



WHO WE ARE AND WHAT WE DO

Who We Are and Where We Work



SELF



People impacted	> 1.8 million
Watershed Villages	1,997
Project Villages	3,599
NGO Partners	189
States	7
Area covered	> 1.3 million ha
People trained	> 350,000

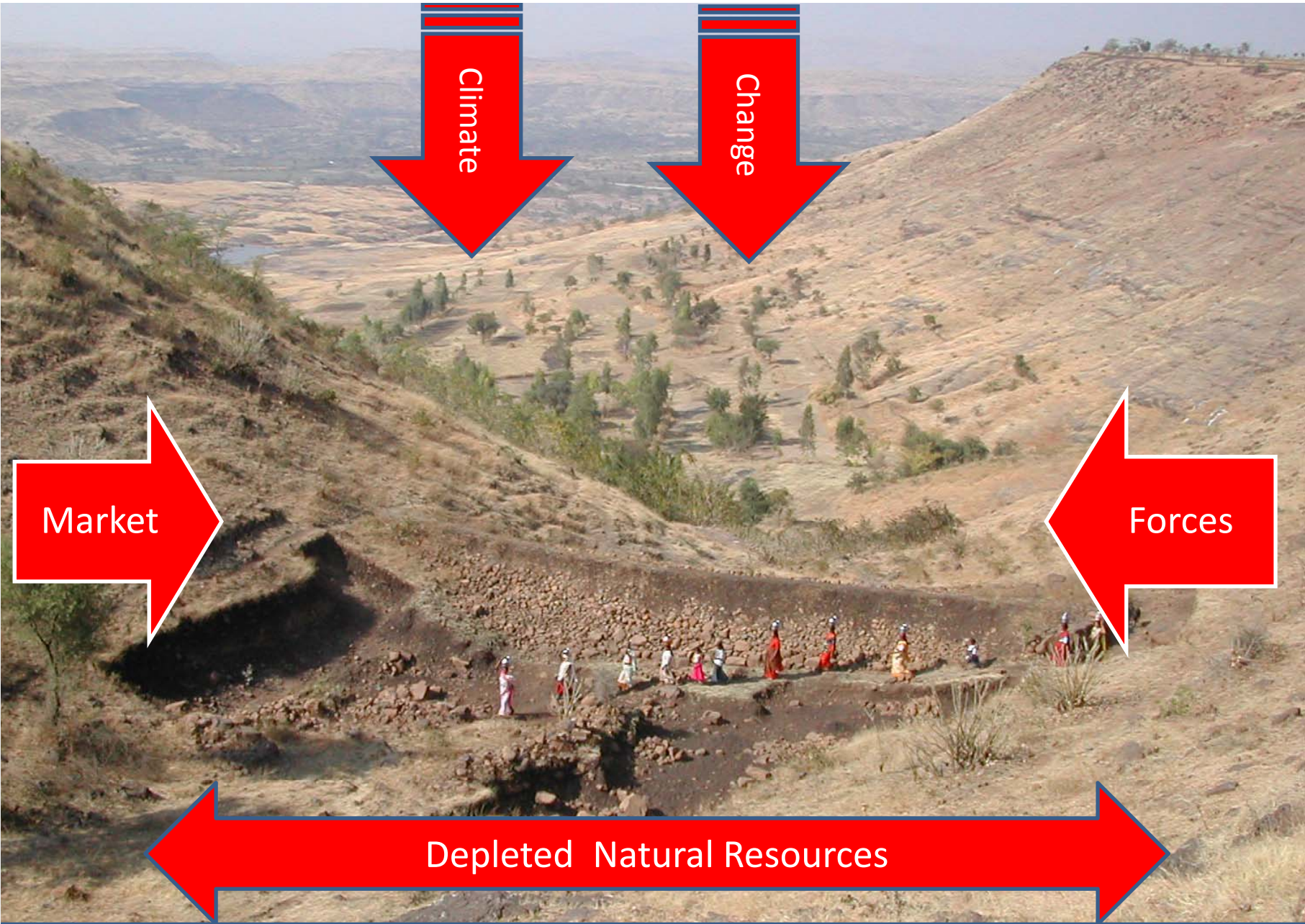
Support provided to Projects in Somaliland, Kenya, Tanzania and Malawi .

Building Adaptive Capacities of Rural Communities to Climate Change in Rainfed Regions of India



The Context and Problem

The Context



Fractured Vulnerable Communities

The Effects of Environmental Degradation and Water Scarcity



Long distances to fetch fire wood



Tanker fed Villages



Malnourished children



Cattle Camps during droughts

Climate Change in Semi-Arid, Drylands

Scale of the Problem

- Today 1.7 billion people are water stressed around the world, by 2025 the population would be over 3 billion.
- 50% of the Earth is made of semi-arid and hot arid lands
- 58 % of India is arid, semi-arid, hot sub-humid; 70% agriculture is rain-dependent

Key Impacts




- Rising Temperatures – heat stress, increased Evapo-transpiration
- Irregular weather patterns and increased extreme events

The Challenge: How Do You.....

- Reduce Risks and Build Resilience?
- Enhance Adaptive Capacities?
- Go Beyond Coping to Increased Well being and Sustainable Economic Development ?
- Up-scale and Replicate a Winning Strategy?

WOTR's Climate Change Adaptation Project

LEGEND

-  Project States
-  Project Districts
-  Project Blocks



Total Villages : 72
Districts / Blocks : 6/8
Area ha. : 45,276
Population : 72,889

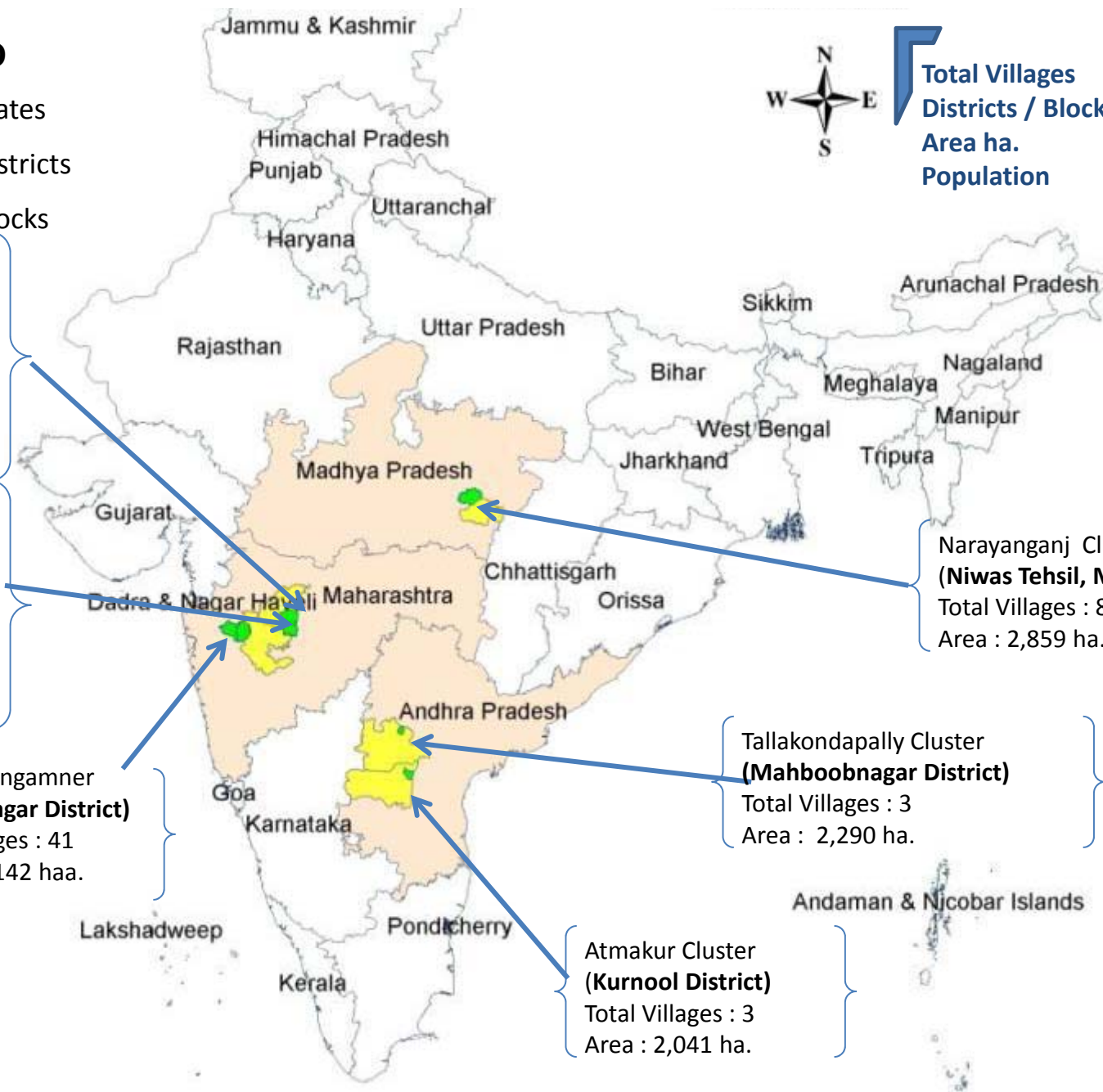
- (Vadhona cluster
Bhokardan Taluka
Jalna District)
Total Villages : 7
Area : 4542ha.
- Kachner Cluster
Aurangabad /
Paithan Taluka
**(Aurangabad
District)**
Total Villages : 10
Area : 4402 ha.

- Akole – Sangamner
(Ahmednagar District)
Total Villages : 41
Area : 29,142 haa.

- Narayanganj Cluster
(Niwas Tehsil, Mandla District)
Total Villages : 8
Area : 2,859 ha.

- Tallakondapally Cluster
(Mahboobnagar District)
Total Villages : 3
Area : 2,290 ha.

- Atmakur Cluster
(Kurnool District)
Total Villages : 3
Area : 2,041 ha.



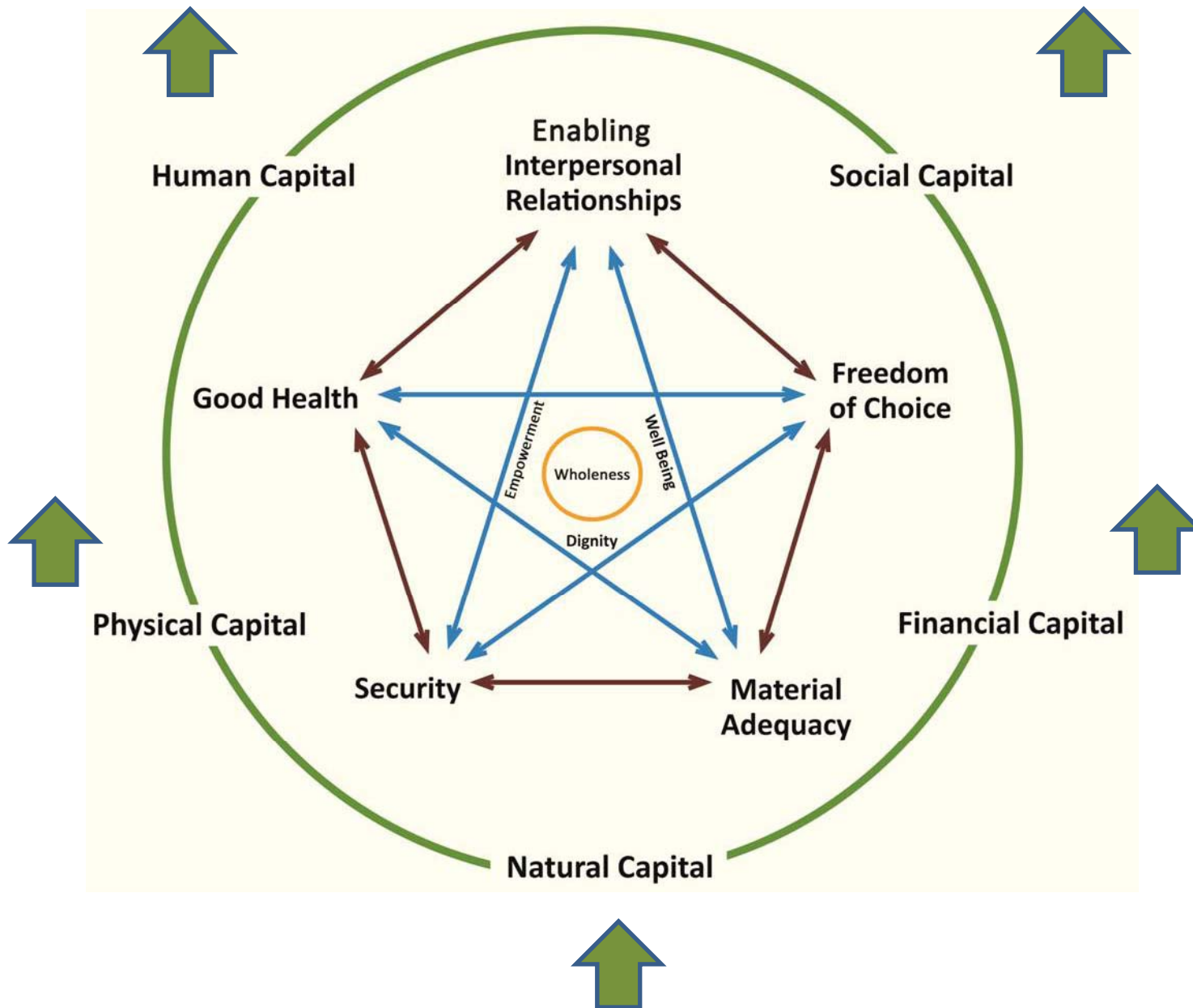
KEY INTERVENTIONS AND MEASURES

- **Integrated Ecosystems/ Watershed Management**
- **IWRM – Water Budgeting and Enhanced Water Use Efficiency**
- **Adaptive Sustainable Agriculture for Food Security and Income**
- **Climate Smart Agriculture – Weather based Crop Advisories**
- **Bio-diversity Conservation**
- **Disaster Risk Mitigation – Contingency Plans**
- **Alternative and Renewable Energy**
- **Sustainable livelihoods**
- **Gender and Women’s empowerment**
- **Tool Kits and Technology enabled Monitoring systems.**
- **Knowledge Generation/Action Research/Dissemination**
- **Capacity Building/ Training**
- **Policy Advocacy and Dialogue**

WOTR's Approach and Perspective

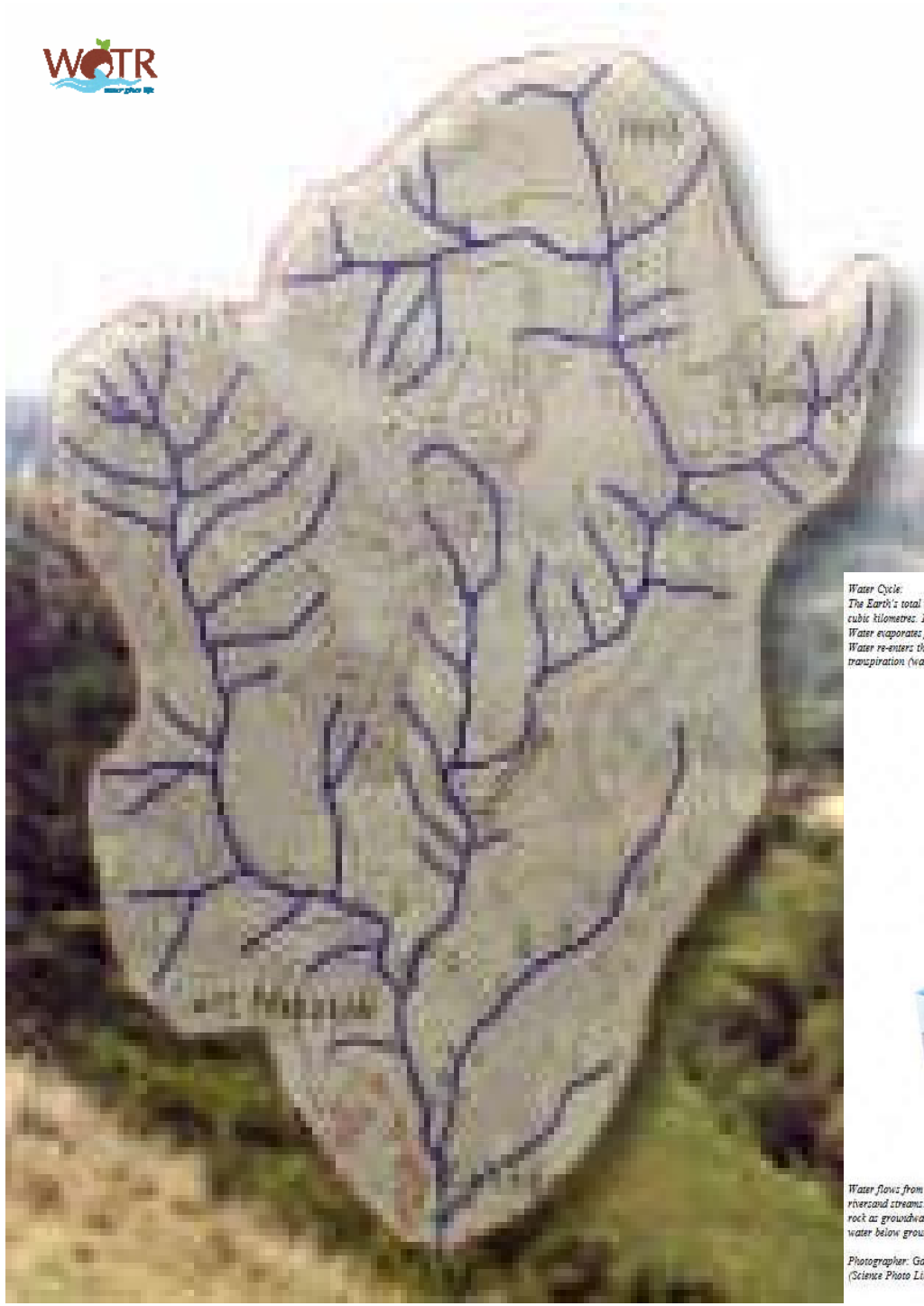
The WOTR Engine for Adaptive Sustainable Development

Perspective and Approach

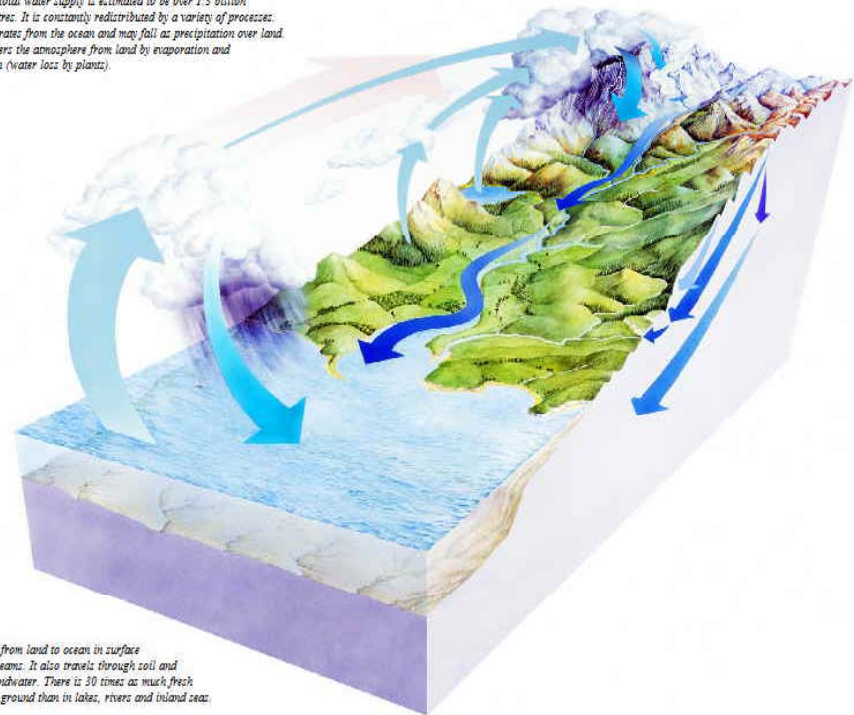


Watershed Development and Ecosystems Management

Watershed/ Ecosystems Development - A Climate-Smart Strategy for Sustainable Agricultural Development



*Water Cycle:
The Earth's total water supply is estimated to be over 1.3 billion cubic kilometres. It is constantly redistributed by a variety of processes. Water evaporates from the ocean and may fall as precipitation over land. Water re-enters the atmosphere from land by evaporation and transpiration (water loss by plants).*



Water flows from land to ocean in surface rivers and streams. It also travels through soil and rock as groundwater. There is 30 times as much fresh water below ground than in lakes, rivers and inland seas.

*Photographer: Gary Hinck
(Science Photo Library)*



MEASURES - AREA TREATMENTS



DRAINAGE TREATMENTS/LAND USE CHANGES



Adaptive Sustainable Agriculture for Small Holder Farmers

Adaptive Sustainable Agriculture

FOOD & WATER

Conservation, Management, Use Efficiency



Water Availability → Cropping Pattern

Pilot Crop Demos/ Farmer Field Schools

Soil Health and Environmentally safe Practices

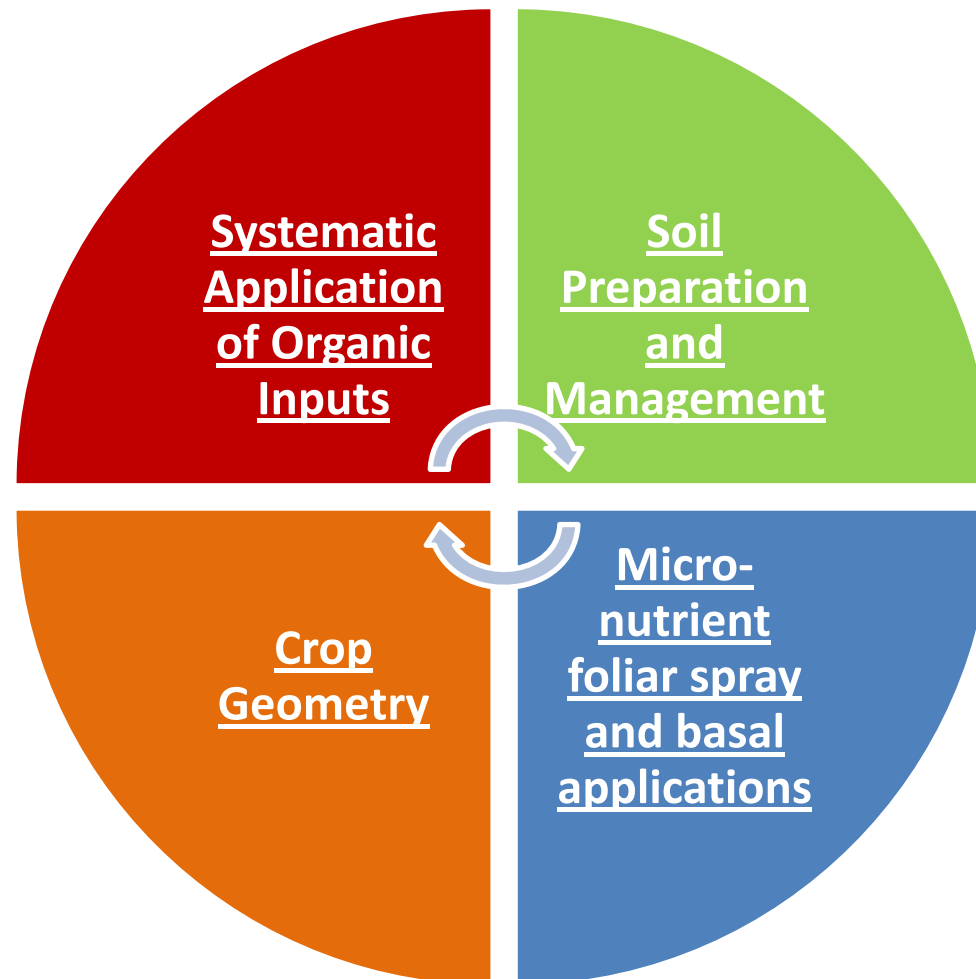
Water Budgeting

Integrated Pest Management

Water Conservation Technologies

Integrated Water-Nutrient Management

System of Crop Intensification (SCI)



SCI – A 4 step approach to enhancing productivity of both soil & crop yields

On Field Interventions – Learning By Doing

- Water Efficiency Enhancing Systems
- Agro Advisories
- Farmer Field Schools
- Field Exposure Trips for learning and Results Validation



WOTR Agricultural Advisory System

Crop Calendar Details

Crop Name: : Jowar
Crop Variety : C SH 9
Crop Variety Duration : 120
Crop Variety Description : Jowar, Description
Standard Crop Soil : Heavy and Medium Black
Standard Crop Irrigation Type : Non Irrigated
Crop Stage : Sowing
Crop Stage Duration : 50

Cropping Practice Details

Cropping Practice/Practic	Duration	Water Requirement	Description
Spacing	2	50	Row to row=45cm

Pest & Disease Details

Rainfall	Pest/Disease	Temperature(Max)	Temperature(Min)	Humidity	Sunshine Hours	Field Observation
1.3	Aphids	29.9	15.5	70	8.9	Ahids

Date: : 7/26/2012 Time: : 3:19 PM

Enter advisory * :



Agro-Meteorology: Making Farming Climate-Smart

Locale- Specific Meteorological Information



Automated Weather Station



Training for villagers

Automated Weather Stations installed in 70 villages

Weather information displayed on boards in villages

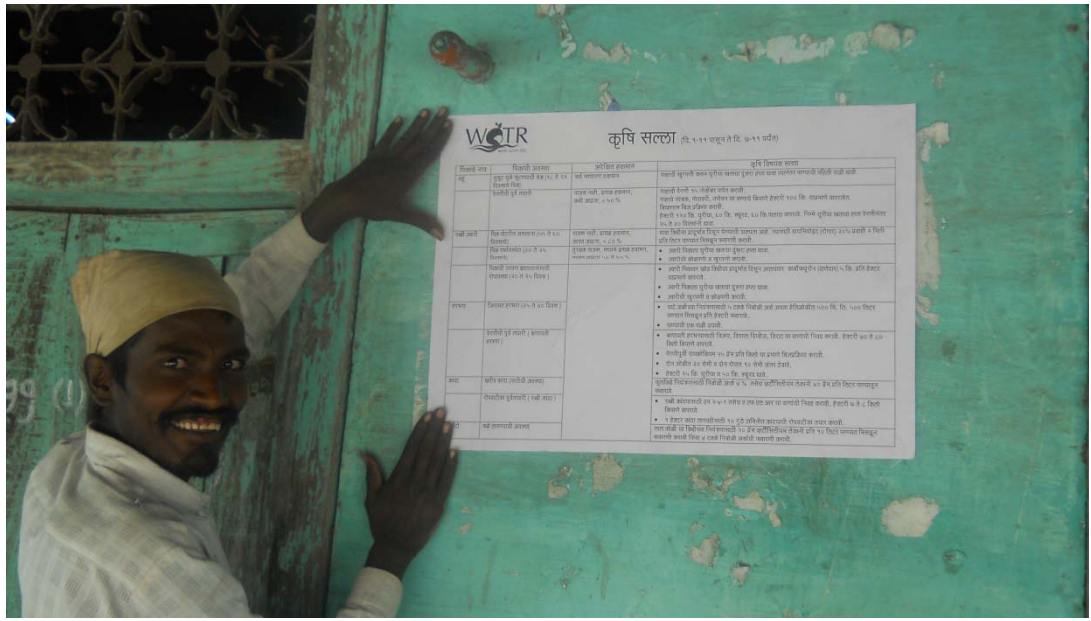
Awareness creation amongst villagers

Agro-Meteorology software developed for processing hourly data

Agro Advisories

WOTR **कृषि सल्ला** **सल्ला व सल्ला देणे, सेवा देणे**
 By Maharashtra State Government

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Weather based, Crop and Locale Specific Agro-Advisory Provisioning: A Systems Diagram



Awareness building and sensitization of local communities



Automated Weather Stations installed in villages

1 Weather Data Transfer



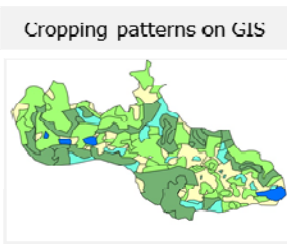
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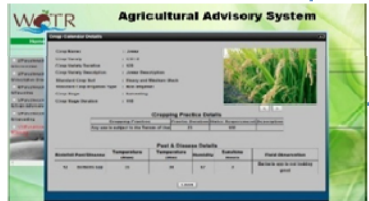
Indian Meteorological Department (IMD)

3

3-Day Weather Forecasts



Cropping patterns on GIS



Crop Weather Calendar Software

4

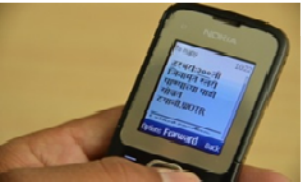
Documentation of People's knowledge and Traditional Systems



Farmers' Feedback Sessions

6

7 Farmers' Feedback



5

Dissemination to Farmers through SMS and village wallpapers

Development of locale-specific agro-advisories

क्र.सं.	दिनांक	वर्षा	तापमान	वहल	कृषि कार्य
1	15/01/2011	10.5	25.0	15	गन्ना की देखभाल
2	16/01/2011	11.0	24.5	15	गन्ना की देखभाल
3	17/01/2011	11.5	24.0	15	गन्ना की देखभाल
4	18/01/2011	12.0	23.5	15	गन्ना की देखभाल
5	19/01/2011	12.5	23.0	15	गन्ना की देखभाल
6	20/01/2011	13.0	22.5	15	गन्ना की देखभाल
7	21/01/2011	13.5	22.0	15	गन्ना की देखभाल
8	22/01/2011	14.0	21.5	15	गन्ना की देखभाल
9	23/01/2011	14.5	21.0	15	गन्ना की देखभाल
10	24/01/2011	15.0	20.5	15	गन्ना की देखभाल

Bio Diversity Conservation

People's Biodiversity Registers



**Women's Empowerment, Health, Sanitation,
Nutrition, Child Growth, Drinking Water and
Alternative Energy**

Nutrition, Health and Hygiene Promotion



- Anemia (concept, causes, signs and symptoms, treatment and prevention) + Hb testing camps
- Training and Capacity Building on Growth Monitoring (information on height and weight of children of 0-5 years, maintaining registers, filling up growth charts)
- Meeting nutritional needs by growing, using locally available foods and adopting healthy cooking practices
- Promotion of Sanitation and Hygiene



Alternate & Renewable Energy

3,832 Solar Home Lighting Systems
599 Biogas
3,563 Biomass stoves/ Smokeless chullahs (stoves)
3008 Hot Water Chullahs (stoves)
51 Solar Street Lights / 13 Solar Pumps
Darewadi Learning Centre having mini solar grid



ENERGY



Hot water chulha



Solar Home and Street lights



A renewable energy effort by Watershed Organisation



Participatory Tools and Approaches: Scaling Up with Feet on the Ground

WOTR has developed/ adapted the following Tools and Frameworks for Context Assessment and Decision Making:

- **CoDriVE- PD:** A Vulnerability Assessment Tool
- **CoDriVE – LA:** A Livelihoods and Project Adjustment Tool
- **CoDriVE- VI:** Participatory 3-D Modeling (P3DM)
- **CoDriVE-Health:** Climate-Smart Health Assessment
- **People’s Biodiversity Register (PBR)**
- **Children’s Biodiversity Register (CBR)**
- **Community Disaster Risk Management (CDRM)**
- **IT-enabled, GIS and RS – supported Decision Support Systems**

IMPACTS

Darewadi - 1996

Darewadi - 1996



Darewadi - 1999



Darewadi - 2009

Darewadi - 2009



Rejuvenates & Diversifies Natural Resources

Revitalizes Local Economies

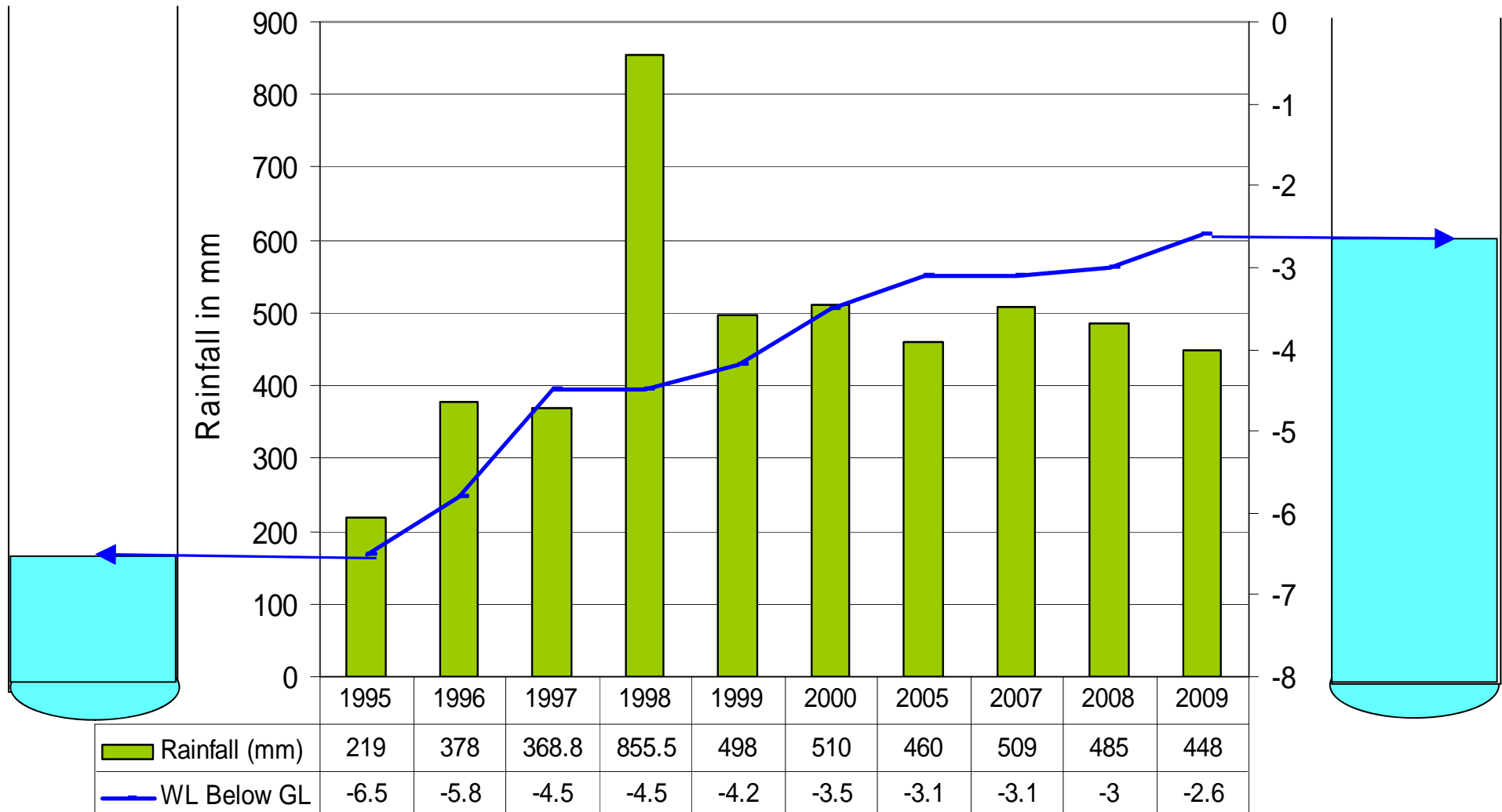
Strengthens Relationships



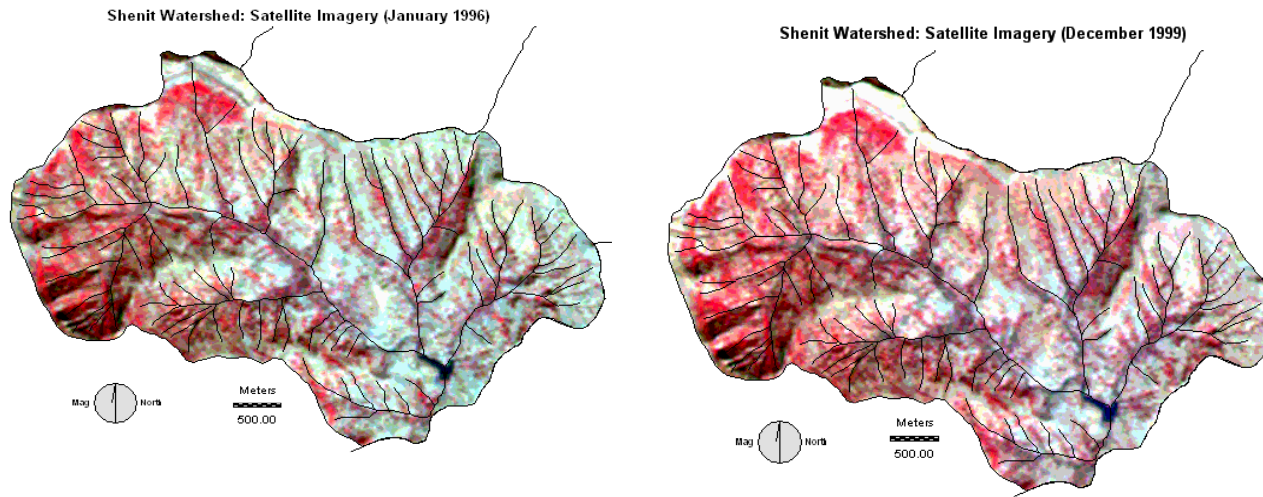
Water Shortages : Fading Memories



Rainfall – Water Table Relationship (1996 – 2009)



The Impacts of Watershed Development



**Barren land
decreased by 74%
despite a 32%
decline in rainfall.**

A study of 15 villages revealed the following:

- Productive wells increased by 29%
- Area under irrigation increased by 233%
- Cropped area increased by 25%
- Agriculture employment went from 4 to 10 months /year locally (150% increase)
- Distress migration declined by 84%
- Milk production increased by 143%
- Production of Food crops by 65%
- Vegetable production by 64%

SCI Crop Demonstrations



Increased Resilience to Climate Change



Some Policy Impacts

- Capacity Building as a distinct and preparatory phase included in all Government and large-scale WSD Programmes in India
- The Watershed Development Fund (NWDF) set up by Govt. of India based on this approach developed under the IGWDP.
- Participatory Net Planning (PNP) for Soil and Water Conservation and Land Use Planning adopted in Govt. Programs
- Secured permission to treat Govt. Forest land
- The Resource Agency Concept has been adopted by the Govt. of India in the country-wide Integrated Watershed Management Program (IWMP)
- The Public-Private-Civil Society Partnership Model for implementing the MGNREGA Program has been adopted and scaled by Govt. of Maharashtra
- Cluster Facilitation Team Approach for MGNREGA adopted by GOI for up-scaling in 250 Blocks in the country

**HOW IT IS DONE: PUTTING
PEOPLE AT THE CENTRE**

An Inclusive Community Involvement

- The Village chooses to implement the project (self-selection)
- Agree to non-negotiable disciplines
- Village institutions involved:
 - General Village Body (Gram Sabha of all adult members)
 - Village Council and the Village Development Committee (representative of all communities including landless poor)
 - Women's Self-Help Groups & their Apex Body
 - Forest Protection Committee & others



What is done: Community Engagement

- **Village Envisioning**
- **Vulnerability Assessment**
- **Water Budgeting**
- **Bio-Diversity and Hazard Assessment**
- **Capacity Building**
- **Planning and Implementation Strategy**
- **Adopting a “Systems Approach”**
- **Implementation**
- **Accountability: Accounts, Records and Reporting**
- **Participatory Impact Monitoring & Peer Group Assessment**



What is done: Important Aspects for continued Community Engagement & Sustainability

Key Issues consciously addressed:

- Inclusiveness and equity (community takes responsibility)
- **Women's Empowerment**
- Transparency and Accountability

Plan for Sustainability:

- Maintenance Fund
- **Water Use Efficiency**
- Environmentally Friendly and Climate Smart Agriculture
- Sustainable Value Chains that return fair value to producers
- **Linkages with government and other service providers**
- Addressing related issues (eg renewable energy; rural tourism)



Multi-Institutional, Multi-Sectoral, Multi-Actor Partnerships

- At the local/ village Level : Representative Bodies which are embedded in Local Government structures
- At the regional and state level: Government departments and line ministries.
- At the political and bureaucracy level: Engagement with elected representatives and decision makers at all levels
- Collaboration with Knowledge and Technology Institutions: Agriculture Universities, National Institutions involved in supporting State and National Action Adaptation Plans, International Organisations

Some Key Requirements

- Clearly defined Roles, Functions and Responsibilities between collaborating Institutions/ Partners
- Complementary Funding Sources
- South-South –North exchanges for Knowledge and Experience sharing influence international conventions and frameworks related to CCA.
- Development of a Pedagogy for Up-Scaling and Replication

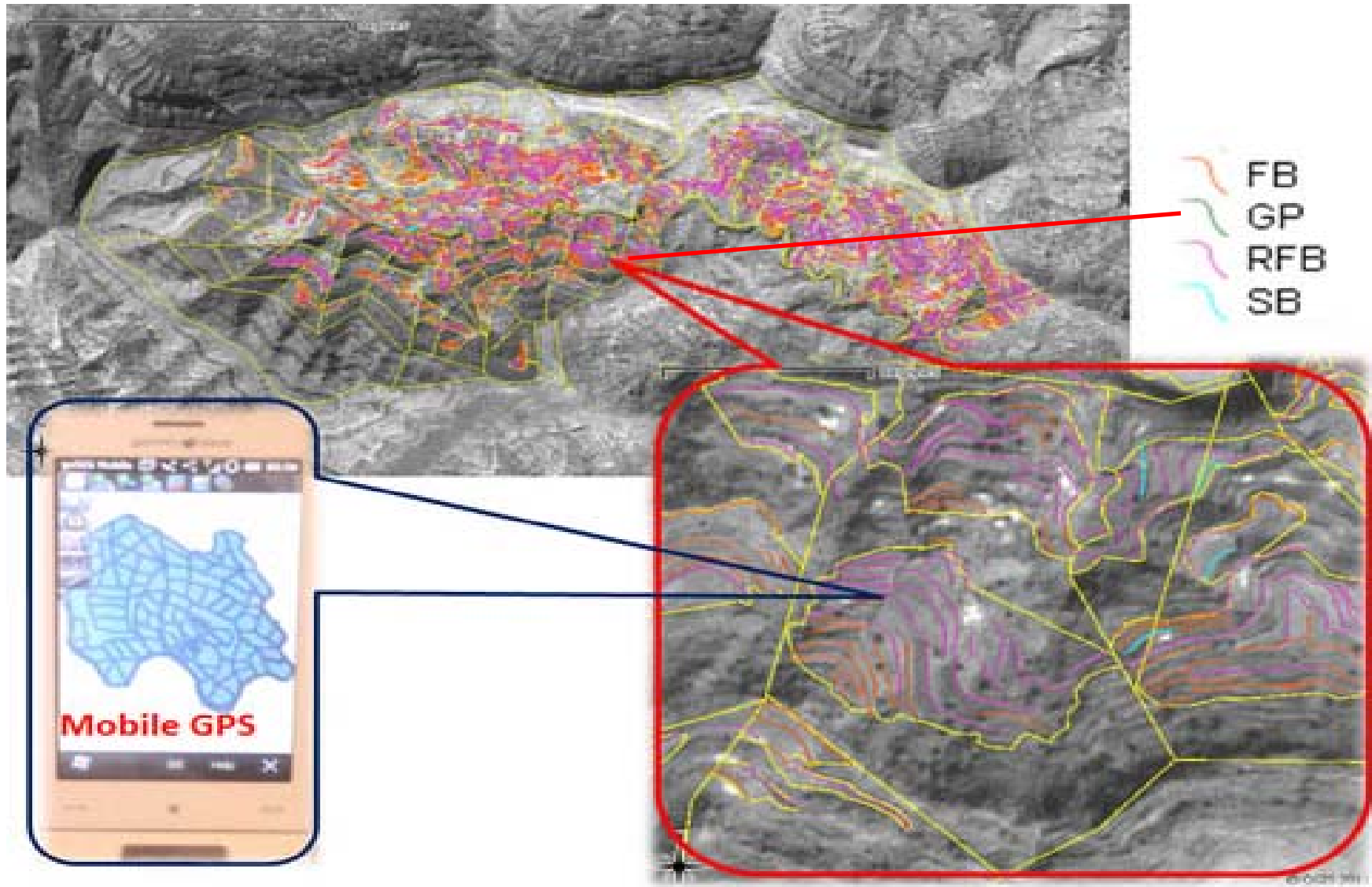
Managing It All

IT- enabled, GIS and Remote Sensing –
supported Decision Support ,
Documentation and Monitoring
Systems








Socio Technical Approach

Using Technology for Context Assessment & Decision making

Net Planning using Mobile GPS

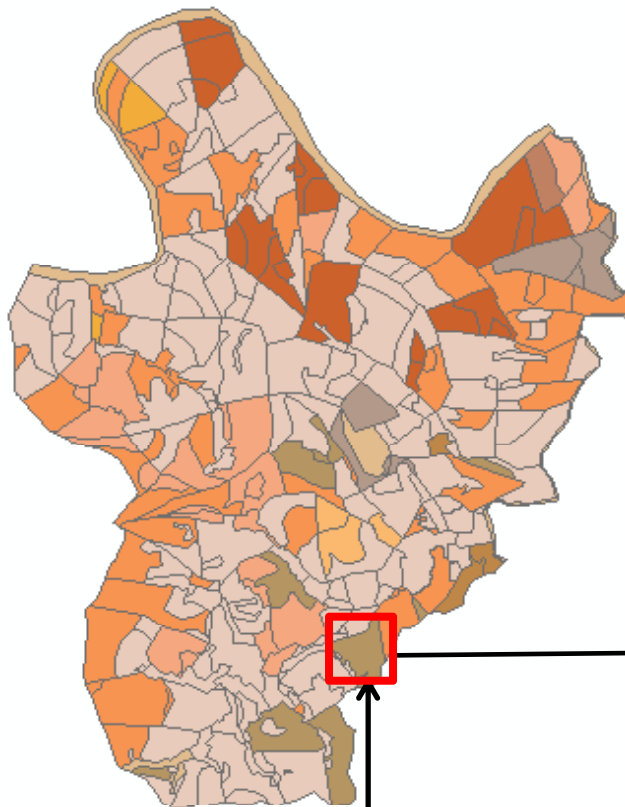


Texture

- 
-  C
-  CL
-  GCL
-  GSIL
-  GSL
-  LS

Area	5.45
Class	IV
commonid	23/133/1
Depth	D2
Erodibilit	E2
FID	275
Gat_No	133/1
netplan no	23
Owner	Shantaram Ramchandr Shinde
Phase	7
Pre_Use	C1R
Pro_Use	CC
remarks	
Shape	Polygon
Slope	C

Net Plan Data



Area	0.95
Area_1	0
Bajra	0.1
bajra_new	1
BPL	No
Buffalo	0
Bull	2
Bull_cart	0
caste	Hindu-Mahadev Koli
category	ST
Chawli	0.1
Class	IV
commonid	23/23/1
Cow_dung	32
Cross_calf	0
Cross_cow	0

Gat_No 133/1

Socio-Economic Data





Thank You!

Catching Rain Everywhere... @ www.wotr.org