



Madhya Pradesh State Action Plan on Climate Change

Sector Policy Brief: AGRICULTURE

Madhya Pradesh is a predominantly rural state, with around 70% of the population relying on agriculture and its allied services for their livelihoods. The sustainable development of agriculture, horticulture, fisheries and agri-business is therefore hugely important for the overall socio-economic development and well-being of its people.

The majority of Madhya Pradesh farmers are smallholders and many of them already find it difficult to make ends meet. These farmers have few livelihood options and are highly vulnerable to climatic shocks (e.g. droughts and floods) as well as economic ones, which include changes in market demand. Groundwater resources are severely depleted in some areas, due mainly to overexploitation for irrigation. At the same time, soil health is suffering, due in a large part to monocropping and a lack of good soil nutrient management.

Recognising the importance of agriculture to the economy of Madhya Pradesh, an 'Agriculture Cabinet' was set up by the Government in 2011. The aim is to find ways of maximising agricultural production through new techniques and technologies to increase farmers' incomes, reduce rural poverty and enhance food security. At the same time, the Madhya Pradesh Organic Farming Policy 2011 aims to use local knowledge to build sustainable livelihoods while conserving natural resources by reducing pollution and the use of harmful chemicals, and increasing investment, soil health and biodiversity.

But the effective transfer of information and investment remains a significant challenge. Agriculture call centres have been set up in Madhya Pradesh to answer farmers' queries. Measures are also being taken to improve credit and loan facilities for farmers. And to help them hedge against the risks of climate change, innovative climate-related finance schemes are being put in place.

What does climate change mean for the agriculture sector?

Current climate observations suggest a gradual increase in temperatures across all seasons and an increase in rainfall variability, with the frequency and intensity of droughts and heavy rainfall likely to increase. Extremes of temperature and rainfall have dramatic effects on crop productivity and food security as well as livelihoods throughout the value chain.

Increasing temperatures lead to a rise in evapotranspiration, which lowers the moisture retention capacity of the soil, thereby making crops more vulnerable to drought. At the other extreme, increasing rainfall intensity leads to higher runoff and soil erosion on steep slopes. High rainfall intensity does not contribute to groundwater recharge, so does not restore the water resources needed for irrigation. Erosion depletes soil fertility, while increased temperatures cause stored carbon to be released from the soil.

It is also likely that the onset of the monsoon may shift from June to July and this will affect the cropping sequence and sowing time of crops. The timing of rainfall is critical for crop growth and development. Trends indicate a decline in rainfall in the west in July, an important time for sowing soybean, and also in the east, when the rice crops are planted. A reduction in winter rainfall is likely, and this will affect the productivity of *rabi* crops like wheat, with the worst effects experienced in the west of the State. Lower yields of this staple crop will affect food security and could spark mass migration to urban areas. If the projected changes in climatic conditions come true, soybean yields may decline, and by a greater amount than wheat yields. In addition to food security, this trend could have a large effect on agro-industries and employment.



Education through entertainment

The Government of Madhya Pradesh has already set up scientific committees to study and find solutions to the effects of climate change and, as a result, they have developed a variety of support schemes and packages aimed specifically at the poorest farmers. But many of these schemes have not been taken up, due largely to a lack of awareness among the target beneficiaries.

In a novel approach to improve information flows, the community radio stations of Bundelkhand District are working with research scientists to devise entertaining programmes and relay important messages directly to the farmers. This includes information on the weather and advice on the best times for sowing different crops, together with details of available support packages: where to get improved seeds for example. In this project, which is coordinated by Development Alternatives Group and supported by CDKN, reporters from the local areas are charged with collecting data from local scientific bodies. They then write the radio programmes in the local language to ensure their appeal to local audiences. The reporters also collect feedback from the farmers, which they pass on to the scientists and decision-makers, thereby opening an important channel for two-way communication.

Use of rural radio to pass on important agricultural messages has met with success in many parts of the world. In fact, the world's longest-running soap ('The Archers') began in the UK in 1950 as a means of raising awareness of rural issues. By offering two-way information flow, this scheme will help farmers and politicians make more informed decisions and improve their response to the climate change challenge.

Source: http://www.bkpindia.net/publication/Media_Article_for_CDKN_SK.pdf

Adaptation and mitigation strategies set out in the SAPCC

The agriculture sector needs to focus on improving the efficiency of farming practices, providing better information to more farmers, and forging closer links among all its stakeholders.

The key strategies are to:

- ▶ Address increasing water scarcity by promoting soil and water conservation technologies, including small-scale water harvesting, drip or sprinkler irrigation, raised beds, seed treatment, shade nets and agroforestry.
- ▶ Plan cropping systems that are suited to the predicted climate of each agro-climatic zone, which may involve changing sowing dates for major staple crops and introducing new varieties that have better tolerance to drought and/or flooding. Improved breeding for livestock and developing drought-tolerant fodder varieties also fall within this strategy.
- ▶ Build capacity for sustainable agriculture, which may include developing alternative livelihood options, particularly for the poorest and most vulnerable farmers. Promoting renewable energy (solar and wind) will reduce carbon emissions and allow animal manure to be used on the fields rather than as fuel. Over-reliance on chemical fertilisers can be reduced by encouraging intercropping and agroforestry, and by integrating crops with livestock or fisheries.



- ▶ Improve knowledge transfer by strengthening agricultural research and increasing the dissemination of new and appropriate technologies. Developing regional demonstration centres and farmer resource centres will improve outreach from research stations to farmer's fields. Alternative media (e.g. rural radio, mobile phones) should be harnessed to improve the flow of information.
- ▶ Develop an agricultural information system to manage climate change data, including early warning for risk mitigation. Investment in weather monitoring stations will help to improve climate forecasting and allow for weather-based crop insurance schemes. Better access to information will also assist decision-makers.
- ▶ Improve links throughout the value chain. This includes ensuring farmers have better information on and access to markets and creating rural business hubs, which will help to generate employment and diversify livelihoods. Developing and improving storage and processing facilities are also important, particularly for horticultural crops.

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The Madhya Pradesh State Action Plan on Climate Change (SAPCC) has been prepared by the Climate Change Cell, Environmental Planning and Coordination Organisation (EPCO), Housing & Environment Department, Government of Madhya Pradesh. The Plan outlines the strategies required to strengthen development planning and build a more climate-resilient State. It aims to promote the integration of appropriate adaptation/mitigation strategies into the State's development policies and programmes. It is based on secondary data and promotes 'no regret' measures.

In order to share the results of the Madhya Pradesh SAPCC and begin to address climate change concerns through development policies and programmes, the Climate Change Cell of EPCO commissioned a series of policy briefs. CDKN was tasked with producing these, based on the Madhya Pradesh SAPCC, as a Communications Project. This brief is one of a series of ten sector policy briefs, designed to inform stakeholders about the strategies and commitments established in the SAPCC that are of relevance to their sector. Further information can be found in the full SAPCC, available at http://www.epco.in/pdf/Draft_MP_SAPCC.pdf



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