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Climate change: Crisis is here & now

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Longer summers and erratic rainfall in Tamil Nadu have raised doubts over whether the state is experiencing impacts of climate change. Even if present-day weather uncertainties cannot be conclusively linked to climate change, there are several indications that unpredictable climate will become the norm in the coming years. Is the state prepared to deal with the situation?

The location of the state on the wrong side of the monsoonal curtain makes it more vulnerable to climate change. While the average annual rainfall for Tamil Nadu is 998 millimetres, the comparative figure for Kerala is 3,055mm. The Western Ghats block the monsoonal clouds as they enter the peninsula from the southwest. This also impacts the rivers flowing through the state, with only two riverine systems — Cauvery and Thamirabarani - emerging from the Western Ghats and thereby having water flow throughout the year. The other rivers in the state emerge from the drier hill tracts and have a good flow only when it rains, thereby making the state vulnerable to drought.

According to the Tamil Nadu State Action Plan for Climate Change (TNSAPCC), agriculture in the state is vulnerable. "The projected increase in minimum and maximum temperatures, decrease in number of rainfall days, increase in intensity of rainfall, carbon dioxide, cyclones, and rise in the sea level projected for the future have all implications vis-a-vis enhanced soil erosion, loss in soil nutrient, increase in pests and diseases, loss in productivity due to flooding of extended areas with respect to what is occurring now," says the report.

Tamil Nadu receives rainfall in two spells - first the southwest monsoon from July to September, and the northeast monsoon from October to December. According to the TNSAPCC, the trend in the past decade has shown the southwest monsoon has been decreasing from its share of 48% to 24%, and the northeast monsoon has increased from 34% to 63%. The steadier

southwest monsoon is better for agriculture unlike the northeast monsoon, which comes in short bursts of heavy rainfall. This trend could get accented with climate change. Thus, though the average annual rainfall over TN may not change over time, its distribution could change.

The TNSAPCC quotes modeling studies for rice production and states that there will be a likely increase in productivity of rice in Tamil Nadu in the near future, i.e., in 2020s with respect to current levels of production. However, in 2050s the production during the kharif season (southwest monsoon) is likely to reduce by 30% to 35% and in 2080s there might be yield reduction up to 80%. During the northwest monsoon period, i.e., the rabi season, in the 2050s, the rice yields are almost same as that of the current productivity and further increase in temperature during 2080s had negative impact and reduced the yields up to 25% in most of the districts of TN.

The state's water supply situation will worsen and the adverse impact of this will not be felt only on agriculture but on all sectors of the economy. The gap between the demand and supply is expected to be 11% by 2020 and 17% by 2050. Adding to this would be the poor health of the water sources in the state. For agriculture, this would mean an increased demand for irrigation water in the upper basin, coupled with a reduction in surface water availability in the delta regions. This will be especially so in the Cauvery delta, where the demand for groundwater extraction would increase. Increased northeast monsoon in the tail end of the Cauvery delta where drainage is already a problem can increase chances of flooding. This, combined with the expected sea level rise can result in increased salinization of coastal farmlands.

With a 1,076km long coastline, Tamil Nadu is vulnerable to sea level rise. The fifth assessment report of the Intergovernmental Panel on Climate Change (IPCC-AR5) predicts the global mean sea level rise by the last two decades of the 21st century (as compared to sea levels in 1986-2005) will likely to be in the range of 26cm-55cm under a low-emissions scenario, and 45cm-82cm for a high-emissions scenario. The TNSAPCC predicts a sea level rise for TN to be between 19cm and 73cm.

The sea level rise would submerge the mangroves as well as increase salinity of the wetlands. Coral bleaching because of increase in sea surface temperatures, which has been observed every summer since 2005, could become a regular phenomenon. The coastal region of the state supports the livelihood of a large population, with economic activities such as fishing, tourism, aquaculture, salt mining and coastal agriculture. It also supports infrastructure such as power plants, highways, urban centres, ports and fishing harbours. Increased intensity of cyclonic activity and storm surges, combined with

the effect of sea level rise can make these populations and infrastructure vulnerable.

The measures listed as part of the state's action plan include the introduction of weather-based insurance scheme for farmers and livelihood diversification. The plan also intends to add awareness about climate change to all community livelihood support programmes. These and others are the areas that the state has included as part of a process in which all states were asked to develop. The Union ministry of environment, forest and climate change endorsed the TNSAPCC on March 31, 2015.

India's approach to dealing with climate change has been high on rhetoric and less on policy planning and implementation. Even though Indian negotiators had been actively participating in the international climate change negotiations since the Rio Earth Summit in 1992, the national action plan on climate change was released only in June 2008.

The state governments are developing their action plans seven years after that and 23 years after the international community decided to deal with climate change. Though TN's action plan is broad in its sweep, it will turn into action only if the government thinks through the details in discussion with the communities and backs it up with enough funds and administrative support. Only mitigative and adaptive action can help the state vulnerable to climate change.

(The author is regional environment manager with Panos South Asia. Views are personal)