

# Climate Smart Agriculture (CSA) Strategy

## Background

Agriculture is not only the production sector most affected by climate change, but also one of the largest contributors to climate change. Making farmers and agriculture systems more resilient to climate change has become a priority area. Enabling climate smart agriculture (CSA) underpins all of BRAC's agricultural programmes, as interventions must take into account and adapt to the impacts of climate change. Further, the role of agriculture in mitigation is also important.

FAO defines climate smart agriculture (CSA) as “agriculture that sustainably increases productivity, enhances resilience (adaptation), reduces/removes greenhouse gases (mitigation) where possible, and enhances achievement of national food security and development goals” (Food and Agriculture Organization of the United Nations, 2010). In this definition, the principal goal of CSA is identified as food and nutrition security; while productivity, adaptation, and mitigation are identified as the three interlinked pillars necessary for achieving this goal (Lipper, et al., 2014).

## BRAC's Initiatives

BRAC's initiatives to increase productivity are closely linked to a focus on sustainable intensification. Rather than enhancing productivity by increasing the amount of land under cultivation, BRAC enables farmers to yield more from the land they already have. This helps to reduce aggregate greenhouse gas (GHG) emissions per kilogram of food production and reduce the expansion of production areas into forests, further mitigating GHG emissions.

To enhance resilience, the focus has been on building the capacity of farmers to adapt to climate change while reducing their exposure to short-term risks. BRAC's agriculture research team in Bangladesh have worked to develop improved varieties with greater drought, flood and iron toxicity tolerance, while teams in flood-affected regions have explored the implementation of alternative farm-related livelihoods, such as fisheries, for farmers who have lost their crops to submersion. Reducing GHG emissions is part of BRAC's forward-looking approach, as it seeks to mitigate future risks. Initiatives so far have centred on crop diversification, whereby farmers are encouraged to grow two or more different types of crops to maximise land productivity and thus reduce aggregate GHG emissions.

BRAC-promoted cost effective strategies so that smallholder farmers are able to adapt to changing climate conditions. By adopting climate resilient inputs, such as drought-tolerant and disease-resistant seed varieties, and innovative technology and techniques, such as use of

short duration crop varieties and balanced fertilizer application, smallholder farmers increase their capacity to mitigate the negative impacts of climate change.

Community-based participatory adaptation plans are very important for sustainable agricultural development. Community-managed adaptation techniques help manage risk and exposure to changing climates.

## **Climate Smart Approaches**

Below we highlight each of the key components of our training process and how they contribute to our CSA approach.

### **i) Strengthen capacity of farmers and relevant stakeholders**

- Identify negative consequences of climate change (relevant to agriculture) and train community people on the adaptation measures.
- Train farmers and other relevant stakeholders on climate-smart integrated land management.
- Build capacity and generate new knowledge among community people to enable them to better adapt and protect their communities from extreme climatic conditions, including heat/cold waves, increased water salinity, flooding, and other challenges.
- Train farmers on soil improvement, including the use of green manure, FYM, vermi-compost, animal manure, and when and how to utilize chemical fertilizers to improve land productivity.
- Train farmers on integrated pest management (IPM) and efficient management of water.
- Train farmers on the negative effects of deforestation and build skills to combat land degradation, including forestation/re-forestation, crop rotation, cropping pattern, cropping intensity, mulching/covered crop cultivation.
- Enhance farmers' knowledge on seed production, processing and proper storage of seeds and grain.
- Develop institutional capacity of local governments, including agricultural ministries (agriculture, livestock, fisheries) and other relevant departments (youth, forest, environment) to enable communities of adaptation to climate change.

### **ii) Introduce climate smart agricultural technologies**

- Practice conservation agriculture, including reduced soil disturbance (minimum tillage), crop rotation and crop residue management.
- Increase knowledge and adoption of water management technologies practices, including on-farm water management, rainwater harvesting, water-saving irrigation practice (Alternate Wetting and Drying (AWD) and drip irrigation with mulch in the orchard/crop field), use of covered drain/underground pipeline, cultivation of cover crops to reduce water loss, and farming less water loving crops.

- Motivate farmers to adopt innovative farming practices, such as shifting planting time (early/late planting), crop pattern management, rain-fed short duration crop cultivation, crop diversification, introducing alternative crops, and cultivating less water-intensive crops, e.g. mungbean, maize, groundnut, and sesame.
- Introduce agriculture insurance schemes to insure against crop loss due to climate-related events, e.g. drought.
- Promote nitrogen-saving technology use, including bio-slurry, soil tests based on fertilizer application, leaf color charts, and cultivation of legume crops.
- Introduce energy efficient models, including biogas and environmentally friendly cooking stoves.
- Encourage uptake of agriculture machinery for cost-effective increases to agricultural productivity.
- Increase use of ICT in agriculture development, including promoting centralized and comprehensive agricultural information systems, farmer databases, early warning systems, agricultural technology compendiums, use of mobile-based e-agriculture support and services, and community radio in remote drought-prone areas.

### **iii) Promote improved climate resilience crop/livestock varieties**

- Conduct high-level agricultural research and higher agricultural education, with focus on climate change, adaptation, and resilience.
- Increase agricultural production under a changing climate through promotion of climate resilient agricultural technologies and practices.
- Introduce stress (e.g. flood, drought, salinity and cold) tolerant and nutrient-rich and short duration crop varieties.
- Promote disease and pest resistant crop and livestock varieties.

### **iv) Promote alternative adaptation options**

- Build cohesion among community members, develop self-help groups. Accumulate community resources, managed by the communities to facilitating long-term community resource management.
- Establish rural markets, develop market agents and communication networks, and develop community-managed value chains for agricultural inputs and outputs.
- Promote inclusive and sustainable small-scale business practices and group approaches at the local level.
- Develop community volunteers for collecting early warning data and other up-to-date information to disseminate to community farmers.
- Train poor people on agro-based off-farm income generating activities as alternative livelihood strategies for poverty alleviation.
- Develop community agrovets, paravets, and vaccinators at the local level to support small- and medium-scale farmers.

- Increase food security of poor and vulnerable populations through safety nets programmes (e.g. food for work), reduce food prices, and other local-level interventions.

**v) Raise awareness and build partnerships to address climate change in agriculture-dependent communities**

- Direct community mobilization and awareness building campaigns to encourage a reduction in activities contributing to climate change.
- Increase awareness among communities of the negative consequences of deforestation and forest degradation that result in biodiversity losses and are major sources of greenhouse gas (GHG) emissions.
- Train community members on forest preservation and cultivation of new plants (fruits and timber trees) for conservation of the local environment.
- Arrange community meetings to address improving the environmental and social sustainability of supply chains.
- Establish and maintain partnerships between public, private and civil society actors to address the extreme climatic situation through joint initiatives.
- Arrange innovative public-private financing models.
- Engage government agencies, public financial institutions, private sector investors and business people, and development institutions serving poor smallholder farmers through innovative financing and investment in the agriculture sector.

**vi) Document and disseminate best practices and learnings and engage in policy advocacy**

- Carefully document best practices that contribute to building climate resilience and capture and disseminate best practices and learnings to farming communities and policy makers.
- Advocate for transformative change in current policies and institutional arrangements addressing climate-smart agriculture.
- Develop low emission, resilient development strategies, e.g. Green Growth, National Adaptation Plan for Action (NAPA), and Low Emissions Development Strategies.
- Engage with agro-based companies and national governments to advocate for public commitments to undertake positive efforts to improve food security.



## Bibliography

Food and Agriculture Organization of the United Nations. (2010). *"Climate-Smart" Agriculture, Policies, Practices and Financing for Food Security, Adaptation and Mitigation*.

Lipper, L., Thornton, P., Campbell, B. M., Baedeker, T., Braimoh, A., Bwalya, M., et al. (2014). Climate-smart agriculture for food security. *Nature Climate Change volume 4* , 1068–1072 .