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“Reconcile land system changes  
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## Farmers’ perspectives on climate-resilient agriculture for food security: Bridging the gap between policy and practice in coastal Bangladesh

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### Abstract

Climate change poses severe threats to food security and biodiversity in low-lying coastal regions like Bangladesh. Adapting to these challenges requires the adoption of Climate-Resilient Agriculture (CRA) to build resilience and for sustainable food security. However, upscaling of CRA practices is largely constrained by limited local-level knowledge of CRA institutional capacity and access to inputs. Therefore, bridging the prevailing knowledge gap is essential to develop targeted strategies to address such challenges to promote sustainable agricultural practices, food security, and biodiversity conservation in Bangladesh’s highly vulnerable coastal landscapes. The current study has attempted to focus on the existing knowledge gaps in promotion of CRA in coastal Bangladesh with the following research questions; (i) What adaptation actions are perused by farming communities to develop climate resilience in their agricultural systems and (ii) What input side factors constrain planned and autonomous adoption of CRA in coastal agricultural landscapes? The study followed case study-based investigations in coastal Bangladesh to gather novel insights into the prevailing barriers to planned and autonomous adaptation of the food production systems. The data were analysed using a multi-criteria framework consisting of seven key dimensions of CRA (agrometeorology services, water management practices, nutrient management activities, technologies and knowledge management activities, infrastructure development, socio-economic resilience, and institutions and good governance). The study revealed that a) agricultural communities in coastal Bangladesh significantly appreciate the economic and ecological gains of climate change adaptation of the crop production systems and the consequent benefits to the linked social systems, b) Adoption of planned adaptation actions is limited due to deficiencies in institutional arrangements and implementation capacity, c) Adoption of autonomous adaptation measures were found to be dependent on farmer income level, farm-holding size, access to input resources and services, and peer/social influences, d) Both planned and autonomous adaptation actions were found influenced by specific social and geographic contexts and cultural aspects. The study proposes strategic recommendations to foster inclusive, scalable CRA models that align with local realities and promote long-term food security and sustainability.

**Keywords:** Autonomous adaptation, climate-resilient agriculture, coastal Bangladesh, food security, institutions, planned adaptation

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