



स्वास्थ्य एवं
परिवार कल्याण मंत्रालय
MINISTRY OF
HEALTH AND
FAMILY WELFARE



MEGHALAYA

STATE ACTION PLAN ON CLIMATE CHANGE AND HUMAN HEALTH



National Centre for
Disease Control
Government of India



National Programme
on Climate Change
and Human Health



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2022-27



**National Centre for
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Table of Contents

Acknowledgement	iv
PART I: Climate Change and its Health Impacts	
1. Introduction	3
2. Climate Vulnerability	6
3. Climate Sensitive Issues/Disease prevalent in Meghalaya	13
4. Vision, Goal and Objectives	16
5. Organisational Structure	17
PART II: Health Action Plans on Priority Climate Sensitive Health Issues	
6. Health Action Plan on Air Pollution Related Diseases	21
7. Health Action Plan on Heat Related Illnesses	26
8. Health Action Plan on Extreme Weather Event-Related Health Issues	35
9. Health Action Plan on Vector-borne Illnesses in Context of Climate Change	39
10. Action Plan for Green and Climate Resilient Health Care Facilities	44
PART III: Budget	
11. Budget	53
References	56
Annexures	57

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The background features a bright yellow sun with rays in the upper half, and a blue lower half containing several interlocking gears of various sizes. The text is centered over the blue gear area.

PART I

Climate Change and its Health Impacts

CHAPTER 1

Introduction



The United Nations defined climate change as long-term shifts in temperatures and weather patterns. These shifts may be natural such as through variations in the solar cycle. But since the 1800s, human activities have been the main driver of climate change, primarily due to the burning of fossil fuels like coal, oil, and gas.

Climate change has a widespread impact on human health and has been identified as “the greatest health threat of the 21st century. It is predicted to lead to an adverse, irreversible impact on the earth and the ecosystem as a whole (Sasmita and Mohanty, 2009). Climate change will directly affect agricultural production, water resources, natural ecosystem, bio- diversity, and animal and human health. The North Eastern Region of India is expected to be highly prone to the consequences of climate change because of its geo-ecological fragility, strategic location vis-à-vis the eastern Himalayan landscape and international borders, its trans- boundary river basins, and its inherent socio-economic instabilities. Environmental security and sustainability of the region are and will be greatly challenged by these impacts. The region falls under a high rainfall zone with a subtropical type of climate. Droughts and floods are adverse climatic conditions arising out of deficit and excess rainfall, respectively. Drought assumes significance mainly in rainfed conditions like in North East India.

The climate of Meghalaya varies with the altitude. The Khasi and Jaintia Hills belt has a uniquely pleasant and bracing climate. It is neither too warm in summer nor too cold in winter, but over the plains of Garo Hills, the climate is warm and humid, except in winter. True to its name, the Meghalaya sky seldom remains free of clouds. The average annual rainfall is about 1,150 cm. Flood-affected areas are mostly in the low-altitude areas, bordering Assam and the international border (India-Bangladesh). Flash floods have become a regular feature in these areas, due to massive deforestation as well as unchecked *jhum* cultivation. The flood water carries huge amounts of hill sand, stone, logs, and trees, which are deposited in agricultural fields due to the inundation of banks in the foot hills, thus causing immense damage to crops.

People are experiencing climate change in diverse ways and it has been observed to have a negative impact on human health as seen in the rise of illnesses and deaths. The climatic variables directly costing lives include an increase in the frequency and intensity of heat waves, increased precipitation, floods, and droughts. 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 and certain cancers. Besides these, there is an increase in the transmission and spread of infectious diseases, changes in the distribution of water-borne, food-borne, and vector-borne diseases, and occurrence of disasters as well as increased probability of malnutrition. For example, weather and

climate affect the survival, distribution, and behavior of mosquitoes, ticks, and rodents that carry diseases like *Malaria*, *Japanese encephalitis*, *Dengue*, *Chikungunya*, *Scrub typhus*, and other vector-borne diseases. The marginalized populations are found to be more adversely affected due to variability and change in climatic conditions.

Details of commonly occurring climate change-induced shifts and stressors to human health include.

Extreme Weather Events- Drought, Storms, and Floods

More periods of 'drought', 'dust storms', or 'heavy rains (precipitation)', and even 'flooding' *directly* affects people's health in the form of injuries, hypothermia, hyperthermia, drowning, and *indirectly* through population dislocation, crowding, poor living conditions, faeco-oral transmission of gastro-intestinal pathogens causing water and food borne illnesses, respiratory illness and other infectious diseases (e.g., leptospirosis, vector-borne disease, cholera and also mental illnesses). The reason primarily is due to contamination of water and sewage disposal.

Air Pollution

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

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

Climate dependant diseases particularly affecting vulnerable populations include the following:

Air-Borne and Cardio-Respiratory Illnesses: Climate change influences various illnesses including respiratory tract infections like asthma, rhino-sinusitis, chronic obstructive pulmonary diseases (COPD), respiratory viral diseases (Avian Influenza), and circulatory collapse posing danger to cardiac patients. The cited reasons are poor air quality, high ozone, dust storms, extreme heat, desertification, alteration of allergens, change in timing and duration of survival and transmission cycle of respiratory virus, and alteration in bird migration. Further, the other contributory factors are demographic factors (age, sex, immunity status, pregnant women, prevailing endemic illnesses, etc) low socio-economic status, overcrowding, poor hygienic conditions, accessibility to health care facilities, population with tuberculosis, immune-compromised level, or mentally or physically challenged people.

Vector-borne diseases (VBD): Climate change and other weather parameters have a significant impact on vector-borne diseases such as malaria, dengue, chikungunya, Japanese encephalitis, kala-azar, and filariasis. The known parameters are temperature, humidity, wind, rainfall, flood, and drought, affecting the 'distribution of vector' and 'effectiveness of transmission of pathogen' through vectors. Temperature affects vectors' survival, population growth, feeding behavior, susceptibility to pathogens, incubation period, seasonality of vector activity as well as pathogen transmission. The effects of rainfall on vectors are an increase in breeding sites due to an increase in surface water, increase in vegetation, and expansion of vertebrate hosts, and flooding bringing vertebrate hosts close to the human population. Other factors affecting VBDs are population growth, population displacement, socioeconomic status, changes in residential patterns, changes in land use, water projects, agricultural practices, housing projects, international travel, resistance of disease vectors and pathogens, and accessibility to health care and diagnostic facilities.

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

Malnutrition and consequent disorders like retarded child growth and development have been identified as one of the health threats by the Working Group-II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Climate change results in food insecurity namely- food availability, food accessibility, food utilization, and food system stability. Drought diminishes crop yield, dietary diversity, supply chain disruption, increase in market rates and reduction in animal and aquatic products are being experienced. These factors reduce overall food consumption, and may therefore lead to macro as well as micronutrient deficiencies. For India, a proactive approach is critical as nearly half of the children (48%) aged less than five are chronically malnourished, more than half of women (55%), and almost one-quarter of men (24%) are anemic (NFHS-3). The health of the vulnerable population is further threatened by the changing climate.

There are certain positive effects of climate change too, like modest reductions in cold- related morbidity and mortality, geographical shifts in food production, and reduced capacity of disease-carrying vectors due to exceeding of thermal thresholds. These positive effects will however be increasingly outweighed, worldwide, by the magnitude and severity of the negative effects of climate change.



CHAPTER 2

Climate Vulnerability

Overview

Meghalaya is at the unique confluence of the Indo-Malayan, Indo-Chinese, and Indian bio-geographical region coupled with its physiography has generated a profusion of habitats, which harbors diverse biota with a high level of endemism. Meghalaya's economy is closely tied to its natural-resource-base and climate-sensitive sectors such as agriculture, water, and forestry; therefore the state faces a major threat from the projected changes in climate. Crucial sectors in the state like agriculture, water resources, health, sanitation, and rural development are likely to be affected by climate change. The state's population primarily depends on climate-sensitive sectors like agriculture and forestry for livelihood. The highly dispersed and vulnerable population segment of the state is poorly equipped to cope effectively with the adversities of climate change due to low capabilities, weak institutional mechanisms, and lack of access to adequate resources.

Climate Change is a multi-objective problem, therefore, the vulnerability and adaptive capacities are diverse and vary from state to state, and is based on several sectoral and cross- sectoral parameters. These parameters include key sectors of the state's economy and cross- sectoral factors such as poverty, inequality and social discrimination over property rights, access to resources, social attrition/migration, and unequal and unsustainable competition for scarce natural resources.

Climate Sensitivity/Variability

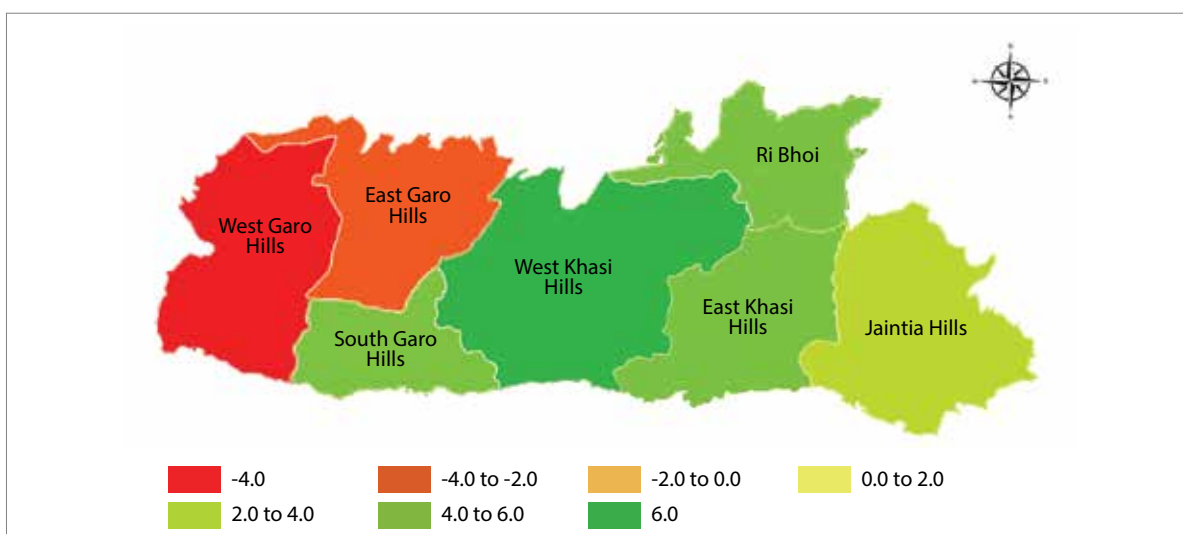
Climate variability refers to variations in the mean state of temperature, monthly rainfall, etc., and other statistics (such as standard deviations, statistics of extremes, etc.) of the climate on all temporal and spatial scales beyond that of individual weather events. Variability may be due to natural internal processes within the climate system (internal variability), or variations in natural (e.g., solar and volcanic) and external forces (external variability).

In this section, the focus is on the current mean climate and climate variability in Meghalaya at the district level and investigates how changes will alter Meghalaya's vulnerability to climate change. Precipitation and temperature are used as the key climate variables in this analysis. The climate sensitivity of the state is attributed to the fragile ecosystem of the region. The varied physiological features of the state and the altitudinal differences give rise to varied types of climate ranging from near tropical to temperate and alpine. The state is vulnerable to water-induced disasters because of its location in the eastern Himalayan periphery, fragile geo-environmental setting, and economic under-development. The powerful hydrological and

monsoon regime of the region, especially the Brahmaputra and the Barak (Meghna) river systems are both a resource and a source of vulnerability.

Trend in Rainfall variability

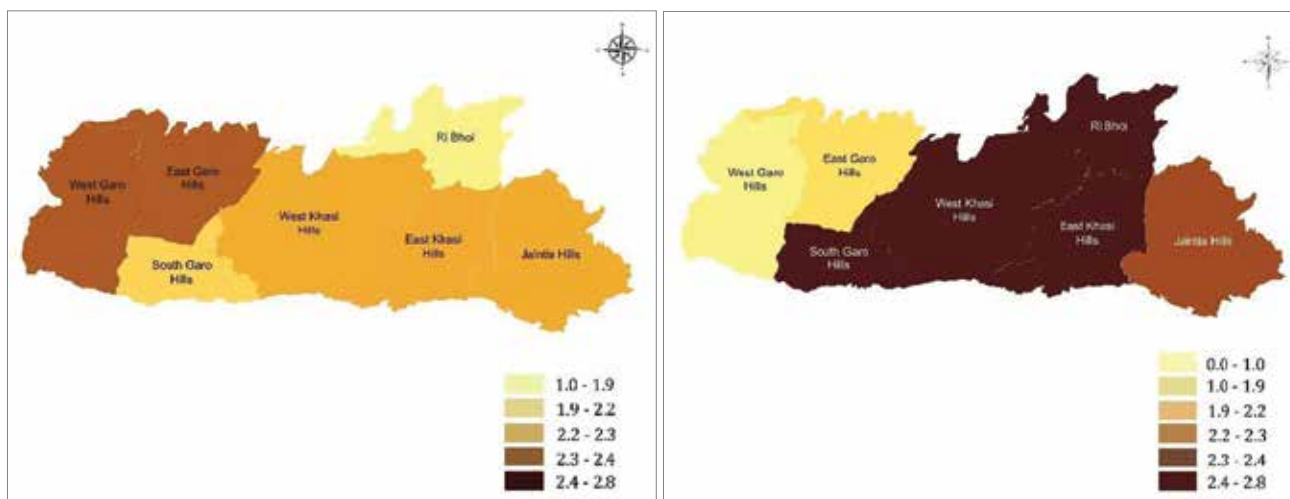
- ▶ A majority of the districts of Meghalaya have experienced an increase in precipitation in the past 100 years (figure below).
- ▶ However, the two western districts, West Garo Hills and East Garo Hills showed a decrease in precipitation of 3.72 mm/day and 6.85 mm/day respectively. This is a very high decrease and is of concern.
- ▶ The West Khasi Hills, located in the central region of the state has the highest increase in precipitation, about 6.01 mm/day. This is also a very high increase and may lead to flooding if the trend continues.
- ▶ The precipitation trend shows high variability with West Khasi Hills showing an increase in precipitation of 6.01 mm/day and West Garo Hills showing a decrease of 6.85 mm/day.



District-wise precipitation trend (mm/day per 100 yr) of southwest monsoon season (June-September) for the period 1971-2005.

Trend in Temperature Variability

The analysis of the meteorological measurements of temperature for Meghalaya shows a steady warming trend in both the minimum and maximum temperatures (figure below).



Spatial pattern of temperature trends for JJAS (°C per 100 years) over Meghalaya for the period 1901-2002 indicates:

- ▶ An overall increase in minimum and maximum temperature trends over the past 100 years.
- ▶ The western part of the state exhibited an increase in minimum temperature (West Garo Hills, East Garo Hills) when compared to the eastern part of the state:
- ▶ The central parts of the state, West Khasi Hills, South Garo Hills, East Khasi Hills exhibited a high increase in the maximum temperature (about 1.2°C) when compared to Western and Eastern districts.
- ▶ Overall, the trend of the last 100 years shows that an increase in minimum temperature is slightly higher in absolute terms than an increase in maximum temperature.

Future Climate Projections for Meghalaya

GCM and SRES scenario used: In this report, data from the HadCM3 global climate model downscaled by PRECIS model, a regional climate model for downscaling climate projections (Kumar et al., 2006), is used. Climate change projections were made:

- ▶ For daily values of temperature (average)
- ▶ For daily values of precipitation
- ▶ For periods of 2021-2050

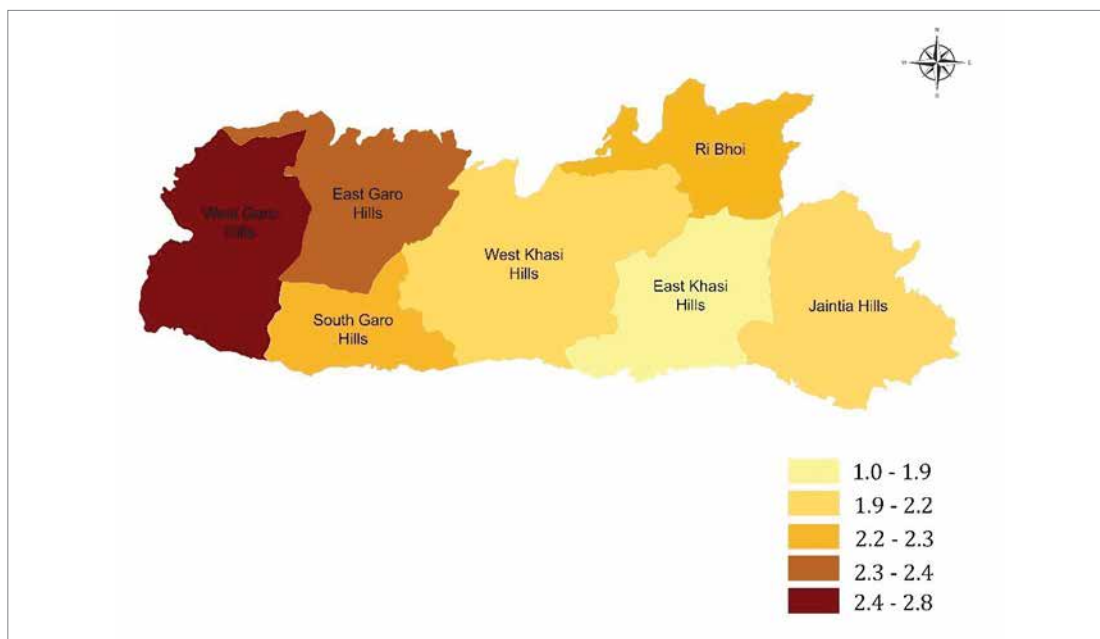
Projected change in average temperature

Climate modeling studies for India show that the sub-continent is likely to experience warming over 3-5°C. The projection of temperature is as follows:

- ▶ The western parts of the state are projected to experience a higher increase in temperature when compared to the eastern parts of the state
- ▶ However, the variability in the increase in temperature is not high, with the highest increase being 1.8°C and an average increase in the range of 1.6°C.

Table 1: Projected changes in temperature in Meghalaya district 2021-50

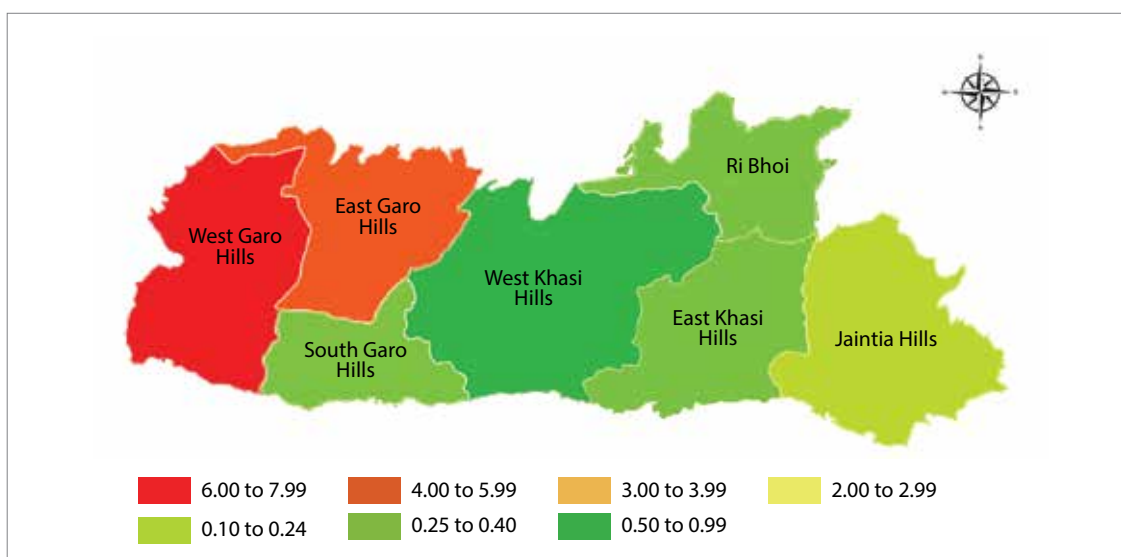
Sl. No.	District	Increase in Temp(0C)
1	West Garo Hills, East Garo Hills, South Garo Hills	1.8-1.9
2	Ri-Bhoi, Jaintia Hills, West Khasi Hills	1.7-1.8
3	East Khasi Hills	1.6-1.7



District-wise projected increase in annual average temperature (°C) for the period 2021-2050 (A1B SRES scenario) compared to baseline (1975), projected by the HadRM3 model. The solid black lines indicate district boundaries.

Projected changes in rainfall

The figure below shows the projected change in total annual rainfall for the southwest monsoon season (June, July, August, and September months abbreviated as or JJAS) in the short-term future A1B scenario.



District-wise projected increase in annual rainfall and JJAS rainfall for the period 2021-2050 (A1B SRES scenario) compared to baseline (1975), projected by the HadRM3 model. The solid black lines show the district boundaries.

It can be seen that:

- ▶ Meghalaya is projected to receive an increase in precipitation in all the districts.
- ▶ The western districts of Meghalaya are predicted to obtain a lesser increase in rainfall, compared to the eastern districts which are predicted to obtain a higher increase in rainfall.

- ▶ There is a high variability of projected rainfall, where western districts such as East and West Garo Hills are projected to obtain an increase in rainfall of only about 3%, while Jaintia Hills in the east are projected to obtain an increase in rainfall of about 18%.

Table 2: District-wise projected change in rainfall

Sl. No.	District	Increase in rainfall (%)
1	Jaintia Hills	15-20%
2	East Khasi Hills, Ri-Bhoi	10-15%
3	West Khasi Hills	5-10%
4	West Garo Hills, East Garo Hills, South Garo Hills	0-5%

District-wise Projection of Extreme Events in Precipitation

The extreme events in precipitation for Meghalaya for the last 100 years were analyzed. The main results are:

- ▶ There is an increase in extreme events (>100 mm of rainfall/day) in almost all the districts of the state.
- ▶ The exception is West Garo Hills, which seems to have experienced a decrease in the number of extreme event days, which is consistent with the observation of a decrease in the amount of rainfall in this district in the past 100 years.
- ▶ There is a gradual increase in the number of extreme events eastward, with Jaintia Hills, East Khasi Hills, and Ribhoi exhibiting an increase in 2 or more days of extreme events in the past 100 years.

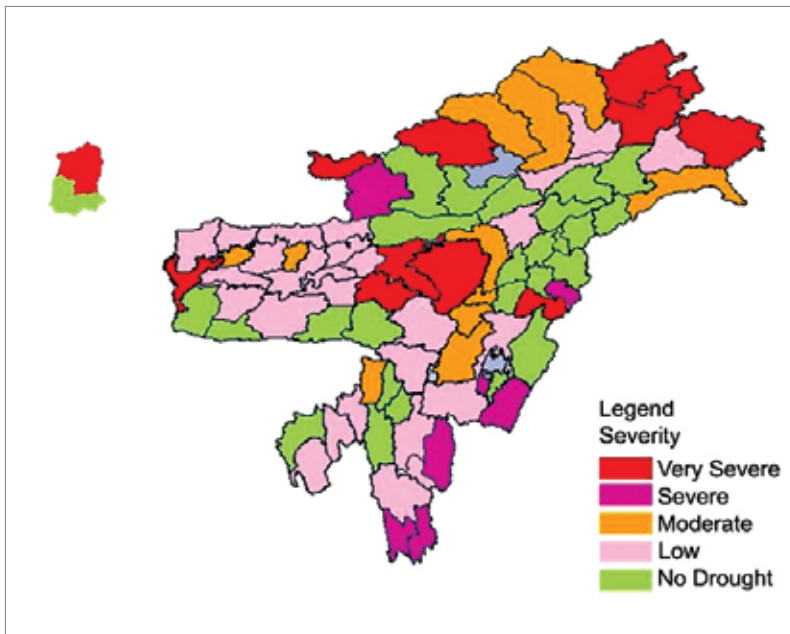
Table 3: District-wise change in the number of days (in a year, on an average) when the rainfall exceeds 100 mm per day for Meghalaya

Sl. No.	District	Annual increase in extreme event days
1	Jaintia Hills, East Khasi Hills, Ribhoi	2.0 and more
2	West Khasi Hills	1.0–2.0
3	South Garo Hills, East Garo Hills	0.0–1.0
4	West Garo Hills	Less than 0.0 (reduction in extreme rainfall events)

** A heavy rainfall day is defined as a day when the rainfall exceeds 100 mm.

Rainfall, Flood and Forest Dependence

Climate models predict 2^o-3.5 °C increase in temperature and a 250-500 mm increase in precipitation in the North Eastern region (*Ravindranath et al., 2006; IPCC Technical paper V*). The predicted increase in the precipitation in the forest areas in the Indian subcontinent is higher than that of the non-forest area (*Ravindranath et al., 2006*). An increase in rainfall may not have a significant impact on the forest areas of North East which are already experiencing high rainfall but a change in temperature regime may cause severe impact and significant changes (*Ravindranath and Sukumar, 1996*).



The most damage in the past few years have been caused due to high variability in rainfall, sometimes causing flash floods and extensive damage to crop, livestock, and human life.

Under the influence of global climate change, even high rainfall areas are facing drought-like situations in the current years and the reverse i.e. flood is frequenting mostly in low rainfall areas. In 2009 (July) most of the NE states were affected by drought-like situations. Manipur, Nagaland, and Meghalaya witnessed severe meteorological drought. Other states have recorded moderate drought.

Rainfall occurring earlier or later has adversely affected the sowing and harvesting of crops, and harvestable grains have been damaged. Moreover, there are reports that natural wetlands are shrinking in many parts of the region. Some ecologists have informed about the appearance of more number of invasive species and changes in their distribution pattern in the region. Some have reported a greater number of diseases and pests in citrus species. One significant impact which many plant scientists agree is the change taking place in the phenological phases of plants (ICIMOD, 2008).

Extreme Weather Events

The key extreme events observed in the state are as follows:

- ▶ Floods, heavy rain, and landslides
- ▶ Heat wave, cold wave, and fog
- ▶ Drought

Projected increase in rainfall and accelerated summer flows may give rise to more intense flooding and flood hazards, but the consequent retreat of glaciers may reduce flows in the long run. It has been observed in the National assessment that the frequency of hot days is on a decline in the state, especially in the plateau areas so also there is a decline in the number of cold days. This indicates a pattern that shows high climatic variability and affects the climate-sensitive plantation crops of the region.

Extreme precipitation events (heavy rain storms, cloud bursts) may have impacts on the fragile geomorphology of the Himalayan part of the Brahmaputra basin causing more widespread landslides and soil erosion. The response of hydrologic systems, erosion processes, and sedimentation in the Himalayan River basins could alter significantly due to climate change. Two extremely intense cloud bursts of unprecedented intensity—one in the western Meghalaya hills and Western Arunachal Pradesh in 2004 produced two devastating flash floods in the Goalpara and Sonitpur districts of Assam bordering Meghalaya and Arunachal respectively causing hundreds of deaths.

Ravindranath et al (2010) indicates that for most parts of Meghalaya, the probability of drought is relatively high. A higher incidence of drought leads to higher exposure to vulnerability to climate change especially for poor people who have less adaptive capacity. A combination of drought and higher temperature will lead to increased evapo-transpiration. This causes extreme moisture stress conditions during the critical crop growth stage and reduces yield.



Climate Sensitive Issues/Disease Prevalent in Meghalaya

Climate-sensitive illnesses are on the increase due to climate change either through direct or indirect impacts. Climate change may negatively affect human health in several ways, but the most commonly experienced are increased frequency and intensity of heat waves, rise in heat-related illnesses and deaths, increased precipitation, floods, and droughts, costing lives directly. High temperature is known to increase the level of 'ground level ozone' and other 'climate-altering pollutants' other than carbon dioxide, which further exacerbates cardio-respiratory and allergic diseases and certain cancers. Besides these, there is an increase in 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.

Following are the major climate-sensitive diseases prevalent in Meghalaya:

- ▶ Vector-Borne Diseases (Malaria, *Japanese encephalitis*, Dengue, Chikungunya)
- ▶ Water-borne and Food-borne diseases (typhoid, dysentery and others caused from micro-organisms)
- ▶ Emerging and reemerging diseases (H1N1 influenza, Covid 19, Scrub typhus)
- ▶ Extreme weather events such as floods

Vector-Borne Diseases

Climate change and other weather parameters have a significant impact on vector-borne diseases and the known parameters are temperature, humidity, wind, rainfall, flood, and drought, affecting the 'distribution of vector' and 'effectiveness of transmission of pathogen' through vectors. The major vector-borne diseases prevalent in Meghalaya are malaria, dengue, JE, and chikungunya. Malaria is more prevalent in rural and semi-urban areas especially in Garo Hills which reported the maximum cases, Ribhoi and Jaintia Hills districts which have become problematic, known for their hilly, forested, and inaccessible regions, and for the indigenous/tribal people that live there. Over the past decade, malaria caused by the dominant species *Plasmodium falciparum* and *Plasmodium vivax* has been high and unstable across the state. In 2020, a Malaria outbreak has been reported in Nartiang and Namdong PHCs, Jaintia Hills district.

Due to the change in climatic conditions, JE cases in the state have also started to increase at an alarming rate and most of the cases are reported from the Jaintia Hills district followed by the Garo Hills district and Khasi Hills districts. The total number of reported cases is indicated in the table below:

Table 3: Yearly trend of Vector-Borne Diseases in Meghalaya, 2019-2022

Year	Malaria		JE		Dengue		Chikungunya	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
2019	2615	4	169	9	82	0	48	0
2020	1881	4	36	1	0	0	0	0
2021	483	3	56	7	129	0	0	0
2022	258	6	68	1	24	0	0	0

Water-borne and Food-borne Diseases

The major diseases prevalent in the state are Acute Diarrhoeal Disease, typhoid, dysentery, and others caused by micro-organisms such as Vibrio cholera, E.Coli, Salmonella, Cryptosporidium, and Yersinia. The increase in temperature is seen to be associated with increased survival and abundance of micro-organisms.

Meghalaya has reported many outbreaks of diseases, especially Acute Diarrhoeal Disease, cholera, etc. In 2022, almost 9 outbreaks of Acute Diarrhoeal Disease (ADD) and 3 outbreaks of typhoid have been reported in the state. Maximum outbreaks are reported from the East Khasi Hills district.

Table 4: Outbreaks of ADD and Typhoid in East Khas Hills districts, Meghalaya

Name of Disease	2020			2021			2022		
	Out break	Cases	Deaths	Out breaks	Cases	Deaths	Out break	Cases	Deaths
ADD	0	0	0	8	6965	0	9	22185	2
Typhoid	0	0	0	0	563	0	3	3601	0

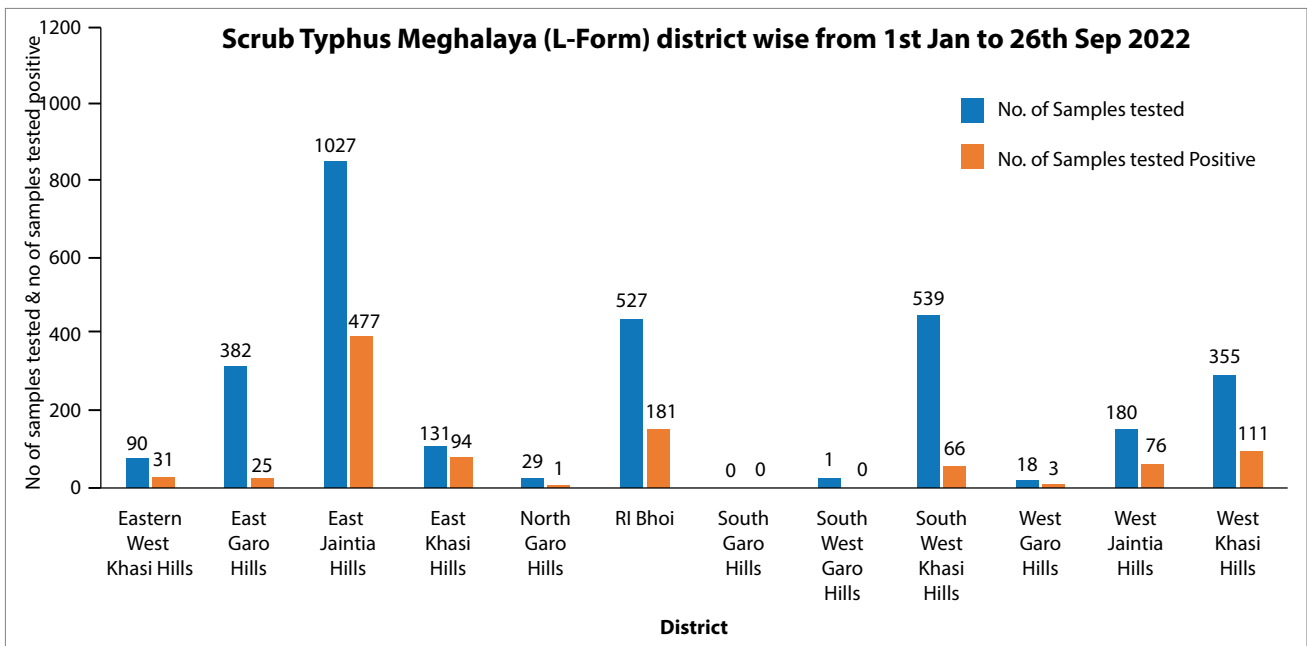
Acute Respiratory Infection/Serve Acute Respiratory Infection (SARI)

Table 5: Details of ARI/ILI cases reported from the Meghalaya

Details	2020	2021	2022
ARI/ILI	0	19397	80919
Serve Acute Respiratory Infection (SARI)	0	685	449
Total Deaths	0	6	1

Other Diseases

Scrub typhus disease is also reported from all districts of Meghalaya and in 2022, maximum cases have been reported from East Jaintia Hills district where an outbreak also has been reported.



Landslide and Floods

India Meteorological Department in Shillong, Meghalaya, reported that the town of Sohra (also known as Cherrapunjee) recorded 811.6 mm of rain in 24 hours to 15 June 2022. This is the 7th highest 24-hour rainfall for Sohra in the June month. The highest ever record is 1,563.0 mm on 16 June 1995.

In 2022, heavy rainfall caused damage, flooding, and landslides in several districts in the state of Meghalaya where 4 people are reported from the same family died when a landslide buried a house in East Khasi Hills District. Also, 3 people were reported dead due to flash floods in Baghmara and 1 person due to a landslide in Siju, South Garo Hills District.

CHAPTER 4

Vision, Goal and Objectives



Vision: Strengthening of healthcare services for all the citizens of the state especially vulnerable populations 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 healthcare 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 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 Meghalaya in coordination with the Ministry of Health & Family Welfare.

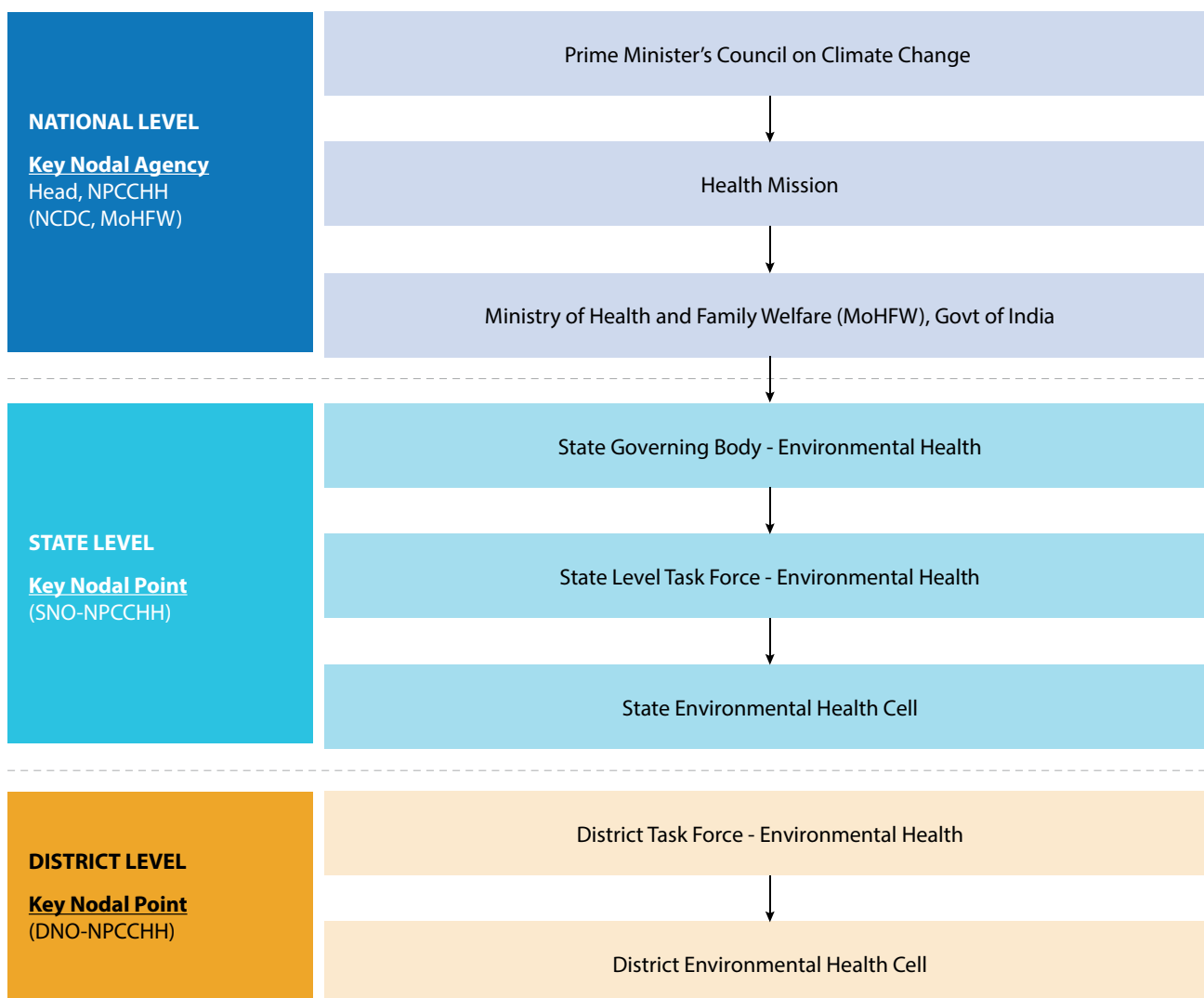
Objective 5: To strengthen state research capacity to fill the evidence gap on climate change impact on human health.



CHAPTER 5

Organisational Structure

ORGANISATIONAL STRUCTURE



PART II

Health Action Plans on Priority Climate Sensitive Health Issues

CHAPTER 6

Health Action Plan on Air Pollution Related Diseases



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

Types of Air Pollution:

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

Prominent causes of Ambient Air Pollution in Meghalaya:

- ▶ Pollution by automobiles (e.g. cars and heavy-duty vehicles)
- ▶ Industrial Emission (e.g. cement, coke, metal, and steel industries)
- ▶ Municipal and agricultural waste sites and waste incineration/burning
- ▶ Residential cooking, heating, and lighting with polluting fuels

Prominent causes of Household Air Pollution in Meghalaya:

- ▶ Use of biomass, kerosene as fuel for cooking, heating, and lighting
- ▶ Burning of waste, cow dung, coal
- ▶ Home products (e.g. floor care products, furniture, and household care fabrics, or when candles and incense are burned)
- ▶ Building materials (e.g. asbestos)
- ▶ Volatile Organic Compounds (VOC's) (e.g. paints, wood preservatives, cleaners, and disinfectants).

Air Quality Index: Air Quality Index is a tool for effective communication of air quality status to people in terms, which are easy to understand. It transforms complex air quality data of various pollutants into a single number (index value), nomenclature and colour.

Air Quality Index (AQI) Category	
Good	0-50
Satisfactory	51-100
Moderately Poor	101-200
Poor	201-300
Very Poor	301-400
Severe	401-500

AQI calculation is as per standard procedures prescribed by Central Pollution Control Board (CPCB), New Delhi.

Health Adaptation Plan

I. Awareness Generation

Under the programme, awareness generation amongst all the relevant stakeholders including the common population, vulnerable communities, healthcare providers, and policymakers around the impacts of air pollution along with the ways to address the same is imperative. Thereby, under the programme, Meghalaya state will conduct the following key activities.

a. IEC Dissemination Plan

The districts are aimed to create awareness through Information, Education and Communication Activities (IEC) through the development of locally and culturally acceptable messages by using communication materials such as posters, audio, and videos, organizing public health events, and issuing advisories related to air pollution.

The content for the IEC for air pollution-related issues will be provided by the State NPCCHH division. The state has already translated posters into the local or regional language (Khasi) and the role of the districts is to utilize these materials and disseminate them at all levels. In accordance with the IEC strategy, the Meghalaya state plans to implement the following IEC dissemination strategy:

Table 7: IEC Dissemination Plan for 5 Years 2022-27

Sl. No.	IEC Content	Priority Districts	Dissemination Plan for 5 years	Timeline	Budget (in lakhs) for 5 years (15% increasing each year)				
					2022-23	2023-24	2024-25	2025-26	2026-27
1	Posters	All 11 Districts	2 Posters for Healthcare facilities in all districts	October	1.22	1.40	1.61	1.85	2.11
2	Audio		Social Media (Facebook, Instagram, Twitter etc.)	October-November					
3	Videos								
4	GIF's								
5	Public Health Advisories		1 in all the Healthcare facilities	November-December					

*No separate IEC budget for specific area like Air pollution, Heat or VBD.

b. Public Health Advisories

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

c. Observation of Special Days

Special Day	Date	Key planned activities	Budget
Celebration of World Environment Day in collaboration with Green tech Foundation (NGO) Meghalaya.	5th of June	Awareness Programme on effect of Climate Change and Human Health. <ul style="list-style-type: none"> Tree plantation Sports events: Football 	

II. Capacity Building

To strengthen the capacity of the healthcare system to adapt/address illnesses/diseases due to the impacts of air pollution, the training plan of the state is as follows:

a. Training on air pollution and various health impacts of air pollution

Table 8: NPCCHH Training Plan at the District Level

Training Programme	Trainer	Participants	Training Content
Medical Officers (3 Days)	DNO	MO (DH, CHC, PHC)	Air pollution related illness
Community Health Care Workers (HWC) (2 Days)	MO	Community Health Workers (MPHW, ASHA)	
Block level (1 Day)	MO, MLHP	Headman, School, College communities.	
Traffic Police & Municipal worker (1 Day)	SNO, Consultant, Climate Change, DNO, MO	Traffic Police & Municipal Worker in Urban Areas	

Table 9: Schedule Plan for Training for 5 Years 2022-27

Sl. No.	Training Programme	Timeline	Target	Priority Districts	Budget (in lakhs) for 5 years 15 % increasing each year				
					2022-23	2023-24	2024-25	2025-26	2026-27
1	DNO	August	100%	All districts	4.0	4.6	5.29	6.08	6.99
2	MO	September-October	100%						
3	Community Health Workers	October-November	100%						
4	Panchayati Raj Institutions	November	100%						

*No separate IEC budget for specific area like Air pollution, Heat or VBD.

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

III. Surveillance

The objective of ARI surveillance is to identify the trend of air pollution-related illness in the context of outdoor air quality for an area and share the reported findings with all the relevant authorities including public health authorities to minimise the impact of air pollution by undertaking the timely intervention.

The state team implements has initiated ARI surveillance by the conduct of following activities:

1. ARI Surveillance Activity at the District and State Level
2. Health Management Information System
3. Mortality and Morbidity Data Related to ARI.
4. Data analysis of different non-communicable and communicable diseases reported to the Department of Health and Family Welfare.

Table 10: Two healthcare facilities have been identified as sentinel hospitals for the surveillance for ARI

Name of the District	Sentinel Hospital for ARI	Public or Private	Type of Hospital (Medical College, District Hosp, Rural Hosp, Pediatric Hosp, Respiratory Disease Hospital)	Name of Nodal Officer of Hospital	Details of Nodal Officer of Hospital (Mobile No. & Email ID)
Shillong	Civil Hospital	Public	District Hospital	Dr. Pura Pakma Chest Specialist	scivilhospital@gmail.com
Nongpoh	Civil Hospital	Public		Dr. Subir Hussain Medical Officer	7005362081 civilhospitalnongpoh@gmail.com

Roles and Responsibilities

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

	Responsibilities
SNO	<ul style="list-style-type: none"> • Finalization of IEC material and dissemination plan • Organize IEC campaigns at the state level on the observance of important environment-health days • Organize training sessions for district-level and surveillance nodal officer • Facilitate training of medical officers in clinical aspects of air pollution's health impact • Real-time air quality data dashboard in proposed cities • Monitor AQI levels in states especially in hotspots and NCAP cities • Ensure reporting from sentinel hospitals and DNO • Ensure necessary health facility preparedness • Review surveillance reporting and monthly report submission by DNO

	Responsibilities
	<ul style="list-style-type: none"> • Submit a report of activities • Review implementation of IEC and surveillance activities at all levels • Evaluate and update relevant sections of SAPCCHH with support from the State Task Force • Liaison with State Pollution Control Board for AQI alerts and its dissemination • Liaison with the Department of Environment for combined IEC campaigns and information sharing on health indicators for targeted air pollution reduction activities • Awareness and action plan input sharing with the local bodies of cities with high AQI • Create organization support and strengthen the Environmental Health cell to implement NPCCHH vision, goal, and objectives • Organize sensitization workshops for other stakeholders and line departments • Organize seminars on Air Pollution and conferences to share knowledge and action under NPCCHH. • Collaborate with academic institute/s for support in updating SAPCCHH • Surveillance activity monitoring, vulnerability assessment, and applied research • Advocate for a reduction in source of air pollution
DNO	<ul style="list-style-type: none"> • Ensure IEC dissemination to the community level • Facilitate community-level IEC activities • Organize training for Block Health Officers, Medical Officers, and Sentinel hospital nodal officers with relevant training manuals • Organize training of vulnerable groups: police officers, outdoor workers, women, children • Organize IEC campaigns at the district level on the observance of important environment-health days • Collect and monitor AQI levels in states, especially in hotspots and NCAP cities • Ensure daily reporting from Sentinel hospitals and compile the data • Analyse daily health data with AQI level to monitor trends and hotspots in health impacts • Submit analyzed monthly report to SNO, NPCCHH Headquarter, and other departments for necessary action • Submit a report of activities • Update DAPCCHH with support from the District Task Force • Advocate for the reduction in source of air pollution
Surveillance Hospital Nodal Officer	<ul style="list-style-type: none"> • Train hospital staff and clinicians responsible for daily reporting in case indentation and reporting flow • Compile daily reports for the health facility and submit it to DNO and NPCCHH Headquarters
Block Health Officer	<ul style="list-style-type: none"> • Conduct community-level IEC activities • Ensure training of medical officers • Organize PRI sensitization workshops and training for vulnerable groups
Medical Officer	<ul style="list-style-type: none"> • Conduct health facility-based IEC activities • Support community-level IEC activities • Be aware of AQI levels and the health impact of air pollution • Ensure necessary health facility preparedness in early diagnosis and management of cases
Panchayati Raj Institutions	<ul style="list-style-type: none"> • Conduct community-level IEC activities

CHAPTER 7

Health Action Plan on Heat Related Illnesses



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

Based on Departure from Normal

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

Based on Actual Maximum Temperature (for plains only)

- ▶ *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- ▶ *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

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

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

Different type of heat-related illness includes:

1. Minor heat related illnesses: Heat rash, heat cramps, heat syncope
2. Major heat related illnesses: Heat exhaustion and heat stroke

Table 11: Types of heat-related illnesses

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

Table: 12: Roles and Responsibilities of the Health Department

Department	Season	Roles and Responsibilities
Health department	During Pre-Heat Season (Annually from January through March)	<ul style="list-style-type: none"> • Create a list of high-risk areas (heat-wise)of districts/blocks/cities • Update surveillance protocols and programs, including tracking daily heat- related data • Develop/revise and translate IEC in the local language • Make a communication plan for the dissemination of heat-related alerts or education materials • Check inventories of medical supplies in health centers • Identify cooling centers and barriers to accessing cooling centers • Capacity building of healthcare personnel to detect and treat heat-related illnesses • Community involvement for workers and trainers’ education • Issue health advisory to healthcare personnel based on IMD seasonal prediction or warning • Reassess ‘Occupational Health Standards’ for various types of Occupation. • Ensure Inter-sectoral convergence and coordination for improving the architecture, design, energy-efficient cooling, and heating facility, and increase in plantation i.e. Climate Resilient Green Building Design.
	During Heat Season (Annually from March through July)	<ul style="list-style-type: none"> • Ensure real-time surveillance and monitoring system in case of extreme events. • Prepare rapid response team • Distribute “Dos and Don’ts” to the community • Effectively send a “Don’t Panic!” message to the community • Ensure access to Medical Mobile Van in the Red Zone • Ensure additional medical vans are available • Ensure strict implementation of legislative/regulatory actions as per Occupational Health Standards. • Coordination with the meteorological department for analyzing cases and death data with meteorological variables like maximum temperature and relative humidity
	During Post-Heat Season (Annually from July through September)	<ul style="list-style-type: none"> • Participate in the annual evaluation of heat action plan • Review the revised heat action plan
Medical College and Hospitals	During Pre-Heat Season (Annually from January through March)	<ul style="list-style-type: none"> • Adopt heat-focused examination materials • Get additional hospitals and ambulances ready • Update surveillance protocols and programs, including tracking daily heat- related data • Establish more clinician education • Continue to train medical officers and paramedics
	During Heat Season (Annually from March through July)	<ul style="list-style-type: none"> • Adopt heat-illness related treatment and prevention protocols • Equip hospitals with additional materials • Deploy all medical staff to be on duty • Keep the emergency ward ready • Keep stock of small reusable ice packs to apply to PULSE areas • Report heat stroke patients to DSU daily • Expedite recording of cause of death due to heat-related illnesses

Department	Season	Roles and Responsibilities
	During Post-Heat Season (Annually from July through September)	<ul style="list-style-type: none"> Participate in annual evaluation of heat action plan Review the revised heat action plan
For health centres and link workers	During Pre-Heat Season (Annually from January through March)	<ul style="list-style-type: none"> Distribute pamphlets and other materials to the community Sensitize link workers and community leaders Develop and execute a school health program Dissemination of materials in slum communities Coordinate outreach efforts with other community groups, non-profits, and higher education
	During Heat Season (Annually from March through July)	<ul style="list-style-type: none"> Recheck management stock Modify worker hours to avoid the heat of the day Visit at-risk populations for monitoring and prevention Communicate information on tertiary care and 108 service
	During Post-Heat Season (Annually from July through September)	<ul style="list-style-type: none"> Participate in the annual evaluation of heat action plan Review the revised heat action plan

Table 13: Other department's roles and responsibilities

Department	Season	Roles and Responsibilities
Meteorological Department	Pre-Heat	Issue weather forecasts on Short/Medium/Long range duration
	Heat	<ul style="list-style-type: none"> Issue Heatwave alerts Coordination with the health department for analyzing cases and death data with meteorological variables like maximum temperature and relative humidity
	Post-Heat	<ul style="list-style-type: none"> Participate in the annual evaluation of heat action plan Review the revised heat action plan
Dept of Drinking Water & Sanitation	Pre-Heat	<ul style="list-style-type: none"> Identify vulnerable places
	Heat	<ul style="list-style-type: none"> Provide drinking water points at identified places and Worksites
	Post-Heat	<ul style="list-style-type: none"> Participate in the annual evaluation of the heat action plan Review the revised heat action plan
Public Health & Engineering Dept	Pre-Heat	<ul style="list-style-type: none"> To construct cool shelters/sheds in public places, bus stands etc
	Heat	<ul style="list-style-type: none"> To maintain shelters/sheds, bus stands
	Post-Heat	<ul style="list-style-type: none"> Participate in the annual evaluation of heat action plan Review the revised heat action plan
Municipalities	Pre-Heat	Review the heat preparation measures.
	Heat	Ensure implementation of guidelines of the heat action plan
	Post-Heat	Review the heat preparation measures and make a note of the lessons learned for the next season

Department	Season	Roles and Responsibilities
Dept of Education	Pre-Heat	Train and Sensitise teachers and students towards the health impact of extreme events and disseminate health ministry- approved prevention and first-aid measures
	Heat	<ul style="list-style-type: none"> Rescheduling school timing during summer During extreme events keep a check on outdoor activities Close teaching institutes incase of issue of alert from Government
	Post-Heat	<ul style="list-style-type: none"> Participate in the annual evaluation of heat action plan a. Review the revised heat action plan
Department of Labour & Employment	Pre-Heat	<ul style="list-style-type: none"> Reassess 'Occupational Health Standards' for various types of Occupation. Utilize maps of construction sites to identify more high-risk outdoor workers Heat illness orientation for factory medical officers and general practitioners Communicate directly about heat season with non-factory workers
	Heat	<ul style="list-style-type: none"> Encourage employers to shift out door workers' schedules away from peak afternoon hours (1pm-5pm) during a heat alert or consider extended afternoon breaks or alternate working hours for workers. Provide water at work sites
	Post-Heat	<ul style="list-style-type: none"> Participate in the annual evaluation of heat action plan Review the revised heat action plan
Dept of Power supply	Pre-Heat	Maintenance of electrical lines
	Heat	Ensure uninterrupted supply of electricity
	Post-Heat	<ul style="list-style-type: none"> Participate in the annual evaluation of heat action plan Review the revised heat action plan
Dept of Forest & Climate Change	Pre-Heat	<ul style="list-style-type: none"> Develop/encourage projects to decrease the 'Urban Heat Island effect'
	Heat	<ul style="list-style-type: none"> Ensure implementation of guidelines of the heat action plan
	Post-Heat	<ul style="list-style-type: none"> Review the heat preparation measures and make a note of the lessons learned for the next season
Dept of Transport	Pre-Heat	<ul style="list-style-type: none"> Review the road map for preparation for the heat season
	Heat	<ul style="list-style-type: none"> Ensure implementation of guidelines of the heat action plan
	Post-Heat	<ul style="list-style-type: none"> Participate in the annual evaluation of heat action plan Review the revised heat action plan
Media or Press officer	Pre-Heat	<ul style="list-style-type: none"> Secure commercial airtime slots for public service announcements Identify areas to post warnings and information during the heat season Activate telephone heat hotline Begin placing temperature forecasts in newspapers Increase installed LED screens with scrolling Temperature
	Heat	<ul style="list-style-type: none"> Issue heat warnings in heat and electronic media Contact local FM radio and TV stations for announcements Use SMS, text, and WhatsApp mobile messaging and centralized mobile databases to send warnings
	Post-Heat	<ul style="list-style-type: none"> Evaluate the reach of advertising to target groups and other means of communication suchas social media

Health Adaptation Plan on Heat-Related Illness

i. Awareness Generation

Under the programme, awareness generation among all the relevant stakeholders including the common population, vulnerable communities, healthcare providers, and policymakers around the impacts of heat-related illnesses along with the ways to address the same is imperative. Thereby, under the programme, Meghalaya state will conduct the following key activities.

a. IEC Campaign

The Districts are aimed to create awareness through Information Education and Communication Activities (IEC) through the development of locally and culturally more acceptable messages in posters, audio, videos, organising public health events, and issuing advisories related to increasing heat.

The content for the IEC for the heat-related issues will be provided by the State 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 at all levels.

IEC dissemination plan

Sl. No.	IEC Content	Priority Districts	Dissemination Plan	Timeline	Budget (in lakhs) for 5 years with a 15% increase each year				
					2022-23	2023-24	2024-25	2025-26	2026-27
1.	Posters	All districts	1 Poster for Healthcare facilities in all districts	March-May	1.22	1.40	1.61	1.85	2.11
2.	Audio		Social Media (Facebook, Instagram etc.)						
3.	Videos								
4.	GIF's								
5.	Public Health Advisories		1 Health advisories to all the healthcare facilities						

*No separate IEC budget for specific area like Air pollution, Heat or VBD.

ii. Capacity Building

To strengthen the capacity of the healthcare system to adapt/address illnesses/diseases due to the impacts of heat.

Table 14: NPCCHH Training Plan At District Level

Training Programme	Trainer	Participants	Training Content
Medical Officers (1 Day)	DNO	MO (DH, CHC, PHC)	Heat-related illness
Community Health Care Workers (HWC) (1 Day)	MO	Community Health Workers (MPHW, ASHA)	
Block Development Office (1 Day)	MO, MLHP, SW	MTS, Field Health Staff & Communities	

Table 15: Schedule Plan for Training for 5 Years 2022-27

Sl. No.	Training programme	Timeline	Target	Priority Districts	Budget (in lakhs) for 5 years 15% increasing each year				
					2022-23	2023-24	2024-25	2025-26	2026-27
1.	DNO	February	100%	All districts	4.0	4.6	5.29	6.08	6.99
2.	MO	March	100%						
3.	Community Health Workers	April	100%						
4.	Panchayati Raj Institutions	April-May	100%						

*No separate IEC budget for specific area like Air pollution, Heat or VBD

Table 16: Activities undertaken and further proposed to generate awareness, accessing weather data and capacity building related to heat related illness

Sl. No.	Activities to generate awareness, accessing weather data and capacity building		Activities done (yes/no)	Details
1.	Increasing public awareness of heat vulnerability	Assess and prioritize heat-vulnerable communities		
		Disseminated more information on the health effects of heat		Distribute informational pamphlets launch a "heat line" call centre develop heat health early action response strategies involve link workers in heat health campaigns
		Disseminate public service announcements and health warnings Form partnerships and heat health preparedness networks		
2.	Improving access to weather data and he at warning	Increase communication channels between the Met Center, Municipal corporation and the health department. Work with MC and state government to install displays for temperature and weather forecasts. Revise the current heat wave advisory thresholds		
3.	Building capacity in the health care infrastructure	Conduct heat vulnerability Reduction Trainings to increase Awareness and diagnosis of heat illnesses		Provide a train-the-trainers' session for Primary medical officers Create a training program or multiday workshop for health care providers, ward leaders and paramedics Conduct training programs for link workers Increase heat stress outreach and education for women in maternity wards Create and implement heat health guidelines
				Adopt heat-focused examination procedures at local hospitals and Urban Health Centers

Roles and Responsibilities

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

Particulars	Responsibilities
SNO	<ul style="list-style-type: none"> • Disseminate early warnings to the district level • Finalization of IEC material and dissemination plan • Liaison with IMD for weather alerts and its dissemination • Liaison with other departments for combined IEC campaigns, coordinated response and information sharing of health indicators for targeted action • Organize the IEC campaigns at the state level on observance of important environment-health days • Organize training sessions for the district level and the surveillance nodal officers • Facilitate training of medical officers in clinical aspects of the heat- health impact • Ensure daily surveillance reporting from the district level • Ensure submission and analysis of heat-related death at the state and district level • Monitor daily health data with temperature and humidity levels to monitor trends and hotspots in the state • Review health facility preparedness and ambulance services to manage HRI • Identify health facilities at different levels that can have heat illness wards with necessary treatment/cooling facilities • Keep existing Rapid Response Teams under IDSP prepared to manage HRI if needed for an emergency response to extreme heat • Review implementation of the IEC and surveillance activities at all levels • Evaluate and update relevant section of SAPCCHH with support from State Task Force • Create organizational support and strengthen Environmental Health cell to implement NPCCHH vision, goal, and objectives • Organize sensitization workshops for other stakeholders and line departments • Organize seminars and conferences to share knowledge and action under NPCCHH. • Collaborate with academic institute/s for support in updating SAPCCHH, Surveillance activity monitoring, training of health care professionals, vulnerability assessment, and applied research • Submit a report of activities on heat-health under NPCCHH • Advocate for the reduction in source of greenhouse gas emissions
DNO	<ul style="list-style-type: none"> • Disseminate early warning to block and health facility level • Ensure IEC dissemination to the community level and facilitate community-level IEC activities • Liaison with IMD to receive daily observed temperature and relative humidity information • Liaison with other departments for combined IEC campaigns, coordinated response and information sharing of health indicators for targeted action • Conduct training for block health officers, and medical officers with relevant training manuals • Conduct sensitization of vulnerable groups: police officers, outdoor workers, women, children, etc • Organize IEC campaigns at the district level on the observance of important environment-health days • Ensure daily reporting from health facilities and compile the data • Analyze daily health data with temperature and humidity levels to monitor trends and hotspots in the district

Particulars	Responsibilities
	<ul style="list-style-type: none"> • Support timely suspected heatstroke death analysis and its reporting • Submit analyzed weekly report to SNO, NPCCHH, Hq, and other departments for necessary action • Coordinate with other agencies for response • Update DAPCCHH with support from District Task Force • Submit a report of activities on heat-health under NPCCHH • Advocate for the reduction in source of greenhouse gas emissions
Block health officer	<ul style="list-style-type: none"> • Conduct community-level IEC activities • Ensure training of medical officers • Organize PRI sensitization workshops and training for vulnerable groups • Implement heat mitigation efforts
City health department	<ul style="list-style-type: none"> • Support in the development and implementation of the city-specific heat-health action plan
Medical officer	<ul style="list-style-type: none"> • Conduct health facility-based IEC activities • Support community-level IEC activities • Ensure necessary health facility preparedness in early diagnosis and management of cases
Panchayati Raj Institutions	Conduct community-level IEC activities

Health Action Plan on Extreme Weather Event-Related Health Issues



The state has recorded an increase in morbidity and mortality due to the effect of extreme weather conditions, frequent and severe episodes of heavy rainfall, increasing heat, floods, droughts, and fires as a direct impact of climate variability and affecting the population at large.

Climate change can result in more hot days and cold days resulting in more periods of 'drought', 'dust storms', or 'heavy rains (precipitation)', and even 'flooding' and 'landslides. Owing to this, the health of the population gets directly affected due to injuries, hypothermia, hyperthermia, drowning, and indirectly through population dislocation, crowding, poor living conditions, faeco-oral transmission of gastrointestinal pathogens causing water and food borne illnesses, respiratory illness and other infectious diseases (e.g. vector-borne disease, cholera and also mental illnesses). The reason primarily is due to contamination of water and sewage disposal.

The State Disaster Management Authority (SDMA) in Meghalaya is the nodal institution for disaster prevention, mitigation, preparedness, and management of disaster impacts as a result of climate change. The SDMA and the GSI have come together to develop a regional-level early warning system for excessive rainfall resulting in landslides.

As Meghalaya is a hilly state, according to the State Disaster Management Plan under Multi- Hazard Risk Vulnerability Assessment Study (MHRVA), the following hazards are considered to be common in the state:

1. Earthquake
2. Landslide
3. Floods
4. Cyclonic wind
5. Coal Mining
6. Fires
7. Drought
8. Hailstorm, thundering, and lightening

Health Adaptation Plan for Disaster Management

I. Awareness Generation

Under the programme, awareness generation amongst all the relevant stakeholders including the common population, vulnerable communities, healthcare providers, and policymakers around the impacts of disaster events. Thereby, under the programme, Meghalaya state will conduct the following key activities-

A. IEC Campaign

- Under the programme, awareness generation amongst all the relevant stakeholders including the common population, vulnerable communities, healthcare providers, and policymakers around the impacts of disaster events.
- The districts are aimed to create awareness through Information, Education, and Communication Activities (IEC) through the development of locally and culturally more acceptable messages in posters, audio, videos, organising public health events, and issuing advisories related to disaster management. The content for the IEC for disaster management will be provided by the State NPCCHH division. The role of the districts is to utilize these materials, translate the required material, and disseminate them at all levels.
- Sensitization of the health professionals/communities on emerging climate-sensitive health impacts and diseases.

Observance of important environment-health days

Day	Activities on Heat-Health
International Day for Disaster Risk Reduction	<p>IEC Campaigns</p> <ul style="list-style-type: none"> Audio-video spots broadcasting Targeted awareness sessions for women, children, occupational groups, etc. Mock drill, disaster response exercise Sports events Competition: poster, poem/essay, quiz <p>Health facility-level activities</p> <ul style="list-style-type: none"> Health facility-based patient awareness sessions Conduct an assessment of disaster vulnerability/energy/water conservation measures Review of implementation of climate-resilient measures

B. Capacity Building

To strengthen the capacity of the healthcare system for disaster management

Training on disaster management is as follows:

Table 17: NPCCHH Training Plan at District Level

Training Programme	Trainer	Participants	Training Content
Medical Officers (3 Days)	DNO	MO (DH, CHC, PHC)	Extreme weather events and Disaster Management
Community Health Care Workers (HWC) (2 Days)	MO	Community Health Workers (MPHW, ASHA)	
Blocks (1 Day)	MO, MLHP	Village headman & communities	

Sensitization/knowledge building workshops will be planned for seeking updates on disaster management between district officials, medical officers and academic institutions working on climate change impact.

Roles and Responsibilities

Particulars	Responsibilities
SNO	<ul style="list-style-type: none"> • Disseminate early warnings to the district level • Finalization of IEC material and dissemination Plan • Formalize intersectoral coordination for disaster planning, management, and response with SDMA/IMD and other response departments • Organize training of district-level officers • Facilitate assessment and implementation of climate-resilient measures in health facilities • Review implementation of IEC, training, and surveillance activities at all levels • Evaluate and update relevant sections of SAPCCHH with support from State Task Force • Create organizational support and strengthen the Environmental Health cell to implement NPCCHH vision, goal, and objectives • Organize sensitization workshops for other stakeholders and line departments • Collaborate with academic institute/s for support in updating SAPCCHH, surveillance activity monitoring, training of health care professionals, vulnerability assessment, and applied research • Submit reports of activities on EWE and health under NPCCHH
DNO	<ul style="list-style-type: none"> • Disseminate early warning to block and health facility level • Ensure IEC dissemination to the community level and facilitate community-level IEC activities • Organize training for block health officers and MO • Formalize intersectoral coordination for disaster planning, management, and response with SDMA/IMD and other response departments • Liaison with other departments for combined IEC campaigns, coordinated response and information sharing of health indicators for targeted action • Identification and communication of evacuation routes & relief camps • Support planning and management of health care services in relief camps • Provide necessary IEC on health and sanitation in relief camps training for block health officers, and medical officers with relevant training manuals • Conduct sensitization of vulnerable groups: police officers, outdoor workers, women, children, etc • Organize IEC campaigns at the district level on the observance of important environment-health days • Facilitate disaster vulnerability assessments in health facilities and maintain records of such assessments and health facility damage due to EWE • Update DAPCCHH with support from District Task Force • Submit reports of activities on EWE and health under NPCCHH
Block Health Officer	<ul style="list-style-type: none"> • Conduct community-level IEC activities • Ensure training of medical officers • Organize PRI sensitization workshops and training for vulnerable groups • Facilitate disaster vulnerability assessments in health facilities and maintain records of such assessments and health facility damage due to EWE

Particulars	Responsibilities
Medical Officer	<ul style="list-style-type: none"> • Conduct health facility-based IEC activities • Support community-level IEC activities • Preparation of Disaster Management Plans and hospital safety plan • Assessment of health facilities in the context of climate change- extreme weather events • Identifying structural changes/retrofitting measures at the facility level to equip the healthcare facility • Ensuring routine monitoring and maintenance of support functions (Water quality, waste management) • Health facility preparedness for seasonal events
Panchayati Raj Institutions	<ul style="list-style-type: none"> • Conduct community-level IEC activities • Community involvement in planning and demonstration of measures taken before-during-after an EWE

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



The threat of a rapidly changing planet coupled with social, environmental, and climatic changes poses new conceptual and practical challenges in responding to vector-borne diseases. These include non-linear and uncertain spatial-temporal change dynamics associated with climate, animals, land, water, food, settlement, conflict, ecology, and human socio-cultural, economic, and political-institutional systems. To date, research efforts have been dominated by disease modelling, which has provided limited practical advice to policymakers and practitioners in developing policies and programmes on the ground. Diseases transmitted to humans by vectors (mosquitoes, flies, ticks, mites, etc.) remain significant public health problems, especially in India. The geographic distribution of VBDs is influenced by a complex dynamic of environmental and social factors and their changing impact on the transmission and burden of VBDs through effects on their vectors, intermediate hosts, and reservoirs.

Climate change creates new risks, particularly in non-endemic areas, for human exposure to vector-borne diseases (VBDs) i.e., diseases that are transmitted to humans through the bites of insects (referred to as vectors) that carry the disease-causing pathogens. Climate change creates new uncertainties about the spread of VBDs such as the Zika virus, dengue fever, malaria, JE, Scrub typhus, KFD, and CCHF diseases by altering conditions that affect the development and dynamics of the disease vectors and the pathogens they carry.

According to the WHO, there are three key components that determine the occurrence of VBDs:

- ▶ Vector and host abundance
- ▶ Local prevalence of disease-causing parasites and pathogens
- ▶ Human population behavior and disease resilience

Climate change affects these three key components through changes in temperature, precipitation, humidity, and other factors that influence the reproduction, development, behavior, and population dynamics of insects, pathogens, and people. Insect vectors have several physical traits that help them take advantage of climate impacts like flooding, increased precipitation, and warmer weather.

Body Temperature: Insects cannot regulate their body temperature and are dependent on external warmth to survive. Rising temperatures may cause vector range patterns to shift, increasing the risk to new populations.

Breeding: Humidity and water is crucial for vector breeding, so more insects can hatch in areas with standing water and high precipitation.

Pathogen Incubation: The incubation period of pathogens within vectors is also temperature-dependent, and becomes shorter in warmer conditions.

Presently, VBDs are dealt with simple methods of diagnosis and treatment with the reporting of cases at the passive agencies. However, little effort has been made to study the impact of climate and environmental changes which has a direct influence on the occurrence and propagation of vector species and pathogens. Broadly, it is evident that rainfall, temperature, and humidity has a direct impact on the population build-up of vectors in a given area. However, ongoing environmental changes in the demographic profile play a vital role in shifting the mother foci to other areas, thereby, in the transmission of VBDs.

Causes of different vector-borne diseases in the state:

1. Temperature which affects the biting, survival, and reproductive rates of the vectors, and the survival and development rates of the pathogens that they carry
2. Climate-sensitive health risks, such as heat stress, or exposure to storms and floods, the influence of meteorological factors

Adaptation strategy and action plan for vector-borne diseases

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

Health Adaptation Plan for Vector-Borne Diseases

I. Awareness Generation

To increase the general awareness amongst all the relevant stakeholders including people especially vulnerable communities, healthcare providers, and policy makers regarding the impacts of vector-borne disease and the 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 more acceptable messages in posters, audio, videos, organizing public health events, and issuing advisories related to vector-borne disease.

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

Table 18: Indicating facilities in Meghalaya for IEC dissemination

Sl. No.	Districts	Number of DH	Number of CHC	Number of PHC	Number of St. Dispy	Number of UPHC	Total
1	East Garo Hill	1	1	8	1	0	11
2	East Jaintia Hills	0	2	6	0	0	8
3	East Khasi Hills	2	7	26	5	13	53
4	Eastern West Khasi Hills	1	1	11	0	0	13
5	North Garo Hills	0	1	11	0	0	12
6	Ri Bhoi	1	3	8	2	0	14
7	South Garo Hills	1	1	6	1	0	9
8	South West Garo Hills	1	1	9	0	0	11
9	South West Khasi Hills	0	2	4	0	0	6
10	West Garo Hills	2	6	9	3	3	23
11	West Jaintia Hills	1	3	12	1	2	19
12	West Khasi Hills	1	1	5	0	1	8
	Total	11	29	115	13	19	

Table 19: IEC dissemination Plan

IEC type	Material	Timeline	Mechanism
Posters & Wall painting Hoardings	Posters on VBD and Climate Change (Translate in Khasi language)	After extreme weather events i.e. floods, cyclone and other natural disaster i.e. earthquake/Tsunami	In collaboration with NVBDCP
Digital display	Available GIF video messages		<ul style="list-style-type: none"> In schools and selected colleges. To be planned with Municipalities and Districts, display in health facilities. Display in health facilities Public digital display boards in major cities
Social media	All above material + relevant activity updates		Facebook and Twitter handle of State NPCCHH, NHM WhatsApp groups (State, DNO and Health facility group)

II. Capacity Building

To strengthen the capacity of the healthcare system to adapt/address illnesses/diseases due to the impacts of vector-borne disease.

Table 20: NPCCHH Training Plan at District Level

Training Programme	Trainer	Participants	Training Content
Medical Officers (3 Days)	DNO	MO (DH, CHC, PHC)	Vector-borne related illness
Community Health Care Workers (HWC) (2 Days)	MO	Community Health Workers (MPHW, ASHA)	
Block Development Office (1 Day)	MO, MLHP, SW	MTS, Field Health Staff & Communities	

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

EWARS

The Early Warning and Response System (EWARS) is a toolkit that provides countries with early-warning systems for efficient and cost-effective local responses. It uses outbreak and alarm indicators to derive prediction models that can be used prospectively to predict a forthcoming dengue outbreak at the district level. In collaboration with WHO TDR, WHO WR, IMD, NVBDCP, and NCDC, EWARS is piloted in selected states across the country. Several meetings were organized with the stakeholders and in consultations with the states for rolling out the EWARS application tool. One of the states for implementation of EWARS is Meghalaya. High, moderate, and low-endemicity districts have been identified in the state with respect to historical data of dengue cases. IMD has assured that the historical data of climate variables for the selected districts will be provided to integrate the variable into the EWARS format. (IMD).

Table 21: Identified high, moderate, and low endemic districts for Dengue for EWARS application tool

State	High Endemicity	Moderate Endemicity	Low Endemicity
Meghalaya	South Garo Hills District	East Garo Hills District	Ri-Bhoi District

Roles and Responsibilities

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

Sl. No.	Department	Season	Roles and responsibilities
1	NVBDCP, Meghalaya	Overall guidance and policy formulation	To guide the state governments in the resurgence and containment of any VBD.
2	ICMR-NIMR and other related institutes	To provide technical expertise to find out solutions to any outstanding research question related to epidemiology and control of VBDs.	ICMR-NIMR to work in close collaboration with NVBDCP/vulnerable state in the analysis of the relationship between climatic parameters and a particular VBD. To help in the identification of micro foci of transmission.
3	State Nodal Officer, Climate Change	To supervise the state govt. in control of VBDs, particularly in climate- sensitive states.	To supervise the action taken in consultation with SPO.

Sl. No.	Department	Season	Roles and responsibilities
4	India Meteorological Department	To provide meteorological data as and when required	To help the state govt. in collaboration with any research institute, in the analysis of the relationship between climatic factors and a particular VBD so as to forewarn the impending outbreaks.
5	NGO at the state and district level for reach to the community	Health education at the community level	To conduct workshops for IEC activities for different levels of staff in the identified areas in consultation with the state govt.
6	State Programme Officer	Overall planning and execution of surveillance and intervention measures to control VBDs.	To supervise and guide the DMOs in control of VBDs
7	State Entomologist	To provide guidance in vector control.	To generate data on fortnightly fluctuations in the density of vector species so as to guide the state government in choosing the appropriate time of IRS activities. To generate data on the susceptibility status of disease vectors for using appropriate insecticide for IRS/larvicide for vector control
8	District Malaria Officer/Disease Surveillance officer all districts	Execution of task assigned by the SPO	To supervise and guide surveillance and intervention measures for control of VBDs in the district.
9	Media	To be vigilant for reports of any upsurge/outbreak of any VBD.	To impart health education to the masses through print and audio-visual means.

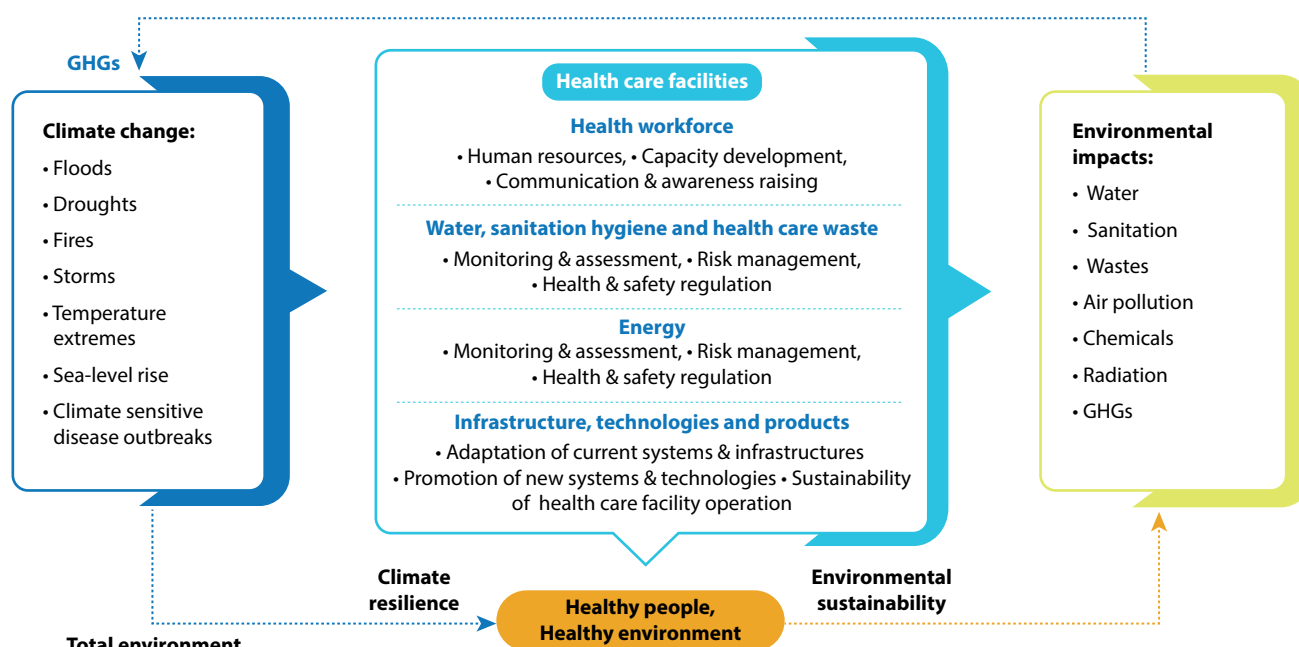
Action Plan for Green and Climate Resilient Health Care Facilities



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

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

Framework for building climate-resilient and environmentally sustainable HCF



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

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

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

- a. Energy Auditing
- b. Installation of LED lighting at Health Care Facilities
- 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-uses within the building, estimates how much energy is used in each department, and determines the amount of energy used in relation to the desired values.

The guiding principles in this respect include:

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

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 per cent of water while heating ventilation and air conditioning (HVAC) consumes 23 per cent of water, thus, major water-consuming area needs to be focused on reducing water consumption.

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

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

- ▶ The healthcare facility would develop a strategy for the optimum usage of water
- ▶ The HCFs would develop a plan for the conservation of water. e.g., water- efficient fixtures, dual flush mechanism, sensor-operated urinals, waterless urinals, rainwater harvesting
- ▶ The HCFs would have a plan for wastewater treatment. e.g., sewage treatment plants and effluent treatment plant at sites of generation of contaminated grey water, like pathology.
- ▶ The HCFs would develop a programme/plan for the conservation of water
- ▶ The HCFs would have a water management programme for the conservation of water by establishing a team, setting goals with timelines, conducting water audits, determining the cost of water, and preparing an action plan
- ▶ The HCFs would have an ongoing educational programme for the efficient usage and conservation of water for all the stakeholders (staff, patients, and visitors)
- ▶ The HCFs would have 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

3. Climate Resilient Infrastructure at Health Care Facilities Including Retro Fitting of Existing Health Care Facilities

It is essential that HCF planning and designing should be responsive to local climate and hazard profile of the district. Strong focus should be given to designing all aspects of infrastructure and services as per relevant IS standards, building codes and local 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 per cent 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

i. Implementation of Green (Environmentally-friendly and sustainable) considered in FY 2023-24 are as follows:

- a. Energy Auditing of the Healthcare Facilities for Energy Efficiency in the HCFs
- b. Replacement of existing (non-LED) lighting with LED in Healthcare Facilities
- c. Installation of Solar Panels in Healthcare Facilities
- d. Install Rainwater Harvesting System in Healthcare Facilities

Measure	Unit	Justification
Sub Centre	107	Replacement of inefficient luminaries with efficient luminaries is part of the intervention to reduce the solar system capacity and the cost and the capital cost in the long run
Primary Health Centre	41	
Community Health Centre	4	
District Hospital	2	
Sub Divisional Hospital	1	
Total	156	
Installing Solar Panels		
Sub Centre	107	This solution provided is to convert the health center in to climate-friendly and self-reliant sustainable health center. The solar system design was finalized based on the requirement/services at each type of health center. Also considered some of the loads from a futuristic perspective in consultation with NHM Meghalaya
Primary Health Centre	41	
Community Health Centre	4	
District Hospital	2	
Sub Divisional Hospital	1	
Total	156	

ii. Plan of implementation of green measures in healthcare facilities 2022-2027, NPCCHH

Green Measures in Healthcare Facilities	Units						
	Previous Years	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Replace existing Lighting Non-LED with LED in Sub Centre	108	107	225	-	-	-	440
Replace existing Lighting Non-LED with LED in PHC	13	41	66	-	-	-	119

Green Measures in Healthcare Facilities	Units						
	Previous Years	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Replace existing Lighting Non-LED with LED in CHC	2	4	0	-	-	-	6
Replace existing Lighting Non-LED with LED in DH	0	2	0	-	-	-	2
Replace existing Lighting Non-LED with LED in SDH	0	1	0	-	-	-	1
Installing Solar panels at Sub Centre	108	107	225	-	-	-	440
Installing Solar panels at Primary Health Centre	13	41	66	-	-	-	120
Installing Solar panels at Community Health Centre	2	4	0	-	-	-	6
Installing Solar panels at District Hospital	0	2	0	-	-	-	2
Installing Solar panels at Sub Divisional Hospital	0	1	0	-	-	-	1
Installing Rainwater harvesting System CHC	Nil	Nil		-	-	-	
Installing Rainwater harvesting System PHC	Nil	Nil		-	-	-	

iii. Monitoring and evaluation of activities will be done in line with targets set in PIP.

Refer PIP Guidelines: <https://bit.ly/NPCCHHIP>

Roles and Responsibilities

Particulars	Responsibilities
SNO	<ul style="list-style-type: none"> Disseminate early warnings to the district level Finalization of IEC material and dissemination plan Organize training sessions for district-level officers and trainers Identify health facilities for priority implementation based on disaster and health facility vulnerability Identify relevant state and district level nodal agencies and collaborate with them for assessment of health facilities for implementation of measures Facilitate and monitor necessary assessments at the health facility level Facilitate implementation of structural and functional measures at the health facility level Submit a report of activities on heat-health under NPCCHH Advocate for the reduction in source of greenhouse gas emissions

Particulars	Responsibilities
DNO	<ul style="list-style-type: none"> • Conduct training for block health officers, and medical officers with relevant training manuals • Support conduction for following assessment at the health facility level <ul style="list-style-type: none"> - Energy audit - Water audit - Disaster-vulnerability assessment • Support following functional measures at the health facility level <ul style="list-style-type: none"> - Water committee - Sustainable procurement committee - Operational measures to make health facility function during disasters or power cuts • Coordinate with other agencies for the assessment and implementation of identified structural and functional measures • Update DAPCCHH with support from District Task Force • Submit a report of activities on heat-health under NPCCHH
Block Health Officer	<ul style="list-style-type: none"> • Ensure training of medical officers • Organize PRI sensitization workshop • Coordinate with other agencies for the assessment and implementation of identified structural and functional measures
Medical Officer	<ul style="list-style-type: none"> • Conduct health facility assessment <ul style="list-style-type: none"> - Energy audit - Water audit - Disaster-vulnerability assessment • Lead following functional measures <ul style="list-style-type: none"> - Water committee - Sustainable procurement committee - Operational measures to make health facility function during disasters or power cuts • Support community-level IEC activities • Identify local funding opportunities: e.g. CSR initiative, NGO funding
Panchayati Raj Institutions	<ul style="list-style-type: none"> • Support retrofitting and new health facilities with local funding sources and community involvement

PART III

Budget

CHAPTER 11

Budget



Sl. No.	Activities	Indicator	Budget (in lakhs) for 5 years with 15 % increase every year					TARGET for five years 2022-27				
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 1	Year 2	Year 3	Year 4	Year 5
Programme Management												
1.	Taskforce meeting to draft health sector plan for heat and air pollution	% State Task Force Quarterly Meetings conducted in a year	1.0	1.15	1.32	1.51	1.73	0%	25%	50%	100%	100%
		% Districts conducted quarterly District Task Force Meetings in a year						0%	25%	50%	80%	100%
2.	Sensitization workshop/ meeting of the state programme Officers and District level Health Officers.		0.45	0.51	0.58	0.66	0.75	0%	25%	50%	100%	100%
General Awareness												
3.	Development of IEC material, campaigns, Innovative IEC/BCC Strategies	% of Districts implemented IEC campaign on all climate sensitive issues	1.22	1.40	1.61	1.85	2.11	50%	100%	100%	100%	100%
		% Districts included climate sensitive issues in the VHSNCs						50%	100%	100%	100%	100%

Sl. No.	Activities	Indicator	Budget (in lakhs) for 5 years with 15 % increase every year					TARGET for five years 2022-27				
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 1	Year 2	Year 3	Year 4	Year 5
Capacity Building												
4.	Orientation/ Training/ capacity Building of healthcare staffs	% of Districts completed TOT	4.0	4.6	5.29	6.08	6.99	50%	100%	100%	100%	100%
		% of Medical Officers trained in Districts						50%	80%	100%	100%	100%
		% of health workers and ASHA/AWW trained on NPCCHH in District						0%	50%	70%	100%	100%
		% of targeted sensitization trainings planned for vulnerable population in district (PRI Training)						0% of district having trained 10% of pop	30% of district having trained 30% of pop	50% of district having trained 50% of pop	100% of district having trained 80% of pop	100% of district having trained 100% of pop
5.	Planning & ME	To all districts	3.35	3.85	4.43	5.09	5.85	20%	50%	100%	100%	100%

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

Budget Proposed for GCR

Particulars	Unit Cost (Rs. Lakhs)/ Qnty.	(Rs. Lakhs) Year 1	Unit Cost (Rs. Lakhs)/ Qnty.	(Rs. Lakhs) Year 2	Unit Cost (Rs. Lakhs)/ Qnty.	(Rs. Lakhs) Year 3	Unit Cost (Rs. Lakhs)/ Qnty.	(Rs. Lakhs) Year 4	Remarks
Others including operating costs (OOC)									
Energy Audit	0.50	2.50	0.40	2.00	0.50	2.50	0.40	2.0	Budget Proposed for Energy Audit @ Rs. 0.40 Lakhs per DH 5 Nos for 2022-23 and 10 Nos for 2023-24.
LED Lighting	1.00	6.00	1.00	6.00	1.00	5.00	1.00	5.00	Budget Proposed for converting Health Facilities in the Districts into Energy Efficient units @ Rs. 1.00 Lakhs per District @ 6 Nos each for 2024-25 to 2027-28.
Solar Panel	2.50	15.00	2.50	15.00	2.50	15.00	2.50	15.00	Budget Proposed for installing Solar Panel in DHs @ Rs. 2.50 Lakhs per DH 4 Nos for 2022-23 and 4 Nos for 2023-24.

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



References

1. State Climate Change Action Plan, CCAP-Govt of Meghalaya.
2. National Action Plan for Climate Change & Human Health, Ministry of Health & Family Welfare Government of India (Approved Draft, VM Katoch, 23/10/2018).
3. Integrated Diseases Surveillance Programme, Meghalaya.
4. State Vector Borne Diseases Control Programme, Meghalaya.
5. SELCO Foundation, Meghalaya.



Annexures

Annexure 1



Figures above: One day training at the State level has been conducted to District Medical and health Officer, Meghalaya on the topic "Impact of Climate Change on Human Health"

Figures above: The training of the Medical officers and Health Staffs in selected CHCs and PHCs about Impact of Climate Change & Human Health.

Annexure 2: Pamphlet in Khasi and English Language

Printed Poster in English

AIR POLLUTION
PEOPLE WHO ARE AT HIGH RISK

- CHILDREN BELOW 5 YEARS
- PREGNANT WOMEN
- PATIENTS WITH CARDIOVASCULAR DISEASE
- ELDERLY PEOPLE
- PATIENTS WITH RESPIRATORY DISEASE

National Programme on Climate Change & Human Health
One Directorate of Health Services (NCCP/NT) and NE, Jaldighat, Nagaland, Jaldighat - 791001
E-mail: nccch@nic.gov.in

IMPACTS OF CLIMATE CHANGE ON HUMAN HEALTH

- SEVERE WEATHER
- AIR POLLUTION
- CHANGES IN VECTOR ECOLOGY
- INCREASING ALLERGENS
- WATER QUALITY IMPACTS
- WATER AND FOOD SUPPLY IMPACTS
- ENVIRONMENTAL DEGRADATION
- EXTREME HEAT

National Programme on Climate Change & Human Health
One Directorate of Health Services (NCCP/NT) and NE, Jaldighat, Nagaland, Jaldighat - 791001
E-mail: nccch@nic.gov.in

HEALTH EFFECTS OF AIR POLLUTION

SHORT TERM EFFECTS

- Headache, Giddiness
- Irritation in eyes
- Coughing
- Breathlessness
- Skin Irritation

LONG TERM EFFECTS

- Central Nervous System (Stroke)
- Cardiovascular Diseases (Heart Attack)
- Respiratory Diseases (Asthma, Bronchitis)
- Lung Cancer Risk

National Programme on Climate Change & Human Health
One Directorate of Health Services (NCCP/NT) and NE, Jaldighat, Nagaland, Jaldighat - 791001
E-mail: nccch@nic.gov.in

How to protect yourself from AIR POLLUTION

1. Check air quality index before leaving from your location
2. Avoid congested areas
3. Close doors & windows on polluted days
4. Don't smoke tobacco products

National Programme on Climate Change & Human Health
One Directorate of Health Services (NCCP/NT) and NE, Jaldighat, Nagaland, Jaldighat - 791001
E-mail: nccch@nic.gov.in

HOW CLIMATE-CHANGE AFFECTS VECTOR BORNE DISEASES

- INCREASED FLOODING
- CHANGES IN PRECIPITATION
- INCREASED DURATION OF WARM SEASON
- CHANGES IN MEDIAN TEMPERATURE
- INCREASED INCIDENCES OF JAPANESE ENCEPHALITIS INCREASES
- INCREASED BURDEN OF DENGUE FEVER IN ANDHRA PRADESH
- INCREASED BURDEN OF DENGUE FEVER IN GUJARAT
- INCREASED BURDEN OF DENGUE FEVER IN KARNATAKA
- INCREASED BURDEN OF DENGUE FEVER IN MADHYA PRADESH
- INCREASED BURDEN OF DENGUE FEVER IN WEST BENGAL
- INCREASED BURDEN OF DENGUE FEVER IN WEST BENGAL
- INCREASED BURDEN OF DENGUE FEVER IN WEST BENGAL

National Programme on Climate Change & Human Health
One Directorate of Health Services (NCCP/NT) and NE, Jaldighat, Nagaland, Jaldighat - 791001
E-mail: nccch@nic.gov.in

Act to protect your health from AIR POLLUTION

Do's

- Remain indoors
- Consult doctor in case of breathlessness, chest discomfort, irritation in eyes
- Keep medications ready available for person with allergy, lung or heart diseases
- Use clean cookware tools for cooking & heating purposes

Don'ts

- Avoid going to places with heavy traffic & congested places
- Don't burn fireworks, garbage or waste
- Don't smoke tobacco products

National Programme on Climate Change & Human Health
One Directorate of Health Services (NCCP/NT) and NE, Jaldighat, Nagaland, Jaldighat - 791001
E-mail: nccch@nic.gov.in



HEALTH DEPARTMENT

Check the **Air Quality Index (AQI)** level of your area from

AQI Pollution Level	Possible Health Consequences	What can you do	
		General Population	Vulnerable Population
Good (0-50)	Low risk	No special precautions	No special precautions
Satisfactory (51-100)	Minor breathing discomfort in vulnerable population	No special precautions	Reduce prolonged or strenuous outdoor physical exertion
Moderate (101-200)	Breathing or other health related discomfort in vulnerable population	Reduce prolonged outdoor physical activity	Avoid prolonged or strenuous outdoor physical activity
Poor (201-300)	<ul style="list-style-type: none"> Breathing discomfort in healthy people on prolonged exposure. Breathing or other health related discomfort in vulnerable population on short exposure 	Avoid outdoor physical exertion	Avoid outdoor physical exertion
Very Poor (301-400)	<ul style="list-style-type: none"> Respiratory illness in healthy people on prolonged exposure Pronounced respiratory or other illness in vulnerable population on short exposure 	Avoid outdoor physical activities especially during morning & late evening hours	Remain indoors and keep activity levels low
Severe (401 and above)	<ul style="list-style-type: none"> Respiratory illness in healthy people on prolonged exposure Serious respiratory or other illness in vulnerable population on short exposure 	Avoid outdoor physical exertion	Remain indoors and keep activity levels low

National Programme on Climate Change & Human Health
 O/o Directorate of Health Services (MCH&FW) Red Hill, Laitumkrah Meghalaya, Shillong – 793003
 E-mail – spcchhmegha17@gmail.com



Khmih Bniah iaKa Jinglong ka Lyer (Air Quality Index AQI) ha ki Jaka jong phi, kat kum ki jingkdew ba la pynbeit na

CPCB (https://app.cpcbcr.com/AQI_India/) or
MAPAN-SAFAR: <http://safar.tropmet.res.in/>

ka jingkhew ia ka jingjaboh ka lyer (Air Quality Index AQI)	Kaba lah ban ktah ia ka koit ka khiah	Kumno phi dei ban leh	
		Haki jaka ba bun ki nongshong Shnong	Haki jaka ba shah ktah Nongshong Shnong
Kaba Bha (0-50)	ka bym da doi jingna	Kam don ka jingsumar kaba Kyrpang	Kam don ka jingsumar kaba Kyrpang
Kaba Biang (51-100)	Ka jingpynjyrjar haba ring bad pynhiar mynsiem ha ki jaka ba bun briew	Kam don ka jingsumar kaba Kyrpang	Pynduna na ki jingtrei slem shabar kaba lah ban ktah ia ka met ka phad
Kaba pdeng (101-200)	Ka pynjynjar haba ring bad pynhiar mynsiem bad kiwei pat ki jingshitom ha jaka ba bun briew	Pynduna ia ka jingtrei Shabar kaba lah ban ktah ia ka koit ka khiah	Kiar naka jingtrei slem shabar kaba lah ban ktah ia ka Koit ka khiah
Kaba Sniew (201-300)	<ul style="list-style-type: none"> Ka jingbim suk bun ring bad pynhiar mynsiem ha ki briew ba koit ba khiah haba ki trei slem shabar Ka jingpynjynjar haba ring bad pynhiar mynsiem haki jaka ba bun briew wat ha i por ba khyndiat. 	Kiar na kaba trei shabar	Kiar na kaba leit kai shabar
Kaba sniew (301-400)	<ul style="list-style-type: none"> Ka jingshitom haba ring bad pynhiar mynsiem ha ki briew kaba khoh ba khiah ha ka jingtrei shabar ka jingshab ktah kaba man ka por kaba ring bad pynhiar mynsiem kam kiwei ki jingshitom ha ki jaka ba bun briew wat ha ka por ba khyndiat 	Kiar na ka jingtrei kam shabar khomrom haka por mynsiem bad haki kenta ha ki jon dam	Shong hapoh ing bad pynduna ki jingtrei kam
Kaba jur tam (401-500)	<ul style="list-style-type: none"> Ka jingshitom haba ring bad pynhiar mynsiem ha ki briew kaba koit ba khiah na ka jingtrei slem shabar. Ka jingbimlah shub bun ring bad pynhiar mynsiem bad kiwei ki jingshitom haki jaka ba bun briew wat ha i por ba khyndiat. 	kiar na kaba leit kai shabar	Shong hapoh ing bad pynduna ki jingtrei kam

National Programme on Climate Change & Human Health
O/o Directorate of Health Services (MCH&FW) Red Hill, Laitumkhrah Meghalaya, Shillong – 793003
E-mail – spcchhmegha17@gmail.com

Number of Facilities in Meghalaya

Sl. No.	Districts	No. of Block	No. of DH	No. of CHC	No. of PHC	No. of St. Dispy	No. of UHC	No. of Public SC	TB Hospital	Mental Hospital	No. of Private SC	No. of Private Hospital	No. of Medical College	No. of Military Hospital	Total Functioning Facilities
1	East Garo Hill	3	1	1	7	1	0	31	0	0	0	0	0	0	41
2	East Jaintia Hills	2	0	2	6	0	0	36	0	0	0	0	0	0	44
3	East Khasi Hills	8	2	7	26	5	13	72	1	1	1	6	1	1	136
4	North Garo Hills	2	0	1	11	0	0	50	0	0	0	0	0	0	62
5	Ri Bhoi	3	1	3	8	2	0	34	0	0	0	1	0	0	49
6	South Garo Hills	4	1	1	6	1	0	21	0	0	0	0	0	0	30
7	South West Garo Hills	2	1	1	9	0	0	27	0	0	0	0	0	0	38
8	South West Khasi Hills	2	0	2	4	0	0	20	0	0	0	0	0	0	26
9	West Garo Hills	6	2	5	9	3	3	66	1	0	0	2	0	0	91
10	West Jaintia Hills	3	1	3	12	1	2	46	0	0	0	1	0	0	66
11	West Khasi Hills	4	2	2	15	0	1	47	0	0	0	3	0	0	70
	Total	39	11	28	113	13	19	450	2	1	1	13	1	1	653

Sl. No.	Name of District Hospital	Block	Name of District
1	Ganesh Das	Mylliem Block	East Khasi Hills
2	Civil Hospital Shillong		
3	Nongstoin DH	Nongstoin Block	West Khasi Hills
4	Tirot Singh Memorial Hospital	Mairang Block	
5	Jowai DH	Thadlaskein	West Jaintia Hills
6	Nongpoh DH	Umling Block	Ri Bhoi
7	Tura Civil Hospital	Rongram Block	West Garo Hill
8	Tura MCH Hospital		
9	Williamnagar Civil Hospital	Samanda Block	East Garo Hills
10	Baghmara DH	Bagmara Block	South Garo Hills
11	Ampati DH	Betasing Block	South West Garo Hill

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**GOVERNMENT OF MEGHALAYA
HEALTH & FAMILY WELFARE DEPARTMENT**

NOTIFICATION

Dated Shillong, the 22nd October, 2019.

Health.95/2018/147: The Governor of Meghalaya is pleased to create the Environmental Health Cell for Climate Change & Human Health with the Executive Members of Environmental Health Cell (EHC) as follows:-

- | | |
|--|-----------|
| 1. State Nodal Officer, Climate Change. | -Chairman |
| 2. State Programme Manager-NHM | -Member |
| 3. Additional Director Public Health/NCD | -Member |
| 4. Additional Director NVBDCP | -Member |
| 5. Additional Director Immunization/Family Welfare | -Member |
| 6. Additional Director Medical (Mental Health) | -Member |
| 7. State Surveillance Officer/Additional Director Epidemic | -Member |
| 8. Head, State Nutrition Bureau | -Member |
| 9. Consultant, SHSRC | -Member |
| 10. Additional Director, IEC/State Mass Media | -Member |
| 11. State Epidemiologist, IDSP | -Member |
| 12. Microbiologist, IDSP | -Member |

Functions and Responsibilities of the State 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.
- Assessment of needs for health care professional (like training, capacity building) and organise training, workshop and meetings.
- Maintain State and District Level data on physical, financial, epidemiological profile for climate sensitive illnesses.
- Ensure Convergence with NHM activities and other related programs in the State/District.
- Monitor programme, Review meeting, Field observations.
- Timely issue of warning/alerts to health professionals and related stakeholders as well as general public through campaign or using mass media (electronic or printed)
- Social mobilization against preventive measures through involvement of women's self-help groups, community leaders, NGOs etc.
- Advocacy and Public awareness through media (Street Plays, folk methods, wall paintings, hoardings etc.)
- Conduction of operational research and evaluation studies for the climate change and its impact on human health.

This cancels this Department's Notification No.Health.95/2018/105, dt.12.06.2019

Sd/-
(Pravin Bakshi, IAS)
Secretary to the Govt. of Meghalaya,
Health & Family Welfare Department.

Memo.No. Health. 95/2018/147-A

Dated Shillong, the 22nd October, 2019.

Copy to: -

1. P.5 to the Hon'ble Minister, Health & Family Welfare Department for kind information of the Minister.
2. Secretary, Health & Family Welfare Department to the Govt. of Meghalaya for favour of information.
3. Mission Director, National Health Mission, Meghalaya, Shillong with reference to letter No.HSM/IDSP/Climate/C/2017, dt. 12.9.2019 for information and necessary action.
4. Director of Health Services (MI)/(MCH&FW)/(R) Meghalaya, Shillong.
5. Regional Director, Regional Office of Health & Family Welfare Health & Family Welfare Govt. of India, Dhankheti, Shillong Director Medical Education & Research.
6. State Nodal Officer, Climate Change.
7. Director Printing & Stationery, Meghalaya, Shillong for kind publication in the next issue of the Gazette.

Yours faithfully,

Under Secretary to the Govt. of Meghalaya,
Health & Family Welfare Department.

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**GOVERNMENT OF MEGHALAYA
HEALTH & FAMILY WELFARE DEPARTMENT**

NOTIFICATION

Dated Shillong, the 22nd October, 2019.

No. Health.95/2018/148: the Governor of Meghalaya is pleased to constitute the District Level Task Force for Environmental Health for Climate Change & Human Health in the all 11(eleven) districts with the following members:-

- | | |
|---|-------------------|
| 1. Deputy Commissioner | -Chairman |
| 2. Head-Department of Community Medicine of the Medical College | -Vice Chairman |
| 3. District Medical & Health Officer / District Nodal Officer | -Member Secretary |
| 4. District Surveillance Officer | -Member |
| 5. District Programme Manager-NHM | -Member |
| 6. District Revenue & Disaster Management Officer | -Member |
| 7. District Agriculture Officer | -Member |
| 8. District Water Resources/PHE Officer | -Member |
| 9. District Transport Officer | -Member |
| 10. District Animal Husbandry & Vety. Officer | -Member |
| 11. District Forests & Environment Officer | -Member |
| 12. District Social Welfare Officer | -Member |
| 13. District Planning Officer | -Member |
| 14. District Education Officer | -Member |
| 15. District Food & Civil Supplies & Consumer Affairs Officer | -Member |
| 16. District Public Work Department Officer | -Member |
| 17. District Officer of Meghalaya Energy Corporation Ltd | -Member |
| 18. District Law Officer | -Member |

This cancels this Department's Notification No.Health.95/2018/104, dt.12.06.2019

Sd/-
(Pravin Bakshi, IAS)
Secretary to the Govt. of Meghalaya,
Health & Family Welfare Department.

Memo.No. Health. 95/2018/148-A

Dated Shillong, the 22nd October, 2019.

Copy to:-

1. P.S to the Hon'ble Minister, Health & Family Welfare Department for kind information of the Minister.
2. Secretary, Health & Family Welfare Department to the Govt. of Meghalaya for favour of information.
3. Mission Director, National Health Mission, Meghalaya, Shillong with reference to letter No.HSM/IDSP/Climate/C/2017, dt. 12.9.2019 for information and necessary action.
4. Deputy Commissioner of District East Khasi Hills, Shillong/West Khasi Hills, Nongstoin/South West Hills, Mawkyrwat/West Jaintia Hills, Jowai/East Jaintia Hills, Khliehriet/Ri-Bhol District, Nongpoh/West Garo Hills, Tura/East Garo Hills, Willamngar/South Garo Hills, Bagmara/South West Garo Hills, Ampati/North Garo Hills, Resubelpara.
5. Director of Health Services (MI)/(MCH&FW)/(R) Meghalaya, Shillong.
6. Regional Director, Regional Office of Health & Family Welfare Health & Family Welfare Govt. of India, Dhankheti, Shillong Director Medical Education & Research.
7. Director of Agriculture/AH&Vety/Urban Affairs/Land Records
8. Director, NEIGRIHMS, Mawdiangdiang, Shillong.
9. Chief Engineer, PWD(R&B)/PHE/Meghalaya Energy Corporation Ltd.
10. District Nodal Officer, Climate Change.
11. Director Printing & Stationery, Meghalaya, Shillong for kind publication in the next issue of the Gazette.

Yours faithfully,

Under Secretary to the Govt. of Meghalaya,
Health & Family Welfare Department.

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**GOVERNMENT OF MEGHALAYA
HEALTH & FAMILY WELFARE DEPARTMENT**

NOTIFICATION

Dated Shillong, the 22nd October, 2019.

No. Health.95/2018/146: The Governor of Meghalaya is pleased to constitute the State Level Task Force for Environmental Health to oversee the implementation of the State Action Plan for Climate Change & Human Health (SAPCCHH) with the following members:-

- | | |
|---|-------------------|
| 1. Addl. Chief Secretary/Principal Secretary/ Com & Secretary/Secretary, Health & Family Welfare Department | -Chairman |
| 2. Mission Director-National Health Mission. | -Vice Chairman |
| 3. Director of Health Services (MCH&FW) & Joint Mission Director, NHM. | -Member Secretary |
| 4. Director of Land Record, | -Member |
| 5. Director of Agriculture | -Member |
| 6. Director of Water & Resources | -Member |
| 7. Commissioner of Transport. | -Member |
| 8. Director of Animal Husbandry & Vety | -Member |
| 9. Principal Chief Conservator of Forest | -Member |
| 10. Director of Social Welfare | Member |
| 11. Director of Food Civil Supplies & Consumer Affairs Deptt. | -Member |
| 12. Chief Engineer, Public Works Department (R&B) | Member |
| 13. Director of Urban Affairs | Member |
| 14. Director of Higher & Technical Education | Member |
| 15. Controller of Legal Metrology. | -Member |
| 16. Chief Engineer, Meghalaya Energy Corporation Ltd. | -Member |
| 17. Director of Institutional Finance | -Member |
| 18. Environmental Engineer, Meghalaya State Pollution Control Board. | -Member |
| 19. Chief Engineer, PHE Department | -Member |
| 20. Regional Director of Regional Office of Health & Family Welfare | -Member |
| 21. Director of Health Services (MI)/(Research) | -Member |
| 22. State Nodal Officer, Climate Change | -Member |
| 23. Head -NAPCCHH,CEOH&CCH Division, NCDC, Ministry of Health & Family Welfare | -Member |
| 24. Head -NCDC Branch of the State | -Member |

The Task Force of the State Environmental Health Cell will coordinate with the centre (MoHFW,NCDC) for execution of execution of State Action Plan for Climate Change & Human Health (SAPCCHH) .

This cancels this Department's Notification No.Health.95/2018/103, dt.12.06.2019

Sd/-
(Pravin Bakshi, IAS)
Secretary to the Govt. of Meghalaya,
Health & Family Welfare Department.

Memo.No. Health. 95/2018/146-A

Dated Shillong, the 22nd October, 2019.

Copy to: -

1. P.S to the Hon'ble Minister, Health & Family Welfare Department for kind information of the Minister.
2. Secretary, Health & Family Welfare Department to the Govt. of Meghalaya for favour of information.
3. Mission Director, National Health Mission, Meghalaya, Shillong with reference to letter No.HSM/IDSP/Climate/C/2017, dt. 12.9.2019 for information and necessary action.
4. Director of Health Services (MI)/(MCH&FW)/(R) Meghalaya, Shillong.
5. Regional Director, Regional Office of Health & Family Welfare Health & Family Welfare Govt. of India, Dhankheti, Shillong.
6. Director of Land Record/Agriculture/Water Resources/Transport/Animal Husbandry & Vety/Social Welfare/Food Civil Supplies & Consumer Affairs/Urban Affairs/Higher & Technical Education /
7. Director Printing & Stationery, Meghalaya, Shillong for kind publication in the next issue of the Gazette.
8. State Nodal Officer, Climate Change.

Yours faithfully,

Under Secretary to the Govt. of Meghalaya,
Health & Family Welfare Department.

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**GOVERNMENT OF MEGHALAYA
HEALTH & FAMILY WELFARE DEPARTMENT**

NOTIFICATION

Dated Shillong, the 22nd October, 2019.

No. Health.95/2018/150: the Governor of Meghalaya is pleased to constitute the Community Health Centre/PHC Level Structure for Climate Change & Human Health with the following members:-

CHC Level

- | | |
|---------------------------------|-----------|
| 1. Medical & Health Officer i/c | -Chairman |
| 2. Taluka Health Officer | -Member |
| 3. Health Education Officer | -Member |
| 4. Block Development Officer | -Member |
| 5. Health Supervisor | -Member |

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

Sd/-
(Pravin Bakshi, IAS)
Secretary to the Govt. of Meghalaya,
Health & Family Welfare Department.

Memo.No. Health. 95/2018/150-A

Dated Shillong, the 22nd October, 2019.

Copy to:-

1. P.S to the Hon'ble Minister, Health & Family Welfare Department for kind information of the Minister.
2. Secretary, Health & Family Welfare Department to the Govt. of Meghalaya for favour of information.
3. Mission Director, National Health Mission, Meghalaya, Shillong with reference to letter No.HSM/IDSP/Climate/C/2017, dt. 12.9.2019 for information and necessary action.
4. Director of Health Services (MI)/(MCH&FW)/(R) Meghalaya, Shillong.
5. Director Printing & Stationery, Meghalaya, Shillong for kind publication in the next issue of the Gazette.
6. District Medical & Health Officers, East Khasi Hills, Shillong/West Khasi Hills, Nongstoin/South West Hills, Mawkyrwat/West Jaintia Hills, Jowai/East Jaintia Hills, Khliehriat/Ri-Bhoi District, Nongpoh/West Garo Hills, Tura/East Garo Hills, Williamnagar/South Garo Hills, Baghmara/South West Garo Hills, Ampati/North Garo Hills, Resubelpara.

Yours faithfully,

Under Secretary to the Govt. of Meghalaya,
Health & Family Welfare Department.

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