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“Development on the margin”

Shaping Agricultural Innovation Systems Responsive to Food Insecurity and Climate Change

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Abstract

Climate change and variability present new challenges for agriculture, particularly for smallholder farmers who continue to be the mainstay of food production in developing countries. Global food crises of recent years have exposed the structural vulnerability of increasingly globalised agri-food systems. In this context, climate change is one of a complex of environmental, demographic, social and economic drivers generating unprecedented levels of instability and food insecurity, the impacts of which disproportionately effect poorer groups in marginal environments. Rather than search for single causes, we argue, there is a need to understand these changes at a systemic level. Improved understanding of and engagement with the adaptive strategies and innovations of communities living in conditions of rapid change provides an appropriate starting point for those seeking to shape agricultural innovation systems responsive to food insecurity and climate change.

This paper draws lessons from selected country experiences of adaptation and innovation in pursuit of food security goals. It presents three case studies of systems of innovation operating in contrasting socio-economic, geographical and agro-ecological contexts and facing different challenges. In Southeast Asian post-Green Revolution rice cultivation we trace innovations responding to unintended consequences of rapid technological change. In India we focus on attempts to recover degraded semi-arid lands and livelihoods bypassed by the Green Revolution in a rapidly developing now middle income economy and a functioning democracy; in southern Africa we explore responses to similar social and environmental challenges to those in the Indian context, but in low income economies with less developed institutions and democratic practice. We review each case in terms of four features of innovation systems more likely to build, sustain or enhance food security in situations of rapid change: a) recognition of the multifunctionality of agriculture and opportunities to realise multiple benefits; (b) access to diversity as the basis for flexibility and resilience; (c) concern for enhancing capacity of decision makers at all levels; and (d) continuity of effort aimed at securing well-being for those who depend on agriculture. Finally we draw implications for policy makers and other stakeholders in agricultural innovation systems.

Keywords: Agricultural innovation systems, climate change, food security