defined as the passage of three or more loose or liquid stools per day (or more frequent passage than is normal for the individual. In the past, for most people, severe dehydration and fluid loss were the main causes of diarrhea deaths. Now, other causes such as septic bacterial infections are likely to account for an increasing proportion of all diarrhea-associated deaths. Children who are malnourished or have impaired immunity as well as people living with HIV are most at risk of life-threatening diarrhea.[7]

According to the Integrated Disease Surveillance Program (IDSP), weekly reports of 2019 districts of Kawardha, Janjgir, Balodabazar, Balod, Rajnandgaon, Mahasamund, Kanker, and Durg have reported outbreaks of ADD in Chhattisgarh.

Flood Vulnerability Zones of Chhattisgarh



Source: UNICEF

3.6 Emerging Climate-Sensitive Health Impacts and Diseases

3.6.1 Zoonotic Disease

Emerging infectious diseases (EIDs), especially those with zoonotic potential, are a growing threat to the global health, economy, and safety. The influence of global warming and geoclimatic variations on zoonotic disease epidemiology is evident by alterations in the host, vector, and pathogen dynamics and their interactions.

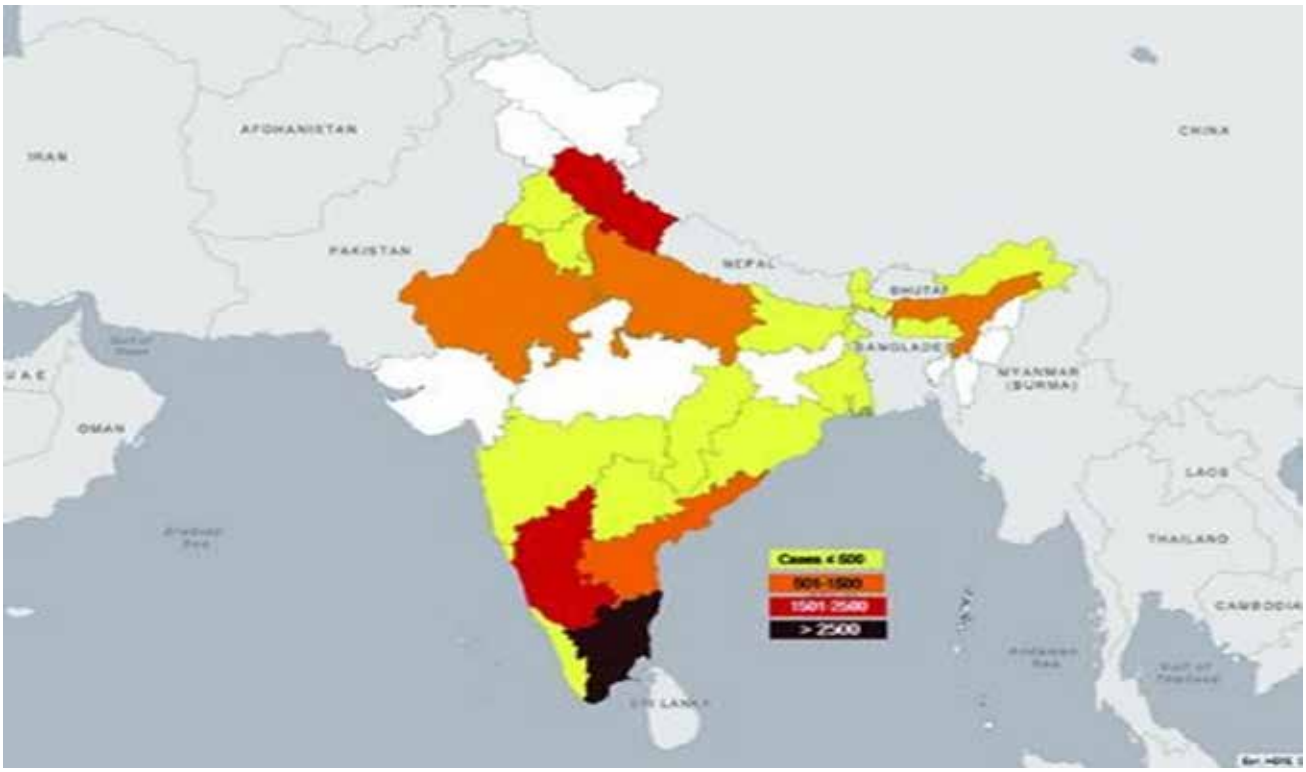
3.6.1.1 Scrub Typhus

Scrub typhus is a vector-borne zoonotic disease caused by Orientia tsutsugamushi. This organism is transmitted by infected trombiculid mites, L. pallidum, and L. scutellare. The most common symptoms of scrub typhus include fever, headache, body aches, and sometimes rash. Scrub typhus lasts for 14 to 21 days without treatment. Severe infections may be complicated by interstitial pneumonia, pulmonary edema,

6 Waterborne Diseases [Internet]. [cited 2019 Jun 25]. Available from: https://www.niehs.nih.gov/research/programs/geh/climatechange/health_impacts/waterborne_diseases/index.cfm

7 https://www.who.int/news-room/fact-sheets/detail/diarrhoeal-disease

congestive heart failure, circulatory collapse, and a wide array of signs and symptoms of central nervous system dysfunction, including delirium, confusion, and seizures.

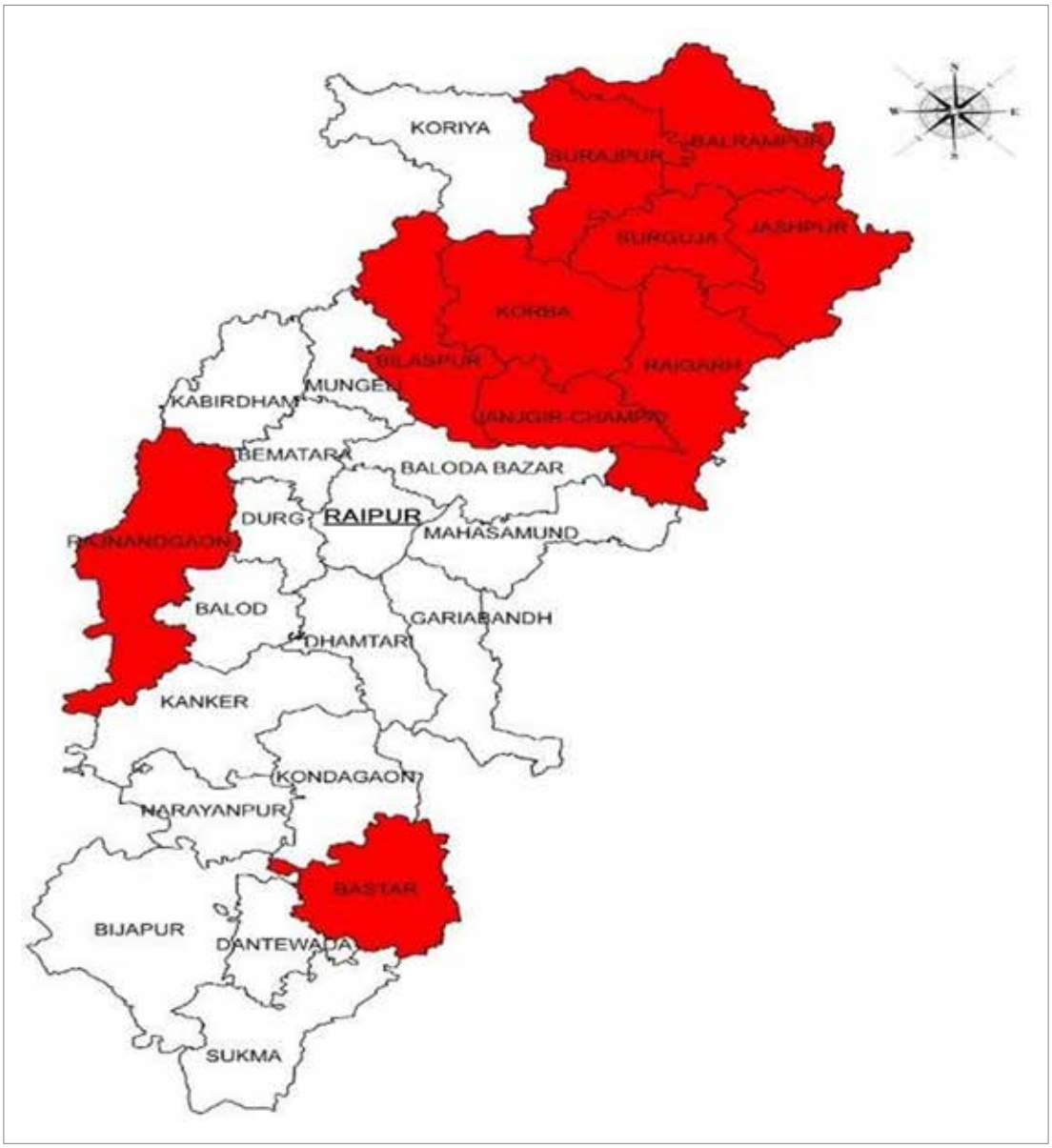


Mapping the regional distribution of scrub typhus in India. Number of scrub typhus cases less than or equal to 500 is represented as yellow, 501-1500 cases is represented as orange, 1501-2500 cases is represented as red and more than 2500 cases is represented as maroon. This map was created in the free version of ARC GIS by the first author. Please see the ARC GIS link https://arcg.is/1iDvKu. The base layer map was used from the Survey of India, Department of Science & Technology which gives open access to the general public https://indiamaps.gov.in/soiapp/.

The natural environment including climate conditions could affect the development and survival of larva mites. Climate change may have an effect on the increasing trend of Scrub typhus. (22) The study also indicates that the incidence of Scrub typhus is affected by climate elements changed by global warming.

3.6.1.2 Snake Bites

Snakebite is the only WHO-listed, not infectious neglected tropical disease (NTD), although its eco-epidemiology is similar to that of zoonotic infections: envenoming occurs after a vertebrate host contacts a human. Accordingly, snakebite risk represents the interaction between snake and human factors, but their quantification has been limited by data availability. Snakebites are on the rise as snakes migrate with climate change. As the climate changes, snakes are on the move and snakebites are becoming more common. Over the last decade, an estimated 30 million people worldwide have been bitten by snakes, with nearly 5.4 million bites in the last year alone. And these worrisome numbers are underestimated, since most bites are never reported, especially in poor rural areas. A few things should be done, and urgently. We need to update the maps of snake habitats and educate communities about new threats they may face from venomous snakes. Because different antivenoms are needed for different snakebites, this mapping will also help determine what antivenoms are needed where.

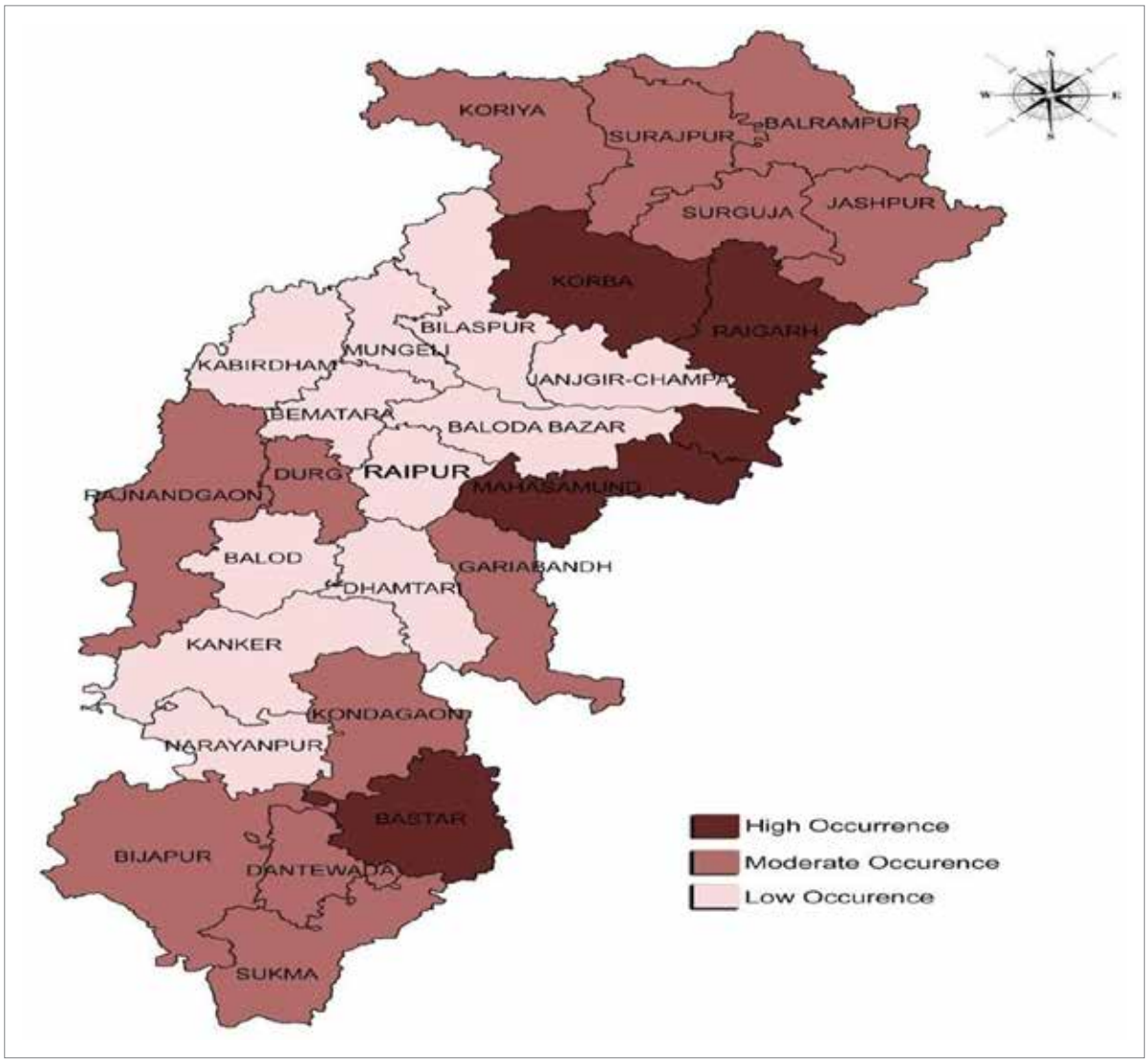


In Chhattisgarh Bastar, Rajnandga, Bilaspur, Korba, Janjgir-Champa, Raigarh, Surguja, Jashpur, Balrampur, and Surajpur are the districts which have high reporting of zoonotic diseases like Snake Bites and other animal bites. Scrub Typhus is tending to be reported more in rural and forest- dominated areas. Early Detection through diagnostics and surveillance would be the key strategies for prompt interventions to reduce the impact of climate change on human health.

3.6.1.3 Lightening – Burnt and Deaths

Scientists are starting to recognize that lightning has a broader story to tell. Lightning frequency is changing, as the climate is changing. For example, lightning's close relationship to thunderstorms and precipitation makes it a valuable indicator for storminess, which makes lightning a particularly useful means of observing a variable and changing climate [*Price, 2013; Williams, 2005*]. What's more, lightning is not only an indicator of climate change; it also affects the global climate directly. Lightning produces nitrogen oxides, which are strong greenhouse gases [*Price et al., 1997*].

Lightning Vulnerability Zones of Chhattisgarh



Source: http://sdma.cg.gov.in/LightningVulnerabilityZonesofChhattisgarhcopy.jpg

Lightning is a symptom and a cause of climate change. A recently established task team is working to make lightning data available and useful for climate science and service applications.

In efforts to better understand how these variabilities, as well as changing lightning frequencies, affect climate change, lightning has been added to the Global Climate Observing System's (GCOS) list of Essential Climate Variables (ECVs) [*Global Climate Observing System, 2016*]. These ECVs provide the empirical evidence needed to understand and predict the evolution of climate as well as to guide mitigation and adaptation measures in support of scientists, governments, agencies, and the international climate policy in general under the United Nations Framework Convention on Climate Change (UNFCCC) and its Intergovernmental Panel on Climate Change [*Bojinski et al., 2014]*.

Non Communicable diseases/Cardiovascular/Allergens/Mental Health and Occupational hazards are the other important emerging health impacts that are being felt in the rural and urban belts of Chhattisgarh. The correlation with climate change is yet to established.

CHAPTER 4
Vision, Goal and Objectives

Vision: Strengthening of healthcare services for all the citizens of the state especially vulnerable groups like children, women, elderly, tribal, and the marginalized population against climate-sensitive illnesses.

Goal: To reduce the morbidity, mortality, injuries, and health vulnerability due to climate variability and extreme weather.

Objective: To strengthen health care services against the adverse impact of climate change on health.

Specific Objectives

Objective 1: To create awareness amongst the general population (vulnerable community), healthcare providers and policy makers regarding the impacts of climate change on human health.

Objective 2: To strengthen the capacity of healthcare system to reduce illnesses/diseases due to variability in climate.

Objective 3: To strengthen health preparedness and response by performing situational analysis at national/state/district/below district levels.

Objective 4: To develop partnerships and create synchrony/synergy with other missions and ensure that health is adequately represented in the climate change agenda in the country in coordination with the Ministry of Health & Family Welfare.

Objective 5: To strengthen state research capacity to fill the evidence gap on climate change's impact on human health.

CHAPTER 5
Organisational Structure

ORGANISATIONAL STRUCTURE

NATIONAL LEVEL

Key Nodal Agency
Head, NPCCHH
(NCDC, MoHFW)

- Prime Minister's Council on Climate Change
- Health Mission
- Ministry of Health and Family Welfare (MoHFW), Govt of India

STATE LEVEL

Key Nodal Point
(SNO-NPCCHH)

- State Governing Body - Environmental Health
- State Level Task Force - Environmental Health
- State Environmental Health Cell

DISTRICT LEVEL

Key Nodal Point
(DNO-NPCCHH)

- District Task Force - Environmental Health
- District Environmental Health Cell

5.1 State Level - Governing Body - Environmental Health

The state level governing body for policy level decision shall be working under Chairpersonship of Honourable State Health Minister. The other members may be as follows:

1	Honourable State Health Minister	Chairperson
2	Principal Secretary (Health)	Vice Chairperson
3	Director Health Services/Head of Health System	Member Secretary
4	Mission Director-National Health Mission	Member
5	Principal Secretary, Ministry of Revenue (Disaster)	Member
6	Principal Secretary, Ministry of Agriculture	Member
7	Principal Secretary, Ministry of Water and Sanitation	Member
8	Principal Secretary, Ministry of Transport	Member
9	Principal Secretary, Ministry of Animal Husbandry	Member
10	Principal Secretary, Ministry of Environment and Forests	Member
11	Principal Secretary, Ministry of Women and Child Development/Social Justice	Member
12	Principal Secretary, Ministry of Science and Technology/Earth Sciences	Member
13	Principal Secretary, Ministry of Education	Member
14	Principal Secretary, Ministry of Human Resource Development	Member
15	Principal Secretary, Ministry of Public Works Department	Member
16	Principal Secretary, Ministry of Power	Member
17	Principal Secretary, Ministry of Urban Development (Municipalities)	Member
18	Principal Secretary, Ministry of Finance	Member
19	Principal Secretary, Ministry of Law	Member
20	Principal Secretary, Ministry of Food and Civil Supplies	Member
21	Principal Secretary, Ministry of Panchayati Raj	Member
22	Regional Director-Health & Family Welfare (GoI)	Member
23	Director Medical Education and Research	Member
24	State Nodal Officer-Climate Change	Member
25	Head–NAPCCHH, CEOH & CCH Division, NCDC	Member

5.2 State Level Task Force - Environmental Health

This task force shall be working under the guidance of the Principal Secretary (Health) of the state. It shall be directly overseeing the implementation of the State Action Plan for Climate Change and Human Health (SAPCCHH) in their state. It shall be working through the Directorate of Health Services (DHS) of the state, which will be the implementing agency for SAPCCHH. The State level Task Force shall have inter-ministerial members which are suggested as:

1	Principal Secretary (Health)	Chairperson
2	Mission Director–National Health Mission	Vice Chairperson
3	Director Health Services/Head of Health System	Member Secretary
4	Director/Chairperson–Department of Revenue (Disaster)	Member
5	Director/Chairperson–Department of Agriculture	Member
6	Director/Chairperson–Department of Water and Sanitation	Member
7	Director/Chairperson–Department of Transport	Member
8	Director/Chairperson–Department of Animal Husbandry	Member
9	Director/Chairperson–Department of Environment and Forests	Member
10	Director/Chairperson–Department of Women and Child Development/Social Justice	Member
11	Director, Meteorological department of State/UT	Member
12	Director/Chairperson–Department of Public Works Department	Member
13	Director/Chairperson–Department of Urban Development (Municipalities)	Member
14	Director/Chairperson–Department of Education	Member
15	Director/Chairperson–Department of Food and Civil Supplies	Member
16	Director/Chairperson-Department of Human Resource Development	Member
17	Director/Chairperson–Department of Power	Member
18	Director/Chairperson–Department of Finance	Member
19	Director/Chairperson–Department of Law	Member
20	Director/Chairperson–Department of Panchayati Raj	Member
21	Director/Chairperson–State Ground Water Board	Member
22	Head–State disaster Management Authority	Member
23	Environmental Engineer/Scientist from Ministry of Environment	Member
24	Chairperson, State Pollution Control Board	Member
25	Regional Director–Health & Family Welfare (GoI)	Member
26	Director Medical Education and Research	Member
27	State Nodal Officer–Climate Change	Member
28	Director, ICMR Institute/Centre (If any branch in the State/UT)	Member
29	State Surveillance Officer	Member
30	Head–NAPCCHH, CEOH & CCH Division, NCDC, MoHFW	Member
31	Head, NCDC Branch of the state	Member

The task force of the State Environmental Health Cell will coordinate with the centre (MoHFW, NCDC) for the execution of the state SAPCCHH.

DHS will create an ***Environmental Health Cell*** within the State Health Department and will identify a ***Nodal Officer*** from the Health department which preferably should be a senior Public Health Expert of the state. The State Level Structure of the Environmental Health Cell is as follows:

5.3 Structure at the State Environment Health Cell

Nodal Officer (Public Health Expert - State Health Department)	1
Consultant-Capacity building/Training/HR Management	1
Consultant-Environmental Health	1
Data Manager & Analyst	1
Secretarial Assistants cum Data entry Operator	1

5.4 State Executive Members of EHC of Chhattisgarh NPCCHH

Sl. No.	Nominee/Representative Details	Member Details
1	Director/NHM	Chairperson
2	State Nodal Officer–CG NPCCHH	Member Secretary
3	State Surveillance Officer	Member
4	State Nodal Officer–NVBDCP	Member
5	Consultant–SHSRC	Member
6	State Consultant–CG NPCCHH	Member
7	Consultant–SHSRC	Member
8	Consultant–IEC	Member
9	State Epidemiologist–IDSP	Member
10	State Veterinary Consultant	Member
11	State Microbiologist–IDSP	Member

5.5 Roles and Responsibilities of the State Environmental Health Cell

- Preparation and implementation of the State Action Plan for Climate Change and Human Health
- Conduct Vulnerability assessment and risk mapping for commonly occurring climate-sensitive illnesses in the state
- Assessment of needs for healthcare professionals (like training, capacity building) and organise training, workshops, and meetings
- Maintain state and district level data on physical, financial, and epidemiological profile for climate-sensitive illnesses
- Ensure convergence with NHM activities and other related programs in the state/district
- Monitor programme, review meetings, and field observations
- Timely issue of warning/alerts to health professionals and related stakeholders as well as general public through campaign or using mass media (electronic or printed)
- Social mobilization against preventive measures through involvement of women's self-help groups, community leaders, and NGOs etc.

- Advocacy and public awareness through media (street plays, folk methods, wall paintings, hoardings, etc.)
- Conduction of operational research and evaluation studies for climate change and its impact on human health.

5.6 District Level

The DHS is responsible for appointment of the District Medical Officer/Chief Medical Health Officer as the District Nodal Officer – Climate Change. A District Level Task Force is to be constituted by the District Nodal Officer- Climate Change in consultation with the SNO-CC.

5.12.1 Structure of District Level Task Force- Environmental Health

1	District Collector	Chairperson
2	Dean – Govt Medical College in the district/Head- Department of Community Medicine of the Medical College	Vice Chairperson
3	Chief Medical Officer/District Medical Officer/District Nodal Officer–Climate Change.	*Member Secretary*
4	District Surveillance Officer	Member
5	District Programme Manager – NHM	Member
6	District Head, Department of Revenue (Disaster)	Member
7	District Head, Department of Agriculture	Member
8	District Head, Department of Water and Sanitation	Member
9	District Head, Department of Transport	Member
10	District Head, Department of Animal Husbandry	Member
11	District Head, Department of Environment and Forests	Member
12	District Head, Department of Women and Child Development/Social Justice	Member
13	District Head, Department of Science and Technology/Earth Sciences	Member
14	District Head, Department of Education	Member
15	District Head, Department of Food	Member
16	District Head, Department of Human Resource Development	Member
17	District Head, Department of Public Works Department	Member
18	District Head, Department of Power	Member
19	District Head, Department of Finance	Member
20	District Head, Department of Law	Member
21	District Head, Department of Panchayati Raj	Member

The District Environmental Health Cell is to be constituted by the District Nodal Officer- Climate Change in consultation with the SNO-CC. At the district level, a District Environmental Health Cell is to be constituted, which shall be comprise of the following:

5.12.2 Structure at the District Environment Health Cell

1	District Nodal Officer- Climate Change	Chairperson
2	District Veterinary officer	Member
3	District Surveillance Officer/District Epidemic Officer	Member
4	District RCH officer/FW Officer	Member
5	District Epidemiologist	Member
6	District Microbiologist	Member
7	District Immunisation Officer	Member
8	District Training Officer	Member
9	Data entry operator	Supporting staff

5.12.3 Roles and Responsibilities of the District Environmental Health Cell

- Preparation and implementation of District Action Plan for Climate Change and Human Health.
- Conduct Vulnerability assessment and risk mapping for commonly occurring climate-sensitive illnesses in the district.
- Maintain and update the district database of illnesses identified.
- Assess needs for health care professionals and conduct sub-district/CHC level training/workshops and meetings for capacity building.
- Ensure appointment of contractual staff and engage them in the assigned task of data management under the NAPCCHH.
- Maintain district level data on physical, financial, and epidemiological profile for these illnesses.

5.7 Community Health Centre Level

The proposed CHC Level Structure is as under:

- Medical Superintendent (CHC Hospital): Chairperson
- Taluka Health Officer/Talukas Health Officer: Member Secretary
- Health Education Officer/Similar Post: Member
- Block Development Officer: Member
- Health Supervisor: Member

5.13.1 Health Facility Level (PHC)

At the health facility, the responsibility for implementation will lie with the Medical Officer (in- charge) of the facility. The existing machinery of NHM will be utilised for the related activities. The Rogi Kalyan Samiti (RKS) would be reviewing and monitoring implementation at the health facility level. The ANM, ASHA, and Anganwadi worker will assist in activities related to implementation of action plan at the local level.

Sl. No.	Designation	Role and Responsibilities
1	**State Nodal Officer**	• Head the NPCCHH and state EHC at the state level • Preparation and implementation of State Action Plan for Climate Change and Human Health • Maintain state and district level data on physical, financial, and epidemiological profile climate-sensitive illnesses. • Ensure convergence with NHM activities and other related programs in the state/district • Monitor program, review meetings, and field observations. • Timely issue of warning/alerts to health professionals and related stakeholders as well as general public campaigns for using mass media (electronic or printed), • Conduction of operational research and evaluation studies on climate change and its impact on human health.
2	**District Nodal Officer**	• Head NPCCHH and District EHC at the district level. • Preparation and implementation of District Action Plan for Climate Change and Human Health. • Maintain and update the district database of illnesses identified in the district. • Assess needs for health care professionals and conduct sub- district/CHC level training/workshops and meetings for capacity building. • Maintain district level data on physical, financial, and epidemiological profile for these illnesses. • Coordinate with the state team and EHC on NPCCHH • Organise and observe important events and days
3	**Block Medical Officer**	• Monitor the implementation of the SAPCCHH at the block level • Conduct training and workshops at block levels with ANM/Mitanins/ Aganwadi Workers • Organise and observe important days

PART II

Health Action Plans on Priority Climate Sensitive Health Issues

CHAPTER 6

Health Action Plan on Air Pollution Related Diseases

6.1 Air Pollution

Chhattisgarh has the highest number of mines and mineral based industries leading to air pollution being one of the biggest threats to the health of the population. Air pollution has a wide range of health effects, such as cardiovascular diseases, respiratory diseases, hypertension, diabetes, and obesity. Air pollution has also been linked to have a detrimental impact on food productivity, for instance, increase in the ground level ozone pollution affects the crop yield. Similarly, traditional methods of food preservation like sun drying of vegetables for use in lean seasons, is no longer viable in coal mining and power plant areas due to coal dust and fly-ash pollution.

Air pollution is a major environmental risk to health. The formation, transport, and dispersion of many air pollutants is determined partly by climate and weather factors such as temperature, humidity, wind, storms, droughts, and precipitation and partly by human activities known to produce various air pollutants. It is thus logical to assume that climate change will influence the dynamics of air pollution. By reducing air pollution levels, states can reduce the burden of disease from stroke, heart disease, lung cancer, and both chronic and acute respiratory diseases, including asthma.

6.1.1 Two major types of Air Pollution

1. Ambient (Outdoor) Air Pollution
2. Household (Indoor) Air Pollution

6.1.2 Define Ambient (Outdoor) Air Pollution and Household (Indoor) Air Pollution

Ambient (outdoor air pollution) in both cities and rural areas was estimated to cause 3.7 million premature deaths worldwide in 2012. Air pollution also affects health by causing acid rain, eutrophication due to nitrogen oxides, emissions in the air from power plants, cars, trucks, and other sources, haze, toxic effects on wildlife, ozone depletion, crop and forest damage, etc. Over 4 million people die prematurely from illness attributable to the household air pollution from cooking with solid fuels. 3.8 million premature deaths annually from non-communicable diseases including stroke, ischemic heart disease, chronic obstructive pulmonary disease (COPD) and lung cancer are attributed to exposure to household air pollution.

6.1.3. Studies conducted by the state government on air pollution

a) The State Climate Change and Human Health (SCCHH) in coordination with Pt. J L N medical College Raipur conducted a study in Baloda Bazar on air pollution in 2019.

b) The State Climate Change and Human Health technical cell - State Health Resource Center (SHRC) has conducted studies on air pollution and health in the districts of Raipur, Raigarh, and Korba since 2016.

Link: http://shsrc.org/wp-content/uploads/2020/04/Korba-Study-SHRC-2020.pdf

c) Technical Cell of SCCHH study of air pollution in Raipur city and possible sources of the pollution and released its report in April 2019 and 2020. This was followed up with an interdepartmental consultation on the issue and way forward.

Link: http://shsrc.org/wp-content/uploads/2020/05/Korba-AQ-report-2020.pdf

d) Since 2018, the technical cell (SHRC) has been engaged in a study titled Participatory Environmentalism: Mobilizing Citizens for Air Pollution Mitigation and Improved Environmental Health in India.

e) The cell conducted a study on Sigdi use in Korba, to understand the pattern of usage of fuels and strategies for shifting the behavior of usage from coal to cleaner fuel like LPG.

6.1.4 Prominent causes of Ambient Air Pollution in Chhattisgarh

1. Pollution by Automobiles
2. Industrial Emission – Sponge iron
3. Thermal Power Plants
4. Mining
5. Transportation of coal in open trucks
6. Waste Burning

6.1.5 Prominent causes of Household Air Pollution in Chhattisgarh:

1. Use of biomass and kerosene as fuel for cooking
2. Burning of waste, cow dung, coal, tyre, chena
3. Sigdi (coal stove)
4. Firewood

6.1.6 Other factors contributing to increase/decrease of ambient/household air pollution in the polluted cities in the state

1. Building construction (Outdoor Pollution)
2. Mosquito coil/agarbatti (Indoor Pollution)

6.2 Health Adaptation Plan

6.2.1 Awareness Generation

IEC Campaign

a) Audio-visual communication packages on air pollution and health impacts and measures to protect health will be developed and disseminated at all DH and CHC levels.

b) Sustained public awareness campaigns will be conducted throughout the year through community outreach and workshops and trainings, to create awareness about air pollution and its health impacts.

c) Street plays in low-income communities

d) Mass media campaigns and engagement of local and regional media (community radio, TV)

e) Promoting a culture of risk prevention, mitigation, and better risk management

f) Promoting attitude and behavior change in the awareness campaigns linking air pollution and climate change

IEC DISSEMINATION PLAN FOR 5 YEARS 2022-27

Sl. No.	IEC Content	Priority Districts	Dissemination Plan for 5 Years	Timeline	Budget (in Lakhs) for 5 Years				
					2022-23	2023-24	2024-25	2025-26	2026-27
1.	Posters	Raipur, Korba, Raigarh, Balodabazar, Janjgir-Champa, Bilaspur, Durg-Bhillai,	2 Posters for healthcare facilities in all districts	July-September	7.5	7.5	7.5	7.5	7.5
2.	Audio		Social Media (Facebook, Instagram, Twitter etc.)	August - October					
3.	Videos								
4.	GIF's								
5.	Public Health Advisories		1 in all the Healthcare facilities	September-October					

6.2.2 Public Health Advisories

Health advisories are issued to alert the population of the potentially harmful impact of air pollution. Advisories are issued at the central level and will be forwarded to all the districts through the state for public dissemination. District is to ensure timely dissemination of health advisories and if required translate in locally acceptable language.

Observation of Special Days

Special Day	Date	Key planned activities
International Day on Clean Air for Blue Sikes	7th of September	District and sub-districts levels are recommended to arrange community engagement activities as: • Health facility based: plantation, awareness sessions • Community setting based: mass meetings, rallies, local/ community radio programmes, street plays. • Sports events: athletics, cycling • Competition and quiz

6.2.3 Capacity Building

a) Training on air pollution and health response will be provided for doctors, nurses, and para medical staff from DH and Community Health Centre (CHC) at AIIMS Raipur and Pt Jawahar Lal Nehru Medical College. Technical training will be provided to the spirometry staff at all DH on operating and maintaining the equipment.

b) Necessary medicines and equipment will be made available to all health centres and hospitals to cope with any air pollution related health situation. Spirometers and a trained staff to handle it will be made available at the CHC level.

c) Capacity building of Mitanins and Panchayati Raj Institutions on Climate change and health impacts.

d) **Sensitization/knowledge building workshops** will be planned for seeking updates on various air pollution related health issues between district officials, medical officers, and academic institutions working on climate change impact.

Training on air pollution and various health impacts of air pollution

NPCCHH TRAINING PLAN AT THE DISTRICT LEVEL

Training Programme	Trainer	Participants	Training Content
Medical Officers (3 days)	DNO	MO (DH, CHC, PHC)	**Air pollution related illness** • Air pollution- health impact, prevention measures • Surveillance case identification, reporting and analysis with AQI • Health facility preparedness
Community Health Care Workers (HWC) (2 days)	MO	Community Health Workers (MPHW, ASHA)	
Panchayati Raj Institutions (1 day)	MO, MLHP	Panchayati Raj Institutions, communities	

SCHEDULE PLAN FOR TRAINING FOR 5 YEARS 2022-27

Sl. No.	Training program	Timeline	Target	Priority Districts	Budget (in lakhs) for 5 years 15% increase each year				
					2022-23	2023-24	2024-25	2025-26	2026-27
1	DNO	August	100%	The entire State of Chhattisgarh	6.0	6.0	6.0	6.0	6.0
2	MO	September-October	100%	Raipur/Durg/Bilaspur/ Janjgir Champa/ Korba/Raigarh/ Balodabazar/Sarguja					
3	Community Health Workers	October-November	100%	The entire state of Chhattisgarh					
4	Panchayati Raj Institutions	November	100%	The entire state of Chhattisgarh					

6.2.4 Surveillance

a) ARI Surveillance Activity at the district and state level has been initiated

b) Pilot Air Monitoring and Health Advisories will be conducted for 8 most vulnerable districts in the first year. These districts are Raipur, Raigarh, Bilaspur, Korba, Balodabazar, Janjgir-Champa, Durg, Sarguja. IDSP has initiated ARI surveillance that will be strengthened further. Air pollution and health impact

studies will also be carried out in these districts along with the monitoring. IDSP division will be oriented to track ARI incidences in these regions.

c) Mortality and Morbidity Data related to ARI.

d) Data analysis of different non-communicable and communicable diseases reported to the department of health and family welfare.

e) Necessary health advisories will be issued by the Chief Medical Officer and Collector based on the air quality data, as and when required.

Acute Respiratory Illness: Acute Respiratory Illness (ARI) is a cause of death globally, causing approximately 19% of all deaths before the age of 5 years, according to a World Health Organization estimate. Indoor air pollution from biomass fuels, which is strongly poverty-related, has long been regarded as an important risk factor for ARI morbidity and mortality.

Long-term exposure to high concentrations of PM2.5 may increase risk for acute respiratory problems in small children.

Chhattisgarh State National Program of Climate Change and Human Health has identified eight sites for ARI surveillance based on the poor air quality, out of which presently seven are considered vulnerable in association with poor air quality, except Sarguja.

The ARI surveillance will be implemented in the eight identified sites within a set of guidelines with the existing human resources and infrastructure. This would require:

Sl. No.	Human Resource	Numbers of staff	Role and responsibility
1	Nodal Officer: Pulmonary specialist only in the absence of the Pulmonary specialist MD Medicine OR MBBS is preferred	1	Supervise the process of surveillance from time to time.
2	Staff Nurse or Paramedics	1	To assist the nodal officer in the process and taking the details of the patients diagnosed with COPD/Asthma/Bronchitis/Pneumonia/TB
3	Data entry operator	1	Enter the data required in the given format in Annexure A in the surveillance portal or link provided on monthly basis.

Sentinel hospitals selected for ari surveillance activity

8 health facilities are identified as the sentinel hospitals for the surveillance for ARI:

Sl. No.	Name of the District	Name	Designation	Sentinel Hospital for ARI	Phone
1	Raipur		MO	District Hospital	
2	Korba	Dr. Chandrakant Bhaskar	Assistant Professor	GMC Medical College, Korba	94084 42075
3	Raigarh	Dr. Yogesh Patel	CMHO, Office	Raigarh Distrcit Hospital	99818 46933
4	Bilaspur	Dr. Aniket Kaushik	Medical Officer	Bilaspur District Hospital	9839171346
5	Durg	Dr. Devendra Kumar Sahu	MD Medicine	Durg District Hospital	99810 79993

Sl. No.	Name of the District	Name	Designation	Sentinel Hospital for ARI	Phone
6	Janjgir-Champa	Dr. Akash Thawat	Medical Officer	District Hospital, Janjgir	90981 13160
7	Balodabazar	Dr. Narendra	Medical Officer	District Hospital, Balaodabazar	93025 36808
8	Sarguja	Dr. Rajesh Kumar	Medical Officer	District Hospital, Sarguja	87180 49006

The list is subject to be updated as per the changes due to government orders regarding transfers and other requirements.

6.3 Roles and Responsibilities

In accordance with the action plan on air pollution and its impact on human health, the following roles and responsibilities have been identified to be implemented at the state, district, block as well as healthcare facility level:

Particular	Responsibilities
SNO	• Finalization of IEC material and dissemination plan • Organize IEC campaigns at state level on observance of important environment- health days • Organize training sessions for district level and surveillance nodal officer • Facilitate training of medical officers in clinical aspects of air pollution's health impact • Real time air quality data dashboard in proposed cities • Monitor AQI levels in states especially in hotspots and NCAP cities • Ensure reporting from sentinel hospitals and DNO • Ensure necessary health facility preparedness • Review surveillance reporting and monthly report submission by DNO • Submit report of activities • Review implementation of IEC and surveillance activities at all levels • Evaluate and update relevant section of SAPCCHH with support from the State Task Force • Liaison with State Pollution Control Board for AQI alerts and its dissemination • Liaison with Department of Environment for combined IEC campaigns and information sharing on health indicators for targeted air pollution reduction activities • Awareness and action plan input sharing with the local bodies of cities with high AQI • Create organization support and strengthen Environmental Health cell to implement NPCCHH vision, goal, and objectives • Organize sensitization workshops for other stakeholders and line departments • Organize seminars on Air Pollution and conferences to share knowledge and action under NPCCHH. • Collaborate with academic institute/s for support in updating SAPCCHH • Surveillance activity monitoring, vulnerability assessment, and applied research • Advocate for reduction in source of air pollution
DNO	• Ensure IEC dissemination to the community level • Facilitate community level IEC activities • Organize training for Block Health Officers, Medical Officer, Sentinel hospital nodal officers with relevant training manuals • Organize training of vulnerable groups i.e. police officers, outdoor works, women, and children

Particular	Responsibilities
	• Organize IEC campaigns at the district level on observance of important environment-health days • Collect and monitor AQI levels in states especially in hotspots and NCAP cities • Ensure daily reporting from Sentinel hospitals and compile the data • Analyze daily health data with AQI level to monitor trends and hotspot in health impacts • Submit analysed monthly report to SNO, NPCCHH Headquarter and other departments for necessary action • Submit report of activities • Update DAPCCHH with support from District Task Force • Advocate for reduction in source of air pollution
Surveillance hospital nodal officer	• Train hospital staff and clinician responsible for daily reporting in case indentation and reporting flow • Compile daily reports for the health facility and submit it to DNO and NPCCHH, Headquarter
Block Health Officer	• Conduct community level IEC activities • Ensure training of medical officers • Organize PRI sensitization workshop and training for vulnerable groups
Medical Officer	• Conduct health facility-based IEC activities • Support community level IEC activities • Be aware of AQI levels and health impact of air pollution • Ensure necessary health facility preparedness in early diagnosis and management of cases

CHAPTER 7

Health Action Plan on Heat Related Illnesses

In India, a heat wave is considered if the maximum temperature of a station reaches at least 40°C or more for plains, 37°C or more for coastal stations, and at least 30°C or more for hilly regions. The following criteria are used to declare a heat wave:

A. Based on Departure from Normal

- *Heat Wave:* Departure from the normal is 4.5°C to 6.4°C
- *Severe Heat Wave:* Departure from the normal is >6.4°C

B. Based on Actual Maximum Temperature (for plains only)

- *Heat Wave:* When the actual maximum temperature ≥45°C
- *Severe Heat Wave:* When the actual maximum temperature ≥47°C

The adverse health effects of hot weather and heat waves are largely preventable. Prevention requires a portfolio of actions at different levels, these actions can be integrated in a defined heat– health action plan.

National Disaster Management Authority (NDMA) prepared Guidelines for Preparation of Action Plan-prevention and management of Heat wave 2017, wherein the roles and responsibilities of various agencies were identified. Emergency Medical Relief (EMR), Ministry of Health and Family Welfare prepared detailed guidelines on prevention and management of heat-related illnesses in 2015 wherein patho-physiology, risk factors, clinical manifestations, management, prevention and public health action plan for managing heat-related illnesses has been explained.

7.1 Types of heat-related illnesses

Clinical Entity	Age Range	Setting	Cardinal Symptoms	Cardinal/ Important Signs	Pertinent Negative Findings
Heat rash/ prickly heat/ Miliaria	All, but frequently children	Hot environment; +/- insulating clothing or swaddling (wrap in tight clothes)	**ITCHY RASH** with **SMALL RED BUMPS** at pores in the skin. Seen in setting of heat exposure; bumps can sometimes be filled with clear or white fluid	**DIFFUSED RED COLOUR SKIN OR VESICULAR RASH**, itching of the skin without visible eruption	**NOT FOCALLY DISTRIBUTED** like a contact dermatitis
Heat cramps	All	Hot environment, **TYPICALLY WITH EXERTION**, +/- insulating clothing	**PAINFUL SPASMS** of large and frequently used muscle groups	Uncomfortable appearance, may have **DIFFICULTY FULLY EXTENDING AFFECTED LIMBS/ JOINTS**	No contaminated wounds/tetanus exposure; no seizure activity
Heat exhaustion	All	Hot environment; +/- exertion; +/- insulating clothing or swaddling (wrap in a tight clothes)	Feeling overheated, light headedness, **EXHAUSTED AND WEAK**, unsteady, feeling of **VOMITING, SWEATY AND THIRSTY**, inability to continue activities	**SWEATY**/ diaphoretic; flushed skin; hot skin; **NORMAL CORE TEMPERATURE**; +/- dazed, +/- generalized weakness, slight disorientation	No coincidental signs and symptoms of infection; no focal weakness; no difficulty in swallowing food or speech; no overdose history
Heat syncope	Typically adults	Hot environment; +/- exertion; +/- insulating clothing or swaddling (wrap in a tight clothes)	Feeling hot and weak; light headedness followed by a **BRIEF LOSS OF CONSCIOUSNESS**	Brief, generalized loss of consciousness in hot setting, short period of disorientation, if any	**NO SEIZURE ACTIVITY**, no loss of bowel or bladder continence, no focal weakness, no difficulties in food swallowing or speech
Heat Stroke	All	Hot environment; +/- exertion; +/- insulating clothing or swaddling (wrap in a tight clothes)	Severe overheating; profound weakness; **DISORIENTATION, NOT FULLY ALERT, CONVULSION, OR OTHER ALTERED MENTAL STATUS**	Flushed, **DRY SKIN** (not always), **CORE TEMP ≥40°C OR 104°F**; altered mental status with disorientation, incoherent behaviour, **COMA, CONVULSION**; tachycardia; +/- hypotension	No coincidental signs and symptoms of infection; no focal weakness; no difficulties in swallowing food or speech, no overdose history

7.2 Heat Waves Records in Chhattisgarh

Directorate of Health Services, Chhattisgarh													
Heat Stroke Report year 2015-2019													
Sl. No.	Name of the District	2015		2016		2017		2018		2019 (As On 31/06/2019)		Total	
		Case	Death	Case	Death	Case	Death	Case	Death	Case	Death	Case	Death
1	Balod	53	0	23	0	29	0	5	0	41	0	151	0
2	Balodabajar	0	0	4	0	29	0	2	0	2	0	37	0
3	Balrampur	0	0	6	0	35	0	2	0	10	0	53	0
4	Bastar	0	0	11	0	1	0	1	0	1	0	14	0
5	Bemetara	6	0	1	0	1	0	1	0	43	0	52	0
6	Bijapur	0	0	3	0	16	0	1	0	31	0	51	0
7	Bilaspur	1	0	39	0	6	0	11	0	5	0	62	0
8	Dantewada	12	0	0	0	13	0	2	0	11	0	38	0
9	Dhamtari	4	0	7	0	0	0	0	0	0	0	11	0
10	Durg	6	0	7	0	4	0	0	0	6	0	23	0
11	Gariyaband	14	0	37	1	3	0	5	0	3	0	62	1
12	Jangjir	71	0	5	0	3	0	1	0	2	0	82	0
13	Jashpur	35	0	55	0	60	0	3	0	35	0	188	0
14	Kabirdham	7	0	0	0	24	0	0	0	3	0	34	0
15	Kanker	0	0	5	0	9	0	0	0	0	0	14	0
16	Kondagaon	1	0	20	0	16	0	0	0	17	0	54	0
17	Korba	7	0	1	0	9	0	8	0	17	0	42	0
18	Korea	18	0	9	0	0	0	2	0	0	0	29	0
19	Mahasamund	6	0	9	1	14	0	11	0	22	0	62	1
20	Mungeli	5	0	1	0	20	0	2	0	0	0	28	0
21	Narayanpur	2	0	0	0	0	0	0	0	0	0	2	0
22	Raigarh	34	0	16	0	33	0	9	0	15	0	107	0
23	Raipur	1	1	4	0	15	0	0	0	2	0	22	1
24	Rajnandgaon	74	0	8	0	22	0	0	0	84	0	188	0
25	Sukma	0	0	1	0	0	0	0	0	2	0	3	0
26	Surajpur	6	0	36	0	9	0	10	0	13	0	74	0
27	Surguja	5	0	2	0	19	0	15	0	0	0	41	0
	Total	**368**	**1**	**310**	**2**	**390**	**0**	**91**	**0**	**365**	**0**	**1524**	**3**

In May 2019, almost all big cities in Chhattisgarh experienced heat wave like situations. According to the news reports high temperatures in some of the cities in May 2019 were[8]:

- Bilaspur: 45°C
- Rajnandgaon: 45°C
- Raipur: 44.3°C
- Durg: 42.6°C
- Pendra Road: 41.5°C
- Ambikapur: 41°C
- Jagdalpur: 41°C

Raipur, Bilaspur, Raigarh, Janjgir, and Durg districts were particularly affected and all of them recorded a temperature of 46°C on 9th and 10th May 2019.

7.3 Health Adaptation Plan

7.3.1 Awareness Generation

IEC Campaign

a) So far, the heat alerts are received and delivered by the state through IDSP. Even though a Heat Wave State Action Plan as well as the Raipur city heat action plan has been prepared, it needs to be disseminated further.

b) Audio-visual communication packages on heat stress and health impacts and measures to protect health, will be developed and disseminated at all the DH and CHC levels. Formulation and dissemination of Heat Wave Action Plans for districts vulnerable to heat wave in collaboration with IDSP.

c) Sustained campaign in coordination with Education Dept. and AYUSH for school and anganwadi interventions. Public awareness programs will be conducted throughout the year through community outreach and workshops and trainings, to create awareness about heat stress and its health impacts.

d) **Public Health Advisories:** Health advisories are issued to alert the population of potential harmful impact of increasing heat. Advisories are issued at the central level and forwarded to the districts through State/UTs for public dissemination. District should ensure timely dissemination of health advisories in locally acceptable language.

8 https://zeenews.india.com/chhattisgarh/imd-issues-heatwave-warning-in-chhattisgarh-for-next-48-hours-2202084.html

IEC DISSEMINATION PLAN

Sl. No.	IEC Content	Priority Districts	Dissemination Plan	Timeline	Budget (in lakhs) for 5 years with				
					2022-23	2023-24	2024-25	2025-26	2026-27
1	Posters	Bilaspur, Rajnandgaon, Raipur, Durg, Pendra Road, Ambikapur, Jagdalpur, Raigarh, Janjgir-Champa, Gariyaband, Dantewada, Mahasamund, Bemetra	1 Poster for Healthcare facilities/ Schools/Construction workers/Farmers/ travellers in all districts	Feb. - May	7.5	7.5	7.5	7.5	
2	Audio		Social Media (Facebook, Instagram etc.)	Feb. - May					
3	Videos								
4	GIF's								
5	Public Health Advisories		1 Health advisories for Healthcare facilities/ Schools/Construction workers/Farmers/ travellers in all districts	Feb. - May					

7.3.2 Public Health Advisories

Health advisories are issued to alert population of the potential harmful impacts of increasing heat. Advisories are issued at the central level and forwarded to the districts through State for public dissemination. District should ensure timely dissemination of health advisories in locally acceptable language.

7.3.3 Capacity Building

a) Organizing State and District level meetings with the Task Force on Heat Action Plans before the summer season to ensure awareness and preparedness for responding to the heat wave scenario.

b) Training on heat stress and health response will be provided for doctors, nurses and para medical staff from DH and Community Health Centre (CHC) at AIIMS Raipur and Pt Jawahar Lal Nehru Medical College.

Training on various health impacts of heat is as follows:

NPCCHH TRAINING PLAN AT DISTRICT LEVEL

Training Programme	Trainer	Participants	Training Content
Medical Officers (3 days)	DNO	MO (DH, CHC, PHC)	**Heat related illness** • Heat-health impact, prevention measures • Surveillance case identification and reporting • Health facility preparedness • Clinical management of HRI • Indoor and outdoor mitigation measures
Community Health Care Workers (HWC) (2 days)	MO	Community Health Workers (MPHW, ASHA)	
Panchayati Raj Institutions (1 day)	MO, MLHP	Panchayati Raj Institutions, communities	

SCHEDULE PLAN FOR TRAINING

Sl. No.	Training programme	Timeline	Target	Priority Districts	Budget (in lakhs) for 5 years with increasing 15% each year				
					2022-23	2023-24	2024-25	2025-26	2026-27
1	DNO	February	100%	Bilaspur, Rajnandgaon, Raipur, Durg, Pendra Road, Ambikapur, Jagdalpur, Raigarh, Janjgir -Champa, Gariyaband, Dantewada	6.0	6.0	6.0	6.0	6.0
2	MO	March	100%						
3	Community Health Workers	April	100%						
4	Panchayati Raj Institutions	April-May	100%						

c) **Sensitization/knowledge building workshops** will be planned for seeking updates on various heat related health issues between district officials, medical officers, and academic institutions working on climate change impact.

7.3.4 Surveillance

Surveillance of heat for advisories is in existence and the data is also regularly shared with National Center for Disease Control under the National Program of Climate Change and Human Health.

a) Creating Heat Stress Response Corners in the Hospital. These will be special section in the hospitals equipped with material, ORS, and water and drugs, along with the technical staff to create awareness and respond to heat-related emergencies.

b) Issuing Health advisories by the Directorate of Health and Family Welfare and District Collectors during extreme heat situations. These advisories will contain the Do's and Dont's for the general public.

7.4 ROLES AND RESPONSIBILITIES

The roles and responsibilities of the state staff to implement the action plan for heat related illnesses is defined below:

Particular	Responsibilities
SNO	• Disseminate early warnings to the district level • Finalization of IEC material and dissemination plan • Liaison with IMD for weather alerts and its dissemination • Liaison with other departments for combined IEC campaigns, coordinated response and information sharing of health indicators for targeted action • Organize the IEC campaigns at state level on observance of important environment-health days • Organize training sessions for the district level and the surveillance nodal officers • Facilitate training of medical officers in clinical aspects of heat-health impact • Ensure daily surveillance reporting from district level • Ensure submission and analysis of heat related death at state and district level • Monitor daily health data with temperature and humidity levels to monitor trends and hotspots in the state

Particular	Responsibilities
	• Review health facility preparedness and ambulance services to manage HRI • Identify health facilities at different levels that can have heat illness wards with necessary treatment/cooling facilities • Keep existing Rapid Response Teams under IDSP prepared to manage HRI if needed for emergency response to extreme heat • Review implementation of the IEC and surveillance activities at all levels • Evaluate and update relevant section of SAPCCHH with support from State Task Force • Create organizational support and strengthen Environmental Health cell to implement NPCCHH vision, goal, and objectives • Organize sensitization workshops for other stakeholders and line departments • Organize seminars and conference to share knowledge and action under NPCCHH. • Collaborate with academic institute/s for support in updating SAPCCHH, Surveillance activity monitoring, training of health care professionals, vulnerability assessment, and applied research • Submit report of activities on heat-health under NPCCHH • Advocate for reduction in source of greenhouse gas emissions
DNO	• Disseminate early warning to block and health facility level • Ensure IEC dissemination to community level and facilitate community level IEC activities • Liaison with IMD to receive daily observed temperature and relative humidity information • Liaison with other departments for combined IEC campaigns, coordinated response and information sharing of health indicators for targeted action • Conduct training for block health officers, medical officers, with relevant training manuals • Conduct sensitization of vulnerable groups: police officers, outdoor works, women, children, etc. • Organize IEC campaigns at district level on observance of important environment- health days • Ensure daily reporting from health facilities and compile the data • Analyze daily health data with temperature and humidity levels to monitor trends and hotspots in the district • Support timely suspected heatstroke death analysis and its reporting • Submit analyzed weekly report to SNO, NPCCHH, and other departments for necessary action • Coordinate with other agencies for response • Update DAPCCHH with support from District Task Force • Submit report of activities on heat-health under NPCCHH • Advocate for reduction in source of greenhouse gas emissions
Block health officer	• Conduct community level IEC activities • Ensure training of medical officers • Organize PRI sensitization workshop and training for vulnerable groups • Implement heat mitigation efforts
City health department	• Support in the development and implementation of city-specific heat-health action plan
Medical officer	• Conduct health facility-based IEC activities • Support community level IEC activities • Be aware of AQI levels and health impact of air pollution • Ensure necessary health facility preparedness in early diagnosis and management of cases
Panchayati Raj Institutions	• Conduct community level IEC activities

CHAPTER 8

Health Action Plan on Extreme Weather Event-Related Health Issues

Disasters in Chhattisgarh State

10.1 Drought

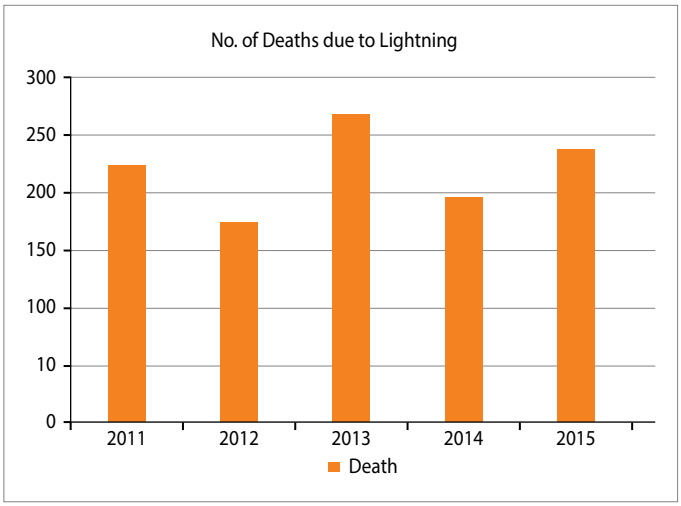
Drought condition is a serious threat to the state. Based on the available data of last 17 years, it was seen that there is a variety of drought patterns in the state, sometimes affecting the whole state and sometimes limited to some areas and districts. However, four districts have been identified as severe drought prone districts, which include Baloda Bazar, Bemetara, Mungeli, and Kabirdham. According to the statistics, in the year 2017-18, 96 tehsils in 21 districts of the state were affected by the droughts which impacted almost 9,58,411 farmers.

10.2 Flood

Out of all the natural hazards, flood affects the state most and is one of the most devastating natural disasters. In other words, the danger of flood is very high in the state. According to the available data by the Department of Revenue and Disaster Management, the state has faced severe floods in 2005, 2007, and 2018. It was also observed that more than 80% of the annual rainfall is centered on the period of three months of monsoon. This leads to poor discharge of heavy silt, flash floods, and flood water, and for this reason the embankment gets sometimes broken.

10.3 Lightning

In Chhattisgarh, most of the lightning incidents occur during the monsoon season, apart from this, due to sudden changes in weather, the possibility of lightning also arises. As a result, huge losses are incurred of the animals as well as the public money. The adverse effects of lightning are seen in Korba, Raigarh, Mahasamund, and Bastar districts. Between 2011-2015, 1058 people died due to lightning in the state.



10.4 Earthquake

In major parts of the state, moderately high intensity of earthquakes take place. In the recent times, some incidents have triggered the whole state. However, according to the India's vulnerability Atlas 2007 Korba, Korea, Raigarh, Sarguja, Bijapur districts comes under Zone-3, and Sukma, Dantewada, Raipur, Mahasamund districts under Zone-2.

10.5 Storm

Neighbouring states of Chhattisgarh, like Odisha, Andhra Pradesh, and Telangana experience large scale storms due to their proximity to sea. The effect of which is also witnessed by a few districts of Chhattisgarh state like Sukma, Raigarh, Bastar, and Bijapur.

Seasonality of Hazards

By understanding the estimated event of hazard, the concerned departments can be prepared for the related threats. The mapped annual seasonality of the hazards experienced by Chhattisgarh is as follows:

Risk	January	February	March	April	May	June	July	August	September	October	November	December
Flood												
Urban Flood												
Drought												
Lightning												
Rail/Road Accident												
Industrial												
Disaster												
Epidemic												
Forest Fire												
Fire												
Heat wave												
Cold wave												
Snake Bite												
Animal Conflict												
Storm												
Stampede												
Earthquake												
Land Slide												
Legend	High Occurrence				Moderate Occurrence				Low Occurrence			

District wise Hazard Analysis Summary of Chhattisgarh

Sl. No.	District Name	Food	Drought	Lightning	MAH Units (Industrial)
1	Raipur	High	Moderate	Low	High
2	Dhamatri	High	Moderate	Low	Low
3	Durg	Moderate	Moderate	Moderate	Moderate
4	Rajnanadgaon	High	Moderate	Moderate	Low
5	Mahasamund	Low	Moderate	High	Low
6	Balod	Moderate	Moderate	Low	Low
7	Baloda bazar	Moderate	High	Low	Low
8	Sukma	High	Moderate	Moderate	Low
9	Dantewada	Moderate	Low	Moderate	Low
10	Narayanpur	Low	Moderate	Low	Low
11	Kondagaon	Low	Moderate	Low	Low
12	Kanker	Moderate	Moderate	High	Low
13	Jagdalpur	High	Low	High	Low
14	Bijapur	Moderate	Moderate	Moderate	Low
15	Kabirdham	Low	High	Low	Low
16	Bilaspur	Low	Moderate	Low	Low
17	Korba	High	Moderate	High	Low
18	Janjgir-Champa	Moderate	Moderate	Low	Low
19	Jashpur	Low	Moderate	Moderate	Low
20	Sarguja	Low	Low	Moderate	Low
21	Korea	Low	Moderate	Moderate	Low
22	Surajapur	Moderate	Low	Moderate	Low
23	Balrampur	Low	Low	Moderate	Low
24	Raigarh	Low	Moderate	High	Low
25	Mungeli	Low	High	Low	Low
26	Gariyaband	Moderate	Moderate	Moderate	Low
27	Bemetara	Moderate	High	Low	Low

Adaptation Plan

Awareness Generation

IEC on emerging climate-sensitive health impacts and diseases

a) Under the programme, awareness generation amongst all the relevant stakeholders including the common population, vulnerable communities, healthcare providers, and policymakers around the impacts of disaster events.

b) The districts are aimed to create awareness through Information, Education, and Communication Activities (IEC) through the development of locally and culturally more acceptable messages in posters, audio, video, organising public health events, and issuing advisories related to disaster management. The content for the IEC for disaster management will be provided by the State NPCCHH division. The role of the districts is to utilize these materials, translation of the required material and dissemination at all levels.

c) Sensitization of the health professionals/communities on emerging climate-sensitive health impacts and diseases.

Observance of important environment-health days

Day	Activities on Heat-Health
• International Day for Disaster Risk Reduction	**IEC Campaigns** • Audio-video spots broadcasting • Targeted awareness sessions: women, children, occupational groups • Mock drill, disaster response exercise • Sports events • Competition: poster, poem/essay, quiz **Health facility level activities** • Health facility-based patient awareness sessions • Conduct assessment of disaster vulnerability/energy/water conservation measures • Review of implementation of climate-resilient measures

Capacity Building

a) Refreshers training of the health professionals on diagnosis and treatment of Scrub Typhus/ Snake Bites

b) Meeting the compensation process for the family for the death of the person due to lightening

c) **Training on disaster management is as follows:**

NPCCHH Training Plan at District Level

Training Programme	Trainer	Participants	Training Content
Medical Officers (3 days)	DNO	MO (DH, CHC, PHC)	Disaster Management
Community Health Care Workers (HWC) (2 days)	MO	Community Health Workers (MPHW, ASHA)	
Panchayati Raj Institutions (1 day)	MO, MLHP	Panchayati Raj Institutions, communities	

Strengthening Health Sector Preparedness

i. Early warning

Dissemination of early warnings for heat wave, cold wave, flood, cyclone, etc. to the health facility level and community level

ii. Surveillance

a) Monitoring of the cases in collaborative efforts with IDSP/Zoonotic Disease Department and State Disaster Management Authority

b) Post-disaster health impact assessment

iii. Health Facility Preparedness

- Vulnerability assessment of health facility in the context of climate change-extreme weather events
- Identify structural changes/retrofitting measures at the facility level to equip the healthcare facility
- Formalize disaster management plan and committee
- Emergency procurement arrangements and functioning of essential health services (safe water, immunization, maternal-child care, etc.)
- Post-disaster damage assessment and referral plan in case of health facility damage
- Ensure routine monitoring and maintenance of support functions (water quality, waste management)
- Establish Sustainable Procurement Committee

Roles and Responsibilities

Particulars	Responsibilities
SNO	• Disseminate early warnings to the district level • Finalization of IEC material and dissemination Plan • Formalize intersectoral coordination for disaster planning, management, and response with SDMA/IMD and other response departments • Organize training of district level officers • Facilitate assessment and implementation of climate-resilient measures in health facilities • Review implementation of IEC, training, and surveillance activities at all levels • Evaluate and update relevant section of SAPCCHH with support from State Task Force • Create organizational support and strengthen Environmental Health cell to implement NPCCHH vision, goal, and objectives • Organize sensitization workshops for other stakeholders and line departments • Collaborate with academic institute/s for support in updating SAPCCHH, Surveillance activity monitoring, training of health care professionals, vulnerability assessment and applied research • Submit reports of activities on EWE and health under NPCCHH
DNO	• Disseminate early warning to the block and health facility levels • Ensure IEC dissemination to community level and facilitate community level IEC activities • Organize training for block health officers and MO • Formalize intersectoral coordination for disaster planning, management, and response with SDMA/IMD and other response departments

Particulars	Responsibilities
	• Liaison with other departments for combined IEC campaigns, coordinated response and information sharing of health indicators for targeted action • Identification and communication of evacuation routes and relief camps • Support planning and management of health care services in relief camps • Provide necessary IEC on health and sanitation in relief camps training for block health officers, medical officers, with relevant training manuals • Conduct sensitization of vulnerable groups, police officers, outdoor works, women, children etc. • Organize IEC campaigns at district level on observance of important environment- health days • Facilitate disaster vulnerability assessments in health facilities and maintain records of such assessment and health facility damage due to EWE • Update DAPCCHH with support from District Task Force • Submit reports of activities on EWE and health under NPCCHH
Block Health Officer	• Conduct community level IEC activities • Ensure training of medical officers • Organize PRI sensitization workshop and training for vulnerable groups • Facilitate disaster vulnerability assessments in health facilities and maintain records of such assessment and health facility damage due to EWE
Medical Officer	• Conduct health facility-based IEC activities • Support community level IEC activities • Preparation of Disaster Management Plans and hospital safety plan • Assessment of health facility in the context of climate change-extreme weather events • Identifying structural changes/retrofitting measures at the facility level to equip the healthcare facility • Ensuring routine monitoring and maintenance of support functions (Water quality, waste management) • Health facility preparedness for seasonal events
Panchayati Raj Institutions	• Conduct community level IEC activities • Community involvement in planning and demonstration of measures taken before, during, and after an EWE

CHAPTER 9

Health Action Plan on Vector-borne Illnesses in Context of Climate Change

8.1. Vector-Borne diseases

In Chhattisgarh there are few vector borne diseases outbreaks every year they are:

8.1.1 Malaria

Malaria is caused by Plasmodium parasites. The parasites are spread to people through the bites of infected female Anopheles mosquitoes, called "malaria vectors." There are 5 parasite species that cause malaria in humans, and 2 of these species – P. falciparum and P. vivax – pose the greatest threat. The southern and north eastern districts of the state including Bijapur, Dantewada, Bastar, Sukma, Kanker, Kondagaon, Jagdalpur, Sukma, Narayanpur, Jashpur and Koriya are particularly vulnerable to malaria.

8.1.2 Dengue

Dengue is a mosquito-borne viral infection causing a severe flu-like illness and, sometimes causing a potentially lethal complication called severe dengue. Dengue Fever is caused by the dengue virus which is transmitted through the Aedes type of mosquitoes. Dengue is fast emerging pandemic-prone viral disease in many parts of the world. Dengue flourishes in urban poor areas, suburbs and the countryside but also affects more affluent neighborhood in tropical and subtropical countries. During the rainy seasons, survival of the virus increases which leads to outbreak of the disease, almost throughout the state. Dengue cases have increased 5 fold from 2014 to 2018 in the state and at least 15 deaths due to dengue were reported in Chhattisgarh in 2018.

8.1.3 Filariasis

Filariasis is caused by several round, coiled and thread-like parasitic worms belonging to the family filaridea. These parasites after getting deposited on skin penetrate on their own or through the opening created by mosquito bites to reach the lymphatic system. The disease is caused by the nematode worm, either Wuchereria bancrofti or Brugia malayi and transmitted by ubiquitous mosquito species Culex quinquefasciatus and Mansonia annulifera/M.uniformis respectively. The disease manifests often in bizarre swelling of legs, and hydrocele and is the cause of a great deal of social stigma. Filariasis is caused by several round, coiled and thread-like parasitic worms belonging to the family filaridea. These parasites after getting deposited on skin penetrate on their own or through the opening created by mosquito bites to reach the lymphatic system. Filaria endemic districts in Chhattisgarh are Ambikapur/Surguja, Bilaspur, Dhamtari, Durg, Janjgir, Jashpur Nagar, Mahasamund, Raigarh, Raipur.

Weather variables: temperature, rainfall, humidity, floods, drought, wind, daylight duration etc., Change in Vector/animal population due to change in growth, survival, feeding habits, seasonality, breeding sites, resistance etc, Change in interaction of vector/animal & pathogen due to change in susceptibility, Incubation period, or transmission, Change in demography, migration, land-usage practices, water projects, agricultural practices and Public health infrastructure and access to it.

Adaptation strategy and action plan for Vector Borne diseases

1. Protective measures and greater community mobilization.
2. Increased technical capacity.
3. Increased Infrastructure.
4. Strengthened monitoring and Surveillance systems.
5. Case Management; Lab diagnosis and clinical management.
6. Vector management; environmental management for source reduction, chemical control, personal protection and legislation.

8.2 Health Adaptation Plan on Vector Borne Diseases

IEC Campaign

- The Districts are aimed to create awareness through Information Education and Communication Activities (IEC) through development of locally and culturally more acceptable messages in posters, audio, video, organising public health events, issuing advisories related to vector borne disease.
- The content for the IEC for vector borne disease will be provided by the State NPCCHH division. The state will translate the content into the regional language, if required and the role of the districts is to utilize these materials and disseminate at all levels.
- Advertisement and promotion through IEC: Street plays, Hoards, billboards, as and other advertisement modes

Capacity Building

Refresher trainings of the Medical professionals:

- Expanded training of doctors and associate staff
- Increased training of NGOs and Asha workers

NPCCHH TRAINING PLAN AT DISTRICT LEVEL

Training Programme	Trainer	Participants	Training Content
Medical Officers (3 days)	DNO	MO (DH, CHC, PHC)	Vector borne related illness
Community Health Care Workers (HWC) (2 days)	MO	Community Health Workers (MPHW, ASHA)	
Panchayati Raj Institutions (1 day)	MO, MLHP	Panchayati Raj Institutions, communities	

Sensitization/knowledge building workshops should be planned for seeking updates on various air pollution related health issues between district officials, medical officers and academic institutions working on climate change impact.

Surveillance

a) Monitoring of the cases in the Districts through collaborated affords with IDSP/Vector borne disease programs and district Nodal Officers of CG NPCCHH

b) Monitoring and evaluation
   - Monthly Computerized Management Information System (CMIS)
   - Field visits by state by State National Program Officers
   - Field visits by Malaria Research Centers and other ICMR Institutes
   - Feedback to states on field observations for correction actions.

ROLES AND RESPONSIBILITIES

In order to address the current as well as future exposure of the state to vector borne diseases due to changes in temperature and rainfall patterns, the following roles and responsibilities have been identified to be conducted by the departments at the state, district block and healthcare facility level:

NVBDCP, Chhattisgarh	Overall guidance and policy formulation	Guide the state governments in resurgence and containment of any VBD
State Nodal Officer, Climate Change	To support the state govt. in control of VBDs particularly in climate-sensitive states	• Oversee vector control measures • Oversee health sector preparedness • Oversee VBD surveillance, control in post-disaster situations in community and relief camps • Train DNO, DMO • Sensitization workshops to increase awareness on climate change and its impact on VBD
India Meteorological Department	To provide meteorological data as and when required	• To help the state govt. in building collaboration with any research institute, analysis of relationship between climatic factors, and a particular VBD so as to forewarn the impending outbreaks
NGO at state and district level for reach to community	Heath education at community level	• Conduct workshops for IEC activities for different level of staff in the identified areas in consultation with the state government
State Programme Officer	Overall planning and execution of surveillance and intervention measures to control VBDs	• Supervise and guide the DNOs in control of VBDs
State Entomologist	To provide guidance in vector control	• Generate data on fortnightly fluctuations in density of vector species so as to guide the state government in choosing appropriate time of IRS activities. To generate data on susceptibility status of disease vectors for using appropriate insecticide for IRS/larvicide for vector control
Chief Medical Officer/ District Malaria Officer/Disease Surveillance officer	Execution of task assigned by the SPO	• Supervise and guide surveillance and intervention measures for control of VBDs in the district.

CHAPTER 10

Action Plan for Green and Climate Resilient Health Care Facilities

"Climate-resilient and environmentally sustainable health care facilities anticipate, respond to, cope with, recover from and adapt to climate-related shocks and stresses, while minimizing negative impacts on the environment and leveraging opportunities to restore and improve it, so as to bring ongoing and sustained health care to their target population and protect the health and well-being of future generations. (WHO)".

As the climate continues to change, risks to health systems and facilities – including hospitals, clinics, and community care centers – are increasing, reducing the ability of health professionals to protect people from a range of climate hazards. Health care facilities are the first and last line of defence to climate change impacts as they can be responsible for large emissions of greenhouse gases (GHGs), and because they provide the needed services and care to people harmed by extreme weather and other long-term climate hazards.

Framework for building climate-resilient and environmentally sustainable HCF

Source: WHO Guidance for Climate-Resilient and Environmentally Sustainable Health Care Facilities

The National Programme on Climate Change and Human Health (NPCCHH) is engaging critically with strengthening the healthcare services and facilities to adapt to as well as mitigate the impacts of climate change. The key components recognized under the programme include:

1. Environmentally Sustainable (Green) Measures at Health Care Facilities
   a. Energy Auditing
   b. Installation of LED lighting at Health Care Facilities Installation of Solar panels
   c. Water Conservation Measures – Rain water Harvesting
2. Climate Resilient Infrastructure at Health Care Facilities including Retro Fitting of Existing Health Care Facilities

1. Environmentally Sustainable (Green) Measures at Health Care Facilities

a. Energy Auditing:

As per the Energy Conservation Act, 2001, Energy Audit is defined as "the verification, monitoring and analysis of use of energy including submission of technical report containing recommendations for improving energy efficiency with cost benefit analysis and an action plan to reduce energy consumption", which can be further evaluated with subsequent, annual energy audits to reach a goal of net-zero emissions. More information is available at https://beeindia.gov.in/sites/default/files/1Ch3.pdf

An energy audit identifies all energy end-uses within the building, estimates how much energy is used in each department, and determines the amount of energy used in relation to the desired values.

The guiding principles in this respect include:

- The HCFs would develop a plan for the energy audit to assess the level of energy consumption.
- The responsibility for the energy audit would be of the IPC committee of the facility. If the healthcare facility lacks qualified staff, then the energy audit would be conducted by the state health department as well.
- The energy audit would also consider load management, poor maintenance aspects, and extreme temperature to avoid fire-related accidents. Audit would be conducted in the facility biannually.
- Installing sub-meters in the facility premises would be useful in understanding how much energy is used across the healthcare facility

The work would be carried out in Collaboration with Chhattisgarh Renewal Energy Development Agency for solarization, water harvesting, energy efficient equipment's and cool roof.

b. Replace existing (non-LED) lighting with LED

LED stands for light-emitting diode (LED). This specialized electronic component is assembled into a lamp or bulb for use in light fixtures. LED bulbs have the following advantages:

- LED bulbs are energy efficient. As compared to the incandescent bulbs, LEDs consume up to 90% less power.
- Lesser consumption of power also means lesser emission of CO_2, and thus reduced carbon footprints.
- Use of LED bulbs naturally is indicative of a dramatic decrease in power costs.
- LED bulbs are long lasting. A single bulb may last as long as 20 years. Thus, usage of the same also results in time-efficiency.
- Money and energy is saved in maintenance and replacement costs due to the long LED lifespan.

Replacing the incandescent bulbs with LEDs leads to 75% less energy consumption. Each LED light saves approximately INR 700-1400 over the course of a year.

The guiding principle in this respect would be:

- Healthcare facilities would have a policy on purchasing and using energy- efficient equipment and devices. The facilities would gradually phase out the incandescent bulbs with LEDs.
- Incandescent light bulbs or other inefficient bulbs should be replaced with LED bulbs in all suitable places in a health facility.

State and District Nodal Officers will coordinate with State/District level Bureau of Energy Efficiency representatives to conduct energy audits and energy conservation

c. Installation of solar panels: Healthcare facilities both in urban and rural areas consume a lot of energy throughout the day as the electrical equipment used directly or indirectly to treat patients requires uninterrupted power.

The guiding principle in this area would be:

- The state would, in a phased manner, install PV solar panels in unused spaces like the roof of the facility. This would reduce grid-based electricity consumption and decrease the peak demand of a facility, which means the organization has lower operating costs, and hence these saved costs can be utilized for better patient care.

Photovoltaic (PV) (solar panels) systems capture energy from the sun and convert it into electricity, thereby reducing energy generated via fossil fuels and leading to reduced GHG emissions and air pollution. Solarization of health facilities also reduces dependence on insufficient or intermittent electricity supply in rural areas. If solar power is used as backup, the services of prime importance – emergency, essential services, childbirth, freezer for cold chain maintenance (vaccines), new- born care corners etc. will be provided 24x7. Solar water heating is another way to use solar energy in HCF apart from solar photovoltaics for power generation.

Chhattisgarh is the leader in the country in solarizing its health centers. The Chhattisgarh Renewable Energy Development Authority (CREDA) has so far achieved more than 90% solarizing targets for PHCs and CHCs in the state. Solarizing the health centers make them energy independent and helps reduce their carbon footprint and hence truly climate resilient. CREDA is a partner for the Department of Health and Family Welfare of the State in making the health infrastructure more climate resilient.

The survey was conducted of the public health facilities based on the list received by CREDA by State Health Resource Center, Rapiur (Technical cell for CG NPCCHH) of around 1198 public health facilities. Few of the health facilities were repeated due to an increase in KV or for minor reasons. The findings and recommendations made in the report are as follows:

1. 99% of the public health facilities were found to be solarized
2. Solar plants were found to be functional in 90% solarized health facilities
3. Good mechanism for receiving and addressing the complaints exist at CREDA
4. Smaller centers were found to utilize solar energy well

Gaps identified

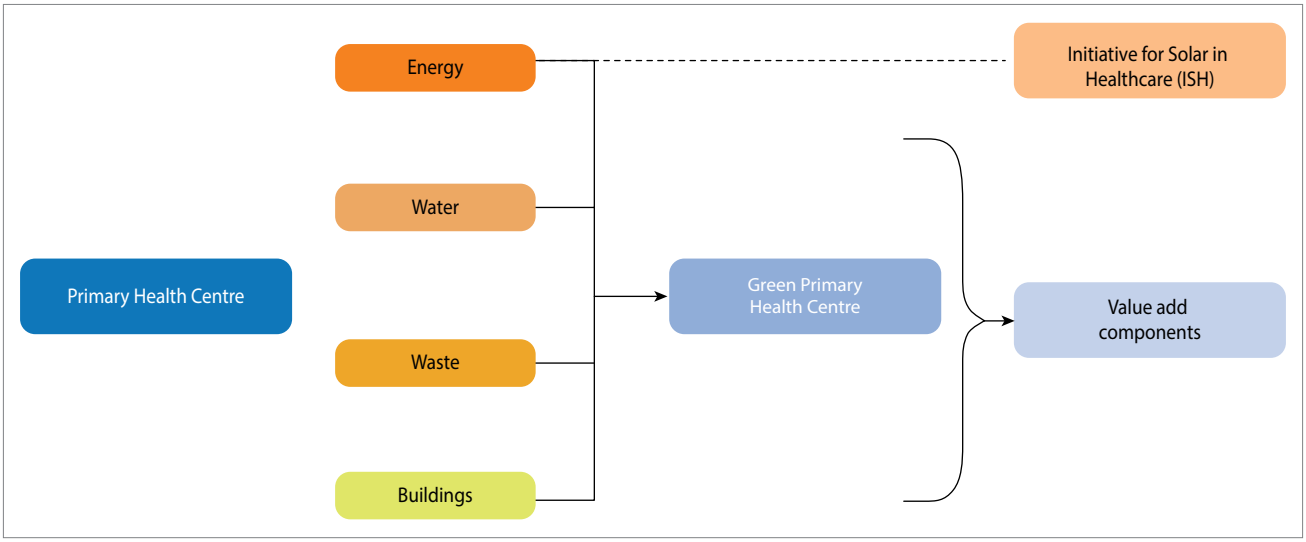
A. 47% of health facilities use solar energy only during power failures.

B. Partial use of solar energy for equipment in health facility is identified.

Recommendations

1. Powering rural healthcare infrastructure with decentralized renewable energy is an obvious choice now and in the future. The solarization of the sub health center would not only facilitate to deal with the ongoing or any pandemic situation but also to meet the challenge of climate change.
2. There is ample evidence that access of electricity is crucial for the health centers to discharge their duties. Enhancements are being planned in the rural health infrastructure in the aftermath of the COVID-19 pandemic provides a unique opportunity to direct critical public funding towards electrifying the SHCs.
   a) Rural Health Facility – Sub Health Centers and Primary Health Centers should be given the priority for solarization, as smaller centers are being found to use the solar energy well.
   b) Guidance document/Guidelines for Solarization of the health facility – defining role and responsibility for the selection criteria or identification of the public health facility for solarization, using vulnerability assessment for health infrastructure.
   c) Orientation of the health facility staff for solar energy for its potential use and climate resilience.
   d) Accountability – capacity building of the point person. Indicators for potential use of solar energy need to be defined for future assessment.
   e) A designated staff at the health center level should be appointed by the health center to manage and maintain the solar power plant and coordinate with the engineers at CREDA.
   f) Monitoring and maintenance of solar energy should be encouraged through the health system with the technical support for repairing and other major breakdowns can suggested to CREDA.
   g) Health facility energy audit should be facilitated from time to time.

Green measures: Proposal to develop organic food, medicinal, and herbal gardens at all HWCs and Health Centers.



Source: CREDA

d. Water conservation: In an HCF, sanitary fixtures consume 42 per cent of water while heating ventilation and air conditioning (HVAC) consumes 23 per cent of water, thus, major water-consuming area needs to be focused on reducing water consumption.

Rainwater harvesting for healthcare facilities has the potential to save thousands of litres of water every year. This in turn can result in substantial cost savings in addition to adopting climate-smart practices.

The guiding principles for water conservation in a HCF would be as follows:

- The healthcare facility would develop a strategy for the optimum usage of water.
- The HCFs would develop a plan for the conservation of water. e.g., water- efficient fixtures, dual flush mechanism, sensor-operated urinals, waterless urinals, rainwater harvesting.
- The HCFs would have a plan for wastewater treatment. e.g., sewage treatment plant and effluent treatment plant at sites of generation of contaminated grey water, like pathology.
- The HCFs would develop a programme/plan for the conservation of water.
- The HCFs would have a water management programme for the conservation of water by establishing a team, setting goals with timelines, conducting water audits, determining the cost of water, and preparing an action plan.
- The HCFs would have an ongoing educational programme for the efficient usage and conservation of water for all the stakeholders (staff, patients and visitors).
- The HCFs would have a plan to train the staff on water savings techniques.
- The HCFs would develop a wide variety of methods to communicate through IEC materials, new and/or revised operating guides and manuals.

Installation of Rainwater harvesting system

Rainwater harvesting system to reduce climate change vulnerability has two goals: first, to be one of the alternatives for clean water source during a disaster/drought, and second, provide adaptation actions to reduce flooding. Hospitals can also adopt a strategy of simple artificial recharge techniques in rural areas like Percolation Tanks, Check Dams, Recharge Shafts, Dug Well Recharge and Sub-surface Dykes and adopt Rooftop rainwater harvesting in urban areas.

Water harvesting methods are of following two types:

1. Surface run-off harvesting: During heavy downpours, the water flows away as surface runoff. This runoff water can be collected and used for recharging aquifers.
2. Rooftop harvesting: In this system, the roof itself becomes the catchment and rainwater can be collected from the roof of the building. The water can either be stored for utilization or it can be diverted to an artificial recharge system. In this method, water can be collected without much expense. This method is highly effective and it can also help in the recharge of groundwater level.

The rainwater harvesting potential of a site depends on rainfall quantity, area of catchment, and runoff coefficient. Additionally, the decision of whether to store or recharge groundwater using harvested rain depends upon the rainfall pattern, requirements, surface geology of a particular region, groundwater quality etc[4]. Efforts should be made to increase dependence on harvested rainwater and redirect excess water to groundwater recharge.

Kayakalp guidance document also provides more information and important consideration on rainwater harvesting in HCF. http://qi.nhsrcindia.org/sites/default/files/Implementation%20Guidebook%20for%20Kayakalp% 20final%20version.pdf

Important considerations for water storage tanks:

- It should not be located close to a source of contamination, such as a septic tank etc.
- It should be located on a lower level than the roof to ensure that it fills completely
- It should be accessible for cleaning
- A rainwater system should include installation of an overflow pipe which empties into a non-flooding area. Excess water may be used for recharging the aquifer through dug well or abandoned hand pump or tube well etc.
- A speed breaker plate should be provided below inlet pipe in the filter so as not to disturb the filtering material
- The inlet into the storage tank should be screened in such a way that it can be cleaned regularly
- Water be filtered and disinfected before using for drinking purpose by chlorination or boiling etc.

More information is available at https://megphed.gov.in/resolution.htm

2. Climate Resilient Infrastructure at Health Care Facilities including Retro Fitting of Existing Health Care Facilities

It is essential that HCF planning and designing should be responsive to local climate and hazard profile of the district. Strong focus should be given to designing all aspects of infrastructure and services as per relevant IS standards, building codes and local byelaws, and history of emergencies in the district to ensure patient safety and continuity of health service during emergencies. Few key interventions that would be undertaken to make the HCFs into green buildings would include:

New Buildings

- Climate risk assessment at the time of planning and designing the building.
- Use of high-performance glass on windows, doors, and roofs to prevent the heat inside and allows sunlight and fresh air to enter the room.
- Use double glazing glass on windows; it provides thermal and optical properties to the building and reduce the noise level.
- Insulation of building from inside and outside in colder regions of the country.
- Ensure the plinth level is above the high flood level as known locally or storm surge level (in costal districts) and make the building accessible with ramps and railing to create a barrier free environment.
- Installation of Rainwater Harvesting System
- Installation of alternative energy systems
- Installation of STP & ETP

Existing Infrastructure

- Introduction of electronic patient records in the facility to reduce the use of paper.
- Availability of 10-30 per cent area for the herbal garden in the facility.
- Floor and wall finishes are conducive for infection prevention control practices.

- Modifications in the critical care rooms to make them functional during disasters.
- Installation of Rainwater Harvesting System
- Installation of alternative energy systems
- Installation of STP & ETP

Cooling measures for HCF (Climate Resilient measures in heat vulnerable areas): Retrofitting for heat resilient measures is recommended in heat vulnerable areas and should be prioritized based on the gap analysis.

a. Cool roofs are a simple and cost-effective solution to reduce temperatures inside a building in comparison with traditional roofs.

b. Benefits: Depending on the setting, cool roofs can help keep indoor temperatures lower by 2 to 5°C (3.6-9°F). They conserve energy by reducing cooling load on fans, coolers, air conditioners, in turn reducing contribution to emissions. Cool roofs enhance the durability and appearance of roofs.

c. How they work: Cool roofs are better at reflecting sunlight and absorb less heat. They are prepared, covered or coated with materials that have characteristics that enable them to warm up less than regular roofs. Light-coloured paints, roof tiles, coatings are usually used for this purpose. Reflective paint is a cost-effective cool roof coating. For example, locally-available simple white lime paint costs as little as ₹0.5 per square foot to more expensive reflective coatings or membranes. White lime paint is being used in various Cool Roof Programmes in different states. (https://ncdc.gov.in/WriteReadData/l892s/57166105751632287688.pdf) and (https://tsredco.telangana.gov.in/PDFs/Telangana_Cool_Roofs_Policy_for_Public_ Comments.pdf).

Implementation Plan

HEALTH SECTOR PREPAREDNESS FOR 5 YEARS 2022-27

Objective	Activities	Priority districts	Identified Health faciliti es for 5 years for each	Timeline	Budget (in lakhs) for 5 years with 15% increasing each year					Target for 5 years 2022-27				
					2022-23	2023 -24	2024 -25	2025 -26	2026-27	2022-23	2023-24	2024-25	2025-26	2026-27
Strength-ening Healthcare System	Energy Audit	Entire Chhattisgarh	PHC's/SHC/ HWC	February-April	18.9	18.9	18.9	18.9	18.9	20%	35%	50%	75%	100%
	Led installation			April-May						20%	35%	50%	75%	100%
	Solar Panels installation			May-August						20%	35%	50%	75%	100%
	Rain water Harvesting			August-October			20.0	20.0	20.0	20%	40%	60%	80%	100%
	Retro fitting of Healthcare facilities			October-December						20%	40%	60%	80%	100%

Roles and responsibility

The table below highlights the roles and responsibilities of the associated staff to help support green climate and resilience infrastructure development in order to strengthen healthcare infrastructure.

Particulars	Responsibilities
SNO	• Finalization of IEC material and dissemination plan • Organize training sessions for the district-level officers and trainers • Identify health facilities for priority implementation based on disaster and health facility vulnerability • Identify relevant state level nodal agencies and collaborate with them for assessment of health facilities for implementation of measures • Facilitate and monitor necessary assessments at the health facility level • Facilitate implementation of structural and functional measures at the health facility level • Monitor the implementation of the activities • Support districts to identify sources of funding • Advocate for reduction in source of greenhouse gas emissions
DNO	• Conduct training for block health officers, and medical officers, with relevant training manuals • Support conduction for the following assessment at the health facility level ▪ Energy audit ▪ Water audit ▪ Disaster-vulnerability assessment • Support the following functional measures at the health facility level ▪ Water committee ▪ Sustainable procurement committee ▪ Operational measures to make health facilities function during the disasters or power cut • Coordinate with other agencies for the assessment and implementation of identified structural and functional measures • Update DAPCCHH with support from District Task Force
Block health officer	• Ensure training of medical officers • Organize PRI sensitization workshop • Coordinate with other agencies for assessment and implementation of identified structural and functional measures
Medical officer	• Conduct health facility assessment ▪ Energy audit ▪ Water audit ▪ Disaster-vulnerability assessment • Lead following functional measures ▪ Water committee ▪ Sustainable procurement committee ▪ Operational measures to make health facility functioning during disasters or power cut • Support community level IEC activities • Identify local funding opportunities: e.g. CSR initiative, NGO funding
Panchayati Raj Institution	• Support retrofitting and new health facilities with local funding source and community involvement

Awareness Generation

- Awareness and sensitization on climate change events on Heat wave, flooding, air pollution events, and waste management
- Sensitization workshop on Sustainable Procurement
- Awareness on energy efficient measures and water conservation measures

Capacity Building

- Training of ToTs, DNO-CC, and Medical officers on guidelines and operational framework of Green and Climate resilient measures in Health Care Facilities.

PART III

Budget

CHAPTER 11
Budget

BUDGET

The table below presents an overview of the proposed activities and the respective budget to be implemented under the climate change and human health programme between 2022-2027 in Chhattisgarh. The detailed activities and the corresponding budgetary amount are enlisted in the table below:

Sl. No.	Activities	Indicator	Budget (in lakhs) for 5 years					Target for five years 2022-27				
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 1	Year 2	Year 3	Year 4	Year 5
Programme Management												
1	Taskforce meeting to draft health sector plan for heat and air pollution	% State Task Force Quarterly Meetings conducted in a year % Districts conducted quarterly District Task Force Meetings in a year	28	28	28	28	28	50%	100%	100%	100%	100%
2	Sensitization workshop/ meeting of the state programme Officers and District level Health Officers.		1	1	1	1	1	100%	100%	100%	100%	100%

Sl. No.	Activities	Indicator	Budget (in lakhs) for 5 years					Target for five years 2022-27				
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 1	Year 2	Year 3	Year 4	Year 5
General Awareness												
3	Development of IEC material, campaigns, Innovative IEC/BCC Strategies	% of implemented IEC on all climate sensitive issues	15	15	15	15	15	100%	100%	100%	100%	100%
			0.65	0.74	0.85	0.97	1.11					
Capacity Building												
4	Orientation/ Training/ capacity Building of healthcare staffs	% of Medical Officers/D NO/ SN trained in Districts	12	12	12	12	12	100%	100%	100%	100%	100%
		% of targeted sensitization trainings planned for vulnerable population in district (PRI Training)	120	120	120	120	120	50% of district having trained 10% of pop	80% of district having trained 30% of pop	80% of district having trained 50% of pop	100% of district having trained 80% of pop	100% of district having trained 100% of pop
Strengthening of The Health System												
5	Adoption of Green/ Environment Friendly Measures in Health facilities	*Energy Audit:* % of healthcare facilities per district per year that have conducted energy audit.	8.90	18.90	18.90	18.90	18.90	20% of district covering 20% of health care facilities	35% of district covering 35% of health care facilities	50% of district covering 50% of health care facilities	75% of district covering 75% of health care facilities	100% of district covering 100% of health care facilities
		LED lighting: % of healthcare facilities per year that installed solar panel *Solar Panel:* % of healthcare facilities per district per year that installed solar panel	Untied funds	Untied funds				Most of the Health facilities in state have LED lighting installed under kayakalp scheme.				

Note: Year 1 = FY 2022-23; Year 2 = FY 2023-24; Year 3 = FY 2024-25; Year 4 = FY 2025-26; Year 5 = FY 2026-27.

11.2 Budget as planned for FY 2022-23 and FY 2023-24

Community interventions

Training of PRI

Two days of training will be conducted for the next batch of 2,000 Panchayats PRIs in 2022-23, 2023-24. The training module developed by the State Health Resource Centre will be used for it. The next batch of panchayats will be selected on a priority basis from the districts where the air pollution level is at an alarming level. The proposed budget for the activity is as follow:

Training of PRI

Activity	Budget Proposed for FY 2022-23	Budget Proposed for FY 2023-24	Total (in lakhs)
Training of PRIs	120	120	240

The proposed budget for the activity for FY 2022-24 is Rs. 240 lakhs Only

Training

Training of Medical Officers, Health Workers, and Programme officers.

Training of 300 health personal on climate change and human health will be conducted in 2021- 22. The 300 health staff will include Medical Officers, Health Workers, and program Officers from the high priority districts. The high priority districts are categorized based on the intensity of the pollution in the districts. The high priority districts in the state are Raipur, Durg, Bhilai, Korba, Janjgir Champa, Bilaspur, Raigarh, Baloda Bazar, etc. The proposed budget for the activity is as below.

Training of MO, Health workers, and POs.

Activity	Budget Proposed for FY 2022-23	Budget Proposed for FY 2023-24	Total (in lakhs)
Training of MO, Health workers, and POs.	12	12	24

The proposed budget for the activity is Rs. 24 lakhs Only for F.Y 2022-24.

IEC/BCC: FMR Code – 11.4.7

IEC/BCC on Climate change and human health.

Community awareness of climate change and human health is very important. Yet, many steps have been taken at the national, international, and state level, the concern information has not reached the community level. Therefore, the active participation of the community in climate change is very limited. Therefore, to make this climate change issue of day to day life concern of the people, it may require to spread its knowledge to the doorstep of the people. This information will help to develop the opinion of people about the short term and longterm effects on their life and their participation. Therefore, it very important to have the IEC and BCC activities in the state particularly focusing the climate change. IEC activities will be carried with

collaboration with SHRC (Climate Change Cell). IEC activities will include Flex printing, Video Documentary making, puppet shows etc. The proposed budget for the activity is as follows.

IEC/BCC

Activity	Budget Proposed for FY 2022-23	Budget Proposed for FY 2023-24	Total (in lakhs)
IEC/BCC	15	15	30

The proposed budget for the activity is Rs. 30 lakhs for F.Y.. 2022-24.

Task force Meeting to draft health sector plan for Heat and Air Pollution: FMR Code-16.1.2.1.23

At State level task force including different departments to be formed under Chairpersonship of principle secretary health, and meeting to be organized quarterly. Similarly under the Chairpersonship of Honourable Health Minister of state governing body should be constituted for which one to two meeting can be organized at state level.

Activity	Budget Proposed for FY 2022-23	Budget Proposed for FY 2023-24	Total (in lakhs)
Task Force Meeting & GB Meeting	1	1	2

The proposed budget for the activity is Rs. 2 lakhs for F.Y. 2022-24.

Sensitization workshop/Meeting of the State Program Officers and District level Health Officers: FMR Code – 16.1.2.1.24

Similarly like state level at district level task force including different departments to be formed under Chairpersonship of District collector to be formed and meeting to be organized time to time.

Activity	Budget Proposed for FY 2022-23	Budget Proposed for FY 2023-24	Total (in lakhs)
Workshop/Meeting at District level	28	28	56

The proposed budget for the activity is Rs. 56 lakhs for F.Y. 2022-24.

Other including Operating Cost (OOC)

1. Energy Audit in Health Care facility:- Budget Proposed for energy audit of health care facility @ Rs. 10,000 for PHC, Rs. 30,000 for CHC, Rs. 1,00,000 for DH. In F.Y 2022- 24 about 10% PHC i.e 79, 15% of CHC i.e 23 and 25% of DH i.e 5 is selected each year to conduct energy audit of health care facilities. Budget proposed for F.Y. 2022-23 is Rs. 19.80 Lakhs and for F.Y 2023-24 Budget proposed is Rs. 19.80 Lakhs. Total Budget Proposed for two years is Rs. 39.6 lakhs.
2. Budget proposed @ Rs. 10 lakhs for F.Y 2022-23 & @ Rs. 10 Lakhs for F.Y 2023-24 technical cell operation at SHRC. The technical cell support head and budget is required to work on and develop content on Climate Change and Human Health in general and state specific requirements.

The content is developed through various activities of field, interaction at various platforms, assessments, short studies, survey to provide hands on recommendations and suggestions to strengthen the health system. Total Budget proposed @ Rs. 20 lakhs for F.Y 2022-24.

Total Proposed Budget

Total budget proposed in 2022-23 for NPCCHH program by Chhattisgarh State is Rs. 205.5 lakhs and 2023-24 budget proposed Rs. 205.5 lakhs, Total Budget proposed Rs. 411 lakhs for two years.

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Annexures

Annexure A: Key Priorities of Chhattisgarh Action Plan

Climate Change and Health Risks (Existing Health Burden)	Impacts of Climate Change	Vulnerable Districts	Plan of Action	Budget
Respiratory Illnesses (Air Pollution)	Acute Respiratory Illnesses (ARI)/ Related Allergies	Raipur, Korba, Raigarh, Balodabazar, Janjgir-Champa, Bilaspur, Durg- Bhillai,	a. Capacity Building of the health professionals on climate change and air pollution-related illnesses is planned with the centre of excellence PGI Chandigarh. b. Associating ARI surveillance and health advisories. c. IEC has been developed and disseminated.	
Heat-Related Morbidity and Mortality	Heat Strokes/ CKD: Kidneys are particularly vulnerable to damage from high heat.	Bilaspur, Rajnandgaon, Raipur, Durg, Pendra Road, Ambikapur, Jagdalpur, Raigarh, Janjgir -Champa, Gariyaband, Dantewada	a. On the issue of Heat Stress, the state in collaboration with IDSP has been disseminating heat alerts. The Directorate of Health and Family Welfare and District Collectors have also been regularly issuing Health Alerts based on heat predictions in the State. b. Efforts are being made to raise awareness among the citizens on the issue of heat stress and health impacts with simple messaging of Dos and Don'ts. c. IEC has been developed and disseminated. d. Treatment through dialysis have been made available….	
Vector-Borne Disease	Malaria/Dengue/ Filariasis	Ambikapur/Surguja, Bilaspur, Dhamtari, Durg, Janjgir, Jashpur Nagar, Mahasamund, Raigarh, Raipur.	a. Disease management • Early case Detection and Prompt Treatment (EDPT) b. Insecticide resistance • Vector Control–Chemical and Biological Control.	
Water-Borne Disease	Acute Diarrheal Disease/Typhoid	Kawardha, Janjgir, Balodabazar, Balod, Rajnandgaon, Mahasamund, Kanker and Durg		

Climate Change and Health Risks (Existing Health Burden)	Impacts of Climate Change	Vulnerable Districts	Plan of Action	Budget
			c. Involvement of NGOs/private sector/ community • Sensitizing and involving the community for detection of Anopheles breeding places and their elimination • NGO schemes involving them in program strategies • Collaboration with the private sector. d. Quality assurance on laboratory diagnosis e. Long-lasting insecticide-treated nets f. Improve quality and efficiency of services at primary, secondary and tertiary levels g. Environmental management • Source reduction i.e. filling of the breeding places • Proper covering of stored water • Channelization of breeding source h. Monitoring and evaluation • Monthly Computerized Management Information System (CMIS) • Field visits by state-by-State National Program Officers Field visits by Malaria Research Centers and other ICMR Institutes - Feedback to states on field observations for correction actions. i) Inter-sectoral collaboration *https://nvbdcp.gov.in/index4.php?lang=1&level= 0&linkid=503&lid=3780* **Refreshers pieces of training from time to time is planned**	
Emerging Health Burden under Climate Change and Human Health				
Non-Communicable diseases	Hypertension, diabetes, obesity, Gastritis	Disease mapping	Integral and coordinated approach with IDSP/Mental Health and other associated departments. Capacity building of different cadre health professionals	
Mental Health	Anxiety, Stress			
Zoonotic Diseases	Scrub Typhus/ Snake Bites/ Rabies	Bastar/Rajnandgao/ Bilaspur/Korba/Janj gir-Champa/Raigarh/ Surguja/Jashpur/ Balrampur/Surajpur	Detection and Diagnosis (Testing's Kits for scrub typhus)/Capacity Building of health professionals is planned with the center of Excellence on CCHH PGI Chandigarh	
Burnt/Shocks/ disabilities due to Lightening	Burns and deaths dues to Lightening	***High Occurrence:*** *Korba/Raigarh/ Mahasamund/Bastar*		

Climate Change and Health Risks (Existing Health Burden)	Impacts of Climate Change	Vulnerable Districts	Plan of Action	Budget
Cardiovascular diseases There is a relationship between cardiovascular mortality and max temperatures which are positive and strong for temperatures more than 26 °C (r=0.83, P<0.01) such that, a 1 °C increase in maximum temperature is associated with a 4.27% (95%CI: 0.91, 7.00) increase in cardiovascular disease mortality. Climate Change and Simulation of Cardiovascular Disease Mortality: A Case Study of Mashhad, Iran Mohammad BAAGHIDEH and Fatemeh MAYVANEH, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5395536/#:~:text=There%20is%20a%20relationship%20between,incr ease%20in%20cardiovascular%20disease%20mortality. **Malnutrition** Malnutrition and consequent disorders, like retarded child growth and development have been identified as one of the health threats by the Working Group-II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Climate change results in food insecurity, namely, food availability, food accessibility, food utilization, and food system stability. Drought diminishes crop yield, dietary diversity, supply chain disruption, increases market prices, and reduces animal and aquatic products are being experienced. These factors reduce overall food consumption, and may therefore lead to macro as well as micronutrient deficiencies.				
Impact of climatic Disasters on health				
Heavy Rainfall	Vector-Borne Disease	Raipur/Gariyabandh/ Dhamtari/ Balodabazar/Durg/ Balod/Bemetara/ Rajnandgao/Janjgir-Champa/Korba/ Surajpur/Jagdalpur/ Narayanpur/Sukma/ Bijapur/Dantewada/ Kanker		
Drought	Water-Borne Disease	The districts whose tehsils have been declared drought-hit (as in 2017) are Rajnandgaon (9 tehsils), Bilaspur (8), Kanker (7), Balodabajara (6), Raigarh (6), Dantewada (5),Koriya (5), Bemetara (5), Mahasamund (5), Dhmatari (4), Raipur (4), Balod (4), Kabeerdham (4) and Janjgir-Champa (4), Kondagaon (4), Bijapur (4), Mungeli (3), Gariyaband (3), Durg (3), Narayanpur (2), Korba (1).		

Climate Change and Health Risks (Existing Health Burden)	Impacts of Climate Change	Vulnerable Districts	Plan of Action	Budget
Occupational Health Hazards				
Occupational Health Risk (COPD/Cancer/ Silicosis)	Pulmonary Lung Diseases	Korba/Raigarh/Raipur/ Balodabazar/Durg - Bhillai/Bilaspur/Janjgir Champa	Identifying the respiratory health-related issues in the early stages to reduce mortality and strengthen the compensations procedures for the treatment.	
Climate Resilient Health Infrastructure				
Assessed around 1000 health facilities listed in government records as solarised. Solar plants were found to be functional and in use in 86% of the solarised public health facilities. Identified around a hundred specific facilities for improvements. The mechanism for addressing repairs was functioning well and smaller centres were found to utilize solar energy well. **Smaller centers were found to utilize solar energy well. CREDA is also working on pilots of cool roofs, rainwater harvesting, solar-powered water heaters, and water pumps for hospitals and health centers and implementing them at the district level.** 1. To conduct an energy audit and climate vulnerability assessment of health centers. 2. Reduce Carbon Emissions in the Health care system by addressing biowaste management.				

Annexure B: Long Term Matrix of Adaptation Plan of Chhattisgarh SAPCCHH

Sl. No.	Key Action	Short term (2022-2024)	Midterm (Till 2028)	Long Term (Till 2030)	
1. To strengthen the capacity of the health system for climate change and Human health					
	Strengthening of the health care system in the context of climate change in coordination with different departments of the state with the sup	• Establish Environment Health Cell' (EHC) at Health deptt. • Depute State Nodal Officer– Climate change (SNO-CC) as the focal point • Notify Task Force with multiple stakeholders and review existing Indian Public Health Standards and appropriate suggestions • State to form climate-sensitive health Programme Implementation Plan (PIP)	• Implement/ adapt/modify the Monitoring, Supervision, and Evaluation tool for climate-sensitive diseases • Coordinate with other agencies (municipalities, PRIs) for efficient and effective implementation of proposed activities at the state and below level. • Phased Implementation of the recommendations of Task Force.	• Share appropriate technology like reduction in carbon footprint at healthcare facilities • Continue Phased Implementation of recommendations of Task Force.	• Notification of - SNO, State level EHC, State level Task Force, State level Governing Body • Notification of District Nodal Officers identified, District Environmental Health Cell, District Task Force formed." • State Action Plan for Climate Change and Human Health (SAPCC • HH) was develope d, approved by the State Governing Body, and launched by the state. • District- specific Heat Action plan develope d by the respective District Task Force. (State-specific heat action plan will be a chapter of SAPCCHH and the respective district-specific plan will be consolidated within the SAPCCHH) • PIP submitted to state NHM • Consultant Recruited in the state EHC

Sl. No.	Key Action	Short term (2022-2024)	Midterm (Till 2028)	Long Term (Till 2030)	
	Capacity building	• Identify agency/ institute/ Organizations/ Centers of Excellence for developing guidelines, capacity building, supporting implementation, monitoring, and supervision. • Training of the health care professionals at various levels of the health system • Enlist (customized as per states' vulnerabilities) • Technical committees/ working groups to support the focal point, Skilled staff, logistics funds	• As per the priority list, State to prepare a guideline/action plan and upload the same on its website for ready reference. • Develop training modules, organize training • Conduct meetings/ Workshops/ Training on CC&HH for health care personnel • Sensitize and orient private health care providers	• Extend and expand training to reach health care staff to the village level. • Conduct workshops/ structured training in new treatment/ management technologies at the regional or local level • Disseminate reports and good practices;	• Names of related institutes and NGOs identified per state- specific climate- sensitive illnesses in the state and district. • No of SNOs/ DNO's trained at National/ State level pieces of training, Workshop, and ToT. • Details of funds mobilized and utilized from other sources (Govt/N GOs)
2. To strengthen health preparedness and response by performing situational analysis at State and district levels					
	Develop/strengthen the monitoring and surveillance systems for climate-sensitive diseases in coordination with IDSP	• Develop/ strengthen surveillance for each district on Climate Sensitive Diseases (CSD) • Train all concerned personnel on surveillance system (data collection, collation, and analysis) • Integrate relevant non-health data into the health surveillance system	• Build an interdisciplinary platform i.e. link health databases with real- time monitoring of weather, climate, geospatial, and exposure data so as to accurately forecast health illness/events for heat/ARI/Zoonotic diseases/ Vector- borne/ Waterborne diseases	• Update monitoring and surveillance system as per new evidence • Evaluate inter-disciplinary platform and upgrade as per evolving technologies. • Identify gaps for research	• No of polluted cities were identified for ARI surveillance in the state and no of Sentinel Surveillance Hospitals were Identified from polluted cities • No of polluted cities where ARI surveillance has been initiated as per SOP • No of hospitals identified with 'Special Cold Room' (SCR) for management of heat-related illnesses

Sl. No.	Key Action	Short term (2022-2024)	Midterm (Till 2028)	Long Term (Till 2030)	
		• Initiate Sentinel & real-time surveillance for illnesses due to Air Pollution, Heat etc	• Develop/modify mechanisms and indicators to monitor the trend of CSDs. • Conduct Joint Review Missions/ Central Internal Evaluations and feedback mechanisms		• Coordinate ion with SDMA regarding death due to heat-related illnesses. • Coordination with respective IMD offices for climate data for analysis of climate-sensitive illnesses • Coordination with the respective State Pollution Control Board for getting AQI data. • No. of Biennial Training Workshops of concerned personnel
	Develop mechanisms for EWS/alerts and responses at state, district, and below district level in coordination with Other state government departments	• Constitute a multi-stakeholder working group for the development of an early warning system for each CSD • Design and integrate public health response plan with Meteorology Dept, NDMA, EMR	• Review the monitoring and surveillance system of CSDs • Develop thresholds/ prediction models for health events or CSDs. • States to develop a communication plan and dissemination systems to warn people and communities	• Evaluation and modifications for the appropriate ness of the plans' for Thresholds of action • Interventions to maximize response effectiveness for the relevant community or region.	• Establishment of a Working group by EHC for the development of a mechanism for EWS/alerts for climate- sensitive illnesses • Steps were taken by EHC to develop mechanisms to integrate public health response plan with related stakeholders (SPCB, NDMA, IMD, etc.)
3. To strengthen the climate-resilient and energy-efficient health infrastructure					
	• Develop climate-resilient health and energy-efficient health infrastructure	• Vulnerability needs assessment in the entire state of Chhattisgarh	• Identify the climate-vulnerable districts and prepare the health infrastructure to be climate resilient	• Policy changes in the health facility infrastructure	• No of climate-vulnerable health facilities • Type of climatic vulnerabilities affecting the health system and delivery of health care facilities

Sl. No.	Key Action	Short term (2022-2024)	Midterm (Till 2028)	Long Term (Till 2030)	
			• Old facilities to be made adaptive. • New facilities to be climate resilient • Guidance document for state- specific climate-resilient health infrastructure		• No of Changes to the old facilities • Climate-resilient infrastructure with new health facilities
	• Integrate, adopt and implement environment-friendly measures suggested in other missions on climate change in coordination with other state departments	• Increase plantation in and around the building to make it 'Green' • Incorporate measures in building design for making it climate resilient • Use technologies that reduce harmful chemicals emission & carbon foot-print • Use of energy-efficient equipment and services	• Expand measures to make the healthcare sector 'Green'. • Replicate the successful 'model of building design' for new healthcare facilities • Explore and support technologies, equipment and services which are energy efficient and reduce harmful chemicals emission & carbon foot- print	• Assess and document the reduction of climate risk in climate- resilient building design for replication in other states and UTs	• No plants planted in the various health care facilities- PHC, CHC, SHC, DH annually • No Green Hospital models were Initiated, Constructed, and Renovated at Primary, Secondary and Tertiary levels. • No of prototype hospital buildings prepared which are resilient to Disasters (Floods, Cyclones, earthquake, Tsunami) • No of health facilities where solar panels installed, LEDs installed, rain water harvesting done
4. To strengthen research capacity to fill the evidence gap on climate change's impact on human health					
	Strengthening of healthcare services based on research on climate variables and impact on human health in coordination with NCDC	• Create a database of professionals, researchers, and institutions engaged in studies of the impact of weather and climate on health	• Development of models mathematical or other types for early warning alerts for CSDs. • Develop/ad apt techniques for modeling or use other research advances by	• Develop and validate models, and enhance research on the effectiveness of CSDs management. • Evaluate and improve the effectiveness of the modeling technique.	• List of professionals, researchers, and institutions engaged in studies of the impact of weather and climate on health at the state and district level.

Sl. No.	Key Action	Short term (2022-2024)	Midterm (Till 2028)	Long Term (Till 2030)	
		• Create a platform for 'data- repository' of various researches on climate and health effects • Scenario-building (initiation of study, data sources, mechanism used, apportionment of risk factor, methodology, assumptions, model used, confidence interval) for establishing a relation of climate variables and health impacts. • Identify best practices in the implementation of measures to combat the effect of climate change	transitioning them into operational products and decision support tools • Reassess health data esp. CSDs using modeling techniques • Inform Policy-makers about the 'scenario' of health- related statistics was ith focus on CSDs. • Conduct seminars, workshops, and conferences on best practices of measures to combat the effect of climate change on human health.	• Evidence- based information to Policy- makers • Conduct seminars, workshops, and conferences on best practices of measures to combat the effect of climate change on human health.	• Creation of 'data- repository' of various researches on climate and health effects at state and district levels. • List of 'best practices in the implementation of measures to combat the effect of climate change • Number of seminars in a year on CSDs and related aspects including 'best practices at the state and district levels.
5. To develop partnerships and create synchrony/synergy with other missions and ensure that health is adequately represented in the climate change agenda in the country					
	• Develop a joint action plan with other deptt./ organizations In view of their capabilities and complementaries in coordination with other state government departments/ National and state level	• Identify or assess aspects/areas underserved in the management of CSDs • Develop affordable and acceptable tools for risk reduction and Environmental Health Impact Assessment	• Broaden Stakeholders' network and partnership and reassess service areas to be served for climate-related health risk reduction and Environmental Health Impact Assessment.	• Reassess tools for risk reduction and Environmental Health Impact assessment. • Share best management practices that are affordable and acceptable in social/traditional contexts locally	• State- specific Affordable and acceptable tools develope d for risk reduction and Environmental Health Impact Assessment by the State Task Force. • No Corporate Houses involved with the state

Sl. No.	Key Action	Short term (2022-2024)	Midterm (Till 2028)	Long Term (Till 2030)	
		• Establish Corporate Social Responsibility/ Accountability in terms of finances for implementing measures for prevention/ reduction/ treatment of CSDs	• Evaluate Corporate Social Responsibility (CSR) under laws for Health Strategies, Policies, and measures for the promotion of health • Meeting/ Consultation with the local governing body for a reassessment of roles and services and appropriate resource allocation and for limiting duplication of actions	• Evidence- based support to decision- makers for addressing gaps in climate-resilient healthcare services	to invest in mitigation/ adaptation of climate- sensitive illnesses through CSR • Funds eg. Printing and dissemination of IEC, conduct training and workshop s, greening of hospitals, help in research etc. • No medical colleges (Private and Govt.) involved with the State EHC

Annexure C: Training Material: Do's and Don't for Climatic situations

Lightning Safety	
Do's	**Don't**
Stay off corded phones,computers and other electrical equipment that put you in direct contact with electricity.	Don't lie on the ground to avoid lightning. If lightning strikes nearby you should keep as little of your body to come in contact with the ground current.
Do stay away from Windows and doors and stay off porches	Don't lie on concrete floors and do not lean against concrete walls
Do avoid the open area. You should avoid being the tallest object in the area	Don't bath, wash clothes and utensils in ponds, rivers, hand pumps, tube wells, plumbing including sinks, bath and water taps. Water is an excellent conductor of electricity.
Do spread out if with the group of people this decreases the chance of multiple casualties	Don't swim or participate in watersports (Fishing) during thunderstorms. Head inside until it is safe
Do pay attention to the weather. If able, head in doors when lightning seems imminent	Don't stand under or near isolated tall trees. Towers or utility poles lightning will strike taller objects in an area.
Do stay in a safe location for 30 minutes past the last rumble of thunder you can hear	Don't ignore thunder if you can hear it you are in danger. Lighting often strikes as far as 10 miles away from a storm's heavy rainfall.

Snake Bite	
Do's	**Don't**
Let the victim of a snake bite lie in a semi-reclined position with the bite wound below the level of the heart. This prevents the venom from spreading to other parts of the body until medical help arrives.	Try to suck out the venom it is extremely important to retain traces of venom for use with Venom identification kids
Do tie a bandage 2 to 4 inches above the bite wound to slow the spread of venom in the body. If the bite area turns cold or numb, the bandage is too tight. Loosen it. Use a splint to immobilise the wounded limb. Remove the bandage in a medical facility as the release of pressure will cause a rapid flow of venom through the bloodstream	Do not in size or cut the bite or reply hi torquent cutting aur incising the bite hotel high torque winds are ineffective and can be fatal if released
DO seek medical help immediately as the Venom can cause serious damage to health or even death within a few hours	Do not allow the victim to walk or move their Limbs use a splint for linked to minimise all Limb movement what the patient on a stretcher or bring transportation to the patient
	Don't apply ice on the snake bite as the ice may block blood circulation.
	Don't suck the blood out with your mouth (germs in the mouth may cause infection in the bite wound) and you may be also exposing yourself to the venom.
	Don't attempt to cut the wound.
	Don't attempt to guess whether the snake was venomous or not, based on its physical characteristics.

Heavy Rainfall	
Do's	**Don't**
Do listen to the weather forecast India Meteorological Department (IMD)	Don't Go in the water logging area.
Do drive slow or stop as visibility reduces	Don't drive/walk on flooded bridges, there are high chances of flash floods/bridges suddenly collapsing.
Do stay away from electric poles/transformers/and wires. Beware of and watch for structural damages, such as falling walls and ceilings. Piercing small holes in sagging ceilings can strategically drain them and prevent collapses.	

Floods	
Do's	**Don'ts**
Turn off gas valves fed to appliances, water valves and the electricity on the main fuse box. Be aware that surges of electricity during gas leaks can cause violent ignitions.	Don't eat or drink anything exposed to the likely contaminated floodwaters.
Unplug all electrical items and store them away from floodwaters.	Don't use potentially contaminated water for washing or food preparations.
Move all inhabitants and pets at a higher level or any to safe locations, ideally in pet carriers.	Watch out for and don't approach downed power lines.
To prevent sewage backups, put sandbags in the toilet and obstructions on drain holes. Both floating and sinking littered debris and refuse can both complicate rescue efforts and plug outgoing flows.	Don't drive through floodwaters. If stuck, exit the vehicle and move to higher ground.
Look out for snakes, which often go inside flooded homes.	Don't be careless in a flooded area at night when it's much harder to see standing and flowing water. Two feet of moving water is deep enough to sweep away a vehicle and six inches can sweep away an adult.
Try to keep the ration/documents in the attic.	Don't leave doors and windows unlocked when leaving your property due to high incidences of looting.
Strong ropes and a well equipped First Aid Kit can greatly enhance rescue efforts.	
Rushing waters, risks of electrocution, gas explosions, drowning, and the threats of pests, pestilence, water damages, mold damages and looting all accompany floods. Being tactful can avert or minimize the physical threats and the damages.	

Drought	
Do's	**Don'ts**
Monitoring of rainfall during the South West Monsoon period, on a regular basis.	Do not waste water, especially drinking water, as it is precious
Listen to the advisories by Indian Meteorological department and State Disaster Management Authority to farmers for taking up drought resistant crops & crops requiring less water	
Judicious use of available water.	
Issue of advisories to farmers for taking up drought resistant crops & crops requiring less water.	
Have kitchen gardens (Badi), Water harvesting.	

Heat Wave	
Do's	**Don'ts**
Stay and work in the shade. Do agricultural work in early hours of morning and evenings when heat is less and take frequent breaks.	Don't drink ice-cold drinks; they can cause stomach cramping.
Move slowly.	Don't leave any living being in a closed car
Wear a wide-brimmed hat.	Don't take salt tablets unless the doctor says so.
Check on elderly neighbors or relatives.	Don't assume you are immune to heat outside just because you work in a hot environment like a bakery or pizza parlor. The damage can accumulate through the day.
Stay Hydrated and also keep giving water to pets and animals from time to time.	Don't skimp on water.
Tune into weather broadcasts for the latest heat advisory or alert — and heed it!	
Wet a paper towel or hankie and drape it on your face when you come inside. Other "hot spots" to place a cool compress for quick cooling include the back of your neck, underarms, and groin area.	
Staying safe in high temperatures is relatively simple: Don't take chances when Mother Nature is turning up the heat.	

Air Pollution	
Do's	**Don'ts**
Stay indoor as much as possible. Monitor the pollution level in the newspaper daily, especially people with Asthma and COPD.	Don't do outdoor activities, physical exercise in peak hours of pollution. Avoid going to areas with heavy smoke or dust
Wear a mask whenever you go out and, wear the right masks with respirators.	Do not burn garbage, plastics and other discarded items.
Place air purifying plants like Tulsi, spider plant, aloe vera in homes and offices to increase indoor air quality.	Don't burn Dry neem leaves to chase the mosquitoes; it creates suffocation.

Air Pollution	
Do's	**Don'ts**
Stay hydrated. Drink more water to flush out toxins and harmful particles from the body.	Don't go to bigger roads with more traffic.
Start carpooling, public transport to reduce the number of vehicles plying on roads.	Don't go to areas with heavy smoke or dust
Follow a diet rich in antioxidants, nutrients to detoxify and improve immunity as air pollutants affect the lungs.	
Avoid smoking.	
Keep a proper check on pollution of your vehicles.	

Air Borne Disease	
Do's	**Don'ts**
Cover your mouth and nose when sneezing or coughing	Don't go to crowded places unless very necessary.
Wash hands frequently with soap and water.	Don't touch your eyes and face areas oftenly.

Water Pollution	
Do's	**Don'ts**
Do collect the water sample for testing regularly from time to time.	Don't litter around the water bodies.
Properly dispose of chemical cleaners, oils, and non-biodegradable items to keep them from ending up down the drain or water bodies.	Don't throw garbage, especially plastic garbage in water bodies, drains etc.
Do water harvesting	Don't apply pesticides and herbicides in gardens and yards.
Do learn about water acts	Don't allow the runoff from roads, farmyards, hard standings and ring feeder areas used by stock to discharge directly to a watercourse.
	Don't allow livestock to have access to watercourses. Instead, provide water at drinking troughs wherever possible.
	Don't allow the rainwater from poultry buildings that are ventilated to the roof to discharge directly to a watercourse.

Vector Borne Diseases	
Do's	**Don'ts**
Remove water from coolers and other small containers at least once in a week	Do not wear clothes that expose arms and legs
Use aerosol during day time to prevent the bites of mosquitoes	Don't allow children to play in shorts and half sleeved clothes
Use mosquito nets or mosquito repellents while sleeping during day time	

Water Borne Diseases	
Do's	**Don'ts**
Wash hands with soap after using the toilet and before eating.	Keep your home and surroundings clean to prevent flies and other insects from breeding.
Consume freshly cooked food. Protect food and water from flies. Cover the food items with a lid.	Don't eat uncooked and open or exposed street food.
Avoid stale foods, while raw fruits and vegetables should be washed thoroughly before eating.	
Drink Purified Water. Boil water and allow it to cool with a lid on it.	

Soil/Land Pollution	
Do's	**Don'ts**
All cropped land over the following winter must, where soil conditions after harvest allow, have either: crop cover, grass cover, stubble cover, ploughed surface or a roughly cultivated surface. Fine seedbeds must only be created very close to sowing.	Don't use pesticides, veterinary medicines or chemicals unless there is an identified need.
Prevent Erosion. Plant more trees and shrubs.	Don't throw plastic and non biodegradable waste in open.
Do reduce dirty water around the farm and improve nutrient use.	
Do carry out a land risk assessment for slurry and manure; manage your water margins.	

Annexure D: Health Adaptation plan for Water borne Diseases

1. Water Borne Diseases

Illnesses due to contaminated water and food are usually seen following flood, drought, religious or other mass gatherings.

Waterborne diseases such as typhoid, hepatitis, dysentery, and others caused from micro- organisms such as Vibrio vulnificus and Vibrio cholera, E.Coli, Campylobacter, Salmonella, Cryptosporidium, Giardia, Yersinia, Legionella are some climate-dependant infectious diseases. The increase in temperature is seen to be associated with increased survival and abundance of micro-organisms. The decreased precipitation and drought result in decrease availability of safe-water, reuse of wastewater, contamination of water sources, transmission from vertebrate to human or human to human etc. Flooding cause contamination of water source as well as disruption of sewage disposal system, further contributors are population displacement, overcrowding, poor sanitation and hygiene, subsequent faeco-oral contamination and spread of pathogens etc.

1.1 Acute Diarrheal Disease

Water borne diseases are caused by the toxic contaminants, Micro organism in the water. During rainy seasons and floods the outbreak of water borne diseases occurs. Common water borne diseases in Chhattisgarh is **Acute Diarrheal Disease (ADD)**.

According to Integrated Disease Surveillance Program (IDSP) weekly reports of 2019 districts of Kawardha, Janjgir, Balodabazar, Balod, Rajnandgaon, Mahasamund, Kanker and Durg have reported outbreaks of ADD in Chhattisgarh.

1.2 IEC

a) Advertisement and promotion through IEC: Street plays, Hoards, billboards, as and other advertisement modes

1.3 Capacity Building

b) Refresher trainings of the Medical professional training:
   - Expanded training of doctors and associate staff
   - Increased training of NGOs and Asha workers

1.4 Surveillance

c) Monitoring of the cases in the districts through collaborated efforts with IDSP/Vector borne disease programs and district Nodal Officers of CG NPCCHH

d) Monitoring and evaluation
   - Monthly Computerized Management Information System (CMIS)
   - Field visits by state-by-State National Program Officers
   - Field visits by Malaria Research Centers and other ICMR Institutes
   - Feedback to states on field observations for correction actions.

Annexure E: Office Orders

संचालनालय स्वास्थ्य सेवायें
छत्तीसगढ़

विभागाध्यक्ष कार्यालय, इन्द्रवती भवन, तृतीय तल नवा रायपुर अटल नगर

क्रमांक/संचा./स्टेनो/2022/40 नवा रायपुर, दिनांक 23/03/2022

//आदेश//

संचालनालय स्वास्थ्य सेवायें छत्तीसगढ़ में पदस्थ वित्त नियंत्रक/संयुक्त संचालक/उप संचालक/राज्य कार्यक्रम अधिकारी/राज्य नोडल अधिकारी एवं अन्य अधिकारियों के मध्य निम्नानुसार कार्य आबंटन किया जाता है :–

क्रं.	नाम	पदनाम	आबंटित कार्य
1	2	3	4
1	श्री बी.आर. कावड़े	वित्त नियंत्रक	लोक लेखा समिति, बजट, आडिट, पेंशन, भुगतान संबंधी समस्त नस्तियां, एन.एच.एम. संबंधी कार्य।
2	डॉ. सुभाष मिश्रा	प्रभारी संचालक, महामारी नियंत्रण (संयुक्त संचालक)	राष्ट्रीय अंधत्व नियंत्रण कार्यक्रम, आई.डी.एस.पी, एन.व्ही.बी.डी.सी.पी. मानव अंग प्रत्यारोपण, से संबंधित समस्त कार्य।
3	डॉ. अल्का गुप्ता	प्रभारी संचालक (SIHFW) (संयुक्त संचालक)	मातृत्व स्वास्थ्य, आर.एम.एन.सी.एच+ए, जननी सुरक्षा योजना, जननी शिशु सुरक्षा कार्यक्रम, बीस सुत्रीय कार्यक्रम, लक्ष्य, पी.एम. एस.एम.ए., एफ.आर.यू., 24X7 पीएचसी क्रियान्वयन, एम.डी.एस. आर., से संबंधित समस्त कार्य।
4	सुश्री भारती चन्द्राकर	संयुक्त संचालक	विज्ञप्त शाखा, आर.एम.ए. शाखा, नर्सिंग शाखा, एच.आर.एम.आई. एस., सूचना का अधिकार–अपीलीय अधिकारी, महिला उत्पीड़न, स्थानीय कार्यालय।
5	श्री रविराज ठाकुर	उप संचालक	अविज्ञप्त शाखा, कार्यालय स्थापना, लीगल शाखा, पेंशन, समस्त आयोग से संबंधित समस्त कार्य, आयुष्मान भारत डिजिटल मिशन, एसडीआरएफ मद एच.आर. अनुमति एवं भर्ती संबंधित कार्य, CPGRAMS से संबंधित समस्त कार्य, HRMIS NG & Updation - चिकित्सा अधिकारी संबंधित कार्य।
6	सुश्री मनीषा नाग	संयुक्त संचालक (वित्त)	राज्य नोडल एजेंसी, आयुष्मान भारत प्रधानमंत्री जन आरोग्य योजना, डॉ.खूबचंद बघेल स्वास्थ्य सहायता योजना, मुख्यमंत्री विशेष स्वास्थ्य सहायता योजना, एड्स नियंत्रण समिति, CPS Course, बजट, लोक लेखा समिति से संबंधित कार्य, वेतन निर्धारण अनुमोदन, आडिट निरीक्षण कार्य, सामान्य भविष्य निधि, यात्रा भत्ता परीक्षण एवं वित्त, पेंशन, भुगतान,. संबंधी समस्त कार्य।
7	डॉ.एस.के. पामभोई	संयुक्त संचालक (NHM)	एन.एच.एम, एन.यू.एच.एम., एच.डब्ल्यू.सी.,शहरी स्वास्थ्य, विधानसभा, टेलीमेडिसीन, डायलिलिस कार्यक्रम/CKD से संबंधित संबंधित समस्त कार्य।
8	डॉ. एस.के. बिंझवार	उप संचालक	108 संजीवनी एक्सप्रेस, 102 महतारी एक्सप्रेस, अतिरिक्त परियोजना संचालक (एड्स), रेडक्रास, ब्लड बैंक, सिकल सेल, थैलेसिमिया, सिफिलिस, एच.आई.व्ही., आर.टी.आई.–एस.टी.आई., पी. पी.सी.टी. कार्यक्रम, डायग्नोस्टिक सर्विसेस, मितानिन कार्यक्रम संबंधित समस्त कार्य।

9	डॉ0 छाया तिवारी	उप संचालक	मातृत्व स्वास्थ्य, आर.एम.एन.सी.एच+ए, जननी सुरक्षा योजना, जननी शिशु सुरक्षा कार्यक्रम, बीस सुत्रीय कार्यक्रम, लक्ष्य, पी.एम. एस.एम.ए., एफ.आर.यू., 24X7 पीएचसी क्रियान्वयन, एम.डी.एस. आर.,
10	डॉ. राजेश शर्मा	राज्य कार्यकम अधिकारी	अस्पताल प्रशासन, नर्सिंग होम एक्ट, बायोमेडिकल वेस्ट मैनेजमेंट, स्वास्थ्य संस्थापना, क्वालिटी सेल, पी.पी.पी., पोस्टमार्टम, अल्टरनेटिव मेडिसीन, रोड सेफ्टी, जीवनदीप, एम.सी.सी.डी. (Medical Certification of Cause of Death), समिति से संबंधित समस्त कार्य, आयुष्मान भारत डिजिटल मिशन।
11	डॉ.अनिल परसाई	प्रभारी उपसंचालक	केन्द्रीय स्टोर शाखा, डी.डी.ओ., भवन विकास, मुख्यमंत्री घोषणा, समस्त प्राधिकरण से संबंधित समस्त कार्य।
12	डॉ. के.सी. उरांव	प्रभारी उप संचालक	विज्ञप्त शाखा, HRMIS MO/SPECIALIST, स्थानीय स्टोर शाखा, परिवहन शाखा।
13	प्रोफेसर डॉ. कमलेश जैन	राज्य कार्यक्रम अधिकारी	104 आरोग्य सेवा, 1099 मुक्तांजली, स्वच्छता एवं जल जीवन मिशन अभियान, PUBLIC HEALTH CADRE DEVLOPMENT, NPPC, NIPPCF, NPHCE, NIDDCP, NTCP, NOHP, यू.एस.पी.पी. राष्ट्रीय एवं अंतर्राष्ट्रीय सहयोगी संस्था जैसे USAID, JHPIEGO से समन्वय संबंधी कार्य एवं मानव अंग प्रत्यारोपण से संबंधित कार्य नस्ती संचालक महामारी के माध्यम से प्रस्तुत करेंगे।
14	डॉ. श्रीकांत राजिमवाले	रजिस्ट्रार मेडिकल काउंसिल/ राज्य नोडल अधिकारी	मेडिकल काउंसिल, एस.एन.ए., आयुष्मान भारत, (आर.एस.बी.वाय., एम.एस.बी.वाय. से संबंधित कार्य), आयुष्मान भारत डिजिटल मिशन, AB-PMJAY, DKBSSY &MVSSY, CPS कोर्स।
15	डॉ. व्ही. आर. भगत	प्रभारी उप संचालक	शिशु स्वास्थ्य, शिशु स्वास्थ्य पोषण, शालेय स्वास्थ्य, एनआरसी, टीकाकरण कार्यक्रम, आर.बी.एस.के., आर.के.एस.के., एस.एन.सी.यू., एन.बी.एस.यू., एनबीसीसी, NIPI, एचबीवायसी, एचबीएनसी, डीईआईसी, एनीमिया मुक्त भारत कार्यक्रम से संबंधित समस्त कार्य। महिला बाल विकास विभाग से समन्वय संबंधी कार्य, मुख्यमंत्री सुपोषण अभियान।
16	डॉ. आनंद राव	राज्य नोडल अधिकारी	केंद्रीय प्रयोगशाला मलेरिया, मेडिकल बोर्ड, मेडिकल बोर्ड सर्टिफिकेट, दिव्यांगजन/समाज कल्याण संबंधी कार्य, एम.आर. शाखा, CGHS Wellness Rate (Health Scheme), एवं कर्मचारी राज्य बीमा निगम, विधानसभा शाखा – सहायक नोडल अधिकारी।
17	डॉ. नेतराम बेक	राज्य कार्यकम अधिकारी	102 महतारी एक्सप्रेस उपसंचालक के सहयोगी के रूप में। आरएमएमयू (RMMU) ठोस अपशिष्ट प्रबंधन, iRAD, मान. मुख्यमंत्री, मान. मंत्री, 'मुख्य सचिव, भारत सरकार, समय–सीमा प्रकरण, विभिन्न माध्यम, संभागायुक्त एवं अतिविशिष्ट व्यक्तियों से प्राप्त पत्रों का निराकरण, मंत्रीजी एवं सचिव स्तर पर मिटिंग से संबंधित जानकारी, जनशिकायत, जनदर्शन, पी.जी.एन., राज्य स्तरीय बैठक संबंधी कार्य, विधानसभा से संबंधित समस्त कार्य में नोडल अधिकारी के सहयोगी के रूप में, प्रोटोकॉल, सांसद आदर्श ग्राम, लोक सेवा गारंटी, वृक्षारोपण, हरियाली, हज यात्रा एवं अमरनाथ यात्रा से संबंधित समस्त कार्य। (नस्ती संयुक्त संचालक/उपसंचालक के माध्यम से प्रस्तुत करेंगे)

18	डॉ. टी.के.टोण्डर	प्रभारी उप संचालक	परिवार कल्याण कार्यकम संबंधित समस्त कार्य।
19	डॉ. महेन्द्र सिंह	राज्य कार्यकम अधिकारी	PCPNDT, Surrogacy & ART एक्ट, राज्य नोडल अधिकारी, NPCDCS, NMHP, COPD, से संबंधित समस्त कार्य, IEC राज्य सूचना शिक्षा संचार ब्यूरो एवं कम्यूनीकेशन सेल, सूचना प्रौद्योगिकी, सूचना का अधिकार, जन सूचना अधिकारी, विधानसभा, समस्त कार्य के सहयोगी के रूप में समस्त कार्य।
20	डॉ. धर्मेन्द गहवई	प्रभारी नोडल अधिकारी	राज्य क्षय अधिकारी (टी.बी. नियंत्रण कार्यक्रम), आई.डी.एस.पी., आपदा प्रबंधन, कोविड–19, एनसीडीसी से संबंधित कार्य, NPCCHH, National Viral Hepatitis Control Program (NVHCP) से संबंधित कार्य।
21	डॉ. जितेन्द्र कुमार	राज्य नोडल अधिकारी	लेप्रोसी कार्यकम (SLO), MALARIA, DENGUE से संबंधित समस्त कार्य, मुख्यमंत्री हाट बाजार क्लीनिक योजना से संबंधित नस्ती DFW को प्रस्तुत करेंगे। (संबंधित नस्ती संयुक्त संचालक/उपसंचालक के माध्यम से प्रस्तुत किया जावे)
22	डॉ. शैलेन्द्र अग्रवाल	राज्य नोडल अधिकारी	नर्सिंग शाखा, HRMIS NURSING, एच.आर.एम.आई.एस. समन्वय संबंधी कार्य, संबंधी समस्त कार्य संबंधित समस्त कार्य। लिंक जन्म पंजीकरण (Birth Registation), NPPCD, संबंधी समस्त कार्य, मातृत्व स्वास्थ्य से संबंधित समस्त कार्य एवं अस्पताल प्रशासन/बायोमेडिकल वेस्ट मैनेजमेंट से संबधित कार्य में सहयोगी के रूप में कार्य करेंगे। (स्थापना संबंधी नस्ती संयुक्त संचालक के माध्यम से प्रस्तुत किया जावे)
23	डॉ. जी. जगन्नाधा राव	प्रभारी नोडल अधिकारी	FILARIA, JAPANESE ENCEPHALITIS, CHIKANGUNIYA , KALA AZAR, SDG, नीति आयोग, आंकाक्षी जिला से संबंधित समस्त कार्य, (संबंधित नस्ती संयुक्त संचालक/उपसंचालक के माध्यम से प्रस्तुत किया जावे)
24	श्री किशोर चतुर	प्रशासकीय अधिकारी	कार्यालय स्थापना, आवक–जावक, ऑडिट, डाक मार्किंग, विधानसभा शाखा से संबंधित समस्त कार्य।
25	श्री प्रेमशंकर वर्मा	विशेष कर्तव्यस्थ अधिकारी	ग्रामीण चिकित्सा सहायक स्थापना शाखा, छत्तीसगढ़ चिकित्सा मण्डल, त्रिवर्षीय चिकित्सा पाठ्यक्रम, संबंधी समस्त कार्य, HRMIS में अपडेशन एवं HRMIS समन्वय संबंधी कार्य।
26	डॉ. श्रीमती विनीता तिवारी	सहायक लेखा अधिकारी	महालेखाकार से संबंधित कंडिकाओं पर पालन प्रतिवेदन, वेतन निर्धारण, ऑडिट निरीक्षण, लेखा शाखा संबंधी समस्त कार्य, सामान्य भविष्य निधि (जी.पी.एफ.) में व्याप्त गड़बड़ियों में सुधार संबंधी कार्य, पेंशन प्रकरणों से संबंधित कार्य। विज्ञप्त/अविज्ञप्त/नर्सिंग शाखा के विभागीय जांच संबंधित प्रकरणों, नर्सिंग शाखा एवं महिला उत्पीड़न से संबंधित कार्यों में सहायक नोडल अधिकारी के रूप में।
आयुक्त/संचालक, स्वास्थ्य सेवायें एवं वित्त नियंत्रक द्वारा समय–समय पर सौंपे गए अन्य कार्य।			

आयुक्त, स्वास्थ्य सेवायें द्वारा अनुमोदित।

संचालक
स्वास्थ्य सेवायें
छत्तीसगढ़

पृ. क्रमांक/संचा./स्टेनो/2022/41 नवा रायपुर, दिनांक 23/03/2022

प्रतिलिपि :–

1. विशेष सहायक, माननीय मंत्रीजी, स्वास्थ्य एवं परिवार कल्याण विभाग, मंत्रालय, महानदी भवन, नवा रायपुर, अटल नगर, जिला रायुपर की ओर सूचनार्थ।
2. प्रमुख सचिव, छत्तीसगढ़ शासन, स्वास्थ्य एवं परिवार कल्याण विभाग, मंत्रालय, महानदी भवन, नवा रायपुर, अटल नगर, की ओर सूचनार्थ।
3. आयुक्त, स्वास्थ्य सेवायें, छ.ग. नवा रायपुर, अटल नगर, जिला रायुपर की ओर सूचनार्थ।
4. मिशन संचालक, राष्ट्रीय स्वास्थ्य मिशन नवा रायपुर, अटल नगर, जिला रायुपर की ओर सूचनार्थ।
5. संचालक, स्वास्थ्य एवं परिवार कल्याण/महामारी नियंत्रण, छ.ग. नवा रायपुर, अटल नगर, जिला रायुपर की ओर सूचनार्थ।
6. प्रबंध संचालक, छ.ग. मेडिकल सर्विसेस कॉर्पोरेशन, छ.ग. रायपुर की ओर सूचनार्थ।
7. संचालक, राज्य स्वास्थ्य एवं परिवार कल्याण प्रशिक्षण संस्थान, रायपुर छ.ग. की ओर सूचनार्थ।
8. परियोजना संचालक, छ.ग. राज्य एड्स नियंत्रण समिति रायपुर की ओर सूचनार्थ।
9. संबंधित अधिकारी ..... स्थानीय कार्यालय की ओर पालनार्थ।
10. डॉ. प्रशांत श्रीवास्तव, संभागीय संयुक्त संचालक, स्वास्थ्य सेवायें, रायपुर संभाग, रायपुर अपने वर्तमान कार्य के साथ–साथ पीसीपीएनडीटी/Surrogacy & ART एक्ट, का कार्य भी संपादित करेंगे।
11. समस्त संभागीय संयुक्त संचालक, स्वास्थ्य सेवायें/मुख्य चिकित्सा एवं स्वास्थ्य अधिकारी/सिविल सर्जन सह मुख्य अस्पताल अधीक्षक, छत्तीसगढ़ की ओर सूचनार्थ प्रेषित।

संचालक
स्वास्थ्य सेवायें
छत्तीसगढ़

संचालनालय स्वास्थ्य सेवायें
छत्तीसगढ़
इंद्रावती भवन, तृतीय तल, नवा रायपुर

कमांक/संचा./स्टेनो/2022/42 नवा रायपुर, दिनांक :– 23/03/2022

–:: आदेश ::–

संचालनालय स्वास्थ्य सेवायें, छ.ग. में पदस्थ वित्त नियंत्रक/संयुक्त संचालक/उपसंचालक/राज्य कार्यकम अधिकारी/राज्य नोडल अधिकारी/राज्य नोडल अधिकारियों को पारस्परिक रूप से एक–दुसरे के नाम के सम्मुख दर्शाए नाम के अनुसार लिंक अधिकारी बनाया जाता है :–

क0	अधिकारी का नाम एवं पदनाम	अधिकारी का नाम एवं पदनाम
1	डॉ. सुभाष मिश्रा, संचालक महामारी	डॉ. अल्का गुप्ता, संचालक, SIHFW
2	सुश्री भारती चंद्राकर, संयुक्त संचालक	श्री रविराज ठाकुर, उपसंचालक
3	डॉ. एस.के.पामभोई, संयुक्त संचालक	डॉ. राजेश शर्मा, राज्य कार्यकम अधिकारी
4	डॉ. छाया तिवारी, उपसंचालक	डॉ. व्ही. आर. भगत, राज्य कार्यकम अधिकारी
5	डॉ. एस.के.बिंझवार, उपसंचालक	डॉ. श्रीकांत राजिमवाले, प्र.उपसंचालक
6	डॉ. अनिल परसाई, प्र.उपसंचालक	डॉ. एस.के.पामभोई, संयुक्त संचालक
7	डॉ. के.सी.उरांव, उपसंचालक	डॉ. शैलेन्द्र अग्रवाल, SPO
8	डॉ. कमलेश जैन, SPO	डॉ. धर्मेन्द्र गहवई, SPO
9	डॉ. डॉ. टी.के.टोण्डर, प्र. उपसंचालक	डॉ. नेतराम बेक, प्र. उपसंचालक
10	डॉ. आनंद राव, SNO	डॉ. जी. जगन्नाथा राव, SNO
11	डॉ. महेन्द्र सिंह, SPO	डॉ. जितेन्द्र कुमार, SPO

यह आदेश तत्काल प्रभाव से लागू होगा।

संचालक
स्वास्थ्य सेवायें
छत्तीसगढ़

पृ. कमांक/संचा./स्टेनो/2022/43 नवा रायपुर, दिनांक :– 23/03/2022

प्रतिलिपि :–

1. प्रमुख सचिव, छत्तीसगढ शासन, स्वास्थ्य एवं परिवार कल्याण विभाग, मंत्रालय, महानदी भवन, नवा रायपुर।
2. आयुक्त, स्वास्थ्य सेवायें, छत्तीगसढ।
3. मिशन संचालक, राष्ट्रीय स्वास्थ्य मिशन, छत्तीसगढ़।
4. संचालक, परिवार कल्याण/महामारी/राज्य स्वास्थ्य एवं परिवार कल्याण संस्थान/परियोजना संचालक, छत्तीसगढ।
5. संयुक्त/उप संचालक, समस्त स्थापना शाखा, स्थानीय कार्यालय।
6. संबंधित ..... को सूचनार्थ एवं पालनार्थ।

संचालक
स्वास्थ्य सेवायें
छत्तीसगढ़