



Curcuma crop

Climate change considerably increases the risks involved in agricultural production. The resulting negative impacts of climate change disproportionately affect smallholder farmers and low income groups (FAO, 2016)<sup>1</sup>. India holds the second-largest agricultural land in the world where 78% of Indian farmers are small and marginal scale (SML) owning or cultivating less than 2 hectares of land. Crop diversification to higher value commodity crops that are more climate resilient and significantly improve net profits could be an effective adaptation strategy for smallholder farmers to tide over extreme climatic events and natural hazards (Pretty et al., 2018)<sup>2</sup>. Crop diversification through Medicinal and Aromatic Plants (MAPs) cultivation and promotion of MAPs based livelihoods can spur socially equitable and gender balanced economic growth and reduce rural poverty. This is mainly because in India the percentage of women farmers and farmers belonging to socially disadvantaged groups is higher among small and marginal farmers.

India has a rich tradition in the use of MAPs in different traditional healing systems. With increasing demand for MAPs in India, its area under cultivation has increased from 0.3 million hectares in 2005-06 to 0.7 million hectares in 2015-16. Similarly, the yield has increased from 2 million tonnes in 2005-06 to 10 million tonnes in 2016-17. Despite increase in the area of cultivation and yields, MAPs sector in India is constrained due to low productivity resulting in limited success in improving farmer livelihoods. This is mainly due to broken MAPs value chain which is in different levels of disarray. Addressing this challenge requires measures to build capacities of farmers and other stakeholders across the entire value chain, implementation of integrated production systems and access to innovative financial mechanisms and better market linkages.

## Climate Adaptation and Finance in Rural India

### Strengthening Medicinal and Aromatic Plants (MAPs) Value Chain as a Climate Adaptation and Livelihood Diversification Strategy in Bundelkhand Region, Uttar Pradesh

<sup>1</sup>Food and Agriculture Organization (FAO) 2016. Climate Change and Food Security Risks and Responses. (<http://www.fao.org/3/a-i5188e.pdf>)

<sup>2</sup>Pretty, J. et al. 2018. Global assessment of agricultural system redesign for sustainable intensification. *Nature Sustainability*, 1, 441-446.

# Project CAFRI in Uttar Pradesh

GIZ India in partnership with the Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India under the German Federal Ministry for Economic Cooperation and Development (BMZ) funded project "Climate Adaptation and Finance in Rural India (CAFRI)" is supporting partner states (Uttar Pradesh and Himachal Pradesh) in reducing climate change risks for vulnerable groups and sectors as well as capacity building of actors (at different levels) in the planning, implementation and financing of climate adaptation initiatives. In the state of Uttar Pradesh (UP) this support among others relates to gender-responsive participatory adaptation planning and implementation at local level with capacity building, and improved capacities of community groups for adaptation planning. Part of this support, moreover, relates to developing capacities for accessing and mobilising climate finance for adaptation activities from national and international sources and private sector.

The UP SDG Vision 2030 envisions development of livelihood opportunities for rural communities and their capacity development. Promotion of cultivation of MAPs as a measure of crop diversification has not only been a priority area for Government of India but also for the Uttar Pradesh state government. As part of the "Namami Gange" project with a plan outlay of more than 4,000

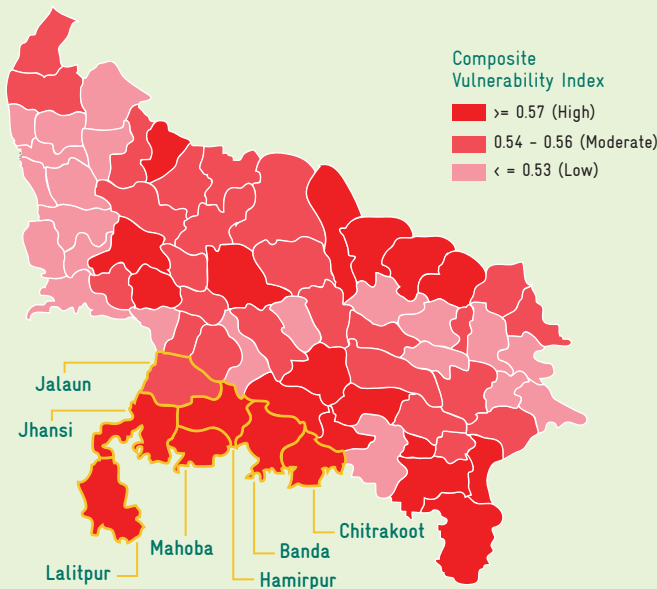
crores, nearly 800 hectares of land along the Ganga River will be put under MAPs cultivation.

A scoping assessment conducted in UP in the year 2020 by GIZ India jointly with the Directorate of Environment (DoE), Government of Uttar Pradesh has shown that under different climate change scenarios (current, future-RCP 4.5 and future-RCP 8.5 corresponding to different estimated concentrations of greenhouse gases in the atmosphere), Bundelkhand region in UP is identified as the most vulnerable agro-climatic region in terms of climatic exposure, sensitivity and adaptive capacity. The study also found that agriculture & allied sectors and water resources are among the most vulnerable sectors to climate change and further identified Women Farmers as among the most vulnerable groups to climate change.

Considering the economic and environmental benefits associated with crop diversification through MAPs cultivation, GIZ India aims to support the Government of UP in strengthening MAPs value chain as a climate adaptation and livelihood diversification strategy for the identified vulnerable groups in the seven Bundelkhand districts of UP.

## Bundelkhand districts of UP

Lalitpur, Jhansi, Jalaun, Hamirpur, Mahoba, Banda, Chitrakoot



Area  
**70,000 Sq. km**

Population  
**8 million**

**80%**  
of population lives in rural areas

**>75%**  
are SML farmers

**>33%**  
households are Below Poverty Line (BPL)

## Environmental challenges



**42%**

of the total area has experienced decreasing annual rainfall in the last 68 years (1951- 2018)



**42%**

area in the region is marked as under semi-critical, critical and overexploited categories in ground water utilisation



The average annual rainfall amount is projected to decrease by -6% during midcentury in RCP 4.5 scenario



Low forest coverage area (7.81%)

## Social challenges

Low literacy rate

**57%**  
overall

## Economic challenges

Low agricultural productivity

The region accounts for only 4% of the state's gross value of agriculture output

No Major industries

Low per capita net domestic product; Lowest number of MSMEs per 100,000 people; Large scale migration due to lack of employment opportunities

## Policy Alignment with MAPs promotion in UP

### *Namami Gange Project*

National Medicinal Plants Board (NMPB) aims to bring 800 hectares of area along banks of river *Ganga* under medicinal plants cultivation

### **One District One Product Program (ODOP)**

The Ministry of Food Processing Industries, Govt of India has identified Turmeric in Lalitpur and Basil in Jhansi districts under the ODOP approach to reap the benefit of scale in terms of procurement of inputs, availing common services and marketing of products

### *Mahila Kisan Sashaktikaran Pariyojna (MKSP) Scheme*

A sub-component of the National Rural Livelihood Mission (NRLM), MKSP scheme aims at empowering women in agriculture by strengthening community institutions of poor women farmers and leveraging their strength to promote sustainable agriculture. More than 550,000 women farmers are covered under MKSP scheme in Bundelkhand region of UP and they would be targeted in the current project

## Objectives

The project aims to

- Prepare a strategic roadmap for understanding existing knowledge on MAPs cultivation in the region, identify opportunities and challenges as well as innovative business models by fostering integrated links between production, agri-business and government policies
- Develop capacity building measures for primary and secondary stakeholders across the MAPs value chain and pilot the demonstration of priority components of MAPs value chain coupled with in-class and experiential learning outcomes
- Support in accessing public, private and blended financing mechanisms for scaling up the initiative

## Approach

The project in collaboration with the UP Directorate of Environment (DoE), UP State Institute of Rural Development (UP DDU SIRD), UP Department of Horticulture & Food Processing (UP DoH & FP), Central Institute of Medicinal and Aromatic Plants (CSIR-CIMAP), relevant Civil Society Organizations and private sector players

active in the sector/region, aims to enhance climate resilience and diversify livelihood opportunities for the identified vulnerable groups through promotion of cultivation of MAPs and strengthening MAP value chain in the Bundelkhand region of UP.

01 **Climate vulnerability assessment**

02 **Identification of suitable MAPs varieties**

03 **Identification of stakeholders**

04 **Identification & developing capacity building measures**

05 **Multi-stakeholder cooperation**

06 **Integrated production models**

07 **Post-production processing & value addition**

08 **Support in market linkages**

09 **Pilot testing priority components of value chain**

10 **Innovative financing models for scale up**

## Focus Areas



### Landscape approach

(Alignment with government priorities & schemes and integrating policy and implementation to ensure equitable, sustainable development and climate adaptation benefits)



### Integrated production models

(Intercropping, Agroforestry, micro-irrigation, rainwater harvesting, livestock-crop integration)



### Innovative Financing

Models for implementation through public, private and blended financing



### Farmer collectivization

(Women SHGs and FPOs) for achieving critical quality and quantity



### Post-harvest management

(Processing, Value Addition and Waste Valorization)



### Market linkages and Private Sector Engagement

## Expected Achievements

Improved climate resilience and increased adaptive capacity for the target vulnerable groups

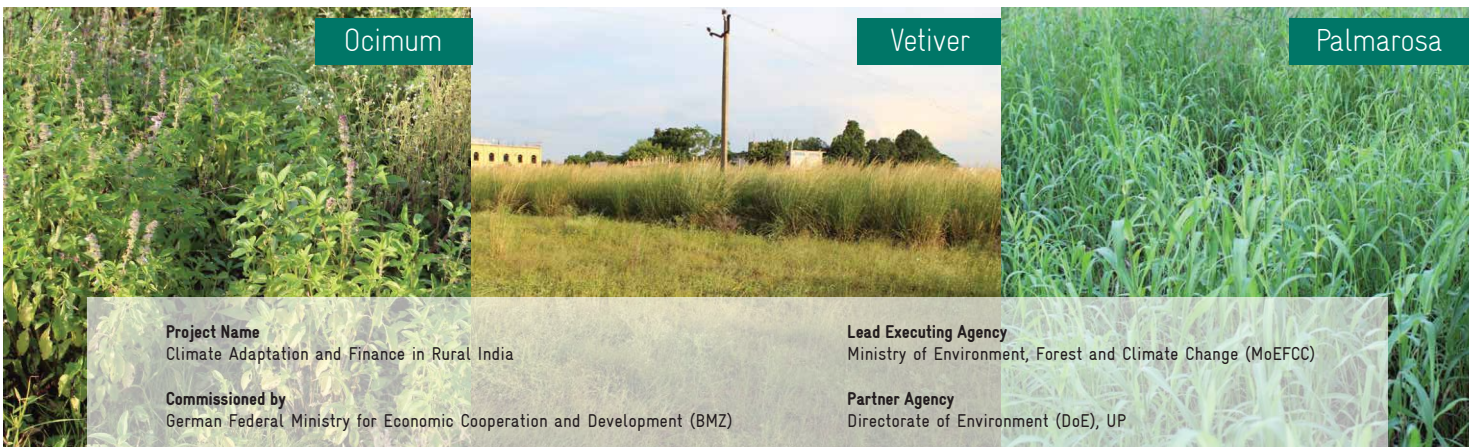
Economic and livelihood diversification for the target vulnerable groups

Improved resource use efficiency

Socially equitable and gender balanced economic growth

Preservation of Indigenous knowledge and cultural traditions

## Contributions to the 2030 Agenda



Ocimum

Vetiver

Palmarosa

**Project Name**  
Climate Adaptation and Finance in Rural India

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