

## Climate Smart Agriculture

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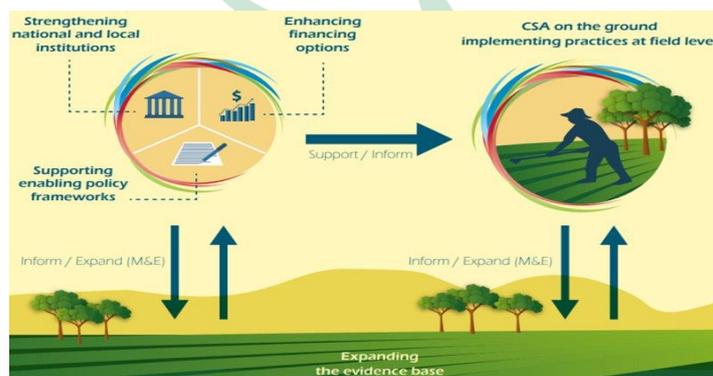
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### Introduction

Climate-smart agriculture (CSA) is an approach that helps guide actions to transform agri-food systems towards green and climate resilient practices. CSA supports reaching internationally agreed goals such as the SDGs and the Paris Agreement. It aims to tackle three main objectives: sustainably increasing agricultural productivity and incomes; adapting and building resilience to climate change; and reducing or removing greenhouse gas emissions, where possible.

CSA supports the FAO Strategic Framework 2022-2031 based on the Four Betters: better production, better nutrition, a better environment and a better life for all, leaving no one behind. What constitutes a CSA practice is context-specific, depending on local socio-economic, environmental and climate change factors. FAO recommends the approach is implemented through five actions points: expanding the evidence base for CSA, supporting enabling policy frameworks, strengthening national and local institutions, enhancing funding options, and implementing CSA practices at field level.

About 800 million people in South Asia would be prone to climate change scenarios such as floods, cyclones, droughts and heat waves, including India. In India, gross domestic product (GDP) per capita is estimated to decline to 9.8% by 2050 under carbon-intense climate change, and climate-induced yield loss would be anywhere between 4.5 and 9%, which will lead to a loss of 1.5% of GDP on an annual basis.





Indian farmers might have to incur about a 3% net income loss if the temperature rises by 2 °C and +7% change in average precipitation. Also, they are likely to face around a 10% rise in cereal price and 3–4% increased poverty after 30 years than at the present time due to an increase in temperature and aberrations in weather. Therefore, it might need to produce 70 million more food grains by 2030 to feed the burgeoning population (The Economic Times 2017).

### **Various Incentives by Government of India**

#### **The Project for Climate Resilient Agriculture (POCRA)**

Department of Agriculture, Government of Maharashtra in association with World Bank has rolled out NanajiDeshmukhKrishiSanjivaniPrakalp, also known as Project on Climate Resilient Agriculture (PoCRA), which is an ambitious project aimed at promoting climate-resilient agriculture in the State of Maharashtra.

The Maharashtra Project for Climate Resilient Agriculture, which at US\$420 million is one of the largest CSA projects the Bank has financed to date, is estimated to yield climate change improvements of US\$386 million. As of June 2020, 309,800 project beneficiaries have adopted climate-smart agriculture practices, and 56,602 hectares of land have benefitted from improved irrigation and drainage technologies.

The Project on Climate Resilient Agriculture (PoCRA) aims to enhance climate resilience and profitability of 700,000 small (1-2 ha) and 10,00,000 marginal (less than 1 hectare) farmers in 5000 villages across 15 drought and salinity / sodicity affected districts of Maharashtra.

#### **National Initiative for Climate Resilient Agriculture (NICRA)**

National Innovations in Climate Resilient Agriculture (NICRA) was launched during February 2011 by Indian Council of Agricultural Research (ICAR) with the funding from Ministry of Agriculture, Government of India. The mega project has three major objectives of strategic research, technology demonstrations and capacity building. Assessment of the impact of climate change simultaneous with formulation of adaptive strategies is the prime approach under strategic research across all sectors of agriculture, dairying and fisheries. The four modules of NICRA – natural resource management, improving soil health, crop production and livestock – is aimed making the farmers self-reliant. Outcome of the Scheme



Selection of promising crop genotypes and livestock breeds with greater tolerance to climatic stress. Existing best bet practices for climate resilience demonstrated in 100 vulnerable districts. Infrastructure at key research institutes for climatic change research strengthened. Adequately trained scientific manpower to take up climate change research in the country and empowered farmers to cope with climate variability.

### **CGIAR-Consultative Group on International Agriculture Research Program on CCAFS Envisions Climate Smart Villages**

CCAFS – Climate change, Agriculture and Food systems for Climate-Smart Villages (CSVs) have successfully combined global knowledge with local action to help farmers sustainably produce more food, while curbing greenhouse gas emissions and increasing resilience to climate change. In CSVs farmers and researchers test and implement portfolios of climate-smart agricultural practices, technologies, and services, which can be combined together to make the best out of an increasingly difficult situation. In the Indian state of Haryana, farmers have implemented climate-smart practices such as laser-land levelling and alternate wetting and drying of rice, reducing water use, improving soil health and bringing economic rewards. Farmers have also been receiving agro-advisories on their mobile phones, with inputs from met departments, scientists, input dealers and farmers, which allow them to make timely decisions.

Due to the success of CSVs, the State Government of Haryana has kick-started a program to launch an additional 500 CSVs in the state's rice-wheat systems. The program will be implemented by the Department of Agriculture, Government of Haryana through integrated investments. A planning workshop with the most important stakeholders has already mapped out the range of schemes which will be used within the villages. CSVs are catching on across the country, with new proposals for developing CSVs across five other Indian states, on over 237,000 ha of land. These states are particularly vulnerable to climate change, and the International Food Policy Research Institute (IFPRI) has developed and submitted pilot projects worth USD 140 million as part of the CCAFS program.

### **Climate Smart Farming in India an example**

One good example of CSA intervention is Dhundi village in Gujarat, where the farmers irrigate their lands with solar power, shared GirirajAmarnath, Principal Researcher,

Disaster Risk Management and Climate Resilience Research Group at International Water Management Institute (IWMI).

The solar programme provides remuneration to the farmers in two ways. First, the farmers transfer the electricity to the local grid, and they are provided an income for the same. Second, they can also diversify and grow different crops as there is a guarantee of water and they don't have to depend entirely on monsoon. They are growing pomegranate, papaya, cotton and the like. You don't need a lot of water for that. This also doubles the farmers' income. The grids are also local. A section of farmers in India are now using solar-based energy, which means lesser emissions compared to the diesel-based pumps.

### Conclusions

The Climate smart agriculture is the saviour for the world. Various smart incentives like organic farming and zero budget natural farming should be taken into consideration. Renewable energy can also be the better solution for climate smart farming. Integrated farming system model can also be the right choice for climate smart agriculture. Precision agriculture and its new applications can also be a game changer for Climate smart agriculture.

