

Farming in a warming world

Efforts to make agriculture climate-resilient must be scaled up and consolidated



NAVEEN P. SINGH &
BHAVNA ANAND

The pervasiveness of climatic aberrations and the associated socio-economic vulnerability are now widely recognised and experienced across the globe. The Sixth Assessment Report by the Intergovernmental Panel on Climate Change (IPCC) on "Global Warming at 1.5°C" distinctly propagates the need to strengthen and enhance existing coping capacity and to remain committed to the objectives of the Paris Agreement.

The report establishes that the world has become 1°C warmer because of human activities, causing greater frequency of extremes and obstruction to the normal functioning of ecosystems. Climate-induced risks are projected to be higher for global warming of 1.5°C than at present, but lower than at 2°C (a catastrophic situation). However, the magnitude of such projections depends on in-situ attributes and the level of developments. Moreover, for such a change in global warming, indigenous populations and local communities dependent on agricultural or coastal livelihoods are very vulnerable to the climate impacts.

India, with its diverse agro-climatic settings, is one of the most vulnerable countries. Its agriculture ecosystem, distinguished by high monsoon dependence, and with 85% small and marginal land-holdings, is highly sensitive to weather abnormalities. There has been less than normal rainfall during the last four years, with 2014 and 2015 declared as drought years. Even the recent monsoon season (June-September) ended with a rainfall deficit of 9%, which was just short of drought conditions. Research is also confirming an escalation in heat waves, in turn affecting crops, aquatic systems and livestock. The Economic Survey 2017-18 has estimated farm income losses between 15% and 18% on average, which could rise to 20%-25% for unirrigated areas without any policy interventions. These projections underline the need for strategic change in dealing with climate change in agriculture.

Steps needed

There is a need to foster the process of climate adaptation in agriculture, which involves reshaping responses across both the micro- and macro-level decision-making culture. At the micro-level, traditional wisdom, religious epics and various age-old notions about weather variations still guide farmers' responses, which could be less effective. Corroborating these with climate assessments and effective extension and promoting



climate resilient technologies will enhance their pragmatism. Climate exposure can be reduced through agronomic management practices such as inter and multiple cropping and crop-rotation; shift to non-farm activities; insurance covers; up-scaling techniques such as solar pumps, drip irrigation and sprinklers. Several studies indicate increasing perceptions of the magnitude of climate change and the need for farmers to adapt, but the process remains slow. For instance, the NSS 70th round indicates that a very small segment of agricultural households utilised crop insurance due to a lack of sufficient awareness and knowledge. Hence there is an urgent need to educate farmers, reorient Krishi Vigyan Kendras and other grass-root organisations with specific and more funds about climate change and risk-coping measures.

Climate adaptation actions in agriculture are closely intertwined with rural developmental interventions, calling for a holistic new paradigm. At the macro-level, climate adaptations are to be main-

streamed in the current developmental framework (which is still at a nascent stage, as acknowledged in the Economic Survey 2017-18). Though programmes of the government document the likely consequences of climate change, they lack systematic adaptation planning and resource conservation practices. Mainstreaming adaptation into the policy apparatus has the potential to improve the resilience of several development outcomes. The approach demands coherence across multiple policy scales as required for developing possible synergy between micro-macro levels and addressing several cross-cutting issues. Moreover, this enables identification of several barriers that prevent up-scaling efforts and adaptation by farmers.

Key interventions

Expansion of extension facilities, improving irrigation efficiency, promotion of satellite-enabled agriculture risk management, creating micro-level agro-advisories, providing customised real time data, and capacity building of stakeholders are some initiatives towards building greater resilience in agriculture. Interventions such as the Pradhan Mantri Krishi Sinchayee Yojana, Pradhan Mantri Fasal Bima Yojana, Soil Health Card, Paramparagat Krishi Vikas Yojana, National Agriculture Market, or e-NAM, and other rural development programmes are positive interventions that can address the

vulnerability of farmers and rural households. There are also exclusive climate and adaptation schemes being operationalised, such as the National Innovations on Climate Resilient Agriculture (NICRA), the National Mission for Sustainable Agriculture (NMSA), the National Adaptation Fund, and the State Action Plan on Climate Change (SAPCC). It is desirable to have a cultural change wherein some of the components under these schemes can be converged with major rural developmental programmes, which will further enhance their effectiveness at the grass-root level. A study by the Centre for Science and Environment provides insights into the development of SAPCCs across selected States.

The SAPCC is an important platform for adaptation planning but it needs to evolve further in terms of climate-oriented regional analysis to capture micro-level sensitivity and constraints. Moreover, convergence of climate actions with ongoing efforts and several Central schemes with similar mandates is a must. Greater expertise and consultations are required for a systematic prioritisation of actions and fiscal prudence for building climate resilient agriculture.

Naveen P. Singh and Bhawna Anand are with the ICAR-National Institute of Agricultural Economics & Policy Research, New Delhi. The views expressed are personal