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Policy Brief

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Agriculture, Climate Change, and Migration

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The Context

There is a growing crisis at the intersection of three inexorable processes - climate change, migration and urbanisation - challenging governance and sustainability at the local, regional and national levels. It underlines the urgency for an alliance between science, social science and people science to foster a real-world response that will enable a fundamental transformation at the level of households and communities. From a policy perspective it centres on a cross-cutting theme - demographics - the burgeoning young population that aspires to mobility. From a practice perspective, it is the potential tipping point - a manifestation of an important aspect of the Malthusian - Darwinian dynamic, as applicable to India (Gollerkeri and Chhabra, 2016).

It is estimated that between 2001 and 2011, rural migrants in search of work added over 22 percent to urban population growth in India - a staggering 18 million migrants (Census of India, 2011). This remains an irony because in a country where nearly half of an average household's expenditure is spent on food and where close to half the labour force is engaged in agriculture, sustainable agriculture is central to inclusive, equitable and sustainable development. Yet, a low-level equilibrium trap in agriculture characterised by low productivity, surplus labour and large numbers of small and marginal farmers engaged in outdated modes of cultivation, has meant that farming is the least preferred livelihood and the village the least preferred home. The single biggest challenge is demographics - providing jobs to a humongous young population that no more aspires to an agricultural-pastoral life. Therefore, much of the policy concerns and data work at the subnational level in the future must focus on the causal relationship between agriculture, extreme climate events and migration.

The decision to migrate is more a household decision than an individual one, influenced by twin factors: the imperative to reduce the risk of consumption failure and to diversify and augment income sources. The decline in labour absorption in climate-sensitive agriculture and the absence of non-farm livelihood options create objective conditions for forced migration. It must be recognised, however, that not all households make the decision to migrate. Evidence suggests that the effectiveness of the delivery of climate related inputs, knowledge, and services by the state on the supply side; and the access to and the ability of a farmer in utilising knowledge and technology-based farm adaptation services, serve as important differentiators. The migration decision-making process is influenced by the perception of a household of the risks of climate change; assessment of the potential loss of income from crop failure, and the uncertainty experienced in the gap between felt needs and the extension services available for agricultural operations. Market information asymmetry constrains informed decision-making.

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The Question

From an action research perspective, how might the state governments triangulate the three-way relationship between weather, agricultural performance and internal migration; to better understand rural distress, and design interventions for more equitable spatial and temporal development outcomes?

The Problem

Rain-fed agriculture accounts for over 51 percent of the net crop sown area and about 40 percent of the total food production in India. It is characterised by low productivity, is subject to the vagaries of the monsoon and increasingly to extreme climate events (Department of Agriculture, Cooperation, and Farmers Welfare). Climate induced livelihood vulnerability is driving rural-urban migration in India. The growing disparity in income and living standards between a village and a city and the chronicity of extreme climate events are the proximate causes of significant inter and intra state mobility. Though the scale and the diversity have intensified in the last two decades, the theoretical basis of and the rationale for internal migration as an inevitable economic process was advanced, over 50 years ago. Fei and Ranis (1964) posited internal migration as a process by which surplus labour at MPL= 0 moves from the farm sector to industry, where MPL > 0. Agriculture is for most part, a climate-sensitive sector with surplus labour, and rural risk a major determinant of migration decisions.

The diminishing marginal productivity of labour in India's agriculture is intrinsic to the structure of landholding. This problem has been exacerbated by the degradation of natural resources, soil stress, and crop yield uncertainty resulting from changes in average weather - the changing patterns of temperature and precipitation. Extreme climate events, primarily, chronic and prolonged droughts are rendering rainfed agriculture unsustainable and causing widespread rural distress. It is therefore important to understand migration as a risk mitigation and livelihood adaptation response of rural households. Understanding the nature and impact of extreme climate events is a necessary condition to design and implement mitigation and adaptation strategies at the individual, household and community levels. The primary sector - agriculture and allied activities - presents a complex challenge to enhance productivity and to improve the income and living standards of rural households.

Despite the knowledge and experience generated over the last few decades on extreme climate events and mitigation-adaptation measures, considerable 'actionable-knowledge' gaps remain. Chief among them is the failure to identify the heterogenous causes - context and geography specific - underlying rural distress, and influence out-migration and more recently, return-migration. From an evidence-based policy development and programme design perspective, states need to examine three broad areas of development governance:

1. Underlying causes for the unsustainability of agriculture
2. Proximate triggers for distress migration
3. Role of extreme climate events in accelerating rural-urban migration.

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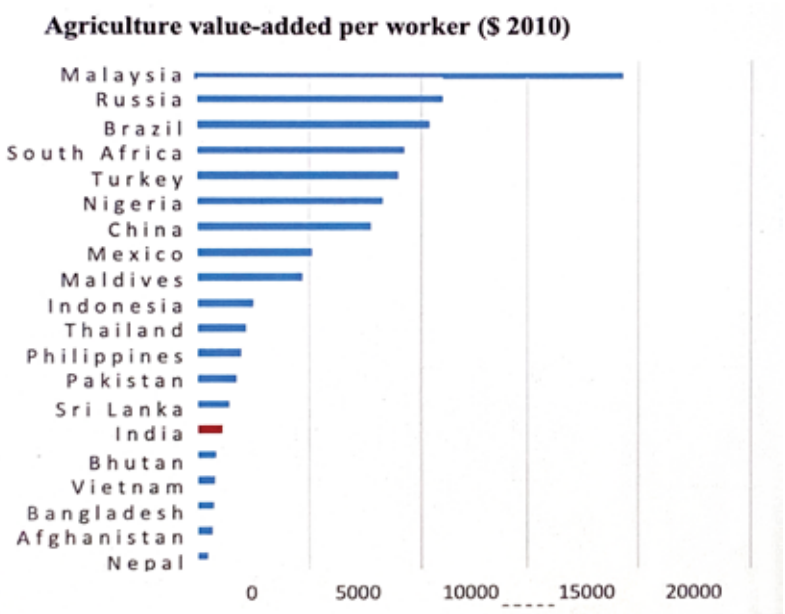
The vast majority of farm households - an overwhelming 85 percent- are marginal and small holdings and rely primarily on own family labour and consume half or more of what they produce. Economists characterise this as subsistence farming. The predominant economic feature of the farmer household is its limited resources and the narrow range of economic choices before it. Since rain-fed agriculture predominates; soil, water and climate conditions combine to compel the farmer to produce the same crop or set of crops, year after year. Farming practices remain time honoured relying on simple implements and limited mechanisation. From a market perspective, the return the farm household seeks is simple and undifferentiated - after meeting expenditure and debt obligations - to have sufficient produce to feed the family. The farm household is not a link between the 'products market' on the one side and the 'factors market' on the other. Indeed, it is a micro model of the two rolled into one. This is the fundamental reason why one cannot apply the theory of the entrepreneur to it.

It is time to recognise that unless disaggregated and local action at the level of the farmstead and the community is taken, climate change - disrupting rainfall patterns and the increasing intensity of temperatures - will worsen food security, livelihoods of rural people and migration decisions of vulnerable households. Policy focus must now shift to address the needs of the vast majority who choose not to migrate and continue to live in rural India, as part of the communities affected by climate change. The policy focus must be on advancing climate resilient agriculture that will help the small and marginal farmers to increase the productivity of and the value-added in small farm agriculture, to help break out of the low-level equilibrium trap.

The dire need to do this can be gleaned from the comparison of the performance among similarly placed countries depicted in the graph below:



Source: World Development Indicators (2014)

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What the states must consider:

The way forward must begin with the recognition that India has scarce natural resources. It is therefore imperative that we make our small and marginal farms more resource-efficient. A concerted programme to envision a better future for small and marginal farmers, and implementing a targeted action plan to enhance resource efficiency in rain-fed agriculture must be led by the states. Two specific problems need urgent attention and both are multifactorial. The interventions in response must become non-negotiable public governance interventions that state governments implement:

First, improve agricultural land-use efficiency. Indian agriculture ranks low on productivity. The per hectare yields of major crops - rice, wheat and pulses - are about half the international levels (Subramanian, 2017). India needs to accelerate its productivity to achieve per capita outputs that are closer to the industry standards. There are several measures necessary to address the related factor markets and for the delivery of timely information, technology and inputs, but these are not the subject of this brief.

Second, improve water-use efficiency. India is among the world's most water-stressed countries. In 1950, it had about 3500 cubic metres of water per capita annually; today, it is as little as 1,000 cubic metres. Despite water being such a scarce resource, India uses more water for irrigation, than any other country in the world (FAO, 2016). With close to 30 million private tube wells combined with free power for agricultural pump sets, the country is estimated to draw nearly 230 billion cubic meters of ground water each year.

The Conclusion

The states must focus attention on the structure, agency, and regulatory aspects that circumscribe both the land-use and water-use efficiency challenges if agriculture has to transition from subsistence farming to a modern and sustainable food production system, resilient to climate change. Urgent steps are necessary to address low productivity, risks due to climate change and natural resource degradation. Flexible, decentralised supply-side responses that best address these two problems, as well as the systemic risks that climate change is bringing in its wake, will need to be crafted to address local contexts. The community needs to be engaged and participatory mechanisms evolved. If there is one imperative today, it is for the states to bridge the critical knowledge gaps in understanding current risk management strategies of small and marginal farmers.

In essence, nothing about them, without them.

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