

PIP Guidance Note for Districts

National Programme on Climate Change and Human Health

National Programme on Climate Change and Human Health (NPCCHH) is a flagship programme of Ministry of Health and Family Welfare shaping health system response to climate change in the country with goal to reduce morbidity, mortality, injuries, and health vulnerability to climate variability and extreme weather events. The actions taken under the programme to spread general awareness, build capacity of health care workforce and strengthen health system structurally and functionally in coming years will determine our health system's adaptive capacity to increasing and compounding impacts of various climate sensitive diseases and health impacts ranging from increased vector and water borne diseases, food insecurity, heatwaves, flooding and other disasters that are predicted to be more frequent/severe.

NPCCHH, launched in 2019, has been establishing **organizational framework** and rolling out **activities** according to its five key objectives. To fulfil its vision, establishment of district level organizational structure i.e. **District Nodal Officer-Climate Change (DNO-CC)** and **District Multisectoral Task Force (DTF)** in all the districts is a priority. They are important for timely implementation and adequate attention to local vulnerabilities. DTF is vital to identify locally relevant climate change and health issues and focus NPCCHH activities through DNO-CC with support from various concerned departments to increase awareness among population and strengthening health care. **District Action Plan on Climate Change and Human Health (DAPCCHH)** is an essential document allowing districts to pre-plan response of health sector to each climate sensitive health issues and allocate resources. DAPCCHH should be finalized by all the districts by end of financial year 2022-23.

The **District Health Action Plan (DHAP)** enclosed here should guide district health officials on priority activities and key targets under NPCCHH for financial years 2022-23 and 2023-24. Heat-related illnesses, air pollution related diseases, and environmentally friendly (green) and resilient infrastructure are three important climate sensitive health issues out of 17 climate sensitive diseases and issues identified for action in the programme. IEC and training at all levels will cover all of these subject specific areas. Heat-related illness surveillance and air pollution related illness surveillance are important tools implemented at district level that allows monitoring of health impact of these two hazards. Simultaneous focus should be given to adoption of environmentally friendly (green) and resilient measures like energy audit, solarization etc for health care facilities based on local vulnerability. State and central NPCCHH will be providing all necessary support to achieve these targets.

National Programme on Climate Change and Human Health

- The programme was approved in February 2019 for funding of the implementation of the programme related activities in the States under National Health Mission (NHM) and subsequently, it received funding for FY 2019-20 and FY 2020-21.
- This guidance note describes activities and deliverables under NPCCHH at the District level in three of its five key objectives (Table 1) and targets (Annexure 6) for FY 2022-23/ 2023-24.
- Goal of the programme: to reduce morbidity, mortality, injuries, and health vulnerability to climate variability and extreme weather.

At present, priorities on the first three key programme objectives proposed to be considered at District level are as following.

Table 1: Key objectives of NPCCHH	Level of Implementation
1. Awareness Generation among the population especially vulnerable communities, health-care providers and policy makers regarding impacts of climate change on human health	District, State, Central
2. Capacity building of healthcare system to reduce illnesses/ diseases due to variability in climate	
3. Health sector preparedness and response including district level	
4. To develop partnerships and create synchrony/ synergy with other missions, departments and programmes	State & Central
5. To steer research on climate change and health	

Health impact due to climate change is broadly considered in two ways:

- **Direct health impact** due to increased frequency and intensity of extreme weather events; examples- floods, heavy rainfall, cyclones, heat waves, droughts, cold waves
- **Indirect health Impact:** Water borne, vector borne, nutrition related illnesses etc

Accordingly, 17 Climate Sensitive Diseases (CSDs) or health issues are identified for focused action and integration under NPCCHH (**Annexure 1**). Three priority areas at present under NPCCHH at District level are

- Air Pollution related illnesses
- Heat-related illnesses
- Development of Green (environmentally friendly and sustainable measures) and Climate Resilient infrastructure in health sector

District Level Organizational Framework

Ensuring establishment of the organizational structure is important for effective roll out of the programme. At district level, following structure should be ensured.

1. District Multi-sectoral Task Force
2. District Environmental Health Cell with a District Nodal Officer-Climate Change (DNO-CC)

1. District level Multi-sectoral Task Force (DTF) on Climate Change and Health

Under the guidance of District Collector, a District Task Force will be constituted and the members will contribute in preparing District Action Plan for Climate Change and Human Health (DAPCCHH). The recommended District Task Force structure is attached (**Annexure 2**).

The District ensures that the DTF holds meeting every quarter in a year and the Task Force members oversees drafting, implementation, evaluation and revision of their district-specific **District Action Plan for Climate Change and Human Health (DAPCCHH)**.

DAPCCHH is an action-oriented guidance document on district health department's response to Climate Sensitive Diseases (CSDs) prevalent in the district. And the document facilitates and provides the methods of inter-departmental coordination and resource allocation to reduce impact of climate sensitive issues (CSI) and extreme weather on district's population. Its purpose is to allow long-term planning for delivery of NPCCHH objectives and should include inputs, processes, logistics, indicators and evaluation of each prevalent CSDs.

District Nodal Officer-Climate Change (DNO-CC) is responsible for drafting DAPCCHH based on District Task Force meeting inputs in the first half and finalize it by end of FY. 2022-23.

2. **District Environmental Health Cell:** Establish District Environmental Cell under the Health Department of the District. The District to designate DNO-CC who is the key person responsible to carry out programme activities at the District level. To support the DNO-CC; Medical officers and supporting staff should be provided for implementation of the programme activities.

Roles and Responsibilities of the District Environmental Health Cell

1. Preparation and implementation of District Action Plan for Climate Change and Human Health (DAPCCHH)
2. Conduct IEC campaigns and sensitization workshops
3. Conduct Sub-District/CHC/ Block/PHC/SC level training for health care professionals and Panchayati Raj Institutions (PRI)
4. Implement health care strengthening measures and ensure health facility preparedness for prevalent CSI in the District
5. Maintain and update District database of illnesses identified in the district.
6. Maintain District level data on physical, financial, epidemiological profile for these illnesses.
7. Conduct vulnerability assessment and risk mapping for commonly occurring climate sensitive illnesses in the District.
8. Coordination Supervising and Monitoring and Reporting of programme related activities at every level

Proposed District Level Activities under NPCCHH (FY 2022-24)

1. Awareness Generation

To increase general awareness among all the relevant stakeholders including people especially vulnerable communities, health-care providers and policy makers regarding impacts of climate change on human health and ways to address them.

a. IEC Campaign

The District is aimed to create awareness through Information Education and Communication Activities (IEC) through development of locally and culturally more acceptable messages in posters, audio, video, organising public health events, issuing advisories related to climate change and human health. The content for the IEC for the all the climate sensitive issues will be provided by NPCCHH. The role of the District is to utilise these materials and translate the content into the local or regional language for dissemination at all levels. The list of IEC activities and the dissemination plan at the district level (**Annexure 3**).

The District is also encouraged to develop indigenous IEC material with respect to the mentioned climate sensitive issues. The District to utilise social media platform for propagating the climate sensitive issues as a means of wider and speedy method for creating awareness.

b. Public Health Advisories

Health advisories are issued to alert population of potential harmful impact of impending environmental phenomena like cold wave/ frost, heat wave and elevated air pollution. Advisories are issued at central level and forwarded to Districts through State/UT for public dissemination.

District should ensure timely dissemination of health advisories in locally acceptable language/s.

c. Observance of important days on environment and health

Following days should be observed under NPCCHH every year

- World Forestry Day (21 March)
- World Water Day (22 March)
- Earth Day (22 April)
- International Day for Biological Diversity (22 May)
- World Environment Day (June 5)
- World Day to Combat Desertification & Drought (17 June)
- World Nature Conservation Day (28 July)
- International Day of Clean Air for blue skies (September 7)
- World Car Free Day (22 Sep)
- World Environmental Health Day (September 26)
- Green Consumer Day (28 Sep)
- International Day for Disaster Risk Reduction (October 13)
- World Food Day (16 Oct)
- International Day of Climate Action (October 24)

- National Pollution Prevention Day (02 Dec)
- World Soil Day (05 Dec)
- National Energy Conservation Day (14 Dec)

District and sub-district levels are recommended to arrange community engagement activities as

- Health facility based: plantation, awareness sessions
- Community setting based: mass meetings, rallies, local/community radio programmes, street plays
- Sports events: athletics, cycling
- Competitions and quiz

d. Monitoring and Supervision of IEC

In order to strengthen the IEC activities at District level and sub district level, monitoring and supervision will be given more importance. DNO-CC and members of DEHC should visit villages and health facilities to monitor the IEC activities, communication activities are carried out at periphery level. The detail **Quarterly Reporting Format** is **attached in Annexure 4**. The DNO-CC/DEHC should compile proper quarterly reports with photographs and send to the State; and States to share with the NPCCHH. Reports of observance of important days should be prepared separately with details and photographs and transmitted to State; State to NPCCHH.

2. CAPACITY BUILDING

To strengthen capacity of healthcare system to adapt/address illnesses/ diseases due to variability in climate and extreme weather events

a. Training on climate change and health

Training plan on various health impacts of climate change is as follows

Training Programme	Trainer	Participants	Training content
Medical officers (3 days)	District Level Trainers DNO-CC	MO (DH/CHC/PHC)	Climate sensitive health issues (Recommended schedule in Table 3)
Community Health care workers (HCW) (2 days)	District Level Trainers, MO	Community Health Workers (MPW, ASHA)	
Panchayati Raj Institutions (1day)	District level trainers, MO, Health care workers	Panchayati Raj Institutions, communities	

Modules for the training will be provided by NPCCHH. Training subjects should be selected in a way that training of MO and HCW on prevalent seasonal CSDs in the district are completed before

possible seasonal increase in the CSDs. For example, training on heat-related illnesses, air pollution related illnesses and vector borne diseases should be before summer, winter and monsoon respectively, for MO and HCW, so they ensure health facility preparedness and remain vigilant for identification of illnesses in the population.

Table 3: Recommended schedule of training	
Time of year	Content matter
February-March	Heat-related illnesses Disaster related health issues Green & Climate resilient infrastructure
April-June	Vector borne diseases Zoonotic diseases Water borne diseases Food security and Nutrition related illnesses
July-September	Air pollution-related illnesses Cardio pulmonary diseases Allergic diseases
October-December	Climate change and health impacts (generic and climatic zone-wise) Mental Health, Occupational health Coastal Climate Sensitive Diseases (<i>if applicable</i>) Hilly region and Mountainous Climate Sensitive Diseases (<i>if applicable</i>) <i>Vulnerability Needs Assessment on CC & HH</i>

b. Sensitization/knowledge building workshops should be planned for seeking updates on various climate sensitive issues between District Officials, Medical Officers and academic institutions working on environment or climate change impact.

3. STRENGTHENING HEALTH PREPAREDNESS AND RESPONSE

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

1. Surveillance

a. Surveillance of Heat-Related Illnesses (HRI)

HRI surveillance is conducted to establish a baseline of HRI morbidity and mortality, to monitor HRI incidence in relation to environmental parameters and improve health system preparedness to extreme heat.

There are 23 heat vulnerable States/UT (Andhra Pradesh, Bihar, Chhattisgarh, Delhi, Gujarat, Haryana, Jharkhand, Karnataka, Maharashtra, Madhya Pradesh, Odisha, Punjab, Rajasthan, Tamil Nadu, Telangana, Uttar Pradesh, Kerala, Goa, Uttarakhand, Jammu & Kashmir, West Bengal, Arunachal Pradesh and Himachal Pradesh) are required to conduct the surveillance **from March 1 to July 31, currently.**

All health facilities (PHC and above) should collect and report HRI data **daily** to the district and NPCCHH in the formats given in National Action Plan on Heat Related Illnesses (NAPHRI) (<https://bit.ly/NAPHRI>).

DNO-CC to analyse HRI health surveillance data with environmental parameters like maximum, minimum temperature and send a **weekly surveillance analysis report** to the State and to NPCCHH during summer.

All suspected heatstroke deaths in the district should be investigated by a three-member committee using death investigation format provided in National Action Plan on Heat Related Illnesses (<https://bit.ly/NAPHRI>) and reported in relevant surveillance format.

- **Health facility preparedness**

All health facilities in a district (PHC and above) in 23 heat vulnerable states/UT (as above) should ensure implementation of NAPHRI to prepare health facility to prevent and manage HRI cases.

- **Early warning and alert**

District to collect information on weather parameters and heatwave predictions from state meteorological department during summer and issue warning to the health care facilities of impending heatwave.

b. Surveillance on air pollution related illnesses in all States Presently on Acute Respiratory Illness (ARI) in context of Air Pollution

The objective of ARI surveillance is to identify the trend of air pollution related illness in context of the outdoor air quality at an area and its report is shared to all relevant authorities including public health authorities to minimize the impact of the air pollution through timely appropriate intervention measures.

- For initiation of ARI surveillance, selection of cities can be done from the list of cities where air quality measurement system of any of CPCB/SPCB/SAFAR is established or 122 cities of NCAP. (https://cpcb.nic.in/uploads/Non-Attainment_Cities.pdf)
- City having higher level of AQI are to be selected first for this ARI surveillance. During selection of the city, it is expected that both highest value and average value of AQI during span of last one year is to be considered.
- The identified sentinel hospitals (mainly Medical Colleges/District Hospitals /Hospitals with large patient inflow) should collect daily data and shared to the District Nodal Officer in suggested formats in [HAP developed](#) by NCDC. (<https://ncdc.gov.in/WriteReadData/linkimages/HealthAdaptationPlanforDiseaseDuetoAirPollutions.pdf>)
- DNO-CC to analyse ARI surveillance data with Air Quality Levels (AQI) from air quality monitoring centre from respected city of the hospital and send a **monthly surveillance analysis report** to the state and to NCDC throughout the year.

All health facilities in a district (PHC and above) in 122 NCAP cities and cities with high air pollution levels should ensure implementation of the plan to prepare health facility to prevent and manage ARI cases.

- **Early warning and alert**

Districts to collect information on Air Quality Data from State Pollution Control Board and issue warning to the health care facilities for preparedness in context of air pollution health Impacts.

2. Green (Environmentally friendly and sustainable measures) and Climate Resilient infrastructure

(Refer to NPCCHH document: *Guidance Note on Green Environmentally Sustainable & Climate Resilient Health Care Facilities for PIP FY.2022-23 & FY. 2023-24* for additional information)

Defining the concepts of resilience and mitigation

- **Green Healthcare facility Infrastructure (Mitigation)**

Health care including hospitals, health systems and the health products supply chain can paradoxically contribute to emissions from the entire lifecycle of their operations, estimated to be 2.6 gigatons of carbon dioxide a year or about 4.6% of total greenhouse gas emissions. Healthcare systems, hence, have a responsibility to adopt sustainable, low-carbon solutions to mitigate and reduce their own climate footprint.

- **Climate Resilient Healthcare facility infrastructure (Adaptation)**

Climate resilient Healthcare Infrastructure refers to the capacity of Healthcare facility to adapt, reorganize and evolve to be better prepared for future disasters and climate change impacts. Health care facilities need to take effective measures to withstand the impacts of increasing extreme weather events and other climate-related hazards such as higher temperatures, increasing precipitation over longer periods of time (causing increased flooding), intense but short-lived rainfall (causing flash flooding), decreasing precipitation (affecting places where rainwater harvesting contributes to the water supply systems of health care facilities), and higher winds and storms.

At present, activities considered on adoption of Green and Climate Resilient healthcare facilities infrastructure are as following

1. Energy Auditing of the Healthcare Facilities for Energy Efficiency level in the HCFs (Carbon Emissions Reduction Measures from health sector)

- The Healthcare Facilities is one of the Major contributors to energy consumption and greenhouse gases (GHG) emissions. The fundamental goal of energy management is to produce goods and provide services with the least cost and least environmental effect.
- The scope of the activity would be the identification of Energy saving schemes in the facility along with the cost-benefit analysis. The study would cover field measurements and data analysis to identify saving possibilities in the utilities.
- All the level of Healthcare facilities (PHC and above) should be considered for conducting the energy auditing.

Procedure

- District Nodal Officer-Climate Change (DNO-CC) should submit proposal to conduct Energy auditing in Healthcare facilities (PHC and above) through District Nodal Agency of Bureau of Energy efficiency (BEE) in the District.
- If the District Nodal Agency of Bureau of Energy efficiency (BEE) is not available in the district, DNO-CC has to submit the proposal through the State Nodal officer Climate Change. SNO-CC further submit the proposal to the State Nodal Agency of Bureau of Energy efficiency (BEE).
- If the proposal has approved, District Nodal Agency of Bureau of Energy efficiency (BEE) in the District themselves will conduct the activity in Districts.
- DNO-CC has to monitor the activity and should submit a report to SNO-CC and subsequently to NCDC.

2. Replacement of existing (non-LED) lighting with LED in Healthcare Facilities (Energy Efficiency Measures to reduce carbon emissions HCFs)

- LEDs use one-third of the energy consumed by fluorescents, and their lifespan is five years longer. By making the switch to LEDs, hospitals and health systems can minimize maintenance costs, improve quality of lighting, and reduce emissions.
- So, in order to reduce the carbon emission Healthcare facilities (PHC and above) to preferably utilize LED in Healthcare Facilities.

Procedure

- District Nodal Officer-Climate Change (DNO-CC) should submit proposal to conduct replacement of existing lighting with LED in Healthcare Facilities (PHC and above) through District Nodal Agency of Bureau of Energy efficiency (BEE) in the District.
- If the District Nodal Agency of Bureau of Energy efficiency (BEE) is not available in the district, DNO-CC has to submit the proposal through the State Nodal officer Climate Change. SNO-CC further submit the proposal to the State Nodal Agency of Bureau of Energy efficiency (BEE).

- If the proposal has approved, State/District Nodal Agency of Bureau of Energy efficiency (BEE) in the District themselves will conduct the activity in Districts.
- If the Budget for this activity is not available through BEE, then the budget can be proposed under Green Healthcare Infrastructure in NPCCHH Programme under NHM.
- DNO-CC has to monitor the activity and should submit a report to SNO-CC and subsequently to NCDC.

3. Installation of Solar Panels in Healthcare Facilities

- Health-care facilities can significantly cut greenhouse gas emissions and energy costs over time by using alternative forms of clean and renewable energy – such as solar energy.
- For hospitals, alternative energy means an initial investment with potential savings later on. For regions that have no access to electricity, alternative energy sources can fuel primary health-care facilities in even the most remote areas.
- Finally, alternative sources of energy give health facilities an advantage in terms of disaster preparedness, since alternative energy sources are less vulnerable to disruption than traditional fossil fuel systems.

Procedure

- District Nodal Officer-Climate Change (DNO-CC) should submit proposal to conduct installation of Solar Panels in Healthcare Facilities (PHC and above) to District Nodal Agency of Bureau of Energy efficiency (BEE) in the District.
- If the District Nodal Agency of Bureau of Energy efficiency (BEE) is not available in the district, DNO-CC has to submit the proposal through the State Nodal officer Climate Change. SNO-CC further submit the proposal to the State Nodal Agency of Bureau of Energy efficiency (BEE).
- If the proposal has approved, State/District Nodal Agency of Bureau of Energy efficiency (BEE) in the District themselves will conduct the activity in Districts.
- 20-30% subsidy will be obtained from MNRE and remaining money may be proposed under the budget Head of Greening under the National Programme on Climate Change and Human Health in the NHM PIP Process by the District.
- DNO-CC has to monitor the activity and should submit a report to SNO-CC and subsequently to NCDC.

Operational Guideline for implementation of Phase- II Grid connected Rooftop Solar Programme for achieving cumulative capacity of 40,000MW from Rooftop Solar Projects the year 2022

http://www.apeda.nic.in/docs/tenders/MNRE_Guidelines/Operational_Guidelines_of_implementation_of_Phase-II_GCRSP.pdf

Amendment in Benchmark costs for Grid-connected Rooftop Solar Photo-voltaic systems for the Financial Year 2021-22 (https://solarrooftop.gov.in/notification/130_notification.pdf).

4. Install Rainwater Harvesting System in Healthcare Facilities

- Rainwater harvesting (RWH) is promoted as a climate change adaptation measure to relieve urban water supply and drainage pressures. Rainwater harvesting for healthcare facilities has the potential to save thousands of litres of mains water every year. This in turn can result in substantial cost savings and of course contribute to alleviating stormwater run-off.

Procedure

- District Nodal Officer-Climate Change has to identify Healthcare Facilities (PHC and above) in the Districts to Install Rainwater Harvesting System in Healthcare facilities (PHC and above) and get an estimate from Dept. of Public works (PWD) and submit proposal to Department of Water and Sanitation under Ministry of Jalshakthi in the District. If the fund is not available through Ministry of Jalshakthi then District may propose this activity under the Budget Head of Greening under the National Programme on Climate Change and Human Health.
- If the Budget for this activity is not available through Ministry of Jalshakthi, then the budget can be proposed under Green Healthcare Infrastructure in NPCCHH Programme under NHM.
- After getting the funds the work has to be submitted to Dept. of Public works (PWD) to complete the activity.
- DNO-CC has to monitor the activity and should submit a report to SNO-CC and subsequently to NCDC.

5. Retrofitting Healthcare Facility Infrastructure (Climate/ Disaster resilient) in Districts as per IPHS guidelines.

- A climate resilient healthcare system is one that ensures an adaptive framework that helps it respond adequately and appropriately in the event of an acute climatic event.
- Health care facilities need to take effective measures to withstand the impacts of increasing extreme weather events and other climate-related hazards such as higher temperatures, increasing precipitation over longer periods of time (causing increased flooding), intense but short-lived rainfall (causing flash flooding), decreasing precipitation (affecting places where rainwater harvesting contributes to the water supply systems of health care facilities), and higher winds and storms.
- Thus, with climate change increasing the risk of severe impacts on health care facilities and placing complex, multifaceted and unpredictable demands on health systems, all new investments in the health sector should contribute to building resilience to climate change.

Procedure

- District Nodal officer to identify commonly occurring extreme weather/climatic events occurring in the District
- Select the most vulnerable Healthcare facility (PHC and above) in the identified region to make it complying IPHS guideline.
- According to the identified Healthcare Facility, DNO-CC has to get estimate from Dept. of Public works (PWD).
- If the Budget for this activity is not available through local/District/State administration, then the budget can be proposed under Climate Resilient Healthcare Infrastructure in NPCCHH Programme under NHM.
- DNO-CC has to monitor the activity and should submit a report to SNO-CC and subsequently to NCDC.

CONCLUSION

The above document enlists the programme structural components and programme activities to be undertaken at the District level under National Programme on Climate Change and Human Health (NPCCHH). The key deliverables and the targets for the activities under NPCCHH are listed in **Annexure 6**.

Annexure 1

Climate Sensitive Diseases (CSDs or Health Issues)
1. Air Pollution related illnesses
2. Heat-related illnesses
3. Development of Green and Climate Resilient infrastructure
4. Vector borne Diseases
5. Water borne Diseases
6. Zoonotic Diseases and One Health
7. Cardiopulmonary Diseases
8. Allergic health issues
9. Nutrition-related diseases
10. Disaster related diseases/Illnesses
11. Mental Health Issues
12. Food security
13. Coastal Climate Sensitive Diseases
14. Hilly region and Mountainous Climate Sensitive Diseases
15. Mental health
16. Occupational health
17. Vulnerability assessment
18. Health information system

Annexure 2

Constitution of District level Multi-Sectoral Taskforce
District Collector (Chairman)
CMO/DHO/CHMO (Co-Chairman)
District Nodal Officer- Climate Change (Member Secretary)
Members -
1. District Surveillance Officer (DH&FW)
2. District Epidemiologist (DH&FW)
3. District Malaria Officer/Vector-borne Diseases (DH&FW)
4. District Programme Officer, NHM (DH&FW)
5. District Disaster Management Authority & Revenue
6. Department of Agriculture
7. Department of Water and Sanitation
8. Department of Animal Husbandry
9. Public Work Department (PHED)
10. Department of Rural Development
11. Department of Education
12. Department of Environment
13. District pollution Control Board
14. Department ICDS
15. Tribal Welfare & Social Welfare
<ul style="list-style-type: none"> • Inclusion of those experts who can give technical guidance for the development in the chapters of the developing DAPCCHH guideline • Inclusion of Members (preferably) of the committee that drafted District Action Plan on Climate Change (DAPCC) under Department of Environment, Forest and Climate Change

Annexure 3

Communication Method	Content
<ul style="list-style-type: none"> • Posters: At least 1-2 large wall poster and/ 1-2 foam board posters printed and disseminated in all healthcare facilities and all government educational institutes. • One each at each facility/ institute per year. • Hoardings/billboard: 5-10 billboards on prevalent CSI in the district should be placed in public areas • Wall painting: 1-2 wall paintings on prevalent CSI per healthcare facility • Audio-video clips on climate change and health should run in mass media throughout the year <ul style="list-style-type: none"> - 1-2 video clips of 1-2 minutes duration broadcasted on CSI relevant to that part of year - 1-2 radio clips of 1-2 minutes duration broadcasted on CSI relevant to that part of year • Digital display of IEC should also be run in equipped healthcare facilities and government institutions • Painting on Buses: Paint posters on 5-10 buses per district on prevalent CSI in the district • Social media: Twitter and/ Facebook should be used if district officials have accounts, to post IEC and event related info with appropriate tagging. 	<ul style="list-style-type: none"> • IEC content on CSI will be provided by NCDC which should be translated into local language/s by State/District • Districts may also create their own content

Dissemination Plan

Recommended schedule of CSI to be focused in the IEC campaign	
Time of year	Content matter
Summer (March-July preferably)	Heat-related illnesses Disaster related health issues
Monsoon (June-August)	Vector borne diseases Zoonotic diseases Water borne diseases
Winter (September-February with more emphasis and whole year if possible)	Air pollution-related illnesses Cardio pulmonary diseases Allergic diseases
At any time throughout the year	Climate change and health impacts (generic and climatic zone-wise) Mental Health, Occupational health Green & Climate resilient infrastructure Coastal Climate Sensitive Diseases (if applicable) Hilly region and Mountainous Climate Sensitive Diseases (if applicable) Food security and Nutrition related illnesses

Annexure 4: Quarterly Reporting Format

Name of the State/District	Name of the District Nodal Officer (SNO)	Quarter Period
O.M. of appointment of District Nodal Officer	Annexed (Yes / No)	
Postal Address of District Nodal Officer		
Phone (O)	(M)	E Mail address:

Programme Activities /Deliverable			
1	Designated District Nodal Officer -Climate Change (DNO-CC)		
A	If District has identified DNO-CC in the district?	Yes/No	
B	O.M. of appointment of DNO-CC's	Annexed (Yes / No)	
2	Formation of District Multisectoral Task Force (DMTF)		
A	If District Multisectoral Task Force (DMTF) formed?	Yes/No	
B	If Yes, provide O.M. of constitution of DMTF	Annexed (Yes / No)	
C	DMTF meeting held in past quarter	Yes/No,	
D	Minutes of meeting held in past quarter	Annexed (Yes / No)	
3	Capacity Building of State & District Nodal Officers on Climate Change		
A	Have the DNO-CC attended the TOT?	Yes/No	
B	Any other Healthcare Professionals attended the TOT?	Yes/No	
C	Whether the training has been conducted on Climate Change and Human Health in past quarter for	DNO -CC	Yes/No
		Medical Officer	Yes/No
		Health Workers	Yes/No
D	No of health care professionals trained in past quarter on Climate change and Human Health	Health care personnel	No of trained
		DNO -CC	
		Medical Officer	
E	Training on Air pollution	Training on Heat Related Illnesses	
		Health care personnel	No of trained
		DNO -CC	
	Medical Officer		
	Health Workers		
F	Training on any other Climate issues	Health care personnel	No of trained
		DNO -CC	
		Medical Officer	
		Health Workers	
G	No of Sensitization workshop/ meeting at District level on CC&HH matters in past quarter	No :	Report Annexed (Yes / No), If Yes, No _____
H	Training of Panchayat Raj Institutions in past quarter	No of Blocks :	
		No of activities held:	Report Annexed (Yes / No), If Yes, No _____
4	IEC in past quarter		
A	At Block level in past quarter		

	Pollution	Total No	Heat	Total No	Other Climate issues	Total No
	No of audio		No of audio		No of audio	
	No of video		No of video		No of video	
	No of social media		No of social media		No of social media	
	No of posters		No of posters		No of posters	
B	At District Level in past quarter					
	Pollution	Total No	Heat	Total No	Other Climate issues	Total No
	No of audio		No of audio		No of audio	
	No of video		No of video		No of video	
	No of social media		No of social media		No of social media	
	No of posters		No of posters		No of posters	
5	Observation of public health days related to Climate Change in past quarter					
A	World Environment Day observed?			Yes/No /Not Applicable		
	If Yes, report submitted with details			Report Annexed Yes/No		
B	International day of Clean Air and Blue Skies observed?			Yes/No/Not Applicable		
	If Yes, report submitted with details			Report Annexed Yes/No		
C	Other events observed in past quarter			YES/No		
	If Yes, report submitted with details			Report Annexed Yes/No		
6	Printing in past quarter					
A	No of Training modules printed in past quarter					
B	IEC printed					
C	Others printed			Details.. Yes/No		
C	Articles contributed to NPCCHH Newsletter for past quarter activities			Attached.. Yes /No		

7	Budget							
A	Total received by DNO-CC for expenses in FY			OM Annexed (Yes / No)				
b	Total budget spent till the end of past quarter (Rs in lakhs)							
	At the District level							
	FMR code	Activities	Budget Received	Quarter I	Quarter II	Quarter III	Quarter IV	Total Expenditure
1	3.3.3.3	Training of PRI						
2	5.1.1.2.13	Greening						
3	9.2.4.9	Training of MO's, Health workers and Programme Officer's						
4	10.2.14	Surveillance						
5	11.4.7	IEC						
6	12.17.3	Printing						
7	16.1.2.1.23	Task force Meeting						
	Date of submission			Signature of SNO				

Annexure 5: NPCCHH Objectives and Budget Heads FY 2022-23, 2023-24

Priority key objectives	Proposed activities	New budget head	New FMR codes	Old FMR codes
1. General awareness	IEC Campaigns	IEC & Printing	11.4.7 12.4.7	11.24.4.4
2. Capacity building of health professionals and health workers	<ul style="list-style-type: none"> • Training for the Health Professionals (MO) and health workers 	Capacity building incl. training	9.2.4.9	9.5.29.8
	<ul style="list-style-type: none"> • Training of PRI/block level training 		3.3.3.3	3.3.3.3
	<ul style="list-style-type: none"> • Printing of programme related material 	IEC & Printing	12.4.7	12.17.3
	<ul style="list-style-type: none"> • Task force meeting to draft health sector plan meeting • Sensitization workshop • District Logistics and Mobility support 	Planning & M & E	16.1.2.1.23 16.1.2.1.24 -	16.1.2.1.23 16.1.2.1.24 -
3. Strengthening of the health system	<ul style="list-style-type: none"> • Surveillance - Heat-related illnesses - Acute respiratory illness due to air pollution • Vulnerability Need Assessment • Early Warning, Alert and Response System (EWARS) 	Surveillance Research, Review, Evaluation (SRRE)	10.2.14	10.2.14
	<ul style="list-style-type: none"> • Climate-resilient healthcare facilities 	Infrastructure – Civil works (I&C)	5.1.1.2.13	5.1.1.2.13
	<ul style="list-style-type: none"> • Greening of health care facilities and Maintenance of greening health care sector 	Others including operating costs (OOC)	5.1.1.2.13	5.1.1.2.13

Annexure 6						
NPCCHH key deliverables and targets for the activities						
S No	Activities	FMR Head	Type of Indicator	Indicator	Target	
					22-23	23-24
1.	State Task Force Meeting	Planning and M&E	Process	1. % State Task Force Quarterly Meetings conducted in a year	75%	100%
2.	District Task force Meeting	Planning and M&E	Process	2. % Districts conducted quarterly District Task Force Meetings in a year	50%	75%
3.	Submission of district Plans as part of DHAP	<ul style="list-style-type: none"> Planning and Program Management (HSS.11) 	Output	3. % of Districts submitted final district plan	100%	-
Key Objective-1: General awareness						
4.	Development of IEC material, campaigns, Innovative IEC/ BCC Strategies	IEC & Printing <ul style="list-style-type: none"> NPCCHH (NCD.7) Specific requirement of the state/UT Other Community engagement components (HSS.3) 	Output	4. % of Districts implemented IEC campaign (as per Annexure 3) on all climate sensitive issues	50%	100%
				5. % Districts included climate sensitive issues in the VHSNCs	50%	100%
Key Objective-2: Capacity building of health professionals and health workers						
5.	Orientation/ Training /capacity Building of healthcare staffs (Including training on Kayakalp eco-friendly theme)	Capacity Building <ul style="list-style-type: none"> NPCCHH (NCD.7) IDSP (NDCP.1) NVBDCP (NDCP.2) Health & Wellness Centres (HSS.1) Quality Assurance (HSS.6) NMHP Programme for intersectoral coordination with Zoonotic Diseases NPCDCS 	Output	6. % Of Districts completed TOT	100%	-
				7. % of Medical Officers trained in Districts	40%	80%
				8. % of health workers and ASHA/AWW trained on NPCCHH in District	30%	50%
				9. % of targeted sensitization trainings planned for vulnerable population in district (PRI Training) (No of training programmes / Total number planned trainings for vulnerable population in the district x 100)	30%	50%

		• RCH				
Key Objective-3: Strengthening of the health system						
<ul style="list-style-type: none"> • Green (Environmentally Sustainable) and Climate-Resilient Health Care Facilities (HCF) (For detailed guidance refer, <i>Guidance Note on Green Environmentally Sustainable & Climate Resilient Health Care Facilities for PIP FY.2022-23 & FY. 2023-24</i>)						
6.	Assessment of the healthcare facilities	Kayakalp: OOC (HSS.6)	Process	10.% of HCF per district per year that have conducted assessment	50%	100%
7.	Green and Climate Resilient infrastructure measures e.g <ul style="list-style-type: none"> • Energy efficiency • Solarisation • Water conservation 	New infrastructure: <ul style="list-style-type: none"> • Public Health Institutions as per IPHS norms -DH/CHC/PHC-civil works (HSS.4) Existing HCF: <ul style="list-style-type: none"> • Other Infrastructure/Civil works/expansion etc. (HSS.4) • NPCCHH (NCD.7) 	Output	11.% of Districts with at least one climate resilient healthcare facility complying IPHS guideline per year	30%	50%
				12.% of HCF have been replaced existing (Non-LED) lighting facility with LED in Districts	20%	40%
				13.% HCF with installed solar panel in Districts	20%	40%
				14.% HCF with Rain Water Harvesting (RWH) system in Districts	10%	30%
8.	Effluent treatment plant (ETP)	<ul style="list-style-type: none"> • Kayakalp: OOC (HSS.6) • Other Infrastructure/ Civil works/expansion etc. (HSS.4) 	Output	15. % HCF having connection with ETP in Districts	20%	40%

NATIONAL PROGRAMME ON CLIMATE CHANGE AND HUMAN HEALTH
Addendum to PIP Guidance Note for Districts

Introduction

National Programme on Climate Change and Human Health (NPCCHH) is a flagship programme of Ministry of Health and Family Welfare shaping health system response to climate change in the country with the goal to reduce morbidity, mortality, injuries, and health vulnerability to climate variability and extreme weather events.

Under National Health Mission (NHM), the programme related activities are receiving funding support for implementation in the states since FY 2019-20. A PIP guidance note for districts was shared with the states from NPCCHH in response to the new PIP format proposed for 2022-24 on 10th December, 2021. For PIP purpose, NPCCHH is covered under NCD Flexi Pool and programme related activities should be proposed in single FMR- NCD.7 and under Schemes/Activity column as- "Implementation of NPCCHH" (serial number 113).

Purpose

During the National Programme Coordination Committee (NPCC) meeting for the State of Tamil Nadu the Additional Secretary and Mission Director (AS&MD), NHM, MoHFW desired clarification on the following points:

1. Priority areas of climate-resilient infrastructure that state should focus in 2022-24.
2. Overlapping activities related to infrastructure, environmental measures including biomedical waste covered under NQAS.
3. Expenses for green measures and climate-resilient infrastructure to be met through untied fund.

With this background, details of the activities under NPCCHH are enumerated in this document to support states in planning and preparing proposals to expedite the implementation of the program. The aim of the document is to give clarity to the state officials including Mission Directors, SPM, Programme Officers as well as other members of planning team on the key programme priorities and implementation of activities to achieve three of the five objectives (given in Table-1) for FY 2022-23/ 2023-24.

Table 1: NPCCHH Objectives and Budget Heads FY 2022-23, 2023-24

Priority key objectives	Proposed activities
1. General awareness	a. IEC Campaigns- <ul style="list-style-type: none"> - District Level: IEC activities are described in detail in Annexure 3 of DHAP - Subdistrict Level: using the existing platforms (HSNCs, VISHWAS, MAS) through ANMs, ASHAs, PRIs/ULBs b. Public Health Advisories c. Observance of important days on environment
2. Capacity building of health professionals and health workers (Including training on Kayakalp eco-friendly theme)	a. Training on climate change and health <ul style="list-style-type: none"> - ToT: State and District level (Details in Table 2 and 3 of DHAP) - Training of Health Professionals (MO) and health workers - Training of PRI/block level training b. Sensitization/knowledge building workshops

3. Strengthening of the health system	<ul style="list-style-type: none"> a. State organizational Structure (SNO-CC, Environmental Health Cell, Task Force, Governing Body, Consultant, State Action Plan on Climate Change and Human Health) b. District Level Organizational Structure (DNO-CC, District Task Force, District Action Plan on Climate Change and Human Health) c. Task force meeting to draft health sector plan meeting (SAPCCHH, DAPCCHH) d. Vulnerability Need Assessment e. Surveillance (Heat-related illnesses, Air pollution related Surveillance) f. Early Warning, Alert and Response System (EWARS) g. Green and Climate Resilient Healthcare Infrastructure h. District Logistics and Mobility support i. Sustainable procurement
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Planning process:

Planning for PIP should be to meet the key priority objectives: general awareness, capacity building and strengthening of health system at state and district levels under NPCCHH (**Table 1**). States also have liberty and flexibility to undertake activities beyond those listed. The proposals should reflect the planning and budgeting for next two years (2022-24). The table below (**Table 2**) indicates the relevant FMR codes for budgeting and the indicators to be monitored over next two years. **Guidance for States for Reflecting Activities in the PIP (Table 3)** could be utilised for identifying the key activities to achieve the objectives and locating the appropriate funds under various programs for proposing the budget.

Activities that do not align under any other programme for budgeting, could be budgeted under one of following two sources;

1. United funds, or
2. Under NPCCHH, if the activities proposed are beyond the scope of untied fund.

Table II: Monitorable Indicators of the PIP

S No	Activities	FMR Head	Type of Indicator	Indicator	Target	
					22-23	23-24
1.	State Task Force Meeting	Planning and M&E	Process	1. % State Task Force Quarterly Meetings conducted in a year	75%	100%
2.	District Task force Meeting	Planning and M&E	Process	2. % Districts conducted quarterly District Task Force Meetings in a year	50%	75%
3.	Submission of district Plans as part of DHAP	• Planning and Programme Management (HSS.11)	Output	3. % of Districts submitted final district plan	100%	-
Key Objective-1: General awareness						
4.	Development of IEC material, campaigns, Innovative IEC/ BCC Strategies	IEC & Printing • NPCCHH (NCD.7) • Specific requirement of the state/UT • Other Community engagement components (HSS.3)	Output	4. % of Districts implemented IEC campaign (as per Annexure 3) on all climate sensitive issues	50%	100%
				5. % Districts included climate sensitive issues in the VHSNCs	50%	100%
Key Objective-2: Capacity building of health professionals and health workers						
5.	Orientation/ Training /capacity Building of healthcare staffs (Including training on Kayakalp eco-friendly theme)	Capacity Building • NPCCHH (NCD.7) • IDSP (NDCP.1) • NVBDCP (NDCP.2) • Health & Wellness Centres (HSS.1) • Quality Assurance (HSS.6) • NMHP	Output	6. % Of Districts completed TOT	100%	-
				7. % of Medical Officers trained in Districts	40%	80%
				8. % of health workers and ASHA/AWW trained on NPCCHH in District	30%	50%
				9. % of targeted sensitization trainings planned for vulnerable population in district (PRI Training) (No of training programmes / Total number	30%	50%

S No	Activities	FMR Head	Type of Indicator	Indicator	Target	
					22-23	23-24
		<ul style="list-style-type: none"> • Programme for intersectoral coordination with Zoonotic Diseases • NPCDCS • RCH 		planned trainings for vulnerable population in the district x 100)		
Key Objective-3: Strengthening of the health system						
• Green (Environmentally Sustainable) and Climate-Resilient Health Care Facilities (HCF) (Specific guidance attached)						
6.	Assessment of the healthcare facilities	Kayakalp: OOC (HSS.6)	Process	10.% of HCF per district per year that have conducted assessment	50%	100%
7.	Green and Climate Resilient infrastructure measures e.g <ul style="list-style-type: none"> • Energy efficiency • Solarisation • Water conservation 	New infrastructure: <ul style="list-style-type: none"> • Public Health Institutions as per IPHS norms - DH/CHC/PHC- civil works (HSS.4) Existing HCF: <ul style="list-style-type: none"> • Other Infrastructure/Civil works/expansion etc. (HSS.4) • NPCCHH (NCD.7) 	Output	11.% of Districts with at least one climate resilient healthcare facility complying IPHS guideline per year	30%	50%
				12.% of HCF that replaced existing (Non-LED) lighting facility with LED in Districts	20%	40%
				13.% HCF with installed solar panel in Districts	20%	40%
				14.% HCF with Rain Water Harvesting (RWH) system in Districts	10%	30%
8.	Effluent treatment plant (ETP)	<ul style="list-style-type: none"> • Kayakalp: OOC (HSS.6) • Other Infrastructure/ Civil works/expansion etc. (HSS.4) 	Output	15. % HCF having connection with ETP in Districts	20%	40%

Guidance for States for Reflecting Activities in the PIP

Table-III: Reflecting the Budget Head in the PIP

S.No	Activities	Unit Cost	Remarks/funding source
1	Key Objective-1: General Awareness	<p>Should cover following per district per year</p> <ul style="list-style-type: none"> • Posters: At least 1-2 large wall poster and/ 1-2 foam board posters printed and disseminated in all healthcare facilities and all government educational institutes. • One each at each facility/ institute per year. • Hoardings/billboard: 5-10 billboards on prevalent CSI in the district should be placed in public areas • Wall painting: 1-2 wall paintings on prevalent CSI per healthcare facility • Audio-video clips on climate change and health should run in mass media throughout the year - 1-2 video clips of 1-2 minutes duration broadcasted on CSI relevant to that part of year • 1-2 radio clips of 1-2 minutes duration broadcasted on CSI relevant to that part of year • Digital display of IEC should also be run in equipped healthcare facilities and government institutions • Painting on Buses: Paint posters on 5-10 buses per district on prevalent CSI in the district • Social media: Twitter and/ Facebook should be used if district officials have accounts, to post IEC and event related info with appropriate tagging. 	NPCCHH and other related programmes

S.No	Activities	Unit Cost	Remarks/funding source
2	Key Objective-2: Capacity building of health professionals and health workers		
2.1.	ToT of Programme Officers at State/District/Block level- On NPCCHH implementation and activities		<ul style="list-style-type: none"> • NPCCHH
2.2	CHO, ANMs & ASHAs on NPCCHH		<ul style="list-style-type: none"> • NPCCHH /HWC
2.3	Training of Medical Officers on NPCCHH and related issues		<ul style="list-style-type: none"> • NPCCHH /NVBCP/IDSP/Quality Assurance/ NMHP/Programme for intersectoral coordination with Zoonotic Diseases/NPCDCS/RCH
3	Key Objective-3: Strengthening of the health system		
3.1.	Assessment of the healthcare facilities for Green Measures in Healthcare Facilities		
3.2.	Climate Resilient Healthcare Infrastructure		
	3.2.1. New healthcare facilities with climate resilient infrastructural features	@Rs.1.43 Crore for PHCs @Rs.5.75 Crores for CHCs	<ul style="list-style-type: none"> • HSS. 4- Infrastructure as per IPHS norms
	3.2.2. Existing healthcare facilities Retrofitting Healthcare Facility Infrastructure (Climate/ Disaster resilient) in Districts as per IPHS guidelines.	@Rs.5 Lakh per HCF or Based on the gap analysis	<ul style="list-style-type: none"> • NPCCHH • Untied fund/ • Major upgradation of civil work can be covered under IPHS (HSS. 4)
	3.2.3. Flood resilient measures in existing HCFs		
	a. Raise appropriately the floor and increase its strength (facility) to ward off from flooding. Make floodwall. Use flood damage resistant materials. b. Design roof to provide quick drainage and a structure that avoids any seepage or leakage. c. Place sewer backflow valves to prevent flooded sewage systems from backing up into HCF. d. Design surroundings to allow flood water outlet and avoids its pooling and damage. e. Provision for electricity back up (generators, server rooms) or solar supply.	Based on the gap analysis	<ul style="list-style-type: none"> • Untied fund/ • Major upgradation of civil work can be covered under IPHS (HSS. 4)

S.No	Activities	Unit Cost	Remarks/funding source
	f. Move drug store, critical equipment to higher floors in the building or provisions for shifting to non-flooded areas during emergencies. g. Map historical flood levels and accordingly design location site the HCF facilities floor levels at which critical services are relocated. h. Have functional sump pumps with battery backup		
	3.2.4. Cooling measures for HCF (Climate Resilient measures in heat vulnerable areas)		
	a. Cool Roof Plans with solar or heat reflector (lime paint /simple acrylic polymer paints heat)	Based on surface area (average cost Rs.1.50/Sq.ft for locally-available white lime paint)	<ul style="list-style-type: none"> Untied funds/ CRS funds
3.3	Green (Environmentally Sustainable) Measures in Healthcare Facilities (For detailed guidance refer, Guidance Note on Green Environmentally Sustainable & Climate Resilient Health Care Facilities for PIP FY.2022-23 & FY. 2023-24)		
	3.3.1. Adoption of Energy efficiency measures in the existing HCFs		
	a. Energy auditing in Healthcare Facilities (Identifying all energy end-uses in the facility, estimating the amount of energy used by each end-use, conducted in-house or by a qualified agency)	Rs.3 Lakhs/District	<ul style="list-style-type: none"> Contact Bureau of Energy Efficiency Others including operating costs (OOC) Kayakalp
	b. Replace existing lighting (Non-LED) with LED	Rs.7 Lakhs/District	<ul style="list-style-type: none"> Contact Bureau of Energy Efficiency Untied funds Corpus funds available with the facility
	3.3.2. Adoption of Solarisation (renewable energy) in the exiting HCFs		
	Connectivity of services of prime importance –emergency, essential care, childbirth, freezer for cold chain maintenance (vaccines), new-born care corners with solar power back-up	Rs.20 Lakhs/ District	<ul style="list-style-type: none"> Contact MNRE appointed agencies NPCCHH (for one-time cost) Untied fund (Recurring expenditure)
	3.3.3. Adoption of Water conservation measures		

S.No	Activities	Unit Cost	Remarks/funding source
	Install Rainwater Harvesting (RWH) System	Rs.20 Lakhs/ District	<ul style="list-style-type: none"> • Contact MoJS or MoRD agencies • NPCCHH (for one-time cost) • Untied fund (Recurring expenditure)
	3.3.4. Waste Management		
	Effluent treatment plan (ETP) for toxic effluents from the healthcare facilities to the environments	<i>(Varies as per the capacity/ load)</i> @ Rs.5 lakhs (max) for CHC @ Rs.10 Lakhs (max) for SDH (100beds) @ Rs.40 Lakhs (max) for DH (500beds)	<ul style="list-style-type: none"> • Under HSS. 4- Public Health Institutions as per IPHS norms

NATIONAL PROGRAMME ON CLIMATE CHANGE AND HUMAN HEALTH

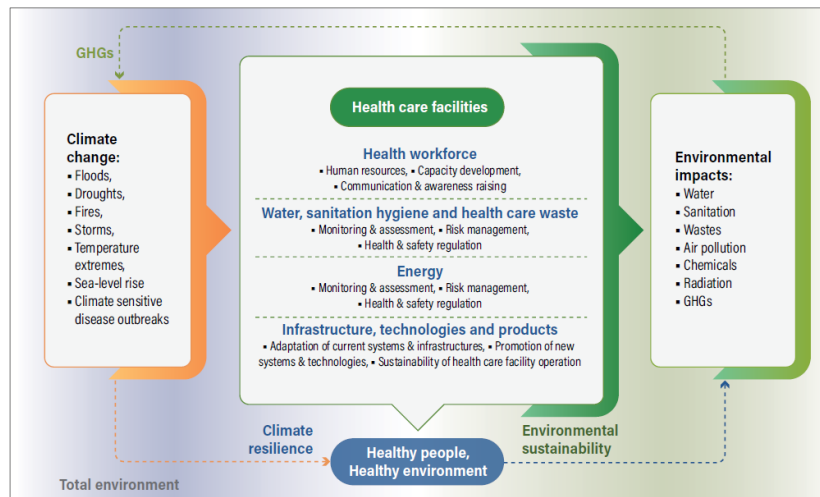
Guidance Note on

**GREEN (ENVIRONMENTALLY SUSTAINABLE) &
CLIMATE RESILIENT HEALTH CARE FACILITIES**

**PIP
FY.2022-23 & FY. 2023-24**

Health care facilities (HCF) are the first and last line of defense to the health impact of climate change drivers. They provide essential services and care to the population affected by extreme weather events and long-term climate hazards (adaptation) and conversely, require to reduce its own contribution to climate change producing greenhouse gas (GHG) emissions (mitigation). Building resilience and contributing to environmental sustainability are major components to strengthen HCF to continue functioning with minimal negative environmental and health impact. Health care workforce, WASH (water, sanitation, hygiene) and health care waste management, energy, and infrastructure, are four components identified for interrelations for green and climate-resilient health systems and HCF¹.

Figure 1: Framework for building climate-resilient and environmentally sustainable HCF



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

HCF, when not well designed, equipped and managed, produce adverse environmental impacts, affecting their health workforce and the community they aim to protect. A minimum requirement for climate resilient, safe and quality care is access to reliable sources of energy and safe water. One of the seven global targets of The Sendai Framework for Disaster Risk Reduction, is to “substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030”. SDG 9 (Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation) calls for the development of quality, reliable, sustainable and resilient infrastructure, and also upgrading infrastructure and retrofitting industries (including health care) to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and processes.

Programmes like Kayakalp, and National Quality Assurance Standard (NQAS) support and routinely assess the implementation of basic operational aspects like safety and quality in the public HCF in the country². Indian Public Health Standards (IPHS) have been benchmarks for infrastructure planning and up-gradation of public HCF in the States and UTs. However, a specific focus in the context of climate change impacts, direct and indirect, is required for timely and adequate implementation of health system adaptation and mitigation.

National Programme on Climate Change and Human Health (NPCCHH) is dedicated to health response to climate change through five key objectives including capacity building of health workforce and adaptation of environmentally sustainable and climate-resilient infrastructure measures. Recently, IPHS is updated to include aspects of climate-resilient infrastructure.

The purpose of this document is to provide brief, specific guidance on the component of environmentally sustainable and climate-resilient measures for HCF under **Key Objective-3** (Strengthening of Health System) that are recommended under **National Programme on Climate Change and Human Health (NPCCHH)** for **FY. 2022-23 and 2023-24**. This document is supplementary to NPCCHH's **PIP Guidance Note for Districts** that outlines all proposed NPCCHH activities, key deliverables, targets, budget heads and funding sources.

PROPOSED ACTIVITIES: GREEN (ENVIRONMENTALLY SUSTAINABLE) & CLIMATE RESILIENT HEALTH CARE FACILITIES

3.1. Assessment of the healthcare facilities for Green Measures in Healthcare Facilities

Systematic approaches to assess climate vulnerabilities and identifying and assessing adaptation options can aid health facilities and health-supporting infrastructure in building climate resilience. Establishing a baseline and identifying gaps is the first step towards strengthening health facility. A checklist is provided to assess climate resiliency of a health care facility. Facility administrator or medical officer with support staff can carry out this assessment within a few days. It is suggested to have a designated team including male and female members both assessing the facility. (Annexure 1).

3.2. Climate Resilient Healthcare Infrastructure

With increasing global warming, heatwaves and rainfall related extreme weather events will be the new normal across India. India is the seventh-most vulnerable country with respect to climate extremes (Germanwatch 2020). About 80% of India's population lives in districts highly vulnerable to extreme hydro-met disasters. It is important to know climate vulnerability of the district where the HCF is located to prioritize adaptation measures. District-level climate vulnerability assessment (calculated using exposure to extreme events, sensitivity and adaptive capacity) from very high to very low vulnerable districts is attached (Annexure 2)³.

HCFs need to take effective measures to withstand the impacts of increasing extreme weather events and other climate-related hazards such as higher temperatures, increasing precipitation over longer periods of time (causing increased flooding), intense but short-lived rainfall (causing flash flooding), decreasing precipitation (affecting places where rainwater harvesting contributes to the water supply systems of HCF), and higher winds and storms. Climate change can also create new or exacerbate existing environmental problems, such as increasing contamination of groundwater during droughts, or increasing air pollution. It is also increasing the risk of new and emerging infectious diseases (such as Zika and West Nile Virus), and climate migration putting additional demand on HCF. Many of these hazards can have severe, acute, and long-term impacts on mental health (including that of health workers) putting greater pressure on health systems.

Currently, all HCFs may not meet all the criteria suggested in the IPHS and National building Code 2005. However, the new add-on infrastructures are following these guidelines. In this context, it is also important to retrofit the existing hospital infrastructure in line with the IPHS Guidelines, ISO and green building guidelines for the hospital infrastructure. NPCCHH suggests following measures for infrastructure resilience with the funding and partnership recommendations.

3.2.1. New HCF should be built in compliance with Green & Climate Resilient Infrastructural features as of updated IPHS.

<http://nhm.gov.in/index1.php?lang=1&level=2&sublinkid=971&lid=154>

3.2.2. 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 (implementing measures or technologies which improve climate resiliency) locally sourced and sustainable building designs and construction technologies should be considered to reduce energy requirements, carbon footprint, and cost-effectiveness. An example is placed for flood and heat resilient measures, and similarly measures could be introduced for other climate risks.

3.2.3. Flood resilient measures: Retrofitting for flood resilient measures should be prioritized based on the gap analysis for HCF located in flood prone zones.

- a. Raise appropriately the floor and increase its strength (facility) to ward off from flooding. Make floodwall. Use flood damage resistant materials.
- b. Design roof to provide quick drainage and a structure that avoids any seepage or leakage.
- c. Place sewer backflow valves to prevent flooded sewage systems from backing up into HCF.
- d. Design surroundings to allow flood water outlet and avoids its pooling and damage.
- e. Provision for electricity back up (generators, server rooms) or solar supply.
- f. Move drug store, critical equipment to higher floors in the building or provisions for shifting to non-flooded areas during emergencies.
- g. Map historical flood levels and accordingly design location site the HCF facilities floor levels at which critical services are relocated.
- h. Have functional sump pumps with battery backup

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

- a. Cool roofs are a simple and cost-effective solution to reduce temperatures inside a building in comparison with traditional roofs.
- b. Benefits: Depending on the setting, cool roofs can help keep indoor temperatures lower by 2 to 5°C (3.6-9°F). They conserve energy by reducing cooling load on fans, coolers, air conditioners, in turn reducing contribution to emissions. Cool roofs enhance the durability and appearance of roofs.
- c. How they work: Cool roofs are better at reflecting sunlight and absorb less heat. They are prepared, covered or coated with materials that have characteristics that enable them to warm up less than regular roofs. Light-coloured paints, roof tiles, coatings are usually used for this purpose. Reflective paint is a cost-effective cool roof coating. For example, locally-available simple white lime paint costs as little as ₹0.5 per square foot to more expensive reflective coatings or membranes. White lime paint is being used in various Cool Roof Programmes in different states.

(<https://ncdc.gov.in/WriteReadData/1892s/57166105751632287688.pdf>) and (https://tsredco.telangana.gov.in/PDFs/Telangana_Cool_Roofs_Policy_for_Public_Comments.pdf).

3.3 Green (Environmentally Sustainable) Measures in HCF

Environmental sustainability, from climate change perspective, means implementing interventions that optimize the consumption of resources (such as water, energy, food), and reduce GHG emissions and waste discharge (including biological, chemical, radiological and wastewater). It also includes procuring goods and services that follow the principles of environmental sustainability. Importantly,

sustainability measures need to be evaluated for their performance and functionality, because quality of care should be the most important criteria. Therefore, more sustainable goods, materials and services should be considered when they do not compromise health care provision, and do not adversely affect the health and safety of health care workers.

3.3.1. Energy Efficiency

Energy and the way it is used are the most significant contributor to climate change. Energy conservation and utilizing renewable energy will be significant factors in making a health facility 'smarter'. In the health sector, energy is consumed by lighting, large and small specialized equipment and devices, appliances, and transportation. More guidance on energy efficiency in a health care setting is available from Bureau of Energy Efficiency (BEE), Ministry of Power.

<https://www.beeindia.gov.in/sites/default/files/HospitalEnergyEfficiencyBestPracticesGuide.pdf>

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

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

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

- LED bulbs are energy efficient. As compared to the incandescent bulbs, LEDs consume up to 90% less power.
- Lesser consumption of power also means lesser emission of CO₂, and thus reduced carbon footprints.
- Use of LED bulbs naturally is indicative of a dramatic decrease in power costs.
- LED bulbs are long lasting. A single bulb may last as long as 20 years. Thus, usage of the same also results in time-efficiency.
- Money and energy is saved in maintenance and replacement costs due to the long LED lifespan.

Incandescent light bulbs or other inefficient bulbs should be replaced with LED bulbs in all suitable places in a health facility.

Support Partners: Bureau of Energy Efficiency (BEE - Ministry of Power)

State and District Nodal Officers are recommended to coordinate with BEE representatives in State/Districts to conduct energy audits and energy conservation planning.

It is also important to upgrade/replace equipment, be it medical or office equipment, with energy efficient models with Bureau of Energy Efficiency (BEE) 4-star rating or more whenever opportunity arises².

3.3.2 Renewable Energy: Solarization

Photovoltaic (PV) (solar panels) systems capture energy from the sun and convert it into electricity, thereby reducing energy generated via fossil fuels and leading to reduced GHG

emissions and air pollution. Solarization of health facilities also reduces dependence on insufficient or intermittent electricity supply in rural areas.

India has signed up for an ambitious goal of generation of 175 GW of solar power by 2022. Many states are taking steps with different departments to install solar panels in HCF. The state of Chhattisgarh has already made use of the 2 off grid solar photo voltaic rooftop systems in around 570 PHCs across their state through the Chhattisgarh Renewable Energy Development Agency (CREDA), the same model can be followed by the rest of the country.

Support Partners: Ministry of New and Renewable Energy

State and District Nodal Officers are recommended to consult with the State Nodal Agency (SNA) under Ministry of New and Renewable Energy (MNRE) responsible for solarization in the state for solarization of HCF. List of SNA is available at <https://solarrooftop.gov.in/pdf/sna.pdf>

If solar power is used as backup ensure connectivity of services of prime importance – emergency, essential services, childbirth, freezer for cold chain maintenance (vaccines), newborn care corners. Solar water heating is another way to use solar energy in HCF apart from solar photovoltaics for power generation.

3.3.3 Water Conservation

Water conservation refers to reducing the usage of water and recycling waste (used) water. Any beneficial reduction in water loss, water use, and water waste can be classified as water conservation. HCF consume vast amounts of water and use energy to heat, pump and dispose of it. Climate change, with its accompanying impacts of drought, glacier melt, and aquifer depletion, will exacerbate water scarcity. Health facilities can conserve this precious natural resource by closely monitoring water use, installing water-efficient fixtures and technologies, and making sure that leaks are quickly repaired. Rainwater harvesting, and recycling for non-drinking purposes can also be implemented.

Water conservation includes all the policies, strategies, and activities undertaken by the hospital to sustainably manage water, to protect the environment, and to meet the current and future demands of the hospital. Factors like bed occupancy, size of the hospital, functional departments affect water conservation measures taken by the hospital.

a. Routine water conservation measures

Guidance on following routine water conservation measures in HCF are described in Kayakalp guidance.²

- Routine maintenance and record-keeping of water storage and dispensing
- Routine maintenance of water supply system
- Routine inspection for waste water removal system

b. Rain Water Harvesting

Rainwater harvesting system to reduce climate change vulnerability has two goals: first, to be one of the alternatives for clean water source during a disaster/drought, and second, provide adaptation actions to reduce flooding. Hospitals can also adopt a strategy of simple artificial recharge techniques in rural areas like Percolation Tanks, Check Dams, Recharge Shafts, Dug Well Recharge and Sub-surface Dykes and adopt Rooftop rainwater harvesting in urban areas. India's climate is quite distinctive and is characterized by intense monsoons followed by protracted droughts. In such a situation, the importance of rainwater harvesting increases to a great extent.

Water harvesting methods are of following two types:

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

The rainwater harvesting potential of a site depends on rainfall quantity, area of catchment, and runoff coefficient. Additionally, the decision of whether to store or recharge groundwater using harvested rain depends upon the rainfall pattern, requirements, surface geology of a particular region, groundwater quality etc⁴. Efforts should be made to increase dependence on harvested rainwater and redirect excess water to groundwater recharge.

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

Support Partners: Ministry of Jal Shakti and Ministry of Rural Development

State and District Nodal Officers are recommended to consult with the nodal committee/department/ for watershed management programme, Ministry for Rural Development or Department of Drinking Water & Sanitation for HCF in rural area and Jal Board/Urban Development or equivalent in urban areas.

Important considerations for water storage tanks

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

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

3.3.4 Waste Management

Climate change will lead to an increase in the frequency, intensity, and duration of extreme events such as droughts, floods, high winds, and tropical storms, and health care waste management system design, construction, and operation must also take these factors into account. Wastes must be treated with a frequency appropriate to the climate. As temperature increases, especially in regions of warm climate, wastes should be treated sooner (within 24 hours) than in cooler temperate climates. Successful healthcare waste management projects include efforts to moderate climate-related risks and vulnerabilities and to take advantage of potential benefits to improve the likelihood of long-term project success.

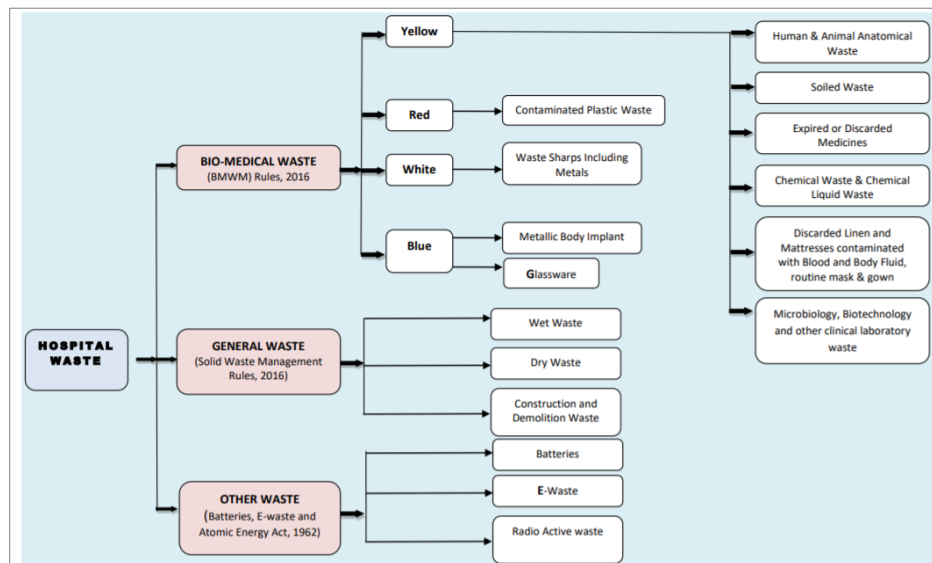
Over half of the world's population is estimated to be at risk from environmental, occupational or public health threats resulting from improperly treated health care waste. Improper health care waste management can occur for several reasons, due to lack of awareness about the health

hazards related to health care waste, inadequate training in proper waste management, lack of infrastructure or energy, lack of appropriate regulations, or enforcement of existing regulations. In addition, transporting health care waste in vehicles using fossil fuels, inadequate incineration, inappropriate incinerator technology, or the incineration of unsuitable materials results in GHG emissions and the release of pollutants into the air. As such proper waste management is both an adaptation and a mitigation measure.

a. Biomedical waste management (BMW)

Biomedical waste management is a basic function of HCF in compliance with BMW Rules, 2016 & 2018 (Amendment)⁵. As an infection prevention measure, it is and being assessed through National Quality Assurance Standards for Public Health Facilities and also Kayakalp.

Figure 2: Categorization & Classification of Wastes in Health Care Facilities.



Source: Guidelines for Management of Healthcare Waste as per Biomedical Waste Management Rules, 2016

b. Effluent Treatment Plant

Improper wastewater management, collection, treatment, and disposal may result in the pollution of local drinking water sources, or the contamination of natural resources. Wastewater generated from HCF can be categorized as black (sewage, high concentration of excreta and toxic chemicals), grey (sullage, low concentration of chemical and biological materia) and stormwater.

Inadequate treatment and improper disposal of wastewater can lead to

- Excessive nutrients cause biological degradation in groundwater, lakes and rivers by using up oxygen (eutrophication) resulting in algal blooms and biotoxins
- Pharmaceuticals in water that can disrupt endocrine levels
- Antibiotics could result in antibiotic-resistant pathogens
- Mercury and heavy metal poisoning
- Water-borne disease outbreaks in communities like Campylobacteriosis, cholera, Hepatitis A and E, schistosomiasis, and typhoid fever
- Vector-borne diseases and parasites like Dengue fever, malaria, roundworms

Effluent Treatment Plant should be provided in every HCF to treat the wastewater generated from the hospital in order to comply with the effluent standards prescribed under the BMWM Rules, 2016.

ETP is necessary if the discharge from

- HCF is connected with city's/town's public sewerage network that does not have any terminal sewage treatment plant *or*
- HCF is not connected to the public sewerage network.

Treated wastewater from healthcare facilities should conform to the standards of liquid waste as listed in Schedule II of BMW Rules, 2016. Bedded HCFs with > 10 beds should establish a suitable Effluent Treatment Facility with immediate effect, while HCFs with <10 beds. More information is available from [CPCB: https://cpcb.nic.in/uploads/Projects/Bio-Medical-Waste/Guidelines_healthcare_June_2018.pdf](https://cpcb.nic.in/uploads/Projects/Bio-Medical-Waste/Guidelines_healthcare_June_2018.pdf)

State and District Nodal Officers are recommended to consult with state pollution control board, Public Works Department or local municipal corporation in this aspect.

References

1. WHO guidance for climate resilient and environmentally sustainable health care facilities.
2. Guidelines for Implementation Of "KAYAKALP" initiative
3. Mohanty A, Wadhawan S. A District Level Assessment Mapping India's Climate Vulnerability.
4. RWH in India - An Appraisal CPCBENVIS.
5. Guidelines for Management of Healthcare Waste as per Biomedical Waste Management Rules, 2016.

CLIMATE-RESILIENT HEALTH FACILITIES CHECKLIST

Climate change poses risks to health care facilities (HCF). This check list has been prepared to identify gaps and actions for building climate resilience in HCF. This checklist comprises of some open-ended questions on aspects related to the HCF resiliency such as emergency management, facilities management, services and supply chain management. Discussions, reasoning for responses should be documented. Based on the analysis of responses and available secondary data, an action plan for HCF should be drafted. This checklist is created by NPCCHH in collaboration with WHO.

General Information about the Hospital

No	Question	Response	Remarks
	Basic Hospital Details		
1	Hospital Name		
2	Type of Hospital		
3	When was hospital constructed/ made operational?		
4	When was last structural change made in the hospital?		
5	What types of services does health care hospital provide? (Y/N)	(Y/N)	
	o Emergency Care		
	o Adult Critical care		
	o Obstetric critical care		
	o OT Complex		
	o Out-Patient department		
	o In-patient department		
	o MCH wing		
	o Dialysis Unit		
	o Diagnostics (Radiology, Lab, blood bank)		
	o Staff Residences		
	o Health, Wellness and AYUSH service areas		
	o Support services (CSSD, Mechanized Laundry, Kitchen)		
	o Administrative offices/areas		

	o Teaching block (for medical, nursing, paramedical		
	o District Early Intervention Centre (DEIC)		
	o Nutritional Rehabilitation Centre (NRC)		
	o Mother and Newborn Care Unit (MNCU)		
	o Neonatal Intensive Care Unit (NICU)		
	o Pediatric Intensive Care Unit (PICU)		
	o Comprehensive Lactation Management Centre (CLMC) / Lactation Management Unit (LMU)		
	Hospital catchment area		
1	Health Profile of the catchment area		
	o Crude Birth Rate		
	o Crude Death Rate		
	o Infant Mortality Rate		
	o Total Fertility Rate		
	o Total Mortality Rate		
2	What is the health-care hospital catchment area ?		
3	What is the approximate size of the dependent population? _		
4	Number of Beds (2 beds per 1000 population NHP, 2017)		
5	What is the decadal growth rate of population in the catchment area?		
6	What is the Child Population in the age group 0-6?		
7	Percentage of Households with access to improved basic needs		
8	Percentage of Households below poverty line in the catchment area		
9	Vulnerable Population in the catchment area		
	o Scheduled Tribes and Scheduled Caste population, OBC and financially backward		
	o Migratory/floating populations		

	<ul style="list-style-type: none"> • Slum dwellers 		
	Hospital Capacity		
1	How many patients does your health care hospital provide services to:		
	o Number of Inpatient		
	o Number of out patients:		
	o Average Daily Emergency Department Visits:		
	o Number of beds		
	o Number of Beds - public health system of tertiary care		
2	Please provide the hospital utilization statistics for the current and previous years ? (In Patient, OPD and Emergency)		
3	Does the reporting location have a computerized system for		
	<ul style="list-style-type: none"> • Recording patient history and demographic information? 		
	<ul style="list-style-type: none"> • Public health reporting? If yes, are notifiable diseases sent electronically 		
	<ul style="list-style-type: none"> • what kind of insurance claim settlement system is present? Or system to access government schemes 		
4	Requisite staffing in the Hospitals?		
	· Number of Doctors	_____ allocated Vs _____ available	
	· Number of Nurses	_____ allocated Vs _____ available	
5	Workers for other services		
	Facilities		
1	what are the laundry and cleaning arrangements of the hospital? Is it by hospital staff, present in its premises or outsourced		
2	Does your facility have Separate clean functional toilets for male, female, LGBT,Divyang etc. with regular supply of running water?		
3	is there STP and water treatment plant in the hospital premises?		
4	Capacity and facilities at waiting area for attendants and family members		

5	Does your facility has adequate storage facility for food materials and Hospital kitchen?		
6	Does your facility has 24X7 pharmacy ?		
7	How does hospital get food supplies? Is the kitchen run by hospital staff or outsourced?		
8	what are the Bio-medical waste management practises at hospital?		
9	Is there a program to conduct training for non-medical staff to deal with emergency situation?		
10	Do you have robust MIS? What are the system to protect/ enter data during emergencies/ surge of patients		
11	Do you have adequate storage facility for food materials for staff, for patients especially infants and new born, for patient attendants?		
12	Do you have some imprest money to use during emergencies?		
13	Do you have authority to hire additional outreach staff during disasters/		

Understanding Climate-related health risks			
No	Question	Response	Remarks
	Understand Climate Risks		
1	Has state government department used climate risk and vulnerability assessments for the healthcare sector		
2	Does the state departments communicate information on local extreme weather hazard trends, including likely hazard impacts to your organization? If yes then how , frequency , mode of communication		
3	Who is responsible to act on such information?		
4	Does your hospital have partnerships with universities or other climate and health-focused organizations to inform your understanding of climate and health risks?		
5	Does your hospital consider how direct and indirect climate-related risks (e.g. drought , resources (food, water, energy) availability and / or prices) may affect sustainability of hospital?		
	Assess Preparedness and Vulnerabilities		

1	Current and future climate variability and change can pose a variety of risks to infrastructure and communities that could affect continuity of services provided at your health care hospital. Please indicate if your health care hospital is conducting or conducted or access to the climate risk assessments (specify segment like catchment area, community, region, hospital). if Yes, whether it considers the following climate-related hazards.		
	<input type="checkbox"/> Extreme heat		
	<input type="checkbox"/> Extreme cold		
	<input type="checkbox"/> Extreme rain		
	<input type="checkbox"/> Unseasonal Rain or heat		
	<input type="checkbox"/> Drought		
	<input type="checkbox"/> Extreme weather – thunderstorm, lightning		
	<input type="checkbox"/> Air, water, noise standards and smog		
	<input type="checkbox"/> Food-borne contamination and/or diseases		
	<input type="checkbox"/> Water-borne contamination and/or diseases		
	<input type="checkbox"/> Vector-and rodent-borne diseases		
	<input type="checkbox"/> New and emerging infectious diseases		
	<input type="checkbox"/> Any other information		
	<input type="checkbox"/> Trauma/ accidents due to landslides, damage to building during floods etc		
	<input type="checkbox"/> increase in case of physical and mental stress		
	<input type="checkbox"/> snow storm/ avalanche		
	<input type="checkbox"/> cyclone		
	<input type="checkbox"/> wildfires/ garbage fires/ agricultural fire		
	<input type="checkbox"/> Hail		
2	Increasing resilience to climate change is an iterative process. Resilience today does not provide a guarantee that a hospital will be resilient in the future under changing climate patterns. Is projected changes of climate variability are considered while identifying hazards?		
3	Whether hospital maintains health weather advisories		

4	Are you participating in local community and/or regional initiatives around mitigation and adaptation for these hazards?		
Prepare a climate action plan			
1	Has the public health & family welfare department prepared an climate change action plan for the public health sector in line with NAPCC? If yes, please provide relevant documents		
2	Does it include a reasonable assessment of the health impacts of climate change/extremes events? Do you have access to climate change information? If yes, please provide relevant documents		
3	Does your facility have a specific climate resilient action plan?		
4	Has the process allowed the health department to prioritize health impacts and suitable interventions?		
5	When ranking risks/ preparing Management Plans for your hospital, are the following involved ?		
	o Climate Expert		
	o Multidisciplinary doctors/nurses/other support staff		
	o Community partners (e.g. police, paramedics, fire, public health, Red Cross)		
	o Other health care facilities in the region		
	o Senior State Government Departmental officials (e.g. Public Health Agency of Madhya Pradesh, Health Madhya Pradesh, Public Safety Madhya Pradesh)		
	o Disaster risk reduction specialist/ someone from disaster management authority		
	o Urban planner/ civil engineer/ architect		
6	Does your facility have a dedicated fund for climate preparedness? Have your facility estimated finance required for implementing these climate resilient action plans?		

Understand Land Use, Siting and Landscape

1	Does the location of the hospitals and health facilities lie at the edge of a slope, near the foot of a mountain vulnerable to landslides, near creeks, rivers or bodies of water that could erode its foundation, on top of or in proximity to active fault lines (less than 10 meters away), near the river banks and areas prone to storm surges?		
2	Is the facility has minimizing exposure		

	o air		
	o noise		
	o water and land pollution		
	o vector-breeding proof		
3	"Is the safety audit of the health facilities carried out with respect to their location, design and quality of construction and their prioritization done for demolition, retrofit or repair?"		
	Understand the physical parameters of hospital located in areas noted below are subjected to higher levels of hazard		
	o Is the site located on low-lying barrier island and/or coastal regions?		
	o Is the site located on or near 100-year or 500-year floodplains or wetlands? Will the system be adequate in 2030/2050/2080??		
	o Is the site located in close proximity to major levees or dams?		
	o Is the site located in close proximity to steep slopes subject to erosion?		
	o Is it located in close proximity to an area subject to fire risk?		
	o If you answered 'yes' or 'somewhat' to the questions above, have you developed comprehensive hazard mitigation plans (HMPs) for affected sites?		
4	Have you done Site planting and reflective paving to reduce heat island effect?		
5	Design has preserved existing vegetation		
6	Is your facility or campus inside the limits of any of the eco sensitive sites:		
7	Does your facility face any problem due to noise pollution?		
8	Measures to taken up for preventing/reducing noise pollution?		
	Building Design		
1	Is the map of the health facility approved by competent authority? By whom and Process?		
2	Have you determined the degree of vulnerability and exposure to the hazard your campus or buildings may face? See understanding climate risks for more details		

3	Has the facility design ensured latest multi-hazard specific techniques used for retrofitting?		
4	Does hospital design is ISO certificated? If yes, please provide more details		
5	Does your hospital acquired necessary environmental (including seismic safety), fire safety and administrative clearance? (If Not, Skip next two questions)		
6	Environment Impact Assessment study conducted for the Hospital (Y/N). If Yes, Please collect EIA copy of the Hospital		
7	Does your facility have a Environment Management Plan (EMP) (Y/N) . If Yes, please collect EMP copy of the Hospital		
8	Inventory Building Envelope design parameters for each critical building		
	• What are the design wind loads for envelope?		
	• What are the design wind loads for windows?		
	• What are the design wind loads for roofs?		
	• What are the design snow loads for roofs?		
	• What are the design peak rainfall parameters for roof drainage systems?		
	• In high wind areas, are there places of refuge designed as part of the structure?		
	• Have building insulation and windows been updated to comply with contemporary energy codes?		
9	Does the map of the health facility consider appropriate measures of earthquake, fire, flood & cyclone safety and resilience (multi-hazard) as per the National Building Codes 2005, BIS codes and NDMA guidelines (or any state level guidelines if issued)?		
10	Divyang-Friendly measures Integrated at Planning Stage(Y/N)		
	Emergency Preparedness		
1	is the triage area for emergency identified?		
2	Does your hospital have an appropriate evacuation measures designed during emergency/extreme events		
3	You have provided enough escape vents during the any emergencies?		

4	Designed separate wards for contagious diseases patients?		
5	Does your hospital have a robust MIS for entering, retrieving and sharing patient and inventory of critical supplies?		
Green Building Aspects			
1	Is your Hospital a Green Building? Is the hospital LEED certified?		
2	Have you incorporated location specific requirements to keep the facility cool and comfortable		
3	Have you oriented building to maximize solar orientation and wind patterns?		
4	Do you have adequate ventilation natural and mechanical?		
5	Any scope for greening hospital infrastructure?		
6	Does your campus or facility actively seek opportunities to preserve vegetative cover, preserve open space, or create habitat through any of the following measures? <ul style="list-style-type: none"> • Dedicated open space • Green roofs • Landscaping with native and adapted plant species 		
Assess transportation and site access resilience.			
1	Does the health facility have good accessibility through roads (preferably more than one well-paved access roads that are cemented or asphalt and are properly identified and labeled), and adequate means of transportation readily accessible to the community?		
2	Location has convenient public transportation, bicycles and walking?		
3	Do you have two unique access routes to critical healthcare facilities?		
4	Do you have contingency plans in place for loss of an access route or routes?		
5	Have you surveyed existing landscape elements to ensure that if damaged they will not block on-site access routes to the facility?		

Management of climate-related disasters or emergencies			
No	Question	Response	Remarks
	Emergency Preparedness & Planning		
1	Identify and describe the natural hazards which occur in your hospital catchment area including		
	a. Hazards	b. Frequency	c. Magnitude
	e.g. Floods, heat waves, epidemic etc.		
2	Mapped the geographic areas which are vulnerable to each natural hazards identified in your hospital catchment area		
3	Does your facility have outbreak management plans that considers climate change preparedness, response and recovery protocols as they relate to infectious diseases		
4	Do maintenance procedures/Disaster Management Plans of your hospital include specifications on impact of weather events affecting safety and continued operations?		
5	Does your facility have a Designated hospital command centre, i.e. a specific location prepared to convene and coordinate hospital-wide emergency response activities and equipped with effective means of communication.		
6	Does your facility have some imprest money to use during emergencies?		
7	Does your facility have a SOP for management of adverse weather events?		
8	Does your health care facility disaster plan include a protocol to receive external assistance from outside partners (e.g. other health care facilities, community, provincial agency, federal agency) in the event of climate-related emergency?		
9	Are you conducting mock drills in your hospitals with regard to disasters? <i>If yes when was the last drill conducted and what were the learnings from it?</i>		
10	Does hospital have a post disaster recovery plan?		
11	What system/ protocol does hospital follow for treatment and reporting of unidentified patients.		
12	Is your hospital located in the vicinity of an industrial area/complex? If Yes, Does your facility has contingency plan prepared to mitigate potential disasters?		

Critical Building Inventory			
1	Inventory the locations of critical medical care departments, support services and diagnostic equipment listed below. Are these departments or services accessible to the following in an extreme events.		
	• Emergency Services		
	• Main Lobby/ Building Entrances		
	• Imaging		
	• Critical Care and/or Bed Units		
	• Pharmacy		
	• Medical Records/ IT		
	• Emergency Command Center		
	• Kitchen/ Food and Potable Water Storage		
	• Clinical Supplies accessible		
	• Clinical Laboratories		
	• Hazardous Waste Storage		
	• Morgue		
	• Ambulance Fleet Refueling/ Garage		
	• Internal building connecting corridors/links		
2	Power outages in extreme weather could cripple hospitals and transportation systems when we need them most. Does your facility have Power Back-up system?		
3	Climate change is expected to increase the frequency and / or intensity of climate-related hazards (refer to hazards listed in step 1). Currently is the infrastructure of your hospital able to withstand climate-related emergencies and able to provide safety for patients, staff and visitors?		
4	Do the facility have Emergency Kitchen, Water Storage and food storage facilities adequate for the anticipated flow of patients?		
5	Does your facility rely on bottled (plastic) drinking water for emergencies? If so, how much Does your facility store and for what purpose?		
Determine Clinical Care Needs			
1	Identify the number of unoccupied beds (total capacity - average census)		
2	Identify number of early discharge recoverable beds		
3	Have you inventoried and assessed Expanded Treatment Areas (ETA) for treating lower acuity patients, either admits or transfers from the hospital?		

4	Have you inventoried and ranked Alternate Care Sites to which lower acuity hospital patients may be transferred for treatment by attending hospital staff?		
Determine Personnel Availability			
1	Does your facility have a dedicated disaster management teams in your hospital? How you identified?		
2	Have you updated the hospital staff contact list? when?		
3	Are the officials responsible for maintenance of your health care facilities, systems and infrastructure adequately trained to manage an extreme weather related emergency or disaster		
4	Are front-line workers engaged in the development of above plans and responses		
5	Does your facility have authority to hire additional outreach staff during disasters/		
Identify Clinical Care and Support Space Vulnerabilities			
1	Does your hospital invest in infrastructural upgrades or redundancy measures to make it resilient to extreme weather or longer-term gradual impacts of climate change?		
2	Does your hospital have access to Logistics management system?		
3	Does hospital have machines/ tools/ equipments to free passage, hospital entrance in case of physical damage to hospital?		
4	Does the ramp connect all floors? Alternatives for patient transfer in case of lift failure, flooding at ground floor etc?		
Health Care Resources and Supplies			
1	Does your facility have pharmacy ready with essential supplies for at-least 96 hours?		
2	Does hospital have enough stock of gloves, masks, sanitizers, soap etc in case epidemic and other infectious diseases outbreak		
3	Is food refrigeration equipment on emergency power?		
4	Identification of locations and plan to reduce Anticipated Patient Surge		
5	How does hospital get emergency food supplies? Is the kitchen run by hospital staff or outsourced?		
6	Is Hospital laboratories are adequately strengthen to deal with the situation		
7	Is there a logistic system in place for estimating drug requirement, maintaining an inventory, storing and stocking and issuing and controlling the use of drugs, stockpile of emergency medicines and supplies, special arrangement with vendors and suppliers for emergency purchases in times of disaster?		
Supporting Infrastructure			

1	Climate related events can disrupt power and communication systems. Does your facility or campus have multiple communication systems in the event of extreme weather emergencies?		
	• Landline telephone systems		
	• Mobile phone systems		
	• Radio Systems		
	• Other (Loud Speakers, intercom etc.)		
2	Do you review locations of energy and utility infrastructure relative to extreme weather hazards.		
3	What is contingency plan in case of water shortage for day to day operation?		
4	what is waste management plan in case of high number of patients, disturbance in municipal systems of waste collection etc		
5	Sewage and wastewater systems may be impacted by climate related events/disasters. Does the facilities the plan for sewage and wastewater systems in the emergencies?		
6	Does the facility has a provision for immediate drinking water provision?		

Climate Change Mitigation (Energy, Water, Waste Sectors)

No	Question	Response	Remarks
Energy and Utility Infrastructure: Energy Conservation and Thermal Energy			
1	Is there an estimation of demand and supply of electricity? Sources of Energy		
2	Power backup		
	o Number of generators, type and their location		
	o Capacity of generators		
	o Provide list of equipment (Name, Number and Capacity)		
	o storage of diesel, batteries etc.		
3	Do your facility monitor or track energy use? What is average monthly consumption ?		
4	Has the hospital audited and benchmarked energy use in your hospital through Energy Auditing or equivalent programs? If yes then where is it documented? Please share Energy Audit report?		
5	Does your hospital have an energy conservation program?		
6	Have you engaged in any of the following energy conservation measures?		
	o Central plant or mechanical equipment upgrades?		
	o Low-energy lighting, such as T-5 or LED? Maximizing day lightning		

	<input type="checkbox"/> Install lighting control systems to minimize energy consumption?		
	<input type="checkbox"/> Install energy efficient equipment?		
7	Does your facility evaluate energy reduction strategies, monitor cost savings, greenhouse gas reductions?		
8	Does your hospital promotes Low Carbon Procurement policies ?		
9	Do you educate staff, patients and visitors about energy conservation and efficiency strategies/programmes (energy awareness campaigns)?		
10	Has your hospital explored the possibility of diversifying energy sources, including renewable energy sources for captive use? Ex. Solar, wind, Biogas etc.		
11	Low carbon features incorporated in the Hospital		
	<input type="checkbox"/> Enhanced building thermal envelope		
	<input type="checkbox"/> Reflective roofing		
	<input type="checkbox"/> Open able windows		
	<input type="checkbox"/> Shading by overhangs or planting		
	<input type="checkbox"/> Use of local materials		
	<input type="checkbox"/> Low-flow water fixtures		
	<input type="checkbox"/> Solar water heating		
	<input type="checkbox"/> "Include energy efficiency in equipment selection criteria Reduces energy consumption		
12	Implement sleep mode on computer equipment"		
	<input type="checkbox"/> Energy management systems		
	<input type="checkbox"/> Automatic Turning off lighting and equipment when not in use-		
	<input type="checkbox"/> Improve the efficiency of chillers		
	<input type="checkbox"/> Teleconferencing /medicine		
	<input type="checkbox"/> Decentralisation of hot water boilers		
	<input type="checkbox"/> Solar Water Heaters		
	Sustainable Water Conservation and consumption		
1	How much water do you use per day or month ----- water bill per month(if paid)_____		
2	Does your facility has rain harvesting provisions and reuse the water ?		
3	What is the total water supply and demand of the hospital_____		

4	Sources of Water (Which agency supply water to the hospital) . Municipality, Groundwater, captive well		
5	How much is the storage capacity, including emergency storage		
6	Do you track or monitor water quality and use for efficiency measures?		
7	Have you audited and benchmarked your water quality and usage (Liter/day)? If yes, please share Water Audit reports?		
8	Does your facility monitor cost savings of water use reduction strategies? What is monthly water bill?		
9	Does your facility have a campaign to increase awareness about water conservation/use in the hospital among staff, visitors and patients?		
10	Climate change may cause more water restrictions or contamination. Does your hospital have demand side water management plan?		
11	Does your facility practice any of the following sustainable storm water management practices to reduce local flooding in extreme rain events?		
	o Permeable paving		
	o Green roofs		
	o Open space for groundwater recharge		
12	Has your hospital adopted any water conservation related strategies? E.g. Water efficient landscaping practices (drip or no irrigation systems), Rain Water Harvesting, Water recycling etc.		
Waste Minimization and Sustainable Health care waste Management			
1	Has your health care facility estimated the total waste (liquid, medical and municipal). If yes, please fill below question?		
2	What are the Bio-medical waste management practices at hospital?		
3	How much waste(KG) is generated in the facilities		
	o Bio Medical (Needles, Springes , Pathological, Radio active, infectious, Pharma etc.)		
	o Organic		
	o Inorganic (Plastic)		
	o Liquid Waste		
	o others		

4	What is the process of Bio Medical and other waste Disposal?		
	o Bio Medical		
	o Organic		
	o Inorganic		
	o Liquid Waste		
	o Others		
	o Does your hospital follow the hazardous substance management rules		
Sewage and Wastewater			
1	Do buildings have check valves or equivalent backflow prevention devices installed on the main sewer discharge line to prevent sewage from flowing back into the building during a major flood event?		
2	Are all floor drains below flood elevation outfitted with drain plugs?		
3	Does your facility have any provisions for storing sewage in the event municipal systems are disabled or lost?		
Adaptation Measures			
1	Does your facility has any surveillance programme for climate sensitive disease. Protocols for timely treatment. If yes, provide names.		
2	Does your facility has protocols for infection control practices are in place (screening, vaccination, sanitation, isolation, use of personal protection equipment, disinfection, notifications to staff, patients and visitors, waste management) and are routinely observed		
3	Review clinical management of patients and residents most at risk either due to reduced mobility, chronic illnesses, use of certain medications, social isolation, inadequate housing or environmental factor		
4	Does your facility has following zonations in the Operation Theatre (Protective Zone, Clean Zone, Aseptic or Sterile Zone and Disposal or Dirty Zone }		
5	What is the coordination mechanisms with other line department such as DM, agriculture, sanitation, water, PHED		
6	Does your facility prepare reports on communicable diseases as mandated by State/Center health legislations		

7	Does your facility have a system for protecting staff from heat illness and provide adequate work rest cycles		
8	Does your facility record nutritional deficiencies related diseases?		
Capacity of Hospital staff to respond to CC Impacts			
No	Question	Response	Remarks
Training Needs & Capacity Building Programs			
1	Do all officials of hospitals have knowledge about risk arising due to environmental degradation and climate change.		
2	"Is the capacity assessment of the health centers conducted in terms of trained staff, helpers, available medicines, equipment, ambulances, fire safety, casualty management capacity etc.?"		
3	Is training of health care staff conducted on how to respond to the threat and evaluate the additional needs for different services (Y/N) , if Yes , Please provide list of trainings and copies training manuals if available		
	Is there a program to conduct training for non-medical staff to deal with emergency situation?		
4	Do staff from your hospital get regularly training on various aspects such as energy efficiency, water management, waste disposal, sanitation , WASH etc.		
Institutional Strengthening on climate change			
1	Does hospital have / maintain environmental and climate charter? If yes, then where and how many people know about it.		
2	Does your facility require a dedicated climate change related training program for your staff? Please describe in details		
3	Are there any mechanisms to coordinate with the relevant institutions at state and district level for capacity building		
4	Are there any awareness materials on environment and climate change, prepared by the hospital? If yes, where it is displayed, who prepared it , what is the frequency of updation?		
5	Does your facility have a mobile clinic? What services it offered, how old it is, how often it is used?		
6	Is there a mechanism in place for issuing alerts and response tracking?		

7	Does your facility record nutritional deficiencies related diseases?		
Action Plan on Climate chnage			
1	Can you map the intensity and probability of extreme weather events across all your campuses (today, 2050, 2080) If external support is required please elobarate ..		
2	Can the facility officials prepare Climate resilient action plan for your facility? If external support is required please elaborate ..		
Awareness Generation & Communication			
No	Question	Response	Remarks
1	Are you part of the Public health agencies and other agencies network which provide key information about risks to public?		
2	Does your facility issue health advisories to the patients and general public. When, who is responsible and how it is used?		
3	What is the most effective medium for providing advisories		
4	Does your facility communicate climate health risks to the general public		
5	Does your facility prepare strategy for communicating climate-related health risks to patients and to the public?		
6	Does your health care facility take any of the following measures to contribute to improving air quality in your community?		
	• Engage in air quality initiatives in the community		
	• Avoid the use of toxic chemicals wherever possible indoors		
	• Avoid the use of toxic chemicals wherever possible in landscape management		
	• Support local suppliers to reduce transportation miles for supplies		
	• Support mass transit, carpooling or ride sharing		
8	Does your facility run awareness programs on (Y/N)		
	Heat Stress		
	Vector Borne		
	Water Borne		

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	Food borne		
	Air borne		
	Zoonotic disease		
	Climate extremes		
9	Have IEC materials been shared among communities, which show the links between health aspects and DRR & CCA?		
10	Are there linkages established with telemedicine to reach out to villages/ households that are difficult to access?		

No	List of documents to be collected and assessed (If Available)	Y/N
1	DPR of the Hospital	
2	EIA Report of the Hospital	
3	Energy Audit Reports	
4	Water Audit Reports	
5	State Action Plan on Climate Change (SAPCC)	
6	Climate Change Impacts and Vulnerability Assessment Reports	
7	Emergency Protocols	
8	Disaster Management Plans/SOP	
9	Advisory Bulletins	

Based on your responses above, identify gaps and suggest a list of action items for Climate Resilient Action Plan	
Understanding climate risks	
Building Adaptive capacity	
Climate Change Mitigation activities	
•	Water
•	Power
•	Waste
Climate Change Adaptation and Mitigation Activities	

Glossary

Keywords	Explanation
Green Building	A green building is a structure that is environmentally responsible and resource-efficient throughout its life-cycle. These objectives expand and complement the classical building design concerns of economy, utility.
Climate Change (CC)	Climate change is the long-term alteration of temperature and normal weather patterns due to natural and anthropogenic reasons. This could refer to a particular location or the planet as a whole. Climate change is currently occurring throughout the world as a result of global warming
CC Adaptation	The Intergovernmental Panel on Climate Change (IPCC) defines adaptation as: 'the process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects
CC Mitigation	Climate change mitigation consists of actions to limit the magnitude or rate of long-term global warming and its related effects. Climate change mitigation generally involves reductions in human (anthropogenic) emissions of greenhouse gases (GHGs).
Climate Resilience	Climate resilience can be generally defined as the capacity for a socio-ecological system to: (1) absorb stresses and maintain function in the face of external stresses imposed upon it by climate change and (2) adapt, reorganize, and evolve into more desirable configurations that improve the sustainability of the system, leaving it better prepared for future climate change impacts
Disaster Risk Reduction	Disaster risk reduction (DRR) is a systematic approach to identifying, assessing and reducing the risks of disaster. It aims to reduce socio-economic vulnerabilities to disaster as well as dealing with the environmental and other hazards that trigger them.
Low Carbon technologies	As the name suggests, low-carbon technologies generates fewer carbon emissions than traditional technology and helps build resilience in vulnerable countries while protecting against exposure to extreme climate change events.
Adaptive Capacity	Adaptive capacity is the ability of a system (human, natural or managed) to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with consequences
Vulnerability Assessment	It analyses likely climate risks posed by climate change and provides information for identifying measures to adapt to climate change impacts. It enables practitioners and decision-makers to identify the most vulnerable areas, sectors and social groups.

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List of hotspot districts, their vulnerability indices and rank³

Rank	District	Event	Exposure	Sensitivity	Adaptive Capacity	Vulnerability Index	Vulnerability
1	Dhemaji	Flood	0.98	0.9	0.35	1	Very High
1	Khamman	Flood & Drought	0.45	0.74	0.14	1	Very High
1	Gajapati	Flood & Cyclone	0.875	0.96	0.36	1	Very High
1	Vizianagaram	Drought & Cyclone	0.909	1	0.4	1	Very High
1	Sangli	Drought	0.82	1	0.47	1	Very High
1	Nagaon	Flood, Drought & Cyclone	0.83	0.89	0.47	1	Very High
2	Chennai	Flood & Cyclone	1	0.69	0.45	0.976	Very High
3	Madhepura	Flood & Drought	0.86	0.75	0.29	0.935	Very High
3	Imphal East	Flood & Cyclone	0.72	1	0.49	0.935	Very High
4	Sitamarhi	Flood & Drought	0.97	0.71	0.31	0.934	Very High
4	Banka	Flood & Cyclone	0.61	0.77	0.32	0.934	Very High
5	Jaisalmer	Drought	0.99	0.69	0.42	0.932	Very High
6	Pashchim Champaran	Flood	0.81	0.95	0.33	0.925	Very High
7	Darbhanga	Flood, Drought & Cyclone	0.925	0.81	0.35	0.917	Very High
8	Khagaria	Flood	0.78	0.99	0.31	0.91	Very High
9	Araria	Flood	0.7	0.98	0.3	0.907	Very High
10	Lakhimpur	Flood	0.95	0.87	0.41	0.869	Very High
11	Jodhpur	Drought	0.99	0.73	0.48	0.863	Very High
12	Jalor	Drought & Cyclone	0.818	1	0.42	0.857	Very High
13	Darrang	Flood & Drought	0.96	0.8	0.38	0.85	Very High
14	Mahbubnagar	Flood & Drought	0.63	1	0.32	0.828	Very High
15	Ahmadnagar	Drought	0.96	0.65	0.44	0.813	Very High
16	Dhubri	Flood	0.98	0.88	0.43	0.796	Very High
17	Jagatsinghapur	Flood & Cyclone	0.83	0.84	0.56	0.792	Very High
18	Dibrugarh	Flood	0.95	0.98	0.44	0.791	Very High
19	Bijnor	Drought	0.82	0.62	0.37	0.788	Very High
20	Khordha	Flood, Drought & Cyclone	0.95	0.9	0.48	0.763	Very High
21	Purnia	Flood	0.59	0.97	0.29	0.751	Very High
22	Solapur	Drought	0.82	0.75	0.47	0.75	Very High
23	Tirunelveli	Flood & Drought	0.89	0.72	0.36	0.748	Very High

24	Golaghat	Flood	0.94	0.87	0.44	0.745	Very High
25	West Godavari	Flood, Drought & Cyclone	0.75	0.97	0.42	0.742	Very High
26	Goalpara	Flood & Drought	0.86	0.86	0.42	0.74	Very High
27	Dhule	Drought	0.82	0.75	0.48	0.734	Very High
27	Ganjam	Flood, Drought & Cyclone	0.875	0.92	0.47	0.734	Very High
28	Mumbai	Flood & Cyclone	0.94	0.76	0.62	0.733	Very High
29	Karbi Anglong	Flood	0.78	0.86	0.4	0.729	Very High
30	Barmer	Drought	0.99	0.57	0.45	0.719	Very High
31	Yamunanagar	Flood	0.78	0.95	0.38	0.713	Very High
32	Sonitpur	Flood	0.91	0.87	0.45	0.709	Very High
33	Nayagarh	Flood, Drought & Cyclone	1	0.74	0.45	0.705	Very High
34	Banswara	Drought	0.76	0.63	0.39	0.704	Very High
35	Kupwara	Flood	0.59	0.96	0.32	0.701	Very High
36	Bongaigaon	Flood	0.81	0.87	0.41	0.698	Very High
37	Buldana	Drought	0.82	0.65	0.44	0.694	Very High
38	Gulbarga	Drought	0.93	0.61	0.47	0.692	Very High
39	Jhunjhunun	Drought	0.82	0.73	0.5	0.686	Very High
40	Bijapur	Flood & Drought	0.93	0.66	0.38	0.679	Very High
41	Bara Banki	Flood	0.81	0.86	0.44	0.674	Very High
42	Barpeta	Flood & Drought	0.97	0.74	0.45	0.671	Very High
43	Samastipur	Flood & Drought	1	0.54	0.34	0.668	Very High
44	Jorhat	Flood	0.93	0.88	0.49	0.663	Very High
45	Pathanamthitta	Flood & Drought	0.74	0.92	0.44	0.651	Very High
46	Pashchim Medinipur	Flood & Cyclone	0.72	0.75	0.54	0.636	Very High
47	Pilibhit	Flood & Drought	0.63	0.78	0.33	0.626	Very High
47	West Siang	Flood & Drought	0.63	0.78	0.33	0.626	Very High
48	Jalaun	Drought	0.82	0.49	0.37	0.622	Very High
49	Hingoli	Drought	0.76	0.52	0.37	0.612	Very High
49	Jalgaon	Flood & Drought	0.63	0.97	0.42	0.612	Very High
50	Guntur	Flood, Drought & Cyclone	0.7	0.84	0.42	0.6	Very High
51	Anantapur	Flood & Drought	0.74	0.63	0.33	0.594	High
52	Osmanabad	Drought	0.96	0.55	0.51	0.593	High
53	Bhopal	Flood	0.7	0.93	0.37	0.586	High
54	Surendranagar	Flood & Drought	0.86	0.78	0.49	0.576	High

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55	Sheohar	Flood, Drought & Cyclone	0.575	0.86	0.37	0.573	High
56	Koppal	Flood & Drought	0.74	0.84	0.46	0.568	High
56	Sidhi	Drought	0.68	0.67	0.46	0.568	High
57	Krishna	Flood, Drought & Cyclone	0.85	0.7	0.45	0.567	High
58	Puri	Flood, Drought & Cyclone	1	0.7	0.53	0.566	High
59	Parbhani	Drought	0.82	0.43	0.36	0.561	High
60	Agra	Drought	0.68	0.69	0.48	0.56	High
61	Kushinagar	Flood & Drought	0.89	0.7	0.47	0.557	High
61	Nandurbar	Drought	0.76	0.55	0.43	0.557	High
61	Nagpur	Drought	0.68	0.8	0.56	0.557	High
62	East Siang	Flood	0.9	0.94	0.4	0.556	High
63	Baleshwar	Flood, Drought & Cyclone	0.675	0.91	0.48	0.548	High
64	Patna	Flood & Drought	0.89	0.57	0.39	0.547	High
65	Kendrapara	Flood & Cyclone	0.61	0.76	0.54	0.546	High
66	Ahmadabad	Flood & Drought	0.93	0.75	0.54	0.543	High
67	Karimganj	Flood	0.91	0.93	0.47	0.542	High
68	Satara	Drought	0.82	0.65	0.57	0.536	High
69	Sri Potti Sriramulu Nellore	Flood, Drought & Cyclone	0.75	0.83	0.5	0.534	High
70	Bidar	Drought	0.93	0.48	0.48	0.533	High
71	Chittoor	Flood	0.81	1	0.51	0.532	High
72	Hardoi	Drought	0.68	0.49	0.36	0.531	High
73	Yadgir	Drought	0.76	0.51	0.42	0.529	High
73	Ramanagara	Drought	0.82	0.54	0.48	0.529	High
74	Akola	Drought	0.68	0.7	0.52	0.525	High
75	Kishanganj	Flood	0.87	0.68	0.29	0.522	High
76	Auraiya	Flood & Drought	0.57	0.81	0.38	0.511	High
77	Bagalkot	Flood & Drought	0.74	0.77	0.47	0.51	High
78	Saharsa	Flood, Drought & Cyclone	0.4	0.85	0.29	0.502	High
79	Muzaffarpur	Flood & Drought	0.74	0.58	0.36	0.501	High
79	Nanded	Drought	0.76	0.46	0.4	0.501	High
80	Vaishali	Flood & Drought	0.63	0.68	0.36	0.5	High
81	Tinsukia	Flood	0.7	0.85	0.47	0.497	High

82	Bid	Drought	0.82	0.58	0.55	0.496	High
83	Thanjavur	Flood, Drought & Cyclone	0.525	0.81	0.37	0.493	High
84	Cachar	Flood & Drought	0.96	0.61	0.5	0.492	High
85	Mysore	Drought	0.82	0.52	0.5	0.489	High
86	Churu	Flood	0.87	0.91	0.46	0.486	High
87	Aurangabad	Flood & Drought	0.74	0.81	0.52	0.485	High
88	Sivasagar	Flood & Drought	0.93	0.63	0.51	0.483	High
89	Gopalganj	Flood	0.47	0.85	0.32	0.482	High
90	Rohtas	Drought & Cyclone	0.545	0.74	0.37	0.48	High
91	Nagappattinam	Flood, Drought & Cyclone	0.575	0.7	0.36	0.479	High
92	Nagaur	Flood & Drought	0.86	0.62	0.47	0.477	High
92	Rajouri	Flood	0.81	0.91	0.55	0.477	High
93	Tiruppur	Drought	0.68	0.44	0.36	0.476	High
94	Bhadrak	Flood, Drought & Cyclone	0.65	0.8	0.47	0.474	High
95	North 24 Parganas	Flood & Cyclone	0.44	0.87	0.52	0.468	High
96	West Tripura	Flood	1	0.51	0.46	0.455	High
97	Thoothukkudi	Flood & Drought	0.89	0.52	0.43	0.452	High
98	Kullu	Flood & Drought	0.89	0.6	0.5	0.449	High
98	Gadag	Flood & Drought	0.63	0.83	0.49	0.449	High
99	Chamrajnagar	Drought	0.82	0.36	0.38	0.445	High
100	Bhagalpur	Flood, Drought & Cyclone	0.4	0.88	0.34	0.444	High
102	Dharwad	Flood & Drought	0.74	0.71	0.5	0.442	High
101	Kamrup	Flood	0.59	0.89	0.44	0.441	High
101	Cuddalore	Flood & Drought	0.74	0.61	0.43	0.441	High
102	Chitradurga	Flood	0.7	0.86	0.49	0.438	High
103	Pali	Drought	0.82	0.4	0.43	0.437	High
103	Rajkot	Flood, Drought & Cyclone	0.625	0.88	0.54	0.437	High
104	Bishnupur	Flood	0.59	0.89	0.46	0.434	High
105	Darjiling	Flood	0.7	0.86	0.52	0.428	High
105	Marigaon	Flood & Drought	0.45	0.86	0.38	0.428	High
106	Hassan	Drought	0.82	0.46	0.51	0.424	High
107	Jhansi	Drought	0.68	0.51	0.47	0.423	High
108	Jaipur	Drought	0.76	0.53	0.55	0.42	High

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109	Ajmer	Drought	0.96	0.33	0.44	0.413	High
110	Y.s.r.	Flood, Drought & Cyclone	0.5	0.94	0.49	0.411	High
110	Madhubani	Flood & Drought	1	0.44	0.45	0.411	High
111	Bulandshahr	Drought	0.41	0.62	0.36	0.405	Moderate
112	Ghaziabad	Flood & Drought	0.57	0.81	0.48	0.404	Moderate
113	Kinnaur	Flood	0.7	0.8	0.53	0.397	Moderate
114	Gorakhpur	Flood	0.59	0.85	0.47	0.396	Moderate
114	Hugli	Flood	0.59	0.93	0.48	0.396	Moderate
114	Raichur	Flood & Drought	0.57	0.71	0.43	0.396	Moderate
115	Latur	Drought	0.82	0.42	0.5	0.395	Moderate
116	Kangra	Flood	0.7	0.95	0.56	0.394	Moderate
117	Pune	Flood & Drought	0.74	0.79	0.63	0.39	Moderate
118	Munger	Flood & Drought	0.45	0.72	0.35	0.389	Moderate
118	Koraput	Flood & Cyclone	0.44	0.5	0.36	0.389	Moderate
119	Saran(chhapra)	Flood & Drought	0.45	0.69	0.34	0.384	Moderate
120	Mandi	Flood	0.59	0.51	0.52	0.383	Moderate
121	Ernakulam	Flood & Drought	0.74	0.65	0.53	0.382	Moderate
122	Jaunpur	Drought	0.68	0.45	0.46	0.381	Moderate
123	Amreli	Drought	0.41	0.58	0.36	0.379	Moderate
124	Srinagar	Flood & Drought	0.72	0.7	0.56	0.378	Moderate
125	Nainital	Flood & Drought	0.63	0.57	0.4	0.377	Moderate
125	Kiphire	Flood	0.47	0.93	0.4	0.377	Moderate
125	Upper Siang	Flood	0.47	0.95	0.31	0.377	Moderate
126	Nalgonda	Flood & Drought	0.63	0.48	0.34	0.374	Moderate
127	Fatehpur	Drought	0.41	0.55	0.35	0.369	Moderate
128	Nalbari	Flood & Drought	0.45	0.85	0.44	0.365	Moderate
128	Jalpaiguri	Flood	0.47	0.92	0.45	0.365	Moderate
129	Bellary	Drought	0.82	0.37	0.48	0.362	Moderate
129	North (Sikkim)	Flood	0.59	0.97	0.55	0.362	Moderate
130	South (Sikkim)	Flood	0.59	0.93	0.55	0.361	Moderate
130	Kollam	Flood & Drought	0.45	0.63	0.33	0.361	Moderate
131	Cuttack	Flood, Drought & Cyclone	0.75	0.59	0.53	0.358	Moderate
132	Bhilwara	Drought	0.96	0.29	0.45	0.355	Moderate
132	Bangalore	Drought	0.76	0.35	0.43	0.355	Moderate
133	Kachchh	Flood, Drought & Cyclone	0.375	0.97	0.44	0.354	Moderate
134	Virudunagar	Drought	0.41	0.54	0.36	0.353	Moderate

135	Amravati	Flood & Drought	0.45	0.78	0.42	0.351	Moderate
136	Ballia	Flood & Drought	0.57	0.71	0.49	0.347	Moderate
137	Tikamgarh	Flood	0.47	0.81	0.46	0.345	Moderate
138	Doda	Flood	0.7	0.76	0.56	0.342	Moderate
139	Junagadh	Drought & Cyclone	1	0.34	0.44	0.34	Moderate
140	Belgaum	Flood & Drought	0.57	0.75	0.53	0.339	Moderate
141	Banas Kantha	Flood & Drought	0.45	0.84	0.47	0.338	Moderate
142	Tumkur	Drought	0.93	0.34	0.54	0.336	Moderate
143	Jamnagar	Flood, Drought & Cyclone	0.4	0.84	0.43	0.335	Moderate
144	Etawah	Drought	0.41	0.54	0.38	0.334	Moderate
145	Mandya	Drought	0.82	0.38	0.54	0.331	Moderate
146	Visakhapatnam	Flood, Drought & Cyclone	0.525	0.79	0.54	0.329	Moderate
147	Srikakulam	Flood, Drought & Cyclone	0.7	0.48	0.44	0.327	Moderate
148	Nashik	Flood & Drought	0.72	0.61	0.57	0.324	Moderate
149	Bangalore Rural	Drought	0.82	0.3	0.44	0.32	Moderate
149	Thoubal	Flood	0.47	0.91	0.47	0.32	Moderate
150	Jalna	Drought	0.41	0.65	0.48	0.318	Moderate
151	Garhchiroli	Drought	0.68	0.39	0.48	0.317	Moderate
151	Mahesana	Flood & Drought	0.57	0.7	0.53	0.317	Moderate
152	Katihar	Flood & Drought	0.45	0.5	0.3	0.315	Moderate
153	Viluppuram	Flood & Drought	0.45	0.63	0.38	0.314	Moderate
154	Namakkal	Drought	0.41	0.55	0.42	0.308	Moderate
155	Dewas	Drought	0.41	0.61	0.47	0.305	Moderate
156	Karur	Drought	0.41	0.54	0.42	0.302	Moderate
157	Palakkad	Drought	0.41	0.56	0.44	0.299	Moderate
158	Ratlam	Drought	0.41	0.58	0.46	0.296	Moderate
159	Shahdol	Drought	0.41	0.56	0.45	0.292	Moderate
160	Idukki	Flood & Drought	0.45	0.79	0.52	0.287	Moderate
161	Medak	Flood & Drought	0.28	0.8	0.33	0.285	Moderate
162	Nadia	Flood	0.47	0.96	0.5	0.281	Moderate
163	Mainpuri	Drought	0.68	0.35	0.49	0.278	Moderate
163	Chikkaballapura	Drought	0.82	0.29	0.49	0.278	Moderate
164	Haveri	Drought	0.76	0.33	0.52	0.276	Moderate
164	Sundargarh	Drought & Cyclone	0.363	0.88	0.51	0.276	Moderate
165	Hyderabad	Flood, Drought & Cyclone	0.35	0.93	0.51	0.274	Moderate

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166	Begusarai	Flood, Drought & Cyclone	0.25	0.84	0.33	0.273	Moderate
167	Sheopur	Drought	0.41	0.51	0.44	0.272	Moderate
168	New Delhi	Flood	0.44	0.63	0.66	0.267	Moderate
169	Pratapgarh	Drought	0.41	0.43	0.38	0.266	Moderate
170	Puducherry	Flood	0.47	0.36	0.48	0.263	Moderate
170	Panna	Drought	0.68	0.31	0.46	0.263	Moderate
171	Ratnagiri	Flood & Cyclone	0.17	0.89	0.37	0.26	Moderate
171	Etah	Drought	0.68	0.24	0.36	0.26	Moderate
172	Kanpur Nagar	Drought	0.41	0.43	0.39	0.259	Moderate
173	Maldah	Flood	0.47	0.86	0.47	0.258	Moderate
174	Dimapur	Flood	0.47	0.42	0.53	0.253	Moderate
175	Udaipur	Drought	0.96	0.22	0.48	0.252	Moderate
175	Imphal West	Flood	0.59	0.93	0.53	0.252	Moderate
175	Erode	Drought	0.41	0.45	0.42	0.252	Moderate
175	Chittaurgarh	Drought	0.76	0.26	0.45	0.252	Moderate
176	Kaushambi	Drought	0.41	0.34	0.32	0.25	Moderate
177	Lahul & Spiti	Flood	0.59	0.94	0.48	0.249	Moderate
178	Unnao	Drought	0.41	0.38	0.36	0.248	Moderate
178	Madurai	Flood & Drought	0.28	0.8	0.38	0.248	Moderate
179	Azamgarh	Flood & Drought	0.28	0.73	0.35	0.246	Moderate
181	Shivpuri	Drought	0.41	0.49	0.47	0.245	Moderate
182	Washim	Drought	0.41	0.52	0.5	0.244	Moderate
183	Giridih	Drought	0.41	0.36	0.35	0.242	Moderate
183	Anand	Flood	0.28	0.28	0.38	0.242	Moderate
184	Vidisha	Drought	0.41	0.5	0.49	0.24	Moderate
184	Thiruvananthapuram	Flood & Drought	0.57	0.51	0.51	0.24	Moderate
185	Warangal	Flood & Drought	0.28	0.69	0.34	0.239	Moderate
185	Rayagada	Flood	0.28	0.54	0.37	0.239	Moderate
186	Dakshina Kannada	Flood, Drought & Cyclone	0.25	1	0.45	0.238	Moderate
187	Bahraich	Flood	0.28	0.91	0.41	0.235	Moderate
187	Raigarh	Drought	0.41	0.49	0.49	0.235	Moderate
188	Mau	Drought	0.41	0.44	0.45	0.23	Moderate
188	Umaria	Drought	0.41	0.44	0.45	0.23	Moderate
188	Hamirpur	Flood & Drought	0.45	0.68	0.56	0.23	Moderate
189	Banda	Flood & Drought	0.28	0.68	0.35	0.229	Moderate
190	Mahoba	Drought	0.41	0.32	0.33	0.228	Moderate

190	Kasaragod	Flood & Drought	0.28	0.89	0.46	0.228	Moderate
190	Ariyalur	Drought	0.41	0.31	0.32	0.228	Moderate
191	Chandrapur	Drought	0.41	0.5	0.52	0.226	Moderate
192	Chirang	Flood	0.28	0.93	0.39	0.225	Moderate
193	Hailakandi	Flood	0.28	0.92	0.42	0.222	Moderate
193	Bokaro	Drought	0.41	0.33	0.35	0.222	Moderate
194	Farrukhabad	Drought	0.41	0.43	0.46	0.22	Moderate
195	Bardhaman	Flood	0.28	0.76	0.58	0.217	Moderate
196	Gondiya	Drought	0.41	0.42	0.46	0.215	Moderate
197	Thrissur	Flood & Drought	0.45	0.54	0.49	0.208	Low
198	Sehore	Drought	0.41	0.43	0.49	0.206	Low
198	Perambalur	Drought	0.41	0.28	0.32	0.206	Low
199	East Godavari	Flood, Drought & Cyclone	0.75	0.33	0.52	0.204	Low
199	Rampur	Drought	0.41	0.26	0.3	0.204	Low
200	Ashoknagar	Drought	0.41	0.39	0.46	0.199	Low
200	Dumka	Drought	0.76	0.21	0.46	0.199	Low
200	Kolar	Drought	0.93	0.19	0.51	0.199	Low
201	North Tripura	Flood	0.28	0.83	0.43	0.196	Low
201	Sagar	Flood & Drought	0.28	0.85	0.51	0.196	Low
201	Kulgam	Flood	0.28	0.97	0.46	0.196	Low
202	Muzaffarnagar	Flood & Drought	0.28	0.59	0.36	0.193	Low
202	Nalanda	Flood & Drought	0.28	0.54	0.33	0.193	Low
203	Kurnool	Flood & Drought	0.74	0.29	0.47	0.192	Low
204	Mathura	Drought	0.41	0.39	0.48	0.191	Low
205	Kheri	Flood	0.28	0.89	0.47	0.19	Low
205	Anantnag	Flood	0.47	0.99	0.57	0.19	Low
206	Prakasam	Flood, Drought & Cyclone	0.475	0.39	0.43	0.185	Low
207	Rajsamand	Drought	0.96	0.14	0.42	0.183	Low
208	Kanpur Dehat	Flood & Drought	0.28	0.58	0.38	0.18	Low
209	Patan	Flood & Drought	0.28	0.74	0.49	0.178	Low
210	Rewa	Flood & Drought	0.28	0.75	0.5	0.177	Low
211	Mirzapur	Drought	0.41	0.27	0.36	0.176	Low
211	Jajapur	Flood	0.28	0.79	0.52	0.176	Low
212	Vellore	Drought	0.41	0.33	0.45	0.172	Low
212	Theni	Drought & Cyclone	0.363	0.42	0.39	0.172	Low
213	Wardha	Flood & Drought	0.28	0.72	0.51	0.166	Low

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214	Thiruvallur	Flood, Drought & Cyclone	0.25	0.85	0.56	0.163	Low
215	Chhatarpur	Flood & Drought	0.28	0.66	0.48	0.162	Low
216	Siwan	Flood & Drought	0.16	0.81	0.34	0.16	Low
216	Bhojpur	Flood, Drought & Cyclone	0.15	0.87	0.35	0.16	Low
217	Tiruchirappalli	Drought & Cyclone	0.545	0.3	0.46	0.156	Low
218	Sawai Madhopur	Drought	0.41	0.31	0.47	0.155	Low
218	Chitrakoot	Drought	0.41	0.29	0.44	0.155	Low
219	Krishnagiri	Drought	0.41	0.23	0.35	0.154	Low
220	Porbandar	Flood, Drought & Cyclone	0.25	0.7	0.49	0.153	Low
221	Shimoga	Flood & Drought	0.28	0.67	0.52	0.152	Low
222	Alappuzha	Flood & Drought	0.28	0.63	0.5	0.148	Low
223	Adilabad	Flood & Drought	0.16	0.69	0.32	0.145	Low
224	Deoria	Flood & Drought	0.45	0.33	0.44	0.142	Low
225	Bhind	Drought	0.41	0.31	0.52	0.14	Low
226	Rangareddy	Flood & Drought	0.63	0.19	0.37	0.136	Low
227	Pithoragarh	Flood & Drought	0.16	0.7	0.36	0.131	Low
228	Kozhikode	Flood, Drought & Cyclone	0.15	0.99	0.49	0.13	Low
229	Morena	Drought	0.41	0.28	0.51	0.129	Low
230	Faizabad	Flood & Drought	0.16	0.84	0.44	0.128	Low
230	East Nimar	Drought	0.41	0.25	0.46	0.128	Low
231	Yavatmal	Drought	0.41	0.27	0.51	0.124	Low
232	Uttara Kannada	Flood, Drought & Cyclone	0.15	0.94	0.5	0.121	Low
233	Balrampur	Flood & Drought	0.16	0.69	0.39	0.119	Low
234	Damoh	Flood & Drought	0.28	0.48	0.48	0.118	Low
234	Aligarh	Flood & Drought	0.16	0.84	0.48	0.118	Low
235	Jammu	Flood & Cyclone	0.17	0.6	0.58	0.112	Low
236	Tiruvannamalai	Drought	0.41	0.21	0.45	0.11	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
238	Karnal	Flood	0.28	0.22	0.5	0.107	Low
238	Purba Champaran	Flood & Cyclone	0.11	0.75	0.49	0.107	Low

239	Coimbatore	Flood & Drought	0.16	0.62	0.41	0.102	Low
240	Shimla	Flood	0.28	0.43	0.55	0.1	Low
241	Kottayam	Flood & Drought	0.16	0.62	0.44	0.095	Low
242	Gandhinagar	Drought	0.68	0.12	0.5	0.094	Low
243	Dindigul	Drought	0.41	0.19	0.48	0.093	Low
244	Chandel	Flood	0.28	0.28	0.46	0.092	Low
245	Gaya	Drought	0.41	0.14	0.36	0.091	Low
246	Kannur	Flood, Drought & Cyclone	0.1	0.98	0.49	0.086	Low
247	Bharuch	Flood & Drought	0.16	0.64	0.52	0.083	Low
248	Satna	Flood & Drought	0.16	0.61	0.5	0.082	Low
249	Bilaspur	Flood & Drought	0.16	0.56	0.47	0.08	Low
249	Sikar	Drought	0.68	0.1	0.49	0.08	Low
250	Vadodara	Flood & Drought	0.45	0.19	0.49	0.073	Low
251	Sivaganga	Drought & Cyclone	0.545	0.14	0.48	0.07	Low
252	Thiruvapur	Drought	0.68	0.07	0.41	0.067	Low
253	Thane	Flood & Cyclone	0.17	0.38	0.62	0.066	Low
254	Surat	Flood & Cyclone	0.17	0.32	0.53	0.065	Low
255	Ramanathapuram	Flood, Drought & Cyclone	0.1	0.7	0.49	0.061	Low
256	Shajapur	Flood & Drought	0.16	0.41	0.47	0.059	Low
257	Saharanpur	Drought	0.41	0.08	0.36	0.052	Low
258	Kolkata	Flood & Cyclone	0.06	0.55	0.47	0.045	Low
259	Kalahandi	Flood & Drought	0.04	0.7	0.3	0.039	Low
259	Nizamabad	Flood & Drought	0.04	0.7	0.3	0.039	Low
260	Sitapur	Flood	0.28	0.18	0.48	0.038	Low
261	Ambedkar Nagar	Flood & Drought	0.04	0.71	0.34	0.035	Low
262	Kurukshetra	Drought	0.41	0.07	0.51	0.032	Low
263	Ghazipur	Flood & Drought	0.04	0.68	0.37	0.031	Low
263	Budaun	Flood & Drought	0.04	0.78	0.43	0.031	Low
264	Buxar	Flood, Drought & Cyclone	0.025	0.9	0.34	0.028	Low
264	Shahjahanpur	Flood & Drought	0.04	0.58	0.35	0.028	Low
265	Bankura	Flood & Drought	0.04	0.77	0.51	0.025	Low
266	Allahabad	Flood & Drought	0.04	0.62	0.49	0.021	Low
267	The Nilgiris	Flood & Drought	0.04	0.4	0.34	0.02	Low
268	Kanniyakumari	Flood, Drought & Cyclone	0.025	0.77	0.46	0.018	Low

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269	Jabalpur	Flood & Drought	0.04	0.49	0.51	0.016	Low
270	Lakhsisarai	Flood & Drought	0.04	0.11	0.32	0.006	Low
271	Rohtak	Flood & Drought	0.04	0.12	0.38	0.005	Low
272	Kodagu	Flood & Drought	0.04	0.01	0.49	0	Very Low
272	Bandipore	Flood	0.28	0.46	0.52	0	Very Low
272	Aizawl	Flood	0	1	0.51	0	Very Low
272	Ambala	Flood	0	0.79	0.38	0	Very Low
272	Anugul	Flood	0	0.97	0.44	0	Very Low
272	Birbhum	Flood	0	0.73	0.44	0	Very Low
272	Chandauli	Flood	0	0.49	0.35	0	Very Low
272	Chandigarh	Flood	0	0.79	0.48	0	Very Low
272	Chikmagalur	Flood	0	0.99	0.49	0	Very Low
272	Dhalai	Flood	0	0.91	0.45	0	Very Low
272	Hardwar	Flood	0	0.79	0.5	0	Very Low
272	Kancheepuram	Flood	0	0.72	0.4	0	Very Low
272	Kandhamal	Flood	0	0.57	0.31	0	Very Low
272	Katni	Flood	0	0	0.48	0	Very Low
272	Kokrajhar	Flood	0	0.86	0.39	0	Very Low
272	Leh (ladakh)	Flood	0	0.94	0.6	0	Very Low
272	Lohit	Flood	0	0.08	0.33	0	Very Low
272	Malkangiri	Flood	0	0.68	0.34	0	Very Low
272	Mandla	Flood	0	0.52	0.46	0	Very Low
272	Puruliya	Flood	0	0.91	0.52	0	Very Low
272	Sabar Kantha	Flood	0	0.94	0.54	0	Very Low
272	Shrawasti	Flood	0	0.81	0.29	0	Very Low
272	Sirsa	Flood	0	0.69	0.48	0	Very Low
272	South 24 Parganas	Flood	0	0.85	0.55	0	Very Low
272	South Garo Hills	Flood	0	0.96	0.46	0	Very Low
272	South Goa	Flood	0	0.85	0.33	0	Very Low
272	Supaul	Flood	0	0.83	0.3	0	Very Low
272	The Dangs	Flood	0	0.1	0.47	0	Very Low
272	Uttarkashi	Flood	0	0.22	0.47	0	Very Low
272	Balaghat	Flood & Drought	0	0.66	0.47	0	Very Low
272	Balangir	Flood & Drought	0	0.66	0.47	0	Very Low
272	Chatra	Flood & Drought	0	0.3	0.32	0	Very Low
272	Karimnagar	Flood & Drought	0.74	0	0.33	0	Very Low
272	Sultanpur	Flood & Drought	0	0.48	0.46	0	Very Low

272	Navsari	Flood & Cyclone	0	0.64	0.51	0	Very Low
272	North Goa	Flood & Cyclone	0.39	0	0.48	0	Very Low
272	Alwar	Drought	0	0.63	0.54	0	Very Low
272	Anuppur	Drought	0	0.28	0.45	0	Very Low
272	Baran	Drought	0	0.48	0.46	0	Very Low
272	Bareilly	Drought	0	0.55	0.45	0	Very Low
272	Basti	Drought	0	0.45	0.32	0	Very Low
272	Bhandara	Drought	0	0.52	0.37	0	Very Low
272	Bhiwani	Drought	0	0.46	0.37	0	Very Low
272	Bikaner	Drought	0	0.69	0.5	0	Very Low
272	Bundi	Drought	0	0.37	0.43	0	Very Low
272	Burhanpur	Drought	0	0.56	0.44	0	Very Low
272	Datia	Drought	0	0.1	0.49	0	Very Low
272	Dausa	Drought	0	0.25	0.47	0	Very Low
272	Davanagere	Drought	0.82	0	0.44	0	Very Low
272	Deoghar	Drought	0	0.47	0.48	0	Very Low
272	Dhamtari	Drought	0	0.26	0.42	0	Very Low
272	Dhanbad	Drought	0	0.29	0.51	0	Very Low
72	Dhar	Drought	0	0.58	0.43	0	Very Low
272	Dharmapuri	Drought	0	0.43	0.34	0	Very Low
272	Dindori	Drought	0	0.41	0.44	0	Very Low
272	Dungarpur	Drought	0	0.38	0.39	0	Very Low
272	Durg	Drought	0	0.32	0.46	0	Very Low
272	Firozabad	Drought	0	0.56	0.47	0	Very Low
272	Garhwa	Drought	0	0.27	0.32	0	Very Low
272	Gautam Buddha Nagar	Drought	0	0.54	0.52	0	Very Low
272	Godda	Drought	0	0.37	0.31	0	Very Low
272	Gumla	Drought	0	0.37	0.32	0	Very Low
272	Guna	Drought	0	0.44	0.44	0	Very Low
272	Gurgaon	Drought	0	0.72	0.52	0	Very Low
272	Gwalior	Drought	0	0.32	0.51	0	Very Low
272	Hanumangarh	Drought	0	0.56	0.48	0	Very Low
272	Hazaribagh	Drought	0	0.34	0.48	0	Very Low
272	Hisar	Drought	0	0.3	0.52	0	Very Low
272	Indore	Drought	0	0.52	0.5	0	Very Low
272	Jamtara	Drought	0	0.41	0.32	0	Very Low
272	Jamui	Drought	0	0.27	0.32	0	Very Low
272	Janjgir-champa	Drought	0	0.33	0.49	0	Very Low

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272	Jehanabad	Drought	0	0.32	0.33	0	Very Low
272	Jhabua	Drought	0	0.61	0.38	0	Very Low
272	Jhalawar	Drought	0	0.5	0.45	0	Very Low
272	Jyotiba Phule Nagar	Drought	0	0.52	0.44	0	Very Low
272	Kabeerdham	Drought	0	0.37	0.3	0	Very Low
272	Kannauj	Drought	0	0.35	0.36	0	Very Low
272	Kodarma	Drought	0	0.36	0.33	0	Very Low

**Source: Mapping India's Climate Vulnerability – A District Level Assessment. New Delhi: Council on Energy, Environment and Water.*

