I ISSUE BRIEF

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Integrated Solutions for Interconnected Challenges:

Building Climate Resilience in India

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26

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TABLE OF CONTENTS

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Issue Brief

Integrated Solutions for Interconnected Challenges:

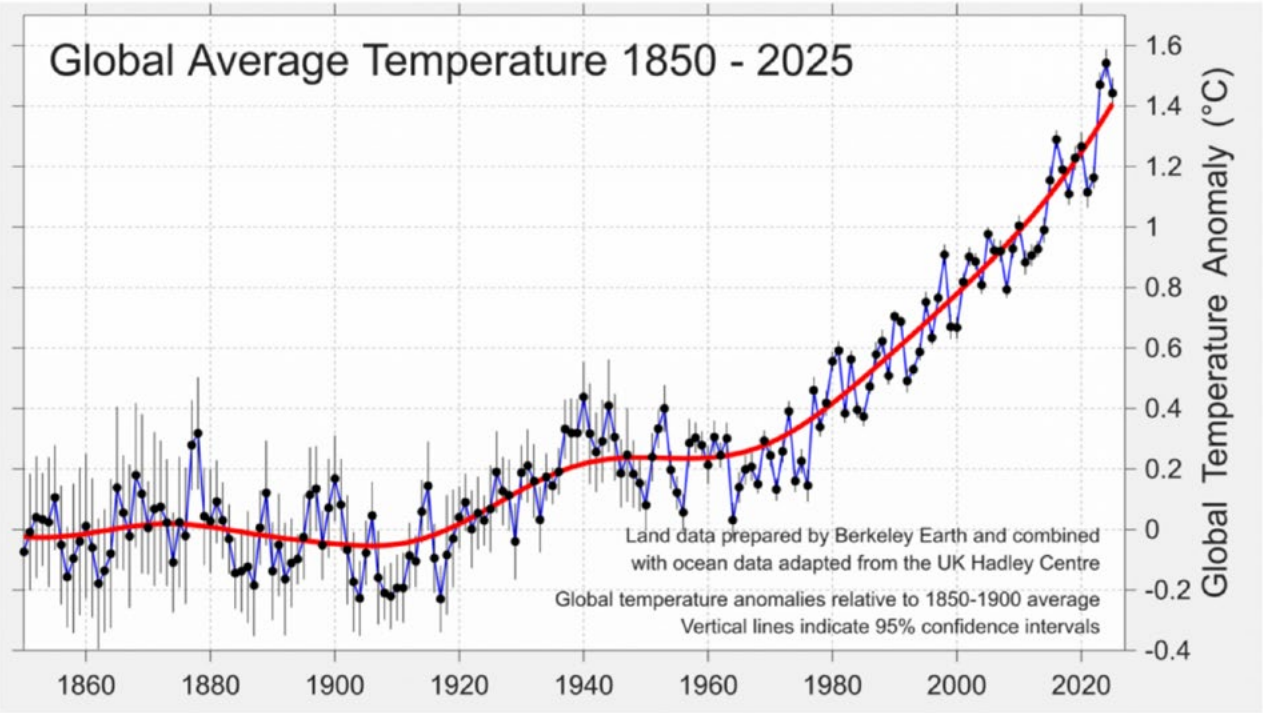
Building Climate Resilience in India

II INTRODUCTION

The recently concluded India-UK Free Trade Agreement (FTA) is a landmark deal in the growing Rising global temperatures are intensifying climate hazards at an unprecedented rate. In 2025, the global annual average temperature increase reached 1.44 ± 0.09 °C (2.60 ± 0.17 °F) above the pre-industrial period, making it the third warmest year on record (Berkeley Earth, 2026). India, among the most climate vulnerable countries, experienced extreme weather events on 99 per cent of the days between January and November 2025. (IFAD, 2012; GAP, 2014; CSE, 2025). The country's annual mean land surface air temperature was 0.28°C higher than the 1991-2020 long-term average, making it 8th warmest year since 1901 (Indian Meteorological Department [IMD], 2025).

These trends are not isolated environmental abnormalities, but rather a deeper systemic crisis. India's climate, agricultural and nutrition challenges are deeply interconnected, yet policy responses remain siloed.

Figure 1: Global Average Temperature from 1850-2025



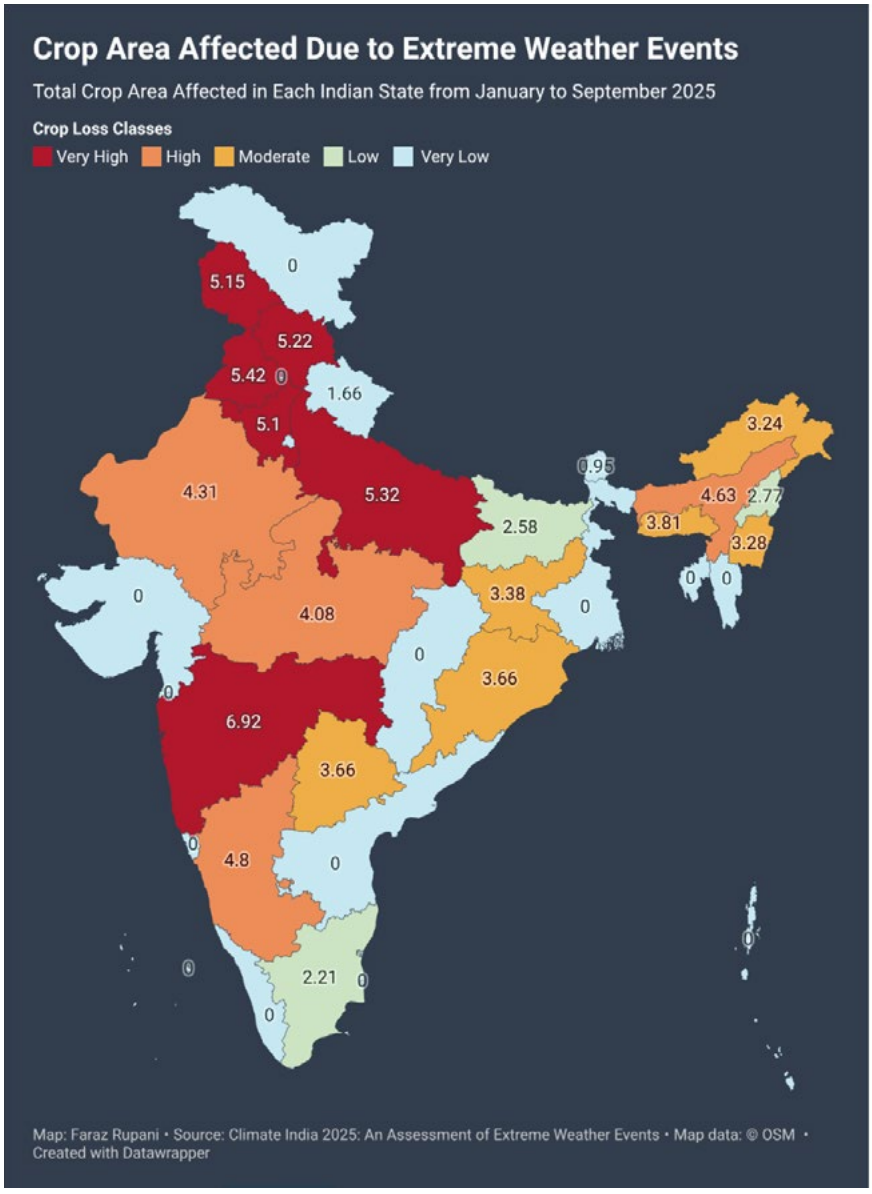
Source: Berkeley Earth . (2026, January 14). Global Temperature Report for 2025 - Berkeley Earth. Berkeley Earth. https://berkeleyearth.org/global-temperature-report-for-2025/

II CLIMATE STRESS AND AGRICULTURAL SYSTEMS

India's economy and livelihoods rely heavily on weather-dependent natural resources. Nearly half of the country's land is used for agriculture, dominated by small and marginal farmers who are highly vulnerable to climate variability (Dev, 2012; IFAD, 2012; GAP, 2014; Minasny et al., 2017). At the same time, approximately 97 million hectares of land are degraded, resulting in annual economic losses of around USD 48 billion (TERI, 2018; World Bank, 2018).

In 2025 alone, climate hazards affected over 9 million hectares of cropland (Fig. 2), with states and Union Territories such as Maharashtra, Uttar Pradesh, Punjab, Himachal Pradesh, Haryana, and Jammu and Kashmir facing severe crop losses. Other central Indian states have also seen increased crop losses, while north-eastern states continue to experience more extreme events compared to central India and have started to see more crop losses in 2025 (CSE, 2025).

Figure 2: Crop Affected Area in India between January to September 2025



Source: Climate India 2025: An Assessment of Extreme Weather Events. (2025). cseindia.org. https://www.cseindia.org/climate-india-2025-an-assessment-of-extreme-weather-events-12927

Out of all the climate hazards, drought is among the most frequent and severe hazards in India. Studies have indicated proliferation in its duration and area, expanding annually at a rate much faster than previously observed (Liu et al., 2018; Chandanpurkar et al., 2025). India's drought situation is exacerbated by land-use patterns, water overuse, and inadequate management of natural resources (Van Loon et al., 2016; AghaKouchak et al., 2021). Droughts also have tangible macroeconomic consequences, reducing state agricultural Gross Domestic Product (SAGDP) growth by 1.53 per cent (Sharma, 2024).

II AGRICULTURAL DISTRESS TO NUTRITIONAL INSECURITY

The implications of climate stress extends beyond farms and into the food system and public health. India ranks 102nd out of 123 countries in Global Hunger Index (WHH, 2025), reflecting persistent challenges in food and nutritional security. This stems from poor land management practices which have caused nearly half of India's agriculture land to be degraded and remain susceptible to agronomic or pedagogical drought showcasing the multi-faceted pressure faced by Indian agricultural systems (IFAD, 2012; Dev, 2012; Nath et al., 2018;Maji et al., 2010; Minasny et al., 2017; NAAS, 2011).

At the household level, the crisis is even more evident. The National Family Health Survey (NFHS-5) assessment revealed that 57 per cent women and 67.1 per cent of children (6-59 months) suffer from anemia. This persists even in agriculturally productive states, highlighting a critical disconnect between food production and nutritional outcomes. The persistence of anemia has led to large scale interventions of running the world's largest food security scheme like Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY)", covering over 810 million people.

The PMGKAY scheme aligns with Sustainable Development Goal (SDG-2) to "End hunger, achieve food security and improve nutrition and promote sustainable agriculture" (United Nations, 2015) by providing 35 kg of food grains per Antyodaya Anna Yojana household per month and 5 kg of food grains per person per month for Priority Households.

While PMGKAY plays an important role for national food security, its design reflects a largely calorie-centric approach. Approximately 62.3 per cent of the population's energy intake comes from carbohydrates, with nearly one-fourth derived from refined cereals due to economic factors and cultural preferences (Anjana et al., 2025). This leaves a substantial gap in the intake of essential micronutrients required for a balanced and healthy diet.

II POLICY RE-ALIGNMENT OF SAPCC, WDC-PMKSY AND PMGKAY

Despite growing evidence of rising climate risks, land degradation, agricultural distress, and nutritional insufficiency, the current approach to addressing these polycrisis is fragmented and largely reactive, with a continued focus on post-impact compensation rather than long-term risk reduction.

All states and union territories have developed State Action Plans on Climate Change (SAPCCs) yet these crises are seen as individual events rather than inter-connected events. India continues to rely on large-scale, long-term macro data downplays local realities, reducing policy effectiveness. There is a need to shift towards collecting and processing micro and meso-level data to assess and identify critical areas with climate vulnerability, poor agricultural systems and food security issues. Such datasets can help in identifying local-specific ground realities which then can be used for predicting future scenarios for policy decisions.

This gap between policy design and ground realities is also reflected in the implementation of major national programmes. The Watershed Development Component of Pradhan Mantri Krishi Sinchayee Yojana (WDC-PMKSY), with a budgetary allocation of Rs 8,134 crore for 2021-26 was launched with a target of achieving land neutrality target i.e., restoring 26 million hectares of land by 2030. While the programme demonstrates strengths in integrating land and water management at a conceptional level, its on ground reality often focuses on short-term, project-specific training, which is insufficient in equipping communities with technical, institutional, and governance skills. To enhance its effectiveness, WDC-PMKSY must institutionalise long-term community engagement programs by integrating socio-technical training, local community stewardship, post-project financing mechanisms and inclusion of landless households which are often neglected.

Climatic hazard and agricultural distress directly impact the food security system. India's dietary pattern has low consumption of fruits, vegetables, and rich protein foods which contains essential micronutrients and its poor consumption has become a significant obstacle in achieving a healthy diet (Afshin et al., 2019; Lock et al., 2005; Mason-D'Croz et al., 2019). As two-third of India's population is reliant on food security schemes to some extent, there is a need to realign the food distribution systems by placing greater emphasis on micronutrients diet rather than calorie intense diet. The next NFHS should focus on understanding the different nutritional needs of populations across States and Union Territories, based on which public food distribution systems can be realigned. A single food distribution system cannot be replicated in a country where consumption patterns vary as widely as dialects across regions.

Extreme events are likely to persist, with 2026 expected to be an El Niño year associated with below normal rainfall. These shocks impose a significant fiscal burden on the economy, reinforcing the need to shift from reactive spending towards supporting long term resilience investment. Only by moving from silo-centric interventions to integrated system based solutions can India effectively address these interconnected challenges and build a resilient future.

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