



# STATE ACTION PLAN FOR CLIMATE CHANGE & HUMAN HEALTH

## Himachal Pradesh

(Revised Version- 19.04.2023)



National Programme on Climate Change & Human Health  
CEOH & CCH-National Centre for Disease  
Control Ministry of Health and Family Welfare, Government  
of India, 22, Sham Nath Marg, Delhi-110054

Telephone: 011-23909223,

Email- [npcchh.hq-ncdc@ncdc.gov.in](mailto:npcchh.hq-ncdc@ncdc.gov.in), [ceohcch-ncdc@ncdc.gov.in](mailto:ceohcch-ncdc@ncdc.gov.in)  
[-npcchh@gmail.com](mailto:-npcchh@gmail.com), [ncdc.env@gmail.com](mailto:ncdc.env@gmail.com)





सत्यमेव जयते



# HIMACHAL PRADESH STATE ACTION PLAN FOR CLIMATE CHANGE AND HUMAN HEALTH (2023)



National Centre for  
Disease Control  
Government of India



National Programme  
on Climate Change  
and Human Health



**National Programme  
on Climate Change  
and Human Health**

## EXECUTIVE SUMMARY

Climate-sensitive illnesses are increasing due to climate variations and a rise in extreme weather events either through direct changes in temperature, precipitation, and occurrence of heat waves, floods, droughts, and fires or indirect impacts (ecological disruptions resulting in crop failures, shifting patterns of disease vectors, or displacement of populations, etc.). Sustainable Development Goal 13 (SDG 13) emphasizes “taking urgent action to combat climate change and its impacts”.

In developing countries like India, the health of the human population is sensitive to the shifts in weather patterns and other aspects of climate change, owing to high population, rapid industrialization, large-scale rural-to-urban migration resulting in unplanned urbanization, depletion of forest cover, high energy consumption, variation in food production, clean air, vector-borne diseases, potable water supply, sewage and waste management, and access to health care.

Climate change is among the greatest health risks of the 21st century. It affects social and environmental determinants of health like clean air, safe drinking water, sufficient food, and secure shelter. Climate change, together with other natural and human-made health stressors, influences human health and disease in numerous ways.

Against this background, the proposed “State Action Plan on Climate Change and Human Health (SAPCCHH)” may take a multipronged approach to address the health-related aspects of climate change. The SAPCCHH is envisioned to strengthen the health of citizens of Himachal Pradesh against climate-sensitive illness, especially among vulnerable groups like children, women, and marginalized populations. 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 health care services against the adverse impact of climate change on human health.

The SAPCCHH Himachal Pradesh covers the vision, goals, and objectives of health planning concerning the changing climate. The implementation plan describes inputs and processes for the next 5 years and expected outputs and outcomes.

The SAPCCHH also describes the operational framework for implementation, systematic structures, and roles and responsibilities of the State, District, and peripheral governing bodies, Task Forces, and Environment Health Cell. It depicts the burden of climate change-sensitive illnesses, strategies and scope of work, advisory and key priorities, and tentative physical and financial planning.

Dr Neerja Gupta  
State Nodal Officer NPCCHH  
Himachal Pradesh

## CONTENTS

### **PART I**

1. Introduction
2. Climate Vulnerability
3. Climate Sensitive Issues/Disease prevalent in Himachal Pradesh
4. NPCCHH Programme and its goals and objectives
5. Organizational Structure

### **PART II**

6. Health Adaptation Plan for Climate Resilient Healthcare facilities
7. Health Adaptation Plan for Acute Respiratory Illnesses attributed to Air Pollution
8. Health Adaptation Plan for Heat related Illness
9. Health Adaptation Plan for Vector Borne Disease
10. Health Adaptation Plan for disaster management
11. NPCCHH Budget
12. Annexures

Annexure 1: Activity Matrix

# **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 several ways, but the most commonly experienced are increased frequency and intensity of heat waves leading to a rise in heat-related illnesses and deaths. High temperature is known to increase the level of ‘ground level ozone’ and other ‘climate-altering pollutants’ other than carbon dioxide, which further exacerbates cardio-respiratory and allergic diseases as well as 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 21<sup>st</sup> March 1994. Since then many steps have been initiated to reduce the effect of climate change at the global level including the “Rio Convention 1992”, “Kyoto protocol 1997”, “Male’ Declaration 1998”, “Convention of Parties”, “Cancun Agreement 2010”, “Durban Platform 2011”, and the “Nationally Determined Contributions” (NDCs) at the Conference of Parties 21”.

India is a signatory to the “Male’ Declaration” which calls for the strengthening of the health sector and achieving climate resilience. According to the “Male’ Declaration”, it is desired that healthcare facilities should be prepared to address human needs in face of climate change-induced vagaries and adopt climate-resilient practices, particularly to encourage that these can withstand any climatic event and that essential services such as water, sanitation, waste management, and electricity are functional during such events. Further, for achieving climate resilience, 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.

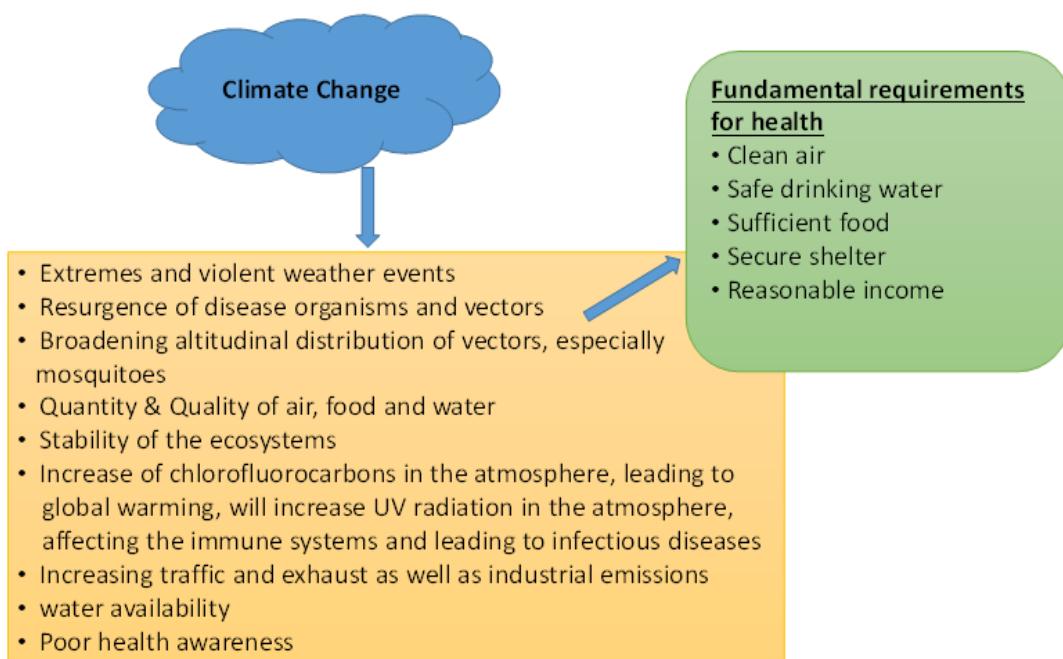
In this regard, initiatives undertaken by the Government of India include the identification of the Ministry of Environment, Forest & Climate Change (MoEF&CC) as the nodal ministry, the formulation of the National Environmental Policy 2006, and the the formulation of the Prime Minister’s Council on Climate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

MoEF&CC has developed 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 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 National Action Plan on Climate

Change and Human Health (NAPCCHH) and recommend strategies for indicators, mitigation, capacity building, etc. for the health sector to respond to the climate emergency.

National Centre for Diseases Control (NCDC) is identified as the 'technical nodal agency' by MoHFW for the proposed National Mission on Health. The Centre for Environmental and Occupational Health Climate Change & Health (CEOH&CCH), NCDC, is implementing the National Programme of Climate Change and Human Health (NPCCHH), as a part of which State Action Plan on Climate Change and Human Health (SAPCCHH) has been prepared for Himachal Pradesh. SAPCCHH is a long-term vision and planning document prepared by the Department of Health & Family Welfare, Himachal Pradesh. In Himachal Pradesh, the State Climate Change and Human Health Cell is working under the Directorate of Health Services, Himachal Pradesh to deal with climate change-related health issues in the state. The state action plan 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 same by addressing the climate-sensitive diseases and develop a climate-responsive and sustainable health care ecosystem in the state.

The figure below shows how climate change is leading to the generation or resurgence of risk factors that are directly or indirectly affecting the determinants or fundamental requirements of health like clean air, safe drinking water, etc.

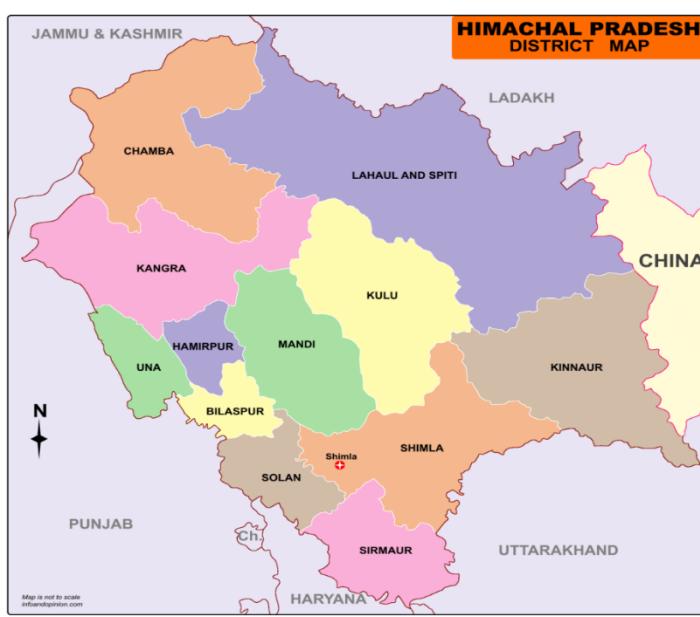


## State profile

Himachal Pradesh "Province of the Snow-laden Mountains is a state in the northern part of India. Situated in the Western Himalayas, it is one of the thirteen mountain states and is characterized by an extreme landscape featuring several peaks and extensive river systems. Himachal Pradesh is the northernmost state of India and shares borders with the union territories of Jammu and Kashmir and Ladakh to the north, Punjab to the west, Haryana to the southwest, Uttarakhand to the southeast, and a very narrow border with Uttar Pradesh to the south. The state also shares an international border to the east with the Tibet Autonomous Region in China. Himachal Pradesh is also known as *Dev Bhoomi*, meaning 'Land of Gods', and *Veer Bhoomi* which means 'Land of the Brave'.

The predominantly mountainous region comprising the present-day Himachal Pradesh has been inhabited since pre-historic times, having witnessed multiple waves of human migrations from other areas. Throughout its history, the region was mostly ruled by local kingdoms, some of which accepted the suzerainty of larger empires. Before India's independence from the British, Himachal comprised the hilly regions of the Punjab Province of British India. After independence, many of the hilly territories were organized as the Chief Commissioner's province of Himachal Pradesh, which later became a union territory. In 1966, hilly areas of the neighboring Punjab state were merged into Himachal and it was ultimately granted full statehood in 1971.

Himachal Pradesh is spread across valleys with many perennial rivers flowing through them. Around 90% of the state's population lives in rural areas. Agriculture, horticulture, hydropower, and tourism are important constituents of the state's economy. The hilly state is almost universally electrified, with 99.5% of households having electricity as of 2016. The state was declared India's second open-defecation-free state in 2016. According to a survey of CMS – India Corruption Study 2017, Himachal Pradesh is India's least corrupt state.



### Geographic Profile\*

- Himachal is located in the western Himalayas between 30°22'N and 33°12'N latitude and 75°47'E and 79°04'E longitude. Covering an area of 55,673 square kilometres (21,495 sq mi), it is a mountainous state. The Zanskar range runs in the northeastern part of the state and the great Himalayan range runs through the eastern and northern parts, while the Dhauladhar and the Pir Panjal ranges of the lesser Himalayas, and their valleys, form much of the core regions. The outer Himalayas,

or the Shiwalik range, form southern and western Himachal Pradesh. At 6,816 m, Reo Purgyl is the highest mountain peak in the state of Himachal Pradesh.

- The drainage system of Himachal is composed both of rivers and glaciers. Himalayan rivers criss-cross the entire mountain chain. Himachal Pradesh provides water to both the Indus and Ganges basins. The drainage systems of the region are the Chandra Bhaga or the Chenab, the Ravi, the Beas, the Sutlej, and the Yamuna. These rivers are perennial and are fed by snow and rainfall. They are protected by an extensive cover of natural vegetation. Four of the five Punjab rivers flow through the state, three of them originating here.
- Due to extreme variation in elevation, great variation occurs in the climatic conditions in Himachal. The climate varies from hot and humid subtropical in the southern tracts to, with more elevation, cold, alpine, and glacial in the northern and eastern mountain ranges. The state's winter capital, Dharamsala receives very heavy rainfall, while areas like Lahaul and Spiti are cold and almost rainless. Broadly, Himachal experiences three seasons: summer, winter, and rainy season.
- Summer lasts from mid-April till the end of June and most parts become very hot (except in the alpine zone which experiences a mild summer) with the average temperature ranging from 28 to 32 °C (82 to 90 °F). Winter lasts from late November till mid-March. Snowfall is common in alpine tracts. Pollution is affecting the climate of almost all the states of India. Due to steps taken by governments to prevent pollution, Himachal Pradesh has become the first smoke-free state in India which means cooking in the entire state is free of traditional chulhas.
- The state of Himachal Pradesh is divided into 12 districts which are grouped into three divisions, Shimla, Kangra, and Mandi. The districts are further divided into 73 subdivisions, 78 blocks, and 172 tehsils.

| Particulars               | Description            |
|---------------------------|------------------------|
| <b>Area</b>               | 55,673 km <sup>2</sup> |
| <b>Total population</b>   | 7,781,244              |
| <b>Males</b>              | 3,946,646              |
| <b>Females</b>            | 3,834,598              |
| <b>Population density</b> | 123                    |
| <b>Sex ratio</b>          | 972                    |
| <b>Rural population</b>   | 6,176,050              |
| <b>Urban population</b>   | 688,552                |
| <b>Capitals</b>           | 2                      |
| <b>Districts</b>          | 12                     |
| <b>Sub-divisions</b>      | 71                     |
| <b>Tehsils</b>            | 169                    |

|  |   |
|--|---|
| <b>Sub-tehsils</b>                               | 38  |
| <b>Developmental blocks</b>                      | 78  |
| <b>Towns</b>                                     | 59  |
| <b>Panchayats</b>                                | 3,243   |
| <b>Panchayat smities</b>                         | 77  |
| <b>Zila parishad</b>                             | 12  |
| <b>Urban local bodies</b>                        | 59  |
| <b>Nagar nigams</b>                              | 2   |
| <b>Nagar parishads</b>                           | 25  |
| <b>Nagar panchayats</b>                          | 23  |
| <b>Census villages</b>                           | 20,690  |
| <b>Inhabited villages</b>                        | 17,882  |
| <b>Health institutions</b>                       | 3,866   |
| <b>Educational institutions</b>                  | 17,000  |
| <b>Motorable roads</b>                           | 33,722 km   |
| <b>National highways</b>                         | 8   |
| <b>Identified hydroelectric potential</b>        | 23,000.43 MW in five rivers basins, i.e., Yamuna, Satluj, Beas, Ravi, Chenab, and Himurja |
| <b>Potential harnessed</b>                       | 10,264 MW   |
| <b>Food grain production</b>                     | 15.28 lakh MT   |
| <b>Vegetable production</b>                      | 18.67 lakh MT   |
| <b>Fruit production</b>                          | 1,027,000 tonnes  |
| <b>Per capita income</b>                         | ₹2,01,854 (2021–22)   |
| <b>Social Security pensions</b>                  | 237,250 persons, annual expenditure: over ₹ 600 million                                   |
| <b>Investment in industrial areas</b>            | ₹ 273.80 billion, employment opportunities: Over 337,391                                  |
| <b>Employment generated in government sector</b> | 80,000  |

| DIVISIONS     |  |
|---------------|--|
| <b>Kangra</b> | Chamba, Kangra, Una                                |
| <b>Mandi</b>  | Bilaspur, Hamirpur, Kullu, Lahaul and Spiti, Mandi |
| <b>Shimla</b> | Kinnaur, Shimla, Sirmaur, Solan                    |

#### Vulnerable Population:

|                          |                  |
|--------------------------|------------------|
| <b>Under 5 Children</b>  | <b>5.5 Lakhs</b> |
| Adolescent (10 – 19 yrs) | 8 Lakhs          |

**Rainfall:** The average annual rainfall is 1,251(mm). The rainy season starts at the end of June. The landscape becomes lush and green. During the season streams and natural springs are replenished. The heavy rains in July and August cause erosion, floods, and landslides. Of all the state districts, Dharamshala receives the highest rainfall, nearly about 3400 mm. Spiti is the driest area of the state (rainfall below 50mm).

**Temperature:** There is a huge variation in the climatic conditions of Himachal Pradesh due to variations in altitude (360–6500 m). The climate varies from hot and sub-humid tropical (450–900 m) in the southern low tracts, warm and temperate (900–1800 m), cool and temperate (1900–2400 m), and cold glacial and alpine (2400–4800 m) in the northern and eastern high elevated mountain. By October, nights and mornings are very cold. Snowfall at elevations of nearly 3000 m is about 3km and lasts from December start to March end. The spring season starts from mid-February to mid-April. The weather is pleasant and comfortable in the season. The rainy season starts at the end of June. During the season streams and natural springs are replenished. The heavy rains in July and August cause erosion, floods, and landslides. Of all the state districts, Dharamshala receives the highest rainfall, nearly about 3400 mm. Spiti is the driest area of the state (rainfall below 50mm) as it is enclosed by high mountains on all sides.

### Healthcare Infrastructure in Himachal Pradesh -2021

| S. No | Name of District | Number of Medical college (Govt/ Pvt)          | Number of district hospital/re Hospital | Number of Sub division /Civil Hospital | Number of CHC hospital | Number of PHCs | Number of Sub-centers |
|-------|------------------|--|---|--|------------------------|----------------|-----------------------|
| 1     | Bilaspur         | 1 ( AIIMS )                                    | 1                                       | 4                                      | 11                     | 35             | 121                   |
| 2     | Chamba           | 1  | 1                                       | 7                                      | 6                      | 51             | 183                   |
| 3     | Hamirpur         | 1  | 1                                       | 5                                      | 5                      | 31             | 153                   |
| 4     | Kangra           | 1  | 1                                       | 20                                     | 27                     | 89             | 445                   |
| 5     | Kinnaur          | 0  | 1                                       | 2                                      | 4                      | 25             | 35                    |
| 6     | Kullu            | 0  | 1                                       | 5                                      | 9                      | 31             | 112                   |
| 7     | Lahaul & Spiti   | 0  | 1                                       | 2                                      | 1                      | 17             | 39                    |
| 8     | Mandi            | 1  | 1                                       | 20                                     | 21                     | 93             | 354                   |
| 9     | Shimla           | 1  | 1                                       | 12                                     | 21                     | 115            | 254                   |
| 10    | Sirmour          | 1  | 1                                       | 6                                      | 11                     | 52             | 152                   |
| 11    | Solan            | ( 1 MMU Private )                              | 1                                       | 6                                      | 11                     | 40             | 179                   |
| 12    | Una              | 0  | 1                                       | 5                                      | 11                     | 24             | 137                   |
| Total |                  | <b>6 State Govt.<br/>1 AIIMS<br/>1 Private</b> | <b>12</b>                               | <b>94</b>                              | <b>138</b>             | <b>603</b>     | <b>2164</b>           |

## Chapter 2

### Climate Vulnerability

Himachal Pradesh is located in Northern India. Referred to as dev bhoomi or “Land of God”, it is bordered by Jammu and Kashmir on the north, Punjab, and Chandigarh on the west, Haryana on the south-west, Uttarakhand on the south-east and by the Tibet Autonomous Region on the east. The word “Himachal” means the abode of snow. Shimla is the capital of Himachal Pradesh. Shimla district has the largest urban population in the state at 25%. Covering an area of 55,673 square kilometers it is a mountainous state. Most of the state lies on the foothills of the Dhauladhar Range.

Himachal Pradesh has a total population of 6,864,602 including 3,481,873 males and 3,382,729 females as per the Census of India 2011. This is only 0.57 percent of India’s total population, recording a growth of 12.81 percent. The total fertility rate (TFR) per woman is 1.8, one of the lowest in India. Himachal Pradesh has been ranked fifteenth in the list of the highest per capita incomes of Indian states and union territories for the year 2013-14. The state has several valleys and about 90% of the population lives in rural areas. The villages have good connectivity with roads, public health centres, and high-speed broadband. Agriculture contributes over 45% to the net state domestic product. It is the main source of income and employment in Himachal.

Himachal Pradesh is a hilly region and it experiences a pleasant climate throughout the year. It even experiences heavy snow fall during the winter months. The weather of Himachal alters with the change in altitude.

**Topography of Himachal Pradesh:** The state, having the highest forest cover in the country, i.e. 27.72 percent, is located at elevations ranging from 1526 ft (465 m) to about 23000 ft (7000 m) above sea level. The elevation increases significantly from west to east and from south to north. The state extends from the Shivalik range of mountains in the south to Outer Himalayas mountain range in the north.

Vast flora and fauna, diversity in the weather parameters across the state can broadly be studies under the four major physiographic zones of the state and the climate variability owes not only the zone specific causal factors but in totality is reflected by cumulative intermingling anthropogenic climate detrimental activities of these zones. The zones are:

**a. Shivaliks:** This is the outer Himalyan mountain range comprising the lower hills (600 m above sea level). The terrain of this zone consists of highly unconsolidated deposits. This is the reason

for vast soil erosion and deforestation in the districts lying in this zone. Low lying areas of district Kangra, Bilaspur, Hamirpur, Una and Solan fall under this zone.

**b. Central zone:** This is the lesser Himalyan mountain range which has a gradual elevation towards Dhauladhar and Pir Panjal mountain ranges. The rise is more in Shimla hills towards the Churdhar peak. District Kangra is basically a longitudinal trough at the foot of the Dhauladhar range of mountains. The lesser Himalayan range is upto an elevation of about 4000 m above sea level. Number of glaciers and passes are present in this range, the famous one being the Rohtang Pass. Districts of Shimla, Chamba, Kinnaur, Lahaul and Spiti and upper ranges of Sirmour fall under the central zone.

**c. Northern zone:** This is the Great Himalayan range of mountains (5000-6000 m above sea level) running along the eastern boundary and is typically slashed across by the river Sutlej. Upper parts of districts of Shimla, Sirmour, the districts of Kinnaur and Lahaul and Spiti regions come under the northern zone. The famous passes like Kangla, Bara Lacha, Parang, Pin Parwati etc lie in this zone.

**d. Zanskar range:** This is the easternmost range of mountains which separates districts of Kinnaur and regions of Lahaul and Spiti from Tibet and Pangi of Chamba district from Leh Ladakh UT. This range is about an elevation beyond 6000 m above sea level.

The weather parameter such as temperature, humidity and precipitation (rain and snow) henceforth show both spatial and temporal variability across the length and breadth of the state. Regions above the elevations of 5000 m are always covered with snow, whereas the low lying Shivaliks often face floods, rain/hail and wind storms.

## **Issues, Challenges, and Priorities**

- Climatic change leads to extremes and violent weather events.
- Climatic change causes a resurgence of disease organisms and vectors and a broadening altitudinal distribution of vectors, especially mosquitoes.
- Climatic change affects the quantity of air, food, and water and the stability of the ecosystems.
- The increase of chlorofluorocarbons in the atmosphere will lead to increased UV radiation, affecting the immune system and leading to infectious diseases.
- Increasing traffic and exhaust as well as industrial emissions are raising concentrations of SO<sub>2</sub>, NO<sub>x</sub>, O<sub>3</sub> and suspended particulate matter, which are known to be damaging to human health.

- The impact of climate change on water availability is likely to be one of the most significant impacts for the health of population
- Difficult hilly terrain.
- Lack of human resources.
- Poor road connectivity.
- Poor health awareness.
- Inadequate health facilities.

#### Priorities

- Strengthening laboratory/diagnostic facilities
- Monitoring drug resistance, insecticide resistance
- Integrated behaviour change communication activities
- Public–private partnership
- Sentinel surveillance for dengue and Japanese encephalitis
- Integrated vector management

Capacity building of medical and paramedical staff, including frontline workers.

## **Chapter 3**

### **NPCCHH: Vision Goal & Objectives**

#### **Vision:**

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

#### **Goal:**

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

#### **Objective:**

To strengthen the 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 the healthcare system to reduce illnesses/ diseases due to variability in climate.

**Objective 3:** To strengthen health preparedness and response by performing situational analysis at the 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 state 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 4

### Chapter 4 - SAPCCHH: Organizational Framework

#### State-Level Governing Body - Environmental Health

The state-level governing body is formed for undertaking policy-level decisions and shall be working under the Chairmanship of the Honourable State Health Minister. The other members may be as follows:

| Honourable State Health Minister   | Chairman         |
|--|------------------|
| <b>Principal Secretary(Health)</b>   | Vice Chairman    |
| <b>Director Health Services/Head of Health System</b>                                | Member Secretary |
| <b>Mission Director-National Health Mission</b>                                      | Member           |
| <b>Principal Secretary, Ministry of Revenue (Disaster)</b>                           | Member           |
| <b>Principal Secretary, Ministry of Agriculture</b>                                  | Member           |
| <b>Principal Secretary, Ministry of Water and Sanitation</b>                         | Member           |
| <b>Principal Secretary, Ministry of Transport</b>                                    | Member           |
| <b>Principal Secretary, Ministry of Animal Husbandry</b>                             | Member           |
| <b>Principal Secretary, Ministry of Environment and Forests</b>                      | Member           |
| <b>Principal Secretary, Ministry of Women and Child Development / Social Justice</b> | Member           |
| <b>Principal Secretary, Ministry of Science and Technology/ Earth Sciences</b>       | Member           |
| <b>Principal Secretary, Ministry of Education</b>                                    | Member           |
| <b>Principal Secretary, Ministry of Human Resource Development</b>                   | Member           |
| <b>Principal Secretary, Ministry of Public Works Department</b>                      | Member           |
| <b>Principal Secretary, Ministry of Power</b>  | Member           |
| <b>Principal Secretary, Ministry of Urban Development (Municipalities)</b>           | Member           |
| <b>Principal Secretary, Ministry of Finance</b>                                      | Member           |
| <b>Principal Secretary, Ministry of Law</b>  | Member           |

|   |        |
|---|--------|
| <b>Principal Secretary, Ministry of Food and Civil Supplies</b> | Member |
| <b>Principal Secretary, Ministry of Panchayati Raj</b>          | Member |
| <b>Regional Director -Health &amp; Family Welfare (GoI)</b>     | Member |
| <b>Director Medical Education and Research</b>                  | Member |
| <b>State Nodal Officer- Climate Change</b>                      | Member |
| <b>Head – NAPCCHH, CEOH&amp;CCH Division, NCDC</b>              | Member |

### **Task Force - Environmental Health**

This task force shall be working under the guidance of the Principal Secretary (*State Level*)

The State level Task Force shall have inter-ministerial members which are suggested as

| <b>Principal Secretary(Health)</b>   | <b>Chairperson</b> |
|--|--------------------|
| <b>Mission Director-National Health Mission</b>  | Vice Chairman      |
| <b>Director Health Services/Head of Health System</b>                                  | Member Secretary   |
| <b>Director/ Chairman - Department of Revenue (Disaster)</b>                           | Member             |
| <b>Director/ Chairman - Department of Agriculture</b>                                  | Member             |
| <b>Director/ Chairman - Department of Water and Sanitation</b>                         | Member             |
| <b>Director/ Chairman - Department of Transport</b>                                    | Member             |
| <b>Director/ Chairman - Department of Animal Husbandry</b>                             | Member             |
| <b>Director/ Chairman - Department of Environment and Forests</b>                      | Member             |
| <b>Director/ Chairman - Department of Women and Child Development / Social Justice</b> | Member             |
| <b>Director, Meteorological department of State/UT</b>                                 | Member             |
| <b>Director/ Chairman - Department of Public Works Department</b>                      | Member             |
| <b>Director / Chairman – Department of Urban Development (Municipalities)</b>          | Member             |
| <b>Director/ Chairman -Department of Education</b>                                     | Member             |

|  |        |
|--|--------|
| <b>Director/ Chairman - Department of Food and Civil Supplies</b>      | Member |
| <b>Director/ Chairman - Department of Human Resource Development</b>   | Member |
| <b>Director/ Chairman - Department of Power</b>                        | Member |
| <b>Director/ Chairman - Department of Finance</b>                      | Member |
| <b>Director/ Chairman - Department of Law</b>                          | Member |
| <b>Director/ Chairman - Department of Panchayati Raj</b>               | Member |
| <b>Director/ Chairman - State Ground Water Board</b>                   | Member |
| <b>Head - State disaster Management Authority</b>                      | Member |
| <b>Environmental Engineer/ Scientist from Ministry of Environment</b>  | Member |
| <b>Chairman, State Pollution Control Board</b>                         | Member |
| <b>Regional Director -Health &amp; Family Welfare (GoI)</b>            | Member |
| <b>Director Medical Education and Research</b>                         | Member |
| <b>State Nodal Officer- Climate Change</b>                             | Member |
| <b>Director, ICMR Institute/Centre (If any branch in the State/UT)</b> | Member |
| <b>State Surveillance Officer</b>                                      | Member |
| <b>Head – NAPCCHH, CEOH&amp;CCH Division, NCDC, MoHFW</b>              | Member |
| <b>Head, NCDC Branch of the state</b>                                  | Member |

### **Structure at State/ UT 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 |

### **Executive Members of EHC**

|                                     |          |
|-------------------------------------|----------|
| State Nodal Officer- Climate Change | Chairman |
|-------------------------------------|----------|

|  |        |
|--|--------|
| State Program Manager - NHM                              | Member |
| Additional Director Public Health/NCD                    | Member |
| Additional Director NVBDCP                               | Member |
| Additional Director Immunization / Family Welfare        | Member |
| Additional Director Medical (Mental Health)              | Member |
| State Surveillance Officer/ Additional Director Epidemic | Member |
| Head, State Nutrition Bureau                             | Member |
| Consultant, SHSRC  | Member |
| Additional Director , IEC/ State Mass Media              | Member |
| State Epidemiologist, IDSP                               | Member |
| State Veterinary Consultant                              | Member |
| Microbiologist , IDSP                                    | Member |

## **Roles and Responsibilities of the State/ UT Environmental Health Cell**

- Preparation and implementation of State Action Plan for Climate Change and Human Health
- Conduct Vulnerability assessment and risk mapping for commonly occurring climate-sensitive illnesses in the state/ UT.
- Assessment of needs for health care professionals (training, and capacity building) and organising training, workshops, and meetings.
- Maintain state and district-level data on physical, financial, and epidemiological profiles 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 warnings/ alerts to health professionals and related stakeholders as well as the general public through campaigns or using mass media (electronic or printed),
- Social mobilization against preventive measures through the involvement of women's self-help groups, community leaders, 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.

## Structure of District Level Task Force- Environmental Health

| <b>District Collector</b>  | <b>Chairman</b>  |
|--|------------------|
| Dean – Govt Medical College in the district/ Head- Department of Community Medicine of the Medical College | Vice Chairman    |
| Chief Medical Officer/ District Medical Officer / District Nodal Officer – Climate Change.                 | Member Secretary |
| <b>District Surveillance Officer</b>   | Member           |
| <b>District Programme Manager - NHM</b>  | Member           |
| <b>District Head, Department of Revenue (Disaster)</b>   | Member           |
| <b>District Head, Department of Agriculture</b>  | Member           |
| <b>District Head, Department of Water and Sanitation</b>   | Member           |
| <b>District Head, Department of Transport</b>  | Member           |
| <b>District Head, Department of Animal Husbandry</b>   | Member           |
| <b>District Head, Department of Environment and Forests</b>  | Member           |
| <b>District Head, Department of Women and Child Development / Social Justice</b>                           | Member           |
| <b>District Head, Department of Science and Technology/ Earth Sciences</b>                                 | Member           |
| <b>District Head, Department of Education</b>  | Member           |
| <b>District Head, Department of Food</b>   | Member           |
| <b>District Head, Department of Human Resource Development</b>   | Member           |
| <b>District Head, Department of Public Works Department</b>  | Member           |
| <b>District Head, Department of Power</b>  | Member           |
| <b>District Head, Department of Finance</b>  | Member           |
| <b>District Head, Department of Law</b>  | Member           |
| <b>District Head, Department of Panchayati Raj</b>   | Member           |

## Structure at District Environment Health Cell:

| <b>District Nodal Officer- Climate Change</b>                   | <b>Chairman</b> |
|---|-----------------|
| <b>District Veterinary officer</b>                              | Member          |
| <b>District Surveillance Officer/ District Epidemic Officer</b> | Member          |
| <b>District RCH officer/FW Officer</b>                          | Member          |

|                                      |                  |
|--------------------------------------|------------------|
| <b>District Epidemiologist</b>       | Member           |
| <b>District Microbiologist</b>       | Member           |
| <b>District Immunisation Officer</b> | Member           |
| <b>District Training Officer</b>     | Member           |
| <b>Data entry operator</b>           | Supporting staff |

## **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 in the district.
- Assess needs for health care professionals and conduct sub-district/ CHC level training/ workshop and meetings for capacity building.
- Ensure the 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 profiles for these illnesses.

## Chapter-5

### Climate Sensitive Diseases or issues prevalent in Himachal Pradesh

In Himachal, broadly prevalent climate-sensitive diseases include-

- a. Water borne
- b. Vector-borne
- c. Extreme weather-driven events
- d. Air borne
- e. Food security and nutrition-driven events

a. **Water borne diseases:** The districts situated in the Shivalik and Central zones are highly prone to water borne diseases (WBD). These include Solan, Shimla, Sirmour, Una, Bilaspur, Hamirpur, Kangra, and the basin region of Chamba. Rampant urbanization and unchecked industrialization, rural-urban transformation, and numerous unscientific anthropogenic activities leading to sanitation disasters are responsible for water borne diseases. Di-siltation process in the Una, Bilaspur, and lower belts of Solan and Kangra districts has made these areas prone to WBDs. Rampant deforestation of these areas is also implicitly responsible for frequent WBD outbreaks.

Diarrheal diseases, Gastro enteritis, Jaundice are the WBDs mostly being reported during the monsoon months i.e. June, July, and August. Few outbreaks of Cholera have also been reported in these districts. Other WBDs reported in sporadic patterns across these physiographic regions are worm infections, scabies, giardiasis, campylobacteriosis, hepatitis, amebiasis, and typhoid.

b. **Vector-borne diseases:** The Shivalik region is mainly prone to the vector-borne diseases (VBD) in the state. The districts of Solan, Una, Bilaspur, Hamirpur, Kangra, Mandi, and Sirmour are high alert regions for VBD which are frequently encountered during monsoon (June, July, August) and post-monsoon (September, October, November) months.

Rapid industrialization envisaging the migratory population dynamics has introduced VBDs such as dengue, malaria, chikungunya, and lymphatic filariasis. Leishmaniasis and Japanese encephalitis have also been reported as new entrants in these regions.

The pathetic state of water, sanitation, and Hygiene (WASH) services due to population influxes due to the mushrooming of industries especially in the districts of Solan and Una have lead to many seasonal outbreaks of VBD.

c. **Extreme weather-driven events:** These climatic variability phenomena are mostly observed in the Northern and the Zanskar range of the state. A few regions of the Central zone also encounter these frequent events. The districts more prone to this extreme

variability are Kinnaur, Lahaul and Spiti, Chamba, Upper altitudes of Shimla and Sirmour. Snowstorms, avalanches, hailstorms, cloudbursts, and windstorms are the rain and winter season drastic events which take a heavy toll on the flora and fauna of the regions concerned. Lightening and forest fires usually occur in the coniferous forest zones of the Central zone. The cold glacial and alpine climate of the Zanskar region may lead to adverse cold conditions with temperatures tumbling to many degrees below zero degrees Celsius. Small duration rainy or winter seasons but with more intensity of rain and snow are frequently being observed as climate change parameters, especially in the Northern range districts of Shimla, Kinnaur, Chamba, and Lahaul, and Spiti. The cool and temperate climate of this region, especially during the winter months of November to February may experience heavy snow and extreme cold wave conditions. Smog due to pollutants in the ambient environment is also being witnessed in the low-lying basin regions of districts of Solan, Una, and Bilaspur.

Prolonged dry spells with heat waves are also new entrants occurring in the geo-topography of the state. The Shivalik region districts of Solan, Una, a few parts of the Sirmour-basin region, and Bilaspur are prone to high-temperature variability especially during pre-monsoon months of April, May, and June. Dehydration, Hyperpyrexia, and Heat stroke may be encountered in these low-lying regions of the state. The hot and sub-humid tropical climate of the districts lying in the Shivalik region may experience extreme variations in temperatures and humidity.

- d. **Air borne diseases:** Across the length and breadth of the state, Tuberculosis is one of the very important air borne diseases (ABD) prevalent. Other air borne diseases such as COVID-19, H.influenzae, Asthma, Pollen allergies, and acute respiratory illnesses. Individual, interpersonal, health system, and structural factors play an intricate role in the spread of ABD.

The ambient and the outdoor environment depend on the weather phenomenon, and the wind flow. The density of the wind and its speed is dependent on the prevailing temperatures and humidity. Henceforth, variations in these two important weather parameters shall amount to more incidence of ABD.

The indoor and ambient climate control measures, especially in the wooden houses of the state, in the regions surrounded by industries, and heavy vehicular traffic-prone tourist destinations of the state, are the need of concern and need prompt and utmost attention. Various forms of noxious gasses such as CO, PM-10, PM-2.5, NO<sub>x</sub>, and SO<sub>x</sub> gasses, VOCs need amelioration in both the indoor and ambient environments, or else they may lead to various lung pathologies including Carcinoma Lung. Skin and eye diseases may also be a concern in highly polluted regions of the state. Sub-state level AIR QUALITY INDEX measurements are the needed yardsticks for prevention and intervention strategies.

- e. **Food security and nutrition-related events:** Extreme variations in the temperatures and humidity have an adverse effect on the land use pattern associated with agriculture and

animal husbandry practices. Crop and livestock management largely depends on weather parameters. Extremes in weather parameters, especially with the high summer temperature-prone districts of Solan, Una, and Bilaspur, may result in decreased crop and livestock productivity. This may affect the per capita income of inhabitants of the state. Out-of-pocket expenditure on adverse health ailments may become a challenge then. This again will in turn lead to decreased man-labor hours needed for food security and nutrition management. Henceforth, this vicious cycle of harm to the sustenance may take a toll on the population of the affected regions.

## Chapter-6

### Health Adaptation Plan for Green and Climate Resilient Health Care Facilities

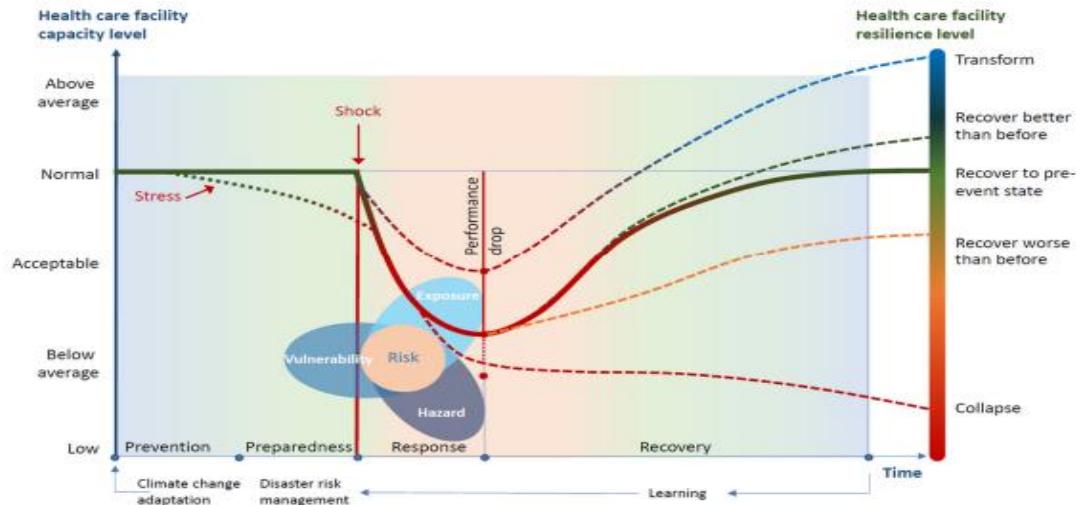


Figure 1. Climate resilience in health care facilities. Sources: [6–9].

Climate-resilient healthcare facilities are those able to anticipate, respond to, cope with, recover from, and adapt to climate-related shocks and stress, so as to bring ongoing and sustained health care to their target populations, despite an unstable climate. The figure below illustrates the important dynamics affecting the climate resilience of healthcare facilities. Building on the concept of risk as a function of hazards, vulnerabilities, and exposures (illustrated in the figure, as defined by the Intergovernmental Panel on Climate Change (IPCC)), it depicts how hazards, in the form of a sudden event (a shock, such as a storm or sudden flood), or a slow-onset event (stress, such as drought, sea-level rise, or high volume of cases of a climate-related disease), will reduce the Health care facilities level of performance and capacity (left axis). This would occur through a combination of impacts on key facility elements (for example, increasing—or adding to—the vulnerability of the health workforce, its infrastructure, its water, sanitation, and energy systems), and therefore increasing risks. The level of resilience (right axis) indicates whether the facility will recover its pre-event state, recover but to a state worse than before (or even collapse and not recover), or recover and attain a level of resilience greater than before the event. The figure also highlights the risk management steps for prevention, preparedness, response, and recovery.

## **Strengthening Climate Resilience and Environmental Sustainability:**

Making HCFs climate resilient and environmentally sustainable would contribute to achieving SDGs related to climate change, sustainable consumption, water and sanitation, energy, employment, resilient infrastructure, and health and well-being.

The National Programme on Climate Change and Human Health (NPCCCHH) 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
  - c. Installation of Solar panels
  - d. 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:**

An energy audit identifies all energy end-users 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

### **b. Replacing the existing non-LED lights with LEDs:** 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.

- 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.

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

Rainwater harvesting for healthcare facilities has the potential to save thousands of liters 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 plants and effluent treatment plants 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, patient, and visitors)
- The HCFs would have the 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

## **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 the 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 bylaws, and history of emergencies in the district to ensure patient safety and continuity of health service during emergencies. A 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 reduces the noise level.
- Insulation of buildings 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 coastal 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 percent area for the herbal garden in the facility.
- Floor and wall finishes are conducive to 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

**Table 2.** Sample interventions.

|  | Objectives                          | Climate Resilience   | Environmental Sustainability   |
|--|-------------------------------------|--|--|
| Health workforce                         | Human resources                     | Identify minimum needs in terms of health care workers to ensure the operational sufficiency of every HCF department, in case of climate-related disaster or emergency | Increase human resources available to reduce or eliminate disease burden among vulnerable populations resulting from environmental hazards in HCFs |
|  | Capacity development                | Health workforce receives training and exercises for preparing for, responding to and recovering from extreme weather-related emergencies                              | Education and training provided to HCF staff and the community on environmental factors that contribute to the burden of disease                   |
|  | Communication and awareness raising | Key messages for target audiences (such as patients, staff, public) drafted in preparation for the most likely extreme weather disaster scenarios                      | Increase knowledge and communication about the environmental impact of pharmaceuticals and their disposal  |
| Water, sanitation and health care wastes | Monitoring and assessment           | Develop climate resilient water safety plans   | Implement and monitor a waste reduction program including waste management training for all staff  |
|  | Risk management                     | WASH climate risk management plan implemented  | Wastewater is safely managed through use of on-site treatment or sent to a functioning sewer system  |
|  | Health and safety regulation        | Sanitation technologies designed to be more resistant to climate hazards and able to operate under a range of climate conditions                                       | Harvested rainwater or gray water is safely used to flush toilets, clean outdoor pavement areas and water plants when possible                     |

**Table 2.** *Cont.*

| Objectives                           |   | Climate Resilience   | Environmental Sustainability  |
|--------------------------------------|---|--|---|
| Energy                               | Monitoring and assessment                         | Assess that location of energy backup or renewable energy infrastructure can withstand extreme weather events (such as strong winds, hail, floods) | Assess the HCF to determine how and where energy use can be reduced (or increased in energy poor areas)   |
|                                      | Risk management                                   | Plan developed for managing intermittent energy supplies or system failure   | HCF fossil fuel consumption reduced by use of renewable energy sources, including solar (photovoltaic) power, wind power, hydro power and biofuels              |
|                                      | Health and safety regulation                      | Adequate lighting, communications, refrigeration and sterilization equipment are available during climate-related disasters or emergencies         | Developed an energy management plan to measure energy consumption   |
|                                      | Adaptation of current systems and infrastructures | HCFs built or retrofitted to cope with extreme weather events, ensuring their resilience, safety and continuous operation                          | New (or retrofitted) HCFs designed and constructed based on low-carbon approaches   |
| Infrastructure, technology, Products | Promotion of new systems and technologies         | HCF uses proven smart materials and applications, sensors, low-power electronics, telemedicine and similar health care-appropriate technology      | Substitute mercury-containing thermometers and blood pressure-measuring devices for affordable, validated device alternatives                                   |
|                                      | Sustainability of HCF operations                  | Anticipate the impact of the most likely disaster events on the supply of water, food and energy   | Implement a clear environmentally sustainable procurement policy statement or protocol for all types of products, equipment and medical devices used in the HCF |

## Activity Plan of implementation of green measures in healthcare facilities 2022-2027

| S. No | Activities               | Priority Districts<br><br>All districts in the state<br>( as per PIP Guidelines of<br>NPCCHH Programme) | Budget (in Lakhs) |             |             |             |             |
|-------|--------------------------|---|-------------------|-------------|-------------|-------------|-------------|
|       |                          |   | 22 to<br>23       | 23 to<br>24 | 24 to<br>25 | 25 to<br>26 | 26 to<br>27 |
| 1     | Energy Auditing          |   | 0                 | 0           | 5           | 7           | 10          |
| 2     | LED Replacement          |   | 20                | 20          | 22          | 24          | 26          |
| 3     | Solar Panel Installation |   | 0                 | 0           | 20          | 40          | 60          |
| 4     | Rain water Harvesting    |   | 0                 | 0           | 20          | 40          | 60          |
| 5     | Retrofitting of HCFs     |   | 0                 | 0           | 10          | 12          | 15          |

### Capacity Building:

Health workers have a key role in building climate resilience and the environmental sustainability of HCFs. Health care workers are the main actors in ensuring that interventions are effective for their own roles and activities, as well as for other components of the framework. Because building climate resilience and environmental sustainability are relatively new approaches for health workers, building awareness, training, and empowering health workers are key requirements for the successful implementation of interventions.

### Annual Training Plan

| Training Programme                | Trainer                                       | Topics  | Timeline  |
|-----------------------------------|---|---|-----------|
| District level (DNO-CC, trainers) | State Level Trainers<br>SNO-CC,<br>Consultant | <ul style="list-style-type: none"> <li>Role Training on green and climate-resilient healthcare facilities in terms of climate impact</li> <li>Assessments required for implementation</li> <li>Coordination with supporting agencies</li> </ul> | September |

|  |   |   |                   |
|--|---|---|-------------------|
| <b>Health facility level<br/>(MO of<br/>DH/CHC/PHC)</b>        | District Level<br>Trainers<br>DNO-CC                | <ul style="list-style-type: none"> <li>Role Training on green and climate-resilient healthcare facilities in terms of climate impact</li> <li>Assessments required for implementation</li> <li>Coordination with supporting agencies</li> </ul> | September-October |
| <b>Community Health care workers (MPW,<br/>ASHA, ANM etc.)</b> | District Level<br>Trainers, MO                      | <ul style="list-style-type: none"> <li>Role Training on green and climate-resilient healthcare facilities in terms of climate impact</li> </ul>   | October- November |
| <b>Panchayati Raj Institutions</b>                             | District-level trainers, MO,<br>Health care workers | <ul style="list-style-type: none"> <li>Role Training on green and climate-resilient healthcare facilities in terms of climate impact</li> <li>Assembling support for implementation</li> </ul>  | December          |

#### Role and responsibility:

|            | <b>Responsibilities</b>  |
|------------|--|
| <b>SNO</b> | <ul style="list-style-type: none"> <li>Disseminate early warnings to district level</li> <li>Finalization of IEC material and dissemination Plan</li> <li>Organize training sessions for district-level officers and trainers</li> <li>Identify health facilities for priority implementation based on disaster and health facility vulnerability</li> <li>Identify relevant state and district level nodal agencies and collaborate with them for assessment of health facilities for implementation of measures</li> <li>Facilitate and monitor necessary assessments at the health facility level</li> <li>Facilitate implementation of structural and functional measures at the health facility level</li> <li>Submit a report of activities on heat-health under NPCCHH</li> <li>Advocate for the reduction in source of greenhouse gas emissions</li> </ul> |
| <b>DNO</b> | <ul style="list-style-type: none"> <li>Conduct training for block health officers, medical officers, with relevant training manuals</li> <li>Support conduction for following assessment at the health facility level <ul style="list-style-type: none"> <li>➤ Energy audit</li> <li>➤ Water audit</li> <li>➤ Disaster-vulnerability assessment</li> </ul> </li> <li>Support following functional measures at the health facility level <ul style="list-style-type: none"> <li>➤ Water committee</li> <li>➤ Sustainable procurement committee</li> <li>➤ Operational measures to make health facility function during disasters or power cut</li> </ul> </li> <li>Coordinate with other agencies for the assessment and implementation of identified structural and functional measures</li> <li>Update DAPCCHH with support from District Task Force</li> </ul>   |

|                                   |  |
|-----------------------------------|--|
|                                   | <ul style="list-style-type: none"> <li>Submit a report of activities on heat-health under NPCCHH</li> </ul>  |
| <b>Block health officer</b>       | <ul style="list-style-type: none"> <li>Ensure training of medical officers</li> <li>Organize PRI sensitization workshop</li> <li>Coordinate with other agencies for the assessment and implementation of identified structural and functional measures</li> </ul>  |
| <b>Medical officer</b>            | <ul style="list-style-type: none"> <li>Conduct health facility assessment <ul style="list-style-type: none"> <li>➤ Energy audit</li> <li>➤ Water audit</li> <li>➤ Disaster-vulnerability assessment</li> </ul> </li> <li>Lead following functional measures <ul style="list-style-type: none"> <li>➤ Water committee</li> <li>➤ Sustainable procurement committee</li> <li>➤ Operational measures to make health facility function during disasters or power cut</li> </ul> </li> <li>Support community-level IEC activities</li> <li>Identify local funding opportunities: e.g., CSR initiative, NGO funding</li> </ul> |
| <b>Panchayati Raj Institution</b> | <ul style="list-style-type: none"> <li>Support retrofitting and new health facilities with local funding sources and community involvement</li> </ul>  |

## Chapter 7

### Health Adaptation Plan for Acute Respiratory Illnesses attributed to Air Pollution

The World Health Assembly has endorsed air pollution i.e. the introduction of harmful substances including particulates and biological molecules into the atmosphere (indoor and outdoor) of the earth, as the world's largest single environmental health risk along with other weather parameters such as temperature, wind flow, sunlight, and humidity etc. Every year indoor and outdoor air pollution accounts for 4.3 million and 3.7 million deaths respectively. Developing air quality monitoring systems and health registries to keep surveillance of all the illnesses related to air pollution and weather parameters is the need of the hour. The respiratory system of human beings is highly vulnerable to air pollution, culminating in many diseases of obstructive and restrictive pathologies.

Air pollutants such as SO<sub>2</sub>, NO<sub>2</sub>, CO, O<sub>3</sub>, VOC, and particulate matter 2.5 and 10 act to increase susceptibility to developing pulmonary tuberculosis and other infectious lung diseases by altering the macrophage functions due to decreased levels of Tumor necrosis factor (TNF)- α and interferon- gamma (IFN-γ).

Certain lung diseases lead to a decrease in lung compliance such as reduced levels of vital capacity, total lung capacity, residual volume, inspiratory capacity, and expiratory reserve volume. Environmental amelioration, improving the indoor and ambient air quality index leads to improved respiratory health and decreased new lung infections.

Air Pollution may be categorized into two major groups-

1. Indoor Air Pollution
  2. Ambient or outdoor air pollution
1. Indoor Air Pollution: Major contributors to indoor air pollution are
    - Burning of mud cookstoves, traditional cookstoves, burning of charcoal, and animal dung cakes
    - Fossil fuel combustion for cooking (kerosene oil)
    - Volatile organic compounds of paints, varnishes, etc.
  2. Ambient or outdoor air pollution:
    - Fossil fuel combustion for the automobile industry
    - Industrial processes involving fossil fuel combustion
    - Waste burning
    - Stubble burning
    - Forest fires

| Air Quality Index (AQI) Category |          |
|----------------------------------|----------|
| Good                             | 0-50     |
| Satisfactory                     | 51-100   |
| Moderately Poor                  | 101-200  |
| Poor                             | 200-300  |
| Very Poor                        | 300- 400 |
| Severe                           | 401-500  |

**Table 1. Air Quality Index**

**Number of AQI monitoring stations within the state:**

- 1. By Central Pollution Control Board (CPCB) - 36**
- 2. BY State Pollution Control Board (SPCB)- 45**
- 3. By System of Air Quality and Weather Forecasting and Research (SAFAR) – 20**

**Priority City/District for Air Pollution Surveillance as per the above AQI (highest AQI value available in the previous year)**

| S.No. | Name of the city | Highest AQI value in previous year | Reasons for High AQI        |
|-------|------------------|------------------------------------|-----------------------------|
| 1     | Baddi            | Very unhealthy or worse category   | Industries,<br>Automobiles, |
| 2     | Damtal           |                                    |                             |
| 3     | Kala Amb         |                                    |                             |
| 4     | Nalagarh         |                                    |                             |
| 5     | Poanta Sahib     |                                    |                             |
| 6     | Parwanoo         |                                    |                             |
| 7     | Sunder Nagar     |                                    |                             |

**Health Sector Adaptation Plan for Air Pollution Control**

Health Action Plan on 'Air Pollution and Health' is developed to protect, prevent, control health problems, and reduce morbidity and mortality due to illnesses related to air pollution.



### 1. Awareness Generation

- IEC dissemination
- Carry out mass media campaigns
- Promote a culture of risk prevention, mitigation, and better risk management
- Promote attitude and behaviour change in the awareness campaigns linking air pollution and climate change.
- Engage local and regional media (community radio, TV)

## Sensitization workshops

| Various levels of Training                                 | Topics  | Timeline           |
|--|---|--------------------|
| <b>Sensitization workshops for State Level officers</b>    | Introduction Air pollution its impact<br>Role and responsibilities of state and regional level officers | October - November |
| <b>Sensitization workshops for District Level officers</b> | Introduction Air pollution its impact<br>Role and responsibilities of District level officers           | December           |
| <b>Panchayati Raj Institute Workshops</b>                  | Prevention measures of Air pollution<br>Role and responsibilities of PRI                                | January            |

## IEC Plan

| S. No | Indicator Statement        | Indicator  | Target 2022-23              | Target 2023-24 | Target 2024-25 | Target 2025-26 | Target 2026-27 |
|-------|----------------------------|--|-----------------------------|----------------|----------------|----------------|----------------|
| 1.    | IEC campaigns              | Percentage of Districts implemented IEC campaign on heat-related illnesses | 50%                         | 100%           | 100%           | 100%           | 100%           |
| 2     | PRI and VHNC sensitization | Percentage of Districts included climate-sensitive issues in the VHSCNs    | 25%                         | 50%            | 75%            | 100%           | 100%           |
| 3     | Community participation    | Sensitization of rural population for Air pollution                        | Pilot study in one district | 5 districts    | 50 %           | 75 %           | 100%           |

## IEC activities for Air pollution

- At least 1-2 wall posters to be disseminated in all healthcare facilities.
- Social Media – active circulation of audio-video clips and poster slideshow in prominent social media handles.
- Radio jingles from March to July in high-priority districts
- Sensitization workshops for district, state, and regional level officers
- Community participation through meetings, heat-related illness education in schools, panchayati raj institutes, and gram sabhas.

| Year           | IEC Content   | Districts               | Dissemination Plan for 5 (Years)              | Time Line                 | Budget (Lakh) |
|----------------|---------------|-------------------------|---|---------------------------|---------------|
| <b>2022-23</b> | Posters       | All districts           | At least 2 posters for each health facility   | September 22- February 23 | 3 lakh        |
|                | Radio Jingles | High Priority Districts | Radio Jingles during the winter season        |                           |               |
|                |               | Low Priority Districts  |   |                           |               |
|                | TV Spots      | All Districts           | TV spots                                      |                           |               |
| <b>2023-24</b> | Posters       | All districts           | At least 2 posters for each health facility   | September 23- February 24 | 3 lakh        |
|                | Radio Jingles |                         | Radio Jingles during the winter season        |                           |               |
|                | TV Spots      |                         | TV spots                                      |                           |               |
| <b>2024-25</b> | Posters       | All districts           | At least 2 posters for each health facility   | September 24- February 25 | 3.3 Lakh      |
|                | Radio Jingles |                         | Radio Jingles during the winter season        |                           |               |
|                | TV Spots      |                         | TV spots                                      |                           |               |
| <b>2025-26</b> | Posters       | All districts           | At least 2 posters for each health facility   | September 25- February 26 | 3.63 Lakh     |
|                | Radio Jingles |                         | Radio Jingles during the winter season        |                           |               |
|                | TV Spots      |                         | TV spots                                      |                           |               |
| <b>2026-27</b> | Posters       | All districts           | At least 2 posters for each health facilities | September 26- February 27 | 3.9 Lakh      |
|                | Radio Jingles |                         | Radio Jingles during winter season            |                           |               |
|                | TV Spots      |                         | TV spots                                      |                           |               |

## Public Health Advisories

Health advisories ([bit.ly/NPCCHHPrge](http://bit.ly/NPCCHHPrge)) are issued to alert the population of the potential harmful impact of impending environmental phenomena like cold waves/frost, heat waves and elevated air pollution. Advisories are issued at the central level and forwarded to districts through state/UTs for public dissemination.

The district will ensure timely dissemination of health advisories in locally acceptable language.



National Programme on Climate Change and Human Health  
MoHFW

### ADVISORY ON AIR POLLUTION AND HEALTH

**What is Air Pollution?**

Air pollution is the contamination of indoor or outdoor air by a range of gasses and solid particles that modify natural characteristics of air we breathe. Key health harmful pollutants include particulate matter (PM2.5 and PM10), carbon monoxide (CO), ozone (O<sub>3</sub>), black carbon (BC), sulfur dioxide and nitrogen oxides (NOx). Air pollution is often not visible to the naked eye as the sizes of the pollutants are smaller than the human eye can detect.

**What are major sources of Air Pollution?**

Ambient (outdoor) air pollution is caused by factors such as vehicular exhaust, road dust, construction dust, burning of garbage, burning of agricultural crop residues, industrial emissions, fossil fuel fired thermal power plants and brick kilns, burning of biomass in households, burning of firecrackers etc.

Household air pollution is caused by burning biomass such as wood, coal, dung, kerosene in chulhas or fireplaces for cooking and heating purposes. Indoor air pollution is caused by burning mosquito coils, incense sticks, cigarettes, bidis, use of sprays, solvents, and fumes from chemicals used in building interiors etc.

**Air Quality**

Air Quality Index (AQI) is a tool based on ambient concentration values of air pollutants and is categorized as Good, Satisfactory, Moderately polluted, Poor, Very Poor, and Severe. Worsening of Air Quality Index especially when in range of 'poor to severe' in an area may result in increase in morbidity and mortality among the exposed people.

www.ncchh.nic.in | @MoHFW\_INDIA | www.mospi.gov.in | @Director\_NCDC

| Air Quality Index (AQI)<br>(Pollution level) | Possible Health Consequences   | Advice for   |
|--|--|--|
| Good (0-50)                                  | Low risk   | General Population<br>No special precautions                                     |
| Satisfactory (51-100)                        | Minor breathing discomfort in vulnerable population*   | No special<br>precautions  |
| Moderate (101-200)                           | Breathing or other health related discomfort in vulnerable population*   | Do less prolonged or strenuous outdoor activities<br>Avoid physical exertion     |
| Poor (201-300)                               | <ul style="list-style-type: none"> <li>- Breathing discomfort in healthy people on prolonged exposure</li> <li>- Breathing or other health related discomfort in vulnerable population without symptoms</li> </ul> | Avoid prolonged or strenuous outdoor activities<br>Avoid physical exertion       |
| Very Poor (301-400)                          | <ul style="list-style-type: none"> <li>- Respiratory illness in healthy people on prolonged exposure</li> <li>- Prolonged respiratory or other illnesses in vulnerable population without symptoms</li> </ul>      | Avoid outdoor physical activities<br>Keep activity levels low                    |
| Severe (401-500)                             | <ul style="list-style-type: none"> <li>- Respiratory illness in healthy people on prolonged exposure</li> <li>- Serious respiratory or other illnesses in vulnerable population without symptoms</li> </ul>        | Avoid outdoor physical activities<br>Remain indoors and keep activity levels low |

\* Vulnerable population (high risk): Elderly, children under 5 years, pregnant women, pre-existing illnesses like asthma and other airway or lung (respiratory) and cardiovascular diseases

#AQI= Air Quality Index; daily AQI is available on websites of CPCB ([https://app.cpcbccp.com/AQI\\_India/](https://app.cpcbccp.com/AQI_India/)) or 2. MAPAN-SAFAR: <http://safer.mapnet.res.in/>

**Health consequences of Air pollution**



Pollution Harms you

The health impacts of air pollution depend on the level of pollution & exposure duration. The individuals' vulnerability to the health impacts of pollution can also differ based on demographic factors and predisposing health conditions. Short-term high-level exposures can result in acute health reactions such as irritation to eyes, nose, and throat, along with coughing, wheezing, chest discomfort and acute upper respiratory infections. Vulnerable groups can experience more severe effects such as lower respiratory tract inflammation and infection, exacerbation of asthma, bronchitis or exacerbation of chronic illnesses such as chronic obstructive pulmonary disease, ischaemic heart disease, and cerebrovascular stroke. Long term exposures to even lower level of pollution can result in chronic illnesses of respiratory and cardiovascular systems, lung cancer and premature death.

**Vulnerable Population**

Following people may be considered vulnerable to health consequences of air pollution –

1. Age group - Individuals who are under five aged children and in old age.
2. Pregnant Women - Exposure during pregnancy may have consequences for child in womb.
3. Predisposed health or medical conditions - Those with pre-existing illnesses of respiratory and cardiovascular system etc. are at high risk.
4. Low socio-economic conditions - Those with poor nutritional status and those living in conditions of poor housing, using fossil fuels for cooking, heating and lighting purposes have high risk.

**Occupational group** – Those with possibility of prolonged exposures such as traffic policemen, traffic volunteers, construction workers, road sweepers, rickshaw pullers, auto-rickshaw drivers, roadside vendors, and others working outdoors in polluted settings are at high risk. Women burning biomass for cooking, and sweeping dust are vulnerable on account of their household work.

**Recommendations for State Health Department**

A. State authorities need to keep a check on Air Quality Index data, available at CPCB and MAPAN-SAFAR website or obtain the same from State Pollution Control Board

## Observation of the environment-health days

| Day   | Activities   |
|---|--|
| World Environmental Day<br>Clean Air for Blue Skies | <ul style="list-style-type: none"> <li>● IEC Campaigns</li> <li>● Workshops for District Nodal Officers on Air pollution and its impact on health and strategies to reduce to impact of air pollution</li> </ul> |

## **2. Capacity Building**

Capacity building efforts include developing the technical skills and institutional capability in developing countries and economies in transition to enable them to participate in all aspects of adaptation to, mitigation of, and research on climate change. Training, workshops, and meetings are very important to sensitize and update target groups on air pollution and its health impacts and various health adaptation mechanisms.

Some of the priority groups/human resource working in the health sector and other departments are targeted to be trained on the health problems of air pollution, such as:

- District nodal officers-CC
- Designated nodal officers related to surveillance in the context of air pollution
- Medical Officers
- Other health professionals like nursing officers, pharmacists, and community health care workers such as ANMs, ASHAs, MPWs, etc.
- Human resource from other departments like Panchayati Raj Institution

**Air Pollution Training Modules are available on NCDC, GoI website:**

| <b>Module</b>                                 | <b>Web link</b>   |
|---|---|
| Training Module for Health Professionals      | <a href="https://ncdc.gov.in/WriteReadData/linkimages/HandbookforHealthProfessionalsonAirPollution&amp;ItsImpactonHealth.pdf">https://ncdc.gov.in/WriteReadData/linkimages/HandbookforHealthProfessionalsonAirPollution&amp;ItsImpactonHealth.pdf</a> |
| <b><u>Women Training Manual (Hindi)</u></b>   | <a href="https://ncdc.gov.in/WriteReadData/linkimages/WomenTrainingManualHindi.pdf">https://ncdc.gov.in/WriteReadData/linkimages/WomenTrainingManualHindi.pdf</a>   |
| <b><u>Women Training Manual (English)</u></b> | <a href="https://ncdc.gov.in/WriteReadData/linkimages/WomenTrainingManualEnglish.pdf">https://ncdc.gov.in/WriteReadData/linkimages/WomenTrainingManualEnglish.pdf</a>   |
| <b><u>Women Flipchart (Hindi)</u></b>         | <a href="https://ncdc.gov.in/WriteReadData/linkimages/WomenFlipchartHindi.pdf">https://ncdc.gov.in/WriteReadData/linkimages/WomenFlipchartHindi.pdf</a>   |
| <b><u>Women Flipchart (English)</u></b>       | <a href="https://ncdc.gov.in/WriteReadData/linkimages/WomenFlipchartEnglish.pdf">https://ncdc.gov.in/WriteReadData/linkimages/WomenFlipchartEnglish.pdf</a>   |

|  |   |
|--|---|
| <u><b>Children Training Manual (Hindi)</b></u>         | <a href="https://ncdc.gov.in/WriteReadData/linkimages/ChildrenTrainingManualHindi.pdf">https://ncdc.gov.in/WriteReadData/linkimages/ChildrenTrainingManualHindi.pdf</a>                           |
| <u><b>Children Training Manual (English)</b></u>       | <a href="https://ncdc.gov.in/WriteReadData/linkimages/ChildrenTrainingManualEnglish.pdf">https://ncdc.gov.in/WriteReadData/linkimages/ChildrenTrainingManualEnglish.pdf</a>                       |
| <u><b>Children Flipchart (Hindi)</b></u>               | <a href="https://ncdc.gov.in/WriteReadData/linkimages/ChildrenFlipchartHindi.pdf">https://ncdc.gov.in/WriteReadData/linkimages/ChildrenFlipchartHindi.pdf</a>                                     |
| <u><b>Children Flipchart (English)</b></u>             | <a href="https://ncdc.gov.in/WriteReadData/linkimages/ChildrenFlipchartEnglish.pdf">https://ncdc.gov.in/WriteReadData/linkimages/ChildrenFlipchartEnglish.pdf</a>                                 |
| <u><b>Traffic Police Training Manual Hindi</b></u>     | <a href="https://ncdc.gov.in/WriteReadData/linkimages/IEC/TrafficPoliceTrainingManualHindi.pdf">https://ncdc.gov.in/WriteReadData/linkimages/IEC/TrafficPoliceTrainingManualHindi.pdf</a>         |
| <u><b>Traffic Police Training Manual English</b></u>   | <a href="https://ncdc.gov.in/WriteReadData/linkimages/IEC/TrafficPoliceTrainingManualEnglish.pdf">https://ncdc.gov.in/WriteReadData/linkimages/IEC/TrafficPoliceTrainingManualEnglish.pdf</a>     |
| <u><b>Municipal Worker Training Manual Hindi</b></u>   | <a href="https://ncdc.gov.in/WriteReadData/linkimages/IEC/MunicipalWorkerTrainingManualHindi.pdf">https://ncdc.gov.in/WriteReadData/linkimages/IEC/MunicipalWorkerTrainingManualHindi.pdf</a>     |
| <u><b>Municipal Worker Training Manual English</b></u> | <a href="https://ncdc.gov.in/WriteReadData/linkimages/IEC/MunicipalWorkerTrainingManualEnglish.pdf">https://ncdc.gov.in/WriteReadData/linkimages/IEC/MunicipalWorkerTrainingManualEnglish.pdf</a> |

## Training Calendar

| Type of Training                        | Participants   | Content of Training                       | Timeline  |
|---|--|---|-----------|
| <b>State Level ToT</b>                  | State Level officers, Regional level officers, District level officers | Air pollution its impact and Surveillance | August    |
| <b>District Level Training</b>          | District-level supervisors, THO  | Air pollution its impact and Surveillance | September |
| <b>Medical Officer Training</b>         | Medical officers   | Air pollution its impact and Surveillance | October   |
| <b>Paramedical staff training</b>       | MPW, ANM, LHV, etc   | Air pollution its impact and Surveillance | November  |
| <b>Panchayat Raj Institute training</b> | PRI members  | Awareness generation                      | December  |

## Budget

| Year    | Priority Districts | Time of year              | Content matter                         | Budget   |
|---------|--------------------|---------------------------|--|----------|
| 2022-23 |                    | September 22- February 23 |  | 3 lakh   |
| 2023-24 | All district       | September 23- February 24 | Air Pollution and its impact on Health | 3 lakh   |
| 2024-25 |                    | September 24- February 25 |  | 3.3 lakh |
| 2025-26 |                    | September 25- February 26 |  | 3.6 lakh |
| 2026-27 |                    | September 26- February 27 |  | 3.9 lakh |

### **3.ARI Surveillance Activity at State Level**

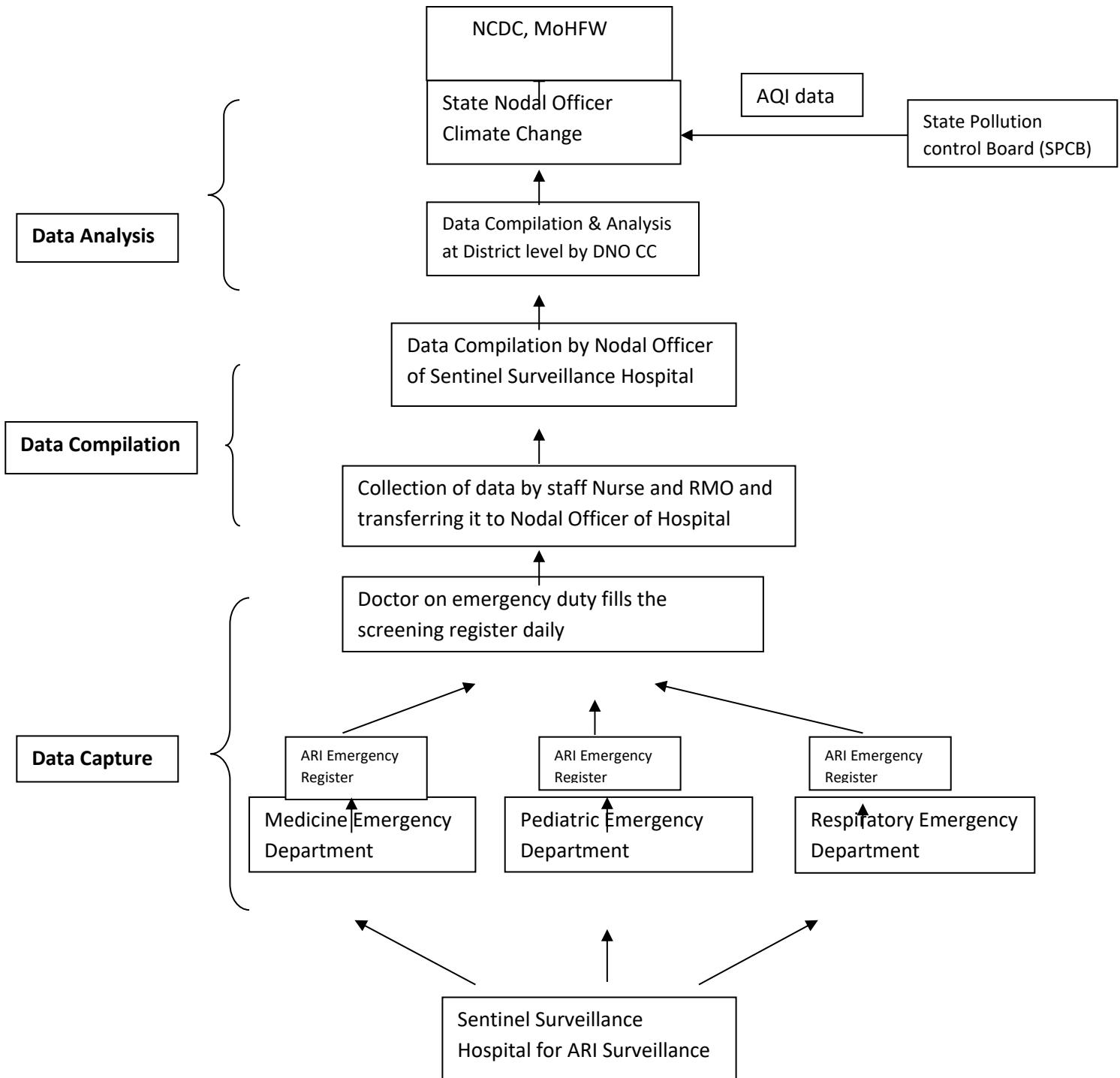
The State has identified 10 sentinel hospitals from highly polluted cities of Himachal Pradesh and they are reporting acute respiratory infection cases on a monthly basis. This data is compared with the air quality of the particular city for inference.

The objective of ARI surveillance is to identify the trend of air pollution-related illness in the context of the outdoor air quality in an area and its report is shared with all relevant authorities including public health authorities to minimize the impact of the air pollution through timely appropriate intervention measures. Sentinel hospitals are working on the collection, analysis, and dissemination of data on air pollution.

#### **Reporting Mechanism:**

- Sentinel hospital to collect daily data on respiratory emergencies for 24 hours and report against the total attendance of patients in the emergency department for the corresponding day.
- Nodal officer of the sentinel hospital to send the report to the nodal officer at the district level.
- District nodal officer – climate change to collect and collate data of sentinel hospitals. DNO-CC must take the AQI level for the corresponding day.
- Similarly, data must be collated and analyzed at the state level against the AQI levels.
- A monthly report and the collected data are to be sent to the NCDC before the specified date.

## ARI Surveillance at State - Data Flowchart



## **Status of ARI Surveillance data collection in Himachal Pradesh**

| Name of City | Name of Hospital      | Name of Nodal Officer of ARI Sentinel Hospital | Contact details | Email ID   |
|--------------|-----------------------|--|-----------------|--|
| Bilaspur     | RH Bilaspur           |  |                 |  |
| Nalagarh     | CHC Nalagarh          | Dr Gaurav Rana                                 | 8053669966      | drgauravmo@gmail.com   |
| Baddi        | CH Baddi              | Dr Anil  | 9418087502      | smochcbaddi@gmail.com  |
| Kala Amb     | ESI Kala Amb          | Dr Ankur Rana                                  | 9988521213      | <a href="mailto:esikalaamb@gmail.com">esikalaamb@gmail.com</a>         |
| Parwanoo     | ESI Hospital Parwanoo | Dr Gurmail                                     | 9418477155      | Drgurmail404@gmail.com   |
| Poanta Sahib | CH Poanta Sahib       | Dr Amitabh Jain                                | 7018741074      | civilhospitalpoanta123@gmail.com                                       |
| Poanta Sahib | ESI Dispensary        | Dr Kavita Saini                                | 9736699501      | Disp_patilian.hp@esic.nic.in   |
| Una          | RH Una                | Dr Adhish Gautam                               | 7580034461      | <a href="mailto:adhishgautam07@gmail.com">adhishgautam07@gmail.com</a> |
| Kangra       | CH Indora             | Dr Rajeev Kumar                                | 8219909852      | bmoindora@yahoo.in   |

**National Guidelines are available on NCDC website:**

**1. Public Health Advisory on Air Pollution and Health (2021 Revised) :**

<https://ncdc.gov.in/showfile.php?lid=632>

**2. Health Adaptation Plan For Diseases Due To Air Pollution -**

<https://ncdc.gov.in/WriteReadData/linkimages/HealthAdaptationPlanforDiseaseDueToAirPollutions.pdf>

**3. Health Sector Preparedness for Air Pollution**

<https://ncdc.gov.in/WriteReadData/linkimages/HealthSectorPreparednessforAirPollution.pdf>

**4. Handbook for Health Professionals on Air Pollutions & Its Impact on Health**

<https://ncdc.gov.in/WriteReadData/linkimages/HandbookforHealthProfessionalsonAirPollutions&ItsImpactonHealth.pdf>

**Timely issuance of alerts/ warnings on health risk factors related to the air quality level (AQI) and weather conditions like temperature, humidity etc. obtained from IMD/ Pollution Control Boards to the health professionals and the people**

To coordinate with other sectors like India Meteorological Department, SAFAR, Pollution Control Boards in an area for information on the air quality level and weather conditions like AQI level, temperature, humidity, wind speed and direction in an area which are likely to increase the health issues among the more vulnerable groups of people. The health risk factors information may be conveyed in advance as an alert or early warning information as forecasted by the concerned departments.

#### **4. Inter-departmental Coordination**

The inter-departmental coordination at the state and district level is very crucial to develop state or district-level health adaptation plans. The multisectoral task force may be engaged for developing HAP related to air pollution and health:

- a. **Forest Department/State Climate Change Centre:** For mitigation action information, including revised plans and actions related to air pollution
- b. **Pollution Control Board:** CPCB/ SPCB/ District PCB for the air quality information or AQI in the city/ area and its forecast.
- c. **IMD:** Information from India Meteorological Department/ SAFAR related to AQI forecasting or timely warning of weather, temperature, humidity, wind direction, and speed, etc.
- d. **Agriculture:** Actions and measures to reduce stubble burning, which is considered to aggravate air pollution during certain seasons; alteration in cropping pattern to reduce pollutant count in an area etc.
- e. **Other National Health Programmes** - like NPCDCS etc. which also address health issues related to air pollution
- g. **Women and Child Development Department:** Advocate through Self-help groups (SHGs) and Mahila Mandals to protect the health of the women and children from significant exposure to smoke from biomass while inside the house. Awareness-raising can be done to improve household ventilation to reduce smoke inhalation from lighting (ex. kerosene) or cooking fuels.
- h. **Transport department-** ensure effective implementation of the New Motor Vehicles Act (once approved) and ensure proper engine checks for vehicles to assess pollution levels
- i. **Panchayati Raj-** to involve creating enabling conditions to facilitate community participation like SHGs.

j. **Academic Institutes/Medical Colleges** capacity building, operational, and community-based research related to air pollution and related health intervention areas.

### **Roles and responsibilities:**

#### **State Climate Change & Human Health Cell:**

1. To coordinate with the state-level task force meetings to develop a HAP on air pollution and health as part of the State Action Plan on Climate Change and Human Health (SAPCCHH)
2. To undertake a situational analysis of health impacts in the context of air pollution in the state
3. Identification and capacity building of human resources like DNO-CC, Nodal officer-ARI surveillance, and others
4. IEC development, translation, and dissemination planning
5. Development and dissemination of health advisories
6. Surveillance establishment in the context of air pollution
7. Hospital preparedness related to air pollution diseases
8. Timely issue of warnings to hotspot areas, health professionals, and the vulnerable and general population
9. Overall periodic reviews, supervision, monitoring, and evaluation of the identified activities being carried out at all levels – state, districts, blocks, and villages/wards

#### **District Climate Change & Human Health Cell:**

1. To coordinate with the district-level task force meetings to develop a HAP on air pollution and health as part of the District Action Plan on Climate Change and Human Health (SAPCCHH)
2. To undertake a situational analysis of health impacts in the context of air pollution in the district
3. Identification and capacity building of human resources like Nodal officer-ARI surveillance, Medical Officers, Communities health officers, health care workers, and other departments like PRI, WCD, etc.
4. IEC development, translation, and dissemination planning
5. Development and dissemination of health advisories

6. Surveillance and reporting in the context of air pollution to the state level
7. Hospital preparedness related to air pollution diseases
8. Timely issue of warnings to hotspot areas, health professionals, and the vulnerable and general population
9. Overall periodic reviews, supervision, monitoring, and evaluation of the identified activities being carried out at all levels i.e. districts, blocks, and villages/wards.

**Block level CHC/PHC:**

1. Implementation of the identified activities on air pollution and health as per DAPCCHH
2. Capacity Building of Medical officers, Nursing officers, Pharmacists, Community health officers, health care workers, and other departments like PRI, WCD, etc.
3. Integrate and coordinate to get support from Rashtriya Bal Swasthya Karyakram, and Rashtriya Kishore Swasthya Karyakram
4. IEC Dissemination for increasing awareness generation to the public and officials
5. Health advisories dissemination and implementation
6. Hospital preparedness for public health emergencies related to air pollution
7. Supervision and monitoring of Surveillance activities if any sentinel hospitals are involved in the block area

**Medical officer at the Primary Health Centre/ Urban Healthcare Centre level:**

The medical officer is responsible for implementing Comprehensive Primary Healthcare Services near the community through active participation in the following actions:

1. Creating awareness at the healthcare facilities and the community
2. Capacity building, developing village-level health adaptation plan related to air pollution

3. Management of outdoor cases of health problems, emergency services, and their referrals for cases in the context of air pollution

**Community Health workers at the Village Level/ Ward Level- including Village Health Sanitation Nutrition Committee and JAS (Jan Arogya Samiti)**

- Community-level public awareness generation on the health effects of air pollution, and ways to protect, and prevent health problems
- **ASHAs** -Awareness generation at the community level on the sources of air pollution, health problems, and ways to protect and prevent air pollution
- Organise campaigns, particularly on health problems of women and children related to air pollution

1. **AWWs** – (Through CDPO): At the Anganwadi centres during immunization sessions, information may be given on the sources of air pollution in the household and outside, its health problems, particularly on women and children, and ways to address them.

## Chapter 8

### Health adaptation plan for Heat-related illness

Heat-related illnesses (HRI) encompass a spectrum of disorders from heat syncope, muscle cramps, and heat exhaustion to a life-threatening emergency such as heat stroke. These illnesses arise when there is a disruption in the regulation of the body's temperature because heat input from the environment and body metabolism is increased compared without put from the skin via radiation, evaporation, and convection.

Different types of heat-related illnesses include:

1. Minor heat related Illnesses: Heat rash, heat cramps, heat syncope
2. Major heat related Illnesses: Heat Exhaustion and Heat Stroke

**Following heat-related illness will be kept under surveillance across the state**

| Clinical Entity                          | Age Range                      | Setting   | Cardinal Symptoms   | Cardinal Important Signs /   | Pertinent Negative findings                              |
|--|--------------------------------|---|---|--|--|
| <b>Heat rash/ prickly heat/ Miliaria</b> | All, but freque ntly childre n | Hot environment; +/- insulating clothing or swaddling (wrap in tight clothes) | <b>ITCHY RASH</b> with <b>SMALL RED BUMPS</b> at pores in the skin. Seen in setting of heat exposure; bumps can sometimes be filled with clear or white fluid | <b>DIFFUSED RED COLOUR SKIN OR VESICULAR RASH</b> , itching of the skin without visible eruption | <b>NOT FOCALLY DISTRIBUTED</b> like a contact dermatitis |

|                        |                  |   |   |   |   |
|------------------------|------------------|---|---|---|---|
| <b>Heat cramps</b>     | All              | Hot environment,<br><b>TYPICALLY WITH EXERTION,</b><br>+/- insulating clothing                | <b>PAINFUL SPASMS</b> of large and frequently used muscle groups  | Uncomfortable appearance, may have <b>DIFFICULTY EXTENDING AFFECTED LIMBS/JOINTS</b>  | No contaminated wounds/tetanus exposure; no seizure activity  |
| <b>Heat exhaustion</b> | All              | Hot environment; +/- exertion; +/- insulating clothing or swaddling (wrap in a tight clothes) | Feeling overheated, light headedness, <b>EXHAUSTED AND WEAK,</b> unsteady, feeling of <b>VOMITING, SWEATY AND THIRSTY,</b> inability to continue activities | <b>SWEATY/diaphoretic; flushed skin; hot skin; NORMAL CORE TEMPERATURE;</b><br>+/- 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 |
| <b>Heat syncope</b>    | Typically adults | Hot environment; +/- exertion; +/- insulating clothing  | Feeling hot and weak; light headedness followed by a  | Brief, generalized loss of consciousness in hot setting, short period   | <b>NO SEIZURE ACTIVITY, no loss of bowel or bladder continence, no focal</b>  |

|                    |     |   |  |  |   |
|--------------------|-----|---|--|--|---|
|                    |     | clothing or swaddling (wrap in a tight clothes)   | <b>BRIEF LOSS OF CONSCIOUSNESS</b>   | of disorientation, if any  | weakness, no difficulties in food swallowing or speech  |
| <b>Heat stroke</b> | All | Hot environment; +/- exertion; +/- insulating clothing or swaddling (wrap in a tight clothes) | Severe overheating; profound weakness;<br><b>DISORIENTATION</b><br><b>ION, NOT FULLY ALERT,</b><br><b>CONVULSION, OR OTHER</b><br><b>ALTERED MENTAL STATUS</b> | Flushed, <b>DRY SKIN</b> (not always), <b>CORE TEMP</b> $\geq 40^{\circ}\text{C}$ <b>OR</b> $104^{\circ}\text{F}$ ; altered mental status with disorientation, incoherent behaviour, <b>COMA</b> , <b>CONVULSION;</b> tachycardia; +/- hypotension | No coincidental signs and symptoms of infection; no focal weakness; no difficulties in swallowing food or speech, no overdose history |

As per IMD, the following criteria are used to declare a heat wave:

**a) Based on Departure from Normal**

- o *Heat Wave*: Departure from the normal is  $4.5^{\circ}\text{C}$  to  $6.4^{\circ}\text{C}$

- o *Severe Heat Wave*: Departure from the normal is  $>6.4^{\circ}\text{C}$

**b) Based on the Actual Maximum Temperature (for plains only)**

- o *Heat Wave*: When the actual maximum temperature  $\geq 45^{\circ}\text{C}$

- o *Severe Heat Wave*: When the actual maximum temperature  $\geq 47^{\circ}\text{C}$

To declare a heat wave, the above criteria should be met in at least two stations in a Meteorological sub-division for at least two consecutive days. A heat wave will be declared on the second day.

## Heat Wave Action Plan in Himachal Pradesh

Core areas for an action plan:

1. Human Resource sensitization: All the stakeholders would be sensitized utilizing IEC mechanisms, seminars, webinars, etc for generating a better understanding of heat-related illness.
2. Identification of hot spot regions for heat waves: utilizing the data from the IMD the different regions which are prone to heat waves will be identified. Depending on the ambient temperatures these regions will then be labeled as hot spots and continuous surveillance of temperature in these regions would be undertaken.
3. The task force working at the Health block headquarters will be the nodal agency for collaborating with the IMD for this regional data.
4. Feedback from the health blocks and in collaborative efforts of IMD, a strategy and plan of action will be formulated by the public health experts at the district level to chalk out mitigation steps for the prevention of health from adverse effects of heat.
5. Thereafter, if a heat wave is suspected, intensive warnings would be issued by the administration and IEC will be put in place to guide people on how to protect themselves.

Vulnerable districts where the actions will be initiated:

1. Solan
2. Sirmour
3. Una
4. Bilaspur
5. Hamirpur
6. Low-lying regions of Kangra
7. Mandi

The Heat-Wave Action Plan provides a framework for implementation, coordination, and evaluation of extreme heat response activities in districts and cities in the state that reduces the negative impact of extreme heat. The heat action plan's primary objective is to alert those populations at risk of heat-related illness in places where extreme heat conditions either exist or are imminent and to take appropriate precautions, which are at high risk.

The heat-wave action plan is intended to mobilize individuals and communities to help protect their neighbors, friends, relatives, and themselves against avoidable health problems during spells of very hot weather. Broadcast media and alerting agencies may also find this plan useful. Severe and extended heat waves can also disrupt general, social, and economic services.

#### **A. Awareness Activities**

To increase general awareness among all the relevant stakeholders including people especially vulnerable communities, healthcare providers, and policy makers regarding the impacts of heat and ways to address them.

#### **Sensitization workshop plan for State and District level Officers**

| Various levels of Training                                 | Topics  | Timeline |
|--|---|----------|
| <b>Sensitization workshops for State Level officers</b>    | Introduction Heat-related illness and its important<br>Role and responsibilities of state and regional level officers | January  |
| <b>Sensitization workshops for District Level officers</b> | Introduction Heat-related illness and its important<br>Role and responsibilities of District level officers           | February |
| <b>Panchayati Raj Institute Workshops</b>                  | Prevention measures for Heatwave related illnesses<br>Role and responsibilities of PRI                                | March    |

#### **IEC Plan**

| S. No | Indicator Statement | Indicator                               | Target 2022-23 | Target 2023-24 | Target 2024-25 | Target 2025-26 | Target 2026-27 |
|-------|---------------------|---|----------------|----------------|----------------|----------------|----------------|
| 1.    | IEC campaigns       | Percentage of Districts implemented IEC | 50%            | 100%           | 100%           | 100%           | 100%           |

|   |                            |   |                             |             |      |      |      |
|---|----------------------------|---|-----------------------------|-------------|------|------|------|
|   |                            | campaign on heat-related illnesses                                      |                             |             |      |      |      |
| 2 | PRI and VHNC sensitization | Percentage of Districts included climate sensitive issues in the VHSNCs | 25%                         | 50%         | 75%  | 100% | 100% |
| 3 | Community participation    | Sensitization of rural population for HRI                               | Pilot study in one district | 5 districts | 50 % | 75 % | 100% |

#### **IEC activities for heat-related illness**

- At least 1-2 wall posters to be disseminated in all healthcare facilities.
- Social Media – active circulation of audio-video clips and poster slideshow in prominent social media handles.
- Radio jingles from March to July in high-priority districts
- Sensitization workshops for district, state, and regional level officers
- Community participation through meetings, heat-related illness education in school, panchayati raj institutes, and gram sabhas.

| Year    | IEC Content   | Districts   | Dissemination Plan for 5 (Years)            | Time Line           | Budget (Lakh) |
|---------|---------------|---|---|---------------------|---------------|
| 2022-23 | Posters       | All districts                                     | At least 2 posters for each health facility | January-February 23 | 2 lakh        |
|         | Radio Jingles | High Priority Districts<br>Low Priority Districts | Radio Jingles during the summer season      |                     |               |
|         | TV Spots      | All Districts                                     | TV spots                                    |                     |               |

|         |                                      |               |   |                     |          |
|---------|--------------------------------------|---------------|---|---------------------|----------|
| 2023-24 | Posters<br>Radio Jingles<br>TV Spots | All districts | At least 2 posters for each health facility<br><br>Radio Jingles during the summer season<br><br>TV spots | January-February 24 | 2 lakh   |
| 2024-25 | Posters<br>Radio Jingles<br>TV Spots | All districts | At least 2 posters for each health facility<br><br>Radio Jingles during the summer season<br><br>TV spots | January-February 25 | 2.2 lakh |
| 2025-26 | Posters<br>Radio Jingles<br>TV Spots | All districts | At least 2 posters for each health facility<br><br>Radio Jingles during the summer season<br><br>TV spots | January-February 25 | 2.4 lakh |

## B. Capacity Building

- Clinical management training of HRI for all physicians, district nodal officers, and district epidemiologists
- Training for Surveillance of HRI and their reporting for district nodal officer, RMO outreach, and district epidemiologist.
- Medical officer training for HRI Clinical management and Surveillance for HRI at the district level.

### Training Calendar

| Type of Training       | Participants   | Content of Training                                       | Timeline |
|------------------------|--|---|----------|
| <b>State Level ToT</b> | State Level officers, Regional level officers, District level officers | Surveillance, Preventive Measures and Clinical Management | February |

|                                |                                 |   |       |
|--------------------------------|---------------------------------|---|-------|
| <b>District Level</b>          | District-level supervisors, THO | Surveillance, Preventive Measures and Clinical Management | March |
| <b>Medical Officer</b>         | Medical officers                | Surveillance, Preventive Measures and Clinical Management | April |
| <b>Paramedical staff</b>       | MPW, ANM, LHV, etc              | Surveillance and Preventive measures                      | April |
| <b>Panchayat Raj Institute</b> | PRI members                     | Awareness generation                                      | April |

## Budget

| Year    | Priority Districts | Time of year | Content matter         | Budget   |
|---------|--------------------|--------------|------------------------|----------|
| 2022-23 |                    | March-April  |                        | 2 lakh   |
| 2023-24 |                    | March-April  |                        | 2 lakh   |
| 2024-25 | All district       | March-April  | Heat-related Illnesses | 2.2 lakh |
| 2025-26 |                    | March-April  |                        | 2.4 lakh |
| 2026-27 |                    | March-April  |                        | 2.6 lakh |

## C. Surveillance Activities

The heat waves are generally experienced from March to May in Himachal Pradesh. The daily reporting of heat stroke diseases is done from 1<sup>st</sup> March to 31<sup>st</sup> July, every year. Each district is responsible for collecting information from health facilities as per the case definition.

- Daily monitoring of health-related illness from the Joint Director of Health Services
- Report shared with NCDC & EMR division New Delhi.
- Guidelines to all health facilities and district and municipal authorities on the management of heat-related illnesses
- Establish a heat stroke treatment room

- Coordination with IMD to develop EWS
- District Level Death Investigation Committee –  
It should be a three-member committee to confirm Heat Stroke Deaths.  
This Committee will comprise of –
  1. District Civil Surgeon
  2. District Surveillance Officer
  3. Experts – Physician/ Paediatrician either from GMC or the Public health department.

Every suspected death is to be investigated and confirmed by the District Committee within 3 days of the death.

### **Roles and responsibilities**

#### **State Climate Change & Human Health Cell**

1. Prepare advisory and disseminate to district level
2. Coordinate with multisectoral task force members in developing the State Action plan for Heat-related illnesses
3. Capacity building of DNO-CC and MOs
4. HRI Surveillance establishment
5. IEC and awareness generation & dissemination planning
6. Monitoring and supervision of activities planned at the district & block level
7. Support in hospital-level preparedness

#### **District Climate Change & Human Health Cell**

1. Disseminate advisory received from the state to block and health facility level
2. Coordinate with multisectoral task force members in developing a District Action Plan for Heat-related illnesses.
3. Capacity building of MOs, paramedical staff, health care workers, CHOs, and other departments
4. HRI Surveillance establishment and daily reporting
5. IEC and awareness generation & dissemination planning
6. Monitoring and supervision of activities planned at the district, block, and health facility level
7. Support in hospital-level preparedness

#### **Block Level**

1. Disseminate advisory received from district level to health facility level
2. Capacity building of MOs, paramedical staff, Health care workers, CHOs, and other departments
3. HRI daily reporting
4. IEC and awareness generation & dissemination

5. Hospital level preparedness

### **Health Facility Level**

1. HRI daily reporting
2. IEC and awareness generation & dissemination
3. Hospital level preparedness

### **Frontline Health Care Worker**

1. HRI surveillance
2. Generate awareness among the community
3. Timely referral of suspected cases to the nearest health facility

## Chapter 9

### Health Adaptation plan for Vector Borne diseases

#### Introduction

##### Vector Borne diseases (VBDS)

The effect of variation in climate has been well established for illnesses that are spread through vectors or are transmitted from animals to humans. Vector-borne diseases are climate sensitive and their occurrence in a particular region is indicative of change in climatic conditions like changes in temperature, humidity, rainfall, floods, landslides, etc. The National Vector Borne Diseases Control Program addresses six vector-borne diseases i.e. Malaria, Dengue, Filaria, Chikungunya, JE, Kala Azar are under surveillance including Scrub Typhus as a state-specific disease. The main contributory factors for the rise in VBDs are unplanned and uncontrolled urbanization, climatic changes (change in temperature), poor environmental sanitation, deforestation, increased population growth, and migration, etc.

Currently, Himachal Pradesh is under category 1 of the elimination phase of malaria, but the state has also witnessed a rise in dengue cases along with an outbreak in 2018. Scrub Typhus is endemic in Himachal Pradesh and has shown an increased trend during the rainy season. Among all districts, Solan, Bilaspur, Mandi, Kangra, Shimla, and Sirmaur are priority districts for VBDs. For monitoring the dengue cases, state has set up 7 sentinel surveillance hospitals in different districts IGMC Shimla, RPGMC Tanda at Kangra, ZH Mandi, RH Bilaspur, CHC Nalagarh, ESI Parwanoo, RH Solan, and the later 4 sites are strategically developed at the areas at the foot hills of Shivalik Hills because of the reason that the environmental conditions in the mentioned areas is quite similar to the neighboring states of Punjab and Haryana.

#### Status of Vector-Borne Diseases in the State of Himachal Pradesh

| Year | Malaria |        | Dengue |        | Scrub Typhus |       |
|------|---------|--------|--------|--------|--------------|-------|
|      | Cases   | Deaths | Cases  | Deaths | Cases        | Death |
| 2018 | 98      | 0      | 4672   | 7      | 1940         | 21    |
| 2019 | 109     | 0      | 344    | 2      | 1597         | 14    |

|      |           |          |            |          |            |          |
|------|-----------|----------|------------|----------|------------|----------|
| 2020 | <b>33</b> | <b>0</b> | <b>26</b>  | <b>0</b> | <b>565</b> | <b>6</b> |
| 2021 | <b>15</b> | <b>0</b> | <b>349</b> | <b>0</b> | <b>977</b> | <b>7</b> |

### **Ongoing Activities under NVBDCD in the state :**

- Dengue, scrub typhus is notifiable diseases in Himachal Pradesh
- Provision of diagnostic services
- Integrated management of vectors
- Capacity building of healthcare workers
- Awareness generation & IEC activities
- Community participation
- Inter-sectoral coordination

### **Adaptation strategy and action plan for Vector Borne diseases**

#### **Key Focus areas:**

- Strengthen the early warning system or alert system
- Awareness generation and community mobilization regarding preventive measures
- Extensive IEC activities
- Ensure availability of Human resources(lab technicians, staff to make slides)
- Strengthening of diagnostics and clinical management in Districts
- Vector management: an integrated approach for vector control(environmental control, chemical control, personal protection)
- Inter-sectoral coordination
- Political awareness and commitment

### **I. AWARENESS GENERATION**

To increase general awareness among all the relevant stakeholders especially vulnerable communities, healthcare providers, and policy makers regarding the impacts of vector-borne disease and ways to address them.

### **a. IEC Campaign**

The districts are aimed to create awareness through Information, Education, and Communication Activities (IEC) through the development of locally and culturally acceptable messages in posters, audio, videos, public health events, and issuing advisories related to vector-borne diseases.

The content for the IEC for vector-borne diseases will be provided by the NPCCHH division. The state will translate the content into the local or regional language and the role of the districts is to utilize these materials and disseminate them at all levels.

Extensive IEC activities: poster, videos, pamphlets, GIFs, radio, and other modes of advertisement.

Observation of important health days:

World Malaria Day(25th April)

World Mosquito day(20th August)

World Environment Health Day (26th September)

### **IEC DISSEMINATION PLAN**

| S.<br>No | IEC<br>Content | Priority<br>Districts | Disseminatio<br>n Plan for 5<br>years 22-27                   | Timeline             | Budget (in lakhs) for 5 years with<br>15% increasing each year |           |              |                 |             |  |  |  |  |  |
|----------|----------------|-----------------------|---|----------------------|--|-----------|--------------|-----------------|-------------|--|--|--|--|--|
|          |                |                       |   |                      | 2022-<br>23  | 23-<br>24 | 2024 -<br>25 | 202<br>5-<br>26 | 2026-<br>27 |  |  |  |  |  |
| 1.       | Posters        | All 12<br>Districts   | 2 posters for<br>healthcare<br>facilities in all<br>districts | July to<br>September | 6.5  | 6.5       | 7.15         | 7.8             | 8.5         |  |  |  |  |  |
| 2.       | Audio          |                       | Social Media<br>(Facebook,<br>Instagram<br>etc.)              | August to<br>October |  |           |              |                 |             |  |  |  |  |  |
| 3.       | Videos         |                       |   |                      |  |           |              |                 |             |  |  |  |  |  |
| 4.       | GIF's          |                       |   |                      |  |           |              |                 |             |  |  |  |  |  |

## CAPACITY BUILDING

### Training Program at District level

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

### Roles and responsibilities

#### State Climate Change & Human Health Cell

In coordination with State Programme Officer NVBDCP and IDSP:

- Assess the burden of vector-borne diseases and suggest measures to reduce them
- Prepare advisory and disseminate to district level
- Strengthen surveillance activities and post-disaster control measures
- Conduct sensitization workshops and capacity building training of DNOs-CC & District level TOTs
- Coordinate district-level activities for vector-borne diseases related activities
- Finalization of IEC material and dissemination of the same to districts
- Ensure uninterrupted supplies of diagnostics and case management
- Inter-sectoral collaboration for early warning and vector control
- Conduct state task force meetings on VBDs
- Monitoring and evaluation

#### District climate change & Human Health Cell:

- Disseminate advisories or guidelines issued from the state to block level
- To assess the burden of vector-borne diseases prevalent in the district and take measures to reduce them

- Coordinate with IDSP & NVBDCP for surveillance and reporting
- Capacity building of block level TOTs , MO, LTs, and other staff members
- Conduct IEC activities at the district level and coordinate with blocks
- To make a district specific micro plan to conduct various activities under program
- Ensure the availability of diagnostic and clinical case management facilities at the health facility level
- Monitoring and evaluation

### **Block Level**

- Dissemination of advisory guidelines up to the facility level
- Capacity building of Mos and other healthcare workers
- Surveillance and reporting and control measures in case of outbreaks
- IEC activities

### **Health Facility Level**

- Reporting of VBDs
- Sensitization and awareness generation among frontline healthcare workers
- IEC activities at the community level
- Preparedness at the health facility level

## **Chapter 10**

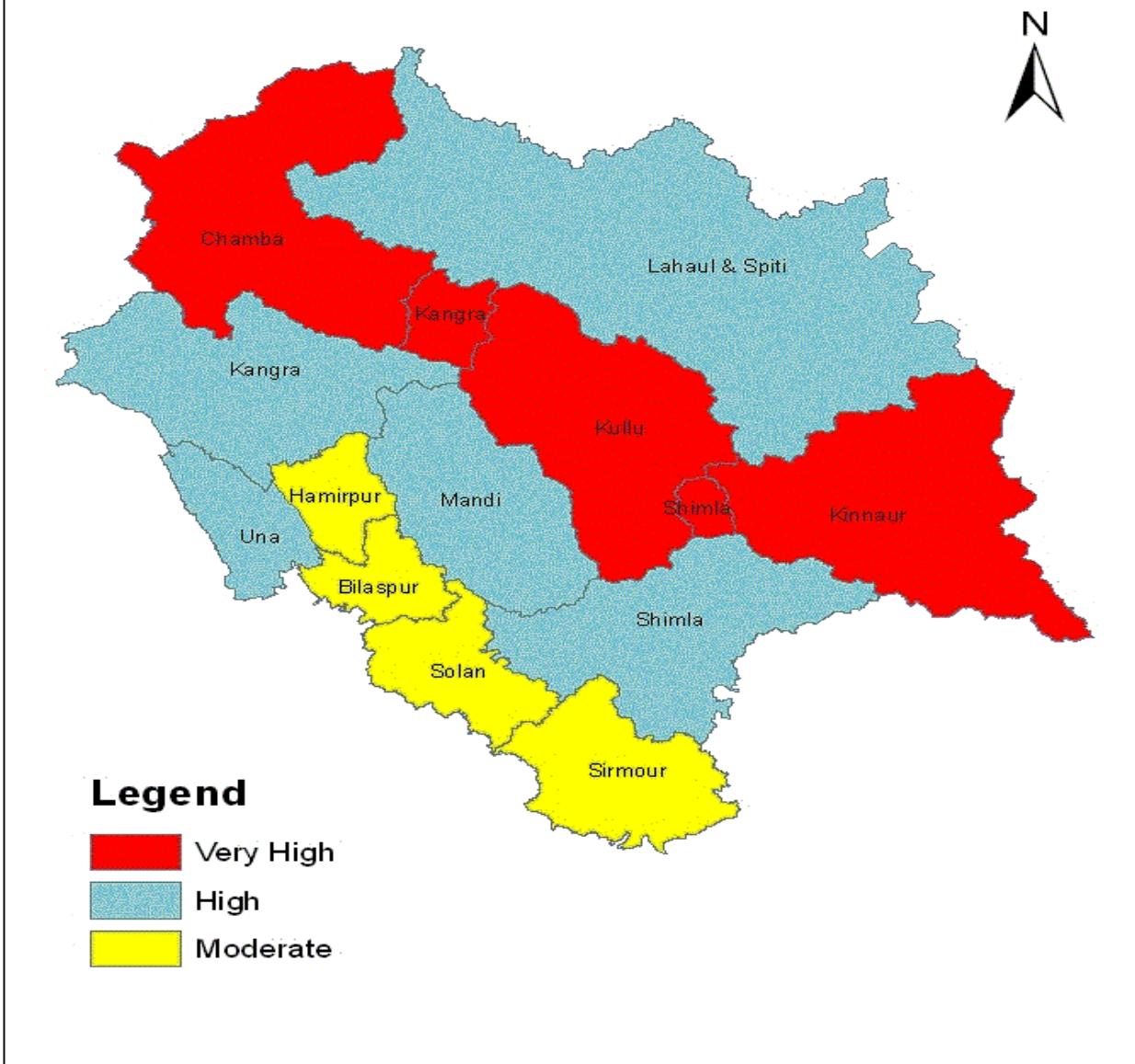
### **HEALTH ADAPTATION PLAN FOR DISASTER MANAGEMENT**

Himachal Pradesh is situated in the western Himalayan region with great variation in its climatic conditions due to variations in elevation, making the state vulnerable to multi-hazards. The state routinely faces small to medium-scale disasters every year of which earthquakes and landslides are the most common. According to the BIS seismic zonation map, Himachal Pradesh lies in high-risk zone IV and very high-risk zone V of seismic activity.

Himachal Pradesh Disaster Management Authority is the nodal agency for disaster prevention, mitigation, preparedness, and management of disaster impacts. As per HPSDMA, the vulnerability matrix for different hazards reveal that districts Kangra, Hamirpur, and Mandi falls in very high vulnerability for earthquakes followed by Chamba, Kullu, Kinnaur, and part of Kangra and Shimla with high vulnerability, and district Una, Bilaspur, Solan, Lahaul, and Spiti are moderate to low vulnerable districts for earthquakes.

Vulnerability to Landslides, district Chamba, Kullu, Kinnaur, and parts of Kangra and Shimla are highly vulnerable to landslides and overall vulnerability shows that the districts Chamba, Kangra, Kullu, Shimla, and Kinnaur are at a very high risk of vulnerability to various type of hazards.

## OVERALL VULNERABILITY MAP-HIMACHAL PRADESH



Health gets directly affected due to such extreme events and leads to short-term as well as long-term effects like

- Injuries, disabilities, and lives lost
- Direct losses in infrastructure and supplies
- Loss or disruption in the delivery of health care, both curative and preventive

- Increased burden of communicable diseases during post-disaster phase
- Impact on the transmission of endemic disease
- Unavailability of safe drinking water during the initial phase of disasters
- Increased economic burden

Protective measures and quick action towards such devastating situations can potentially lower the losses caused by it. Currently, the health systems in collaboration with the State Disaster management authorities are collectively working towards this.

**The following hotspot districts are identified for each event:**

**Kullu** Flood & Drought

**Mandi** Flood

**Kangra** Flood

**Shimla** Flood

**Lahaul & Spiti** Flood

#### **IEC dissemination plan for disasters**

| IEC type             | Material  | Timeline | Mechanism  |
|----------------------|---|----------|--|
| <b>Advisory</b>      | <a href="http://bit.ly/NPCCHHPrgr">bit.ly/NPCCHHPrgr</a>      | Seasonal | By email to DNO for further dissemination to health facilities   |
| <b>Early warning</b> | Bulletins/advisories by IMD (storm, cyclone), and CWC (flood) | Seasonal | <ul style="list-style-type: none"> <li>• Health department/other government website/application</li> <li>• Digital display of temperatures in public places and health facilities</li> </ul> |

|                        |  |                     |   |
|------------------------|--|---------------------|---|
| <b>Posters</b>         | <ul style="list-style-type: none"> <li>• 6 posters on various EWE and health impacts (English, Hindi)</li> <li><a href="http://bit.ly/NPCCHHIEC">bit.ly/NPCCHHIEC</a></li> <li>• Posters on heat and health impacts</li> </ul> | Seasonal, as needed | <ul style="list-style-type: none"> <li>• Printing of copies for state-level dissemination at health facilities, public places/buildings</li> <li>• By email to DNO for printing at the district level and dissemination to health facilities, schools, and other public/government buildings</li> </ul> |
| <b>Hoardings</b>       | <ul style="list-style-type: none"> <li>• Posters in Hindi (above)</li> </ul>   | Seasonal, As needed | <ul style="list-style-type: none"> <li>• To be planned in High priority districts</li> </ul>  |
| <b>Audio-Visual</b>    | <ul style="list-style-type: none"> <li>• Audio Jingle</li> <li>• 5 Video messages (Hindi, English)</li> <li><a href="http://bit.ly/NPCCHHIEC">bit.ly/NPCCHHIEC</a></li> <li>• Video message</li> </ul>                         | Seasonal, as needed | <ul style="list-style-type: none"> <li>• Played seasonally and around relevant extreme weather events</li> </ul>  |
| <b>Digital display</b> | <ul style="list-style-type: none"> <li>• 5GIF</li> <li>• Above mentioned video messages</li> </ul>   | Seasonal, as needed | <ul style="list-style-type: none"> <li>Display in health facilities</li> <li>Public digital display boards in major cities</li> </ul>   |
| <b>Social medial</b>   | All the above material + relevant activity updates   | Seasonal, as needed | <ul style="list-style-type: none"> <li>• Facebook and Twitter handle of state NPCCHH, NHM</li> <li>• WhatsApp groups (State DNO, Health facility group)</li> </ul>  |

### Strengthening Health Sector Preparedness

- **Early warning:-** Dissemination of early warnings for cold waves, floods, cyclones, etc to the health facility **level** and community level
- **Surveillance**
  - Post-disaster health impact assessment
  - Support post-disaster surveillance of communicable diseases, and health facilities affected conducted by SDMA, IDSP, or other agencies

### 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 & 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 a Sustainable Procurement Committee

## Capacity Building

### Training Calendar

| Training Programme                | Trainer                                       | Topics  | Timeline |
|-----------------------------------|---|---|----------|
| District level (DNO-CC, trainers) | State-level Trainers<br>SNO-CC,<br>Consultant | <ul style="list-style-type: none"> <li>- Climate change and the impact of extreme weather events in India</li> <li>- Formation of disaster management committees and plans</li> <li>- Health facility vulnerability, resilient measures, and disaster preparedness</li> <li>- Disaster response in coordination with state/district disaster management authority</li> <li>- Post-disaster health impact assessment and response</li> </ul> | February |

|   |  |  |                |
|---|--|--|----------------|
| Health facility level<br><b>(MO of DH/CHC/PHC)</b>          | District-level<br>Trainers<br>DNO-CC                         | - Health facility disaster vulnerability assessment<br>- Disaster management committee and plan<br>- Climate resiliency measures (structural/functional)<br>- Health facility preparedness for EWE/disaster response<br>- Post-disaster surveillance and damage assessment | February       |
| Community Health care workers(MPH,<br><b>ASHA, ANM etc)</b> | District-level<br>Trainers,<br>MO                            | - Climate change and health impact of extreme weather events<br>- Disaster planning and response   | February-March |
| Panchayati Raj Institutions                                 | District-level<br>trainers,<br>MO,<br>Health care<br>workers | - Climate change and health impact of extreme weather events<br>- Disaster planning and response with community participation including local volunteer group NCC,   | February-April |

### Budget

|                |  |                         |  |        |
|----------------|--|-------------------------|--|--------|
| <b>2022-23</b> |  | <b>December-January</b> |  | -      |
| <b>2023-24</b> |  | January-March           |  | -      |
| <b>2024-25</b> |  | January-March           |  | 3 Lakh |

|                |              |               |   |        |
|----------------|--------------|---------------|---|--------|
| <b>2025-26</b> | All district | January-March |   | 4 lakh |
| <b>2026-27</b> |              | January-March | <b>Preparedness and Capacity Building workshops</b> | 5 Lakh |

## Health System Preparedness

- Strengthen the early warning system and dissemination of early warnings or alerts to health facilities and community level.
- Strengthening of the existing surveillance system for disease control and prevention.
- Set up for temporary hospital in case of damage to the healthcare facility with the team and maintain uninterrupted supplies of drugs, vaccines, etc.
- Formation of Rapid Response Team at the district-level and block-level.
- Details of the RRT should be displayed and revised twice a year for any change.
- Surveillance of post-disaster communicable diseases like water and food borne diseases
- Referral mechanism in case of damage to the health care facility.
- Assurance to provide essential health services.
- Ensure routine monitoring of the affected area.

## Roles and Responsibilities

| Particulars | Responsibilities   |
|-------------|--|
| <b>SNO</b>  | <ul style="list-style-type: none"> <li>• Disseminate early warnings to district level</li> <li>• Finalization of IEC material and dissemination Plan</li> <li>• Formalize intersectoral coordination for disaster planning, management, and response with SDMA/IMD and other response departments</li> </ul> |

|                             |   |
|-----------------------------|---|
|                             | <ul style="list-style-type: none"> <li>• Organize training of district-level officers</li> <li>• Organize sensitization workshops for other stakeholders and line departments</li> <li>• Facilitate disaster vulnerability assessment</li> <li>• Conduct state task force meetings</li> </ul>   |
| <b>DNO</b>                  | <ul style="list-style-type: none"> <li>• Disseminate early warning to block and health facility level</li> <li>• Ensure IEC dissemination to block level</li> <li>• Organize training for block health officers and MO</li> <li>• Conduct the District task force meetings on disaster-related health issues</li> <li>• Identification and communication of evacuation routes &amp; relief camps</li> <li>• Support planning and management of health care services in relief camps</li> <li>• Observance of important environment-health days</li> <li>• Facilitate disaster vulnerability assessments in health facilities and maintain records of such assessment and health facility damage due to Extreme whether Events (EWE)</li> <li>• Submit reports of activities on EWE and health under NPCCHH</li> </ul> |
| <b>Block health officer</b> | <ul style="list-style-type: none"> <li>• Conduct community-level IEC activities</li> <li>• Ensure training of medical officers</li> <li>• Intersectoral coordination with other departments like PD, PRI, ICDS, etc.</li> <li>• Organize PRI sensitization workshops and training for vulnerable groups</li> <li>• Facilitate disaster vulnerability assessments in health facilities and maintain records of such assessments and health facility damage due to EWE</li> </ul>   |
| <b>Medical officer</b>      | <ul style="list-style-type: none"> <li>• Conduct health facility-based IEC activities</li> <li>• Support community-level IEC activities</li> <li>• Preparation of Disaster Management Plans and hospital safety plan</li> </ul>   |

|  |  |
|--|--|
|  | <ul style="list-style-type: none"> <li>• Assessment of health facilities in the context of climate change-extreme weather events</li> <li>• Identifying structural changes/retrofitting measures at the facility level to equip the healthcare facility</li> <li>• Ensuring routine monitoring and maintenance of support functions (Water quality, waste management)</li> <li>• Health facility preparedness for seasonal events</li> </ul> |
| <b>Panchayati<br/>Raj<br/>Institutions</b> | <ul style="list-style-type: none"> <li>• Conduct community-level IEC activities</li> <li>• Community involvement in planning and demonstration of the measure taken before-during-after a EWE</li> </ul>   |

## Chapter 11

### NPCCHH Budget

| Budget Head                                   | Activity   | FY 2022-23<br>(Rs in Lakh) | FY 2023-24<br>(Rs in Lakh) | FY 2024-25<br>(Rs in Lakh) | FY 2025-26<br>(Rs in Lakh) | FY 2027-28<br>(Rs in Lakh) |
|---|--|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <b>STRENGTHENING OF THE HEALTH SYSTEM</b>     |  |                            |                            |                            |                            |                            |
| <b>Others including operating costs (OOC)</b> | Green Measures in Healthcare Facilities:<br><br>Replace existing lighting (Non-LED) with LED in Healthcare facilities  | 20.00                      | 20.00                      | 22.0                       | 24.2                       | 26.6                       |
| <b>Infrastructure - Civil works (I&amp;C)</b> | Climate Resilient Healthcare facilities infrastructure   | 0.00                       | 0.00                       | 0.00                       | 0.00                       | 0.00                       |
| <b>CAPACITY BUILDING</b>                      |  |                            |                            |                            |                            |                            |
| <b>Capacity building incl. training</b>       | 1. Trainings of Medical Officers<br>2. Training of Health Workers<br>3. Training of PRI  | 5.00                       | 5.00                       | 5.5                        | 6.0                        | 6.6                        |
| <b>GENERAL AWARENESS</b>                      |  |                            |                            |                            |                            |                            |
| <b>IEC &amp; Printing</b>                     | 1. IEC on Climate Sensitive Diseases at Block, District and State level – Air pollution, Heat and other relevant Climate Sensitive diseases<br>2. Printing activities for NPCCHH | 6.50                       | 6.50                       | 7.15                       | 7.8                        | 8.58                       |
| <b>Surveillance, Research, Review,</b>        | Surveillance/Vulnerability assessment/   | 0.00                       | 0.00                       | 0.00                       | 0.00                       | 0.00                       |

|                                 |   |             |             |              |              |              |
|---------------------------------|---|-------------|-------------|--------------|--------------|--------------|
| <b>Evaluation<br/>(SRRE)</b>    | Research related to Climate Change, Air Pollution and Heat related illness  |             |             |              |              |              |
| <b>PROGRAMME MANAGEMENT</b>     |   |             |             |              |              |              |
| <b>Planning<br/>and M&amp;E</b> | 1. Task force Meeting to draft health sector plan for Heat and Air Pollution<br>2. Sensitization workshop/ Meeting of the State Program Officers and District level Health Officers | 0.00        | 3.00        | 5.00         | 5.00         | 5.00         |
|                                 | <b>Total</b>  | <b>31.5</b> | <b>34.5</b> | <b>39.65</b> | <b>43.00</b> | <b>46.78</b> |

## ANNEXURES

| S. No. | Key Actions  | Activity  |   |   | Indicators<br>(First 2 years- Short Term Activity)   |
|--------|--|---|---|---|--|
|        |  | Short term<br>(First two years)   | Medium Term<br>(up to five years)   | Long Term<br>(up to fifteen years)  |  |
| 1.     | To create awareness among general population (vulnerable community), health-care providers and Policy makers regarding impacts of climate change on human health |   |   |   |  |
|        | Development of IEC material on health impacts of Climate variability & change in coordination with NCDC  | <ul style="list-style-type: none"> <li>-Identify nodal agency to undertake communication needs assessment for the target groups</li> <li>- Develop Communication Plan &amp; Tools</li> <li>-Develop IEC materials in Hindi, English and other vernacular languages.</li> <li>- Dissemination of IEC: mass media and interpersonal communication</li> <li>- Training &amp; Sensitization of Health Care Providers</li> </ul> | <ul style="list-style-type: none"> <li>-Develop integrated IEC strategy</li> <li>-Explore inter-sectoral / inter-ministerial / civil society / NGOs for collaboration</li> <li>-Integrate health impacts of climate change into school and College curricula</li> <li>- Periodic Impact assessment of communication activities and monitor dissemination and utilization of IEC material</li> <li>-Explore additional sources of funding</li> </ul> | <ul style="list-style-type: none"> <li>-Determine whether the target population is covered/informed timely</li> <li>-Commissioning of impact studies</li> <li>-Follow up 'Evaluation' of awareness activities</li> <li>-Actively pursue partnerships with other agencies</li> </ul> | <ul style="list-style-type: none"> <li>- Nodal Agency identified in the state/district to undertake IEC activities in the state. List out Communication plan and tools prepared at state and district level</li> <li>- No of posters, banners, newspaper advt, pamphlets/handbills prepared for dissemination in Hindi, English and Vernacular language at state and district level</li> <li>- No of IEC material disseminated at cinema halls, Bus and Trains, Newspaper advt, Radio-TV channel, Hoardings at public places, Wall paintings at health centres/hospitals, cycle rally at school/village/PHC level, Taluka level</li> <li>- No of Training sessions conducted- Refresher training, new recruits/ Medical, non-Medical staff/Pvt hospitals, General Physician, Hospital doctors at state and district level</li> </ul> |
|        | Advocacy on health impacts of Climate variability & change in coordination with NCDC   | <ul style="list-style-type: none"> <li>-Advocacy forum to conduct and support workshops and meetings.</li> <li>- Evidence based Information to legislators and decision makers on issues of climate change and impact on health</li> </ul>  | <ul style="list-style-type: none"> <li>Provide evidence/information for decision-makers to assess existing policies, practices and systems</li> <li>Involve community-based organizations (CBOs) for dissemination of information.</li> </ul>   | <ul style="list-style-type: none"> <li>Expand the span of coalitions to strengthen and support favourable legislatures/policies</li> </ul>  | <ul style="list-style-type: none"> <li>- No of ToT's identified and trained at State and District level.</li> <li>- No of biennial Training workshops at state and district level.</li> <li>- No of Quarterly Review meetings of District Nodal Officers, Task Force (State and district) and Governing Body</li> <li>- No of national level trainings attended by the State and district level officials.</li> <li>-No of "biennial workshops for Teaching cadre, General Physician bodies, IMA bodies.</li> </ul>  |

| S. No. | Key Actions   | Activity  |  |  | Indicators |
|--------|---|---|--|--|------------|
|        |   | Short term<br>(First two years)   | Medium Term<br>(up to five years)  | Long Term<br>(up to fifteen years)   |            |
| 2.     | To strengthen capacity of healthcare system to reduce illnesses/ diseases due to variability in climate   |   |  |  |            |
|        | <p><b>Strengthening of health care system in context of climate change in coordination with NCDC</b></p> <ul style="list-style-type: none"> <li>- Establish 'Environment Health Cell'(EHC) at Health deptt.</li> <li>- Depute State Nodal Officer –Climate change (SNO-CC) as focal point</li> <li>- Notify Task Force with multiple stakeholders and review existing Indian Public Health Standards and appropriate suggestions</li> <li>- State to form climate sensitive health Programme Implementation Plan (PIP)</li> </ul>   | <p><b>Implement/ adapt/ modify Monitoring, Supervision and Evaluation tool for climate sensitive diseases</b></p> <ul style="list-style-type: none"> <li>-Coordinate with other agencies (municipalities, PRIs) for efficient and effective implementation of proposed activities at state and below level.</li> <li>- Phased Implementation of the recommendations of Task Force.</li> </ul> | <p><b>Share appropriate technology like reduction in carbon footprint at healthcare facilities</b></p> <ul style="list-style-type: none"> <li>-Continue Phased Implementation of recommendations of Task Force.</li> </ul>   | <ul style="list-style-type: none"> <li>- Notification of - SNO, State level EHC, State level Task Force, State level Governing Body</li> <li>- Notification of District Nodal Officers identified, District Environmental Health Cell, District Task Force formed.”</li> <li>- State Action Plan for Climate Change and Human Health (SAPCCHH) developed, approved by the State Governing Body and launched by the state.</li> <li>- District specific Heat Action plan developed 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)</li> <li>- PIP submitted to state NHM</li> <li>- Consultant Recruited in the state EHC</li> </ul> |            |
|        | <p><b>Capacity building for vulnerability assessment at various levels and liaison with centre in coordination with NCDC</b></p> <ul style="list-style-type: none"> <li>-Identify agency/ institute/ Organizations/ Centers of Excellence for developing guidelines, capacity building, supporting implementation, monitoring, supervision.</li> <li>- Enlist (customized as per states' vulnerabilities) <ul style="list-style-type: none"> <li>i) Technical committees/ working groups to support the focal point,</li> <li>ii) skilled staff,</li> <li>(iii) logistics,</li> <li>(iv) funds</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>- As per priority list, State to prepare guideline/ action plan and upload the same on its website for ready reference.</li> <li>-Develop training modules, organize training</li> <li>- Conduct meeting / Workshops/ Training on CC&amp;HH for health care personnel</li> <li>- Sensitize and orient private health care providers</li> </ul>         | <ul style="list-style-type: none"> <li>- Extend and expand trainings to reach health care staff till village level.</li> <li>- Conduct workshops/ structured training in new treatment/ management technologies at regional or local level</li> <li>- Disseminate reports and good practices;</li> </ul> | <ul style="list-style-type: none"> <li>- Names of related institutes and NGO's identified per state specific climate sensitive illnesses in the state and district.</li> <li>- No of SNO's/ DNO's trained at National/State level Trainings, Workshop and ToT.</li> <li>- Details of funds mobilised and utilised from other sources (Govt/NGOs)</li> </ul>  |            |

| S. No. | Key Actions   | Activity  |   |  | Indicators  |
|--------|---|---|---|--|---|
|        |   | Short term<br>(First two years)   | Medium Term<br>(up to five years)   | Long Term<br>(up to fifteen years)   |   |
|        |   | To strengthen health preparedness and response by performing situational analysis at national/ state/ district/ below district levels.  |   |  |   |
| 3.     | <p>Develop/ strengthen the monitoring and surveillance systems for climate sensitive diseases in coordination with NCDC</p> <p>Develop mechanisms for EWS/ alerts and responses at state, district and below district level in coordination with NCDC</p> | <ul style="list-style-type: none"> <li>- Develop / strengthen surveillance for each CSD</li> <li>- Train all concerned personnel on surveillance system (data collection, collation and analysis)</li> <li>- Integrate relevant non-health data in the health surveillance system</li> <li>- Initiate Sentinel &amp; real-time surveillance for illnesses due to Air Pollution, Heat etc</li> </ul> | <ul style="list-style-type: none"> <li>- 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/ event</li> <li>- Develop/ modify mechanism and indicators to monitor trend of CSDs.</li> <li>- Conduct Joint Review Missions / Central Internal Evaluations and feedback mechanisms.</li> </ul> | <ul style="list-style-type: none"> <li>Update monitoring and surveillance system as per new evidences</li> <li>Evaluate interdisciplinary platform and upgrade as per evolving technologies.</li> <li>Identify gaps for research</li> </ul>              | <ul style="list-style-type: none"> <li>-No of polluted cities identified for ARI surveillance in the state and no of Sentinel Surveillance Hospitals Identified from polluted cities</li> <li>- No of polluted cities where ARI surveillance has initiated as per SOP</li> <li>- No of hospital identified with 'Special Cold Room' (SCR) for management of heat related illnesses</li> <li>- Coordination with SDMA regarding death due to heat related illnesses.</li> <li>- Coordination with respective IMD offices for climate data for analysis of climate sensitive illnesses</li> <li>- Coordination with the respective State Pollution Control Board for getting AQI data.</li> <li>- No. of Biennial Training Workshops of concerned personnel on surveillance system (data collection, collation and analysis)</li> </ul> |
|        |   | <ul style="list-style-type: none"> <li>Constitute multi-stakeholder working group for development of early warning system for each CSD</li> <li>- Design and integrate public health response plan with Meteorology Dept, NDMA, EMR</li> </ul>  | <ul style="list-style-type: none"> <li>-Review monitoring and surveillance system of CSDs</li> <li>-Develop thresholds/prediction models for health events or CSDs.</li> <li>-States to develop communication plan and dissemination systems to warn people and communities</li> </ul>  | <ul style="list-style-type: none"> <li>Evaluation and modifications for the appropriateness of the plans' for</li> <li>-Thresholds of action</li> <li>-Interventions to maximize response effectiveness for the relevant community or region.</li> </ul> | <ul style="list-style-type: none"> <li>- Establishment of Working group by EHC for development of a mechanism for EWS/ alerts for climate sensitive illnesses</li> <li>-Steps taken by EHC to develop mechanisms to integrate public health response plan with related stakeholders (SPCB, NDMA, IMD etc.)</li> </ul>   |

| S. No. | Key Actions  | Activity   |   |  | Indicators   |
|--------|--|--|---|--|--|
|        |  | Short term<br>(First two years)  | Medium Term<br>(up to five years)   | Long Term<br>(up to fifteen years)   |  |
| 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 |  |   |  |  |
|        | Develop joint action plan with other deptt./ organizations In view of their capabilities and complementarities in coordination with NCDC                               | <ul style="list-style-type: none"> <li>-Identify or assess aspects/areas underserved in management of CSDs</li> <li>- Develop affordable and acceptable tools for risk reduction and Environmental Health Impact Assessment</li> <li>- Establish Corporate Social Responsibility / Accountability in terms of finances for implementing measures for prevention/reduction/treatment of CSDs</li> </ul> | <ul style="list-style-type: none"> <li>- Broaden Stakeholders' network and partnership and reassess service areas to be served for climate related health risk reduction and Environmental Health Impact Assessment.</li> <li>- Evaluate Corporate Social Responsibility (CSR) under laws for Health strategies, Policies and measures for promotion of health</li> <li>- Meeting/ Consultation with local governing body for reassessment of roles and services and appropriate resource allocation and for limiting duplication of actions</li> </ul> | <ul style="list-style-type: none"> <li>- Reassess tools for risk reduction and Environmental Health Impact assessment.</li> <li>- Share best management practices which are affordable and acceptable in social/traditional context locally</li> <li>- Evidence based support to decision makers for addressing gaps in climate resilient healthcare services</li> </ul> | <ul style="list-style-type: none"> <li>- State specific Affordable and acceptable tools developed for risk reduction and Environmental Health Impact Assessment by the State Task Force.</li> <li>- No of Corporate Houses involved with the state to invest in mitigation/adaptation of climate sensitive illnesses through CSR Fundseg, Printing and dissemination of IEC, conduct training and workshops, greening of hospitals, help in research etc.</li> <li>- No of medical colleges (Private and Govt.) involved with the State EHC</li> </ul> |
|        | Integrate, adopt and implement environment friendly measures suggested in other missions on climate change in coordination with NCDC                                   | <ul style="list-style-type: none"> <li>- Increase plantation in and around building to make it 'Green'</li> <li>- Incorporate measures in building design for making it climate resilient</li> <li>- Use technologies which reduce harmful chemicals emission &amp; carbon foot-print</li> <li>- Use of energy-efficient equipments and services</li> </ul>  | <ul style="list-style-type: none"> <li>- Expand measures to make healthcare sector 'Green'.</li> <li>- Replicate the successful 'model of building design' for new healthcare facilities</li> <li>- Explore and support technologies, equipments and services which are energy efficient and reduce harmful chemicals emission &amp; carbon foot-print</li> </ul>   | <ul style="list-style-type: none"> <li>- Assess and document reduction of climate risk in climate resilient building design for replication in other states and UTs</li> </ul>   | <ul style="list-style-type: none"> <li>- No of plants planted in the various health care facilities- PHC, CHC, SDH, DH annually</li> <li>- No of Green Hospital models Initiated, Constructed and Renovated at Primary, Secondary and Tertiary levels.</li> <li>- No of prototype hospital buildings prepared which are resilient to Disasters (Floods, Cyclones, earthquake, Tsunami)</li> <li>- No of health facilities where solar panels installed, LEDs installed, rain water harvesting done</li> </ul>  |

| S. No. | Key Actions  | Activity   |   |   | Indicators  |
|--------|--|--|---|---|---|
|        |  | Short term<br>(First two years)  | Medium Term<br>(up to five years)   | Long Term<br>(up to fifteen years)  |   |
| 5.     | <b>To strengthen research capacity to fill the evidence gap on climate change impact on human health.</b>                          |  |   |   |   |
|        | Strengthening of healthcare services based on researches on climate variables and impact on human health in coordination with NCDC | <ul style="list-style-type: none"> <li>- Create database of professionals, researchers and institutions engaged in studies of impact of weather and climate on health</li> <li>- Create a platform for ‘data-repository’ of various researches on climate and health effects</li> <li>- Scenario-building (initiation of study, data sources, mechanism used, apportionment of risk factor, methodology, assumptions, model used, confidence interval) for establishing relation of climate variables and health impacts.</li> <li>- Identify best practices in implementation of measures to combat the effect of climate change</li> </ul> | <ul style="list-style-type: none"> <li>- Development of models mathematical or other types for early warning alerts for CSDs.</li> <li>-Develop / adapt techniques for modelling or use other research advances by transitioning them into operational products and decision support tools</li> <li>- Reassess health data esp CSDs using modelling techniques</li> <li>- Inform Policy-makers about ‘scenario’ of health-related statistics with focus on CSDs.</li> <li>- Conduct seminars, workshops, conferences on best practices of measures to combat effect of climate change on human health.</li> </ul> | <ul style="list-style-type: none"> <li>- Develop and validate models, enhance research on the effectiveness of CSDs management.</li> <li>- Evaluate and improve the effectiveness of modelling technique.</li> <li>- Evidence based information to Policy-makers</li> <li>- Conduct seminars, workshops, conferences on best practices of measures to combat effect of climate change on human health.</li> </ul> | <ul style="list-style-type: none"> <li>- List of professionals, researchers and institutions engaged in studies of impact of weather and climate on health at the state and district level.</li> <li>- Creation of ‘data-repository’ of various researches on climate and health effects at state and district level.</li> <li>- List of ‘best practices’ in implementation of measures to combat the effect of climate change</li> <li>- Number of seminars in a year on CSDs and related aspects including ‘best practices’ at state and district level.</li> </ul> |