



ACTION ON CLIMATE TODAY

# on Impact

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## Adopting climate-smart agriculture in Chhattisgarh



Photo: Action on Climate Today

*Fifty-year-old Sambati relies on a stream for drinking water in Bastar District in Chhattisgarh.*

**UK Aid is assisting the Government of Chhattisgarh in identifying and promoting climate-smart agricultural practices to develop the drought resilience of farming communities in the region.**

Sambati Kashyap, a 50-year-old woman, walks 4 kilometres to a stream every day to fetch drinking water for her family. There is a handpump in her village but it gushes red-coloured water, contaminated by iron, which makes it unfit for drinking. It can only be used for household washing and cleaning.

*She fears for her only source of drinking water: "The stream should not dry."*

Water shortage is not restricted to her family alone. It affects the entire Maria tribe in Mandawa Village. This farming community has traditionally supported itself through paddy cultivation across the two agricultural seasons: Rabi (non-rainy) and Kharif (monsoon). However, the changing climate is squeezing these farmers' source of livelihood, as they are unable to sow during the non-rainy season due to lack of water. Some farmers use tube wells for irrigation but this approach is not sustainable during droughts, when the groundwater table is treacherously low.

"The annual rainfall has decreased from 1600–1400 mm to 1400–1200 mm," said Gopikrishn Das, Head of the Agrometeorology Department of Indira Gandhi Agriculture University. He added: "Earlier there would be rainfall for 80–90 days; now it gets wrapped up in 65 days. The amount of water and the number of days of rain are both less."

Due to changes in rainfall pattern,<sup>1</sup> more frequent and intense periods of droughts are being observed. Some areas of the state are already seeing depletion in the levels of groundwater due to over-extraction of ground water and a decrease in its recharge due to erratic rainfall. In 2015, 15 of the 27 districts in Chhattisgarh were declared as drought affected.

## Disproportionate burdens

The effects are being felt on the ground: "I have never seen this water stream get dried even in summers but from past two years the amount of water flow has decreased. If it dries, we may have to migrate with our whole family to nearby city during summers with no one to look after our land, cattle and house," said Sambati.

Migration has increased in the past 4–5 years due to high risk and losses in agriculture. As many as 95,000 people in Chhattisgarh have already left their homes during the last three years in search of livelihoods due to an increasing level of insecurity in agricultural production and a lack of alternative livelihoods in rural areas.<sup>2</sup> With men mostly gone to cities for labour, women bear the additional responsibility of household, field and cattle protection. Additionally, an increase in temperature has made working conditions tougher for women who perform most of the agricultural work.

Focus group discussions with women farmers and agricultural labourers from three different agricultural climatic zones indicated that increased weed and pest attack in the past 4–5 years in field and horticultural crops have led to the need for increased levels of plant protection,



Photo: Action on Climate Today

*Fields lying fallow during the Rabi season due to a decrease in the groundwater level in the northern hills of Chhattisgarh.*

<sup>1</sup> [http://cgagridpt.nic.in/agriculture/rainfall\\_data.htm](http://cgagridpt.nic.in/agriculture/rainfall_data.htm)

<sup>2</sup> <http://www.dailypioneer.com/state-editions/bhubaneswar/rural-migration-is-still-chhattisgarhs-biggest-challenge.html>



Photo: Action on Climate Today

ACT Chhattisgarh Technical Expert, Asha Verma, speaking to locals about their challenges.

mostly provided by women. Weed growth has increased due to irregular rainfall and women are held responsible for de-weeding activities. This increased time in the field has an adverse impact on their health and the family's well-being.

*"I have never seen this water stream get dried even in summers but from past two years the amount of water flow has decreased. If it dries, we may have to migrate with our whole family to nearby city during summers with no one to look after our land, cattle and house,"*

### Climate-smart approach

In 2012, the Chhattisgarh government held a wide stakeholder consultation to develop a State Action Plan on Climate Change (SAPCC) from which a need was felt to have more studies on the impact of climate change on agriculture. The Agriculture Department requested Action on Climate

Today (ACT), A UK Aid-funded technical assistance programme, to investigate the linkages. To this end, ACT has completed a scoping study to identify the local impacts of climate variability and extreme events on agriculture, documenting local innovation and coping mechanisms in the highly vulnerable cropping systems of Chhattisgarh.

The study confirmed that climate factors are affecting agricultural production in the State and it underlines the need for a climate-smart approach. A climate-smart approach essentially means that after having identified vulnerabilities, measures should be formulated and implemented to enhance resilience to short-term climate variability and extremes as well as long-term change.

The ACT study adopted a highly participatory approach, and it has identified adaptation strategies developed by farmers and communities themselves. For example, farmers are increasingly adopting shorter-duration, hybrid varieties to deal with reduced monsoon duration. They are also resorting to planting or mixing high-yielding varieties (HYVs) with *desi* varieties, which may show more resilience to drought. Women reported that *kodo kutki*, traditional millet varieties, are more resilient to temperature variations, and that their ability to grow with less water makes them a good crop to rely upon in years of drought.



Photo: Action on Climate Today

Potato sowing along with horticulture crops acts as a safety measure in case of crop failure.

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The Chhattisgarh Government has implemented several strategies to enhance resilience. For example, it has launched weather-based crop insurance schemes in 27 districts to provide financial coverage from losses due to poor rainfall. Farmers are now trained on improved agriculture practices and are connected to weather forecast services on SMS. Weather stations are also being installed in remote locations for better local weather forecasts. These forecasts will alert farmers about weather changes and enable them to take measures to minimise crop damage. Recorded data from these stations may also be used to develop crop insurance for farmers. These developments are a step in the right direction.

### Future steps

This study reveals that the population that relies on agriculture, and for whom the large part, or all, of household income comes from farming, is the most vulnerable to climate change. It highlights the community-led response to the changing climate and makes a case for its upscaling. At the same time, it showcases the new scientific opportunities that can be tapped by farmers to build their resilience. Overall, it sets up a policy roadmap that Chhattisgarh can follow towards a more resilient future.

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