



सत्यमेव जयते

Ministry of Health & Family Welfare
Government of India

Health and Climate

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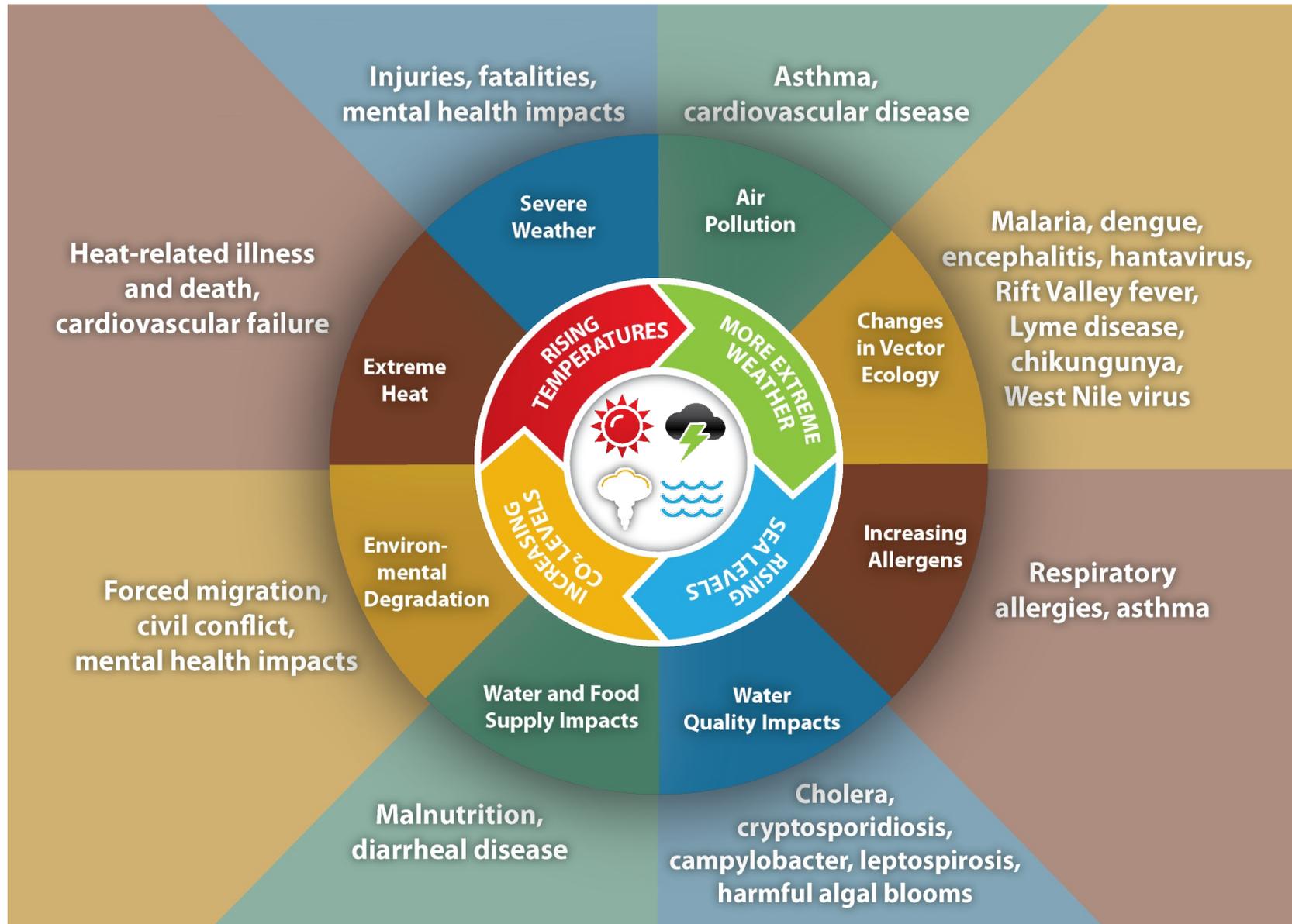
National Program on Climate Change and Human Health,

National Centre for Disease Control



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

Climate Change & Health



Effects of climate change on health – India

1 – Extreme Heat

- 9 deaths/100,000 population due to high temperature (GBD, 2019)¹
- Increase in cardiovascular, respiratory, renal diseases
- Excess mortality with rising temperature

2 - Extreme Weather Events

- EWE increasing ☹ overall reduction in mortality due to cyclone, flooding
- ↑Mortality rate/million due to heatwave (62%) and lightning (53%)²
- Health impacts (knowledge gap)

3 - Vector and Water Borne Diseases

- Dengue: ↑transmission in northern India due to higher temperatures
- Malaria: expansion to Himalayan states by 2030³
- Humidity, flooding, sea level rise ☹ Diarrhea (Cholera)⁴, vector-borne outbreaks

4 - Malnutrition

- Agriculture vulnerability to climate change exacerbates malnutrition
- Children living in vulnerable districts: ↑odds of stunting (32%), wasting (42%), underweight (45%) and anemia (63%)⁵

5 - Air Pollution

- 1.67 million annual deaths, 1/4 chronic respiratory, cardiovascular diseases linked to long-term exposure (outdoor and household) (GBD, 2019)¹
- Reduces Indian life expectancy by average 6.3 years⁶
- ~All residents live in areas where annual avg. particulate pollution level >5 µg/m³

National Programme on Climate Change and Human Health

- Established in 2019, under NHM - Centre and State share funds to implement annual health plans
- Presently has a designated officer in all State as well as District health departments.
- Multisectoral Task Force and Governing Body to supervise
- Long term State and District Action Plan on Climate Change and Human Health

- *Air pollution related illnesses (ARI)*

- *Heat related Illnesses (HRI) and deaths*

- *Extreme weather events*

- *Climate resilient Infrastructure*

- *Vector-borne diseases**

- *Health Vulnerability Assessment*

- Water-borne diseases*

- Cardio-pulmonary Diseases*

- Allergic Diseases

- Nutrition related diseases

- Mental Health*

- Zoonoses*

- Occupational Health

Use of Meteorology in NPCCHH

1. **National Heat-related illness and deaths surveillance** (on IHIP portal since March 2023)

- Reporting from all health facilities PHC and above level, daily (March 1-July 31)
- Aggregate of heatstroke cases and deaths – total, cardiovascular and others
- IMD's API is linked with HRI surveillance platform: daily Tmax, Tmin, Relative humidity data
- IMD's forecast bulletins are shared along with health advisories through emails and whatsapp to DNOs
- Require collaboration for complex analyses with meteorological parameters and complex parameters – heat and severe heat waves, continued days of heat waves, heat-humidity indexes etc.
- Threshold computations for cities and different geo-climatic zones for planning services

2. **National Outdoor Air and Disease surveillance** (on-boarding to IHIP portal)

- Reporting from emergency department of sentinel hospitals listed from NCAP Cities
- Acute and exacerbation of chronic respiratory illness (ARI) visits, admissions, interventions
- CPCB's AQI API linked with ARI surveillance
- IMD's Air Quality Forecast bulletins along with advisories shared through emails and whatsapp to DNOs
- Require collaboration for complex analyses with air pollution parameters

Use of Meteorology in NPCCHH

3. **Early Warning, Alert and Response System (EWARS) for Dengue**

- Predicting forthcoming outbreak through meteorological, epidemiological and entomological indicators – proposed experiment in few States – awaiting availability of servers to host application given by WHO-TDR
- Require collaboration to explore potential use of threshold information provided by IMD for malaria and dengue

Vulnerability/Risk Assessments for Planning and Implementation

4. **Health Vulnerability/Risk Assessment**

- Ranking districts and sub-districts for health vulnerability (climate-sensitive conditions) accounting for extreme weather, demographics, socio-economic status and availability of health services

5. **Climate-resilient health facility infrastructure**

- Understanding climate vulnerability for planning construction of health facility. HCFs are geo-tagged.

Early warning for all climate change-related extreme events

6. **Activate health sector preparedness to extreme weather event – pre-cyclone warnings to DNOs**

IMD's Weather Forecast bulletins shared with Advisories through emails and whatsapp to DNOs

7. **Jointly design health impact based messaging: automated messaging at thresholds to community**

Use of Meteorology in NPCCHH

1. Historical data of meteorological time trends, hotspot maps, extreme weather events at state to sub-district levels
 - Hazard + health impact awareness for listed places
 - Health sector planning for resilience
 - Health infrastructure planning
2. Localized threshold identification based on meteorological indicators (*only*)/ health impact-based (*joint work*)
 - e.g. percentile based Tmax threshold for local heat-health action plan
3. 34 States under NPPCCH have published State level Action Plans for CC & HH with separate chapters on air pollution, heat, EWE, CI resilient HCFs and some have on VBDs. Now drafting District Action Plans. Health being a state subject, better datasets available locally than at national level.
4. NPCCHH could help interested IMD scientists connect for joint work with district health departments on local datasets to strengthen these plans. NPCCHH linking districts to medical colleges for academic support, if required additional institutions be also joined to provide support for health-meteorology data analysis at local level.

Critical gaps in climate information

- District level (warning, forecast or recorded) data as database or API
 - As important planning and functional unit, district level data is important for action and analysis
 - Provide district level data or standardize methodology to convert recorded grided data to district level data
- Data on heatwave days at district levels
- Use of heat index or any equivalent for communicating individual's risk to heat
- Continued generation of heat hazard warnings/bulletins beyond seasonally identified dates of March 1-June 30
- Direct early warnings for different extreme weather events
- Visual information on projected climate impacts in India with different emission scenarios

Sectoral data availability

In public domain

- National Family Health Survey
- District level health survey
- Census

Under MoHFW/DGHS

- Disease surveillance and outbreak
 - Health programmes for specific data on health outcomes
 - Health facility locations
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- Health being State subject, better datasets available at local levels

Cross Sectoral Issues

- Climate – Agriculture information to project malnutrition issues
- Climate – Water quantity and quality information to project waterborne issues
- Climate – Energy information to identify where to invest solar power for HCFs

Needs for Capacity Building

- Capacity development of State and District programme officials to use and interpret climate and weather data available through portal and bulletins

Expectations from NFCS-India

- Nodal person for supporting NPCCHH routinely
 - Exploring joint data analysis in line with globally recognized health and climate change indicators
 - Technical inputs in improving surveillance portal integration, data visualization and inbuilt alert mechanisms
 - Information support in improving State and District Health Action Plans on Climate Change and Health
- Representation in Technical Expert Groups
 - Technical support in drafting and reviewing technical guidelines and surveillance systems

Perceived socio-economic benefits of using climate info

Institutional framework of NPCCHH from National ☾ Community level

- Effective and relevant communication for behavior change, health promotion and prevention
- Adequate understanding to ensure seasonal preparedness mechanisms in planning at all levels of health sectors and community-level for DRR
- Adequate time to implement urgent preparedness and response measures at health facilities
- Assess current and future health impacts for action
- Incorporate impacts in health infrastructure planning

Thank You!

- Known impacts of weather/climate
- Sectoral data availability and access
- Main features of climate-sensitive decision making
- Time/space scales of interest (including forecast requirements on short, medium, sub-seasonal, seasonal, annual and decadal ranges as well as climate change)
- Present sources of climate information (including arrangements with IMD, if any)
- Perceived socio-economic benefits of using climate information
- Critical gaps in climate information
- Needs for capacity development
- Cross-sectoral issues (e.g., water-energy-agriculture)
- Expectations from NFCS-India