



Farmer ploughing his field in Mandla district

Results CCA RAI demonstration project no. 2

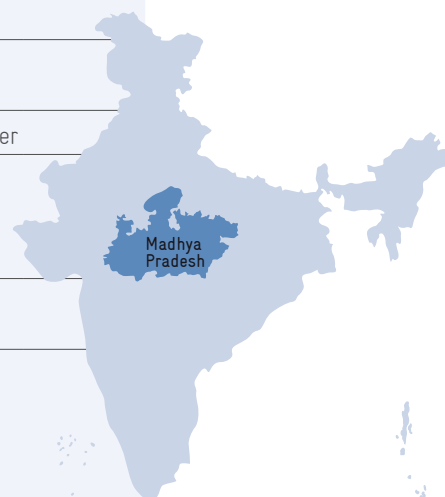
This demonstration project was realised under the Indo-German development project Climate Change Adaptation in Rural Areas of India (CCA RAI) which is jointly implemented by the Ministry of Environment, Forests and Climate Change (MoEF&CC), Government of India and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. CCA RAI is financed by the German Federal Ministry for Economic Cooperation and Development. For further information see: www.ccarai.org

Eco-restoration through institution strengthening, sustainable forest management and sustainable agriculture management

Project location	8 villages in Mandla district, Madhya Pradesh
Project duration	November 2011 – November 2013
Local implementation partner	Foundation for Ecological Security (FES)
Project costs	2,190,729 Indian Rupees equalling 27,046 Euro
Geographic features	Undulating terrain, landscape dominated by forests and agricultural fields, landlocked area
Climatic stresses	Erratic rainfall, decreasing minimum temperatures in winter
Non-climatic stresses	Poverty, population pressure, soil erosion and forest degradation due to unsustainable use of natural resources, weak local institutions leading to poor resource governance
Predominant livelihood sources	Rain-fed agriculture, paid employment in agriculture and collection of non-timber forest produce
Project beneficiaries	Institution strengthening: 1,643 indigenous families of the Gond and Baigas tribes (5,775 individuals) Sustainable forest and agriculture management: 553 indigenous families of the Gond and Baigas tribes (1,968 individuals)



FOUNDATION FOR ECOLOGICAL SECURITY



Ministry of Environment, Forests and Climate Change, Government of India

Project context and need for adaptation

Indigenous communities in Mandla district depend heavily on small-scale rain-fed farming and on different non-timber forest produce for their livelihoods. The forest provides fuel wood, fruits, fodder for livestock, housing material and medicine. Recent changes in rainfall patterns and temperature have had heavy impacts on agriculture. The yields of maize and paddy for example have gone down and certain traditional resilient millet varieties have vanished due to farmers switching to more commercial crops like paddy and maize.

Forest degradation aggravates the impacts of erratic rainfall; more and more fertile soil is washed away because the protective tree and grass cover vanishes. One major reason for forest degradation and overuse of natural resources is weak village institutions. These institutions govern the behaviour of communities over common property resources and thus play an important role in the local management of natural resources. Strengthening these institutions is one main activity of the project. Ishan Aggarwal from the Foundation for Ecological Security (FES) names another purpose of these institutions: "They act as mediators between the community and external stakeholders such as private entities, government and non-government organisations. A strong democratic community institution helps communities to access information and public funds that can be used to increase their adaptive capacities." Another focus of the project is the restoration of degraded forests in Mandla district with the aim to enhance the biodiversity of these landscapes and reduce soil erosion. Improving the management and productivity of agricultural land is an additional project activity.

Adaptation hypothesis

Forest degradation, loss of biodiversity, declining agricultural productivity and soil erosion exacerbated through climate variability and change are immediate threats to natural resource dependent communities in rain-fed areas like in those of Mandla district of Madhya Pradesh. Addressing these issues and strengthening village institutions reduce the vulnerability of communities to climatic stresses.



Shital Singh Dhumketi (right) in his village

Shital Singh Dhumketi, 48 years

Farmer and president of the Natural Resource Management Committee in Payalibahur village, Madhya Pradesh

"We started community-based forest conservation around our village one year ago. Until today, we have managed to protect around 200 hectares of forest. FES and GIZ helped us to understand the importance of having rules and regulations for managing forests and to come up with our own rules in order to use our natural resources in a better way than in the past. The rules are to control lopping and logging of trees, to set limits for harvesting non-timber forest produce and to regulate an equitable sharing of resources amongst villagers. We have also successfully established boundaries in three forest blocks. In one of the blocks resource use is completely prohibited now. Four volunteers from our village monitor the forest blocks daily. This way, we assist the state forest department in its forest protection efforts. Unlike in the past, today we feel like we have a real say when it comes to managing our forest and our resources. The rules that our committee set are strictly followed by most villagers."



Stone exit on an agricultural field

Photo: PES

Adaptation interventions

- Realisation of a local level **vulnerability assessment** with community participation to design suitable interventions
- Strengthening **village institutions** to improve natural resource management and thus bring forest degradation and loss of biodiversity to a halt. This involved strengthening village-level self-governing bodies called *Gram Sabhas* and forming executive committees elected by these *Gram Sabhas*. This way, community members can actively take part in the development and enforcement of rules that regulate the use of their natural resources
- Planting trees on forest fringes and slopes to promote **agro-forestry** in order to reduce forest fragmentation, increase soil moisture and decrease soil erosion
- Construction of **stone exits** and **stone bunds** in upland farms to counteract soil erosion and improve soil moisture levels over longer periods. Stone exits and bunds are used as barriers that slow down the velocity of surface water run-off on fields. This allows rain-water to infiltrate into the soil and thereby reduces erosion of the fertile top soil
- Improving the productivity of traditional crops through **seed replacement** (e.g. for the millet varieties *Kodo* and *Kutki*) and improving the productivity of currently widely used crops like maize and paddy through improved **farming techniques** such as seed drill and line sowing

Benefits and added value for adaptation

- The strengthened **village institutions** actively manage and conserve over 500 hectares of forest in the project region by overseeing the sustainable use of natural resources. A comparison with a forest that is not managed by a community indicates that a community managed forest shows 60 per cent more regeneration, 37 per cent more plant density and a 40 per cent higher number of plant species
- In the upcoming years the implemented **agro-forestry** interventions on forest fringes will further support the stabilisation of the ecosystem and hence ensure that the beneficiaries have diversified livelihood sources
- **Stone exits** and **stone bunds** have improved soil conservation: Within one year, a total of 37,319 cubic metres of soil was saved from being washed away. More than half of the beneficiaries have improved their yields and managed to shift to growing two instead of only one crop within one growing season. Their annual average income increased by up to 40 per cent as compared to farmers working without stone exits and bunds
- Improved **farming techniques** resulted in a 19 per cent productivity increase of millet and maize, and a 30 per cent productivity increase of paddy. This led to an average income increase of up to 20 per cent and resulted in decreasing sensitivity to climate variability and change

Cost estimates* for main interventions (in INR / EUR)

*81 INR = 1 EUR

Strengthening village institutions (per training of 50 people)	25,000 INR / 309 EUR
Tree plantation – material and labour (per hectare)	29,652 INR / 366 EUR + 500 INR / 6.2 EUR maintenance (every year)
Construction of stone exits and stone bunds – material and labour (per hectare)	37,428 INR / 462 EUR + 4000 INR / 49.4 EUR maintenance (every year)
Purchasing seed varieties and introduction of new farming techniques (per hectare)	30,000 INR / 370 EUR + 1,235 INR / 15.3 EUR maintenance (every year)



Plantation work near a forest fringe

Success factors

- The **vulnerability assessment** at the local level helped to identify low-cost and resource friendly adaptation options
- **Involving community members and local institutions** in developing rules on how to use natural resources and forest produce in a participatory manner will help to strengthen local institutions in the long run
- **Efficient communication and knowledge sharing** among stakeholders allowed to spread technical know-how to carry out interventions not only in the project area, but also in neighbouring villages
- **Project experiences** were documented with the aim to improve the project's implementation – this participatory review process is called *systematisation* by GIZ

Recommendations for project replication in the Indian context

There is a high replication potential for forest-restoration in India. About 275 million of the country's rural poor people depend on forests for at least a part of their subsistence. Non-timber forest produce provides substantial sustenance to tribal people living on the fringes of forests. 75 per cent of India's rural population depends on firewood as a prominent source of domestic energy. On an average, two thirds of poor households' overall requirements comes from common property resources that are natural resources owned and managed collectively by a community or society rather than by individuals. Community-based forest management and conservation through strengthened local institutions can thus be one of the key strategies for ensuring livelihood security for these communities against climatic and non-climatic stresses.

A closer look at agriculture in India reveals that an estimated area of 147 million hectares is affected by land degradation and soil erosion caused by climatic conditions, inadequate land use, deforestation and other causes. Soil conservation thus also holds a high replication potential. However, efforts in this field have to be designed and implemented to suit local needs and have to be adapted to the specific hydrological and climatic conditions of a specific area. After assessing the local conditions, sustainable agricultural practices can be designed for small-scale farmers to build their resilience against climate variability and change.

Further information

Environmental Planning and Coordination Organisation
Government of Madhya Pradesh
www.epco.in

Foundation for Ecological Security (FES)
www.fes.org.in

Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
Natural Resources Management Programme
www.giz/de/india | www.ccarai.org