Building Resilience in Rural Landscapes of Rainfed India

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Root Causes of Rural Poverty in Rural India

Despite large cultivatable area, crop yields are only a third of the national average

- India has 69.9% land that is arid, semi-arid, sub-humid; - having 30% lands degraded

- From 1970 to 2020:
  - Droughts increased 7 times & Floods 6 times
  - Impacting agriculture, ecosystems & services

- 50% of India depends on agriculture & allied sectors for livelihoods;
- 85% are small & marginal farmers

Low Agriculture Productivity

Ecosystem Degradation

Climate Change

Over-dependance on Agriculture
The WOTR Approach ...

WOMEN EMPOWERMENT
- Capacity Building
- Drudgery Reduction
- Women’s Enterprise Development
- In Decision Making

HEALTH, SANITATION & NUTRITION
- Health Awareness
- Nutrition
- Drinking Water
- Sanitation

AGRICULTURE
- Agriculture Productivity
- Soil Health Management
- Water Efficient Agriculture
- Agro-meteorology
- Market Linkages

COMMUNITY DRIVEN LAND & WATER MANAGEMENT
- Empowered Community for resource management
- Sustainable land & ecosystem management
- Water stewardship

LIVELIHOODS
- Enterprise Development
- Agro-based Enterprises
- Non-Farm Enterprises

WOTR, Repowering Communities & Ecosystems
A Watershed is a socio-ecological unit
a. Sustainable Land, Water & Ecosystem Management

Ownership & Local Governance for ‘Integrated Watershed Development’:

- **Inclusive representative bodies** to regenerate and manage their natural resource assets
- Soil and water conservation measures
- Afforestation to bring barren lands under tree and grass cover
- Promote & protect biodiversity as and where applicable
- Improve degraded soils
Sustainable land management interventions
Drainage line Treatments and Land Use Changes
Through "Water Stewardship" and Water Governance, rural communities are guided to:

- Understand ‘water’ as an ecosystem and as an ecosystem service
- Establish rules for water management, including equitable water use, water saving
- Community-based Water Budgeting for domestic use, livestock & wildlife, and crop planning with water use optimization
- Undertake aquifer management by a village or a cluster of villages as applicable
c. Adaptive Sustainable Agriculture

Enhance the productivity, profitability and sustainability of farming:

- Improve Soil Health, integrated nutrient and pest management
- Optimum water use and water sharing
- Improved package of practices for improved production
- Locale specific crop weather advisories
- Promotion of horticulture & household forestry & multilayer farming
- Market linkage through Farmer Producer Companies
The Transformation of Bhojdari (in 1998)

- Lies in the rain-shadow belt of Maharashtra, on a drought-prone, rainfed plateau
- No river, dam or canal nearby
- Land is barren, hard, and rainwater simply flows off it during the rains
- Frequent droughts, acute water shortages and stress in summer,
- Repeated crop failures, loss of cattle and livestock - resulting in large scale distress migration.
- Extreme weather related events played further havoc worsening losses
Through water budgeting, 50% families grow a 2nd crop

37% increase in income from agriculture

Food shortages reduced by 50%

The types of crops increased from 3 to 15+

Surface water storage capacity increased by 87%

100% reduction in distress migration

The Result...
Changes in Agriculture Productivity in the Plateau Dryland Villages

Plateau Area- Percentage change in the crop productivity in Drought year 2018-19 as compared to the baseline value

Plateau Area- percentage change in the crop productivity in Normal rainfall year 2017-18 as compared to the baseline value

Ref: Economics of Climate Change Adaptation in Ahmednagar District, Maharashtra
https://wotr.org/publication/economics-cca-ahmednagar-district-maharashtra/
Net Present Value from Agriculture & Water for Domestic Use

A study of the period 2008 to 2018

Net Present Value in INR

Benefits not included are from (a) livestock rearing, (b) fisheries, (c) forest and others

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The Urban – Rural Linkage

Urban

• Water: Piped for domestic & also luxury needs
  Waste water (if not treated) with chemical & bio waste flows back to rivers

• Food: Grain & fresh produce obtained from super markets and urban vendors; processed foods from stores
  Food wastage into the bio waste heaps and back into the water ways

• Bio Fuels: for the ever increasing number of vehicles

Rural

• Water: Dams located at a distance in rural areas
  Water from rivers used for human and livestock consumption and agriculture & pisci-culture

• Food: Urban choices of grain and food produce drives cultivation, not local agro-biodiversity
  Pressure to cultivate in excess, pressure on land and water

• Bio-fuels: Increasing pressure on land for cultivation of bio-fuel crops besides food and fiber crops; changes in land use land cover
WOTR’s Footprint

- Map showing states in India with ongoing projects: Rajasthan, Madhya Pradesh, Chattisgarh, Bihar, Jharkhand, Odisha, Andhra Pradesh, Maharashtra, Telangana.

- Infographics:
  - 9 States
  - 61 Districts
  - 3,754 Communities
  - 3.8 M People
  - 1.453 Mha treated
Thank You!

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Landscape Management for Building Resilience

Main problems of the region:
- Poverty
- Hunger & food insecurity
- Degraded land due to soil erosion
- Water scarcity
- Climate events & climate change (drought & drought like situation, high intensity short duration rainfall; unseasonal rainfall, long summers and higher winter temperature...)
- Distress Migration

Response to the problems:
- Restoration of the degraded lands (Ecosystem restoration) for soil and water conservation
- Water use management
- Adaptive sustainable agriculture
- Create local livelihood opportunities
- Community empowerment to regenerate and maintain their landscape
- A cluster of villages come together to manage their restored landscape through Partnerships
Darewadi 1999
Strengthens Relationships
Rejuvenates & Diversifies Natural Resources
Revitalizes Local Economies
Strengthens Relationships
Community Management of their development process
FarmPrecise – Farm friendly Agro-met advisories

A mobile application which generates dynamic weather-based, crop management advisories tailored to crop and farm specific conditions.
- **It is participatory** - the farmer is co-creator of the advisory
- It generates **weather responsive**, crop-and-farm specific farming advisories
- **It is dynamic** – it responds to likely changes in weather conditions and provides tailored advisories accordingly.
- It provides integrated and holistic solutions and emphasizes **environmentally-friendly** practices.

* **9+ features** for Indian Farmers
* **25 Crops**
* **4 States**
  - Maharashtra
  - MP
  - Telangana
  - Odisha
* **5 languages**
  - English
  - Hindi
  - Telugu
  - Marathi
  - Odia