

**FACULTY OF AGRICULTURE SCIENCES AND
ALLIED INDUSTRIES**

KEY DIMENTIONS FOR ADAPTATION AND MITIGATION

Panel on climate change (PCC 2007) defines mitigation as the technological change and substitution that reduce resource inputs and emissions per unit of output. Although several social economic and technological policies would produce an emission reduction, with respect to climate change, mitigation means implementing policies to reduce GHG emissions and enhance sinks.

Adaptation and mitigation measures needed for transforming Indian agriculture into a climate risk-resilient mode would have to focus on key dimensions in order to synergies strategies for programmatic interventions. These key dimensions (Fig 1) are the areas that need to be addressed due to risks emanating for climate change.

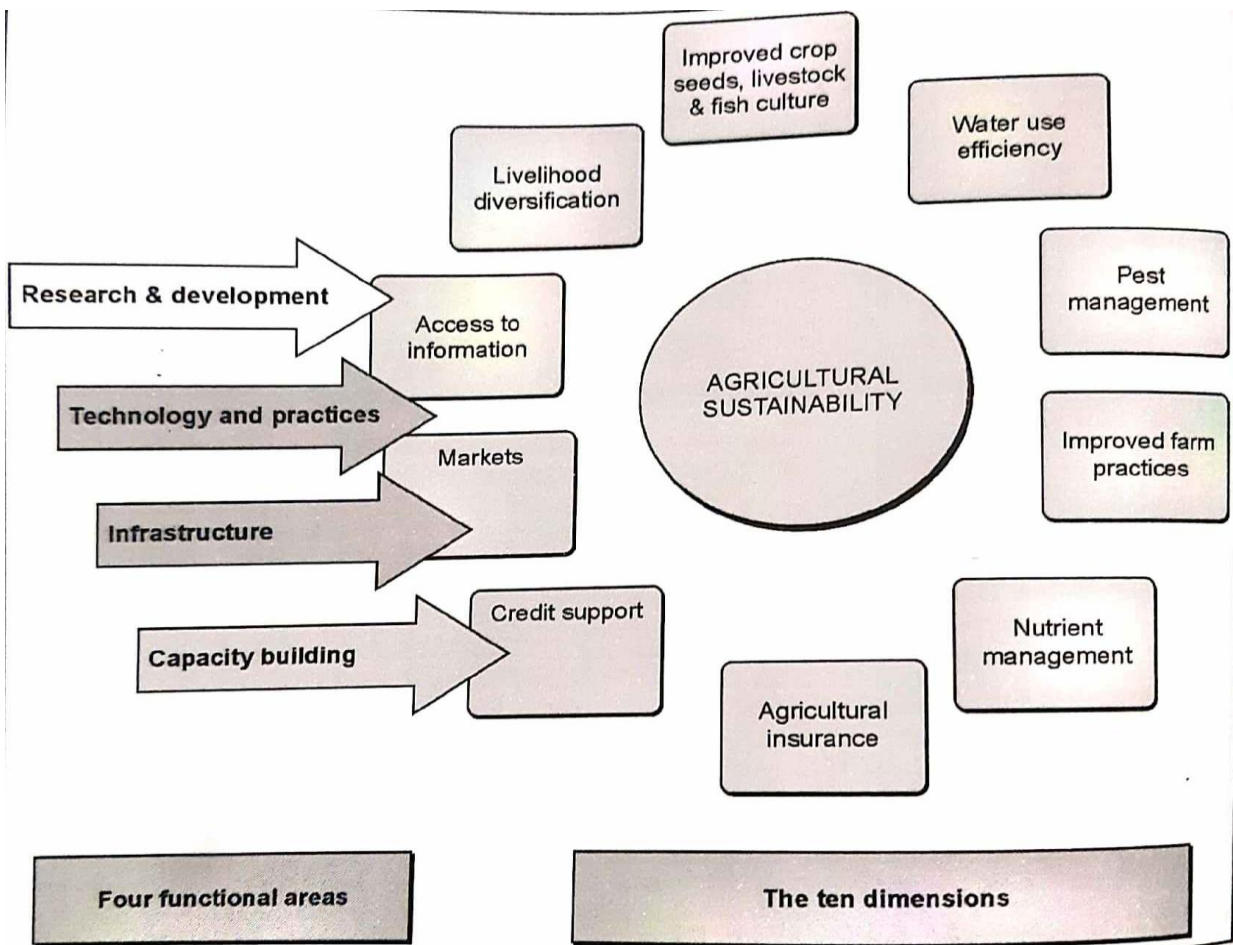


Fig. 1 Key dimensions of agricultural sustainability

The key mitigation technologies in agriculture, as per national Mission for Sustainable Agriculture (NMSA 2010): Strategies for meeting the challenges of climate change, Department of Agriculture and Cooperation, Ministry of Agriculture, New Delhi include:

1. Improved crop seeds, livestock and fish cultures.
2. Water use efficiency.
3. Pest management.
4. Improved agronomic practices.
5. Nutrient management.
6. Agricultural insurance.
7. Credit support.
8. Markets.
9. Access to information.
10. Livelihood diversification.

IMPROVED CROP SEEDS, LIVESTOCK AND FISH CULTURES

- Promoting use of bio-technology
- Research and promotion of C4 pathways in C3 plants.
- Conserving indigenous genetic resources.
- PPP in R&D, management and dissemination of improved varieties.
- Conserving agricultural heritage.

WATER USE EFFICIENCY

- Promoting water use efficiency in irrigation
- R&D in the areas of energy efficient water system.
- Developing mechanisms for integrated management of rainwater, surface and groundwater.
- Policy instruments for PPP.
- Strengthen local institutions in managing water allocation and utilization.

PEST MANAGEMENT

- Efficient, safe and environmentally sound methods of pest management.
- Incentivizing research, commercial production and marketing of bio-pesticides.
- Developing insect forecasting models.

- Decision and information support system for pest and disease surveillance.
- Institutional mechanism for quick response in case of disaster.

IMPROVED AGRONOMIC PRACTICES

- Improved agronomic practices to reduce farm losses.
- Conservation and precision farming.
- Knowledge management.
- Soil conservation.
- Policy instruments for optimum land use.

NUTRIENT MANAGEMENT

- Strengthening services for promoting production and use of bio-fertilizers.
- Developing nutritional strategies for managing heat stress in dairy animals.
- Strengthening capacity of existing soil testing labs.
- Quality standard and quality control system for raising confidence among users.

AGRICULTURAL INSURANCE

- Developing various models for risk assessment.
- Designing user-friendly decision support system to help assess risks and develop region specific contingency plans.
- Strengthening existing risk cover mechanism under NAIS and weather based crop insurance scheme.

CREDIT SUPPORT

- Developing new form of credit assessment and risk management system.
- Promoting micro-finance.
- Developing mechanisms to enhance the flow of credit to critical infrastructure.
- Up-scaling the kisan credit card scheme.
- Designing customized credit policies and programmes to mitigate risks.

MARKETS

- To formulate market-aligned research and development programmes.
- Improving supply chain efficiency.
- Creation of new market infrastructure.
- Supporting community partnership in developing food and forage banks.

- Strengthening access to quality and timely inputs by farmers for mitigating risk.

ACCESS TO INFORMATION

- Minimizing information asymmetry through ICT-based system.
- PPP to develop technology based solution for providing farmers with information on price discovery, commodity arrivals, *mandi* prices etc.
- Building an information and communication technology (ICT) enabled knowledge management network.
- To create, manage and develop national resource portal.

LIVELIHOOD DIVERSIFICATION

- Mitigating risk by supplementing income from off-farm activities.
- Crop diversification.
- Crop-livestock-fisheries farming system.