

PRESS RELEASE

CSTEP Study: Prepare for Warmer Temperature and High-Intensity Rainfall Events in Eastern India

For Immediate Release

Bengaluru: 18 February 2022

A study by the Center for Study of Science, Technology and Policy (CSTEP)—a Bangalore-based think tank—on the climate of eastern India underscores the need for climate risk mapping and climate action. The study '*District-Level Changes in Climate: Historical Climate and Climate Change Projections for the Eastern States of India*' projects changes in temperature and rainfall patterns in Bihar, Jharkhand, Odisha, and West Bengal—the eastern states of India—over the next three decades compared to the historical period (1990–2019). It analysed two representative scenarios: moderate emissions (RCP 4.5) and high emissions (RCP 8.5).

Highlights from the study

- Historically (1990–2019), temperature and rainfall have increased and rainfall variability is high across all the eastern states.
- Climate change projections by CSTEP indicate an overall warming of both summer and winter minimum temperatures, an increase in the number of rainy days (>2.5 mm rainfall/day), and an increase in the number of heavy rainfall events across almost all the districts of the eastern states.
- Summer maximum and the winter minimum temperatures are projected to increase by 1°C to 2°C in the eastern Indian districts compared to the historical temperatures under the high emission RCP 8.5 scenario.
- The number of rainy days is projected to increase in the 2030s in all eastern Indian districts compared to the historical period. The increase is by 1 to 11 days under the RCP 4.5 scenario, with the maximum increase projected in West Bengal and a minimum increase projected in Odisha. The increase is by 1 to 15 days under the RCP 8.5 scenario, with the maximum increase projected in West Bengal.
- Rainfall during kharif (June to September) and rabi (October to December) seasons is projected to increase in the 2030s in almost all the districts of eastern India compared to the historical period. The projected increase in the kharif season rainfall is by 1% to 46% under the RCP 4.5 scenario and 6% to 36% under the RCP 8.5 scenario. The rabi season rainfall is projected to increase by 2% to 55% under the RCP 4.5 scenario and 2% to 85% under the RCP 8.5 scenario.
- The variability of both kharif and rabi season rainfall shows mixed trends in the 2030s across the districts of eastern India compared to the historical period. However, the decline in rainfall variability is more than the increase in all the states during kharif and rabi seasons.
- An increase in high-intensity (51–100 mm/day) and very high-intensity (>100 mm/day) rainfall events is projected in the 2030s across a majority of the districts of eastern India compared to the historical period. The increase in high-intensity rainfall events per annum is by one to three events under the RCP 4.5 scenario and one to four events under the RCP 8.5 scenario.

- A decline in rainfall deficient years is projected in the 2030s across a majority of the districts of eastern India compared to the historical period. The decline in rainfall deficient years is by 1 to 6 years out of 30 years under both RCP 4.5 and RCP 8.5 scenarios. The highest decline in rainfall deficient years is projected in Odisha.

These changes, particularly increase in heavy rainfall events, have implications on the amount of water in rivers, streams, and lakes and the replenishment of groundwater—which translate to water available for irrigation and drinking purposes. The climate projections indicate that conditions will become worse in the eastern Indian states, which are flood-prone. Given that droughts have also been witnessed by these states in the past, it is imperative to integrate climate information into planning and decision-making so as to climate-proof the districts of eastern India from floods and droughts. Cohesive planning that is cognizant of changes in climate will not only climate-proof investments but also buffer loss of lives, livelihoods, and infrastructure from extreme climate events.

The full report is available [here](#).

For more details and interviews, please write to us at cpe@cstep.in

About CSTEP: Headquartered in Bengaluru, the Center for Study of Science, Technology and Policy (CSTEP) is one of India’s leading think tanks with a mission to enrich policymaking with innovative approaches using science and technology for a sustainable, secure, and inclusive society. CSTEP’s areas of focus are Climate, Environment and Sustainability; Energy and Power; AI and Digital Platforms; and Strategic Studies.