Briefing

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Policy pointers

Policymakers in India must urgently acknowledge and act on the link between climate impacts and an increasing suicide rate among farmers, and how recurring climate crises exacerbate poverty and marginalisation, which can promote feelings of despair.

Government social protection policy can be designed to act as a preventative measure: more access to support for rural livelihoods damaged by climate events would alleviate many of the economic, and other, factors that put farmers at risk of suicide.

Inventive national responses to provide insurance against climate events and to ensure rural communities can access mental health services would help protect farmers' economic and psychological wellbeing.

Delivering appropriate support before, during and after climate events will help farmers cope better with fluctuating markets and climate-driven production risks. For example, during a crisis, the government could distribute targeted cash transfers.

Urgent preventative action for climate-related suicides in rural India

The link between increasingly severe climate events and the rising suicide rate among India's farmers has long been a concern. But with the latest national data reporting the highest ever number of deaths by suicide, effective action to prevent the risk factors endangering farmers — and the climate events that exacerbate them — is a matter of urgency. Here, we establish some of the key factors putting farmers at risk and present new analysis of year-on-year data from five drought-prone Indian states, demonstrating how suicide rates are affected by (1) rainfall variation and (2) access to wage employment via social protection schemes. The findings point to four preventative actions that could support farmers to cope with common risk factors by improving local climate resilience and mental health services. This research will resonate in many countries of the global South and North that are struggling with a similar crisis.

In the global South, many countries already contending with climate change are facing new, harder-hitting types and forms of climate impact. This results in loss and damage: affected communities can no longer absorb the effects of climate risks or adapt to worsening impacts. This is especially true for the men and women of India's vast agricultural workforce (referred to from here on as 'farmers', for brevity), for whom loss and damage is often psychological as well as economic.

Farmers witnessing years of hard work destroyed by erratic weather events can experience feelings of helplessness, anxiety and despair — feelings associated with death by suicide. Indeed, farmers are among the most at-risk groups in India for death by suicide, accounting for 15.08% of the country's recorded suicides in 2021.[1] While an estimated 75.5% of the world's suicides occur in low- and middle-income countries (LMICs), India alone accounts for 26.6% of all instances globally.[2,3]

Death by suicide is complex and personal, but never inevitable; recognising common risk factors for a group can help identify preventative action. In this briefing, we focus on five states to analyse relevant data and present a comprehensive framework that explores:

- **Risk factors:** common circumstances or conditions that put farmers at risk of suicide
- **Climate as a precipitating factor:** how climate impacts exacerbate risk factors and can trigger suicidal ideation
- **Preventative factors:** actions to help farmers cope with risk factors exacerbated by climate impacts and so try to prevent deaths by suicide.

Why are India's farmers at risk?

The suicide rate in rural areas is almost double that of urban areas in India.[4] States also report significant variation, with some reporting suicide rates more than ten times greater than others. Five states in particular report high numbers of farmers with certain socioeconomic characteristics dying by suicide: Maharashtra, Madhya Pradesh, Karnataka, Telangana and Chhattisgarh. Some of the factors placing farmers at risk can be broadly categorised as:

Climate change is making agriculture an extremely risky, potentially dangerous and loss-making endeavour for farmers

Economic. 85% of farmers are classified as small or marginal, meaning they work at subsistence level and are unable to save for times of crisis.[5] Research shows that farmers' suicide rates are higher in states that focus on cash crops like cotton;[6] the greater costs of cultivating cash crops, lack of access to formal credit and limited savings to cope in case of crop or market failure all increase farmers' risk of accruing debt.[4]

Political. Liberalisation of the agriculture sector has seen a shift from subsistence farming to cash crops, with India now producing about 23% of the world's cotton. But the dominance of cash crops has also contributed to the agrarian crisis, and has been linked to an increased risk of suicide among small-scale farmers.[7] Most of India's cotton crop is genetically modified 'Bt' cotton, a variety which has proven less resilient to pests, disease and water stress. Since 2002/03, while the area dedicated to growing Bt cotton has increased by 93.35%,[8] productivity has reduced. By 2021/22, the national per-hectare cotton yield was just 60% of the world average.[9]

Demographic. Empirical studies[4] have proved the relationship between illiteracy and farmers' risk of death by suicide. Though lack of education is not a direct cause, it contributes to the distress and isolation individual farmers and their families experience by aggravating their vulnerability. Poor literacy results in limited awareness of and capacity to access government social protection programmes in times of crisis, as well as curbing opportunities for economic and social advancement that might alleviate feelings of hopelessness and isolation.

Social. In 2017, an Indian multi-state survey identified some of the factors often cited as contributing to suicide among farmers,[10] including drug/alcohol addiction, fall in social reputation and family quarrels. Health of family members was also found to be an important factor.

How is climate change having an effect?

Climate change has increased the frequency and coverage of drought in India; in 2020–2022, nearly two-thirds of the country was drought prone.[11] Badly impacted states like Maharashtra, Madhya Pradesh and Chhattisgarh (reporting 62%, 44% and 76% of land as drought prone, respectively) also report high suicide rates among farmers.

We analysed year-on-year data from Chhattisgarh, Karnataka, Madhya Pradesh, Maharashtra and Telangana to understand the relationship between how far rainfall deviated from normal levels[12] and the number of farmers dying by suicide.[13] Data covering 2014/15 to 2020/21 showed a negative correlation for all five states (Chhattisgarh -0.409; Karnataka -0.665; Madhya Pradesh -0.439; Maharashtra -0.524; Telangana -0.892), meaning that the suicide rate is consistently higher in years with a rainfall deficit (see Box 1).

In states reporting the highest suicide rates, farmers are more heavily engaged in cotton cultivation. This requires significant investment in seed, pesticide and insecticide, forcing farmers to borrow money from formal and informal sources. If drought or erratic rainfall cause the cotton crop to fail, farmers cannot make repayments. This is not a rare occurrence: from 2016/17 to 2021/22, a third or more of all crops were lost across approximately 35 million ha[14] (an area slightly larger than the land mass of Germany).

Our research from other geographies shows that recurring droughts affect emotional wellbeing and health. There is a causal connection between loss of livelihood and drug/alcohol addiction, anxiety and emotional distress.[15] Men and women who misuse alcohol may be less able to work, increasing their risk of falling into poverty and hopelessness. This issue is compounded by low levels of literacy, lack of awareness about where to get help and a poor family or community support network. The interplay of these risks, combined with socioeconomic factors (such as marginal landholding, debt traps, food insecurity, transitory poverty due to crop failure and livelihood loss), can push farmers to their limits and can put them at risk of suicidal ideation.

How can the risk be reduced?

Our analysis is clear: climate change is making agriculture an extremely risky, potentially dangerous and loss-making endeavour for farmers, increasing their risk of death by suicide. This is an urgent matter; in 2022, India reported the highest number of suicides since records

began.[16] Responding to known risk factors, we propose four preventative approaches:

1. Anticipatory and shock-responsive social protection

Our research demonstrates that public works-based social assistance programmes could effectively limit climate vulnerability in economies that largely depend on agriculture or seasonal work. We considered the Mahatma Gandhi National Rural Employment Scheme (MGNREGS) — a national social protection programme providing 100 days of guaranteed wage employment to every rural household each year — analysing the relationship between the number of wage days used in a year[17] and the number of farmers dying by suicide in the same period.

We analysed data on Chhattisgarh, Karnataka, Madhya Pradesh, Maharashtra and Telangana for the period 2014/15 to 2020/21. We found a negative correlation between the number of days and number of deaths by suicide (Chhattisgarh -0.830; Karnataka -0.677; Madhya Pradesh -0.688; Maharashtra -0.691; Telangana -0.892), demonstrating that in states where MGNREGS provides employment, the rate of farmer suicides is reduced (see Box 1). This could be because wage employment helps diversify livelihood options, allowing households to maintain their income and consumption even in a crisis. In addition, if planned properly, water conservation and land development assets created through the MGNREGS employment scheme can deliver long-term drought proofing and give farmers the chance to practice less resource-intensive cropping options.

Governments should consider social protection as a core strategy to protect farmers from the risk factors that can lead to suicidal ideation, and from climate events that can precipitate this state. Social protection interventions can maintain and improve the existing livelihoods in the face of climate shocks. Governments must have suicide prevention in mind when designing social protection policies, including comprehensive risk analyses, anticipatory support via early warning systems, pre-agreed allocation and releases of finances at specific trigger points and other measures.

2. Deliver missing mental health care

India's Mental Health Care Act (2017) guarantees every citizen the right to adequate mental health services; in reality, there is a treatment gap of 70–92%. With a paucity of mental health experts in rural areas,[18] farming communities have very little mental health awareness.

Box 1. Seeing the people in the data

Using the example of Telangana state, it is sobering to consider the human, real world impact revealed by our analysis, which supports the case for urgent preventative action.

Rainfall variation: in a year when variation from normal is 5%, the average number of farmers dying by suicide is 810 people. Based on the predicted values of our regression modelling for a rainfall deficit of 25%, the number of farmers dying by suicide in a year would increase to 1,188 individuals.

Access to wage employment: our regression analysis projection shows that when the number of work days taken up from the MGNREGS social protection scheme increases from 50 million to 150 million, the number of farmers dying by suicide drops from 1,800 people per year to 398 people per year.

To rectify this, governments could train the Accredited Social Health Activist workers — a large, established healthcare volunteer group — to act as 'mental health first aiders'. Volunteers would work in the community to raise awareness, identify people experiencing stress or at risk of suicide, offer personal and family counselling, refer complex cases to specialised psychiatric services and so on. When a climate event hits, the volunteers could organise peer support sessions for anxious farmers and/or arrange professional counselling.

3. Bridge the insurance protection gap

Insurance can do far more to absorb climate shocks and spread the climate-related risks farmers face. The global insurance protection gap — the financial loss from disasters not covered by insurance — was US$113 billion in 2020. In India, where most people are not covered, that gap stands at 92%. The international disasters database, EM-DAT, reports India suffering economic losses of US$3 billion during a major drought in 2015, only 13% of which was insured. Our assessment suggests the premium for assurance of these losses would have cost the government between US$0.66 billion and US$0.75 billion.

Intervention is needed to close the insurance protection gap (life and non-life insurance). In recent years, there has been a shift from insuring against poor crop yields towards insuring directly against bad weather, whereby farmers collect an immediate payout if the index reaches a certain measure or 'trigger', regardless of actual losses. There is evidence of positive benefit-cost ratios for insurance against losses from natural disasters.[19] Experience suggests that index-based crop and livestock insurance can be a cost-effective alternative to humanitarian response.[20] Insurance mechanisms can provide pre-agreed finance in a timely and predictable manner when a pre-agreed trigger point is

reached based on reliable early warning information reaching agricultural communities.

However, as the intensity, scale and frequency of climate-related disasters grow, insurance premiums are surpassing household means, with some events deemed uninsurable. Consequently, several countries have established insurance risk pools, which can provide affordable cover for risks that private insurance markets consider uninsurable. Risk pools can also promote solidarity in terms of loss-sharing across regions; examples include the Caribbean Catastrophe Risk Insurance Facility and the Pacific Catastrophe Risk Assessment and Financing Initiative.

Using insurance risk pools to secure access to finance before a disaster strikes would allow countries to respond quickly and reduce the impact on people and livelihoods, protecting them from falling into despair. The Global Shield initiative announced at COP27 creates opportunities for piloting and scaling up innovative insurance approaches and closing the financial protection gap that fails farmers. The Shield aims to help developing countries access more financing for recovery from natural disasters and climate shocks; initial contributions include around €170 million from Germany alone.

4. Support farmers to manage risk

Alongside unpredictable price fluctuations and other market risks, climate-driven uncertainties and extremes lead to production risks for farmers — especially those operating at a small or marginal level. To manage these risk, India's farmers need support:

To be prepared. Simple, timely early warning systems and advisories about weather fluctuations should be provided. Incentives could be offered to encourage farmers to adopt climate-resilient crop varieties; for example, the Better Cotton initiative has improved both profitability for farmers and had a positive environmental impact.

To cope. Losses and damages plunge farmers into a vicious cycle of debt. This is especially true for small and marginal farmers, who rely on the informal financial system as their main source of credit (rendering government loan waivers of little help). The much-discussed Pradhan Mantri Kisan Samman Nidhi (PM-Kisan) cash transfer programme does not reach the most vulnerable households, which are predominantly landless and engaged in lease farming. To effectively target those most in need, minimum support price and other subsidies can be replaced with crisis-linked cash transfer schemes.

To recover. Alongside a comprehensive social safety net, farmers should receive resources, opportunities, systems, livelihood alternatives, favourable value chains and infrastructure that enhances their capacity to adapt and transform. These interventions would help farmers recover from climate shocks and maintain sustainable living standards.

In addition, receiving advance agricultural commodity price information helps farmers plan management practices and avert market risks. Farmers need facilities like forward trading, financing against forward contract agreements, insurance against disruption, warehouses/cold storage and others to increase their security and, by extension, overall wellbeing.

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Notes

[1] Government of India, National Crime Records Bureau. https://ncrb.gov.in/en / [2] World Health Organization (2014) Preventing suicide: a global imperative. / [3] Institute for Health Metrics and Evaluation, Global Health Data Exchange. https://ghdx.healthdata.org / [4] Parida, Y, Dash, DP, Bhardwaj, P and Chowdhury, JR (2018) Effects of drought and flood on farmer suicides in Indian states: an empirical analysis. *Economics of disasters and climate change* 2, 159–180. / [5] Government Of India, Agriculture Census Division, Ministry Of Agriculture and Farmers Welfare (2019) Agriculture Census 2015–16. All India report on number and area of operational holdings. / [6] Kennedy, J and King, L (2014) The political economy of farmers' suicides in India: indebted cash-crop farmers with marginal landholdings explain state-level variation in suicide rates. *Globalization and health*, 10, 1–9. / [7] Hebous, S and Klonner, S (2014) Economic distress and farmer suicides in india: an econometric investigation. University of Heidelberg, Department of Economics. / [8] Calculation based on data from the Department of Agriculture & Farmer's Welfare, state governments and the Directorate of Cotton Development (Nagpur). / [9] World average cotton productivity: 755 kgs per ha; for India: 465 kgs per ha. Calculation based on data from International Cotton Advisory Committee (ICAC) journal *Cotton this Month* (16 Jan 2023) and a Committee on Cotton Production and Consumption (COCPC) meeting (15 November 2022). / [10] Manjunatha, AV and Ramappa, KB (2017) Farmer Suicides: An All India Study. Agriculture Development and Rural Transformation Centre Report, Institute for Social and Economic Change, Karnataka. / [11] UN Convention to Combat Desertification (2022) Drought in numbers 2022 - restoration for readiness and resilience. www.unccd.int/resources/publications/drought-numbers / [12] As reported by the India Meteorological Department (Ministry of Earth Sciences). / [13] As reported by the National Crime Records Bureau (Ministry of Home Affairs). / [14] Gupta, V (7 November 2022) A year of extreme weather events has weighed heavy on India's agricultural sector. https://india.mongabay.com/2022/11/in-india-climate-impact-on-agriculture-is-already-a-reality-now / [15] Bharadwaj, R and Huq S (2022) Climate-induced migration and health issues: a toolkit for policymakers. IIED, London. iied.org/21256iied / [16] Singh, OP (Sep-Oct 2022) Startling suicide statistics in India: Time for urgent action. *Indian Journal of Psychiatry* 64(5):431–432. / [17] See MGNREGS website: https://mnregaweb4.nic.in/netnrega/MISreport4.aspx / [18] Ministry of Health and Family Welfare Government of India (2016) National Mental Health Survey of India, 2015-16. http://indianmhs.nimhans.ac.in/Docs/Report2.pdf / [19] Linnerooth-Bayer, J and Mechler R (2009) Insurance against losses from natural disasters in developing countries. Department of Economic and Social Affairs, United Nations, New York, USA. / [20] Bharadwaj, R and Mitchell, T (2022) Strengthening anticipatory risk response and financing mechanisms for social protection: a practical approach to tackling loss and damage. IIED, London. iied.org/21286iied

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