# Partnership in Climate Services for Resilient Agriculture in India

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USAID, an agency of the United States federal government works towards combating global hunger, poverty and malnutrition, through various collaborations across the world. In India, USAID has come up with a unique partnership with Skymet Weather Services called Partnership in Climate Services for Resilient Agriculture (PCSRA) in India to help digitalize the archaic methods still employed by the Indian farmer and develop new risk mitigation products. The duration of the project is 4 years (October 2015-September 2019) and it has benefited more than 80,000 farmers spread across 31 districts in 9 states.

India is prone to various kinds of hydro-meteorological and geological hazards, especially droughts, earthquakes, floods, tsunamis, cyclones and landslides. These hazards threaten millions of lives and can cause large-scale loss-to people, infrastructure and the economy. Every year, unpredictable or irregular weather events cause unprecedented losses of capital and produce, which, in turn, set off a ripple effect culminating in inflation in food prices and in extreme cases, farmer suicides. 610 deaths have been reported in Maharashtra alone between January and March this year. Accurate weather predictions at the right time can go a long way in mitigating, if not in eradicating this crisis.

India is a study of dizzying contrasts. It's hard to imagine that the country credited with launching the highest number of satellites in a single mission is also the country with almost 31 million homes with no electricity. This perplexing gap is the startling reality of our country. The disconnect between technological progress and technological impact needs to be bridged in order to metamorphose from a 'developing' to a 'developed country'.

Increasingly accurate weather forecasts will not facilitate agriculture if the right information does not reach the right person at the right time. And this is what sets the PCSRA project apart. With its grassroots approach, it aims to take all its specific and detailed weather predictions and insurance information to every disadvantaged farmer, and this is precisely what digitalization is all about- making the maximum impact on the maximum number of people.

The PCSRA project is helping farmers and vulnerable agricultural communities in rural areas cope with climate variability and make informed decisions by providing them with hyper-local weather information. To realize this goal, 675 Automated Weather Stations (AWS) have been installed to generate real time weather and crop monitoring data to

extrapolate weather parameters in the near term. Besides weather information, real-time weather based customised crop advisory is also made available to the farmers. This permits the Indian farmer to make time-sensitive decisions regarding the varieties of crops, irrigation, pesticides, fertilizers and the like. A unique aspect of the project is its concept of 'community of practice' which organises farmers' meets where discussions are held for the adoption of the best practices for agriculture to be more productive and effective. In the community of practice, various stakeholders like district agriculture officials, agricultural research institutions, banks, farmer organisations and NGOs are brought together. This project also deals with an often ignored aspect of risk-management in agriculture - agri-insurance. It facilitates insurance through the Government of India's flagship program- the Pradhan Mantri Fasal Bima Yojna. This benefits the farmer to cope with climate induced shocks.

Since, the beginning of project till the third quarter of the fourth year of the project (i.e. during 1st October 2015 to 30 June 2019), 80,423 farmers have been registered under the project. The state-wise registration of farmers is reflected in Table 1.

Table 1: State-wise registration of farmers under PCSRA (as on 30 June 2019)

| State | Total Farmers Registered |
|---|---|
| Andhra Pradesh | 5835 |
| Bihar | 10819 |
| Gujarat | 10662 |
| Haryana | 7638 |
| Madhya Pradesh | 11951 |
| Odisha | 7783 |
| Punjab | 6767 |
| Rajasthan | 13136 |
| Telangana | 5832 |
| **Total** | **80423** |

Each of the registered farmer under this project is geo-tagged. Skymet has developed mobile application known as 'Skygreen', which was introduced for farmer's registration and activity monitoring on the field. The app also captures the farmers' geo-coordinates, which helps in service customisation and better service delivery.

SkyMitra is an android mobile app developed by Skymet Weather under this program to help the farmers by providing relevant weather and agro advisory information quickly. The app provides weather forecast for 7 days and 15 days. Accurate weather forecast not only helps farmers to protect themselves against the natural factors. They can also benefit significantly if they are aware of the actions they can take to leverage good weather patterns.

Under the project intervention, Skymet gives access to regular and reliable weather information to the small, medium and marginal farmers in all 31 geographies under the project. Shorter real-time meteorological information such as daily forecast further helps to determine timing of various activities such as sowing, weeding, spraying and harvesting.

The project relies heavily on Information and Communication Technologies (ICT) to deliver weather-induced risk management solutions. Skymet collects and processes 6 high resolution satellite data to run Numerical Weather Prediction (NWP) algorithms on computers. It then assimilates data generated through AWS and generates weather forecasts and agro advisories. The farmers are registered through an android based app and receive the weather forecasts and agro advisories on the mobiles of registered farmers. Real-



Picture 1: SkyMitra app

time daily weather data, 7 days' and 15 days' forecast are helping farmers make practical decisions that save their time and money or protect them from weather related damages.

Accurate and detailed weather forecasts are irrelevant to farmers if they do not reach the farmer in the remotest locations or are not understood by those with little to no literacy skills. Besides the SkyMitra app and WhatsApp groups, information is also promulgated through other mediums. A majority of Indian farmers do not have a smart phone. Weather information including weather forecasts and weather alerts are sent to them through SMSs in 6 regional languages, twice in a week. Weather Display Boards are placed in high visibility locations to reach out to farmers who do not have access to mobile phones. The display boards are updated periodically. Through Voice Broadcast Services (VBS), the weather information is disseminated to the registered farmers in six regional languages in the form of voice messages. There is a lack of platform for the Indian farmers to voice their queries and gain access to precise and detailed answers to those queries. This is addressed through a toll-free number where one can dial the pin code number of their district to hear district specific weather information.

The Skymet-USAID partnership also seeks to address the gender disparity in agriculture by directly engaging with them. Due to socio-cultural barriers, it is often difficult to enroll women farmers. Although the share of female farmers is just 10 percent of the total enrollments, it is three times more when compared to the total farmers registered since the inception of the project. To encourage participation of women farmers, the project team conducts separate meetings for women and organises meetings at a time which is more convenient for them. In their experience, meetings held in the evenings have witnessed a higher turnout as women farmers who are engaged in house work or field work during the day are able participate in these meetings and discussions.