

# Gujarat

## State Action Plan on Climate Change and Human Health



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

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# Part I: Climate Change and Its Health Impacts in Gujarat

With the establishment of the Department for Climate Change in 2009, Gujarat state has demonstrated its resolve to respond to climate change and its impact early on. Since then, there are many initiatives taken in various sectors to adapt and mitigate to impact of climate change including the implementation of South Asia's first heat-health action plan with an early warning system.

## Socio-demographic and health profile

Gujarat is the fifth-largest state by area, covering 1.96 lakh square km. It is the ninth-most populous state with a population of 60.4 million as per 2011 census. It largely (53.5%) consists of working age adults (20-49 years) with sex ratio of 965 females per 1,000 males.

About 77% of households in Gujarat live in a pucca house and 97% have electricity as per National Family Health Survey-5 (2019-21). About 95% of households in Gujarat have basic drinking water services, and 98% of households use an improved source of drinking water, but only 65% get piped water in/around their households (79% of urban and 54% of rural). Two percent of households have access to a toilet facility, with a much higher accessibility in urban areas (97%) than in rural areas (71%).<sup>1</sup> Majority of households (67%) in Gujarat use a clean fuel for cooking. There were 94% institutional deliveries.

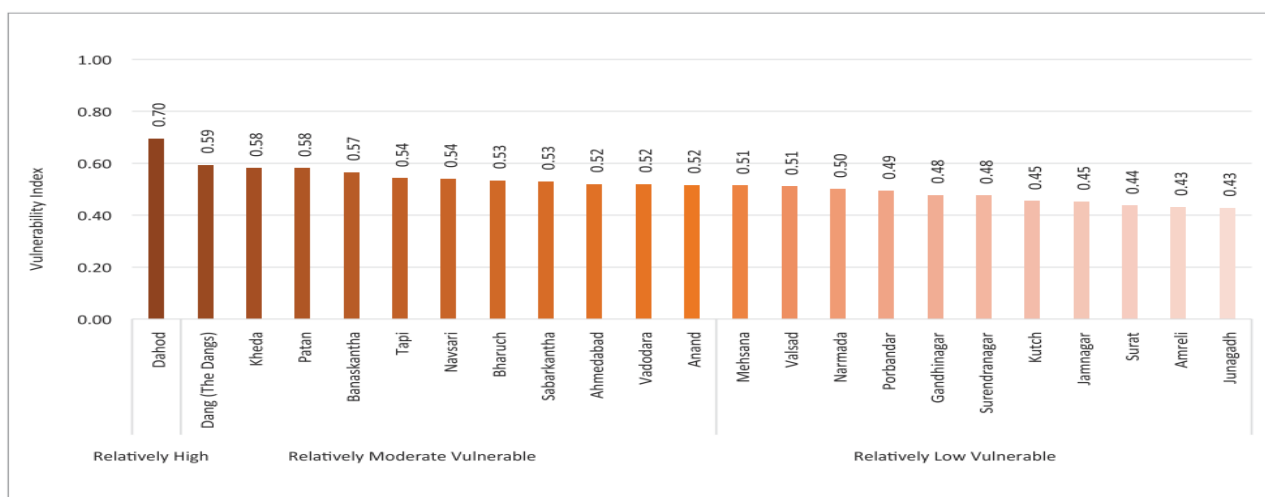
The state has reported higher burden of ischemic heart diseases than the national average. (GBD) ischemic heart disease and COPD were leading causes of Disease Adjusted Life Years (DALY). Highest DALY was attributable to risk factors like malnutrition, air pollution, dietary factors and high blood pressure. Climate change and air pollution may increase burden of such non-communicable disease.<sup>2</sup>

## Climate change and health

The state falls in the subtropical climate zone and has a sub-humid climate in southern Gujarat (South of River Narmada), moderately humid climate in central Gujarat (between Narmada and Sabarmati rivers), humid and sultry climate in the coastal region (south facing coastal region of Saurashtra), dry climate in regions of central Gujarat (north of Ahmedabad and part of central Saurashtra) and arid and semi-arid climate in north Gujarat and Kachchh. There are 8 agro-climatic zones based on soil characteristics, rainfall, and temperature. The summer temperature varies between 25°C and 45°C, while the winter temperature ranges between 15°C and 35°C. The normal monsoon season runs from June to September, with a normal annual rainfall of 852 mm<sup>3</sup>.

Gujarat is one of the moderately vulnerable states to climate change impacts in India based on its socio-demographic, biophysical, and institutional-infrastructure aspects (Figure 1)<sup>4</sup>

Figure 1: Climate vulnerability ranking of districts based on its socio-demographic, biophysical, and institutional-infrastructure aspects, Gujarat, 2021 <sup>4</sup>



According to this assessment, Dahod has high relative vulnerability among districts. However, health impact specific vulnerability assessment should be considered for better understanding of burden of climate sensitive diseases and prioritization of action. Among climate sensitive health issues, air pollution, heat-related illnesses, extreme weather events, vector-borne, food and water-borne diseases, nutrition related impacts, coastal impacts, environmentally sustainable and climate-resilient health care facilities are relevant aspects for health sector strengthening in the state.

## 1. Air pollution

Particulate air pollution is the single greatest threat to human health. Population in Gujarat may be exposed to 40-59.9 $\mu\text{g}/\text{m}^3$  population-weighted mean ambient  $\text{PM}_{2.5}$  concentration and 60-69.9 ppm of Ozone concentration<sup>5</sup>. According to National Clean Air Programme, there are three non-attainment cities as per national ambient air quality standards of 2011 to 2015 in Gujarat—Ahmedabad, Vadodara, Surat<sup>6</sup>. Current annual safe limits for  $\text{PM}_{2.5}$  and  $\text{PM}_{10}$  are 40 $\mu\text{g}/\text{m}^3$  and 60  $\mu\text{g}/\text{m}^3$ .

Table 1: Annual Pollutant Levels in NCAP cities, other industrial/metro cities, Gujarat, 2016-19

City	Pollutant* ( $\mu\text{g}/\text{m}^3$ )	2016	2017	2018	2019
Ahmedabad	$\text{PM}_{2.5}$	34	38	73	37
	$\text{PM}_{10}$	108	120	236	135
	$\text{NO}_2$	28	29	29	25
Surat	$\text{PM}_{2.5}$	31	35	56	40
	$\text{PM}_{10}$	92	106	176	128
	$\text{NO}_2$	22	26	29	27
Vadodara	$\text{PM}_{2.5}$	30	36	60	37
	$\text{PM}_{10}$	93	108	188	131
	$\text{NO}_2$	24	23	25	26
Ankleshwar	$\text{PM}_{2.5}$	32.5	35	46	36
	$\text{PM}_{10}$	104	107.5	148.5	114.5
	$\text{NO}_2$	21	25	25	25.5
Rajkot	$\text{PM}_{2.5}$	32	36.5	64	35
	$\text{PM}_{10}$	92.5	106.5	202.5	126.5
	$\text{NO}_2$	20.5	22	23.5	25.5
Vapi	$\text{PM}_{2.5}$	32.5	36.5	53.5	40
	$\text{PM}_{10}$	104.5	114	171	119.5
	$\text{NO}_2$	24	25	24.5	24.5

Based on  $\text{PM}_{2.5}$  levels reported in 2020, potential average gain in life expectancy is estimated to be 3.1 years from reducing  $\text{PM}_{2.5}$  to the WHO Guideline (5  $\mu\text{g}/\text{m}^3$ )<sup>7</sup>.

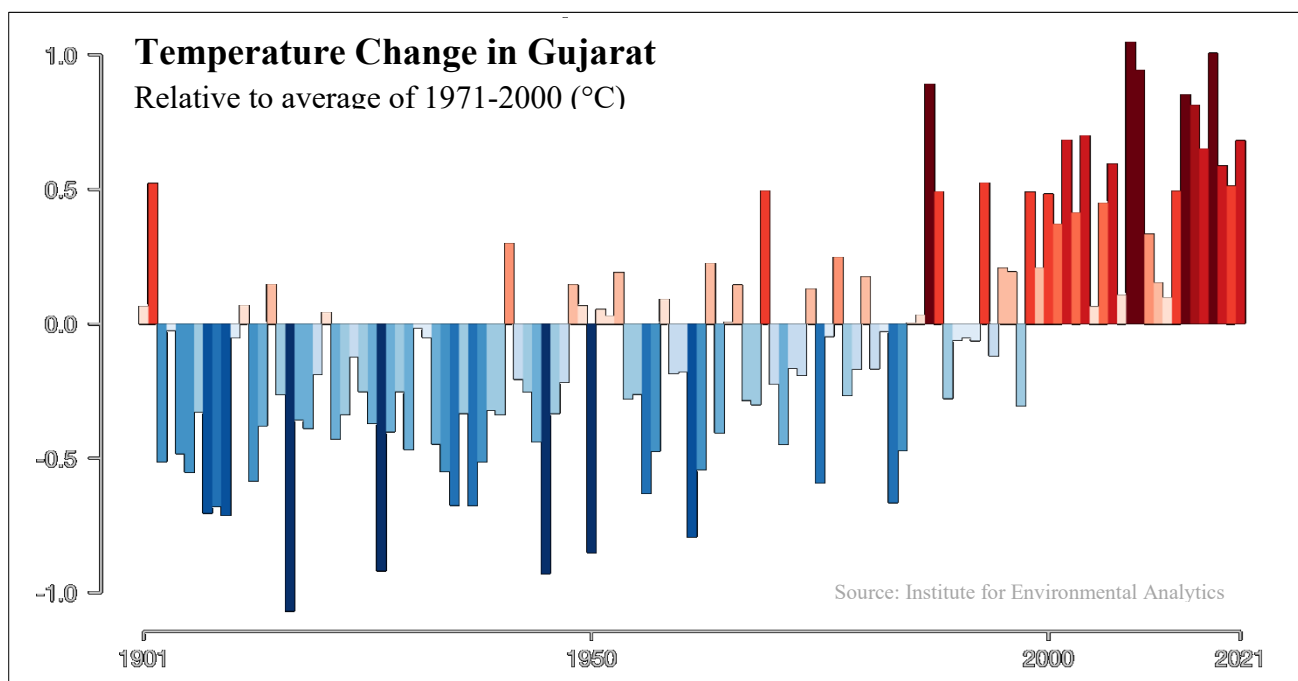
## 2. Extreme heat

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.

Gujarat is a heat-vulnerable state. In 2022, India reported 280 heat wave days from March 11-to May 18, 2022—the highest in 122 years. Five states accounted for 54% of the heat waves this year. These were Rajasthan, Madhya Pradesh, Himachal Pradesh, Gujarat and Haryana, (according to SoE in figures, 2022.). Gujarat witnessed 5 heatwaves, the highest compared to past few years<sup>8</sup>. District of Banaskantha, Sabarkantha,

Gandhinagar, Ahmedabad, Surendranagar, Rajkot, Kutch, Junagadh, Porbandar, Gir-Somanath and Valsad experienced heatwaves.

Figure 2: Annual average temperature change observed in Gujarat, 1901-2021



According to National Heat-Related Illness Surveillance, in 2002 Gujarat and neighboring Madhya Pradesh reported 1030 heat-related mortality. (ED-Dat2007). During 2015-2018 HRI cases show an increasing trend. In 2019, Gujarat state reported 580 cases and 8 HRI deaths. In 2020, 64 cases of HRI were reported. As of June 2022, total 315 suspected heatstroke cases were reported.

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<sup>9,10</sup>. (Table 2)

Table 2: Ranking of heat vulnerable districts, Gujarat, 2017

No	Districts (in descending order of vulnerability)	Heat Vulnerability
1	Dohad	Very High
2	The Dangs	High
3	Panchmahal	High
4	Narmada	High
5	Surendranagar	High normal
6	Tapi	High normal
7	Sabarkantha	High normal
8	Banaskantha	High normal
9	Navsari	Low normal
10	Mahesana	Low normal
11	Bhavnagar	Low normal
12	Anand	Low normal
13	Kachchh	Low normal

14	Vadodara	Low normal
15	Junagadh	Low normal
16	Gandhinagar	Low normal
17	Rajkot	Low normal
18	Kheda	Low normal
19	Bharuch	Low normal
20	Patan	Low normal
21	Amreli	Low normal
22	Valsad	Low normal
23	Ahmadabad	Low normal
24	Porbandar	Low normal
25	Surat	Low normal
26	Jamnagar	Low normal

### 3. 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.

Table 3: Major mosquito-borne diseases reported through National Vector-Borne Disease Surveillance in Gujarat, 2019-21

Year	Malaria			Dengue		Chikungunya
	Cases	PF	Death	Cases	Death	Cases
2019	13883	1045	1	18455	17	689
2020	4771	329	1	1564	2	1059
2021	4921	4921	0	10983	14	4044
Disease	Maximum contribution					
Malaria	Surendranagar, Morbi, Amreli, Jamnagar, Ahmedabad Municipal Corporation, Surat Municipal Corporation					
Dengue	Vadodra, Rajkot, Dwarka, Kutchch, Ahmedabad Municipal Corporation, Jamnagar Municipal Corporation, Vadodara Municipal Corporation					
Chikunguniya	Vadodra, Kutchch, Ahmedabad Municipal Corporation, Vadodara Municipal Corporation					

The Annual Parasite Incidence (API) for malaria is less than 1 in all districts of Gujarat. With climate change impacts, a shift of malaria transmission to southwest and northern states is expected, with 10-12 months of transmission window in Gujarat. Dengue and Chikungunya cases are increasing throughout the State year of 2019 onwards. In recent years, Gujarat has reported outbreaks of Crimean Congo Hemorrhagic Fever (CCHF). Reemergence of Kala-azar cases began from 2007.

### 4. Extreme weather events (EWE)

Gujarat, due to its geo-climatic, geological and physical features, is vulnerable to all major natural hazards, apart from heatwave, like drought, flood, cyclone, cold wave, earthquake, tsunami etc.

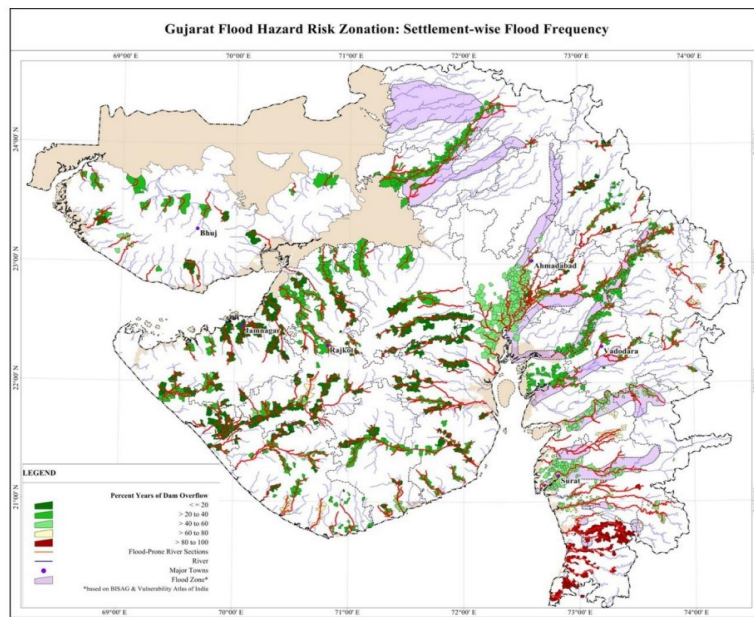
#### Floods

India is highly vulnerable to flooding. Increasing instances of localized heavy rainfall interspersed with dry spells and changing monsoon pattern due to climate change is increasing instances of such extreme weather events and concurrent flash floods, riverine, coastal and urban flooding. Mean seasonal rainfall has increased over Saurashtra and south Gujarat region. All major rivers in Gujarat pass through a wide stretch of the very

flat terrain before reaching the sea. These flat lowlands of lower river basins are prone to flooding. Cities like Ahmedabad, Surat and Bharuch are located on the flat alluvial plains of large rivers have reported urban flooding in past years after heavy rainfalls.

Instances of floods has been reported every year since 2013 from the state with report of 27 deaths in 2019 and 29 in 2022 as per IMD. 2017 floods affected multiple cities and districts and lead to 224 deaths. Besides deaths and injuries due to direct impact, flooding can lead to increase burden of communicable and non-communicable diseases due stress and interruption in routine health care delivery.

Figure 4: Flood hazard risk zones, Gujarat (GSDMA)<sup>3</sup>

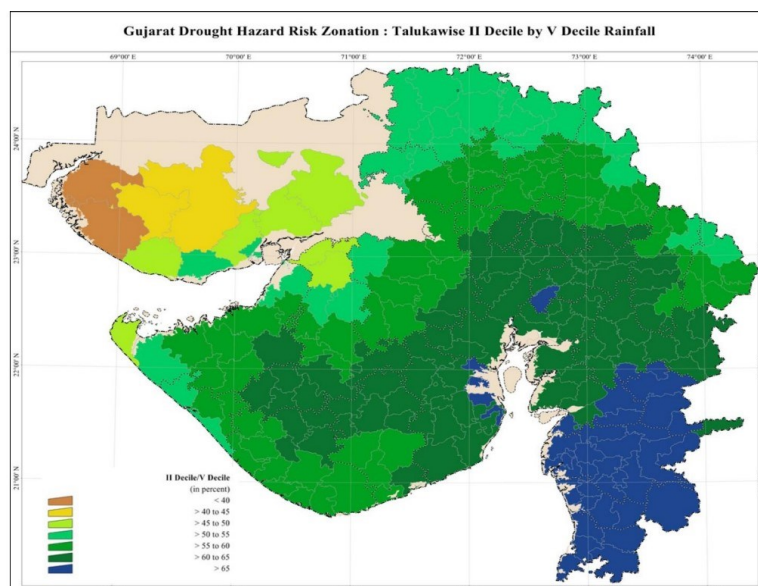


Source: GSDMA

## Drought

In Gujarat, 60% of rainfall is uncertain, unprecedented and unequal and the regions of Saurashtra, Kutch and North Gujarat face famine every third year. Since 1900, the state has faced scarcity of water and food almost 30 times. Gujarat is one the chronic drought prone state of India, with an average annual rainfall about only 700 mm with more than half of the Talukas of Gujarat receiving rainfall within the range of 200-400 mm. Substantial portions of the State are arid to semiarid. With large parts of North Gujarat and Saurashtra having no source of alternate irrigation, groundwater exploitation is leading increased threats of droughts. This makes population vulnerable to water-sanitation, nutrition and air pollution related illnesses.

Figure 4: Drought hazard risk zones, Gujarat (GSDMA)<sup>3</sup>



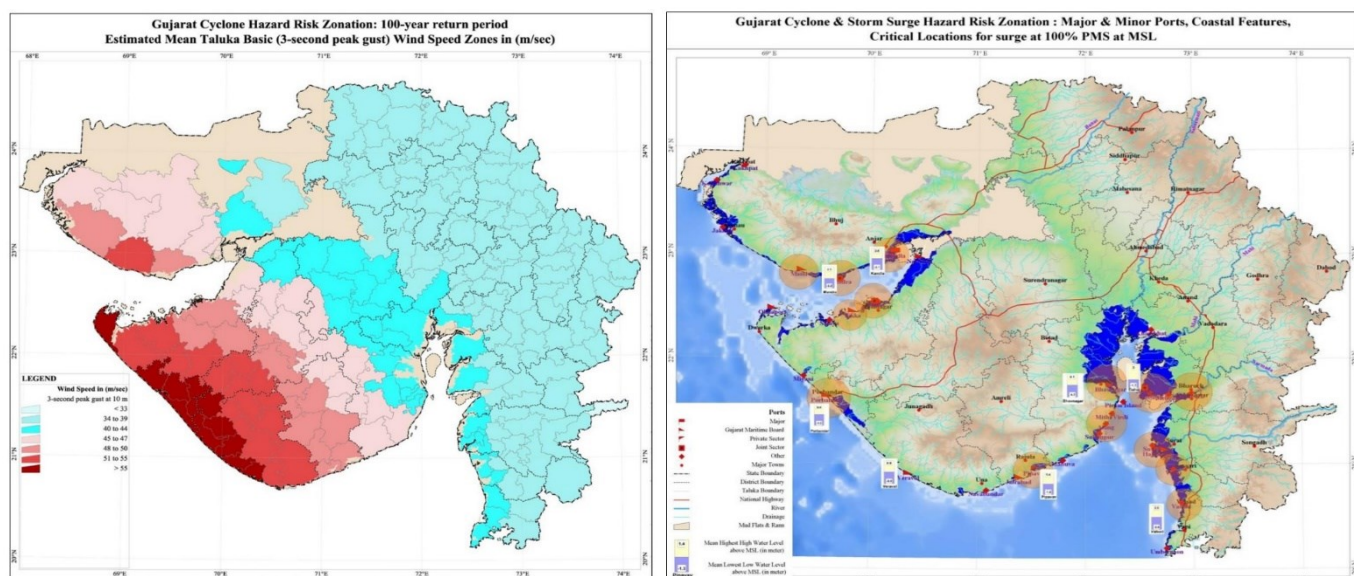
Source: GSDMA



## Cyclone

Gujarat is a cyclone-prone state and highly vulnerable to its subsequent hazard floods and storm surge as it has the longest coast line of 1600km in the country. It is highly vulnerable to associated hazards such as floods, storm surges etc. Most of the cyclones affecting the State are generated in the Arabian Sea. They move northeast and hit the coast particularly the southern Kutch and southern Saurashtra and the western part of Gujarat.

Figure 5: Cyclone and Storm Surge hazard risk zones, Gujarat (GSDMA)<sup>3</sup>



## Coldwave

Gujarat is one of the cold wave prone state. Although frequency of cold wave has decreased over time, it poses a health threat to vulnerable population.

### 5. Gujarat state Health infrastructure

Gujarat has a network of public and private health care facilities. There have been efforts to expand and update public health infrastructure in recent years. Need for concentrated efforts in disaster vulnerability of health facilities and implementation of resilient measures is realized.

Table 4: Public health infrastructure in Gujarat

Health Facility	Quantity
1. Super specialty hospital	6
2. Medical colleges	31
3. District hospitals	20
4. Sub-district hospitals	54
5. Community Health Centres	345
6. Urban Community Health Centres	40
7. Primary Health Centres	1477
8. Urban Primary Health Centres	321
9. Sub-centres	9163



## Roadmap of Gujarat State for Health Sector Response to Climate Change

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

1. Awareness Generation among the population especially vulnerable communities
2. Health-Care Providers & Policy Makers Regarding Impacts Of Climate Change On Human Health.
3. Capacity Building Of Government And Private Healthcare System To Reduce Illnesses/ Diseases Due To Variability In Climate
4. Health Sector Preparedness And Response Including District Level
5. 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)

Gujarat 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 Gujarat.

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

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

## 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.

Specific Objective:

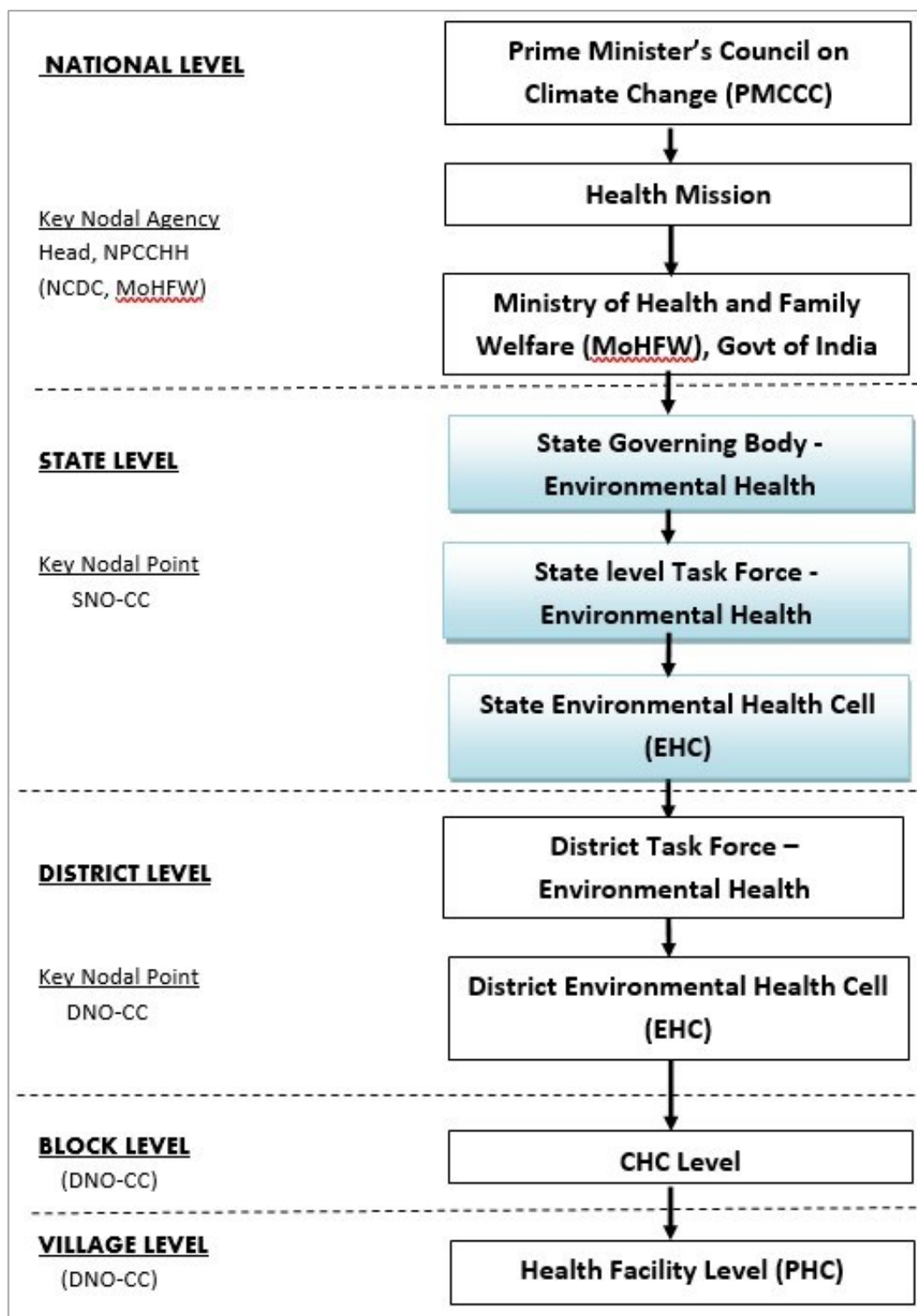
1. To create awareness among general population (vulnerable community), health-care providers and Policy makers regarding impacts of climate change on human health.
2. To strengthen capacity of healthcare system to reduce illnesses/diseases due to variability in climate.
3. To strengthen health preparedness 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

### **a. Organizational Structure under NPCCHH in Gujarat**



b.

### c. Gujarat 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	Contact email
Honorable State Health Minister	Chairman	health@gujarat.gov.in
Principal Secretary (Health)	Vice Chairman	cohealth@gujarat.gov.in
Mission Director-National Health Mission	Member	md-nrhm@gujarat.gov.in
Additional Director (Public Health)	Member Secretary	adir-hlt@gujarat.gov.in
Additional Director (Medical Education)	Member	adddir.health.me1@gmail.com
Additional director (Medical Services)	Member	adddir.health.ms@gmail.com
Additional director (Family Welfare)	Member	asstdirfw@gujarat.gov.in
Regional Director-Health & Family Welfare	Member	rhfw.ahd@rediffmail.com

#### d. Gujarat State Task Force for NPCCHH

This task force shall be working under the guidance of Principal Secretary (Health) of the state. It shall be directly overseeing the implementation of the State Action Plan for Climate Change and Human Health (SAPCCHH) in their state/UT. It shall be working through Directorate of Health Services (DHS) of the state, which will be the implementing agency for SAPCCHH.

**Table 5: Members of State Task Force, Gujarat**

Members	Name	Designation	Contact details
1. Secretary & Commissioner Of (Health, MS, ME, FW) Gujarat state	Mrs. Shahmina Hussain	Chairmen	9537155055
2. Mission Director, National Health Mission Gujarat	Mrs. Ramya Mohan	Member	9978400839
3. Additional Director (Public Health)	Dr.Nilam Patel	Member	9099064009
4. Additional Director (Medical Education)	Dr.R Dixit	Member secretary	9426736199
5. Additional Director (Medical Services)	Dr.Deveshvar	Member	9427322493
6. Director, Indian Institute of Public Health, Gandhinagar	Dr.Dilip Mavlankar	Member	94260099`31
7. Director, Indian Meteorological Department, Ahmedabad	M Mohnaty	Member	07929705011
8. Chairman, Gujarat Pollution Control Board, Gandhinagar	Shri. R B Barad	Member	07923222425

9. Chairman Gujarat State Disaster Management Authority, Gandhinagar	Dr. H R PATEL	Member	07923259283
10. Ex Engineer/Scientist, Forest & Environment Department,	Anita Karn	Member	9868224430
11. Ex Engineer/ Scientist, Ground Water Department Gandhinagar	D A Thakker	Member	9925049489
12. Director, Animal Husbandry Department Gandhinagar	Dr. Falguni Thaker	Member	7575037679
13. Joint Director (NVBDCP)	Dr. R. B. PATEL	Member	9909989249
14. Technical advisor Climate change Gandhinagar	Mr. Swetal Shah	Member	9904085859
15. State surveillance Officer IDSP Gandhinagar	Dr. R. B. PATEL	Member	9909989249

**Official orders of following are attached as Annexures**

1. State Task force Notification of Gujarat (Annexure 1)
2. State Environmental Health Cell, Task Force and Surveillance notification, Gujarat (Annexure 2)
3. State Task Force Meeting in 2021 (Annexure 3)
4. District Task force Notification (Annexure 4)
5. Current DNO list Name with contact details (Annexure 5)

**e. 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.

**f. Gujarat State Environment Health Cell (EHC)**

Gujarat state's EHC comprises of following member

Table 6: Members of Environmental Health Cell, Gujarat, 2022

	<b>Name</b>	<b>Contact detail</b>
1. State Nodal Officer	Dr. R B Patel	9909989249
2. State Surveillance Officer	Dr Jayesh Solanki	9898650501
3. Medical Officer	Dr Mukesh Patel	7043874699
4. Consultant	Dr Naim Ghanchi	9773050763
5. Data entry operator	Shri Ramkrushna	8347293949

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

Planning of activities under NPCCHH should be done in accordance with PIP guidelines<sup>11</sup>.

### I. Health Action Plan on Air Pollution Related Diseases

#### **g. Information, Education Communication (IEC) Activities**

##### **i. Target population:**

**Urban areas** (Primarily Ahmedabad, Vadodara, Sural, Rajkot Municipal corporations)

**Industrial areas** (like Ankleshwar, Vapi, Alang etc),

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

##### **ii. Annual IEC dissemination plan for Air Pollution and Health under NPCCHH, Gujarat**

IEC type	Material	Timeline	Mechanism
Advisory	<a href="http://bit.ly/NPCCHHPrg">bit.ly/NPCCHHPrg</a>	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"> <li>Digital display on public places and health facilities</li> <li>Newspaper</li> <li>Health department/other government website/application</li> </ul>
Posters	<ul style="list-style-type: none"> <li>12 posters on Air Pollution and health impacts (English)</li> <li>3 posters on Air Pollution and health impacts (Hindi) <a href="http://bit.ly/NPCCHHIEC">bit.ly/NPCCHHIEC</a></li> <li>Posters on Air Pollution and health impacts (Gujarati) (Annexure 6)</li> </ul>	September-October	<ul style="list-style-type: none"> <li>Printing for state-level dissemination at health facilities, public places/buildings</li> <li>By email to DNO for printing at district level and dissemination to health facilities, schools and other public/government buildings</li> </ul>
Wall painting	<ul style="list-style-type: none"> <li>Using available material</li> </ul>	Painted in August-September	<ul style="list-style-type: none"> <li>In schools and selected colleges</li> <li>In health facilities</li> </ul>
Hoardings	<ul style="list-style-type: none"> <li>Posters in Gujarati (above)</li> </ul>	September	<ul style="list-style-type: none"> <li>To be planned with Ahmedabad, Vadodara and Surat Municipalities</li> </ul>
Audio-Visual	<ul style="list-style-type: none"> <li>3 Audio Jingles (Hindi) <a href="http://bit.ly/NPCCHHIEC">bit.ly/NPCCHHIEC</a></li> </ul>	September	<ul style="list-style-type: none"> <li>Played 3 times a day during between September to March</li> </ul>



	<ul style="list-style-type: none"> <li>1 Audio Jingle (Gujrati)</li> </ul>		
	<ul style="list-style-type: none"> <li>2 Video messages (Hindi and English)</li> <li><a href="http://bit.ly/NPCCHHIEC">bit.ly/NPCCHHIEC</a></li> <li>1 Video message (Gujarati)</li> </ul>		<ul style="list-style-type: none"> <li>Played 3 times a day during between September to March</li> </ul>
Bus painting	<ul style="list-style-type: none"> <li>Using available material</li> </ul>	Painted in August-September	
Digital display	4 GIF <a href="http://bit.ly/NPCCHHIEC">bit.ly/NPCCHHIEC</a> <ul style="list-style-type: none"> <li>Above mentioned video messages</li> </ul>	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"> <li>Facebook and Twitter handle of state NPCCHH, NHM</li> <li>WhatsApp groups (State DNO, Health facility group)</li> </ul>

### iii. Preparatory work for IEC dissemination by EHC

	Nodal agency and person
<ul style="list-style-type: none"> <li>Gujarati translation of existing print material Hindi/English material</li> <li>Designing of new print material</li> <li>Printing</li> <li>Audio-video spot booking</li> </ul>	<ul style="list-style-type: none"> <li>State Environment health cell /IEC department: Dr Naim Ghanchi, Contact no 9773050763</li> </ul>

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

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

## b. Capacity Building Activities

### i. Training material

**Guidelines:** (available [bit.ly/NPCCHHguidelines](http://bit.ly/NPCCHHguidelines))

- Health Adaptation Plan for Disease Due to Air Pollutions
- Health Sector Preparedness for Air Pollution

- Handbook for Health Professionals on Air Pollutions & Its Impact on Health

**Training modules:** (available [bit.ly/NPCCHHguidelines](http://bit.ly/NPCCHHguidelines))

- Women Training Manual (English, Hindi)
- Children Training Manual (English, Hindi)
- Traffic Police Training Manual (English, Hindi)
- Municipal Worker Training Manual (English/Hindi)

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

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

For State Institute of Health & Family Welfare  
Contact person designation: Dr Ajay Paswan, Medical Officer,  
Contact detail -9427717776

*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, Gujarat

Training Programme for	Trainer	Topics	Timeline
<b>District level</b> (DNO-CC, trainers)	State Level Trainers SNO-CC, Consultant	<ul style="list-style-type: none"> <li>- Air pollution-health impact, prevention measures</li> <li>- Surveillance reporting and analysis with AQI</li> <li>- Health facility preparedness</li> </ul>	August-September
<b>Health facility level</b> (MO of DH/CHC/PHC)	District Level Trainers DNO-CC	<ul style="list-style-type: none"> <li>- Air pollution-health impact, prevention measures</li> <li>- Surveillance case identification and reporting</li> <li>- Health facility preparedness</li> </ul>	August-September December-January (review/repeat)
<b>Community Health care workers</b> (MPH, ASHA, ANM etc)	State & District Trainers	<ul style="list-style-type: none"> <li>- Surveillance case identification and reporting</li> </ul>	August-September December-January (review/repeat)
<b>Panchayati Raj Institutions</b>	District Level Trainers, MO	Air pollution-health impact prevention	September-October
<b>District level</b> (DNO-CC, trainers)	District level trainers, MO, Health care workers	Air pollution-health impact prevention	September-February

## c. Strengthening Health Sector Preparedness

### ➤ National Outdoor Air and Disease Surveillance (NOADS)

#### i. Surveillance guidelines:

Health Adaptation Plan for Disease Due to Air Pollutions <https://bit.ly/NPCCHHNOADS>

There are **three Non-Attainment Cities** identified under National Clean Air Programme (2018)

- Ahmedabad
- Vadodara
- Surat
- All health facilities in a district (PHC and above) especially in NCAP cities and cities with high air pollution levels should ensure implementation of this plan to prepare health facility to prevent and manage cases arising/aggravating from high air pollution exposure.

**ii. Sentinel surveillance sites-NCAP and other urban areas under NOADS, NPCCHH in Gujarat**

Sentinel Sites	District	Hospital Nodal Person
1. Sardar Vallabhbhai Patel Institute Of Medical Sciences and Research (SVP Hospital)	<b>Ahmedabad</b>	Name: Dr Kruti Designation: Medicine Department Contact :9687797555
2. Sheth. V.S. General Hospital		Name: Dr Kaushik Designation: RMO Contact :9924974455
3. L.G. Hospital Municipal General Hospital,		Name: DR Nilesh Suthar Designation: HOD MEDICINE Contact :7016831254
4. Sir Sayajirao General (S.S.G) Hospital,	<b>Vadodara</b>	Name: DR Reena Parekh Designation:AP Emergency Department Contact :9978904851
5. New Civil Hospital	<b>Surat</b>	Name: Dr Parul Vадgama Designation: HOD Respiratory Medicine Contact :9879533318
6. Pandit Deendayal Upadhyay (P.D.U) Hospital	<b>Rajkot</b>	Name: Dr MS Roy Designation:RMO Contact :9879533318
7. Civil Hospital	<b>Bharuch</b>	Name: Dr. R M Jitia Designation: CDMO Contact :9978905371
8. District Hospital	<b>Morbi</b>	Name: Dr. k R sardava Designation:RMO Contact :9825983301
9. ESIC General Hospital	<b>Vapi</b>	Name: Dr.Ani Sahar Designation: Superintendent Contact :9910498369
10. Community Health Center, Khambhat, Kheda	<b>Anand</b>	Name: Dr.Mayank Chahuhan Designation: Superintendent Contact :9099025097
11. Alang GMB Hospital, Alang	<b>Bhavnagar</b>	Name: DR KASHYAP Designation: Superintendent Contact :7048218419

**iii. Surveillance training:** included under capacity building section

**iv. Surveillance activity monitoring:**

- Review with DNO: Quarterly
- Review with Hospital nodal officer: Monthly

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

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

## II. Health Action Plan on Heat and Health

Gujarat is one of the 23 heat-vulnerable states which requires comprehensive actions to adapt and mitigate impact of extreme heat. Special attention to be given to urban areas due to urban heat island effect and vulnerable districts listed on page \_\_ during implementation of IEC and health facility preparedness.

### e. Information, Education Communication (IEC) Activities

#### i. Target population:

- **Urban areas**
  - **Vulnerable groups** (Primarily Children, women, older adults, traffic police, outdoor workers/vendors)

#### ii. Annual IEC dissemination plan on Heat and Health under NPCCHH, Gujarat

IEC type	Material	Timeline	Mechanism
Advisory	<a href="http://bit.ly/NPCCHHAdvisory">bit.ly/NPCCHHAdvisory</a>	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"> <li>• Digital display of temperatures on public places and health facilities</li> <li>• Newspaper</li> <li>• Health department/other government website/application</li> </ul>
Posters	<ul style="list-style-type: none"> <li>• 6 posters on heat and health impacts (English, Hindi) <a href="http://bit.ly/NPCCHHIEC">bit.ly/NPCCHHIEC</a></li> <li>• Posters on heat and health impacts (Gujarati) (Annexure 6)</li> </ul>	February-March	<ul style="list-style-type: none"> <li>• Printing for state-level dissemination at health facilities, public places/buildings</li> <li>• Electronically to DNO for printing at district level and dissemination to health facilities, schools and other public/government buildings</li> </ul>
Wall painting	<ul style="list-style-type: none"> <li>• In AMC, VMC, SMC with collaborative effort with ART school and Colleges city</li> </ul>	Painted in February-March	<ul style="list-style-type: none"> <li>• In schools and selected colleges</li> <li>• In health facilities</li> </ul>
Hoardings	<ul style="list-style-type: none"> <li>• Posters in Gujarati (above)</li> </ul>	March	<ul style="list-style-type: none"> <li>• To be planned with Ahmedabad, Vadodara and Surat Municipalities</li> </ul>
Audio-Visual	<ul style="list-style-type: none"> <li>• 3 Audio Jingles <a href="http://bit.ly/NPCCHHIEC">bit.ly/NPCCHHIEC</a></li> <li>• Audio Jingle (Gujrati)</li> </ul>	March	<ul style="list-style-type: none"> <li>• Played 3 times a day during between March-July</li> </ul>
	<ul style="list-style-type: none"> <li>• 2 Video messages (Hindi, English) <a href="http://bit.ly/NPCCHHIEC">bit.ly/NPCCHHIEC</a></li> <li>• Video message (Gujarati)</li> </ul>	March	<ul style="list-style-type: none"> <li>• Played 3 times a day during between March-July</li> </ul>

Bus painting	Using available material	March-April	With GSRTC and Corporation city Bus service
Digital display	<ul style="list-style-type: none"> <li>Available GIF</li> <li>Above mentioned video messages</li> </ul>	March-July	Display in health facilities Public digital display boards in major cities
Social medial	All above material + Relevant activity updates	February-July	<ul style="list-style-type: none"> <li>Facebook and Twitter handle of state NPCCHH, NHM</li> <li>WhatsApp groups (State DNO, Health facility group)</li> </ul>

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

#### g. Capacity Building Activities

##### i. Training material

###### Guidelines:

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

**Training modules:** (available [bit.ly/NPCCHHguidelines](https://bit.ly/NPCCHHguidelines) shortly)

- 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>

- Clinical Aspects of Heat-Related Illnesses
- Webinars on heatwave and its health impact



- HRI surveillance training

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

- Indian institute of Public Health-Gandhinagar
- State Institute of Health & Family Welfare : Contact person designation: Dr Ajay Paswan, Medical Officer, Contact detail -9427717776
- Gujarat 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, Gujarat**

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

**h. Strengthening Health Sector Preparedness**

➤ **National Heat-Related Illness Surveillance (NHRIS), NPCCHH**

**i. 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

- ii. 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.

iii. **Surveillance training: included under capacity building section**

iv. **Surveillance activity monitoring:**

- Review of surveillance activity with DNO: every month (March-July)

v. **Health Sector Preparedness**

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

ii. **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 multi-sectoral task force,

➤ **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 a necessity and an opportunity not only for reducing heat impact but also for reduction of greenhouse gas emission.

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

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 temperature 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 Plan<sup>12</sup>)
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

i. **Roles and Responsibilities**

	Responsibilities
SNO	<ul style="list-style-type: none"><li>• Disseminate early warnings to district level</li><li>• Finalization of IEC material and dissemination Plan</li><li>• Liaison with IMD for weather alerts and its dissemination</li><li>• Liaison with other departments for combined IEC campaigns, coordinated response and information sharing of health indicators for targeted action</li></ul>

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

City health department	<ul style="list-style-type: none"> <li>• Support in development and implementation of city-specific heat-health action plan</li> </ul>
Medical officer	<ul style="list-style-type: none"> <li>• Conduct health facility-based IEC activities</li> <li>• Support community level IEC activities</li> <li>• Be aware of AQI levels and health impact of air pollution</li> <li>• Ensure necessary health facility preparedness in early diagnosis and management of cases</li> </ul>
Panchayati Raj Institutions	<ul style="list-style-type: none"> <li>• Conduct community level IEC activities</li> </ul>

### III. Health Action Plan for Vector Borne Diseases (VBD) in Context of Climate Change

#### a. Situational analysis of VBD in Gujarat

##### i. District and City with high Malaria prevalence, Gujarat, 2021-22

Sr. No	District/city	Malaria cases		Remarks
		2021	2022	
1	AMC	85	278	Naroda muthia, Gomatipur, Thaltej ,Sarkhej, Ghuma UHCs reported maximum malaria cases.
2	SMC	99	172	Limbayat, Godadara, Fulpada, Pandesara,Bamroli,Navagam,Vesu,Kosad UHCs reported maximum malaria cases.
3	Morbi	46	81	Rangar, Bagathala , Bharatnagar PHCs and Morbi city UHC reported maximum malaria cases.
4	Amreli	25	80	Baabarkot, Mota ankediya, Krankach PHCs and Savar kundala,Amreli UHCs reported maximum malaria cases.
5	Jamnagar	33	52	Berja ,Latipur ,Hadiyana PHCs reported maximum malaria cases.

##### ii. District and City with high Dengue prevalence, Gujarat, 2021-22

Sr. No	District/city	Dengue cases		% Increase	Remarks
		2021	2022		
1	VMC	43	110	155.8	Except Vadsar, chhani, Atladra All UHC reported Dengue cases. Fatehpura reported Maximum 7 Cases
2	AMC	61	75	23.0	40 UHC out of 80 reported dengue cases. Maximum 10 cases reported form Mandaninagar (Vatva) UHC
3	JMC	14	53	278.6	All 10 UHC reported dengue cases. Navagarm UHC reported Maximum 15 cases
4	Vadoara	9	25	177.8	Out of 45 PHC/ UHC, 14 reported dengue cases. Maximum 5 cases reported from Ranoli PHC
5	Dwarka	1	23	2200.0	Out of 28, 16 PHC/UHC reported cases. Maximum 4 cases reported from V. Bara PHC
6	Kutchchh	6	20	233.3	11 PHC/UHC reported dengue cases out of 73. Maximum 5 cases reported from Bhuj UHC
7	Rajkot	2	19	850.0	14 PHC/ UHC reported dengue cases out of 60. Navimeghani reported maximum 3 cases

8	Surendranagar	0	14	1400.0	7 PHC/UHC reported dengue cases out of 60. Maximum 2 dengue cases reported each from Kondh, Bazana, Zinzuwada, Thangadh and Patadi
9	Jamnagar	4	12	200.0	Sethwadala reported Maximum 3 cases. Out of 37, only 7 PHC /UHC reported cases
10	SMC	5	12	140.0	Out of 49 UHC, only 9 reported cases. Maximum 2 cases reported from Godadara
11	Surat	2	11	450.0	5 PHC/UHC reported dengue cases out of 60, Gangdhara reported maximum 5 cases

**iii. District and City with high Chikungunya prevalence, Gujarat, 2021-22**

Sr. No	District/city	Chikungunya Cases		% +/-	Remarks
		2021	2022		
1	VMC	18	142	688.9	Navi dharati, Ramdevnagar, Shiyabag, Warsia, Ektanagar, Sudamapuri, Sama, Diwalipura, Vadsar, Navayarad, Fatehpura, Manjalpur UHCS reported maximum Chikungunya cases.
2	AMC	124	130	4.8	Vejalpur, Ramol, Gota, Naroda, Kuberanagar, Thaltej, Sabarmati, Vatwa, Lambha, Chndalodia, Asarwa, Navavada, S P Stadium, Ranip, Saijpur bogha UHCS reported maximum Chikungunya cases.
3	Vadoara	10	32	220.0	Sadhi, Dabaka, Bhayali, Varnama, Asoj, Chansad PHCs reported maximum Chikungunya cases.
4	Kutchchh	0	23	2300	Bhuj city reported maximum Chikungunya cases.

**b. Information, Education Communication (IEC) Activities**

**i. Target population:**

- **Areas identified** in under section a (above)
- **Vulnerable groups** (Primarily children, pregnant women, older adults, immunocompromised, outdoor workers/vendors)

**ii. Annual IEC dissemination plan for Vector-borne diseases in context of climate change under NPCCHH, Gujarat**

IEC type	Material	Timeline	Mechanism
Posters	<ul style="list-style-type: none"> <li>• Posters on VBD and climate change (English/Hindi) <a href="http://bit.ly/NPCCHHIEC">bit.ly/NPCCHHIEC</a></li> <li>• May update posters made by state NVBDC</li> </ul>	<ul style="list-style-type: none"> <li>• After extreme weather events i.e. floods, cyclone, and other natural disaster i.e. earthquake/ tsunami</li> </ul>	<ul style="list-style-type: none"> <li>• Collaborate with NVBDCP</li> </ul>

	<ul style="list-style-type: none"> <li>Posters on VBD and climate change (Gujarati) (Annexure 6)</li> </ul>	<ul style="list-style-type: none"> <li>Collaborate with NVBDCP</li> </ul>	
Wall painting	Using available material	Painted in June-July, Seasonally as needed	<ul style="list-style-type: none"> <li>In schools and selected colleges</li> <li>In health facilities</li> </ul>
Hoardings	<ul style="list-style-type: none"> <li>Posters in Gujarati (above)</li> </ul>	June-July, Seasonally as needed	<ul style="list-style-type: none"> <li>To be planned with hotspot Municipalities and District</li> </ul>
Audio-Visual	<ul style="list-style-type: none"> <li>3 Audio Jingles</li> <li>Audio Jingle (Gujrati)</li> </ul>	June-July, Seasonally, as needed in case of extreme weather events	<ul style="list-style-type: none"> <li>Plan according to PIP guidelines<sup>11</sup> and in coordination with NVBDCP</li> </ul>
	<ul style="list-style-type: none"> <li>2 Video messages (Hindi, English)</li> <li>Video message (Gujarati)</li> </ul>		
Bus painting	Using available material	Painted in June-July, Seasonally as needed	<ul style="list-style-type: none"> <li>With GSRTC and Corporation city Bus service</li> </ul>
Digital display	<ul style="list-style-type: none"> <li>Available GIF</li> <li>Above mentioned video messages</li> </ul>	June-July, Seasonally as needed	<ul style="list-style-type: none"> <li>Display in health facilities</li> <li>Public digital display boards in major cities</li> </ul>
Social medial	All above material + Relevant activity updates	June-July, Seasonally, as needed in case of extreme weather events	<ul style="list-style-type: none"> <li>Facebook and Twitter handle of state NPCCHH, NHM</li> <li>WhatsApp groups (State DNO, Health facility group)</li> </ul>

c.

#### d. Observance of important environment-health days

Observance of following days may be recommended for awareness on climate change and vector-borne diseases.

Day	Activities on VBD in context of climate change
<ul style="list-style-type: none"> <li>World malaria day (April 25)</li> <li>World mosquito day (August 20)</li> <li>World Environmental Health Day (September 26)</li> </ul>	<p>IEC Campaigns</p> <ul style="list-style-type: none"> <li>Audio-video spots broadcasting</li> <li>Targeted awareness sessions: urban slums, schools, women, children</li> <li>Street plays and local cultural activities, Rallies</li> <li>Sports events</li> <li>Competition: poster, poem/essay, quiz</li> </ul> <p>Collaborate with NVBDCP</p>



## e. Capacity Building Activities

### i. Training material

**Training modules:** (available [bit.ly/NPCCHHguidelines](http://bit.ly/NPCCHHguidelines) shortly)

- 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>

- Training on climate change and its impact on VBD burden

### 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

*Training on Vector-borne diseases may be expanded to include other climate sensitive health issues specifically extreme weather events.*

### iii. Annual training plan for vector-borne diseases in context of climate change under NPCCHH, Gujarat

Training Programme for	Trainer	Topics	Timeline
<b>District level</b> (DNO-CC, trainers)	State Level Trainers SNO-CC, Consultant	<ul style="list-style-type: none"> <li>- Role of climate change impact in VBD burden, prevention measures</li> <li>- Tracking of VBD and Integrating rainfall, humidity and temperature parameters with VBD surveillance</li> <li>- Post-disaster VBD surveillance, prevention, management</li> </ul>	July or after extreme weather events/natural disasters
<b>Health facility level</b> (MO of DH/CHC/PHC)	District Level Trainers DNO-CC	<ul style="list-style-type: none"> <li>- Role of climate change impact in VBD burden, prevention measures</li> <li>- Strengthen surveillance reporting</li> <li>- Post-disaster VBD surveillance, prevention, management in community and at relief camps</li> </ul>	July-August or after extreme weather events/natural disasters
<b>Community Health care workers</b> (MPH, ASHA, ANM etc)	District Level Trainers, MO	<ul style="list-style-type: none"> <li>- Role of climate change impact in VBD burden, prevention measures</li> <li>- Post-disaster VBD surveillance, prevention, management in community and at relief camps</li> </ul>	
<b>Panchayati Raj Institutions</b>	District level trainers, MO, Health care workers	<ul style="list-style-type: none"> <li>- Role of climate change impact in VBD burden, prevention measures</li> </ul>	

#### **f. Strengthening Health Sector Preparedness**

##### **➤ 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) should

##### **i. Surveillance training:** included under capacity building section

##### **ii. 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 in the same way as other endemic areas.
- **Epidemic preparedness** especially after extreme weather events or natural disasters

#### **g. Roles and responsibilities (Govt & non-Govt) in implementation of VBD activities in context of climate change under NPCCNN, Gujarat**

<b>Department/Agency</b>	<b>Area of Collaboration</b>	<b>Specifics</b>
1. NVBDCP, Gujarat	Overall guidance and policy formulation	<ul style="list-style-type: none"><li>• Guide and the state governments in resurgence and containment of any VBD</li></ul>
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"><li>• Oversee vector control measures</li><li>• Oversee health sector preparedness</li><li>• Oversee VBD surveillance, control in post-disaster situations in community and relief camps</li><li>• Train DNO, DMO</li><li>• Sensitization workshops to increase awareness on climate change and its impact on VBD</li></ul>
3. India Meteorological Department	To provide meteorological data as and when required	<ul style="list-style-type: none"><li>• 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.</li></ul>
4. NGO at state and district level for reach to community	Health education at community level	<ul style="list-style-type: none"><li>• Conduct workshops for IEC activities for different level of staff in the identified areas in consultation with the state govts</li></ul>
5. State Programme Officer	Overall planning and execution of surveillance and intervention measures to control VBDs	<ul style="list-style-type: none"><li>• Supervise and guide the DMOs in control of VBDs</li></ul>
6. State Entomologist	To provide guidance in vector control.	<ul style="list-style-type: none"><li>• Generate data on fortnightly fluctuations in density of vector species so as to guide the state government in choosing appropriate time of IRS activities. To generate data on susceptibility status of disease vectors for using appropriate insecticide for IRS/larvicide for vector control</li></ul>

7. Chief Medical Officer/District Malaria Officer/Disease Surveillance officer	Execution of task assigned by the SPO	<ul style="list-style-type: none"> <li>Supervise and guide surveillance and intervention measures for control of VBDs in the district.</li> </ul>
8. Media	To be vigilant for report of any upsurge/outbreak of any VBD.	<ul style="list-style-type: none"> <li>Impart health education to masses through print and audiovisuals means</li> </ul>

➤ **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 Events and its Health Impacts

### a. Hotspot and Vulnerability to Extreme Weather Events (EWE)

Gujarat state is vulnerable to extreme weather events like floods, droughts, cyclone, storm surge.

Following hotspot districts are identified each event:

- Flood hotspot: Kachchh, Anand, Sabarkantha, Rajkot, Bhavnagar, Banaskantha, Jamnagar, Surendranagar
- Cyclone: Kachchh, Rajkot, Bhavnagar, Jamnagar, Porbandar, Navsari
- Drought: Kachchh, Rajkot, Bhavnagar, Banaskantha, Jamnagar, Surendranagar

According to a recent assessment that used composite vulnerability index for flood, drought and cyclone in view of exposure, sensitivity and adaptive capacity, districts are ranked from high to low vulnerability.

#### i. Ranking of Districts based on exposure, sensitivity and adaptive capacity to flood, drought & cyclone

Rank	District	Event	Exposure	Sensitivity	Adaptive Capacity	Vulnerability Index	Vulnerability
54	Surendranagar	Flood & Drought	0.86	0.78	0.49	0.576	High
103	Rajkot	Flood, Drought & Cyclone	0.625	0.88	0.54	0.437	High
123	Amreli	Drought	0.41	0.58	0.36	0.379	Moderate
139	Junagadh	Drought & Cyclone	1	0.34	0.44	0.34	Moderate
143	Jamnagar	Flood, Drought & Cyclone	0.4	0.84	0.43	0.335	Moderate
183	Anand	Flood	0.28	0.28	0.38	0.242	Moderate
209	Patan	Flood & Drought	0.28	0.74	0.49	0.178	Low
220	Porbandar	Flood, Drought & Cyclone	0.25	0.7	0.49	0.153	Low
237	Bhavnagar	Flood, Drought & Cyclone	0.15	0.86	0.51	0.108	Low
237	Kheda	Flood & Drought	0.16	0.74	0.46	0.108	Low
242	Gandhinagar	Drought	0.68	0.12	0.5	0.094	Low
247	Bharuch	Flood & Drought	0.16	0.64	0.52	0.083	Low
250	Vadodara	Flood & Drought	0.45	0.19	0.49	0.073	Low
254	Surat	Flood & Cyclone	0.17	0.32	0.53	0.065	Low
272	Navsari	Flood & Cyclone	0	0.64	0.51	0	Very Low

#### ii. List of Vulnerable Districts for Cyclone, Wind and Coastal/Inland Flooding

S. no	District	Wind and Cyclone	Costal/ inland flooding
1	Kachchh	Very high	Flood zone
2	Junagad	Very high	Flood zone
3	Narmada	High	Flood zone
4	Porbander	High	Flood zone
5	Ahmedabad	Moderate	Flood zone

6	Bharuch	Moderate	Flood zone
7	Kheda	Moderate	Flood zone
8	Surat	Moderate	Flood zone
9	Vadodra	Moderate	Flood zone
10	Valsad	Moderate	Flood zone
11	Bhavanagar	Moderate	-
12	Jamnagar	Moderate	Flood zone
13	Navsari	Moderate	Flood zone
14	Ananad	Moderate	Flood zone
15	Amreli	Moderate	Flood zone
16	Rajkot	Moderate	Flood zone

## b. Information, Education Communication (IEC) Activities

### i. Target population:

- **Vulnerable districts/hotspots:** listed above
- **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 Gujarat

IEC type	Material	Timeline	Mechanism
Advisory	<a href="http://bit.ly/NPCCHHPrg">bit.ly/NPCCHHPrg</a>	Seasonal	By email to DNO for further dissemination to health facilities
Early warning	Bulletins/ advisory by IMD (storm, cyclone), CWC (flood) sent by NPCCHH	Seasonal	<ul style="list-style-type: none"> <li>• Health department/other government website/application</li> <li>• Digital display of temperatures on public places and health facilities</li> </ul>
Posters	<ul style="list-style-type: none"> <li>• 6 posters on various EWE and health impacts (English, Hindi) <a href="http://bit.ly/NPCCHHIEC">bit.ly/NPCCHHIEC</a></li> <li>• Posters on heat and health impacts (Gujarati)</li> </ul>	Seasonal, As needed	<ul style="list-style-type: none"> <li>• Printing of _____ copies for state-level dissemination at health facilities, public places/buildings</li> <li>• By email to DNO for printing at district level and dissemination to health facilities, schools and other public/government buildings</li> </ul>
Wall painting	Using available material	Painted in July-September	<ul style="list-style-type: none"> <li>• In schools and selected colleges</li> <li>• In health facilities</li> </ul>
Hoardings	<ul style="list-style-type: none"> <li>• Posters in Gujarati (above)</li> </ul>	Seasonal, As needed	<ul style="list-style-type: none"> <li>• To be planned with Ahmedabad, Vadodara and Surat Municipalities</li> </ul>
Audio-Visual	<ul style="list-style-type: none"> <li>• Audio Jingle (Gujrati)</li> </ul>	Seasonal, As needed	<ul style="list-style-type: none"> <li>• Played seasonally and around relevant extreme weather events</li> </ul>

	<ul style="list-style-type: none"> <li>5 Video messages (Hindi, English) <a href="http://bit.ly/NPCCHHIEC">bit.ly/NPCCHHIEC</a></li> <li>Video message (Gujarti)</li> </ul>		
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"> <li>5 GIF</li> <li>Above mentioned video messages</li> </ul>	Seasonal, As needed	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"> <li>Facebook and Twitter handle of state NPCCHH, NHM</li> <li>WhatsApp groups (State DNO, Health facility group)</li> </ul>

### iii. Observance of important environment-health days

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

## c. 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>

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

**GIDM**

**State Institute of Health & Family Welfare**

*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, Gujarat**

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

d. **Strengthening Health Sector Preparedness**

i. **Early warning:** dissemination of early warnings for Coldwave, Flood, Cyclone 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

➤ **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	<ul style="list-style-type: none"> <li>• Disseminate early warnings to district level</li> <li>• Finalization of IEC material and dissemination Plan</li> <li>• Formalize intersectoral coordination for disaster planning, management and response with SDMA/IMD and other response departments</li> <li>• Organize training of district level officers</li> <li>• Facilitate assessment and implement of climate resilient measures in health facilities</li> <li>• Review implementation of IEC, training and surveillance activities at all levels</li> <li>• Evaluate and update relevant section of SAPCCHH with support from State Task Force</li> <li>• Create organizational support and strengthen Environmental Health cell to implement NPCCHH vision, Goal and Objectives</li> <li>• Organize sensitization workshops for other stakeholders and line departments</li> <li>• Collaborate with academic institute/s for support in updating SAPCCHH, Surveillance activity monitoring, training of health care professionals, vulnerability assessment and applied research</li> <li>• Submit reports of activities on EWE and health under NPCCHH</li> </ul>
DNO	<ul style="list-style-type: none"> <li>• Disseminate early warning to block and health facility level</li> <li>• Ensure IEC dissemination to community level and facilitate community level IEC activities</li> <li>• Organize training for block health officers and MO</li> <li>• Formalize intersectoral coordination for disaster planning, management and response with SDMA/IMD and other response departments</li> <li>• Liaison with other departments for combined IEC campaigns, coordinated response and information sharing of health indicators for targeted action</li> <li>• Identification and communication of Evacuation routes &amp; relief camps</li> <li>• Support planning and management of health care services in relief camps</li> <li>• Provide necessary IEC on health and sanitation in relief camps</li> <li>• training for block health officers, medical officers, with relevant training manuals</li> <li>• Conduct sensitization of vulnerable groups: police officers, outdoor works, women, children etc</li> </ul>

	<ul style="list-style-type: none"> <li>• Organize IEC campaigns at district level on observance of important environment-health days</li> <li>• Facilitate disaster vulnerability assessments in health facilities and maintain records of such assessment and health facility damage due to EWE</li> <li>• Update DAPCCHH with support from District Task Force</li> <li>• Submit reports of activities on EWE and health under NPCCHH</li> </ul>
Block health officer	<ul style="list-style-type: none"> <li>• Conduct community level IEC activities</li> <li>• Ensure training of medical officers</li> <li>• Organize PRI sensitization workshop and training for vulnerable groups</li> <li>• Facilitate disaster vulnerability assessments in health facilities and maintain records of such assessment and health facility damage due to EWE</li> </ul>
Medical officer	<ul style="list-style-type: none"> <li>• Conduct health facility-based IEC activities</li> <li>• Support community level IEC activities</li> <li>• Preparation of Disaster Management Plans and hospital safety plan</li> <li>• Assessment of health facility in context of climate change-extreme weather events</li> <li>• Identifying structural changes/retrofitting measures at the facility level to equip the healthcare facility</li> <li>• Ensuring routine monitoring and maintenance of support functions (Water quality, waste management)</li> <li>• Health facility preparedness for seasonal events</li> </ul>
Panchayati Raj Institutions	<ul style="list-style-type: none"> <li>• Conduct community level IEC activities</li> <li>• Community involvement in planning and demonstration of measure taken before-during-after an EWE</li> </ul>

## V. Health Action Plan on Green (Environmentally-friendly, sustainable) and Climate Resilient Infrastructure

### f. Capacity building

#### i. Training material

Para medical officers & Health care **Guidelines:**

- National Action Plan on Green and Climate-Resilient Health Care Facilities

**Training modules:** (available [bit.ly/NPCCHHguidelines](https://bit.ly/NPCCHHguidelines) shortly)

- State-District level training modules
- Medical officer training
- workers
- Community level training: vulnerable population group

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

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

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

For State Institute of Health & Family Welfare

Contact person designation: Dr Ajay Paswan, Medical Officer,

Contact detail -9427717776

*Training on green and climate-resilient health care facilities (GCRHCF) 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, Gujarat

Training Programme for	Trainer	Topics	Timeline
<b>District level</b> (DNO-CC, trainers)	State Level Trainers SNO-CC, Consultant	- Role GCRHCF in terms of climate impact - Assessments required for implementation - Coordination with supporting agencies	August-September
<b>Health facility level</b> (MO of DH/CHC/PHC)	District Level Trainers DNO-CC	- Role GCRHCF in terms of climate impact - Assessments required for implementation - Coordination with supporting agencies	September
<b>Community Health care workers</b> (MPH, ASHA, ANM etc)	District Level Trainers, MO	- Role GCRHCF in terms of climate impact	September-October
<b>Panchayati Raj Institutions</b>	District level trainers, MO,	- Role GCRHCF in terms of climate impact - Assembling support for implementation	Anytime

	Health care workers		
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## **g. 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 (Refer: Guidelines on Green (Environmentally Sustainable) and Climate Resilient Health Care Facilities<sup>13</sup>, <https://bit.ly/NPCCHHIP>)
  - 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

### **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	8	Selected 8 CHC in 4 Districts	
- PHC	12	Selected 8 PHC in 4 Districts	
TOTAL	20		
Installing Solar panels			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
- HC	8	Selected 8 CHC in 4 Districts	
- PHC	12	Selected 8 PHC in 4 Districts	
TOTAL	20		
Installing Rainwater harvesting System			
- CHC	8	Selected 8 CHC in 4 Districts	
- PHC	12	Selected 8 PHC in 4 Districts	
TOTAL	20		

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

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	8	50	75	100	125	385
Replace existing Lighting Non LED with LED in PHC	12	300	400	400	686	1798
Installing Solar panels at CHC	8	25	50	75	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/NPCCHHPIP>

**h. Roles and Responsibilities**

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

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

## Part III: Budget for NPCCHH, Gujarat

**Proposed budget for implementation of NPCCHH activities during 2022-24, Gujarat**

Activities		2022-23	2023-24
<b>1. Infrastructure - Civil works (I&amp;C)</b>	<b>Old / ongoing work</b>		
	<b>New Work</b>	25.25	0
<b>2. Capacity building incl. training</b>		8.00	8.00
<b>3. Others including operating costs (OOC)</b>		101.00	101.00
<b>4. IEC &amp; Printing</b>		20.00	20.00
<b>5. Planning &amp; M&amp;E</b>		8.20	6.00
<b>6. Surveillance, Research, Review, Evaluation (SRRE)</b>		5.00	5.00
<b>Total</b>		<b>167.45</b>	<b>140.00</b>


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## Annexure 1: State Task Force notification, Gujarat

6385-6551



**Dr. Paresh Dave**  
Additional Director  
(Public Health)

No EPC/Climate Change/ Task Force/462019-B  
Commissionerate of Health, Medical Services &  
Medical Education (HS)  
Block No. 5/2, Dr. Jivraj Mehta Bhavan,  
Gandhinagar-382010  
Tel No : 079-23257948  
Date: 20.05.2019

**Reference:** D.O. No. 67/ CEOH/ NCDC/ 2017-18/ SAPCCHH, Dt. 26/03/2019.

**Office Order:**

Government of Gujarat has taken multifaceted actions against climate change and established a separate climate change department to take mitigation and adaptation action against climate change through various policies and action plans and integration with various departments. Human health is directly or indirectly affected by climate change. Health Department is, therefore, asked to prepare state specific Action Plan for Climate Change and Human Health by Government of India and establish an Environment Cell in the State and State Task Force for Climate Health Services.

State Level Action Plan for Climate Change and Human Health will be prepared on the action point suggested by National Center for disease Control, New Delhi and modified according to state need.

In view of above purpose, State Task Force is constituted to oversee the various activities and develop the action plan for state for Climate Change and Human Health. The task force will also guide the Governing Body time to time on various policy making decision. After careful consideration, the composition of State Task Force will be as follows.

1.	Principal Secretary, (Health) & Commissioner (Health, MS, ME & MR)	Chairman
2.	Mission Director (National Health Mission)	Member
3.	Additional Director (Medical Services) Ex Officio	Member
4.	Additional Director (Medical Education) Ex Officio	Member
5.	Joint Director (NVBDCP) Ex Officio	Member
6.	Director, Indian Institute of Public Health, Gandhinagar Ex Officio	Member
7.	Director, Indian Meteorological Department, Ahmedabad Ex Officio	Member

Page 1 of 3

8.	Chairman, Gujarat Pollution Control Board, Gandhinagar Ex Officio	Member
9.	Chairman, Gujarat State Disaster Management Authority, Gandhinagar Ex Officio	Member
10.	Ex Engineer/ Scientist, Forest & Environment Department, Gandhinagar Ex Officio	Member
11.	Ex Engineer/ Scientist, Ground Water Department, Gandhinagar Ex Officio	Member
12.	Director, Animal Husbandry Department, Gandhinagar Ex Officio	Member
13.	Deputy Director (Epidemic) & Nodal Officer (Climate Health services) Ex Officio	Member
14.	Technical Advisor, Climate Change Department, Gandhinagar Ex Officio	Member
15.	State Surveillance Officer, IDSP, Gandhinagar Ex Officio	Member
16.	Additional Director (Health) Ex Officio	Member Secretary

The State Task Force shall meet at least once in three month and finalize the State Action Plan for Climate Change and Human Health in time limit and make sure to implement in the State. The Task Force shall ensure the implementation of suggestion of Government of India time to time.

**Approval of Principal Secretary (H) & Commissioner (H) on Date: 17/05/2019 on File**


Additional Director (Health)  
Commissionerate of Health, Medical Services  
& Medical Education (HS)  
Gandhinagar

To,

- Principal Secretary, (Health) & Commissioner (Health, MS, ME & MR), Gandhinagar
- Mission Director (National Health Mission), Gandhinagar
- Additional Director (Medical Services), Gandhinagar
- Additional Director (Medical Education), Gandhinagar
- Joint Director (NVBDCP), Gandhinagar
- Director, Indian Institute of Public Health, Gandhinagar

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## Annexure 2: State Environmental Health Cell, Task Force and Surveillance notification, Gujarat

  
Dr. Paresh Dave  
Additional Director  
(Public Health)

No EPC/Climate Change/ Environment  
Cell/462019-B  
Commissionerate of Health, Medical  
Services & Medical Education (HS)  
Block No. 5/2, Dr. Jivaraj Mehta Bhavan,  
Gandhinagar.-382010  
Tel No : 079-23257948  
Date: .05.2019

To,  
Director,  
National Center of Disease Control,  
22, Shamnath Marg,  
New Delhi

Subject: Organizational structure of Environment Health Cell in Gujarat

Reference: 1) A Letter from NCDC, New Delhi D.O. No. 67/ CEOH/ NCDC/ 2017-18/SAPCCHH, Dt. 26/03/2019.  
2) Approval of Principal Secretary (H) & Commissioner (H) on 17/5/19

Sir,

In reference to above cited subject and letter, we would like to inform you that Gujarat State has initiated actions to prepare State Action Plan for Climate Change and Human Health. As per timeframe given by you, we have started various activities and completed organizational formalities.

1. State Nodal Officer for Climate Health Services:  
Dr. Dinkar Raval, Deputy Director, Epidemic (*Annexure 1*)
2. Environment Health Cell has been established in Epidemic Branch annexed in (*Annexure 2*)
3. State Task Force for Climate Change and Human Health has been formed under chairmanship of Principal Secretary (Health) and *Commissioner (Health) (Annexure 3)*

Furthermore, we have initiated the process of formation of Governing Body of CCHH under chairmanship of Hon'ble Health Minister. Draft Action Plan of Climate Change and Human Health is being prepared by our team and will be finalized after consultation with experts in task force. You will be acknowledged time to time accordingly.

Thanking You.

*22/5*

Enclosures: Annexure 1, 2, 3 & 4

Additional Director (Health)  
Commissionerate of Health, Medical  
Services & Medical Education (HS)  
Gandhinagar

C. F. W. Cs. To,

- Joint Secretary, Ministry of Health & Family Welfare, New Delhi, Gol.
- Principal Secretary, (Health) & Commissioner (Health, MS, ME & MR), Gandhinagar
- Mission Director (National Health Mission), Gandhinagar
- Regional Director, Ministry of Health & Family Welfare Department, Gol, Ahmedabad

*o/c  
Dr  
23-4  
Ch. m. l. Thakur  
24.05.19  
22/5  
23/5*

### Annexure 3: State Task Force Meeting notification, Gujarat



सत्यमेव जयते

Dr. R.B. Patel  
Deputy Director (Epidemic)

No. NPCCHH/Task force /Meeting 1784  
Commissionerate of Health, Medical Services &  
Medical Education (HS)  
5/3, Dr. Jivraj Mehta Bhavan, Gandhinagar.  
Tel No : 079-23257948  
Email: epigujarat.coh4@gmail.com  
Date: 8/12/2021

Reference: 1.D.O No 67/NCDC/NPCCHH/2021/GUJARAT\_UPDATE, DATE 18-11-2021  
2.Note approved by Commissioner of Health, Medical Services & Medical Education  
(H.S.), Gandhinagar on 06/12/2021.

To

1. Additional Director (Public Health)
  2. Additional Director (Medical Education)
  3. Additional Director (Medical Services)
  4. Director, Indian Institute of Public Health, Gandhinagar
  5. Director, Indian Meteorological Department, Ahmedabad
  6. Chairman, Gujarat Pollution Control Board, Gandhinagar
  7. Chairman Gujarat State Disaster Management Authority, Gandhinagar
  8. Ex Engineer/Scientist, Forest & Environment Department,
  9. Ex Engineer/ Scientist, Ground Water Department, Gandhinagar
  10. Director, Animal Husbandry Department, Gandhinagar
  11. Joint Director (NVBDCP)
  12. Technical advisor Climate change Gandhinagar
  13. State surveillance Officer IDSP Gandhinagar.
- Subject: Members of climate change task Force Meeting.

Place	Parivartan Meeting Hall 5/1 Dr. Jivraj Mehta Bhavan Gandhinagar,	
Date & Time	10-12-2021,	3:00pm.

Actions against climate change through integration with various departments and their policies action plan for saving Human health, Human health directly or indirectly affected by climate change. Therefore, High time to Discuss state specific Action Plan for Climate Change and Human Health under chair of COH, State Task Force constituted too oversee the various activities and develop the action plan for state for Climate Change and Human Health. The task force will guide the Governing Body time to time on various policy Decision In this regard

Deputy Director  
Epidemic Department  
Gandhinagar

CF

- Principal Secretary, (Health) & Commissioner (Health, Gandhinagar
- Mission Director (National Health Mission), Gandhinagar

#### Annexure 4: District Task Force notification, Gujarat



ડૉ. જયંતી એસ.એચ. (IAS)  
કમિશ્નર (આરોગ્ય)

નં.પીસી-૧૭/ કલાઈમેટ ચેન્જ એન્ડ હ્યુમન હેલ્થ / સબના / બબલ  
/ ૫.૧૦  
કમિશ્નરશ્રી, આરોગ્ય, તબીબી સેવાઓ અને તબીબી  
શિક્ષણ (આ.વિ.) બ્લોક નં. ૫,  
ડૉ. ગુપ્તરાજ મહેતા ભવન,  
ગાંધીનગર,  
તા. ૦૫.૧૦.૧૯

પ્રતિ,

- મ્યુનિસિપલ કમિશ્નરશ્રી, મહાનગરપાલિકા,.....તમામ.
- જિલ્લા વિકાસ અધિકારીશ્રી, જિલ્લા પંચાયત,.....તમામ.

વિષય:- જિલ્લા/કોર્પોરેશન કક્ષાએ "કલાઈમેટ ચેન્જ એન્ડ હ્યુમન હેલ્થ" અંગેની ટાસ્ક ફોર્સ અને ગવર્નિંગ બોડીની રચના કરવા બાબત.

સંદર્ભ:- ભારત સરકારશ્રીના આરોગ્ય અને પરિવાર કલ્યાણ મંત્રાલયના તા.૨૬/૦૩/૨૦૧૯ ના પત્ર ક્રમાંક ડીઓ નં ૬૭/ સી.ઈ.ઓ.એચ./ એન.સી.ડી.સી/૨૦૧૭-૧૮/સ.એ.પી.સી.સી.એચ.એચ.

આપ સૌ વિદિત છો તેમ વર્તમાન સમયમાં વાતાવરણમાં વિષમ ફેરફારને કારણે પૃથ્વીપરના તાપમાન, વરસાદ તેમજ અન્ય કુદરતી પરિબલોમાં અસામાન્ય બદારો-ઘટાડો લોધવા પામેલ છે. જેને આપને કલાઈમેટ ચેન્જ કહીએ છીએ. આ કલાઈમેટ ચેન્જની સીધી કે આડકતરી રીતે માનવના આરોગ્ય પર અસર પડે છે. જેના કારણે છેલ્લા કેટલાક દસકોમાં પાણીજન્ય રોગો, વાતક જન્ય રોગો, લીટરટ્રોફ, અસનતંત્રતા રોગો, કેન્સર વગેરે જેવા રોગોનાં પ્રમાણમાં ફેરફાર જોવા મળેલ છે.

ભારત સરકારશ્રીના આરોગ્ય અને પરિવાર કલ્યાણ મંત્રાલય દ્વારા સંદર્ભ દર્શિત પત્રથી તમામ રાજ્ય અને કેન્દ્ર શાસિત પ્રદેશોમાં "કલાઈમેટ ચેન્જ એન્ડ હ્યુમન હેલ્થ" અંગે રાજ્ય કક્ષાએ "એન્વાયરમેન્ટ હેલ્થ સેલ" અને સ્ટેટ એક્શન પ્લાન બનાવવા દિશા નિર્દેશ આપવામાં આવેલ છે. જે મુજબ રાજ્ય કક્ષાએ એપીડેમીક શાખામાં "એન્વાયરમેન્ટ હેલ્થ સેલ" બનાવવામાં આવેલ છે. વધુમાં આ પત્રમાં "સ્ટેટ ટાસ્ક ફોર્સ ફોર કલાઈમેટ ચેન્જ એન્ડ હ્યુમન હેલ્થ" અને ગવર્નિંગ બોડીની રચના કરવા પણ જણાવેલ છે. જે અનુસરે માન. અગ્ર સચિવ (આરોગ્ય) અને કમિશ્નર (આરોગ્ય અને પ.ક., ત.સે.,ત.શિ.) ની અધ્યક્ષતામાં સ્ટેટ ટાસ્ક ફોર્સની રચના કરવામાં આવેલ છે. અને માન. આરોગ્ય મંત્રીશ્રીની અધ્યક્ષતામાં ગવર્નિંગ બોડીની રચના કરવામાં આવનાર છે.

જિલ્લા/કોર્પોરેશન કક્ષાએ "કલાઈમેટ ચેન્જ એન્ડ હ્યુમન હેલ્થ" માટે પણ ટાસ્કફોર્સની રચના કરવાની યાચ છે આ ટાસ્ક ફોર્સમાં મેડીકલ સુપ્રીટેન્ડેન્ટ, પ્રોગ્રામ ઓફિસર એન.સી.ડી., એન.પી.બી.ડી.સી.પી., આઈ.ડી.એસ.પી., પી.આઈ.સુ., પબ્લિકાલન, બેલીયાડી, હવામાન વિભાગ, પ્રદુષણ નિયંત્રણ, પાણી પુરવઠા, ફૂડ એન્ડ

ફૂડ કંટ્રોલ, ડીઝાસ્ટર કંટ્રોલ, માહિતી વિભાગ આ ક્ષેત્રમાં કામ કરતી સામાજિક સંસ્થાઓ વગેરેનો સમાવેશ કરવાનો રહેશે. આ ટાસ્ક ફોર્સના ચેરમેન તરીકે જિલ્લા વિકાસ અધિકારી / મ્યુનિસિપલ કમિશ્નર તથા મેમ્બર સેક્રેટરી તરીકે મુખ્ય જિલ્લા આરોગ્ય અધિકારી / આરોગ્ય અધિકારી મહાનગરપાલિકા રહેશે. આ ટાસ્ક ફોર્સએ વખતોવખત મળી જિલ્લા/કોર્પોરેશનને "કલાઈમેટ ચેન્જ એન્ડ હ્યુમન હેલ્થ" અંગેનો એક્શન પ્લાન તૈયાર કરી તેની અમલવારી કરાવવાની રહેશે. આ બાબતને તોવું અગ્રતા આપી આ અંગે સત્વરે કાર્યવાહી કરવા વિનંતી છે.

અગ્ર સચિવ (આરોગ્ય)

આરોગ્ય અને પરિવાર કલ્યાણ વિભાગ,

ગાંધીનગર

નકલ રવાના:-

- મિશન ડાયરેક્ટરશ્રી, નેશનલ હેલ્થ મિશન, એન.એચ.એમ. ભવન, ગાંધીનગર.
- કલેક્ટરશ્રી, જિલ્લા સેવા સદન,.....તમામ.

નકલ રવાના:-

- વિભાગીય નાયબ નિયામકશ્રી, આરોગ્ય, તબીબી સેવાઓ,.....તમામ.
- મુખ્ય જિલ્લા આરોગ્ય અધિકારી, જિલ્લા પંચાયત આરોગ્ય શાખા,.....તમામ.
- આરોગ્ય અધિકારીશ્રી, મહાનગરપાલિકા,.....તમામ.

Annexure 5a:  
Officers under

District Nodal  
NPCCHH, Gujarat



Epidemic Medical Officer (EMO)							
S N	District	Name	Mobile No	Landline No		FAX Number	Email ID
				STD Code	Number		
1	Ahmedabad	Dr Chintan desai	9099064030	79	25500107	25507076	dso.health.ahmedabad@gmail.com
2	Amreli	Dr.A.K.Singh	9727723302	2792	220960	222115	dso.health.amreli@gmail.com
3	Anand	Dr Gunvant Isarvadia	9428070788	2692	263277	268775	dso.health.anand@gmail.com
4	Arvali	Dr. Pravin Damor	7575800957	2774	250017		dso.health.arvali@gmail.com
5	Banaskantha	Dr. N.K.Garg	9727730012	2742	253017	258908	dso.banaskantha.health@gmail.com
6	Bharuch	Dr. Nilesh G. Patel	9727702225	2642	243660	243660	dso.bharuch.health@gmail.com
7	Bhavnagar	Dr.P.A.Pathan	9727779690	278	2525671		dso2.health.bhavnagar@gmail.com
8	Botad	Dr Rakesh R Chuhan	9727723323	2849	271378		dso.health.botad@gmail.com
9	Chhotaudepur	Dr. Kuldeep sharma	9998800382	2669	232218		dso.health.chhotaudepur@gmail.com
10	Dahod	Dr.R.D. Pahadiya (I/C)	7567895134	2673	239125	239138	dso.health.dahod@gmail.com
11	Dang	Dr.Dhansukh Gamit	9428823492	2631	220344	220344	dso.health.dang@gmail.com
12	Devbhumi Dwarka	Dr. R.B.Sutariya (I/C)	9099961609	2833	235974		dso.health.dwarka@gmail.com
13	Gandhinagar	Dr. Dharmesh Parikh (I/c)	9909942246	79	23246276	23223266	dso.health.gandhinagar@gmail.com
14	Gir Somnath	Dr K B Nimavat	7574891971	2876	240051		emo.health.girsomnath@gmail.com
15	Jamnagar	Dr. Biren Manvar (I/C)	7567880025	288	2661097	2661153	dso.health.jamnagar@gmail.com
16	Junagadh	Dr C.L. Vyas	7567884999	285	2632680	2653131	dso.health.junagadh@gmail.com
17	Kheda	Dr.Ajit Thakar	7567863216	268	2555732	2555732	dso.health.kheda3@gmail.com
18	Kutch	Dr.D. K. Gala (I/C)	9687684201	2832	221666	221666	dso.health.kutch@gmail.com
19	Mahisagar	Dr Dharmendra Chuhan	7576006974	2674	253971		dso.health.mahisagar@gmail.com
20	Mehsana	Dr. Vinod B Patel	9909966911	2762	222030	220282	dso.health.mehsana@gmail.com
21	Morbi	Dr. Chetan Varevadiya (I/C)	9909988714	2822	222849		dso.health.morbi@gmail.com
22	Narmada	Dr.R.S.Kashyap	9099943335	2640	221806	221248	dso.health.narmada@gmail.com
23	Navsari	Dr. Mehul R. Deliwala	9727704007	2637	232533	232533	dso.health.navsari@gmail.com
24	Panchmahal	Dr. B. K. Patel	7567893800	2672	250668	250668	dso.panchmahal.health@gmail.com
25	Patan	Dr.R.T.Patel	9909981888	2766	234295	221554	dso.health.patan@gmail.com
26	Porbandar	Dr. B. B. Karamta	8780334305	286	2242731	2242731	dso.health.porbandar@gmail.com
27	Rajkot	Dr. N.M.Rathod	9825211895	281	2443235	2443132	dso.health.rajkot@gmail.com
28	Sabarkantha	Dr. Chirag Modi (i/c)	9909717979	2772	246422	246422	dso.health.sabarkantha@gmail.com
29	Surat	Dr Piyush Shah	9727709506 7567872952	261	2430589	2430589	dso.surat.health@gmail.com
30	Surendranagar	Dr. Arbind Singh	9426944188	2752	285382	285383	dso.health.surendranagar@gmail.com
31	Tapi	Dr. Snehal Patel (I/C)	9510508144	2626	220376	220453	dso.health.tapi@gmail.com
32	Vadodara	Dr.Vijaykumar Bidla	8980039118	265	2432383	2416036	dso.health.vadodara@gmail.com
33	Valsad	Dr. Manoj Patel	9727782012	2632	243213	253080	dso.health.valsad@gmail.com

**Annexure 5b: City-level Nodal Officers under NPCCHH, Gujarat**

AMC	DR.CHIRAG SHAH	-	9327038803	amc.epidemic@gmail.com
VMC	-	02652-432050	-	mso.health.vadodara corporation@gmail.com
JMC	i/c Dr. subhash prajapati	02882-661785	9408781034	moh.health.jamnagar@gmail.com
JuMC	Dr. shailesh chudasama	02852-651408	9925079600	moh.health.junagadh@gmail.com
BMC	Dr. Vijay Kapadiya	-	7069323334	emo_bhavnagar@yahoo.com
SMC	Dr. Ashish chaudhari	-	9099007900	mso.surat corporation@gmail.com
RMC	Dr. Jayesh vakani	-	9033860599	moh@rmc.gov.in
GMC	Dr. Kalpesh Goswami	-	9727742237	moh.health2.gandhinagar@gmail.c om

Annexure 6: IEC material in Gujarat in subjects related to climate change and health, NPCCHH, Gujarat

**આકાશ ભુરુ છે એનો અર્થ એમ નથી કે  
હવા તમારા માટે તંદુરસ્ત છે.**

જો તમને એલર્જી, અસ્થમા અથવા અન્ય શ્વાસન સંબંધી સમસ્યા હોય તો  
હવાનું પ્રદૂષણ તેને ગંભીર બનાવી શકે છે.

હવાના પ્રદૂષણ આરોગ્ય પર હાનિકારક અસર કરે છે.  
તમારા વિસ્તારની હવા કેટલી પ્રદૂષિત છે તેની જાણકારી અવશ્ય લો.

જો તમે હવા ને પ્રદુષિત કરશો, તો તમને હવા પ્રદુષિત કરશે

**PHFI** PUBLIC HEALTH FOUNDATION OF INDIA

**NRDC**

**SAFAR AIR**

તમારા વિસ્તારની  
હવાની ગુણવત્તા જાણવા  
સફર એર એપ  
ડાઉનલોડ કરો

ગુજરાત સરકાર  
સાહસ્ર શિક્ષા યોજના



# લુ લાગવા (હીટ સ્ટ્રોક) ના લક્ષણો



**સાવધાન રહો, લક્ષણો ઓળખો  
અને સાવચેતી રાખો.**



ગરમ, લાલાશ  
અને શુષ્ક ત્વચા



શરીરનું તાપમાન  
 $\geq 40^{\circ}\text{C}$  or  
 $104^{\circ}\text{F}$



માથાનો દુખાવો



ઉબકા અને  
ઉલ્ટી થવી



શ્વાસોશ્વાસ અને હૃદયના  
ઘબકારા ઝડપી થવા.



સ્નાયુની નબળાઈ  
અથવા ખેંચાણ

**જો લક્ષણો જણાય તો....**



વધુ પાણી  
પીવું.



ઠંડી જગ્યાએ જાઓ  
અને આરામ કરો.



સ્નાન  
લો.

**ડોક્ટરની મુલાકાત લો અથવા કોલ કરી એમ્બ્યુલન્સ(૧૦૮) બોલાવો.**



સ્નાયુના ખેંચાણ એક  
કલાક થી વધુ ચાલે છે.



બેભાન  
થઈ જવું



શરીરનું તાપમાન  
 $\geq 40^{\circ}\text{C}$  or  
 $104^{\circ}\text{F}$



લક્ષણો વધારે  
ગંભીર થાય તો



આરોગ્ય અને પરિવાર કલ્યાણ વિભાગ, ગુજરાત રાજ્ય





# લુ લાગવા (હીટ સ્ટ્રોક) ના લક્ષણો



**સાવધાન રહો, લક્ષણો ઓળખો  
અને સાવચેતી રાખો.**



ગરમ, લાલાશ  
અને શુષ્ક ત્વચા



શરીરનું તાપમાન  
 $\geq 40^{\circ}\text{C}$  or  
 $104^{\circ}\text{F}$



માથાનો દુખાવો



ઊંબકા અને  
ઊલ્ટી થવી



શ્વાસોશ્વાસ અને હૃદયના  
ઘબકારા ઝડપી થવા.



સ્નાયુની નબળાઈ  
અથવા ખેંચાણ

**જો લક્ષણો જણાય તો....**



વધુ પાણી  
પીવું.



ઠંડી જગ્યાએ જાઓ  
અને આરામ કરો.



સ્નાન  
લો.

**ડોક્ટરની મુલાકાત લો અથવા કોલ કરી એમ્બ્યુલન્સ(૧૦૮) બોલાવો.**



સ્નાયુના ખેંચાણ એક  
કલાક થી વધુ ચાલે છે.



બેભાન  
થઈ જવું



શરીરનું તાપમાન  
 $\geq 40^{\circ}\text{C}$  or  
 $104^{\circ}\text{F}$



લક્ષણો વધારે  
ગંભીર થાય તો



આરોગ્ય અને પરિવાર કલ્યાણ વિભાગ, ગુજરાત રાજ્ય



# ગરમી ને હરાવો



## શું કરવું



વધુ પાણી પીવું.



છાંચડામા કે હંડક વાળી જગ્યાએ રહેવું.



તાજા ફળો નુ સેવન કરવું,  
લીનું શરબત, છાશ વધારે પીવું.



બપોરના સમયે ઘરમાં રહેવું.

## શું ના કરવું



આલ્કોહોલ, રહા, કોફી,  
અને વધારે ખાંડવાળા  
અને હંડા પીણાને ટાળો.



બપોરે બહાર જવું ટાળો.



નાના બાળકો, સગર્ભા  
અને વૃદ્ધોએ તડકામાં બહાર  
જવું નહિ.



બજારમાં મળતો ખુલ્લો વાસી ખોરાક, બરફ ખાવાનું ટાળો.  
તથા લગ્ન પ્રસંગે દુધ માવાની ચીજો ખાવી નહિ.



ઉઘાડા પગે ન ચાલવું.

આરોગ્ય અને પરિવાર કલ્યાણ વિભાગ, ગુજરાત રાજ્ય





# સનસ્ટ્રોક (લુ) લાગવાથી આરોગ્ય ઉપર થતી વિપરીત અસરો

શરીર અને હાથપગમાં અસહ્ય દુઃખાવો

**ખુબ તરસ લાગવી**

ગભરામણ થવી

**ચક્કર આવવા**

શ્વાસ ચઢવો

**હૃદયના ધબકારા વધી જવા**

આરોગ્ય અને પરિવાર કલ્યાણ વિભાગ, ગુજરાત રાજ્ય

# સનસ્ટ્રોક (લુ)થી બચવા



૧. ગરમીમાં બને ત્યાં સુધી બહાર જવાનું ટાળવું

૩. નાના બાળકો, સગર્ભા માતાઓ, વૃદ્ધો તથા અશક્ત વ્યક્તિઓએ તડકામાં ફરવું નહીં

૨. ઉનાળાની ઋતુ દરમિયાન ખુલ્લા, સફેદ, સુતરાઉ કપડાં પહેરવાં જોઈએ

૪. દિવસ દરમિયાન પુષ્કળ પ્રમાણમાં પ્રવાહી પીવું જોઈએ, શક્ય હોય તો લીંબુનું શરબત બનાવીને પીવું જોઈએ

૫. ભીના કપડાથી માથું ઢાંકી રાખવું અને જરૂર જણાયે અવાર-નવાર ભીના કપડાથી શરીર લુછવું

આરોગ્ય અને પરિવાર કલ્યાણ વિભાગ, ગુજરાત રાજ્ય



## ઉનાળામાં લૂથી ભયવા આટલું જરૂર કરો



છત્રી સાથે  
અથવા કપડા કે  
ટોપીથી માથું  
ઢાંકી બહાર  
નીકળો



વારંવાર પાણી  
પીવો જેથી  
શરીરમાં  
પાણીની માત્રા  
જળવાટ



છાશ, બીબુ  
સરખત જેવા  
પીણાનું સેવન  
કરો



સુતરાઈ કપડાં  
પહેરો. સિન્થેટિક  
અને નાઇલોન  
કપડાં પહેરવાનું  
ટાળો

**તાપથી બચો, સ્વાસ્થ્ય સાચવો**

કમર્સન્ટી 100 મહિલા 181 નાગરિક રૂઝ દેવલાઈન 1908 સચબર દેવલાઈન 1930

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