

Climate Change Adaptation for Sustainable Livelihoods

Agriculture



Wellbeing



Biodiversity



Water



Livelihood

Health

Empowerment

Energy



Learnings from pilot project
in Maharashtra



वृक्षवल्ली आम्हां सोयरीं वनचरें
पक्षी हीं सुस्वरें आळविती

येणें सुरवें रुचे एकांताचा वास
नाही गुण दोष अंगा येत

आकाश मंडप पृथुवी आसन
रमे तेथे मन क्रीडा करी

Verses of an Abhang (*a devotional recitation*)
by Sant Tukaram (*16th Century*)

“The trees, the creepers and the wild animals are our kith and kin in the woods so kind. The birds in nature sing the sweet notes so clear; in this solitude we get the solace of life so dear and hence we are away from evil impacts.”

The poem extolls man to revere and respect the earth which sustains all life. Humans must understand that they are not separate from nature; that they are linked by spiritual, psychological and physical bonds with the great forces of nature- earth, water, fire, air and space - as well as with all the various orders of life that surround us, including plants and trees, forests and animals. We cannot continue to destroy nature without also destroying ourselves.

The dire problems besetting our world-war, disease, poverty and hunger-will all be magnified manifold by the unfolding impacts of climate change.



A PROJECT THAT TOUCHED OVER 20,000 LIVES IMPACTING 2,697 HOUSEHOLDS



Every hour the climate changes... Along, it brings grave news for 50 % of Indians who rely on nature based livelihoods such as agriculture, fisheries, forests, etc. for sustenance.

As monsoon and temperature become more erratic, dependent communities, especially the poor, become more vulnerable. This climate variability has implications not just on local weather but on food, water, agriculture production and livelihoods. The traditional coping mechanisms of communities fail to overcome the increasing risks.

Looking at the larger picture, this is likely to affect India's economic growth, making development, food and nutrition security more challenging.

Confronted by this challenge, the *National Bank for Agriculture and Rural Development (NABARD)*, the *Swiss Agency for Development Cooperation (SDC)* and the *Watershed Organisation Trust (WOTR)* came together in 2010 and, together with the support of the *Government of India* and the *Government of Maharashtra*, initiated the **Climate Change Adaptation Project (CCA)**, which drew to a close in June 2015. Joining in this effort are the following institutions - *India Meteorological Department (IMD)*, *Central Institute of Dryland Agriculture (CRIDA)*, *World Agroforestry Council*, the *Bharati Vidyapeeth Institute of Environment, Education and Research* and the *Mahatma Phule Krishi Vidyapeeth (MPKV)*.



“Every company, investor and bank that screens new and existing investments for climate risk, is simply being pragmatic”
Jim Yong Kim, President of
The World Bank



The **Climate Change Adaptation (CCA) Project's Goal** is to enhance the capacities of rural communities to adapt to the effects of climate change.

Rationale: India is seriously vulnerable to climate variability and change. It is urgently necessary to develop knowledge systems, strategies, measures and processes which can enable vulnerable communities to rapidly build resilience and adaptive capacities to climate-induced risks, across scales.

Key Project Outcomes are communities and local institutions sustainably managing regenerated local ecosystems; increased productivity of natural resources contributes to improved quality of life, especially of the poor; and increased understanding of climate issues together with the various knowledge products developed create a favorable policy and institutional context that promotes adaptive action.

OBJECTIVES AND THEMATIC COMPONENTS

With these outcomes in mind, the CCA project adopted a multi-sectoral and integrated approach with a view to:



Tackle water scarcity through Watershed Development



Train and aid farmers to implement climate smart agriculture



Promote biodiversity concerns and ecosystem conservation



Educate the community about Disaster Risk Reduction



Encourage the use of green energy to counter the exploitation of resources





Provide weather based crop and locale-specific advisories to mitigate the effects of climate change



Sensitise communities of the need to better manage available water and use it efficiently



Level the playing field by empowering women



Train village youth to identify and successfully manage climate resilient livelihoods



Address nutrition, health, hygiene and sanitation at the village level



Develop and make widely available a suite of practice-oriented knowledge products and technologies to raise awareness and develop competencies in the area of adaptation policy and practice

The thematic components covered included social mobilization, women's development and empowerment, watershed regeneration and ecosystems management, adaptive sustainable agriculture, agro-meteorology, water budgeting, biodiversity, livestock management, renewable energy, climate resilient livelihoods, disaster risk reduction, nutrition and health especially of women and children, sanitation and village cleanliness, knowledge generation, capacity building and policy engagement.

THE CCA PROJECT AREA

The Climate Change Adaptation project has been implemented in 25 villages across Sangamner and Akole blocks of Ahmednagar district in Maharashtra state of India.

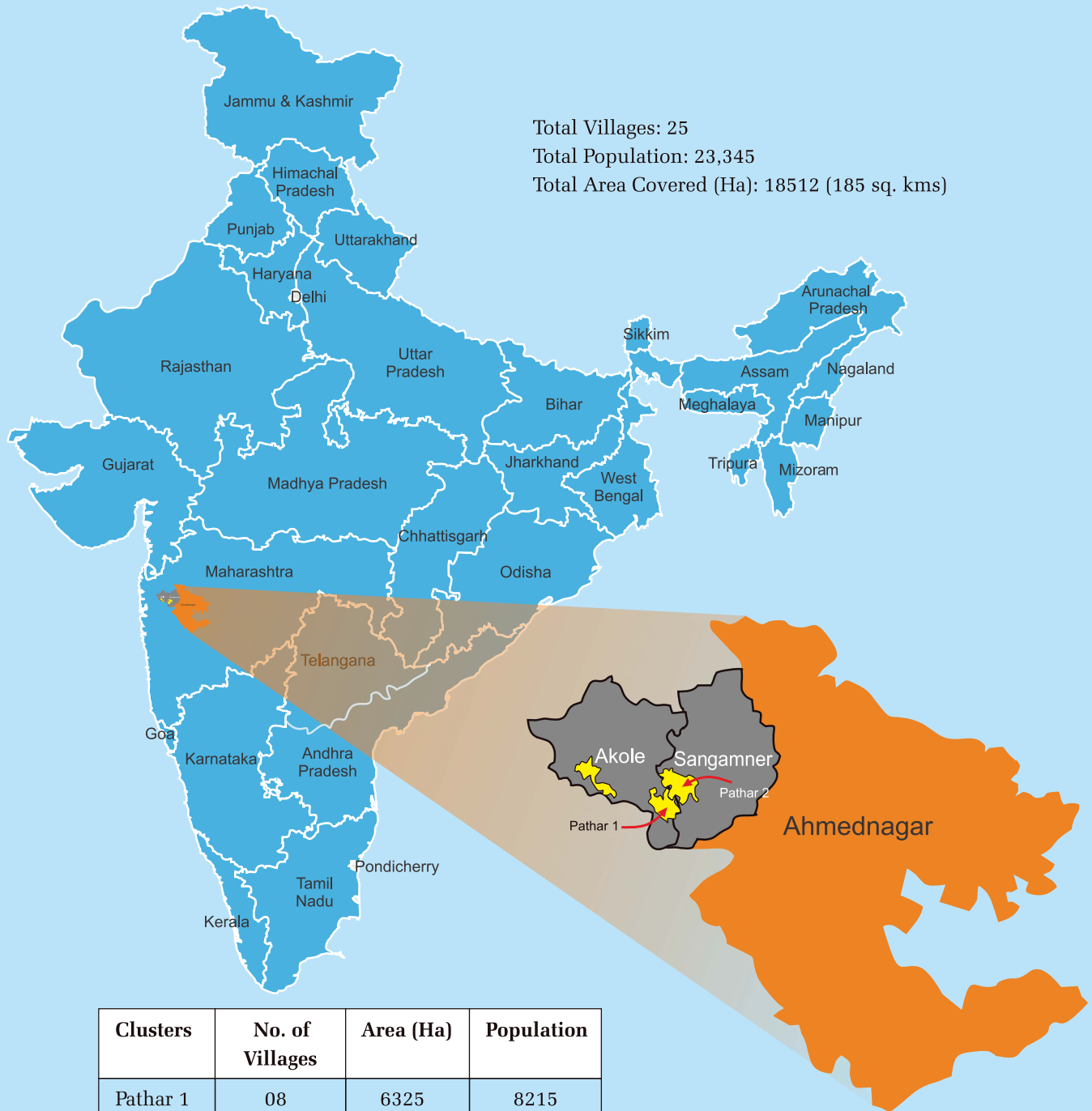
Both these areas represent different agro-ecological and climatic zones, are culturally and ethnically different and also reflect different levels of backwardness and integration with the wider economy - situations representative of many regions in the country. Experience and best practices evolved here would therefore be potentially very valuable for widespread adoption and up-scaling.

Akole Block:

- A largely tribal area
- Large numbers of poor and vulnerable communities
- Some forest cover and biomass
- Rainfall ranging from 750-1200 mm annually
- Well-endowed with natural resources but relatively backward
- High rate of migration for work in summers

Sangamner Block:

- Lies in the rain shadow belt
- Consists of some irrigated portions as well as plateau which is rain-fed, semi-arid and drought prone
- Even though poor, people are enterprising, better informed and politically active
- Acute water shortage with 150 mm to 450 mm rainfall annually



● Project Clusters

SECURING WATER THROUGH WATERSHED DEVELOPMENT AND ECOSYSTEM MANAGEMENT

Even with a rainfall of 400 mm per annum, when local inhabitants come together to regenerate their watershed, miracles happen: reverse migration, enhanced productivity (from agriculture, livestock, fisheries, forests and pastures), increased local employment and communities developing a common vision for the future.

Watershed development thus helps mitigate the impacts of climate change. Under the CCA, extensive watershed development work was undertaken - the idea being to harvest rainwater wherever it falls. Various area and drainage line treatments were done following the ridge-to-valley approach. Operationally, in order to conserve rainwater in-situ, create water banks, enhance soil fertility and regenerate the ecosystem, the following measures were undertaken:



Continuous Contour Trenches



Construction of Water Absorption Trenches in Gondoshi



Compartment Bunding in Warudi Pathar



Stone Bunding Work Done under the Project

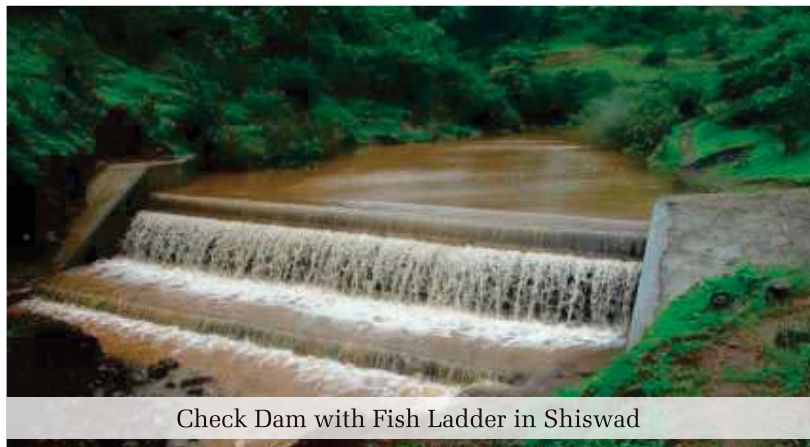


Activities:

- Soil and Water Conservation works (Water Absorption Trenches, Continuous Contour Trenches, Farm Bunds) covering an area of 4,125 hectares were dug
- 2217 hectares of waste lands were afforested and planted with a variety of indigenous trees
- 44 Check Dams were constructed
- 1213 Gully Plugs and Loose Boulder Structures were erected
- Bench Terracing brought 60 hectares of unused lands under cultivation

Impact:

- A total of 2250 labourers got work locally; under the project 415,360 person days of employment were generated
- Income equivalent to Rs. 7,72,85,958 in form of wages was earned by the villagers
- Groundwater table increased by 2.5 metres
- Water sources which used to dry up by December now have water till mid May
- Around 170 hectares of waste land converted to cultivable land
- Significant controlling of soil erosion and reclaimed gullies are now being cultivated
- Migration cut down by 70%
- Area under irrigation increased by 30%



Savita Sunil Hile, Labourer working on watershed work in Gondoshi village says:

“Before the project came to our village, we had to migrate for work twice a year to far off villages. But, the watershed work done under the project has given us work. I earn Rs. 200-250 per day for digging a 5 metre trench. Additionally, I have gotten bunding work done on my 2 acre land for free, which could have otherwise cost me Rs. 50,000. From the regular income earned and little saved, last year I bought three goats and have already made Rs. 25,000 by selling 3 bucks. Even our water problem appears to have been solved; earlier water used be available in the wells till March, now it is available till June.”

ADAPTIVE SUSTAINABLE AGRICULTURE: GOING BEYOND RESILIENCE

Every year the rains get more unpredictable and our farmers bear the brunt. The CCA project aimed at aiding farmers fight climate change by promoting climate responsive agricultural technologies, environment friendly and organic farming techniques, efficient water use and locale-and- crop- specific weather based agro advisories.

Intervention Objective:

To improve agriculture productivity given the variations in local weather by improving soil health, using appropriate plant and soil management techniques, promoting native varieties of seeds, providing on-field technical and demonstration support and building the skills and capacities of farmers.



System of Crop Intensification (SCI)



Adopting Organic Farming Techniques



Farmer Field School (FFS)

Activities:

- On-farm technical support to promote new agricultural practices such as the System of Crop Intensification (SCI) to build resilience, improve agricultural output, reduce risks and costs
- Promotion of biological, botanical and organic preparation for fertilisation, pest and disease control and soil health improvement (*Nimboli Ark, Amrutpani, Jeevamrut, Dashparni Ark, rhizobium, azotobacter, PSB, trichoderma, composts, manures and vermicompost*)
- A total of 1586 on-farm demos for various crops were established across the 25 project villages
- 10 Farmer Field Schools (FFS) conducted
- Over 380 farmer trainings, farmer field days and exposure visits were organized
- 420 farm ponds were built some of which are attached to micro-drip irrigation systems

Impact:

- Application of SCI techniques, organic farming practices and learnings from crop demos led to 30% crop production increase
- The large number of farm ponds built and micro-irrigation systems installed helped provide protective irrigation leading to increased productivity and reduced crop losses
- 7,500 (of which about 800 are women farmers) who acquired knowledge of sustainable and adaptive farming practices have become replicators and resource persons in their own villages
- A total of 13,500 farmers participated in the various trainings and demonstration events
- The Farmer Field Schools witnessed 69 women and 189 men participants. 154 farmers adopted organic farming practices learnt from these FFSs which led to an increase of 40% in their crop production and led to 30% input cost reduction
- Farmers have diversified their cropping pattern and shifted to cultivating cash crops such as floriculture, horticulture and vegetables like tomato, onion, etc. Area under vegetables has increased by 30%
- Using a mixture of organic and chemical control measures pest and disease infestations were reduced by 20-90% for key crops like chickpea, wheat, onion and groundnut (rabi, 2013)



Waliba Sayaji Ghode of Ghoti village used to traditionally cultivate groundnuts in summer on his half acre farm, usually earning a net profit of Rs. 15,000. However, during the summer of 2015, due to late rabi rains, the growing season for groundnut crop was not sufficient and it would result in low production. He switched to a vegetable crop, coriander, which has a short growing period and a high market demand during the summer months and adopted the SCI methods of farming. This fortuitous switch of crops and management practices enabled him to harvest 900 kgs of coriander which earned him a net profit of Rs. 37,900 which is 2.5 times more than what he used to get.

National Bank for Agriculture and Rural Development (NABARD)



NABARD's Mission is to promote sustainable and equitable agriculture and rural prosperity through effective credit support, related services, institution development and other innovative initiatives.

- Since many years NABARD has been implementing several Natural Resources Management programmes that promote resource development in rural areas: watershed development, sustainable livelihood for tribal communities, Umbrella Programme for Natural Resources Management (UPNRM). These projects help improve the resilience and build adaptive capacities of rural communities.
- To create replicable models for up-scaling, pilot projects on climate change adaptation are under implementation by NABARD: The Climate Change Adaptation in Maharashtra is with SDC collaboration and Climate Proofing of Watersheds in Tamil Nadu & Rajasthan with GIZ collaboration.
- NABARD is the accredited National Implementing Entity (NIE) in India for the Adaptation Fund created under United Nations Framework Convention on Climate Change (UNFCCC) for taking up climate change adaptation initiatives in the country.

Watershed Organisation Trust (WOTR)

- Established in 1993, WOTR is a non-profit that engages at the intersection of practice, knowledge and policy across scales and in collaboration with stakeholders from across sectors. Headquartered in Pune, WOTR has supported and carried out developmental work in over 3500 villages across 7 states of India.
- WOTR assists rural communities to assess their vulnerabilities to climate and non-climatic risks. It organizes them in a socially and gender inclusive manner to help themselves out of poverty by regenerating their ecosystems in a holistic and integrated manner, conserving and optimising resource use, especially water, and undertaking climate smart sustainable livelihoods.

The Swiss Agency for Development and Cooperation (SDC)



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Agency for Development
and Cooperation SDC

- The Swiss Agency for Development and Cooperation (SDC) has been a long standing partner of India over the last fifty years. In 2011, SDC reoriented its programme to focus specifically on the topic of climate change. It is a part of SDC's Global Programme on Climate Change (GPCC), which actively engages in multilateral climate change policy processes, supports innovative climate change and mitigation projects in targeted partner countries and facilitates the generation and dissemination of knowledge.
- The overarching goal of SDC in India is to contribute to a climate compatible development over the long term in India. SDC aims to safeguard development achievements from the negative impacts of climate change and seeks to reduce or avoid greenhouse gas emissions without compromising India's development goals.

- Being a Learning Organisation, WOTR undertakes applied research and closely engages with institutional and governance actors so that insights and good practices derived from ground experience contribute to shaping enabling policies and effective programs. With a view to up-scale successful interventions, WOTR develops pedagogies for implementation and organises a variety of knowledge sharing and capacity building events for stakeholders across the civil society, developmental and governance spaces, from India and other countries.





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