

Building Resilience through Integrated Water Resources Management in India: The BAIF Approach

Objectives: Reduce the risk of declining water availability due to climate change to ensure sustainable livelihood, resilience and environment well-being through community-led natural resources management.

Approaches:

- Access to Clean and round-the-year Drinking Water
- Energy-Water-Agriculture Practices for Climate Change Mitigation Actions
- Integrated Watershed Management with Climate Proofing Actions
- Soil Health Management for Food Security and Climate Resilience

Coverage



**13 states
780 Watersheds**



**0.363 million Hectares
Water and Soil Conservation**



1,295 Villages 0.27 million Families



BAIF Development Research Foundation

Dr. Manibhai Desai Nagar, NH No. 4, Warje, Pune 411 058, Maharashtra, India.
Phone : 91 20 25231661 Website : www.baif.org.in E-mail : baif@baif.org.in

Access to Safe and Round the Year Drinking Water

Water scarcity touches the level of water crisis due to extreme events caused by climate change and topography resulting in limited access to drinking water in some regions of India. BAIF has developed an approach to overcome this issue for sustainable drinking water management.

BAIF Approach:

- Community-led Governance and Water Resources Development based on Hydrogeology and Location.
- Resolved Drinking Water problem faced by Women in 58 Villages of India.
- Strengthened Drinking Water Sources and Installed Solar-powered System.
- Ensured Water-sufficient Villages.



Outcomes:

- Improved access to safe drinking water round-the-year.
- Drudgery reduction among women and reduction in health problems.
- Women no longer need to walk long distances to fetch drinking water.



Strengthening of Water Source



Rain Water Harvesting



Solar-powered Systems



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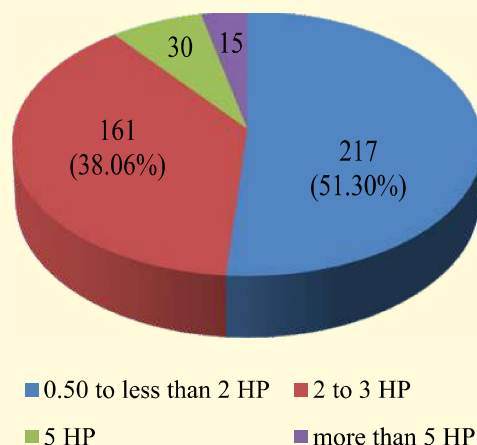
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Energy-Water-Agriculture Practices for Climate Change Mitigation Actions

Electricity consumption to pump ground water for agriculture and drinking purpose is one of the areas of Climate Change Mitigation Actions in India

Emission Reduction Practices Promoted by BAIF:

- Solar-powered pumps for ground water use with micro-irrigation and improved agricultural practices
- Gravity Irrigation Methods: Revival of traditional water management systems like diversion-based irrigation and gravity-based drip irrigation.



Outcomes:

- Reduction in fossil fuel consumption and thereby reduction in emission
- Increased water-use efficiency thereby reducing carbon footprint
- Increase in family income



Revival of traditional water management systems



Solar-powered micro irrigation



Gravity irrigation



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Building Resilience through Integrated Watershed Management with Climate Proofing Actions

Community-led BAIF Approaches for Climate Resilience:

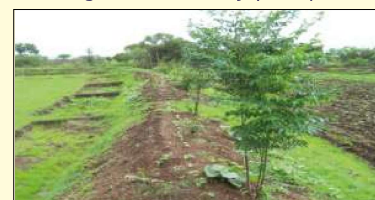
- **Silvi-pasture Development on Common Wastelands**
- **Farm Pond-linked Water Management:** Recharge farm network model of ponds interlinked with trench-cum-bund in watershed in India.
- **Landscape Rejuvenation:** Participatory landscape planning and implementation for eco-restoration and land degradation neutrality.
- **Natural Spring Rejuvenation:** Springshed recharge treatments with afforestation, soil conservation and source development.
- **Climate Proofing Practices** in watersheds.
- **Revival of Traditional Water Harvesting Practices**

Outcomes:

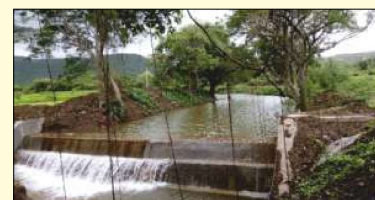
- Round-the-year safe drinking water availability thereby reducing women drudgery and health problems.
- Improved ground water level
- Reduction in land degradation.
- Increase in family income
- Increase in crop yields
- Social and environmental benefits and minimizes vulnerability



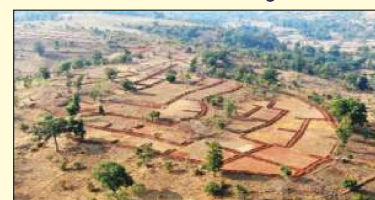
Agri-horti-forestry (Wadi)



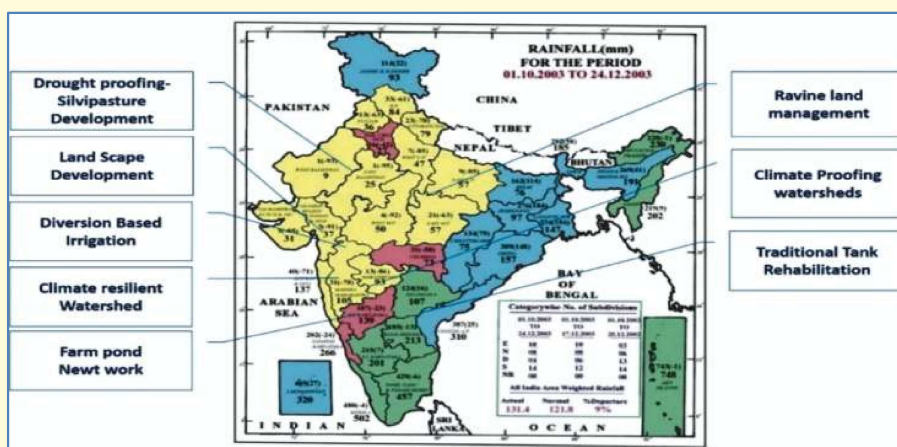
Afforestation



Water harvesting



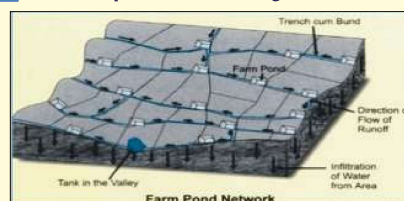
Soil protection on degraded land



Silvi-pasture on commons



Farm Pond Network model



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Soil Health Management for Food Security and Climate Resilience

Objective: Soil restoration through integrated management practices to address Climate Change Adaptation and Mitigation and landscape ecosystem restoration for sustainable livelihood



Practices promoted by BAIF through community participation

- **Soil Health and Productivity Improvement:** Soil Sample Testing, Integrated Nutrient Management, Green Manuring, Intercropping with Legumes, Crop Rotation and Crop Diversification.
- **Carbon Sequestration:** Tree-based farming model has potential to sequester large carbon (23 t Ha^{-1}). The perennial system harvests solar energy year round and the biomass produced helps increase soil organic matter content.
- **Emission Reduction:** Biomass recycling through farmer producer company for Bio char and Bio Prom Production and Crop Intensification.
- **Biodiversity Conservation:** Organic pesticides and fertilisers, conservation of native land races and family nutrition.
- **Land Degradation Neutrality:** Involvement of community in soil protection through soil conservation and runoff control measures and water management.



Bio-char production and application



BAIF Bio-prom

Outcomes:

- Increased farm resilience
- Promotes carbon sequestration
- Ensures food security



City compost application



Crop diversification



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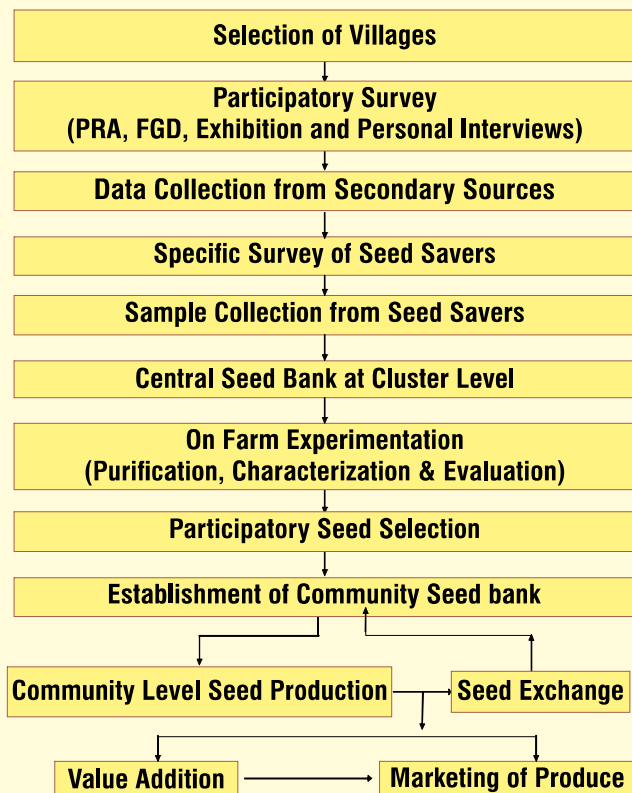
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Bio Diversity Conservation through Community Action in India

Introduction: Biodiversity is the origin of all species of crops, forest species, local livestock and the variety within them. It is also the foundation of ecosystem services essential to sustain agriculture and human well-being. Biodiversity and agriculture are strongly interrelated because while biodiversity is critical for agriculture, agriculture can also contribute to conservation and sustainable use of biodiversity. Maintenance local crop land races, forest species and livestock breeds of the biodiversity is essential for food security, nutrition and livelihoods.

Conservation Approach



Plant Genetic Resources

- Conserved 587 local crop seeds.
- Registration of community varieties : 31 with PPVFRA, New Delhi.
- Deposition of local seeds of crop cultivars to NBPGR, New Delhi : 150.
- Area and farmers covered : 1300 ha and 5500 farmers.
- Marketing through “Farming Monk” brand.



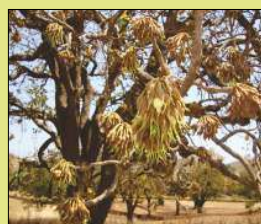
Participatory varietal selection



Community Seed bank

Forest Diversity :

- Identified Candidate of NTFP species : 114
- Planted NTFP trees : 0.4 million
- Conservation of forest habitat : 56 ha



Madhuca indica -
Candidate tree



Terminalia bellerica -
Candidate tree

Conserving Animal Genetic Resources

- Selecting elite local breed with the scientific approach
- Breeding services through Artificial insemination in the region specific breed conservation
- Conservation and promotion of local goat breeds eg. Sangamneri and Berari
- Characterization and conservation of local poultry breeds



Local goat and cattle breed conservation

Acronyms : Non Timber Forest Produce (NTFP), Protection of Plant Varieties and Farmers' Rights Authority (PPVFRA) National Bureau of Plant Genetic Resources (NBPGR) and National Bank for Agriculture and Rural Development (NABARD)



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Wadi A Programme for Human and Ecosystem Wellbeing

The Rural Context (Challenges):

- Majority small and marginal farmers
- Degraded natural resources
- Rainfed agriculture, Water scarcity
- Market fluctuations
- Distress migration
- Erratic Weather and Climate Change



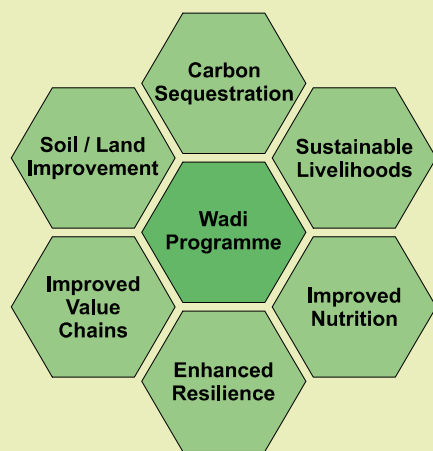
The 'Wadi-Agroforestry system': Holistic Development Approach



- Integration of Trees in the farming system
- Livelihoods: 'Medium Gestation- High Resilience' and 'Short Gestation- High Remuneration' activities
- Market Centric and Ecologically Sound
- Climate Smart Practices
- Boosting 'Second Tier Rural Enterprises'
- Improved Livelihoods as well as Quality of Life
- Demystification of Technologies and capacity building

Components of Wadi Programme:

- Core activity 'Wadi'—Combination of Fruit and Forestry trees with Intercrops
- Short Gestation-High Remuneration activities: Small plot cash crops, Floriculture, Inland fishery
- Soil conservation and organic matter recycling
- Decentralized small scale irrigation and Moisture Conservation
- Farmer Producer Organizations: Value Addition / Processing of farm produce



Impacts: Improved Livelihoods, Quality of lives; Adaptation and Mitigation Strategy to Climate Change

- Food Security and Sustainable Livelihoods: 0.2 million families
- 86000 ha. degraded land converted into Resilient Farming Systems
- Significant Increase in Family Income
- Distress Migration reduced significantly
- Carbon Sequestered: 23 Tons/ha
- Trees outside forest
- Second Tier Rural Enterprises with upgraded skills
- Improved Health and Quality of Lives
- Replicable Models standardized for various Geographies



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