Madhya Pradesh
State Action Plan on Climate Change

Sector Policy Brief: HUMAN HEALTH

Climate change is projected to affect almost all aspects of health, including the availability of food and safe drinking water, vulnerability to disease and disasters, and access to health care and relief services. India's Initial National Communication noted that the complexity of factors influencing the vulnerability of different demographic and geographic sections of India's population, as well as uncertainties around adaptive measures, make anticipation and planning difficult for the health sector. In Madhya Pradesh, the generally poor health status, risk of food insecurity, complex social structure and settlements scattered over vast areas of difficult terrain together pose formidable problems to the delivery of health services.

Overview of basic health and welfare situation in Madhya Pradesh

Among the 72.6 million people living in Madhya Pradesh (the country's 6th most populous state), 72.4% live in rural areas (Census 2011), and 38.3% live below the poverty line compared to 27.5% in India overall (Ministry of Social Justice and Empowerment, data for 2004–2005). For every 1,000 males there are just 930 females, compared to 940 nationally (Census 2011).

According to recent estimates, the inequality-adjusted Human Development Index (IHDI) for Madhya Pradesh ranks 19th out of 19 Indian states assessed, while the standard HDI for the State also ranks low at 16th. The HDI encompasses health, education and income. Life expectancy in Madhya Pradesh is 58 years (Suryanarayana et al., 2011).

The infant mortality rate (IMR) is another key indicator of health status. According to Census 2011 data (Annual Health Survey 2010–2011), the IMR in Madhya Pradesh is 67 per 1,000 live births (males 64, females 69;

urban 50, rural 72). Thirty districts of Madhya Pradesh are among the top 100 Indian districts with the highest IMR.

Health sector concerns and the potential impacts of climate change

Climate change is likely to increase the range and severity of the challenges faced by the health sector in Madhya Pradesh. Infections and other health conditions that are influenced by variations in temperature, precipitation and humidity will increasingly threaten human health.

Vector-borne diseases

Climate change is having an impact on temperature, precipitation and relative humidity, all of which affect the transmission and distribution of vector-borne diseases. Climate change may aggravate the problem of vectors and vector-borne diseases in anticipated and unanticipated ways.

Most cases of malaria in India (65%) occur in just 6 of the country's 28 states, including Madhya Pradesh. Half of the State's 50 districts are considered to be malaria 'hot spots', and 25% of cases occur in just 4 predominantly tribal districts where malaria is endemic: Dindori, Mandla, Dhar and Jhabua. The transmission window (during which the vector – the Anopheles mosquito – thrives) is likely to increase from around 4–5 months to approximately 8 months, with an associated increase in malarial morbidity and mortality, due to the projected 2.5°C rise in temperature by 2050 caused, in part, by climate change (NATCOM 2004, cited in SAPCC).

Other vector-borne diseases are also on the increase. There were more cases of dengue in 2009 compared to previous years, with 5 confirmed and 85 suspected deaths (State Vector Borne Disease Control Programme, cited in SAPCC). There has also been a re-emergence of the previously eradicated disease chikungunya, with 106 confirmed cases in 21 districts of Madhya Pradesh in 2006, mainly in the south. Dengue and chikungunya are both carried by the Aedes mosquito. The projected increase in temperatures will likely worsen the spread of these diseases.

Water-borne diseases

With an increase in extreme rainfall events anticipated due to climate change, there may be more frequent flooding and retention of stagnant water, bringing a greater risk of outbreaks of water-borne diseases. For example, cholera outbreaks have been increasingly frequent in recent years.

Heat stress

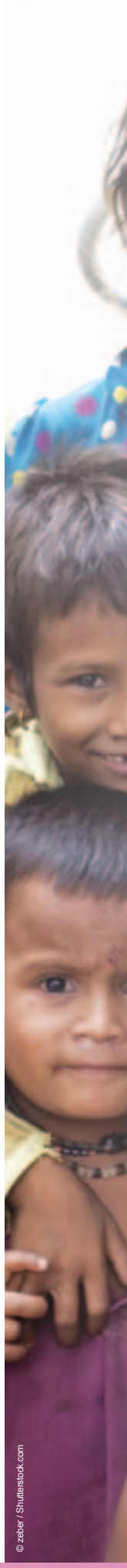
Heat stress occurs when temperatures over 40°C persist for a number of days. In Madhya Pradesh, there were just four heatwaves between 1968 and 1977, and 158 between 1978 and 1999. India has just experienced its warmest decade on record, 2001–2010, with an anomaly of 0.4°C, surpassing the previous record set in 1991–2000 by 0.2°C. In 2010, severe heatwaves were reported in Madhya Pradesh beginning as early as March. The overall increase in temperature, the increase in the number of warmer days and the greater frequency and severity of heatwaves and other extreme weather events will increase the risk of morbidity and mortality related to heat stress.

Pulmonary disorders

Climate change could increase air pollution levels, since increased temperatures may accelerate the atmospheric chemical reactions that produce photochemical oxidants. Increasingly extreme variations in temperatures coupled with an increase in air pollution and particulate matter have led to a rise in cases of pulmonary disorders (e.g. allergies, respiratory infections and bronchial asthma) in the State. This is expected to rise further, mainly affecting vulnerable sections of society, including children.

Nutrition and hunger

This area of human health is also very vulnerable to the effects of climate change. Madhya Pradesh has suffered in the recent past with high rates of calorie



undernourishment and underweight children. The Government has made this a priority area for action. Major adverse nutritional impacts are projected to affect a very large number of people due to crop failure caused by drought, loss of rain-dependent non-irrigated crops, and reduced cereal yields caused by high night temperatures.

Other health concerns

There may also be increased rates of skin inflammation and fungal disorders as a result of increased temperature and humidity. Another serious climate-related concern for the health sector is the problem of rapidly mutating strains of viruses and bacteria. The increase of chlorofluorocarbons (CFCs) in the atmosphere will increase UV radiation, which may weaken people's immune systems, increasing vulnerability to infectious diseases.

Natural disasters

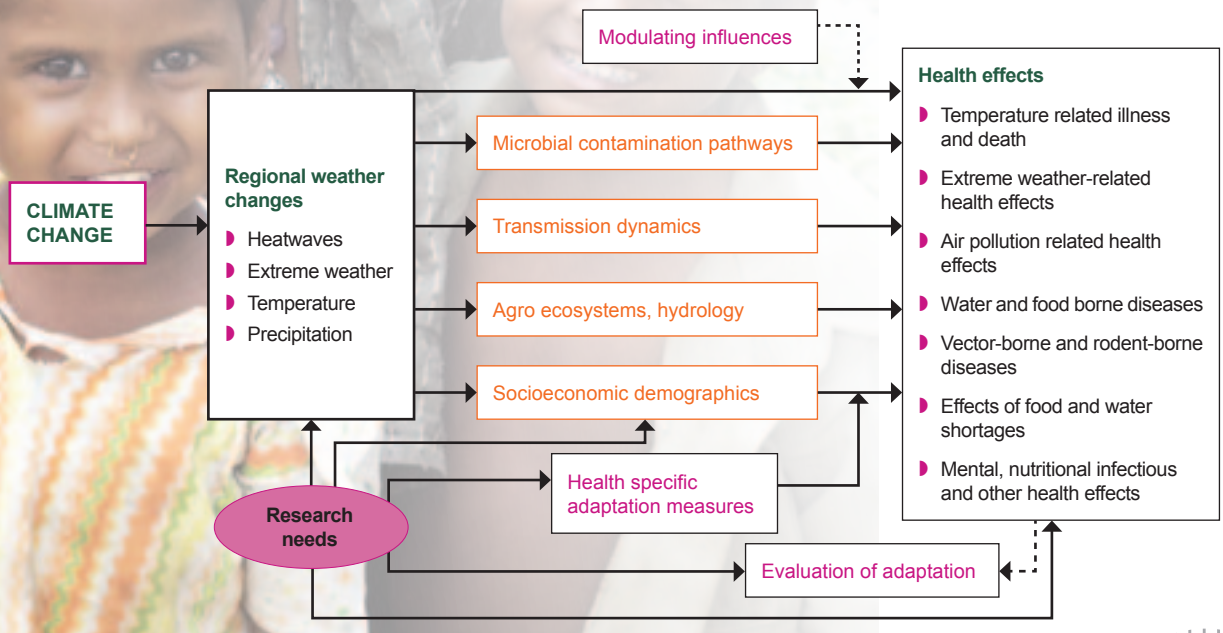
Madhya Pradesh is among the states in India that are most vulnerable to natural disasters, including droughts, floods and hailstorms. With climate change, such natural disasters can be expected to become more frequent and severe, straining the State's health disaster response system.

Key adaptation and mitigation strategies as set out in the SAPCC

The vulnerable health and welfare situation in Madhya Pradesh presents a major challenge for the State in facing the projected impacts of climate change. This is an opportunity to lay a sound foundation to cope with climate change, despite the many uncertainties. The key strategies are to:

- Improve disease surveillance for effective planning. The Health Department is currently undertaking intensive mapping of diseases at the community level across the State, under the Integrated Diseases Surveillance Programme, reflecting the level of vulnerability towards different diseases by location.

Health effects due to climate change



- Develop a robust early warning system for outbreaks of disease. A strong institutional mechanism is needed that integrates short-, medium- and long-term weather forecasting with dissemination of this information (and the health implications) to health professionals and the public.
- Strengthen health disaster management preparedness. Areas most vulnerable to floods, droughts and other weather-related disasters should have separate health delivery systems and health disaster management plans, and specific plans should be in place for control and management of each type of weather-related disease.
- Improve early diagnosis and treatment. Many remote and tribal areas lack health facilities for disease screening and also lack drug distribution centres. Such facilities are urgently needed, and medical professionals must be present. In remote areas, access could be improved through telemedicine or 'mobile health' interventions.
- Strengthen support systems for environmental health management. Source reduction measures are required for all vector-borne and water-borne diseases, including filling in breeding places, properly covering stored water and channelisation of breeding sources.
- Improve the monitoring and reporting mechanism to optimise accountability and outputs. A Monitoring and Evaluation Cell within the Directorate of Health and Family Welfare will compile information from all districts about ongoing health programmes. Monitoring reports will be generated and used as feedback for field observation and corrective actions.
- Raise public awareness on climate-related health issues to reduce risk. Such awareness should be generated through community-level groups, PRI, and educational programmes.
- Conduct research on climate change and health impacts. Studies are needed to map climate-related health vulnerability in different regions of the State, and to analyse potential links between climate change and health.
- Build capacity of health-care personnel and institutions. Capacity needs to be developed on the health impacts of climate change. Health activists and extension workers in remote areas need training on control and management of infectious diseases that are likely to increase in frequency.

Other identified health sector needs in Madhya Pradesh include strengthening drug supply-chain management and storage infrastructure, stringent laws on bio-medical waste management, and establishment of a fully-fledged epidemiology unit.

Finally, the Health and Family Welfare Department must create a Climate Change Cell to coordinate health-related climate change issues with the relevant line ministries at the national level.

Reference

Suryanarayana, M.H., Agrawal, A. and Seeta Prabhu, K. (2011). *Inequality-adjusted Human Development Index for India's States*. UNDP, New Delhi, India.

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The Madhya Pradesh State Action Plan on Climate Change (SAPCC) has been prepared by the Climate Change Cell, Environmental Planning and Coordination Organisation (EPCO), Housing & Environment Department. Government of Madhya Pradesh. The Plan outlines the strategies required to strengthen development planning and build a more climate-resilient State. It aims to promote the integration of appropriate adaptation/mitigation strategies into the State's development policies and programmes. It is based on secondary data and promotes 'no regret' measures.

In order to share the results of the Madhya Pradesh SAPCC and begin to address climate change concerns through development policies and programmes, the Climate Change Cell of EPCO commissioned a series of policy briefs. CDKN was tasked with producing these, based on the Madhya Pradesh SAPCC, as a Communications Project. This brief is one of a series of ten sector policy briefs, designed to inform stakeholders about the strategies and commitments established in the SAPCC that are of relevance to their sector. Further information can be found in the full SAPCC, available at http://www.epco.in/pdf/Draft_MP_SAPCC.pdf

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