ICRISAT

Improving Climate Resilience

Background

- Climate variability and change is threatening agri-food systems, particularly in developing countries where climate-induced risks further compound existing vulnerabilities such as high levels of poverty, food and nutrition insecurity, degraded natural resources and poor resource governance.
- Agri-food system vulnerabilities offer opportunities to strengthen and transform local food systems, improve economic conditions, environmental sustainability and resilience to future shocks. Though there is good intention among agri-food system stakeholders globally on building resilience, their actions are limited due to a lack of science-backed policy and unified approaches and tools for designing and implementing context-specific and data-driven holistic solutions.

ICRISAT's Capability

ICRISAT in collaboration with multiple partners has developed and implemented unified approaches and system tools to inform public policy to support climate-resilient and sustainable agri-food systems, particularly in the dryland regions of Asia and Africa.

A unified approach for scaling climate-smart agriculture: To address climate risks across value chains, ICRISAT promotes a unified framework for scaling Community-Supported Agriculture (CSA) involving i) agriculture and climate risk assessment and vulnerability maps ii) identifying and prioritizing context-specific climate smart agricultural practices and strategies and iii) providing sub-regions and farm-specific investments where there are gaps. The district and sub-district level investment and CSA action plans help the integration of CSA into regular

development plans and policy. A science–policy interface is a key component of this approach. In line with keeping approaches practical, a Microsoft Excel investment planning tool has been developed for decision makers for climate smart investment planning.

Framework and tool for designing and implementing sustainable agricultural intensification strategies: ICRISAT has developed a multidimensional framework as well as a user-friendly quantification tool for assessing domain-specific and overall farming and food systems sustainability. It uses 124 indicators covering five major domains of the farming systems: environment, economy, productivity, social and human well-being.

Designing resilient and profitable integrated crop-livestock systems: ICRISAT promotes crop-livestock whole of farm modeling as a decision support tool for extension agencies to guide smallholders to co-design resilient and profitable farming systems. It can undertake analysis to assess the impacts of potential climate-smart interventions on resilience and on household cashflows considering resources and farmers' preferences. http://oar.icrisat.org/11942

Dynamic value chain modelling to identify entry points for designing effective policy interventions: To design effective value chain interventions, we use the system dynamics modeling technique that can capture the feedback loops and dynamics among various nodes of the value chains to simulate behavior of the value chain actors.

Decentralized Agri-Food System Framework for building resilience, equity, good health and sustainability: ICRISAT is working on a decentralized food system framework that generates evidence, builds theory and impact pathways, and supports data-driven policies to design and promote resilient and nutrition-smart local food systems to strengthen local and indigenous food systems, and mainstream resilient and nutritious foods such as millets into local diets.

New Age Analytics for Digital Transformation of Agro Advisory System: ICRISAT has developed and piloted the Intelligent Agricultural Systems Advisory Tool (iSAT) that builds on making real-time high-quality farm data available to the proposed digital platform along with satellite imagery, historic data, and weather predictions by the Meteorological Department. http://oar.icrisat.org/11074

The way forward

ICRISAT's systems, approaches and tools for improving climate resilience, farm and food systems have an immense potential to support agri-food systems transformation in Africa and Asia.

Further investments in this area will see new advances and innovations in both scaling climate resilient agriculture and next-generation agro advisories tools to contribute to managing climate risk while enhancing agri-food systems resilience.