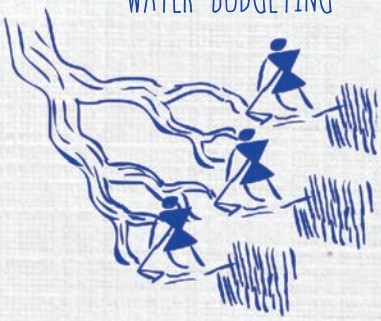
WATERSHED DEVELOPMENT

AGRO-METEOROLOGY

DISASTER MANAGEMENT

WATER BUDGETING



ADAPTATIVE AGRICULTURE

ALTERNATE ENERGY

BIODIVERSITY

SUSTAINABLE LIVELIHOODS

Climate Change Adaptation Project

WOTR

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Watershed Organisation Trust

The Watershed Organisation Trust (WOTR) was established in 1993[1]. Over the years, WOTR has entered diverse sectors and grown institutionally and geographically. Headquartered in Pune, Maharashtra, WOTR has a physical presence in 7 states[2] and provides occasional services to agencies from 28 countries.

It has also incubated three other institutions – the Sampada Trust, the Sanjeevani Institute for Empowerment & Development (SIED) and the Sampada Entrepreneurship and Livelihood Foundation (SELF), these together with WOTR form a family that is referred to as the "WOTR Group".

Our Goal: To ensure food, water, livelihoods and income security together with a growing quality of life to vulnerable and disadvantaged communities on a sustainable and equitable basis.

Vision: Communities, especially the poor within, are empowered and secure their livelihood and well-being in sustainable ecosystems.

Mission: To provide committed development support that motivates, energizes and empowers individuals, groups, communities and other organizations to undertake integrated ecosystems development for enhancement of well-being on a sustainable basis.

Thematic Areas of Intervention and Institutional Collaborations:

WOTR sees itself as a learning organization continuously searching for appropriate responses to address the multiple dimensions of poverty on a sustainable basis. Today WOTR is engaged in several sectors, some key ones are:

(i) Integrated Watershed Development/ Ecosystems management
(ii) Integrated Water Resources Management (IWRM)
(iii) Climate Change Adaptation
(iv) Capacity Building and Training
(v) Sustainable Agriculture and integrated Farming Systems
(vi) Agro-Meteorology
(vii) Bio-diversity
(viii) Sustainable Livelihoods and Employment Generation
(ix) Empowerment of Local Self Governance Institutions
(x) Gender Relations and Women Empowerment
(xi) Alternate Energy
(xii) Integrated Ground water and Energy Management
(xiii) Information Technology and Management Information Systems (IT-MIS)
(xiv) Action Research, Documentation, Publications
(xv) Policy Advocacy

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[1] Initially to support a large scale multi-actor, multi-level, multi-sectoral, community led watershed development program for poverty reduction called the Indo-German Watershed Development Program (IGWDP). It was launched in the Indian state of Maharashtra by Fr. Hermann Bacher, who is also co-founder and Chairman of WOTR, the other co-founder and Managing Trustee being Crispino Lobo.
[2] Maharashtra, Telangana, Andhra (Seemandra), Madhya Pradesh, Rajasthan, Jharkhand and Orissa

ABOUT WOTR

Aware of the fragility of ecosystems and our symbiotic link with it, the Watershed Organisation Trust (WOTR) has historically applied a systems-based approach to watershed development.

Established in 1993, WOTR's focus is on Ecosystem and People centric participatory interventions to address land degradation, water scarcity, rural poverty, food security and more recently, the impacts of climate change in the drylands of India.

With Applied Research as a constant companion, WOTR continually rethinks conventional development and has introduced Systems Thinking and Complexity Analysis in the programme design. Therefore, WOTR develops pedagogies, strategies and tools, moving from activity based project design to Framework Based Management, always for large scale implementation and up-scaling. Occupying a unique niche between the scientific community and the primary stakeholders (rural people), WOTR believes in demystification of science, technology and systems, and builds partnerships between diverse stakeholders: village communities, NGOs, donors, the corporate sector, research institutions and government agencies.

WOTR reaches out to the whole realm of stakeholders (from villagers to NGO, government, donor and foreign agencies) through **Trainings and 'hands-on' Capacity Building.** Lessons learnt from research and studies help frame policy and praxis. The key thematic areas that WOTR engages in are eco-system based **Integrated Natural Resources** and **Water Management**, **Biodiversity** and Building Resilience to climate change through **Empowerment** of local rural institutions, communities and women.

Headquartered in Pune, WOTR has supported and carried out developmental work in **over 3500 villages** in 7 states of **Maharashtra, Telangana, Andhra Pradesh, Madhya Pradesh, Rajasthan, Jharkhand and Odisha**. In its **over 20 years** since inception, WOTR has successfully organized **over 1992 watershed development and climate change adaptation projects**, covering **over 1.33 million hectares**, thus, impacting **over 1.8 million people**. Its involvement in **over 10,250 women's SHGs, micro-finance, trainings** and other initiatives have benefitted **over 130,000 women**. Similarly, **over 350,000 people** from **27 states** in India and **62 countries** have participated in WOTR's Training and Capacity Building program.

WOTR has successfully facilitated **230 NGOs** and **government Project Implementing Agencies (PIAs)**, which are important partners for outreach and up-scaling of sustainable initiatives. Additionally, WOTR has published over **100 articles/studies and books, 87 educational and training films, and 12 Participatory tools** for wide-scale application.

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CLIMATE CHANGE ADAPTATION (CCA)

Earth's climate is changing rapidly and will continue to change at unprecedented rates. This variability has implications not just on local weather conditions but on food, water, agricultural production and the local economy.

India is a hotspot for climate change with 50 % of the population depending on nature-based livelihoods for sustenance (agriculture, forests, fisheries, allied occupations). As monsoon and temperature patterns become erratic, dependent communities, especially the poor, become more vulnerable as risks increase and traditional coping mechanisms fail. The macro impact of climate change will slow India's economic growth, affect health and development, make poverty alleviation more challenging and degrade food and nutrition security.

Confronted by this challenge, WOTR launched a large-scale pilot project on Climate Change Adaptation in the semi-arid and rain fed regions of Maharashtra, Telangana, Andhra Pradesh and Madhya Pradesh with the aim to develop knowledge systems, strategies, measures and processes, which can up-scaled and widely adopted, to build the resilience and adaptive capacities of vulnerable communities.

Given the complexity of climate change impacts on nature and people which requires an integrated adaptation response, this project has brought together a unique blend of partners across sectors and scales –the Swiss Agency for Development and Cooperation (SDC), the National Bank for Agriculture and Rural Development (NABARD), Brot für die Welt, Swiss RE, Dr. & Mrs. S.H.M Modi Hormus House Benevolence Trust Fund, RBS Foundation the Governments of Maharashtra, Andhra Pradesh and Madhya Pradesh as financiers and enablers; the Indian Meteorological Department (IMD), the Central Research Institute for Dryland Agriculture (CRIDA), the World Agro-Forestry Council (formerly ICRAF) and the Mahatma Phule Agriculture University (SAU, Maharashtra) and the Bharati Vidyapeeth Institute of Environment Education and Research (BVIEER) as technology and knowledge partners; and WOTR which anchors the project, implements it, generates and validates knowledge for use.

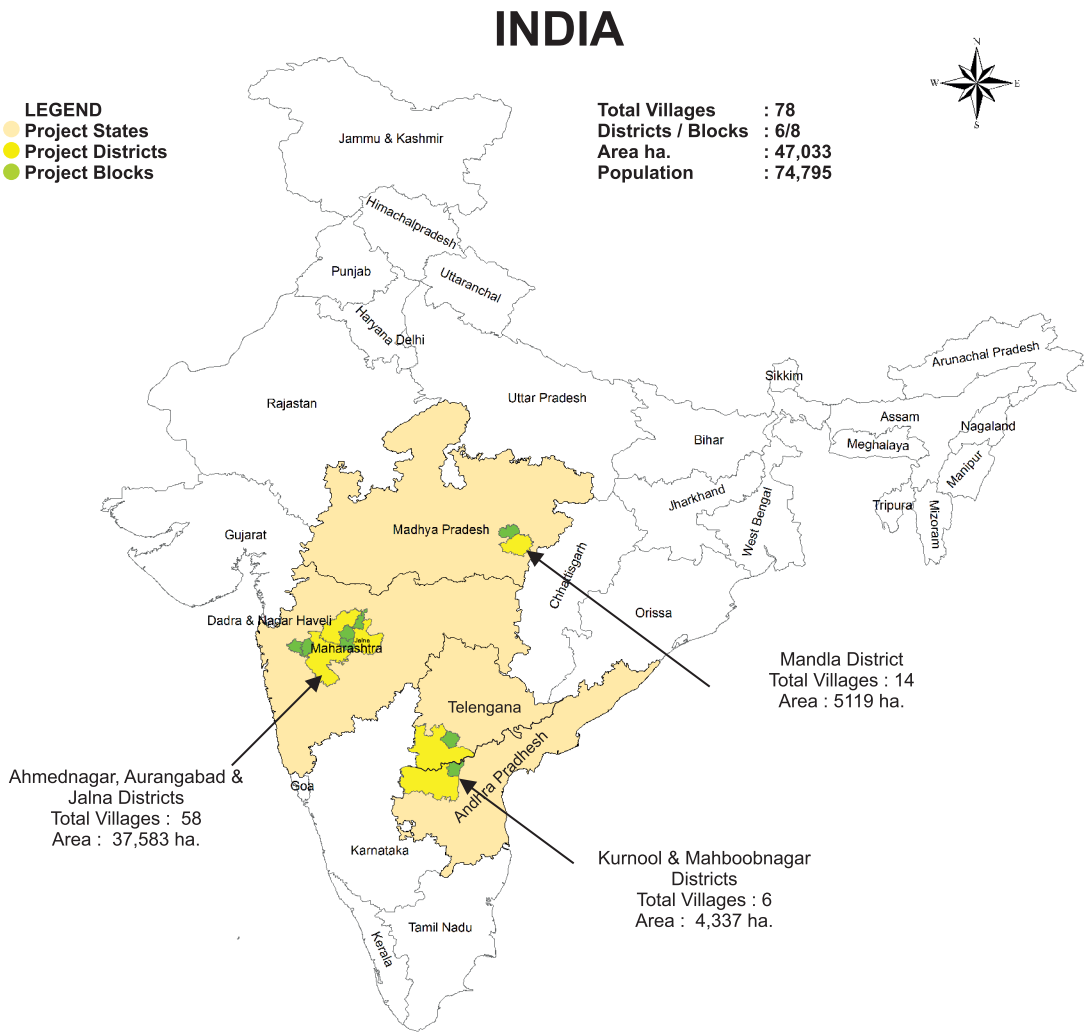
The project adopts a knowledge-informed, multi-disciplinary and participatory approach involving watershed-based ecosystems management; integrated water resources management; adaptive sustainable agriculture; locale and crop specific agro-met advisories; biodiversity conservation; renewable energy; institutional development; capacity building and empowerment of communities; development of tool kits, pedagogies and training modules; applied research; development communication and policy engagement.

This CCA project is implemented in **78 villages** across four states covering a geographical area of **over 47,033 hectares** and **impacting nearly 74,795 people.**

This Project Brochure comes at the inflection point between the conclusion of a praxis-and-knowledge driven phase and the beginning of an evidence-and-policy focused engagement. Its findings would greatly help inform strategies that seek to up-scale good adaptation and resilience-enhancing practices across the Indian rural landscape.

Under the CCA project, various research studies have been presented during different workshops, published in journals and publications, and particularly at the SDC - supported consolidation phase- 'Scaling Up Good Adaptation Practices'- involving the World Resources Institute (WRI). This phase seeks to understand that how adaptation and resilience can be addressed in a semi-arid and rain fed agricultural contexts. A primary objective of this phase is to contribute towards policy debates on adaptation and rural development in India. This is achieved through rigorous research and evidence gathering for synthesizing good practices into policy recommendations with a view to mainstream effective adaptation practices.

THE CCA PROJECT AREA



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WATERSHED MANAGEMENT

Watershed development is the origin and foundation of WOTR's work.
Degraded lands, soil erosion, water runoff and deforestation were identified as the cause of poverty, low human index and a fractured village. Even with rainfall of 400mm per annum, when the local inhabitants come together to re-generate their watershed, miracles happen: reverse migration, enhanced productivity (from agriculture, livestock, fisheries, forests and pastures) and communities developing a common vision for their future.

In the context of climate change, watershed management plays an important role in mitigating weather induced risks, building resilience and strengthening adaptive capacities. In times of drought, it captures rainfall in-situ, recharging ground water sources. In times of cloud bursts or intense rains, it helps control floods, reduces soil erosion and minimizes losses to livelihoods, infrastructure and life. Forests, afforestation and revived grassland sustain biodiversity, retain water and moisture in soils and micro-environments for longer periods and mitigate the effects of soaring temperatures on living beings. Watershed management, thus, helps reduce the adverse impacts of extreme climate events. It provides the environmental resources that can enable affected communities to better cope with such shocks and adapt to them. Hence, watershed development is the mainstay for climate change adaptation.

Action Taken

All project villages have systematic watershed treatments implemented from ridge to valley.

Keeping in mind the specificities of climate variability (rising temperatures and erratic rainfall), as a part of its watershed development effort, WOTR has emphasized the conservation and planting of local indigenous plant species; digging of water absorption trenches on the upper, middle and lower portions of hillsides, with planting of grasses and vegetation that stabilize these and bind soils; designing of water impounding structures that are strong enough to withstand high intensity runoffs or which can "fail safely" (a larger number of smaller structures); prioritized soil conservation measures (land treatments) while dovetailing these with water harvesting structures (drainage treatments); promoted changes in cropping and land use patterns to include water - sipping crops (such as millets), tree-based and mixed farming systems; and introduced "water budgeting" at the community and farm level as well as conservation irrigation technologies (micro-irrigation systems) to determine which crops can be cultivated given the available water.

To make watershed development sustainable and climate resilient, WOTR has developed various tools : (i) the Participatory Net Planning methodology (PNP) which engages land owners in assessing their land resources from a conservation and productivity enhancing perspective; (ii) the Wasundhara Approach that integrates the marginal sections into the Watershed Committee while formally mainstreaming these in the Gram Panchayat; (iii) CoDriVE- VI (Community Driven Vulnerability Evaluation- Visual Integrator) which enables a community to develop a spatial and scaled relief model of their watershed, to visualise and plan adaptation and developmental interventions; (iv) CoDriVE – PD (Community Driven Vulnerability Evaluation- Programme Designer) enables communities to assess their vulnerability to climate change using the 5 - Capitals framework and plan ameliorative and mitigation measures; and (v) various IT - enabled tools, geo-spatial technologies and the use of remote sensing for integrated planning, management and monitoring of watershed projects.

"WOTR's watershed development work has proven to be beneficial. The ridge to valley approach has resulted in 100 % rise in the ground water level. This has solved our drinking water problem".

Ashok Popatrao Gaikwad, Vice- Sarpanch, Sawargaon Ghule

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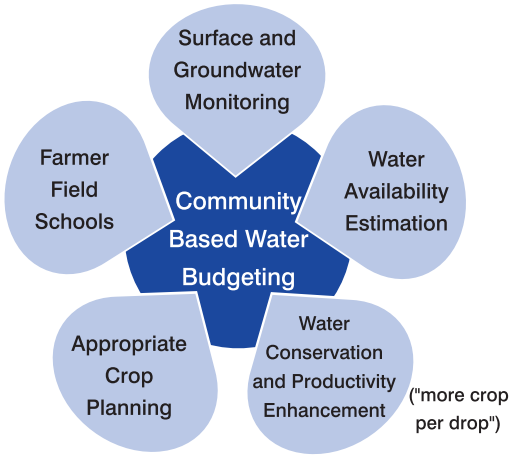
WATER BUDGETING

In the stir of climate change and persistent rainfall aberrations, water becomes limiting especially in semi-arid regions. Even where watershed development successfully augments water stocks, conditions of water scarcity can persist. This is particularly so in cash crop based agrarian economies which draw heavily from groundwater reserves for irrigation.

WOTR sees community enforced **Water Budgeting (WB)** as an effective approach to address problems pertaining to water scarcity and has developed a "How-To" Methodology, a tool on WB and an interactive IT-enabled "Water Budgeting Game" that simulates scenarios resulting from different water use demands and cropping patterns in given rainfall.

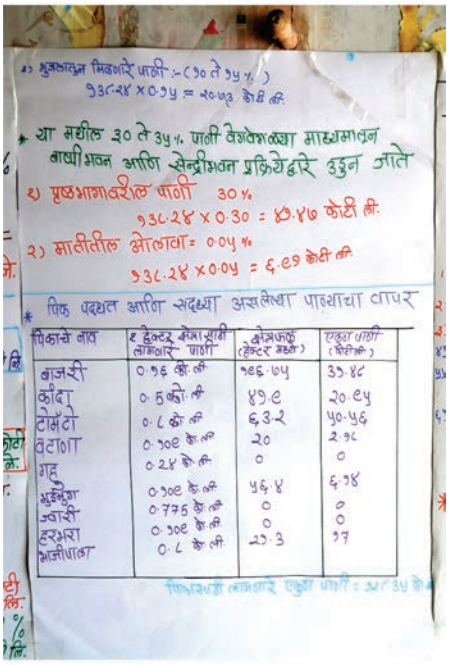
Participatory Water Budgeting: An Overview



Action Taken

WOTR's WB Methodology is geared towards instilling an understanding of how water flows in a watershed, its judicious use and long term availability, following the principles of equity and water requirements for all uses.

People are made aware of the hydrological cycle and their dependencies on it. They quantify their annual water through a component-wise analysis using the tool and game. Rainfall data is provided by **Automated Weather Stations (AWSs)** installed by WOTR in villages.



Since semi-arid regions depend on groundwater in the post monsoons, **communities were capacitated to monitor their groundwater levels** using a water level indicator. Bi-monthly data collected captures the groundwater fluctuation and is publicly displayed. Based on this information crop plans are made (prior to the rabi sowing, taking care to secure sufficient water for livestock and domestic purposes in summer). Efficient irrigation methods **(drips, sprinklers, micro-irrigation systems)** are being adopted.


Groundwater Level Monitoring

Using the WB approach, WOTR has introduced community irrigation systems in 8 tribal villages of Mandla district, Madhya Pradesh. Their livelihood had been dependant on a single crop during kharif. A total of 60 irrigation systems each consisting of a set of 5 sprinklers, a motor and pipes have been given to groups of 3 farmers each, giving them access to nearby streams/canals/wells. They are now able to provide crop- saving irrigation to kharif crops in absence of timely rainfall, and to take short duration rabi crops. Over 180 families have been benefitted directly and have doubled their gross annual income. The average area under cultivation has increased by 48% and crop production by 82% (cereals and pulses) in this project area.

WB helps in combating water scarcity. It reduces chances of rabi crop failure. It thus increases productivity while contributing to securing sustainability of water resources.

Mohan Bhau Rathod, Farmer, Sunderwadi, Maharashtra

"Earlier I used flood irrigation which wasted a lot of water leading to drying of my wells before summer. After participating in WB activities by WOTR, I shifted to drip. The water in my well now stays put for a long time. This not only solved my water woes faced during summer, but also convinced us about the importance of WB".

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ADAPTIVE SUSTAINABLE AGRICULTURE

Agriculture is the lifeline for rural poor, particularly communities living in resource fragile drylands. Limited ecosystem services and scanty rainfall patterns limit the potential of agricultural productivity, thus having implications on food security, livelihoods and general well-being of communities in these regions. Currently, drylands are plagued by over-exploitation and over-utilization of agriculture. The unintended consequences of up-scaling the green revolution and white revolution models into the dryland regions of India are being deeply felt. Agriculture being highly climate sensitive makes communities further vulnerable.

However, if managed well, agriculture in dryland regions can be both profitable and sustainable. WOTR has been working in this direction and promotes Adaptive Sustainable Agriculture - climate compatible agricultural methodologies, low external input systems, efficient water use - and encourages collective farm management particularly for small-holder farmers.

This Includes:

System of Crop Intensification (SCI):

A four pronged approach implemented systematically, particularly in poor soils.

It involves soil preparation and management, crop spacing, systematic application of locally prepared organic inputs from livestock and micro-nutrient foliar sprays. It is simple to follow.

It is a viable intermediate between organic farming and is climate adaptive.

SCI is about plant management rather than pest management and relies on the principle that adequate amounts of phytochemicals in the plant's system help combat climate induced stresses. Optimal crop spacing ensures higher yields. It brings back the critical link between agriculture and livestock by laying emphasis on having an integrated farming systems approach.

Water Budgeting and Efficient Water use Systems:
While suitable crop production methodologies have been identified for sustainable/profitable agriculture in drylands – this is not enough! To use water judiciously for humans, agriculture and livestock as to optimize benefits in climate variability, erratic rainfall and possible drought – is a key essential. While water budgeting is a concept that can be used at various levels, in agriculture it is geared towards ensuring optimal use of water available for agriculture - based on which crops for the year are planned, both at village and farm levels. This includes use of drip systems, equitable sharing of excess water and considered decisions on groundwater withdrawals.

Collective Farm Management

Agriculture being highly climate sensitive makes the smallholder farmers the first victims as they have low adaptive capacity. In this context, WOTR has taken Adaptive Sustainable Agriculture further through a system that connects concepts of water-budgeting based crop planning and efficient water use systems with collectivization of farm resources for agriculture.

The initiative promotes bringing together groups of individual farmers with adjoining lands to share their farm resources for farming. It starts with connecting water resources through uniquely designed drip irrigation system ensuring all farmers in the group get adequate water. Based on the total available water in all sources (tube/bore wells), the crops for the season are planned. This initiative promotes effective use of water for crop planning and gently induces crop diversification per farmer, collective management of farm lands, farm equipments and infrastructure and encourages collective marketing of the produce.

Collective farm management reduces the risk and builds response capacity of smallholder farmers to impacts of climate change as well as enhances food and income security.

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WEATHER BASED, FARMER-CENTRIC AGROMETEOROLOGY

To reduce risks and improve agriculture productivity despite local climatic variations, WOTR provides crop and locale specific agro-advisories to farmers based on weather forecasts and the particular crop's growth stage. The advisories emphasize environment-friendly integrated solutions that are within the farmers' capabilities, promote adaptive sustainable practices, help raise productivity and reduce costs. The delivery channels used are mobile handsets (SMS), on-site technical support, wall papers and public address systems. Particular attention is paid to mobile telephony (SMSs) since this enables a cost-effective dissemination of advisories to a large numbers of farmers in a timely manner.

An Overview of WOTR's Agro-Advisory System

Awareness building and sensitization of local communities

GIS Database: Land, Farm Resources and Crops

Indigenous Knowledge & Traditional Systems

1 Automated Weather Stations installed in villages

Weather Data Transfer

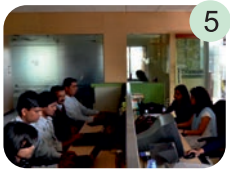
2

3 India Meteorological Department (IMD)

3 Day Weather Forecasts

4 AGRIMATE: Crop Weather Calendar System

Local and Farmer Specific Agro-advisories



5 User Profile System (UPS) Recipient / Subscriber details

Multi-channel dissemination to Farmers: SMS, Wallpapers, Public Address System

6

7 Farmers' Feedback / Training Sessions

8 Farmers' Feedback

Key Features

The Agro-meteorology service consists of 4 components that are interlinked:

- Acquisition of local weather data through **69 Automated Weather Stations**, short range village level weather forecasts from the India Meteorological Department (IMD), and awareness creation of the impacts of weather variability on crops and livestock.
- Crafting of Agro-Advisories based on weather forecasts and Crop Calendars prepared in collaboration with CRIDA and the State Agricultural University (the MPKV), and their dissemination (twice a week) followed by feedback gathering.
- An Automated Content Management System (ACMS) that generates agro-advisories (AGRIMATE) and disseminates them using a User Profiling System (UPS).
- On site Capacity Building through Farmer Field Schools, On-site knowledge and technology Transfer.

Legend

1
- Met stations installed in project villages (54 with telemetry up-links).
- Village youth trained to read the met-data. Information displayed on boards in public places.
- Trainings on maintenance and security of weather stations conducted.
- Community sensitized to likely weather outcomes and impacts on agriculture and alerted of need to undertake coping measures.

2
- Hourly local Met-data sent via SMS/ GPRS to WOTR's servers.
- Data "cleaned", verified and forwarded to IMD servers.

3
- 3-day village level weather forecasts received daily by WOTR from IMD.
- Unusual / extreme weather events forecasts immediately disseminated to villages.

4
- Weather forecasts from IMD fed into AGRIMATE (An Automated Crop Weather Calendar Software).
- Indigenous knowledge and traditional agricultural practices of area referenced.
- GIS data base containing details of farmer-wise land, soil, water, farm resources and crops grown together with socio-economic data prepared.
- In-house experts prepare weather- based, crop growth stage and locale specific agro advisories.

5
- User Profiling System (UPS) matches the advisory with the farmer/ subscriber and disseminates the same through mobile SMSs in local language at least twice weekly or whenever required.

6
- Multi-channel Advisories Distribution: SMSs, weekly wall-papers in local language and public announcement system (loudspeakers).

7
- On-site technical support, Farmers' Field Schools, farmers' feedback sessions and field investigations carried out.

8
- Feedback looped into the Automated Content Management System (AGRIMATE and UPS), the crop advisories generation process as well as to field extension personnel and specialists

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BIODIVERSITY AND ECOSYSTEM SERVICES

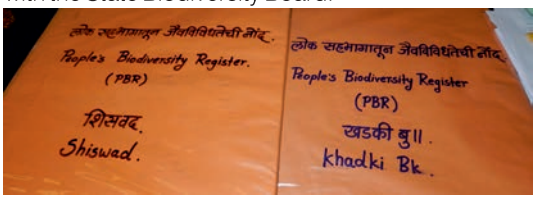
A healthy biodiversity plays an important role in adaptation to climate change. Communities living near forests turn to these to find food, fodder, shelter and numerous livelihoods, even in times of drought.

Healthy ecosystems with rich biodiversity offer Provisioning, Regulating, Supporting and Cultural Services to the communities nearby and to many others living distant from them. Today, India's biodiversity is shrinking rapidly, and with it, our ability to adapt. In this context, WOTR included biodiversity conversation as part of the Climate Change Adaptation project.

WOTR's approach to biodiversity involves creating awareness among the community, its youth and children, about the importance of conserving and protecting their local biodiversity.

Mandated by the Indian Biodiversity Act (2002), the **People's Biodiversity Register (PBR)** is an important document for protection of the fast disappearing biodiversity. It is to be developed by a village **Biodiversity Management Committee (BMC)** by encouraging local communities to be the key participants. The PBR aims at establishing the community's rights over natural resources, along with protection and conservation of biodiversity.

Action Taken: WOTR has prepared a **"How-to" Manual for the People's Biodiversity Register** guiding agencies to assist local communities be the prime documenter of their biodiversity. **WOTR has assisted 33 villages in Maharashtra and Madhya Pradesh to create their PBRs.** Village youth have been trained to document the PBR. 25 Biodiversity Management Committees have been registered with the State Biodiversity Board.



Biodiversity festivals has been organized in the different regions to promote knowledge, the local exchange of indigenous seeds, livestock and traditional recipes, thus giving importance to the local biodiversity. Indigenous knowledge holder stories and technologies have been documented.

Some villagers have raised nurseries of indigenous tree species and medicinal plants to grow these as part of livelihood promotion and reforestation in the watersheds. Villagers have also increased the cultivation of indigenous crop varieties for home use.

Enhancing the recognition and value of biodiversity encourages its protection. Through WOTR's Eco-Tourism in villages of Akole, trained village youth take tourists on nature trails introducing them to the secrets of the forests. Akole block of Ahmednagar district is on the Western Ghats. It is a globally important biodiversity hotspot.

Promoting biodiversity concerns in Watershed Development:

The construction of check dams as a water conservation measure, hampered the path way for fish to return to their breeding sites. As a result, **'Fish ladders'** on check dams have been constructed.

The Children's Biodiversity Register encourages schools to know the local flora, fauna, indigenous knowledge and culture.

With children valuing the biodiversity,
Tomorrow Will Smile on Our Earth.

Vithal Revaji Gavade, a traditional healer of Khandgedara village, Sangamner block, Ahmednagar laments: "The fast depleting biodiversity will leave my grandchildren devoid of the benefits we have derived from our forests".

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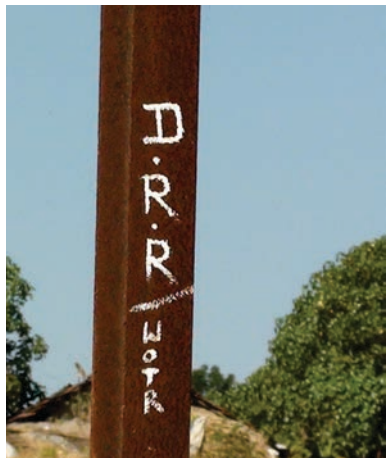
DISASTER RISK REDUCTION (DRR)

State and district authorities take responsibility for managing the increasing sudden onset weather related disasters that aggravate the vulnerability of rural communities. However, giving greater emphasis on pre-disaster preparedness at village level will reduce loss and damage. This is integral to Climate Change Adaptation (CCA).

WOTR's Community Based Disaster Management (CBDM) approach builds capacities of communities to reduce the impacts and to cope with disasters more effectively. Since every individual is vulnerable and is threatened by natural and man-made disasters, each one is required to be aware of and have the minimum capacity to counter such crises. Community participation and community ownership in disaster risk reduction is the key to minimizing losses. The Village Development Committee (a Gram Panchayat sub-committee) has a big role in this.



Action Taken

Seasonal Calendar

Awareness campaigns have been organized to sensitize the village, to plan, review and analyse the past disasters. A **DRR Clock and Seasonal Calendar** have been prepared for likely seasonal disasters.

The **Community Driven Vulnerability Evaluation – Visual Integrator (CoDriVE-VI)** tool – guides the construction of a 3D model of the cluster of villages to assist communities to identify hazard spots, safe spots and how to address the adverse situations.

Once hazard spots (e.g. road caving-in sites, weak houses / walls) are identified, the actual location in the village is marked and the respective government departments and households are contacted for action.

WOTR has initiated DRR interventions in 33 villages across Maharashtra and Madhya Pradesh. Participatory 3D Models are being prepared for some villages and clusters, where hazard spots, vulnerability zones and safe spots are marked.

Each village has phone numbers of the respective local authorities displayed in public sites for immediate contact in times of need.

Safety mock drills have been conducted in schools, to train teachers and children about how to respond to potential disasters. Sensitization meetings were conducted for pre and post project periods; hazard specific mitigation activities, water budgeting, etc. were also undertaken during the project course. **DRR plans and workbooks** have been prepared for project villages. Communication has been initiated with the local authorities to share the data collected through DRR workbooks.

Sakha Haridada Bhau Daate, Zilla Parishad School Teacher, Kothe village, Maharashtra
"WOTR conducted mock drills and awareness sessions for our students. These exercises are important for each individual. They inform you what to do during floods, fire, earthquake or man-induced disasters. This will benefit my students, their families, and the entire village."

Parthala village, Mandla district, Madhya Pradesh : At one spot, high tension electric wires were within easy reach of adults. Understanding the potential disaster that could be caused, the VDC reported the same to the Electricity Board who immediately rectified the situation.

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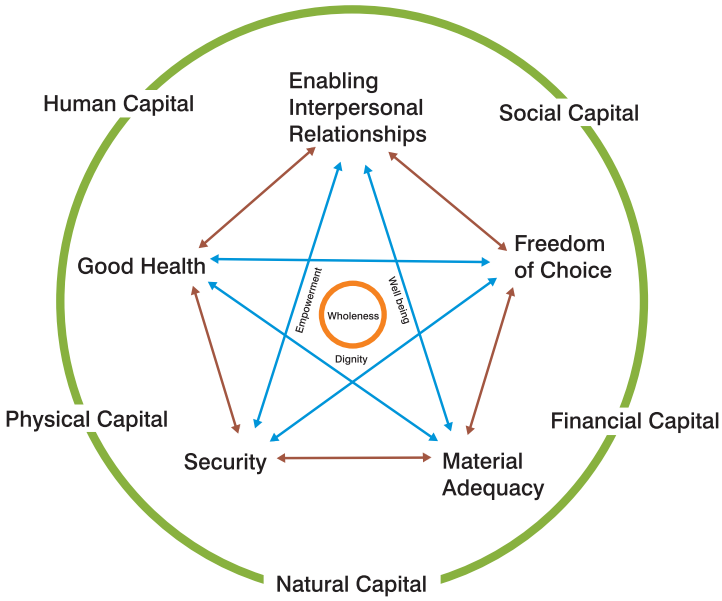
MAKING ADAPTATION HAPPEN: WOTR'S APPROACH

Theory of Change The WOTR Engine for Adaptive Sustainable Development



The outer circle, comprising of the five capitals, is the tangible frame within which human life unfolds. The five capitals – the physical, financial, social, human and natural – have to grow and develop simultaneously and harmoniously to have sustainable growth.

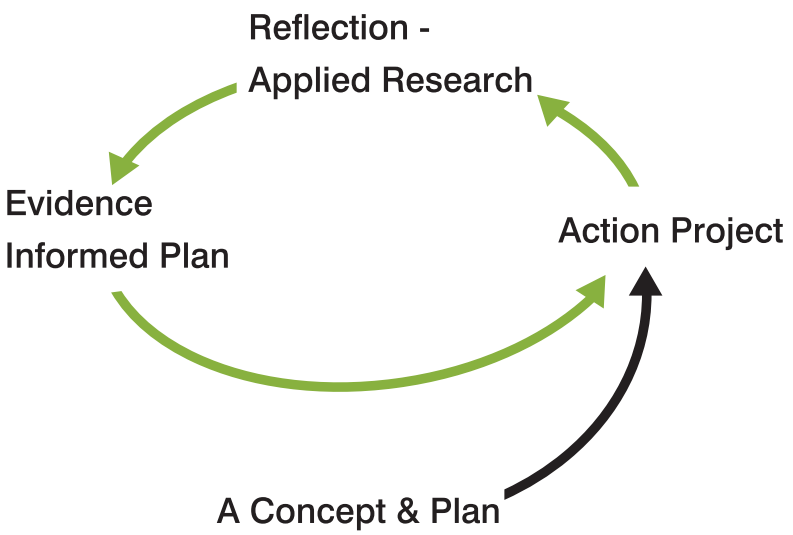
A set of five important conditions, essentially interconnected, that are necessary – material adequacy (not merely 'increase'), security (freedom from fear of insufficiency, discrimination and conflict), freedom of choice, healthy interpersonal relationships and good health. These result in an empowered community that lives in dignity and that enjoys well-being.

In the centre is WHOLENESS – a body, mind, spirit integration – a harmony rooted in centeredness; the space within which the individual and the community are one with the universe.

When we work to conserve our Earth for the 7th generation, we will be conserving it for ourselves. It requires that we sense, understand and respect the interconnectedness of the various components of the engine and take the necessary steps (adapt) so as to strike the balance that will maintain the equilibrium. We would necessarily need to work together as a community and as a group of communities to achieve sustainability.

ACKNOWLEDGEMENTS: This image emerged within WOTR after years of deep reflection, while we were trying to find congruence in the way we need to go forward. The thoughts, ideas and mainly sensing of the various components of “The Engine for Adaptive Sustainable Development” comes from the contribution of many across the globe and across times. We thank each of you, some known, most unknown, for permitting us to take your thoughts and to weave it into a meaningful link as we look towards the future of our great, great grandchildren's children.

The Operational Approach



These are shared appropriately with decision makers, funding agencies, implementing agencies as well as communities, through conferences/workshops, trainings, policy dialogues, the print and e-media.

The Strategic Approach: Partnerships and Collaborations

Positive impacts realized in project villages, the studies that emerged, tools developed for up-scaling implementation of this complex project have only happened due to the contribution of various partners who have come together with WOTR to realize the CCA project.

Key partners are:

- **The Primary Stakeholders:**

At village level, Village communities (Gram Sabha), the Village Development Committee (VDC- a sub-committee of the Gram Panchayat), Women's self-help groups, Cluster Development Committee (CDC – VDCs of the cluster of villages) are our primary stake holders, so that mutual learning takes place, experiences are shared and concerted action can be taken across large areas.

- **The Funding Partners**:

The Swiss Agency for Development Cooperation (SDC), NABARD (National Bank for Agriculture and Rural Development), Brot für die Welt, Swiss RE, Dr. & Mrs. S.H.M Modi Hormus House Benevolence Trust Fund, RBS Foundation, Governments of Maharashtra, Andhra Pradesh and Telangana.

- **The Knowledge Partners:**

WOTR has formal collaboration with knowledge partners - The India Meteorological Department (IMD), Central Research Institute for Dryland Agriculture (CRIDA), International Centre for on Agriculture And Forestry (ICRAF) and Mahatma Phule Krishi Vidyapeeth (MPKV), Bharati Vidyapeeth Institute of Environment Education and Research (BVIEER), The World Resources Institute (WRI).

WHAT VISITORS SAY

THE LEADERS SPEAK

Horst- Köhler- Ex President of German Republic:

The project is an important example for what can be achieved in a short time when you enable people to take their fortune in their hands using simple techniques with the contribution and participation from villagers.

Harsh Kumar Bhanwala – NABARD Chairman:

The visit to Bhojdari watershed was an enjoyable and learning experience. This is the result of a unique experiment where villagers, government, the NGO and the development bank have worked together to bring joy to the people and prosperity to the region. Work on CCA in the watershed region is remarkable. Many things to learn from the experiment and the same can be up-scaled/ replicated for wider adoption. Being the chairman of NABARD, I have a sense of satisfaction of our past association with WOTR and have a desire to work in more areas/ regions with the agency.

THE EXPERTS SPEAK

Dr. Gerolf Weigel,
Head of Climate Change and Development, Embassy of Switzerland:

I was really impressed that the communities have taken their own future in their hands and have become confident to shape it. This unique combination has really combined the commitment and empowerment at the grass root level with linkages to science, latest technologies, policy and has ensured their up scalability.

John Varrier,
CRS Program Manager, Afghanistan:

WOTR's work is very impressive, especially in regard to the successful community mobilization practices. We are certain that we will leave very inspired and hope to employ many of the concepts we learnt here back in the watersheds of Afghanistan.

K. Jagdish,
Convenor and Senior Fellow, SuriSehgal Centre for Biodiversity and Conservation, ATREE:

The CCA project is truly an outstanding and inspiring example of long term commitment toward transforming landscapes and communities.

John Colvin,
Senior Adaptation Practitioner, Global Climate Adaptation Partnership, Oxford, UK:

It has been a special experience and privilege to visit Darewadi. Firstly, knowing the history of its creation and seeing the evidence of what it has achieved all around us; secondly, as a place of retreat, peace and inspiration and finally, for the opportunity to learn so much from the CCA project. Thank you.

THE YOUNG SPEAK

Jenny Godinez,
Student, DePaul University, Chicago:

The time spent in Kumbharwadi village evaluating several drip irrigation projects was extremely successful and enlightening. I was able to apply concepts I learnt in the classroom to real life experiences that reinforced my research skills, which would not have been possible without WOTRs planning and support. I have left the project feeling inspired and motivated to bring back my experiences to communities in Chicago.

On left, Dr Gerolf Weigal, Swiss ambassador to India-
Philippe Welti with WOTR executive director - Marcella D'souza

German Ex-President - Horst Köhler

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Partners and Collaborators

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Swiss Agency for Development and Cooperation SDC

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NABARD

सत्यमेव जयते

Brot für die Welt
Bread for the World – Protestant Development Service

RBS
The Royal Bank of Scotland

Swiss Re

Dr. & Mrs. S.H.M Modi Hormus House Benevolence Trust Fund

World Agroforestry Centre

MAHATMA PHULE KRISHI VIDYAPEETH
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