

SUSTAINABLE AGRICULTURE: LINKING CLIMATE MARKETS TO FARMERS IN INDIA



The problem

Extreme weather is causing significant problems for smallholder farmers and others who depend on agricultural value chains in developing countries. Although value-chain analysis can help untangle the complex relationships within agricultural systems, it often has failed to take into account the effects of climate change. Warming temperatures, increasing droughts and unseasonal rains have rendered farmers helpless.

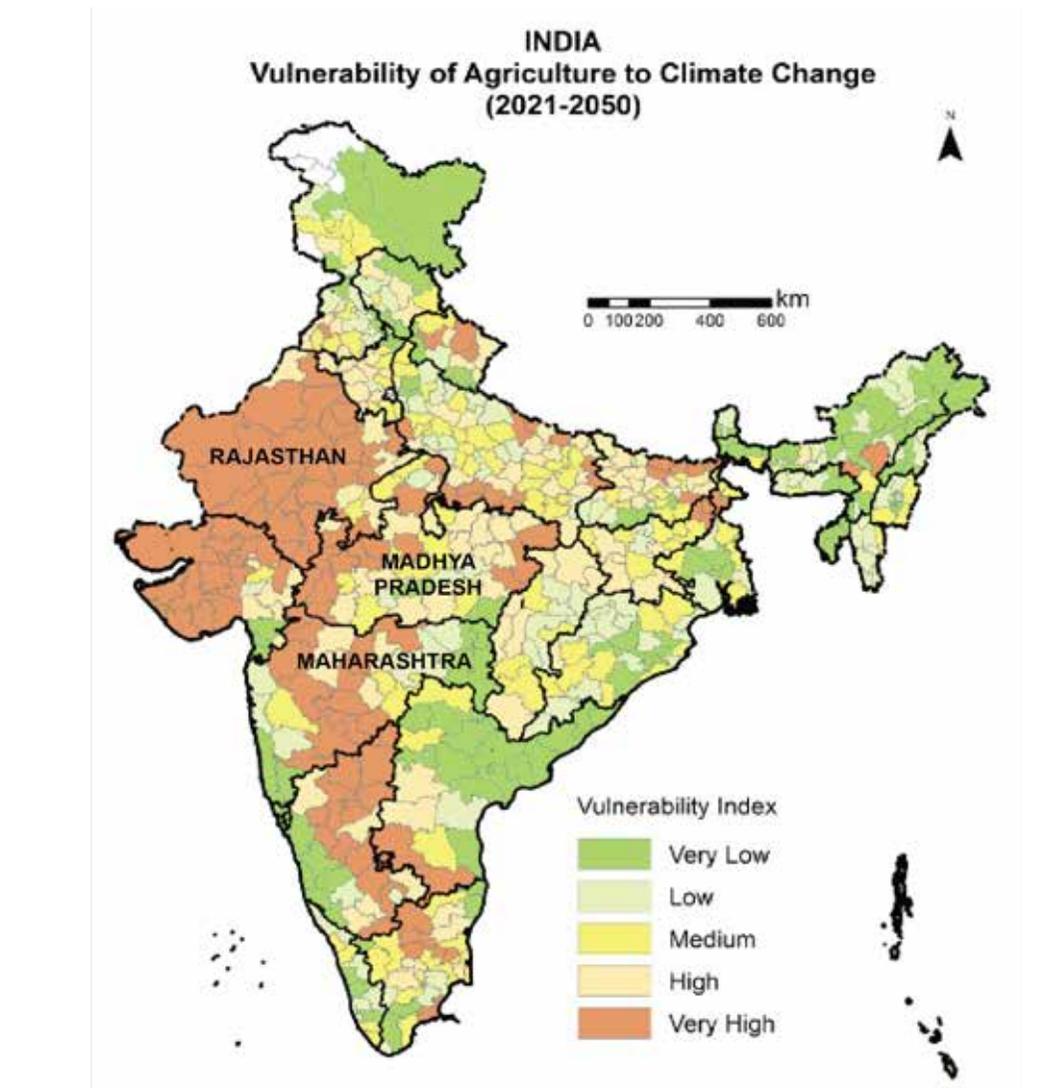
Food security poses a growing challenge for much of the continent. To help people adapt to changing conditions, governments, the private sector and development partners have become interested in the uptake and scaling of climate-smart agriculture (CSA). Many of the studies to date have focused on the production end of the value chain—i.e., ways to help farmers grow more food. This limited focus neglects the importance of the harvesting, storage, processing and marketing stages. More researchers now are recognizing that food security is not just an issue of production but also of distribution, access and affordability.

- Traditional farming methods not suitable for the changing climate
- Many old adaptation techniques, though very innovative at that time, have to evolve to tackle low soil quality and water shortage



Scenario in India

- Recurring drought is a major challenge in the Drought Prone Areas of states Maharashtra, Rajasthan and Madhya Pradesh. Decrease in yield of cereals, horticultural crops, livestock production and loss of employment, all are associated with the decreased income of farmers, all being the most immediate economic impacts of drought.
- Environmental impacts such as increases in average atmospheric temperature, pasture-forest degradation, deteriorated water quality, damage to fish habitat-wildlife, and groundwater depletion.
- Additionally, social impacts such as population migration, impacts on health and schooling of children, hopelessness and sense of loss, conflicts in society for water, and malnutrition due to changed food preferences are also by-products of drought and this vulnerability.



About the project

WHAT IS CLIMATE SMART AGRICULTURE

Climate change is already imperilling the livelihoods of farmers around the globe by exacerbating droughts, heat waves, floods and other extreme-weather events, as well as creating an influx of new pests and diseases. Worldwide, 500 million small-holder farms produce about 80% of the food consumed in Asia and sub-Saharan Africa, and provide livelihoods for more than 2 billion people.

Climate-Smart Agriculture (CSA) takes into consideration the diversity of social, economic and environmental contexts, including agro-ecological zones. Implementation requires identification of climate-resilient technologies and practices for management of water, energy, land, crops, livestock.

Unless business-as-usual emission trends are altered, additional warming will increasingly devastate these vulnerable agricultural communities, further exacerbating the immense challenges of poverty alleviation, food and water security, and energy access already facing developing countries.

Understandably, developing countries want to address climate change through the development framework. Thus, there is an urgent need for strategies that provide a “triple win” by simultaneously:

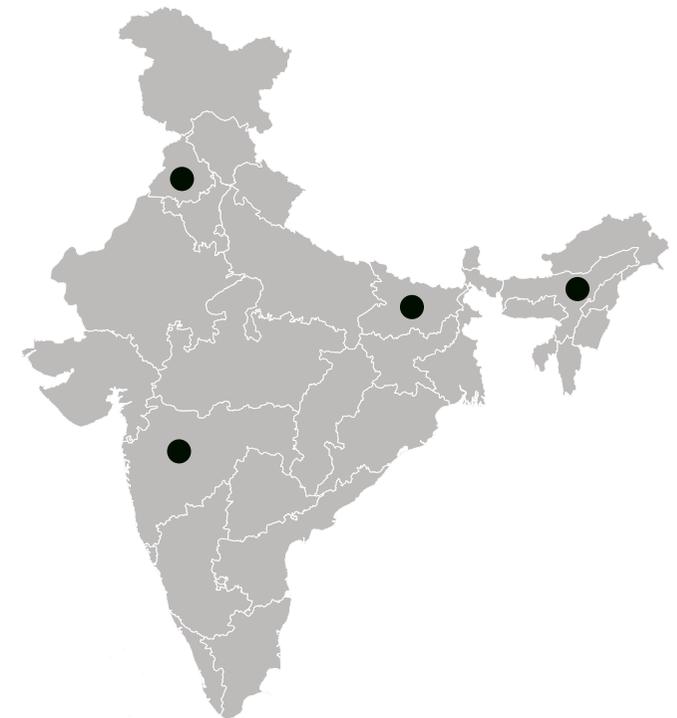
1. Enhancing farmers' economic development through maintenance of crop yields and reduction in input costs
2. Making agriculture more resilient to the impacts of climate change, thus enhancing food security at the local, national and even global level
3. Minimising agriculture's future emissions of greenhouse gases (GHGs)

Climate smart farming (CSF), also called Low-carbon farming (LCF) and often referred to locally as Sustainable Agriculture, practices can deliver on all of these three counts. And as the world moves to implement market-based measures to promote GHG mitigation, markets can offer an additional incentive for small-holder farmers to adopt climate smart practices.

The primary reason to adopt CSF should be common sense: the farmers should adopt CSF because they see the direct economic benefits that help promote the well-being of their families and communities.

Duration of the Project:

10 years



Location -
Country - India
States - Bihar, Maharashtra, Punjab and Assam

RISKS OF TRANSITION TO CLIMATE SMART AGRICULTURE

- Loss of Crops
- Resultant loss of trust / Belief in changing agricultural techniques
- Enhanced Cost of production

STEPS NEEDED TO ADDRESS THESE RISKS

- Weather based predictive models – information to be shared with farmers
- Robust mechanism for information sharing / simplicity and effectiveness to be ensured
- Crop Insurance
- Enhanced pricing to cover for increased costs
- Reliability of sale
- Ensure that farmers are adequately trained, special focus on behavioural issues



How do we approach it

Tillage and Residue Management	<ul style="list-style-type: none"> • No-Tillage/zero-tillage • Reduced tillage
Land Restoration and Rehabilitation	Natural regeneration • Assisted natural regeneration • Enrichment planting
Agronomic Practices	<ul style="list-style-type: none"> • Crop rotation • Intercropping • Green manure • Contour strip cropping • Relay cropping • Use of improved/resilient crop varieties • Integrated pest management • Restricted chemical management (& pesticides)
Nutrient Management	<ul style="list-style-type: none"> • Mulching • Composting • Vermi-composting • Cover / nitrogen-fixing crops • Manure • Restricted chemical fertilizers
Soil and Water Conservation	Smarter water management (eg: drip-irrigation)
Sustainable Energy	Better, cleaner energy for irrigation(avoidance of diesel)
Technological and Other Intervention Support	<p>Implementation partners encourage the use of technology to increase efficiency of resource-use such as water; By demonstrating the benefits, encouraging adoption among farmers; supporting market linkages of produce etc.</p> <p>Additionally implementation partners offer seasonal support from agri-experts</p>
Financial Support	<p>The implementation team over the first few years educate, train and equip farmer groups to manage funds, facilitate loans and help build their credit history. The implementation team guides farmers in planning and implementation of activities aimed at addressing their various vulnerabilities.</p> <p>In the 7 years, the farmer groups will be prepared to take out their own insurance, loans etc.</p>
Behavioural change	Bringing about behavioural change by demonstrating technology and its benefits and encouraging farmers to adapt to using them.



- Farmers will be trained on the various interventions and on choice of climate resilient varieties, efficient nutrient management practices etc. Support will be provided by the on-ground implementation partners to understand and practice these interventions.
- These interventions are not necessarily area specific, hence the project activities can be replicated across various regions in India.
- The creation of farmer groups creates an opportunity for the community to work together as a whole. This enables planning and synchronization of cultivation practices and irrigation activities, as well as a conducive environment for project implementation as all members are involved.
- Farmer groups are also taught on how to manage funds, facilitate loans when necessary. Implementation partners hand-hold through up to 7 years so as to build a beneficial credit history with local banks and encourage technological self-reliance.
- The same farmers can potentially be pioneers who encourage a newer set of farmers for the following year. Scaling up the project to cover entire districts can have the added benefit of aiding with water release and distribution at a more central administrative level.

SUSTAINABLE AGRICULTURE SUPPLY CHAINS

- Increasing thrust globally for sustainably managed agri-produce
- Organic, Non Pesticide based etc



Anticipated activities

- Organic fertilisers (Farm Yard Manure, Vermicompost, Green manuring)
- Biofertilizers and Microbial Cultures (Sanjivak, Jivamrut, Amritpani, Panchgavya)
- Bio-pesticides (Trichoderma/ Pseudomonas)
- Botanical Pesticides (Neem)
- Crop rotation
- Biological Control of Weeds
- Integrated Pesticide Management (IPM)
- Integrated Nutrient Management (INM)
- Integrated Farming Systems (IFS)

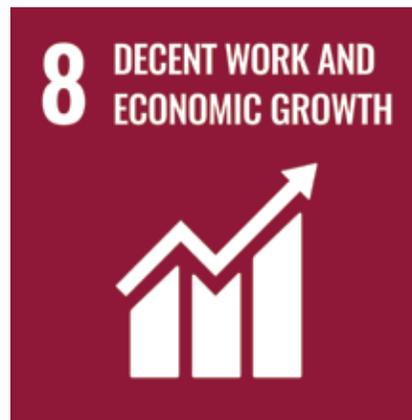


Community involvement and benefits

- Reduced interest rate for farmers (Loan to farmers aimed to be at subsidised rates) even possibly a lower amount to be borrowed due to the unique financial model combining the benefits of both Carbon Finance and concessional Climate Finance.
- Increased source of income and new employment opportunities - via monitoring, maintenance etc.
- Reduced gender inequalities - Involvement of both men and women
- Capacity building and knowledge sharing
- Awareness and education on carbon markets
- Low income farmers to access low cost micro-finance



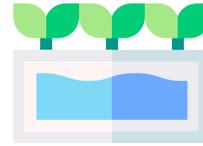
SDGs addressed by the project



The Benefits



Improved soil health



Improved water quality and management



Reduced chemical fertilizer and pesticide use



Healthier crops which leads to less produce waste



Training and capacity building of farmers on sustainable agriculture techniques



Crop yields - Crops are maintained and not negatively affected



Farmer Groups - Creation of community organisation through formation of farmer groups



Local Employment - Recruitment of project staff and monitors



Self-help groups with a significant number of women are created; so as to encourage collaborative decision-making and working



VNV ADVISORY

VNV Advisory Services has been at the forefront of working with climate change and livelihoods. Our decade-long experience has seen us develop low-carbon projects that support these communities in getting their basic needs while adapting to and mitigating the harsh impacts of climate change. We work in areas of clean cooking, social forestry, sustainable agriculture, rural energy access and many other related community based technologies. With support from over 40 NGOs and implementation partners, our work encompasses over 4 million rural households and 50,000 hectares of forest areas under management across the South Asian (India, Bangladesh, Nepal, Laos, Myanmar and Sri Lanka) region. We have also been able to engage with businesses to address issues of Social Responsibility, Environmental Sustainability and Carbon Neutrality.





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