Climate Change and Poverty in India

Mains: *GS III – Economy| Environment*

Why in News?

A recent study conducted by National Institute of Science Education and Research (NISER) highlights how climate variability is reshaping poverty patterns across India.

What does the study reveal?

- **Changing nature of poverty in India** – India has made notable progress in poverty reduction over the past decades.
- The poverty headcount ratio has declined significantly, and poverty intensity has also reduced.
- However, these gains remain fragile.
- **Effect of climate change** – Climate change has introduced new vulnerabilities, especially for populations dependent on natural resources.
- **Environmental stressors** – The NISER study shows that environmental stressors—such as erratic rainfall, rising temperatures, floods, and droughts—interact with existing socio-economic inequalities to exacerbate poverty.
- **Unending risk** – This creates a dynamic where households that have escaped poverty risk slipping back due to climate shocks.
- **Validation of the study** – Based on an analysis of 593 districts across 21 states, the study demonstrates that *poverty is no longer merely an economic issue but increasingly a climate-linked phenomenon.*
- This necessitates a paradigm shift in policy thinking—from uniform national approaches to localized, climate-sensitive strategies.

What are the climate variables and their impact on poverty?

- **Temperature** – Among climatic factors, variability in maximum temperature emerges as the most critical determinant.
- A rise in temperature fluctuations significantly increases the probability of a district being classified as poor.
- Extreme heat affects agricultural productivity, labor efficiency, and health outcomes, thereby undermining livelihoods.
- **Floods and erratic precipitation** – Flood-prone districts experience repeated damage to crops, infrastructure, and housing.
- Irregular rainfall disrupts sowing cycles, reduces yields, and creates water scarcity.
- These findings underline that climate change is not a distant environmental issue but a

direct driver of economic distress.

*The study employs a **logistic regression model** to assess the impact of climatic, economic, and social variables on poverty.*

- **The Drought-Dependence Trap –** One of the most significant insights of the study is the compounded vulnerability of districts that are both drought-prone and heavily dependent on agriculture.
- Such districts are **83% more likely** to experience high poverty levels.
- The interaction between drought conditions and primary sector dependence creates a vicious cycle of low productivity, income instability, and indebtedness.
- Repeated crop failures force farmers into distress borrowing, while the lack of non-farm employment opportunities restricts income diversification.
- This "drought-dependence trap" highlights the structural nature of rural poverty in India.
- **Social dimensions** – The study also brings out the role of social factors, particularly the concentration of Scheduled Tribe (ST) populations.
- Districts with higher tribal populations show a greater likelihood of poverty.
- These communities often reside in ecologically fragile regions such as forests, hills, and drought-prone areas.
- Historical marginalisation, limited access to infrastructure, and dependence on natural resources increase their exposure to climate shocks.
- As a result, climate-induced poverty disproportionately affects these vulnerable groups, raising concerns about equity and social justice.
- **Economic structure and resilience –** A key finding of the study is the protective role of economic diversification.
- Districts with a higher share of the tertiary sector—such as services, trade, and information technology—exhibit lower poverty rates.
- A stronger service sector reduces dependence on climate-sensitive activities like agriculture.
- Regions with diversified economies also tend to have better infrastructure, higher literacy levels, and improved healthcare systems.
- These factors enhance resilience against climate shocks.

What are the regional disparities & policy limitations in climate-induced poverty?

- **Eastern states** – States such as Chhattisgarh, Odisha, Jharkhand, Bihar, and West Bengal show higher poverty levels due to greater dependence on agriculture and lower economic diversification.
- **Southern and western states** – States like Kerala, Karnataka, Tamil Nadu, Gujarat, and Maharashtra exhibit lower poverty rates owing to stronger tertiary sectors and better infrastructure.
- This divergence reflects broader structural inequalities in India's development trajectory.
- Regions with higher human capital and institutional capacity are better equipped to cope with climate stress.

- **Shortcomings of existing policies** – The findings underscore the limitations of one-size-fits-all policy approaches.
- **Implementation gaps** – While national initiatives such as the National Action Plan on Climate Change (NAPCC), State Action Plans on Climate Change, and the SDG India Index reflect India's commitment to sustainable development, implementation gaps persist at the district level.

What could be done?

- **Climate-resilient agriculture –** Promotion of drought-resistant crop varieties.
- Expansion of efficient irrigation systems such as drip and sprinkler irrigation.
- Adoption of climate-smart agricultural practices.
- **Diversification of livelihoods –** Development of non-farm employment opportunities in rural areas.
- Skill development programs to enable transition to the service sector.
- Encouragement of small and medium enterprises.
- **Strengthening disaster management –** Improved early warning systems for floods and extreme weather events.
- Investment in resilient infrastructure.
- Community-based disaster preparedness programs.
- **Focus on vulnerable communities –** Targeted interventions for Scheduled Tribes and other marginalized groups.
- Improved access to markets, credit, and institutional support.
- Inclusive development policies to reduce social inequalities.
- **Towards integrated policymaking –** The study emphasizes that addressing climate change and poverty in isolation is ineffective. Instead, an integrated approach is required that simultaneously tackles environmental, economic, and social dimensions.
- Climate adaptation policies must consider local vulnerabilities and institutional capacities.
- District-level planning should be strengthened to ensure context-specific solutions.
- Collaboration between government, research institutions, and local communities is essential.

What lies ahead?

- The NISER study provides compelling evidence that climate change is reshaping the geography of poverty in India.
- As climate shocks intensify, they threaten to reverse developmental gains and deepen existing inequalities.
- India's path towards achieving Sustainable Development Goals (SDGs)—particularly those related to poverty eradication, zero hunger, and climate action—depends on its ability to integrate climate resilience into development planning.
- A regionally tailored, multi-pronged strategy that promotes economic diversification, strengthens institutions, and prioritizes vulnerable communities is essential.
- In a warming world, poverty alleviation cannot be divorced from climate policy.
- The future of inclusive development in India lies in recognizing and addressing this critical intersection.

Reference

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