

Adverse Hot-Humid Conditions and Educational Outcomes in India: Impact Measurement and Mitigation Pathways



OUR FOCUS

We study the final Class VIII exam – the end of compulsory education in India – a key milestone shaping future opportunities.



THE CHALLENGE

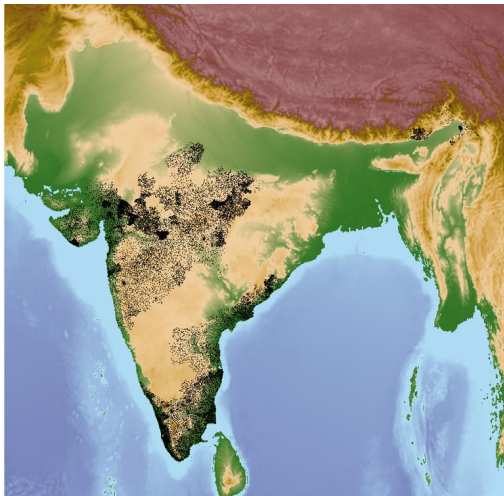
Rising heat and humidity reduce learning and exam performance. Urban areas face much stronger heat exposure than rural areas.



A NATURE-BASED SOLUTION

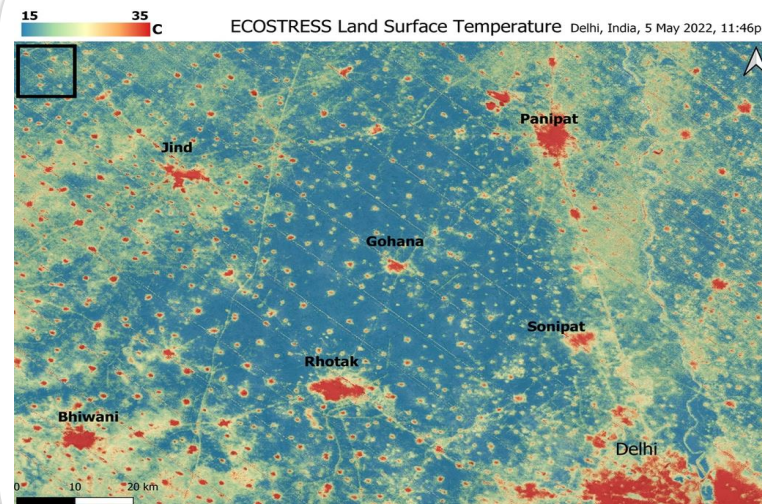
Green surroundings (trees and vegetation) cool the local environment and help mitigate the negative effects of heat.

LOCATIONS OF SCHOOLS



Each black dot represents a school.
We focus on states following the same school calendar.

LAND SURFACE TEMPERATURE



Cities are much hotter. Satellite data show extreme heat in urban centers (red) compared to surrounding rural areas (blue/green).

KEY RESULTS

A 1°C increase in excess heat over the school year
reduces the probability of:

PASSING THE EXAM



-47.3%
relative decrease

Lower odds of passing
the final exam

PASSING WITH DISTINCTION



-66.8%
relative decrease

Lower odds of achieving
a distinction



**Poor neighbourhoods
in urban areas are most at risk.**

Higher heat exposure leads to
larger declines in exam performance.

KEY TAKEAWAYS

- ✓ Excess heat over the school year significantly lowers exam performance.
- ✓ Students in poor-urban areas are most at risk.
- ✓ Natural cooling through vegetation provides meaningful mitigation.

POLICY IMPLICATIONS

Expand urban green cover around schools | Improve school infrastructure & ventilation | Adapt school calendars | Prioritize vulnerable schools