



Ministry of Health and Family Welfare
Government of India

State Action Plan on Climate Change and Human Health

Assam



National Centre
for Disease Control
Government of India



National Programme
on Climate Change
and Human Health

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Part I: Climate Change and Its Health Impacts in Assam

Assam state has demonstrated its resolve to respond to climate change and its impacts with the release of the State Action Plan on Climate Change in 2015. Piloting of FLEWS (flood early warning signals) project in 2009 to provide early warning of the floods was one of the early actions taken in Assam. Since then, there are many initiatives taken in various sectors to adapt and mitigate to impact of climate change like the establishment of the Assam Climate Change Management Society under Government of Assam in 2018 to support a resilient, prosperous and sustainable development pathway by facilitating cross-sectoral convergence across departments in the planning, delivery and monitoring of action on climate change. Assam has also began developing disaster risk reduction roadmap in 2020.

I. Socio-Demographics and Health Profile

Assam is the largest State in the North East is bordering seven states—Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and West Bengal and two countries—Bangladesh and Bhutan. The State has abundant fertile land and water resources with total geographical area of 78,438 sq.km. of which 98.4 % area is rural.¹ According to 2011 census, 86% population live in rural areas and 14% live in urban areas. Most of the state population lives in the valleys of the two major river system—30 districts of the Brahmaputra valley and 3 districts of the Barak valley. Less densely populated three hilly districts are Karbi-Along, West Karbi-Along & Dima Hasao, set in the low- lying hills that separate the two valleys. For administrative and revenue purposes, the state has 33 districts including four districts Under the Bodoland Territorial Council (BTC) area—Kokrajhar, Chirang, Baska & Udalguri and 6 newly created districts—Biswanath, Charaideo, Hojai, South Salmara-Macachar, West Karbi-Anglong and Majuli.

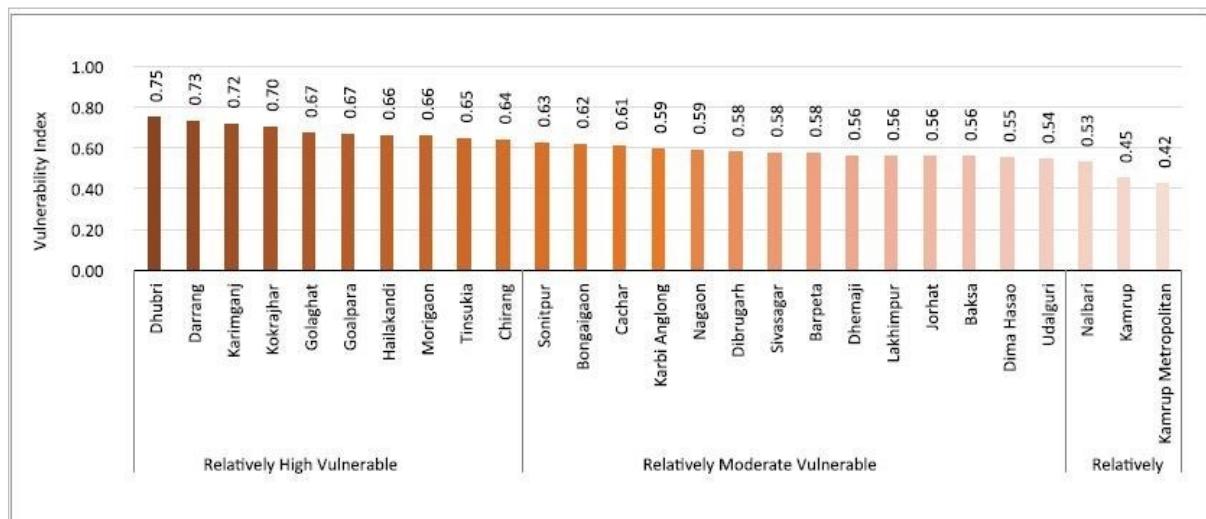
Assam has been going through a slow epidemiological transition with diarrheal diseases being the leading cause of disease adjusted life years (DALY) according to the Global burden of Diseases, 2017 report.² Behavioral and environmental risk factors like malnutrition, air pollution, dietary risk and water and sanitation are among five major risk factors attributing to DALY. According to NFHS-5 survey, 85% households in Assam have basic drinking water services and 86% households use an improved source of drinking water, but only 7% have water piped into their dwellings, yard, or plot.³ Urban households (22%) are more likely than rural households (4%) to have water piped into their dwelling, yard, or plot. Fifty-three percent of households use an appropriate treatment method to make drinking water potable (mostly by using ceramic, sand or other water filter). About 42% households use a clean fuel for cooking. About 4% of all households surveyed, do not use any sanitation facility; they use open spaces or fields, and 96% have access to a toilet facility, with 99% accessibility in urban areas and 95% in rural areas.

II. Climate Change and Health

The state is characterized by high rainfall and a subtropical climate. The annual mean temperature in the state has increased by 0.59°C over the last 60 years (1951 to 2010), and is likely to increase by 1.7-2.2°C by 2050. Climate projections predict that extreme rainfall events will increase by 38%, while previously unheard of heatstrokes may become common place in Assam as summer temperatures begin to reach 40°C.

Assam is one of the most climatically vulnerable states among all the 12 Indian Himalayan region states with the vulnerability index being 0.72 according to climate vulnerability assessment for the Indian Himalayan Region.⁴

Figure 1: Climate vulnerability ranking of districts based on its socio-demographic, biophysical, and institutional-infrastructure aspects, Assam 2021



The Assam SAPCC, identified following major health impact of climate change in the state and proposed strategies to manage those.

- More number of morbidity and mortality death due to heat waves,
- cyclonic winds, landslides, mud slides, and flooding events and fires
- Increased risk of under nutrition resulting from diminished food production
- Increased risks of food and water-borne diseases (very high confidence) and vector-borne diseases.
- More water and food borne disease incidences
- Effects of food and water shortages
- Air pollution-related health effects
- Psycho-social impacts on displaced populations
- Health impacts from conflicts over access to vital resources

Improving Basic Public Health and Health Care Services, creating policies that help towards prevention of certain diseases related to climate change, developing early warning systems through disease forecasting mechanisms etc. can be some of the adaptation strategies that can be brought in.

Health sector response in terms of various adaptation and mitigation measures in Assam must consider the climate and health vulnerabilities in the state and prioritize their actions accordingly for effective long-term outcomes.

Table 1: Strategies for protecting human health as per SAPCCHH (2015-2020)

Sl. no	Action	Costs (INR Cr)	Source of Fund	Priority	Department Responsible
1	Developing disease forecasting system for disease outbreaks on a daily basis in consonance with daily weather forecast	1.00	State/ Central Fund	VH	Dept of Health and Family Welfare
2	Develop mobile based apps on disease outbreak forecast and prevention measures – a to do list	1.00	State/ Central Fund	VH	Dept of Health and Family Welfare
3	Study and map new and emerging diseases in consonance with CC projections	1.00	State/ Central Fund	VH	Dept of Health and Family Welfare
4	Extending IDS to urban areas and to private clinics	10.00	State/ Central Fund	VH	Dept of Health and Family Welfare
5	Including heat wave incidences under IDSP in Assam	10.00	State/ Central Fund	VH	Dept of Health and
					Family Welfare
6	Conduct studies to assess links between climate change and possible malnutrition in the State especially amongst children	1.00	State/ Central Fund	VH	Dept of Health and Family Welfare
7	Review and retrofit disaster risk response strategies of the department in view of climate change using CSDRM tool	0.25	State/ Central Fund	VH	Dept of Health and Family Welfare
7	TOTAL	24.00			

I. Air Pollution

Assam is reporting outdoor and indoor air pollution. The pollution control body has recorded an incredibly high level of air pollution in all the air quality monitoring stations present in the city. The number of deaths that are caused due to Acute Respiratory Infections attributed to a rise in particulate matter PM_{2.5} and PM₁₀ in Assam has increased considerably. Under the National Clean Air Programme (NCAP) there are total 5 non-attainment cities as per national ambient air quality standards—Guwahati, Nagaon, Nalbari, Sibsagar, Sichar.

Growing air pollution has emerged as a serious concern in the city, with vehicular emission and dust contributing a major share of the deteriorating air quality. Guwahati has one of the highest black carbon pollution levels in the world which is alarming.

Table 2: Air Pollutant levels in Major Cities, Assam, 2016-2019

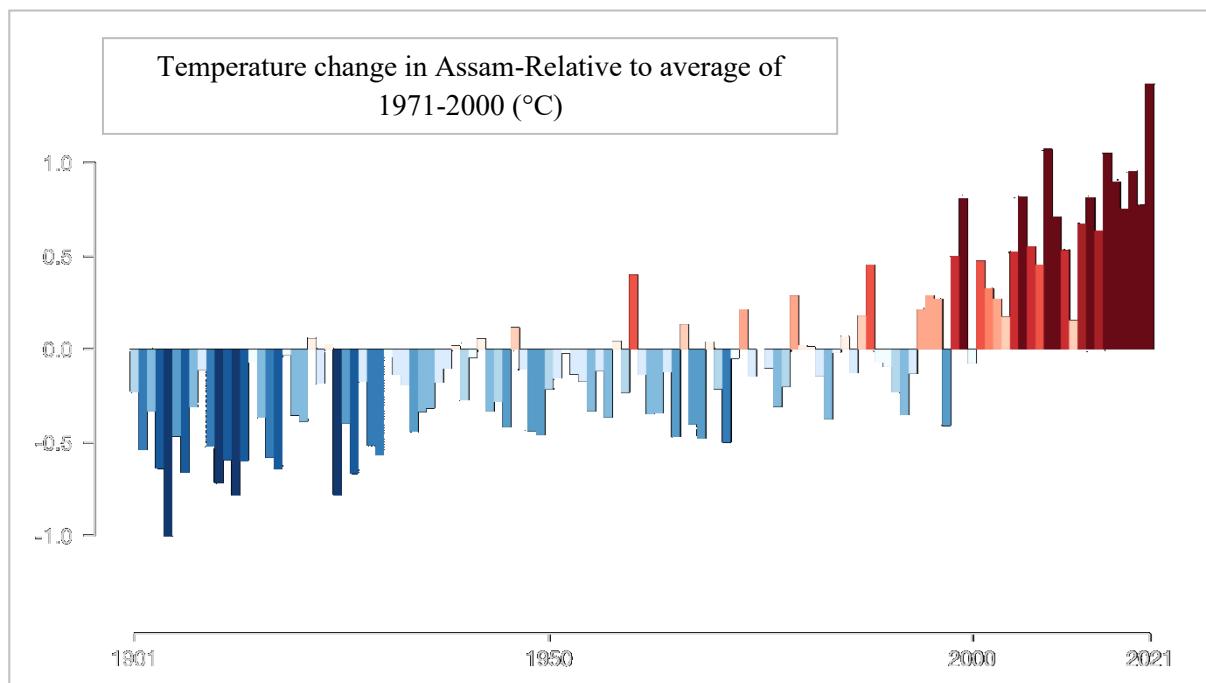
City	Pollutant	2016	2017	2018	2019
Guwahati	PM2.5	-	-	66.5	26.7
	PM10	105.33	105.67	111.83	96.67
	NO ₂	17.5	16.3	17.83	15.5
Nagaon	PM2.5	-	-	-	-
	PM10	111	75	96	105
	NO ₂	15	16	17	15

Nabari	PM2.5	-	-	-	-
	PM10	123.67	136.3	120.67	141.67
	NO ₂	34	34	38	35.67
Sibsagar	PM2.5	-	-	-	-
	PM10	75	81	-	-
	NO ₂	12.5	13	-	-
Sichar	PM2.5	-	-	-	-
	PM10	58	49	49.5	46.5
	NO ₂	12.5	10	10.5	10.5

II. Extreme Heat

Exposure to extreme heat can lead to various heat-related illnesses (HRI), from mild (prickly heat) to fatal (heatstroke) manifestation. It also increases cardiovascular, respiratory, renal, and all-cause mortality along with increases in ambulance calls and admissions. Increasing anthropogenic climate change is expected to intensify heatwaves over India.

Figure 2: Temperature Change in Assam as Relative to Average (°C) of 1971-2000



State level climate data for the period 1951to 2010 has been analyzed by the India Meteorological department12. This analysis is based on 282 stations for temperature and 1451 stations for rainfall across the country. In Assam, the analysis is based on data collected from 6 Stations for temperature and12 Stations for rainfall. The analysis indicates that the mean temperature in the State has increased by +0.01°C/year. There is also an increase in seasonal temperatures across seasons with pronounced warming in post monsoon and winter temperatures.

Heat wave vulnerability index, an aggregate of demographic, socio-economic, population health, and land cover indicators ranked districts on a scale from very high to very low vulnerability^{5,6}.

Table 3: Ranking of heat vulnerable districts of Assam, 2017

S.no	Districts (Descending order)	HVI
1.	Dhubri	Normal
2.	Dhemaji	Low normal
3.	Kokrajhar	Low normal
4.	Hailakandi	Low normal
5.	Karimganj	Low normal
6.	Sivasagar	Low normal
7.	Dibrugarh	Low normal
8.	Darrang	Low normal
9.	Goalpara	Low normal
10.	Barpeta	Low normal
11.	Lakhimpur	Low normal
12.	Chirang	Low normal
13.	Nagaon	Low normal
14.	Jorhat	Low normal
15.	Dima Hasao	Low normal
16.	Tinsukia	Low normal
17.	Karbi Anglong	Low normal
18.	Udalguri	Low normal
19.	Sonitpur	Low normal
20.	Golaghat	Low normal
21.	Bongaigaon	Low normal
22.	Morigaon	Low normal
23.	Baksa	Low normal
24.	Cachar	Low normal
25.	Kamrup Metropolitan	Very low
26.	Nalbari	Very low
27.	Kamrup	Very low

III. Vector-borne diseases

All the VBDs are climate sensitive as the pathogens have to complete a part of their development in particular species of the insect vector that transmit them. The temperature, rainfall and relative humidity (RH) affect the development of vectors.

Malaria is endemic in Assam. Out of total 31.53million populations in the state, 9.71 million populations (31%) are living in malaria high risk areas. Malaria is particularly endemic in Karbi, Anglong, Kokrajhar, N.C.Hills (Dima Hasao), Chirang, Goalpara, Baksa, Hailakandi and in Udalguri.

As per a review, most common mosquito-borne diseases in Assam include Malaria, Dengue, Japanese encephalitis (JE), and Lymphatic filariasis (LF), while Malaria and JE being predominant and spread across the state. Although malaria outbreaks are common in Assam, their incidence has gradually declined in the past few years. Formerly JE was endemic in upper Assam, but it has become common in almost all the districts of the state. Dengue is prevalent in urban and semi-urban areas, and most of the cases have been reported from Guwahati, the largest metropolitan city of Assam. Distribution of Lymphatic filariasis (LF) is confined to a few districts and is common among the tea-garden workers.

Table 4: Trends of Malaria positive cases and deaths, Assam, 2017-2021

Sl. No	District	2017		2018		2019		2020		2021	
		+ve case	Deat h								
1	Baksa	219	0	59	0	10	0	8	0	2	0
2	Barpeta	18	0	11	0	12	1	1	0	3	0
3	Bongaigaon	19	0	16	0	11	0	3	0	3	0
4	Cachar	37	0	18	1	33	0	15	0	10	0
5	Chirang	389	0	252	0	88	0	52	0	20	0
6	Darrang	11	0	24	0	10	0	6	0	1	0
7	Dhemaji	16	0	8	0	5	0	4	0	1	0
8	S. Salmara	0		0	0	0	0	0	0	4	0
9	Dhubri	32	0	25	0	24	0	13	1	6	0
10	Dibrugarh	6	0	6	0	7	0	0	0	3	0
11	Dima Hasao	222	0	119	1	64	0	69	1	4	0
12	Goalpara	84	0	77	0	58	0	15	0	15	0
13	Golaghat	14	0	8	0	4	0	4	0	0	0
14	Hailakandi	73	0	37	0	4	0	4	0	5	0
15	Jorhat	11	0	15	0	7	0	3	0	7	0
16	Majuli	0		0	0	0	0	0	0	0	0
17	Kamrup (M)	10	0	8	0	8	0	6	0	2	0
18	Kamrup (R)	45	0	23	0	12	0	18	0	0	0
19	K-Anglong	1129	0	376	0	95	0	26	0	6	0
20	Karbianglong west	0		0	0	0	0	0	0	1	0
21	Karimganj	93	0	66	0	56	2	4	0	10	0
22	Kokrajhar	1540	0	161	0	447	1	109	0	32	0
23	Lakhimpur	8	0	6	0	0	0	1	0	0	0
24	Morigaon	23	0	27	0	14	0	10	0	3	0
25	Hojai	0		0	0	0	0	0	0	4	0
26	Nagaon	49	0	30	0	40	0	11	0	2	0
27	Nalbari	16	0	3	0	4	0	2	0	1	0
28	Charaidew	0		0	0	0	0	0	0	0	0
29	Sivasagar	10	0	6	0	3	0	2	0	2	0
30	Biswanath	0		0	0	0	0	0	0	1	0
31	Sonitpur	52	0	48	0	24	0	2	0	4	0
32	Tinsukia	26	0	9	0	4	0	6	0	2	0
33	Udalguri	1129	0	2378	0	415	0	90	0	8	0
	State Total	5281	0	3816	2	1459	4	484	2	162	0

Table 5: Trend in Dengue incidents and deaths, Assam, 2017-2021

Sl. No.	District	2017		2018		2019		2020		2021	
		Case	Death	Case	Death	Case	Death	Case	Death	Case	Death
1	Barpeta	39	0	8	0	11	0	2	0	4	0
2	Bongaigaon	8	0	4	0	6	0	0	0	1	0
3	Baksa	12	1	0	0	0	0	0	0	0	0
4	Cachar	6	0	9	0	5	0	7	0	1	0
5	Chirang	0	0	0	0	0	0	0	0	0	0
6	Darrang	12	0	0	0	3	0	1	0	2	0
7	Dhemaji	14	0	2	0	9	0	0	0	4	0
8	Dhubri	19	0	3	0	1	0	3	0	5	0
9	S. Salmara									0	0
10	Dibrugarh	45	0	11	0	10	0	3	0	7	0
11	Goalpara	38	0	3	0	9	0	4	0	5	0
12	Golaghat	10	0	0	0	0	0	0	0	0	0
13	Hailakandi	1	0	2	0	2	0	2	0	0	0
14	Jorhat	35	0	13	0	13	0	0	0	0	0
15	Majuli									0	0
16	Kamrup	39	0	8	0	2	0	2	0	8	0
17	Kamrup (Metro)	4539	0	66	0	69	0	2	0	41	0
18	Karbianglong	0	0	0	0	1	0	0	0	0	0
19	West KA									0	0
20	Karimganj	0	0	0	0	0	0	0	0	0	0
21	Kokrajhar	15	0	2	0	0	0	0	0	0	0
22	Lakhimpur	21	0	8	0	8	0	2	0	2	0
23	Morigaon	6	0	1	0	7	0	1	0	1	0
24	Nagaon	32	0	23	0	10	0	1	0	3	0
25	Hojai									0	0
26	Nalbari	20	0	1	0	5	0	0	0	8	0
27	Dima Hasao	0	0	0	0	0	0	0	0	1	0
28	Sivasagar	15	0	1	0	1	0	1	0	0	0
29	Charaidew									0	0
30	Sonitpur	6	0	1	0	18	0	2	0	2	0
31	Biswanath									0	0
32	Tinsukia	70	0	0	0	3	0	0	0	8	0
33	Udalguri	21	0	0	0	3	0	0	0	0	0
STATE TOTAL		5023	1	166	0	196	0	33	0	103	0

Table 6: Trend in Chikungunya incidents and deaths, Assam, 2017-2021

Sl. No	District	2017		2018		2019		2020		2021	
		Case	Deat h	Case	Deat h	Case	Deat h	Case	Deat h	Case	Deat h
1	Barpeta	0	0	0	0	0	0	0	0	0	0
2	Bongaigaon	0	0	0	0	0	0	0	0	0	0
3	Baksa	0	0	0	0	0	0	0	0	0	0
4	Cachar	0	0	0	0	0	0	0	0	0	0
5	Chirang	0	0	0	0	0	0	0	0	0	0
6	Darrang	0	0	0	0	0	0	0	0	0	0
7	Dhemaji	0	0	0	0	0	0	0	0	0	0
8	Dhubri	0	0	0	0	0	0	0	0	0	0
9	S. Salmara									0	0
10	Dibrugarh	1	0	0	0	0	0	0	0	0	0
11	Goalpara	3	0	0	0	0	0	0	0	0	0
12	Golaghat	0	0	0	0	0	0	0	0	0	0
13	Hailakandi	0	0	0	0	0	0	0	0	0	0
14	Jorhat	0	0	0	0	0	0	0	0	0	0
15	Majuli									0	0
16	Kamrup	0	0	0	0	0	0	0	0	0	0
17	Kamrup (Metro)	28	0	3	0	0	0	0	0	0	0
18	Karbianglong	0	0	0	0	0	0	0	0	0	0
19	West KA									0	0
20	Karimganj	0	0	0	0	0	0	0	0	0	0
21	Kokrajhar	0	0	0	0	0	0	0	0	0	0
22	Lakhimpur	0	0	0	0	0	0	0	0	0	0
23	Morigaon	1	0	0	0	0	0	0	0	0	0
24	Nagaon	0	0	0	0	0	0	0	0	0	0
25	Hojai									0	0
26	Nalbari	0	0	0	0	0	0	0	0	0	0
27	Dima Hasao	0	0	0	0	0	0	0	0	0	0
28	Sivasagar	0	0	0	0	0	0	0	0	0	0
29	Charaidew									0	0
30	Sonitpur	0	0	0	0	0	0	0	2	0	0
31	Biswanath									0	0
32	Tinsukia	0	0	0	0	0	0	0	0	0	0
33	Udalguri	0	0	0	0	0	0	0	0	0	0
STATE TOTAL		33	0	3	0	0	0	0	2	0	0

Table 7: Trends in Acute Encephalitis Syndrome (AES), Assam, 2017-2021

Sl. No	District	2017		2018		2019		2020		2021	
		Case	Death	Case	Death	Case	Death	Case	Death	Case	Death
1	Baksa	8	1	10	2	26	6	16	0	8	4
2	Barpeta	38	0	34	4	98	19	31	6	12	3
3	Bongaigaon	39	2	25	5	38	7	20	4	12	4
4	Cachar	83	1	73	3	154	20	26	3	70	4
5	Chirang	23	7	11	1	23	5	11	1	4	1
6	Darrang	24	7	11	4	56	16	21	6	9	1
7	Dhemaji	151	4	63	4	121	19	31	6	26	5
8	South Salmara							2	0	4	0
9	Dhubri	48	11	25	5	70	13	12	2	17	4
10	Dibrugarh	223	26	230	36	601	42	42	7	16	6
11	Dima Hasao	3	1	2	0	8	5	7	3	7	3
12	Goalpara	65	14	81	8	89	21	24	5	19	10
13	Golaghat	245	3	31	1	77	6	19	3	13	2
14	Hailakandi	12	5	0	0	103	6	8	2	5	0
15	Jorhat	89	19	106	10	121	25	28	5	25	6
16	Majuli							7	1	3	1
17	Kamrup (M)	163	0	107	1	241	9	15	2	4	1
18	Kamrup	51	9	44	12	53	19	23	3	14	1
19	K-Anglong	31	2	2	1	50	7	13	1	16	2
20	Karbianglong West							2	0	0	0
21	Karimganj	15	0	5	1	31	5	3	0	4	2
22	Kokrajhar	108	7	77	7	22	3	24	2	3	1
23	Lakhimpur	144	3	138	10	167	20	17	0	26	4
24	Morigaon	15	3	10	4	36	5	14	5	4	0
25	Hojai							6	0	4	0
26	Nagaon	67	4	86	2	111	20	25	3	17	1
27	Nalbari	46	6	19	9	26	9	7	2	4	1
28	Charaidew							6	0	7	1
29	Sivasagar	100	18	70	13	90	11	18	3	24	3
30	Biswanath							20	6	28	6
31	Sonitpur	105	5	148	29	127	18	58	8	59	10
32	Tinsukia	144	17	55	9	61	12	29	2	20	3
33	Udalguri	37	2	29	2	51	5	10	5	4	1
STATE TOTAL		2077	177	1492	183	2651	353	595	96	488	91

Table 8: Trend in Japanese Encephalitis incidents and deaths, Assam, 2017-2021

Sl. No.	District	2017		2018		2019		2020		2021	
		Case	Death	Case	Death	Case	Death	Case	Death	Case	Death
1	Baksa	2	0	10	2	12	2	15	0	5	3
2	Barpeta	9	0	14	4	26	8	23	4	7	2
3	Bongaigaon	5	2	4	2	17	3	11	0	9	0
4	Cachar	11	1	7	1	16	5	6	3	9	3
5	Chirang	1	1	6	0	13	2	9	1	1	1
6	Darrang	10	4	8	3	24	8	14	4	3	0
7	Dhemaji	60	1	28	4	30	4	13	2	25	4
8	South Salmara							0	0	1	0
9	Dhubri	13	4	7	0	28	4	7	1	5	1
10	Dibrugarh	65	11	114	15	33	11	13	2	12	2
11	Dima Hasao	0	0	0	0	3	3	1	0	0	0
12	Goalpara	18	4	20	1	34	13	7	3	5	2
13	Golaghat	63	2	12	1	20	5	14	2	9	2
14	Hailakandi	1	1	0	0	5	3	1	1	1	0
15	Jorhat	68	14	29	6	29	12	16	2	9	3
16	Majuli							4	1	2	1
17	Kamrup (M)	8	1	10	1	16	7	4	0	4	1
18	Kamrup (R)	11	5	22	10	32	13	9	3	8	0
19	K-Anglong	8	0	0	0	18	2	3	1	7	1
20	Karbianglong West							0	0	0	0
21	Karimganj	0	0	0	0	5	3	3	0	3	2
22	Kokrajhar	17	4	21	2	14	3	18	2	2	0
23	Lakhimpur	33	3	57	7	50	9	10	0	16	3
24	Morigaon	6	3	9	4	18	4	10	4	3	0
25	Hojai							4	0	3	0
26	Nagaon	27	2	20	2	45	9	19	2	8	0
27	Nalbari	14	4	9	3	18	5	6	1	4	1
28	Charaidew							5	0	6	1
29	Sivasagar	64	14	41	9	46	6	15	3	18	2
30	Biswanath							8	2	9	1
31	Sonitpur	12	2	35	15	39	7	24	4	7	2
32	Tinsukia	74	4	16	1	30	8	24	2	15	2
33	Udalguri	4	0	10	1	21	2	4	1	2	0
STATE TOTAL		604	87	509	94	642	161	320	51	218	40

Table 9: Hotspot locations for JE/AES in Assam, 2021-22

Sl no	District	Sl no	District
1	Barpeta	6	Lakhimpur
2	Dhemaji	7	Sibsagar
3	Dibrugarh	8	Sonitpur
4	Golaghat	9	Tinsukia
5	Jorhat	10	Udalguri

Table 10: Hotspot locations of Malaria in Assam, 2021-22

Sl no	District	Sl no	District
1	Karbi Anglong	5	Chirang
2	Karbi Anglong West	6	Baksa
3	Kokrajhar	7	Goalpara
4	Udalguri		

Figure 3: Malaria transmission risk, Assam

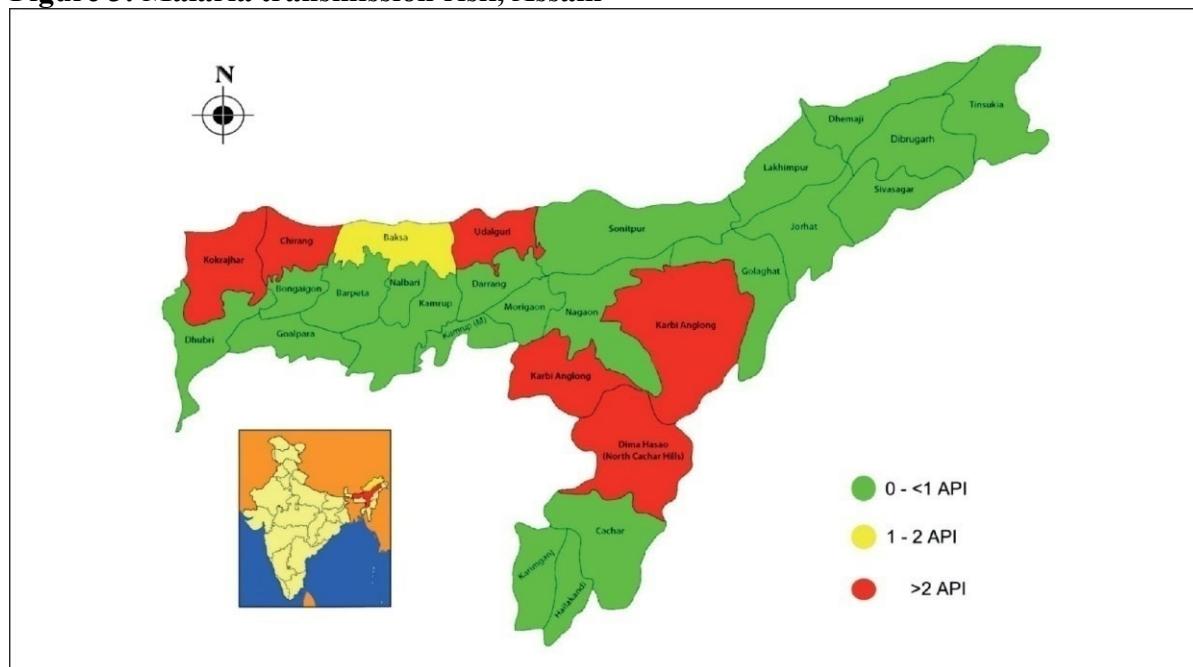


Table 11: Hotspot locations of Dengue in Assam, 2021-22

Sl.	Name of the city	Name of the District
1	Guwahati	Kamrup Metro
2	Dibrugarh	Dibrugarh
3	Silchar	Cachar
4	Jorhat	Jorhat
5	Bongaigaon	Bongaigaon
6	Silapathar	Lakhimpur
7	Tezpur	Sonitpur

IV. Extreme weather events (EWE)

Assam is one of the top climate vulnerable states in India. Flooding is the predominant weather impact in the state.

Table 11: Number of deaths due to extreme weather events, as per Statement on Climate of India During 2022 by IMD, MoES

Year	COLD WAVE	CYCLONIC STORM	DUST STORM	FLOODS & HEAVY	GALE	HAIL STORM	HEAT WAVE	LIGHTNING	SNOW FALL	SQUALL	THUNDER STORM	Grand Total
2019	-	-	-	94	-	-	-	15	-	-	11	120
2020	-	-	-	129	-	-	-	-	-	-	-	129

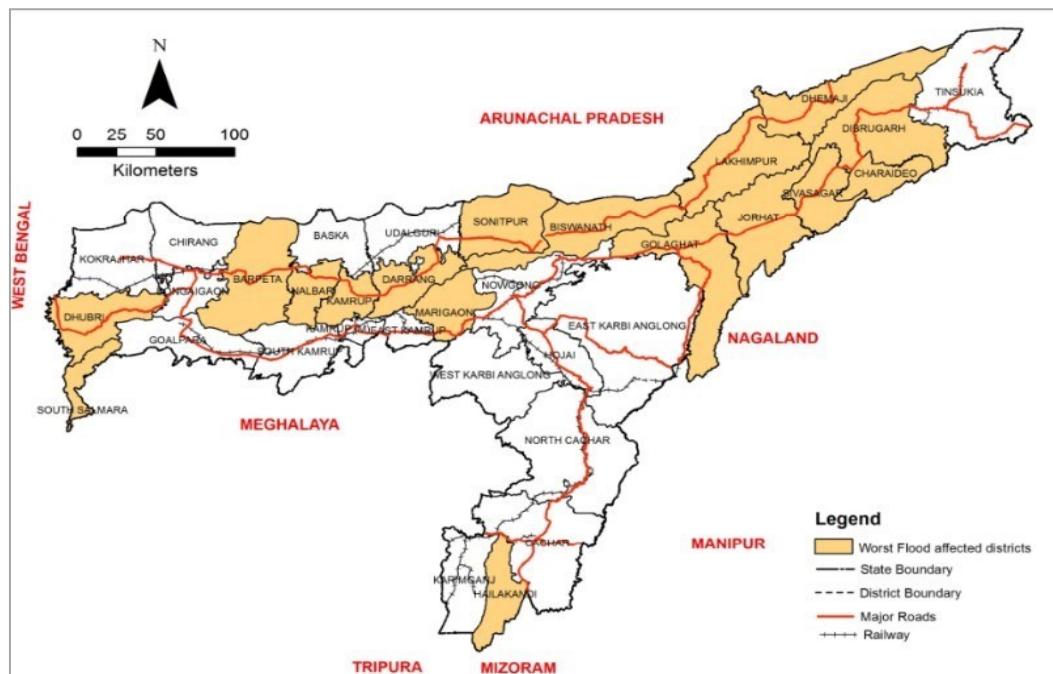
a) Floods and Heavy Rainfall

Assam is prone to floods and erosion due to vast network of rivers. Surge in the frequency and intensity of flood events in recent decades is a challenge. About 97.51 million people are exposed to extreme flood events in India. The flood prone area of the state as assessed by the Rastriya Barh Ayog (RBA) is 31.05 Lakh Hectares against the total area of state 78.523 Lakh Hectares, about 39.58 % of the total land area of Assam. This is about 9.40% of total flood prone area of the country. Assam faced major floods in 1954, 1962, 1972, 1977, 1984, 1988, 1998, 2002, 2004 and 2012 and almost every year since then. 2022 floods that occurred in pre-monsoon period affected 5.4 million people across 32 districts and caused over 200 deaths.

Assam, has witnessed a “significant decreasing” trend in the average monsoon rainfall since 1870 even as extreme rainfall or sudden downpour days that lead to frequent flooding are on the rise, as per India Meteorological Department (IMD). The average rainfall deficiency between 1871 and 2016 was 0.74 mm per decade, but in the period between 1981-2016, the average rainfall deficiency has been 5.95 mm per decade. Assam’s four districts Dhemaji, Dhubri, Dibrugarh, and Lakhimpur are the most vulnerable to extreme floods and have experienced an exponential increase in the frequency of flood events since 2010. More than 20 other districts in Assam fall under this category, making it the most exposed state to extreme flood events.

Seventeen worst flood affected districts are shown in a vulnerability assessment-based hazard map. They are namely Morigaon, Dhemaji, Darrang, Sivasagar, Nalbari, Charaideo, Sonitpur, Biswanath, Dhubri, South Salamara, Kamrup, Jorhat, Lakhimpur, Barpeta, Dibrugarh, Golaghat and Hailakandi districts.

Figure 4: Flood hazard map for the worst flood affected districts, Assam (Source: 7)

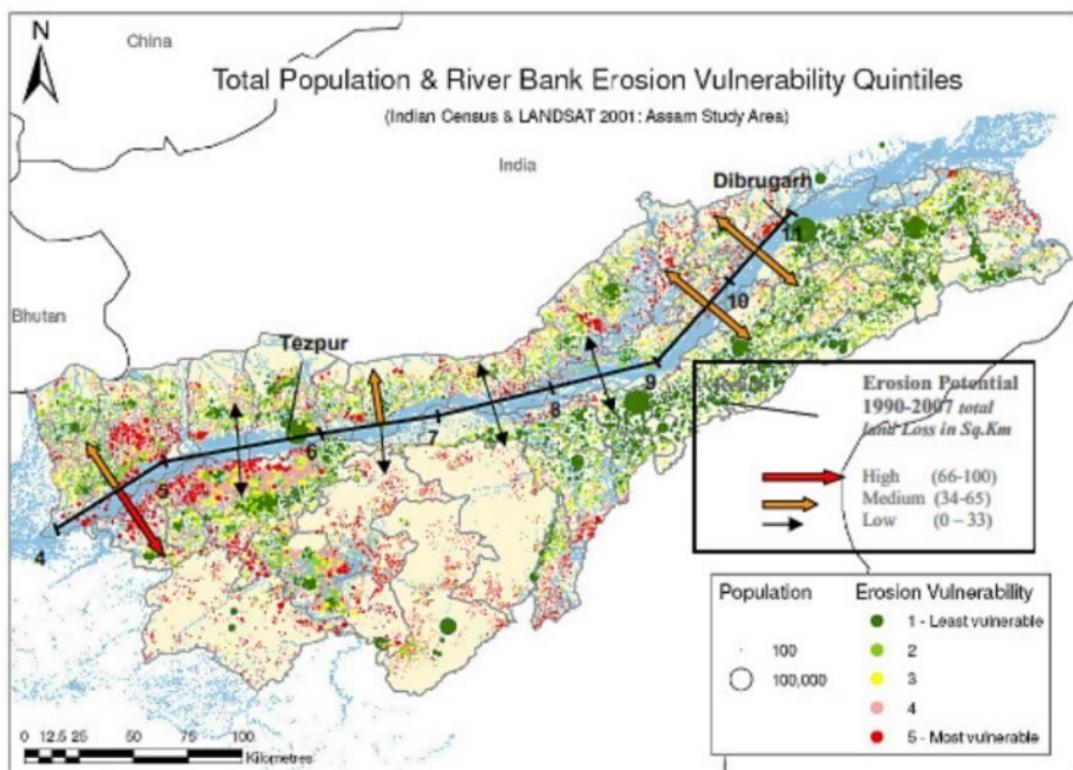


Assam experienced severe flooding due to pre-monsoon episodes of heavy rainfall. Many health facilities were affected. These facilities will be assessed and prioritized for resilient measures

b) Soil erosion

Erosion The Brahmaputra basin is an example of an extremely heterogeneous watershed with complex topography, high spatial variability in land cover.

Figure 5: Major areas affected due to river erosion, Assam



c) Landslide

Where global warming is expected to increase, the frequency and intensity of severe rainfall events, a primary trigger of shallow, rapid-moving landslides that cause many landslide fatalities, population exposed to landslide risk is increasing. Due to heavy rainfall, deforestation and inadequate urban land-use planning along with the demand for land for agriculture and housing have led to the destabilization of hill slope increasing the risk.

Figure 5: Major landslide affected areas, Assam

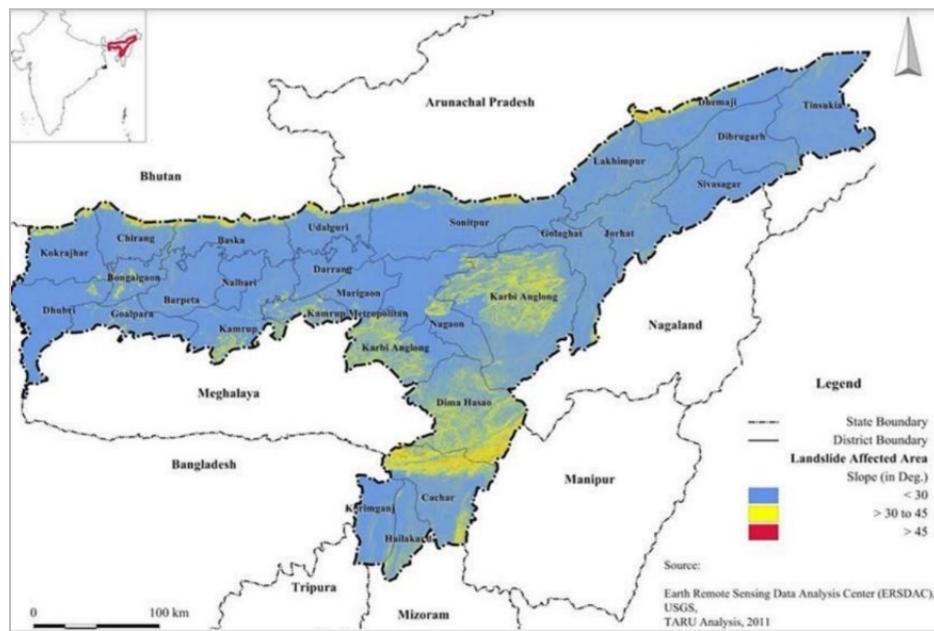
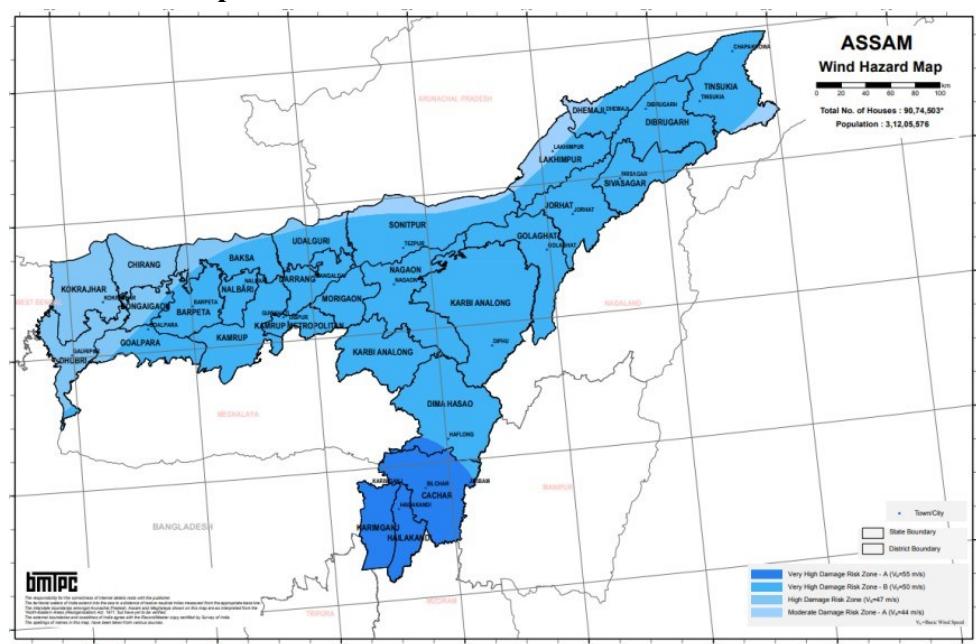


Figure 6: Wind hazard map of Assam



d) Wind and Cyclone

Assam is situated in the north eastern direction of Bangladesh which is highly prone to cyclone/winds. Districts like Dhubri, Gaolpara, Hailakandi, Chachar and Karbi Anglong are more prone to cyclone/winds. Districts Kokrajhar, Bongaigaon, Kamrup, Barpeta, Nalbari, Darrang, Sonitpur,

Nagaon, Marigaon, Lakhimpur, Dhemaji, Sibsagar, Jorhat, Golaghat, Dibrugarh, Tinsukia and Karbi Anglong are likely to experience wind speed of 50m/s whereas districts like Hailakandi, Karimganj and Cachar has wind speed of more than 55m/s and are more vulnerable to cyclonic storms. Occasional cyclones occur in western Assam their severity is more during monsoon.

e) Cold wave

Assam also experiences coldwave. Among deaths reported due to extreme weather events between 2001 and 2014 in Assam, coldwave led to 1.1% mortality.

f) Drought

According to a recent assessment of climate vulnerability of Indian districts, Goalpara, Morigaon, Nalbari, Darrang, Barpeta, Sivasagar, Cachar of Assam are drought hotspots in north-east region.

Table 12: Ranking of Districts based on exposure, sensitivity and adaptive capacity to flood, drought & cyclone, Assam⁸

Rank	District	Event	Exposure	Sensitivity	Adaptive Capacity	Vulnerability Index	Vulnerability
1	Dhemaji	Flood	0.98	0.9	0.35	1	Very High
10	Lakhimpur	Flood	0.95	0.87	0.41	0.869	Very High
13	Darrang	Flood & Drought	0.96	0.8	0.38	0.85	Very High
16	Dhubri	Flood	0.98	0.88	0.43	0.796	Very High
18	Dibrugarh	Flood	0.95	0.98	0.44	0.791	Very High
24	Golaghat	Flood	0.94	0.87	0.44	0.745	Very High
26	Goalpara	Flood & Drought	0.86	0.86	0.42	0.74	Very High
29	Karbi Anglong	Flood	0.78	0.86	0.4	0.729	Very High
32	Sonitpur	Flood	0.91	0.87	0.45	0.709	Very High
36	Bongaigaon	Flood	0.81	0.87	0.41	0.698	Very High
42	Barpeta	Flood & Drought	0.97	0.74	0.45	0.671	Very High
44	Jorhat	Flood	0.93	0.88	0.49	0.663	Very High
67	Karimganj	Flood	0.91	0.93	0.47	0.542	High
81	Tinsukia	Flood	0.7	0.85	0.47	0.497	High
84	Cachar	Flood & Drought	0.96	0.61	0.5	0.492	High
88	Sivasagar	Flood & Drought	0.93	0.63	0.51	0.483	High
101	Kamrup	Flood	0.59	0.89	0.44	0.441	High
192	Chirang	Flood	0.28	0.93	0.39	0.225	Moderate
193	Hailakandi	Flood	0.28	0.92	0.42	0.222	Moderate
272	Kokrajhar	Flood	0	0.86	0.39	0	Very Low

III. Public Health Infrastructure in Assam

Assam has a network of public and private health care facilities. There have been efforts to expand and update public health infrastructure in recent years. Concentrated efforts in disaster vulnerability of health facilities and implementation of resilient measures should be done to ensure health service delivery even during extreme weather.

Table 13: Public health infrastructure in Assam

	District	Sub Centres	PHCs	CHCs	Sub Divisional Hospitals	District Hospitals
1	Barpeta	264	51	6	1	1
2	Baksa	157	41	5	0	1
3	Bongaigaon	84	30	3	0	1
4	Cachar	270	33	5	0	1
5	Chirang	86	25	3	0	1
6	Darrang	163	30	6	0	1
7	Dhemaji	98	22	4	0	1
8	Dhubri	246	44	8	2	1
9	Dibrugarh	231	30	7	0	0
10	Goalpara	151	41	5	0	1
11	Golaghat	144	40	4	1	1
12	Hailakandi	105	13	3	0	1
13	Jorhat	144	44	5	2	0
14	Kamrup Metro	51	25	3	0	1
15	Kamrup Rural	280	71	11	1	1
16	Karbi Anglong	145	46	5	1	1
17	Karimganj	218	29	5	0	1
18	Kokrajhar	161	45	4	1	1
19	Lakhimpur	156	30	8	1	1
20	Morigaon	123	36	5	0	1
21	Nagaon	354	80	15	0	1
22	Nalbari	121	47	9	0	1
23	Dima Hasao	65	11	2	0	1
24	Sivasagar	219	45	4	2	1
25	Sonitpur	275	58	7	2	1
26	Tinsukia	164	23	6	0	1
27	Udalguri	146	24	3	0	1
Total		4621	1014	151	14	25

Table 14: District wise population and health facilities affected by Floods of 2022, Assam (as of September 2022, state report)

Sl. No.	District	No. of Village Affected	No. of Health Institution Affected	No. Of Population Affected	No. of Relief Camps	Relief Camp Population	Medical Camps Held	Patient Treated
Assam Total		6084	712	5023015	1302	308784	7416	173006
1	Baksa	112	7	31057	70	6564	211	7216
2	Barpeta	611	120	1230721	231	45504	983	11287
3	Biswanath	120	5	64627	8	889	8	59
4	Bongaigaon	83	0	17753	40	5563	116	140
5	Cachar	784	158	550318	224	107820	1736	59611
6	Charaideo	10	0	436	2	11	2	0
7	Chirang	130	10	51368	40	10914	97	1193
8	Darrang	640	85	609157	27	9402	637	19673

Sl. No.	No. of the District	No. of Village Affected	No. of Health Institution Affected	No. Of Population Affected	No. of Relief Camps	Relief Camp Population	Medical Camps Held	Patient Treated
Assam Total		6084	712	5023015	1302	308784	7416	173006
9	Dhemaji	160	3	98382	2	251	29	302
10	Dhubri	153	17	183910	0	0	0	0
11	Dibrugarh	2	1	4077	0	0	4	121
12	Dima Hasao	273	12	14425	28	1905	570	3346
13	Goalpara	123	16	101123	57	12443	166	1696
14	Golaghat	24	0	16798	0	0	5	75
15	Hailakandi	111	21	119632	25	6479	223	13691
16	Hojai	201	1	202483	79	14359	217	4121
17	Jorhat	0	0	0	0	0	0	0
18	Karbi Anglong	0	0	0	0	0	0	0
19	Kamrup Metro	14	4	69915	10	853	6	24
20	Kamrup Rural	299	35	332685	102	11772	523	0
21	Karimganj	469	12	281271	71	20595	505	9443
22	Kokrajhar	0	0	0	0	0	0	0
23	Lakhimpur	106	3	43643	9	919	65	2855
24	Majuli	36	0	2,609	0	0	21	0
25	Morigaon	593	57	134318	26	280	218	0
26	Nagaon	547	85	641618	170	39208	920	35045
27	Nalbari	118	51	84931	49	5319	31	1938
28	Sivasagar	4	0	997	0	0	2	70
29	Sonitpur	60	2	28421	9	2262	50	630
30	South Salmara Mancachar	48	7	45950	0	0	0	0
31	Tinsukia	37	0	21597	5	3442	26	85
32	Udalguri	141	0	30661	2	164	1	100
33	West Karbi Anglong	75	0	8132	16	1866	44	285

Health facilities affected by recent floods should be considered for implementation of flood resilient infrastructural and operational measures on priority-basis after vulnerability assessments.

IV. Roadmap of Assam state for Health Sector Response to Climate Change

Current and Future Priorities of Assam state in upcoming years (2022-2027)

- Awareness Generation among the population especially vulnerable communities
- Health-Care Providers & Policy Makers Regarding Impacts Of Climate Change On Human Health.
- Capacity Building of Government And Private Healthcare System To Reduce Illnesses/ Diseases Due To Variability In Climate
- Health Sector Preparedness and Response Including District Level
- To Develop Partnerships and Create Synchrony/ Synergy With Other Missions, Departments and Programmes To Steer Research On Climate Change And Health.

The above objectives will be implemented through National Programme on Climate Change and Human Health (NPCCHH). Assam has placed considerable emphasis on empowerment of village level institutions through extensive capacity building and proactive facilitation. The creation of Water and Sanitation Management Organization (WASMO) has successfully been able to bring effective citizens' engagement through its innovative governance model, for facilitating the community led water supply programme throughout the State of Assam.

The vulnerabilities that climate variability and change create are key issues in the economic and social development of the State. Although, there are studies on climate trends and projections for the Indian region, few focused on the State. Available observational evidence indicates that regional changes in climate, particularly increases in temperature, have already affected a diverse set of physical and biological systems. There is a need to study systematically the inter-relationship between Climate Change impacts to derive effective adaptation and mitigation measures

Identified 10 components provide a comprehensive approach to integrating climate resilience into existing health systems

- Leadership & governance
- Capacity building on climate change and health
- Vulnerability and adaptation (V&A) assessments
- Integrated risk monitoring and early warning
- Climate resilient and sustainable technologies and infrastructure
- Research to reduce uncertainty on local conditions, gain insight into local solutions and capacities, and build evidence to strengthen decision-making
- Management of environmental determinants of health
- Departments and programs that can become climate-informed
- Managing changing risks of climate extremes and disasters and lastly
- Climate and Health financing.

V. Implementation of National Programme on Climate Change and Human Health

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

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

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

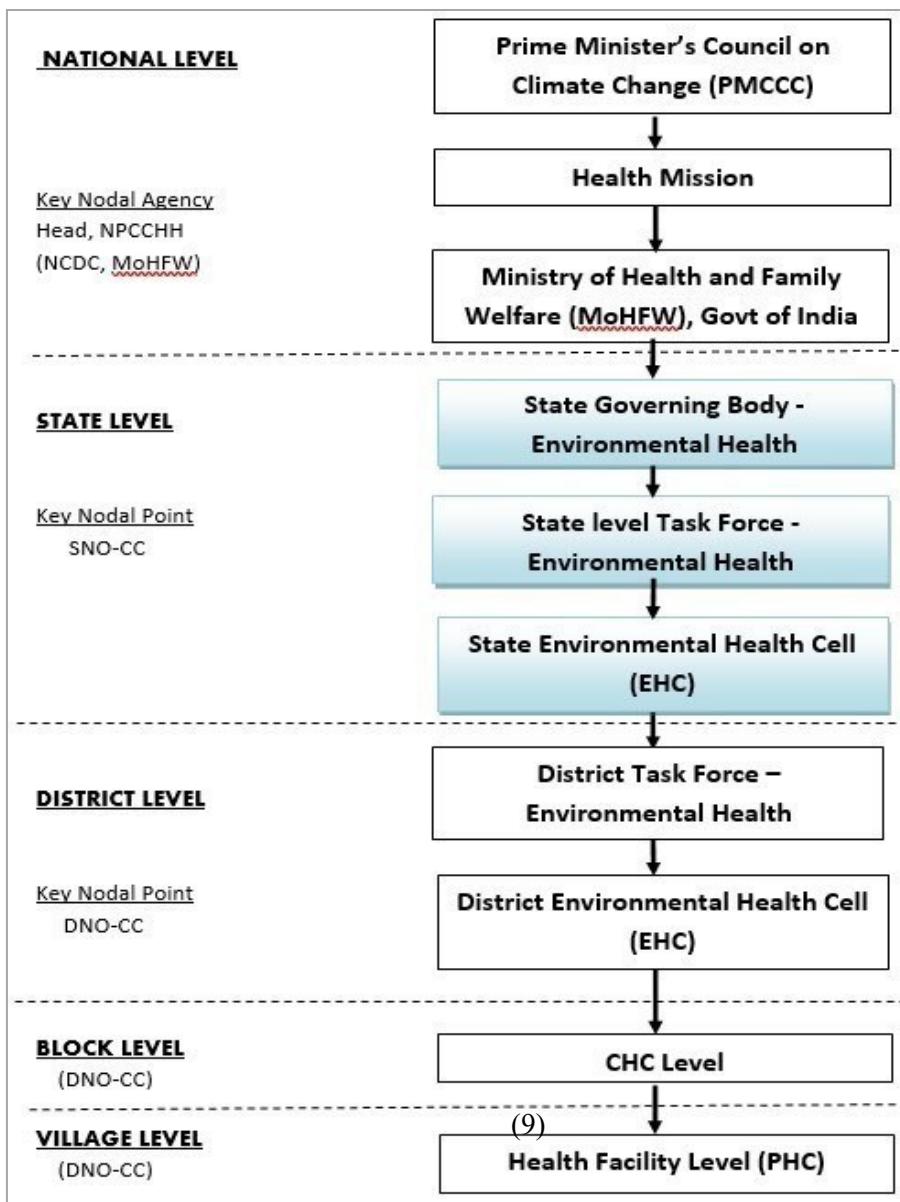
1. To create awareness among general population (vulnerable community), health-care providers and Policy makers regarding impacts of climate change on human health.
2. To strengthen capacity of healthcare system to reduce illnesses/diseases due to variability in climate.
3. To strengthen health preparedness and response by performing situational analysis at state/ district/ below district levels.
4. To develop partnerships and create synchrony/ synergy with other missions and ensure that health is adequately represented in the climate change agenda in the STATE in coordination with the Ministry of Health & Family Welfare.
5. To strengthen state research capacity to fill the evidence gap on climate change impact on human health.

There are 17 Climate sensitive health issues identified under programme for health sector strengthening e.g. Air Pollution related illnesses, Heat-related illnesses Vector borne diseases Disaster related health issues, Nutrition related diseases, Water-borne diseases, Occupational health, Food security, Mental health, Cardio pulmonary diseases, Hilly region and Mountainous Climate Sensitive Diseases, Coastal Climate Sensitive Diseases, Zoonotic diseases and One Health and Development of Environmentally Friendly (Green) and Climate Resilient infrastructure.

This action plan outlines activities to be conducted under priority climate sensitive diseases.

1. Air Pollution related illnesses,
2. Heat-related illnesses
3. Vector borne diseases
4. Disaster related health issues
5. Environmentally Friendly (Green) and Climate Resilient infrastructure

VI. Organizational Structure under NPCCHH in Assam



a) Assam State Governing Body for NPCCHH

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

Member	Designation
Honorable State Health Minister	Chairman
Principal Secretary (Health)	Vice Chairman
Mission Director National Health Mission	Member
Director of Medical Education	Member
Director of Medical Services	Member

b) Assam State Task Force for NPCCHH

The Assam State Task force for NPCCHH has been constituted and reported.

c) Roles and responsibilities of State Task Force

1. Establish organizational structure for implementation of programme activities at state
2. Preparation and Implementation of State Action Plan for Climate Change and Human Health (SAPCCHH)
3. Facilitate implementation of activities at district, sub-district and community level
4. Assessment of needs for health care professionals (like training, capacity building) and organise training, workshop and meetings.
5. Establish/coordinate surveillance of Acute Respiratory Illness in context of Air Pollution and Heat-related illness surveillance
6. Ensure Convergence with NHM activities and other related programs in the State and District
7. Maintain State and District level data on physical, financial, epidemiological profile for climate sensitive illnesses
8. 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)
9. Monitor programme, Review meetings, and Field observations.
10. Social mobilization against preventive measures through involvement of women's self-help groups, community leaders, NGOs etc.
11. Advocacy and public awareness through media (Street Plays, folk methods, wall paintings, hoardings etc.)
12. Encourage and implement Green/environmentally friendly and resilient measures and infrastructures in health care sector
13. Conduct Vulnerability assessment and risk mapping for commonly occurring climate sensitive illnesses in the state/ UT.

d) Members of Environmental Health Cell, Assam, 2022

No	Name and Design	Contact No.	Email ID	Remarks
1	Dr. Kareng Rongpipi SNO, NPCCHH, Assam	94351-66273	npcchhassam@g mail.com	Designated SNO
2	Dr. Parag Deb Roy Addl. SNO, NPCCHH, Assam	98648-21309	<u>parag.debroy@g mail.com</u> npcchhassam@g mail.com	Designated Addl.SNO
3	Dr. Nayan Kr. Das State Consultant, NPCCHH Assam	94354-04726	npcchhassam@g mail.com	File no.NHM- 31032(11)/1/2018-HRD- NHM8569 /dated 21 July, 2022
4	Dr. Subhradeep Sonowal		npcchhassam@g mail.com	File no.NHM- 31032(13)/15/2018- HRD-NHM/9526/dated 30 July, 2022

Part II: Health Action Plan on Priority Climate-Sensitive Health Issues

Planning of activities under NPCCHH should be done in accordance with PIP guidelines.

I. Health Action Plan on Air Pollution Related Diseases

a) Information, Education and Communication (IEC) Activities

i. Target population:

Urban areas (NCAP Cities, Guwahati, Nagaon, Tezpur, Jorhat, Dibrugarh, Silchar, Bongaigaon etc.)

Industrial areas (like Guwahati, Tezpur, Dibrigarh, Sibsagarh, Tinsukia etc),

Vulnerable groups (Primarily Children, women, older adults, traffic police, outdoor workers)

ii. Annual IEC dissemination plan for Air Pollution and Health under NPCCHH, Assam

IEC type	Material	Timeline	Mechanism
Advisory	Sample copy prepared	September	By email to DNO for further Dissemination to health facilities
Early warning	AQI level with health risk category	September-March (Priority) Year around (Ideally)	<ul style="list-style-type: none"> • Digital display on public places and health facilities • Newspaper • Health department/other government website/application
Posters	12 posters on Air Pollution and health impacts (English) 3 posters on Air Pollution and health impacts (Assamese, Hindi, Bengali and other Local language) Posters on Air Pollution and health impacts	September-October	<ul style="list-style-type: none"> • Printing for state-level dissemination at health facilities, public places/buildings • By email to DNO for printing at district level and dissemination health facilities, schools and other public/government buildings
Wall painting	Using available material	Painted in August-September	<ul style="list-style-type: none"> • In schools and selected colleges • In health facilities
Hoardings	Posters	September	<ul style="list-style-type: none"> • To be planned with urban/rural administration/municipalities
Audio-Visual	3 Audio Jingles (Assamese and other language)	September	<ul style="list-style-type: none"> • Played 3 times a day between September to March
	2 Video messages (Assamese and other language)		

Bus painting	Using available material	Painted in August-September	
Digital display	4GIF & above mentioned video messages	August-September	Display in health facilities Public digital display boards in major cities
Social medial	All above material + Relevant activity updates	Throughout the year	<ul style="list-style-type: none"> • Facebook and Twitter handle of official state NPCCHH, NHM • WhatsApp groups (StateDNO, Health facility group)

iii. Preparatory work for IEC dissemination by EHC

	Nodal agency and person
<ul style="list-style-type: none"> • Assamese translation of existing print material Assamese / Hindi material • Designing of new print material • Printing • Audio-video spot booking 	<ul style="list-style-type: none"> • State Environment health cell /IEC department: Dr Parag Deb Roy

iv. Observance of important environment-health days for air pollution and health-related activities

Day	Activities
International Day of Clean Air for Blue Skies (September 7) Otherdays: <ul style="list-style-type: none"> • World Car Free Day (September 22) • World Environmental Health Day (September 26) • Green Consumer Day (September 28) 	IEC Campaigns <ul style="list-style-type: none"> • Health facility-based patient awareness sessions • Audio-video spots broadcasting • Targeted awareness sessions: traffic police, schools, women, children • Street plays and local cultural activities, Rallies • Sports events • Competition: poster, poem/essay, quiz

b) Capacity Building Activities

i. Training material

Guidelines: available at bit.ly/NPCCHHguidelines

- Health Adaptation Plan for Diseases Due to Air Pollution
- Health Sector Preparedness for Air Pollution
- Handbook for Health Professionals on Air Pollution & its Impact on Health

Training modules: available at bit.ly/NPCCHHguidelines

- Women Training Manual
- Children Training Manual
- Traffic Police Training Manual
- Municipal Worker Training Manual

Other training resources: NPCCHH channel at <https://bit.ly/NPCCHHyt>

ii. State-Level/District-Level Master Trainers and Supporting Training institutes

For State Institute of Health & Family Welfare

Contact person Designation:

- Dr. Krishna Kemprai, SNO, NPCCHH-9435712794
- Dr. Parag Deb Roy, Addl. SNO, Contact detail – 98648-21309
- Dr. Ramesh Bhatta, State Consultant NPCCHH-7896759751

Training on Air pollution related diseases may be expanded to include other climate sensitive diseases specifically cardio-pulmonary and allergic diseases.

iii. Annual training plan for Air Pollution and Health under NPCCHH, Assam

Trainee	Trainer	Topics	Timeline
District level (DNO-CC, trainers)	State Level Trainers, SNO, Addl. SNO, Consultant	- Air pollution-health impact, prevention measures - Surveillance reporting and analysis with AQI - Health facility preparedness	August-September
Health facility level (MO of DH/CHC/PHC)	District Level Trainers DNO-CC	- Air pollution-health impact, prevention measures - Surveillance case identification and reporting - Health facility preparedness	August-September December-January (review/repeat)
Community Healthcare workers (MPH, ASHA, ANM etc)	State & District Trainers	- Surveillance case identification and reporting	August-September December-January (review/repeat)
Panchayati Raj Institutions	District Level Trainers, MO	Air pollution-health impact prevention	September-October
District level (DNO-CC, trainers)	District level trainers, MO, Health care workers	Air pollution-health impact prevention	September-February

c) Strengthening Health Sector Preparedness

i. National Outdoor Air and Disease Surveillance (NOADS)

- Surveillance Guidelines: Health Adaptation Plan for Diseases Due to Air Pollutants <https://bit.ly/NPCCHHNOADS>
- Five NCAP districts have been identified and the proposed DNOs are as following.

Sl.No.	Name of District	Name of DSO / DNO	Contact	email ID
1	Surveillance training is included under capacity building section	Capacity building section	parag.debroy@gmail.com Kamrupruralsuidsp@gmail.com	
2	Surveillance activity monitoring: - Kamrup Metro	Er. Kanak Ch Talukdar	9864096619	kamrupmetrodsuidsp@gmail.com
3	- Review with DNO: Quarterly	Hospital nodal officer	Monthly	nagaondsuidsp@gmail.com
4	Nalbari	Dr. Dwepen Kr Das	7002060163	nalbaridsuidsp@gmail.com
5	Sibsagar	Dr. Gayatri Senapati	9101419990	sibsagardsuidsp@gmail.com
6	Cachar	Dr. Ibrahim Ali Ahmed	7086585070	cachardsuidsp@gmail.com

ii. Revision of Health Action Plan on Air Pollution Related Diseases in State Action Plan on Climate Change and Human Health (SAPCCHH)

The section should be revised every year after February based on targets achieved, surveillance data, climate change impacts and health indicators with support from multi-sectoral task force.

d) Roles and Responsibilities

	Responsibilities
SNO / Addl. SNO/ State Consultant NPCCHH	<ul style="list-style-type: none"> • Finalization of IEC material and dissemination Plan • Organize IEC campaigns at state level on observance of important environment-health days • Organize training sessions for district level and surveillance nodal officer • Facilitate training of medical officers in clinical aspects of air pollution's health impact • Monitor AQI levels in state especially in hotspots and NCAP cities • Ensure reporting from sentinel hospitals and DNO • Ensure necessary health facility preparedness • Review surveillance reporting and monthly report submission by DNO • Submit report of activities • Review implementation of IEC and surveillance activities at all levels • Evaluate and update relevant section of SAPCCHH with support from State Task Force • Liaison with State Pollution Control Board for AQI alerts and its dissemination • Liaison with Department of Environment for combined IEC campaigns and information sharing on health indicators for targeted air pollution reduction activities • Create organization support and strengthen Environmental Health cell to implement NPCCHH vision, Goal and Objectives • Organizes sensitization workshops for other stakeholders and lined departments • Organize Seminars on Air Pollution and Conference to share knowledge and action under NPCCHH. • Collaborate with academic institute/s for support in updating SAPCCHH, Surveillance activity monitoring, vulnerability assessment and applied research • Advocate for reduction in source of air pollution
DNO/ District Consultant NPCCHH	<ul style="list-style-type: none"> • Ensure IEC dissemination to community level • Facilitate community level IEC activities • Conduct training for Block health officers, Medical officer, Sentinel hospital nodal officers with relevant training manuals • Conduct training of vulnerable groups: police officers, outdoor works, women, children • Organize IEC campaigns at district level on observance of important environment-health days • Collect and monitor AQI levels in state especially in hotspots and NCAP cities • Ensure daily reporting from Sentinel hospitals and compile the data • Analyze daily health data with AQI level to monitor trends and hotspot in health impacts • Submit analyzed monthly report to SNO, NPCCHH, Hq and other

	<p>departments for necessary action</p> <ul style="list-style-type: none"> • Submit report of activities • Update DAPCCHH with support from District Task Force • Advocate for reduction in source of air pollution
Surveillance hospital nodal Officer	<ul style="list-style-type: none"> • Train hospital staff and clinician responsible for daily reporting incase indentation and reporting flow • Compile daily reports for the health facility and submit it to DNO and NPCCHH, Hq
Block health officer	<ul style="list-style-type: none"> • Conduct community level IEC activities • Ensure training of medical officers • Organize PRI sensitization workshop 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 health impact of air pollution • Ensure necessary health facility preparedness in early diagnosis and management of cases • Community mobilization for reduction in greenhouse gas emissions, and local pollution
Panchayati Raj Institutions	<ul style="list-style-type: none"> • Conduct community level IEC activities • Community mobilization for reduction in greenhouse gas emissions, and local pollution

II. Health Action Plan on Heat and Health

Assam is not considered among 23 heat-vulnerable states which requires comprehensive actions to adapt and mitigate impact of extreme heat. However, annual average temperatures in the state have increased (figure 2) and population is exposed to higher temperatures. Special attention should be given to urban areas due to urban heat island effect and vulnerable districts. Ranking of heat vulnerable districts (table 3) might be used to prioritize actions related to heat-health.

a) Information, Education Communication (IEC) Activities

i. Target population:

- Urban Areas: like Bongaigaon, Cachar, Charaideo, Dhubri, Dibrugarh, Goalpara, Jorhat, Kamrup Metro, Karbi Anglong, Karimganj, Lakhimpur, Nagaon, Sivasagar, Sonitpur
- Vulnerable groups: (Primarily Children, women, older adults, traffic police, outdoor workers/vendors)

Annual IEC dissemination plan on Heat and Health under NPCCHH, Assam

IEC type	Material	Timeline	Mechanism
Advisory	bit.ly/NPCCHH advisory	March	By email to DNO for further Dissemination to health facilities
Early warning	Daily heat bulleting from IMD with health impact information	March-July	<ul style="list-style-type: none"> • Digital display of temperatures on public places and health facilities • Newspaper • Health department/other government website/application
Posters	<ul style="list-style-type: none"> • 6 posters on heat and health impacts (Assamese and other local language) • Posters on heat and bit.ly/NPCCHHIEC 	February-March	<ul style="list-style-type: none"> • Printing for state-level dissemination at health facilities, public places/buildings • Electronically to DNO for printing at district level and dissemination to health

	health impacts (Assamese)		facilities, schools and other public/government buildings
Wall painting	Using available material	Painted in February-March	<ul style="list-style-type: none"> In schools and selected colleges In health facilities
Hoardings	Using available material	March	<ul style="list-style-type: none"> To be planned with Guwahati, Tezpur and Jorhat district
Audio-Visual	• Audio Jingles bit.ly/NPCCHHIEC	March	<ul style="list-style-type: none"> Played 3 times a day during between March-July
	• Video messages bit.ly/NPCCHHIEC	March	<ul style="list-style-type: none"> Played 3 times a day during between March-July
Bus Painting	Using available material	March-April	With GSRTC and Corporation city Bus service
Digital display	<ul style="list-style-type: none"> Available GIF Above mentioned video messages 	March-July	<p>Display in health facilities Public digital display boards in major cities</p>
Social medial	All above material + Relevant activity updates	February-July	<ul style="list-style-type: none"> Facebook and Twitter handle of state NPCCHH, NHM WhatsApp groups (State DNO, Health facility group)

Observance of important environment-health days

Although there is no specific day on heat health, observance of following days may be recommended for awareness on health impact of extreme heat (outdoor-indoor).

Day	Activities on Heat-Health
<ul style="list-style-type: none"> World Forest Day (March 21) World Water Day (March 22) World Health Day (April 7) Earth Day (April 22) World Environment Day (June 5) World Day to Combat Desertification and Drought (June 17) 	<p>IECCampaigns</p> <ul style="list-style-type: none"> Audio-video spots broadcasting Targeted awareness sessions: traffic police, schools, women, children Street plays and local cultural activities, Rallies Sports events Competition: poster, poem/essay, quiz <p>Community level heat mitigation measures</p> <ul style="list-style-type: none"> Plantation drive Cool-roofing drive Energy conservation <p>Health facility level activities</p> <ul style="list-style-type: none"> Health facility-based patient awareness sessions Energy audit and conservation measures Review of preparedness for heat-related illness

b) Capacity Building Activities

i. Training material

Guidelines: National Action Plan on Heat Related Illnesses (<https://bit.ly/NAPHRI>)

Training modules available bit.ly/NPCCHHguidelineshortly

- State-District level training modules
- Medical officer training
- Paramedical officers & Health care workers
- Community level training: vulnerable population group such as women, children,

elderly, different type occupations

Other training resources: NPCCHH channel <https://bit.ly/NPCCHHyt>

- Clinical Aspects of Heat-Related Illnesses
- Webinars on heat wave and its health impact
- HRI surveillance training, ToT

ii. State-Level/District-Level Supporting Training institutes:

- State Institute of Health & Family Welfare: Contact person designation: Dr Ajay Paswan, Medical Officer, Contact detail -9427717776
- Assam Institute of Disaster Management
- Training on Heat-related illnesses diseases may be expanded to include other climate sensitive health issues specifically extreme weather events.

iii. Annual training plan for Heat and Health under NPCCHH, Assam

Training Programme for	Trainer	Topics	Timeline
District level (DNO-CC, trainers)	State Level Trainers SNO, Consultant	<ul style="list-style-type: none"> • Heat-health impact, prevention measures • Surveillance reporting and analysis with weather parameters • Health facility preparedness 	February
Health facility level (MO of DH/CHC/PHC)	District Level Trainers DNO-CC	<ul style="list-style-type: none"> • Heat-health impact, prevention measures • Surveillance case identification and reporting • Health facility preparedness • Clinical management of HRI 	February
Community Health care workers (MPH, ASHA, ANM etc)	District Level Trainers, MO	<ul style="list-style-type: none"> • Heat-health impact prevention • Indoor and outdoor mitigation measures 	February-March
Panchayati Raj Institutions	District level trainers, MO, Healthcare workers	<ul style="list-style-type: none"> • Heat-health impact prevention • Indoor and outdoor mitigation measures 	February-April

c) Strengthening Health Sector Preparedness

i. National Heat-Related Illness Surveillance (NHRIS), NPCCHH

Currently Assam is not part of the NHRIS. However, state may decide to collect relevant data for assessment of heat impact on population.

- **Surveillance guidelines and reporting formats:**

National Action Plan on Heat Related Illnesses (<https://bit.ly/NAPHRI>)

- Case definitions
- HRI reporting formats: health facility to state level (forms 1 to 4)
- Death investigation form for suspected heatstroke deaths

- **Reporting units:** All health facilities in a district (PHC and above) should submit daily reports from March 1-July 31 regardless of observed temperatures and rainfall.
- **Surveillance training:** included under capacity building section
- **Surveillance activity monitoring:** Review of surveillance activity with DNO: every

month (March-July)

ii. Health Sector Preparedness

Guidelines: National Action Plan on Heat Related Illnesses (<https://bit.ly/NAPHRI>)

iii. Revision of Health Action Plan on Heat Related Illnesses in State Action Plan on Climate Change and Human Health (SAPCCHH): The section should be revised every year after July based on targets achieved, surveillance data, climate change impacts and health indicators with support from multisectoral task force,

iv. Heat Action Plan for Specific Cities/Rural Districts

Urban areas often become hotspots of heat impact due to altered land use, reduced land cover, reduced natural shade and use of built material that trap heat during day and night time. Urban heat island effect poses greater threat to larger swath of population by impeding night natural cooling leading to continuous heat stress compared to that in rural area. As such health-centric multisectoral coordinated adaptation and mitigation efforts at city level are necessary for not only reducing heat impact but also for reduction of greenhouse gas emission.

City-specific Heat-Health Action Plans are encouraged and supported by State EHC.

v. City-Specific Heat-Health Action Plans should include:

1. Early warning system and inter-agency emergency response plan:
 - a. Analysis of historic city level all-cause mortality with observed temperatures to establish health impact-based warning and response trigger (IMD, SDMA)
 - b. Daily dissemination of forecast and observed temperatures during summer to public and government agencies (IMD)
 - c. Identification of roles and responsibilities of coordinating agencies with activity matrix and action checklists (Refer: Ahmedabad Heat Action Plan¹²)
2. Public awareness
 - a. Communicating risk to vulnerable population/groups
3. Capacity building of medical professionals
 - a. On identification, management and reporting of HRI cases and deaths
4. Promoting short and long-term adaptation and mitigation measures
 - a. Access to potable water, shaded area, cooling spaces
 - b. Plantation, cool-roof

d) Roles and Responsibilities

	Responsibilities
SNO	
	<ul style="list-style-type: none">• Disseminate early warnings to 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 IEC campaigns at state level on observance of important environment-health days• Organize training sessions for district level and surveillance nodal officer• Facilitate training of medical officers in clinical aspects of heat-health impact• Ensure daily surveillance reporting from district level

	<ul style="list-style-type: none"> • Ensure submission and analysis of heat related death at state and district level • Monitor daily health data with temperature and humidity levels to monitor trends and hotspots in the state • Review health facility preparedness and ambulance services to manage HRI • Identify health facilities at different levels that can have heat illness wards with necessary treatment/cooling facilities • Keep existing Rapid response Teams under IDSP prepared to manage HRI if needed for emergency response to extreme heat • Review implementation of IEC and surveillance activities at all levels • Evaluate and update relevant section of SAPCCHH with support from State Task Force • Create organization support and strengthen Environmental Health cell to implement NPCCHH vision, Goal and Objectives • Organize sensitization workshops for other stakeholders and line departments • Organize seminars and conference to share knowledge and action under NPCCHH • Collaborate with academic institute/s for support in updating SAPCCHH, Surveillance activity monitoring, training of health care professionals, vulnerability assessment and applied research • Submit report of activities on heat-health under NPCCHH • Advocate for measures to reduce source of greenhouse gas emissions •
DNO	<ul style="list-style-type: none"> • Disseminate early warning to block and health facility levels • Ensure IEC dissemination to community level and facilitate community level IEC activities • Liaison with IMD to get daily observed temperature and relative humidity infomation • Liaison with other departments for combined IEC campaigns, coordinated response and information sharing of health indicators for targeted action • Conduct training for block health officers, medical officers, with relevant training manuals • Conduct sensitization of vulnerable groups: police officers, outdoor works, women, children etc • Organize IEC campaigns at district level on observance of important environment-health days • Ensure daily reporting from health facilities and compile the data • Analyze daily health data with temperature and humidity levels to monitor trends and hotspots in district • Support timely suspected heatstroke death analysis and its reporting • Submit analyzed weekly reports 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 report of activities on heat-health under NPCCHH • Advocate for 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 workshop and training for vulnerable groups • Implement heat mitigation efforts
City-health department	<ul style="list-style-type: none"> • Support in development and implementation of 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 Be aware of AQI levels and health impact of air pollution Ensure necessary health facility preparedness in early diagnosis and management of cases
Panchayati Raj Institutions	<ul style="list-style-type: none"> Conduct community level IEC activities

III. Vector-Borne Diseases in Context of Climate Change

a) Information, Education Communication (IEC) Activities

i. Target population:

- Areas/hotspots identified in Part I, section III (above)
- Vulnerable groups: Primarily children, pregnant women, older adults, immuno compromised, outdoor workers/vendors)
- Annual IEC dissemination plan for Vector-borne diseases in context of climate change under NPCCHH, Assam

IEC type	Material	Timeline	Mechanism
Posters	<ul style="list-style-type: none"> Posters on VBD and climate change (Assamese) bit.ly/NPCCHHIEC May update posters made by state NVBDCP 	<ul style="list-style-type: none"> Pre-monsoon season 	<ul style="list-style-type: none"> Collaborate with NVBDCP
Wall painting	<ul style="list-style-type: none"> Using available material 	<ul style="list-style-type: none"> Painted in June-July, seasonally as needed 	<ul style="list-style-type: none"> In schools and selected colleges, In health facilities
Hoardings	<ul style="list-style-type: none"> Posters in Assamese (above) 	<ul style="list-style-type: none"> June-July, seasonally as needed 	<ul style="list-style-type: none"> To be planned with hotspot, Municipalities and District
Audio-Visual	<ul style="list-style-type: none"> Audio Jingle (Assamese) Video message (Assamese) 	<ul style="list-style-type: none"> June-July, Seasonally, as needed in case of extreme weather events 	<ul style="list-style-type: none"> Plan according to PIP guidelines¹¹ and in coordination with NVBDCP
Bus painting	<ul style="list-style-type: none"> Using available material 	<ul style="list-style-type: none"> Painted in June-July, seasonally as needed 	<ul style="list-style-type: none"> With state and Corporation city Bus service
Digital display	<ul style="list-style-type: none"> Available GIF Available video messages 	<ul style="list-style-type: none"> June-July, seasonally as needed 	<ul style="list-style-type: none"> Display in health facilities Public digital display boards in major cities
Social medial	<ul style="list-style-type: none"> All above material + Relevant activity updates 	<ul style="list-style-type: none"> June-July, Seasonally, as needed in case of extreme weather events 	<ul style="list-style-type: none"> Facebook and Twitter handle of official state NPCCHH, NHM WhatsApp groups (State DNO, Health Facility group)

ii. Observance of important environment-health days

Day	Activities in context of climate change
<ul style="list-style-type: none"> • World Wetland day (2nd February) • World wildlife day (3rd March) • World Meterological day (23rd March) • World health day (7th April) • World malaria day(April 25) • World mosquito day(August 20) • World Environment Day (5th June) • International day of clean air for blue sky (7th September) • International day for disaster Reduction (13th October) • International day of Climate Action (24th October) • National Pollution Prevention Day (2nd December) • World Soil day (2nd December) 	<p>IEC Campaigns</p> <ul style="list-style-type: none"> • Audio-video spots broadcasting • Targeted awareness sessions: urban slums, schools, women, children • Street plays and local cultural activities, Rallies • Sports events • Competition: poster, poem/essay, quiz <p>Collaborate with NVBDCP, Pollution Control Board, Department of Environment and forest, Disaster Management authority, Social welfare, Department of Education.</p>

b) Capacity Building Activities

iii. Training material

- **Training modules:** available at bit.ly/NPCCHHguidelines shortly
- State-District level training modules
- Medical officer training
- Paramedical officers & Healthcare workers
- Community level training: vulnerable population group such as women/children/elderly/ different type occupations
- **Other training resources:** NPCCHH channel <https://bit.ly/NPCCHHyt>
- Training on climate change and its impact on VBD burden
- State-Level/District-Level Supporting Training institutes:
- State Institute of Health & Family Welfare
- Contact person designation: Dr. Parag Deb Roy, Addl.SNO, Contact detail – 9864821309
- Training on Vector-borne disease may be expanded to include other climate-sensitive health issues specifically extreme weather events.

iv. Annual training plan for vector-borne diseases in context of climate change under NPCCHH, Assam

Training Programme for	Trainer	Topics	Timeline
District level (DNO-CC, trainers)	State Level Trainers SNO, Addl.SNO- CC, Consultant	<ul style="list-style-type: none"> • Role of climate change impact in VBD burden, prevention measures • Tracking of VBD and Integrating rainfall, humidity and temperature parameters with VBD surveillance • Post-disaster VBD surveillance, prevention, management 	July or after extreme weather events/natural disasters
Health facility level	District Level	<ul style="list-style-type: none"> • Role of climate change impact in 	July-August or

(MO of DH/CHC/PHC)	Trainers, DNO-CC	VBD burden, prevention measures <ul style="list-style-type: none"> • Strengthen surveillance reporting • Post-disaster VBD surveillance, prevention, management in community and at relief camps 	after extreme weather events/natural disasters
Community Health care workers (MPH, ASHA, ANM etc)	District Level Trainers, MO	• Role of climate change impact in VBD burden, prevention measures <ul style="list-style-type: none"> • Post-disaster VBD surveillance, prevention, management in community and at relief camps 	
Panchayati Raj Institutions	District level trainers, MO, Healthcare workers	Role of climate change impact in VBD burden, prevention measures	

c) Strengthening Health Sector Preparedness

i. Integrate weather parameters with VBD surveillance under NVBDC at District level

- Monitor VBD with weather parameters
- Initiate surveillance based on predicted expansion of vectors to pick up emerging foci with support from State Programme Officers (SPO) and District malaria Officers (DMO)
- VBD prevention and control measures
- Planning of indoor residual spray a month before peak of malaria cases based on historical data
- Management of new foci of transmission
- Epidemic preparedness especially after extreme weather events or natural disasters

d) Roles and responsibilities in implementation of VBD activities in context of climate change under NPCCNN, Assam

Department/Agency	Area of Coordination	Specifics
1. NVBDCP, Assam	Overall guidance and policy formulation	<ul style="list-style-type: none"> • Guide the state governments in resurgence and containment of any VBD
2. State Nodal Officer, Climate Change	To support the state govt. in control of VBDs particularly in climate sensitive states	<ul style="list-style-type: none"> • Oversee vector control measures • Oversee health sector preparedness • Oversee VBD surveillance, control in post-disaster situations in community and relief camps • Train DNO, DMO • Sensitization workshops to increase awareness on climate change and its impact on VBD
3. India Meteorological Department	To provide meteorological data as and when required	<ul style="list-style-type: none"> • To help the state govt. in collaboration with any research institute, in analysis of relationship between climatic factors and a particular VBD so as to forewarn the impending outbreaks.

4. State Programme Officer	Overall planning and execution of surveillance and intervention measures to control VBDs	<ul style="list-style-type: none"> Supervise and guide the DMOs in control of VBDs Organize training sessions for district level
5. State Entomologist	To provide guidance in vector control.	<ul style="list-style-type: none"> Generate data on fortnightly fluctuations in density of vector species so as to guide the state government in choosing appropriate time of IRS activities. To generate data on susceptibility status of disease vectors focusing appropriate insecticide for IRS/larvicide for vector control
6. Chief Medical Officer/District Malaria Officer/ Disease Surveillance officer	Execution of task assigned by the SPO	<ul style="list-style-type: none"> Supervise and guide surveillance and intervention measures for control of VBDs in the district.

e) Revision of Health Action Plan on VBD in State Action Plan on Climate Change and Human Health (SAPCCHH):

The section should be revised every year after December in collaboration with NVBDCP based on updated surveillance data, its analysis with weather parameter, prevention and control activities, targets achieved, and predicted climate variability with support from multi-sectoral task force.

IV. Health Action Plan on Extreme Weather Event related Health Issues

a) Information, Education Communication (IEC) Activities

i. Target population:

- Vulnerable districts/hotspots:** listed in Part 1 under Extreme Weather Event section
- Vulnerable groups:** Primarily Children, women, older adults, traffic police, outdoor workers/vendors

ii. Annual IEC dissemination plan for extreme weather events and their health impact under NPCCHH in Assam

IEC type	Material	Timeline	Mechanism
Advisory	Flood and other advisory bit.ly/NPCCHHPrg	Seasonal	By email to DNO for further dissemination to health facilities
Early warning	Bulletins/ advisory by IMD (storm), CWC (flood) sent by NPCCHH	Seasonal	<ul style="list-style-type: none"> Health department/other government website/application Digital display of temperatures on public places and health facilities
Posters	<ul style="list-style-type: none"> Pposters on various EWE and health impacts (Assamese) bit.ly/NPCCHHIEC Posters on heat and health 	Seasonal, As needed	<ul style="list-style-type: none"> Printing for state-level dissemination at health facilities, public places/buildings By email to DNO for printing

	impacts (Assamese)		at district level and dissemination to health facilities, schools and other public/government buildings
Wall painting	Using available material	Painted in July-September	<ul style="list-style-type: none"> In schools and selected colleges In health facilities
Hoardings	<ul style="list-style-type: none"> Posters in Assamese (above) 	Seasonal, As needed	<ul style="list-style-type: none"> To be planned with Guwahati, Tezpur and Jorhat
Audio-Visual	<ul style="list-style-type: none"> Audio Jingle (Assamese) Video messages (Assamese and local language) bit.ly/NPCCHHIEC 	Seasonal, As needed	<ul style="list-style-type: none"> Played seasonally and around relevant extreme weather events
Bus painting	Using available material	Painted in June-July, Seasonally as needed	With GSRTC and Corporation city Bus service
Digital display	<ul style="list-style-type: none"> GIF Above mentioned video messages 	Seasonal, As needed	<ul style="list-style-type: none"> Display in health facilities Public digital display boards in major cities
Social medial	All above material + Relevant activity updates	Seasonal, As needed	<ul style="list-style-type: none"> Facebook and Twitter handle of state NPCCHH, NHM WhatsApp groups (State DNO, Health facility group)

iii. Observance of important environment-health days

Day	Activities on Heat-Health
<ul style="list-style-type: none"> International Day for Disaster Risk Reduction 	<p>IEC Campaigns</p> <ul style="list-style-type: none"> Audio-video spots broadcasting Targeted awareness sessions: women, children, occupational groups 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 assessment of disaster vulnerability/energy/ water conservation measures Review of implementation of climate-resilient measures

b) Capacity Building Activities

i. Training material

Guidelines: National Action Plan on Disaster related Health Issues

Training modules:

- State-District level training modules
- Medical officer training

- Para medical officers & Health care workers
- Community level training: vulnerable population group such as women/ children/ elderly/ different type occupations

Other training resources: NPCCHH channel <https://bit.ly/NPCCHHyt>

State-Level/ District-Level Supporting Training institutes:

- State Institute of Health & Family Welfare, Assam

Training on Heat-related illnesses diseases may be expanded to include other climate sensitive health issues specifically extreme weather events.

iii. Annual training plan for Extreme Weather Events and Health under NPCCHH, Assam

Training Programme for	Trainer	Topics	Timeline
District level (DNO-CC, trainers)	State Level Trainers SNO, Addl.SNO- CC, Consultant	<ul style="list-style-type: none"> • Climate change and impact of extreme weather events in India • Formation of disaster management committees and plans • Health facility vulnerability, resilient measures and disaster preparedness • Disaster response in coordination with state/district disaster management authority • Post-disaster health impact assessment and response 	February
Health facility level (MO of DH/CHC/PHC)	District Level Trainers DNO-CC	<ul style="list-style-type: none"> • Health facility disaster vulnerability assessment • Disaster management committee and plan • Climate resiliency measures (structural/functional) • Health facility preparedness for EWE/disaster response • Post-disaster surveillance and damage assessment 	February
Community Health care workers (MPH, ASHA, ANM etc)	District Level Trainers, MO	<ul style="list-style-type: none"> • Climate change and health impact of extreme weather events • Disaster planning and response 	February-March
Panchayati Raj Institutions	District level trainers, MO, Health care workers	<ul style="list-style-type: none"> • Climate change and health impact of extreme weather events • Disaster planning and response with community participation 	February-April

c) Strengthening Health Sector Preparedness

- i. **Early warning:** dissemination of early warnings for Cold wave, Flood etc to health facility level and community level
- ii. **Surveillance**
 - Post-disaster health impact assessment:
 - Support post-disaster surveillance of communicable disease, health facility affected

conducted by SDMA, IDSP or other agencies

iii. Health Facility Preparedness

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

d) Revision of Health Action Plan on Disaster-Related Health Issues in State Action Plan on Climate Change and Human Health (SAPCCHH) :

The section should be revised every year after December with support from coordinating agencies based on updated surveillance data, its analysis with weather parameters, targets achieved, and predicted climate variability with support from multi-sectoral task force.

e) Roles and Responsibilities

	Responsibilities
SNO, Addl.SNO	<ul style="list-style-type: none">• Disseminate early warnings to 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 implement of climate resilient measures in health facilities• Review implementation of IEC, training and surveillance activities at all levels• Evaluate and update relevant section of SAPCCHH with support from State Task Force• Create organizational support and strengthen Environmental Health cell to implement NPCCHH vision, Goal and Objectives• Organize sensitization workshops for other stakeholders and line departments• Collaborate with academic institute/s for support in updating SAPCCHH, Surveillance activity monitoring, training of health care professionals, vulnerability assessment and applied research• Submit reports of activities on EWE and health under NPCCHH

DNO	<ul style="list-style-type: none"> • Disseminate early warning to block and health facility level • Ensure IEC dissemination to community level and facilitate community level IEC activities • Organize training for block health officers and MO • Formalize inter sectoral 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 <ul style="list-style-type: none"> • training for block health officers, medical officers, with relevant training manuals • Conduct sensitization of vulnerable groups: police officers, outdoor works, women, children etc • Organize IEC campaigns at district level on observance of important environment-health days • Facilitate disaster vulnerability assessments in health facilities and maintain records of such assessment and health facility damage due to EWE • Update DAPCCHH with support from District Task Force • Submit reports of activities on EWE and health under NPCCHH
Block health officer	<ul style="list-style-type: none"> • Conduct community level IEC activities • Ensure training of medical officers • Organize PRI sensitization workshop and training for vulnerable groups • Facilitate disaster vulnerability assessments in health facilities and maintain records of such assessment and health facility damage due to EWE
Medical officer	<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 facility in 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 measure taken before-during-after an EWE

V. Health Action Plan on Green (Environmentally Friendly, Sustainable and Climate Resilient Infrastructure)

a) Capacity building

i. Training material

Training modules: (available bit.ly/NPCCHHguidelines shortly)

- State-District level training modules
- Medical officer training
- Paramedical and community health workers
- Community level training: vulnerable population group

Other training resources: NPCCHH channel <https://bit.ly/NPCCHHyt>

- Clinical Aspects of Heat-Related Illnesses
- Webinars on heat wave and its health impact
- HRI surveillance training

State-Level/ District-Level Supporting Training institutes:

- For State Institute of Health & Family Welfare

Contact person designation: Dr Parag Deb Roy, Add.SNO, NPCCHH, Contact detail – 98648-21309

Training on green and climate-resilient health care facilities (GCRHCF) may be expanded to include other climate sensitive health issues specifically extreme weather events.

ii. Annual training plan for Extreme Weather Events and Health under NPCCHH, Assam

Training Programme for	Trainer	Topics	Timeline
District level (DNO-CC, trainers)	State Level Trainers SNO, Addl.SNO-CC, Consultant	<ul style="list-style-type: none"> • Role GCRHCF in terms of climate impact • Assessments required for implementation • Coordination with supporting agencies 	August-September
Health facility level (MO of DH/CHC/PHC)	District Level Trainers DNO-CC	<ul style="list-style-type: none"> • Role GCRHCF in terms of climate impact • Assessments required for implementation • Coordination with supporting agencies 	September
Community Health care workers (MPH, ASHA, ANM etc)	District Level Trainers, MO, Health care workers	<ul style="list-style-type: none"> • - Role GCRHCF in terms of climate impact 	September-October
Panchayati Raj Institutions	District level trainers, MO,	<ul style="list-style-type: none"> • Role GCRHCF in terms of climate impact • Assembling support for implementation 	Anytime

b) Strengthening Health Sector Preparedness

i. Implementation of Climate Resilient measures at health facilities

- a. New HCF should be built in compliance with Green & Climate Resilient Infrastructural features as of updated IPHS
- b. Existing HCF are recommended to undergo retrofitting to implement structural climate-resilient (i.e.to withstand disasters and provide continuous, quality care

to the affected population post-disaster) measures as per IPHS guidelines. Health facilities' vulnerability to prevalent climate change impact should be assessed to determine retrofitting the measures. For the retrofitting locally sourced and sustainable building designs and construction technologies should be considered to reduce energy requirements, carbon footprint, and cost-effectiveness.

- c. Extreme weather event specific measures
 - Flood resilient measures
 - Cooling measures

ii. Implementation of Green (Environmentally-friendly and sustainable) considered in FY 2023-24 are as following

- a. Energy Auditing of the Healthcare Facilities for Energy Efficiency level 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

Guidelines

- Guidelines for Green and Climate-Resilient Health Facilities (2023):

Refer: <https://ncdc.gov.in/showfile.php?lid=959>

- Guidelines for Solar Powering Health Facilities (2023):

Refer: <https://ncdc.gov.in/showfile.php?lid=960>

iii. Implementation plan for Green Measures in Healthcare facilities activity plan for 2022-23

Measure	Unit	Justification	Pre-requisite
Replacing Non-LED with LED lighting in			
- CHC	9	Selected 8 CHC in 5 Districts	
- PHC	14	Selected 8 PHC in 5 Districts	
TOTAL	23		
Installing Solar panels			
- HC	7	Selected 8 CHC in 5 Districts	Following assessments should be done at health facility level with support from DNO, MO and nodal technical agency identified by state. - Energy audit - Water audit - Disaster vulnerability
- PHC	12	Selected 8 PHC in 5 Districts	
TOTAL	19		
Installing Rainwater harvesting System			
- CHC	8	Selected 8 CHC in 5 Districts	
- PHC	12	Selected 8 PHC in 5 Districts	
TOTAL	20		

**iv. Plan of implementation of green measures in healthcare facilities 2022-2027,
NPCCHH, Assam**

Green Measures in Healthcare facilities	Units					
	2022-23	2023-24	2024-25	2025-26	2026-27	TOTAL
Replace existing Lighting Non-LED with LED in CHC	6	52	73	102	125	385
Replace existing Lighting Non LED with LED in PHC	10	302	410	390	686	1798
Installing Solar panels at CHC	10	23	55	70	100	258
Installing Solar panels at PHC	12	100	200	300	400	1012
Installing Rainwater harvesting System CHC	8	25	50	75	100	258
Installing Rainwater harvesting System PHC	12	75	100	200	400	787

v. Monitoring and evaluation of activities should be done in-line with targets set in PIP.

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

Quarterly progress report should also be prepared and submitted. (Annexure 5)

c) Roles and Responsibilities

	Responsibilities
SNO, Addl.SNO/ State Consultant NPCCHH	<ul style="list-style-type: none"> • Disseminate early warnings to 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 health facility level • Facilitate implementation of structural and functional measures at health facility level • Submit report of activities on heat-health under NPCCHH • Advocate for reduction in source of greenhouse gas emissions

DNO/District Consultant NPCCHH	<ul style="list-style-type: none"> • Conduct training for block health officers, medical officers, with relevant training manuals • Support conduction for following assessment at health facility level <ul style="list-style-type: none"> - Energy audit - Water audit - Disaster-vulnerability assessment • Support following functional measures at health facility level <ul style="list-style-type: none"> - Water committee - Sustainable procurement committee - Operational measures to make health facility functioning during disasters or power cut • Coordinate with other agencies for assessment and implementation of identified structural and functional measures • Update DAPCCHH with support from District Task Force • Submit 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 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 functioning during disasters or power cut • Support community level IEC activities • Identify local funding opportunities: e.g. CSR initiative, NGO funding
Panchayati Raj Institution	<ul style="list-style-type: none"> • Support retrofitting and new health facilities with local funding source and community involvement

Part III: Budget for NPCCHH

Proposed Budget Proposal for next five (5) years under NPCCHH programme, Assam

S. No.	Activities	2022-2023 (Rs. In lac)	2023-2024 (Rs. In lac)	2024-2025 (Rs. In lac)	2025-2026 (Rs. In lac)	2026-2027 (Rs. In lac)
1	Infrastructure & Civil works for Climate resilient health care facilities new	7.00	300.00	300.00	400.00	400.00
2	Capacity Building (Training)	3.00	20.30	20.50	22.00	24.00
3	Other including operation costs (OOC) Green measures	90.00	99.00	108.90	119.79	131.77
4	IEC & Printing	20.00	22.00	24.20	26.62	29.28
5	Planning & Monitoring & Evaluation (including District Task Force meeting)	5.00	9.50	9.50	10.50	12.00
6	Surveillance, Research, Review Evaluation (SRREE)	3.00	9.30	9.63	9.99	12.39
TOTAL		128	460.1	472.73	588.9	609.44

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8. Mohanty A, Wadhawan S. A District Level Assessment Mapping India's Climate Vulnerability.

Annexure 1: Notification of Governing Body under NPCCHH, Assam

<https://mail.google.com/mail/u/0?ik=a4c61425&view=pt&>

(130)

GOVERNMENT OF ASSAM
HEALTH & FAMILY WELFARE (A) DEPARTMENT
DISPUR, GUWAHATI - 781006

ORDERS BY THE GOVERNOR OF ASSAM
NOTIFICATION

Dated Dispur, the 12th August, 2020

No HLA.909/2019/11: The Governor of Assam is pleased to constitute the Governing Body with the following Chairman / Vice Chairman, members for Climate Change and Human Health as per rule and guidelines under National Action Plan on Climate Change and Human Health.

The Governing Body will make necessary policy decisions for the activities relating to Climate Change and Human Health.

Members of Governing Body

1)	Hon'ble State Health Minister, Assam	Chairman
2)	Principal Secretary, Health & F.W. Department, Assam	-- Vice Chairman
3)	Commissioner & Secy, H&F.W. Department	-- Member
4)	Director of Health Services, Assam	-- Member Secretary
5)	Mission Director, NHM, Assam	-- Member
6)	Director, Medical Education, Assam	-- Member
7)	Regional Director, Health & F.W., Assam	-- Member

Sd/- [Samir Kr. Sinha, IAS]
 Principal Secretary to the Govt. of Assam
 Health & Family Welfare Department

Memo No HLA.909/2019/11-A

Dated Dispur, the 12th August, 2020

Copy to:-

1. The Addl. Chief Secretary to the Govt. of Assam, Agriculture Department
2. The Addl. Chief Secretary to the Govt. of Assam, Mines and Minerals Department
3. The Principal Secretary to the Govt. of Assam, Health & F.W. Department
4. The Commissioner & Secretary to the Govt. of Assam, Health & F.W. Department
5. The Commissioner & Secretary to the Govt. of Assam, Revenue and Disaster Management Department
6. The Secretary to the Govt. of Assam, Environment & Forest Department
7. The Secretary to the Govt. of Assam, PHE Department
8. The Secretary to the Govt. of Assam, Health & F.W. Department
9. The Mission Director, NHM, Assam, Christianbasti, Guwahati-5.
10. The Executive Director, NHM, Assam, Christianbasti, Guwahati-5.
11. Director of Health Services, Swasthya Bhawan, Assam, Hengrabari, Guwahati-36
12. Director of Health Services (FW), Swasthya Bhawan, Assam, Hengrabari, Ghy-36.
13. Deputy Commissioner, all districts
14. Member Concerned
15. Director, NCDC, 22 Shambhu Nath Marg, Delhi 110054.
16. Joint Secretary, Center for Environmental and Occupational Health NCDC, New Delhi-54.
17. Joint Director of Health Services, all districts
18. NPO, IDSP, Central Surveillance Unit, NCDC, 22 Shambhu Nath Marg, Delhi 110054
19. PS to Hon'ble Minister of Health & Family Welfare, Assam, Dispur, Guwahati for kind appraisal of the Hon'ble Minister
20. P.S. to Hon'ble Minister of State, Health & Family Welfare, Assam, Dispur, Guwahati

By order etc.

o/c

12/8/20

Annexure 2: Notification of Multisector Task Force under NPCCHH, Assam

GOVERNMENT OF ASSAM
HEALTH & FAMILY WELFARE (AF) DEPARTMENT
DISPUR, GUWAHATI - 781006
ORDERS BY THE GOVERNOR OF ASSAM
NOTIFICATION

(128)

Dated Dispur, the 12th August, 2020

No.HLA.909/2019/9: The Government of Assam is hereby pleased to constitute a Task Force Committee for the activities under Climate Change and Human Health as per National Guidelines of Government of India with the following members:-

	<u>Health Sector</u>	Chairman
1	Commissioner & Secretary, Health & F.W. Department	Member
2	Director of Health Services, Assam	Member
3	Director of Medical Education, Assam	Member
4	Representative from NCD	Member
5	Representative from NVBDCP, Assam	Member
6	Representative from Training and IEC Sections, NIIM, Assam	Member
7	Representative from Zoonotic Diseases related programmes	Member
8	Representative from Disaster & Emergency Response related Sections	Member
9	Representative from Disease Surveillance and Response	Member
10	Representative from Health Infrastructure and Manpower Planning Sections	Member
11	Representative from Health Research Institutions	Member
12	Representative from Civil Society	Member

Non Health Sector

1	Representative from Meteorology Department	Member
2	Representative from State Pollution Control Board	Member
3	Representative from State Disaster Management Authority	Member
4	Representative from departments related to Environment	Member
5	Representative from Department of Agriculture & Food Security Department	Member
6	Representative from Departments of Drinking water & Sanitation	Member

Objective: Task Force will provide technical support/expertise to the State Nodal Officer (SNO). The Task Force will also ensure the activities for Climate Change are being carried as per national objectives.

Sd/- (Samir Kr. Sinha, IAS)
Principal Secretary to the Govt. of Assam,
Health & Family Welfare Department

Dated Dispur, the 12th August, 2020

Memo No.HLA.909/2019/9-A

Copy to:-

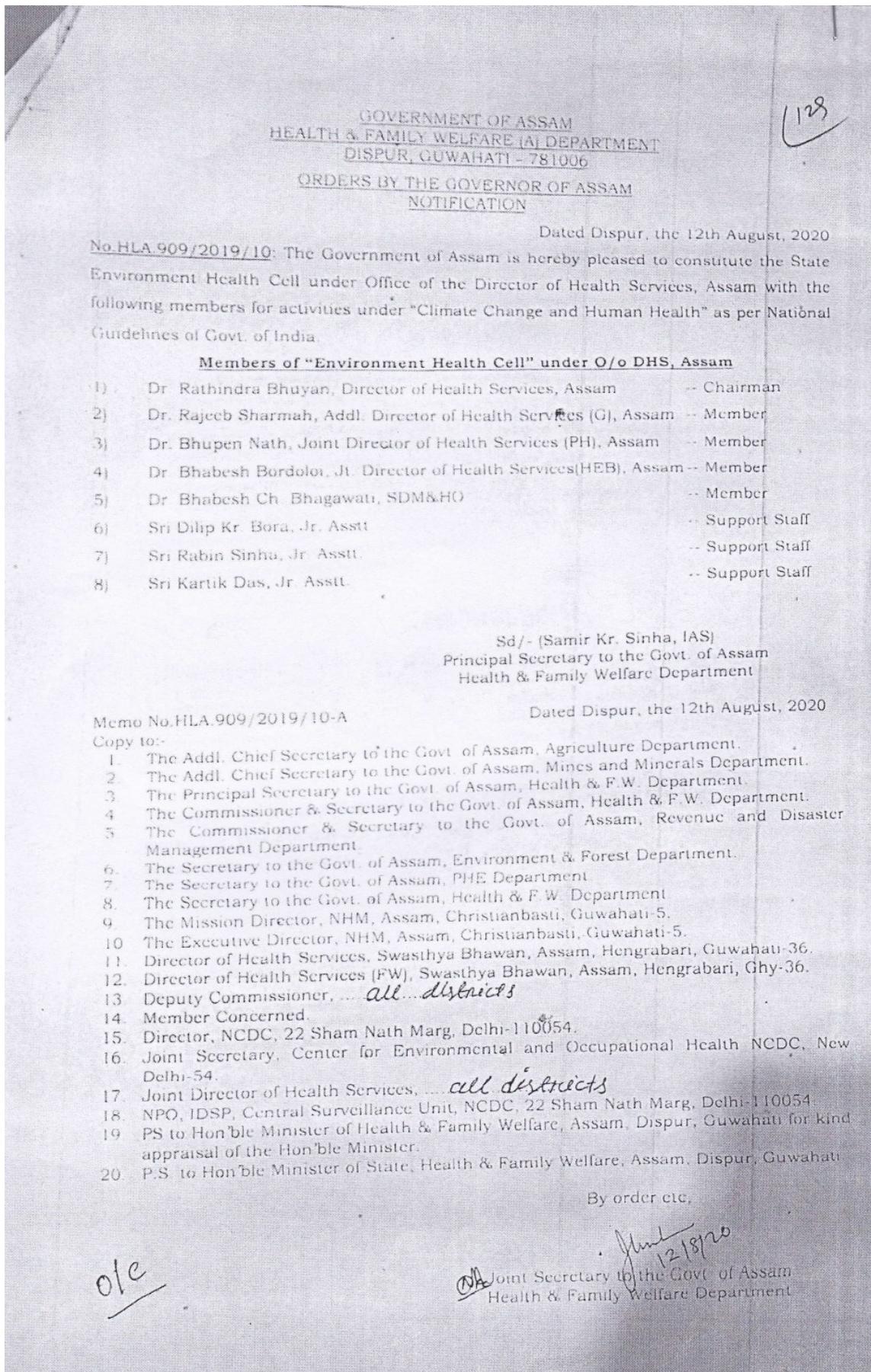
1. The Mission Director, National Health Mission, Christianbasti, Guwahati-5.
2. The Director of Health Services, Hengrabari, Guwahati-36 for information.
3. The Director of Medical Education, Assam, Six mile, Khanapara, Guwahati-22.
4. P.S. to the Hon'ble Health Minister, Assam, Dispur, Guwahati.
5. P.S. to Principal Secretary, Health & F.W. Department
6. P.S. to Commissioner & Secretary, Health & F.W. Department
7. P.S. to Commissioner & Secretary, Revenue & D.M. Department, Dispur
8. Representative from Health Infrastructure and Manpower Planning Sections.
9. Representative from Health Research Institutions.
10. Representative from Civil Society

By order etc.

*Joint Secretary to the Govt. of Assam
Health & Family Welfare Department*

dc

Annexure 3: Notification of Environmental Health Cell under NPCCHH, Assam



Annexure 4: List of District Nodal under NPCCHH, Assam, 2022

List of DSO(Nodal Officers)Under NPCCHH,Assam				
SI NO	DISTRICT NAME	DSO NAME	CONTACT NO	EMAIL
1	BAKSA	Dr. Madhu Ram Baro	7099116099	baksadsuidsp@gmail.com
2	BARPETA	Dr. Satyandra Nath Talukda	9678261038	barpetadsuidsp@gmail.com
3	BONGAIGAON	Dr. Badal sarkar	7575969603	bongaigaondsuidsp@gmail.com
4	BISWANATH	Dr. Eliza Deka	9435383153	biswanathdsuidsp@gmail.com ddm.idsp.biswanath@gmail.com
5	CACHAR	Dr. Ibrahim Ali Ahmed	7086585070	cachardsuidsp@gmail.com
6	CHARAIDEO	Dr. Nipen Baruah	7637984589	charaideodsuidsp@gmail.com ddm.nhm.charaideo@gmail.com
7	CHIRANG	Dr. Dwigendra Ramchiary	9435123881	chirangdsuidsp@gmail.com
8	DARRANG	Dr. Malabika Gogoi	9954662668	darrangdsuidsp@gmail.com
9	DHEMAJI	Dr. Jugen Das	8473844498	dhemajidsuidsp@gmail.com
10	DHUBRI	Dr. Joydip Bhattacharjee	9435324346	dhubridsuidsp@gmail.com
11	DIBRUGARH	Dr. Nabajyoti Gogoi	9435116342	dibrugarhdsuidsp@gmail.com idsp_dibrugarh@yahoo.com
12	DIMA HASAO	Dr. L Vaiphei	7896443784	dimahasaodsuidsp@gmail.com
13	GOALPARA	Dr. Sanjoy Choudhury	9435040163	goalparadsuidsp@gmail.com
14	GOLAGHAT	Dr. Dilip Rajbongshi	9435151453	golaghatsuidsp@gmail.com
15	HAILAKANDI	Dr. Kemei Thambalsana Rongmei	9435179923	hailakandidsuidsp1@gmail.com hailakandidsuidsp1@gmail.com
16	HOJAI	Dr. Basudev Malakar	8399813199	hojaidsuidsp@gmail.com
17	JORHAT	Dr. Tarun Chandra Das	9435842958	jorhatdsuidsp@gmail.com
18	KAMRUP M	Dr. Runu Bala Das	8638094143	kamrupmetrodsuidsp@gmail.com
19	KAMRUP R	Dr. Parag Deb Roy	9864821309	kamrururaldsuidsp@gmail.com kamrururaldsuidsp@gmail.com
20	KARBI ANGLONG	Dr. Bhabatosh Chakraborty	7002671395	karbianglongdsuidsp@gmail.com
21	KARIMGANJ	Dr. Basant Kumar Singh	9854525291	karimganjdsuidsp1@gmail.com karimganjdsuidsp1@gmail.com
22	KOKRAJHAR	Dr. Bikash Karmakar	9435026254	kokrajhardsuidsp@gmail.com
23	LAKHIMPUR	Dr. Silpi Saikia	9435077208	lakhimpurdsuidsp1@gmail.com lakhimpurdsuidsp1@gmail.com
24	MAJULI	Dr. Hemanta Kr Borah	7002103042	majulidsuidsp@gmail.com ddm.idspmajuli@gmail.com
25	MORIGAON	Dr. Arun Kumar Nath	9435065105	morigaondsuidsp@gmail.com
26	NAGAON	Dr. Bhupen Ch. Borah	7670002223	nagaondsuidsp@gmail.com
27	NALBARI	Dr. Dilip Kalita	7002060163	nalbaridsuidsp@gmail.com
28	S SALMARA	Dr. S U Khandkar	8761955530	ssmancachardsuidsp@gmail.com
29	SIVASAGAR	Dr. Gayatri Senapati	9101419990	sivasagardsuidsp@gmail.com sivasagardsuidsp@gmail.com idsp_sivasagar@yahoo.com
30	SONITPUR	Dr. Ranjan Kumer Das	8822553598	sonitpurdsuidsp@gmail.com idsp_сонитпур@yahoo.co.in sonitpurdsuidsp@gmail.com
31	TINSUKIA	Dr. Minakshi Hazarika	7086368745	tinsukiadsuidsp@gmail.com
32	UDALGURI	Dr. Dhrubajyoti Pathak	7002237535	udalgoridsuidsp@gmail.com
33	WEST KARBI ANGLONG	Dr. Gobindra Goswami	8099237396	wkanglongdsuidsp@gmail.com ddm.nrhm.westkarbianglong@gmail.com

Annexure 5: Quarterly Progress Report, National Programme on Climate Change and Human Health

Name of the State	Name of the State Nodal Officer (SNO)	Quarter Period
O.M. of appointment of State Nodal Officer	Annexed (Yes / No)	
Postal Address of State Nodal Officer		
Phone (O)	(M)	E Mail address:
Consultant*		
No of Consultant permitted	1 or 2	
No of Consultant appointed		
O.M of appointment of Consultant	Annexed (Yes / No)	

Programme Activities /Deliverable		
1 Constitution of State Governing Body (SGB)		
A If State Governing Body (SGB) constituted?	Yes/No	
B If Yes, provide O.M. of constitution of SGB	Annexed (Yes / No)	
C SGB meeting held in past quarter	Yes/No	
D Minutes of last meeting held	Date of Meeting / /	Annexed (Yes / No)
2 Formation of State Multisectoral Task Force (SMTF)		
A If State Multisectoral Task Force (SMTF) formed?	Yes/No	
B If Yes, provide O.M. of constitution of SMTF	Annexed (Yes / No)	
C SMTF meeting held in past quarter	Yes/No	
D Minutes of last meeting held	Date of Meeting / /	Annexed (Yes / No)
3 Establishment of Environmental Health Cell (EHC)		
A If State has established EHC?	Yes/No	
B If Yes, provide O.M. of establishment of EHC	Annexed (Yes / No)	
C If Yes, provide list of members	Annexed (Yes / No)	
4 State Action Plan on Climate Change and Human Health (SAPCCHH)		
A If State has submitted SAPCCHH?	Yes/No	
B If Yes, version number of SAPCCHH	No:	Month/Year /
5 Designated District Nodal Officer -Climate Change (DNO-CC)		
A If State has identified DNO-CC in all districts?	Yes/No	
B No of Districts in State/UT		
C No of Districts appointed DNO-CC		
D O.M. of appointment of DNO-CC's	Annexed (Yes / No)	If Yes, No of Districts
6 Formation of District Multisectoral Task Force (DMTF)		
A If District Multisectoral Task Force (DMTF) formed?	Yes/No	
B No of Districts appointed DTF		
C If Yes, provide O.M. of constitution of DMTF	Annexed (Yes / No), If Yes, No of Districts	
D DMTF meeting held in past quarter	Yes/No, If Yes, No of Districts	
D Minutes of meeting held in past quarter	Annexed (Yes / No)	If Yes, No of Districts
7 Capacity Building of State & District Nodal Officers on Climate Change		
A Have the SNO attended the TOT?	Yes/No	
B Have the Consultant/s attended the TOT?	Yes/No	
C Whether the training has been conducted on Climate Change and Human Health in past quarter for	DNO -CC	Yes/No
	Medical Officer	Yes/No
	Health Workers	Yes/No
D No of health care professionals trained in past quarter on Climate change and Human Health	Health care personnel	No of trained
	DNO -CC	
	Medical Officer	

			Health Workers				
E	Training on Air pollution		Training on Heat Related Illnesses				
	Health care personnel	No of trained	Health care personnel	No of trained			
	DNO -CC		DNO -CC				
	Medical Officer		Medical Officer				
	Health Workers		Health Workers				
F	Training on any other Climate issues		Health care personnel	No of trained			
			DNO -CC				
			Medical Officer				
			Health Workers				
G	No of Sensitization workshop/ meeting at State level on CC&HH matters in past quarter		No :	Report Annexed (Yes / No)			
H	No of Sensitization workshop/ meeting at District level on CC&HH matters in past quarter		No :	Report Annexed (Yes / No), If Yes, No _____			
I	Training of Panchayat Raj Institutions in past quarter		No of Blocks : No of activities held:	Report Annexed (Yes / No), If Yes, No _____			
8	IEC in past quarter						
A	At Block level in past quarter						
	Pollution	Total No	Heat	Total No	Other Climate issues		
	No of audio		No of audio		No of audio		
	No of video		No of video		No of video		
	No of social media		No of social media		No of social media		
	No of posters		No of posters		No of posters		
B	At District Level in past quarter						
	Pollution	Total No	Heat	Total No	Other Climate - issues		
	No of audio		No of audio		No of audio		
	No of video		No of video		No of video		
	No of social media		No of social media		No of social media		
	No of posters		No of posters		No of posters		
C	At State level in past quarter						
	Pollution	Total No	Heat	Total No	Other Climate issues		
	No of audio		No of audio		No of audio		
	No of video		No of video		No of video		
	No of social media		No of social media		No of social media		
	No of posters		No of posters		No of posters		
9	Observation of public health days related to Climate Change in past quarter						
A	World Environment Day observed?		Yes/No /Not Applicable				
	If Yes, report submitted with details		Report Annexed Yes/No				
B	International day of Clean Air and Blue Skies observed?		Yes/No/Not Applicable				
	If Yes, report submitted with details		Report Annexed Yes/No				
C	Other events observed in past quarter		YES/No				
	If Yes, report submitted with details		Report Annexed Yes/No				
10	Printing in past quarter						
A	No of Training modules printed in past quarter						
B	IEC printed						
C	Others printed		Details.. Yes/No				

C	Articles contributed to NPCCHH Newsletter for past quarter activities	Attached..	Yes /No										
11	Budget												
A	Total budget sanctioned in ROP for Financial Year (Rs in lakhs)**												
B	Total received by SNO for expenses in FY												
C	Total budget spent till the end of past quarter (Rs in lakhs)												
D	Total budget distributed to districts (for all the districts)	District 1			OM Annexed (Yes / No)								
		District 2			OM Annexed (Yes / No)								
At the State level													
	FMR code	Activities	Budget Received	Quarter I	Quarter II	Quarter III	Quarter IV	Total Expenditure					
1	3.3.3.3	Training of PRI											
2	5.1.1.2.13	Greening											
3	9.2.4.9	Training of MO's, Health workers, Programme Officer's											
4	10.2.14	Surveillance											
5	11.4.7	IEC											
6	12.17.3	Printing											
7	16.1.2.1.23	Task force Meeting											
8	16.1.2.1.24	Review of DNO-CCHH with SNO-CCHH											
9	16.4.1.5.2	Consultant-CCHH											
Date of submission			Signature of SNO										

** The budget approved under ROP of all the States/UT is annexed in Annexure II



স্বাস্থ্য আৰু পৰিয়াল
কল্যাণ মন্ত্ৰণালয়
ভাৰত চৰকাৰ



বায়ু প্ৰদূষণৰ পৰা ৰক্ষা পাৰণ বাবে ৰাইজৰ বাবে- কি কৰিব আৰু কি নকৰিব



যিমান সন্তোষ ঘৰৰ
ভিতৰত থাকিব।



অতিমাত্ৰা যাতায়ত,
নিৰ্মাণ চলি থকা অধঃল
এৰাই চলিব লাগে।



যাত্ৰাৰ বাবে কাৰপুল
বা ৰাজহৰা পৰিবহন
ব্যৱহাৰ কৰক।



ঘৰ পৰিষ্কাৰ কৰিবলৈ
ভিজা সামগ্ৰী ব্যৱহাৰ
কৰক।



দুৰ্ঘত গেছ/বায়ু নিৰ্গত
কৰিবৰ বাবে ঘৰৰ
চিমনি আৰু এক্সজেট
ফেন পৰিষ্কাৰ কৰক।



যদি পিউবিফায়াৰ
ব্যৱহাৰ কৰে, তেন্তে
ফিল্টাৰসমূহ পৰিষ্কাৰ
আৰু সলনি কৰা
নিশ্চিত কৰিব।

উশাহত কষ্ট, বমি ভাৰ হোৱা, চকু আৰু
ডিঙি খচ খচাই থাকিলে স্বাস্থ্যকৰ্মীৰ পৰামৰ্শ লওক



অতিমাত্ৰা প্ৰদূষণৰ
দিনত ব্যায়ামসমূহ
ঘৰৰ ভিতৰত কৰক।



অন্ত্ৰোপচাৰ, কাগজ বা
কাপোৰৰ মাঝে বায়ু
প্ৰদূষণৰ পৰা ৰক্ষা নকৰে



ট্ৰেফিক চিগনেল বা বৈ
থকাৰ সময়ত বাহনৰ
ইঞ্জিন বঞ্চ কৰক।



ধূপ কাঠি, গছৰ পাত,
আৱৰ্জনা আদি ঘৰত বা
ৰাজহৰা ঠাইত জুলাৰ
নালাগে।



ঘৰৰ মজিয়া শুকানে
নমচিব আৰু ডিজেল
জেনেৰেটৰ ব্যৱহাৰ
নকৰিব।



ঘৰ বনোৱা সামগ্ৰীসমূহ
(নিৰ্মাণ সামগ্ৰী) উন্মোচিত
কৰি বাখিব নালাগে।



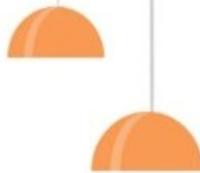


স্বাস্থ্য আৰু পৰিয়াল
কল্যাণ মন্ত্ৰণা
ভাৰত চৰকাৰ



বায়ু প্ৰদূষণ হ্ৰাস কৰাৰ বাবে

কৰ্মসূলীৰ বাবে কিছু পৰামৰ্শ



প্ৰিণ্ট আৰু ফটোকপি
প্ৰয়োজন হ'লেহে কৰক।



নৰীকৰণযোগ্য শক্তিৰ দ্বাৰা
চলিত লাইট ব্যৱহাৰ কৰক।



লাইট, ফেন, এয়াৰ কণিচনাৰ
ব্যৱহাৰ নকৰিলে চুইচ-অফ
কৰক।



ভ্ৰমণৰ পৰা হাত সাৰিবলৈ
ভাৰ্চুৱেল সভা পৰিচালিত কৰক।



আৱৰ্জনাসমূহ হ্ৰাস, পুনঃব্যৱহাৰ,
পৃথকীকৰণ আৰু পচন সাৰ
হিচাপে ব্যৱহাৰ কৰক।



শব্দ আৰু বায়ু প্ৰদূষণ বাধা
দিবলৈ গছ ৰোপণ কৰক।



সৌৰ শক্তিৰ দৰে
নৰীকৰণযোগ্য শক্তিলৈ
সলনি কৰক।



প্ৰদূষণ হ্ৰাস কৰিবলৈ পানী
আৰু শক্তিৰ অডিট কৰক।



ষ্টাইরোফোম, পলিষ্টাইৰিন (থাৰ্ম'কল),
একক ব্যৱহাৰৰ প্লাষ্টিকৰ ব্যৱহাৰ বন্ধ কৰক।





স্বাস্থ্য আৰু পৰিয়াল
কল্যাণ মন্ত্ৰণা
ভাৰত চৰকাৰ



বায়ু প্ৰদূষণ হ্ৰাস কৰাৰ বাবে

বিদ্যালয়সমূহৰ বাবে কিছু পৰামৰ্শ

সৌৰ শক্তিৰ দৰে
নৰীকৰণযোগ্য শক্তি
ব্যৱহাৰ কৰক।



শব্দ আৰু বায়ু প্ৰদূষণ
ৰোধ কৰিবলৈ গছ ৰোপণ
কৰক।



আৱৰ্জনা হ্ৰাস, পুনৰ্বৰহাৰ,
পৃথকীকৰণ আৰু পচন সাৰ
হিচাপে ব্যৱহাৰ কৰক।



ছাত্ৰ-ছাত্ৰী আৰু পৰিয়ালক
সেউজীয়া এলেকা তৈয়াৰ কৰিবৰ
বাবে নিয়োজিত কৰক আৰু
কাৰপুল ব্যৱহাৰ কৰা আৰু
বাহনসমূহৰ বাবে না ইডলিং
যান বনাবৰ বাবে প্ৰেৰণা যোগাওক।



স্থানীয় প্ৰশাসনৰ সৈতে কাম
কৰি কোনো ট্ৰেফিক যান সৃষ্টি
হ'ব দিব নালাগে।



বাহিৰ খেলা ঠাই যাতায়তৰ
পৰা আঁতৰত থাকিব লাগে।



প্ৰদূষণ কম কৰিবৰ বাবে শক্তি,
পানী আৰু আৱৰ্জনাৰ বাবে
পৰ্যালোচনা (আ'ডিট) কৰিব
লাগে।



এবাৰ ব্যৱহাৰযোগ্য প্লাষ্টিক,
ষ্টাইরোফোম আৰু থাৰ্ম'ক'ল
আদি বঞ্চ কৰিব লাগে।



