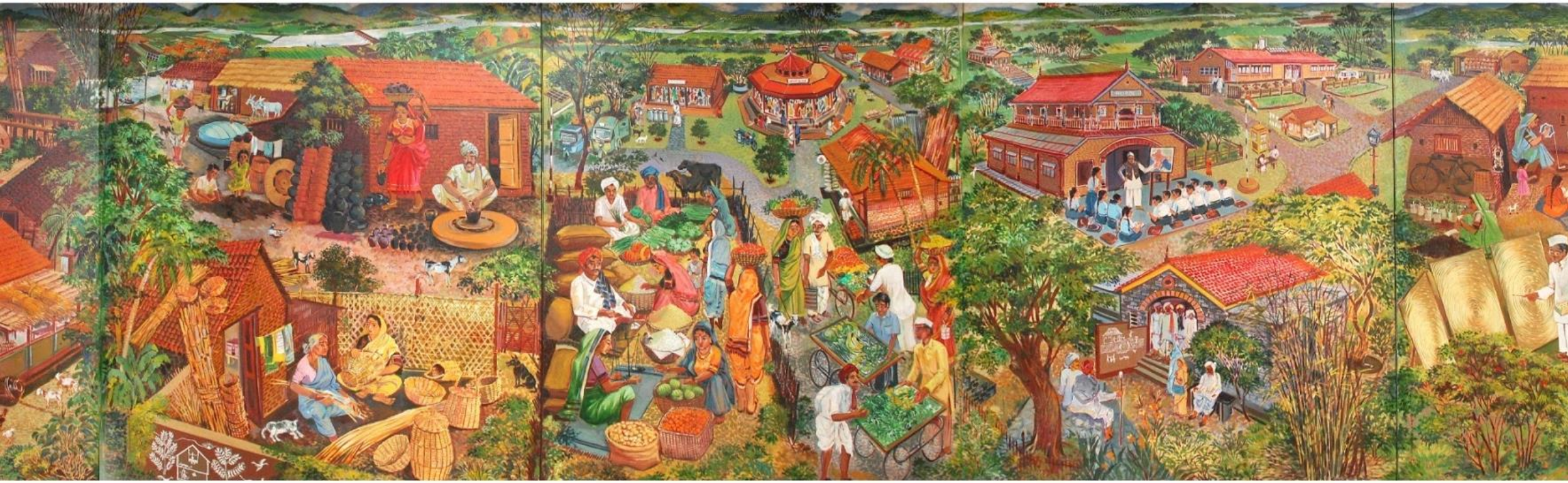


Soil Health Management for Food Security and Climate Resilience in India

BAIF Development Research Foundation

BAIF Bhavan, Dr. Manibhai Desai Nagar, Warje, Pune 411058, India
Phone: +91-20-25231661-9
E-mail: baif@baif.org.in | Website: http://www.baif.org.in

BAIF : Vision, Mission, Outreach and Programmes

Vision

Building a self-reliant rural society assured of food security, safe drinking water, good health, gender equity, low child mortality, literacy, high moral values and clean environment.

Mission

BAIF's Mission is to **create opportunities** of **gainful self-employment** for the rural families, especially disadvantaged sections, ensuring **sustainable livelihood, enriched environment, improved quality of life and good human values**.

Spread in 14 states of India:
96956 villages (337 districts)

Livestock Based Livelihood

Villages: 89,558

Families: 72,10,900

Natural Resources Management

Restoration area: 3,72,109 ha

Families: 2 84,460

Agri-Horti-Forestry (Wadi)

Plantation: 89,136 Ha

Families: 2,22,840

Cross Cutting Themes

1. Climate Change Adaptation and Mitigation
2. Biodiversity Conservation
3. Farmer Producer Organization

Partnerships

- Observer status UNFCCC –Participation in COP 27
- BAIF registered as a Tentative **Observer Organization** to UNFCCD
- 4 per 1000 initiative
- Global Ever Greening Alliance (GEA)
- Collaborative arrangement with INRAE
- Member for Technical committee on Green Credits, Government of India
- Technical Support Institute for National Disaster Management Authority

Strategy

- Promote community led actions for healthy soils for food security in India
- Integrate nature positive local solutions to minimise climate risks
- Research and development actions to promote practices to improve soil organic carbon

Soil Health Management for Food Security and Climate Resilience: BAIF initiatives in India

Soil protection and rehabilitation for food security

'Prosoil' approach demonstrated on 7500 ha

Components	Best Practices
Productivity Enhancement	Soil Health Advisories
	Integrated Nutrient Management
	Crop management: Green Manuring, Crop Rotation, Agro biodiversity
Soil Carbon Management	Soil Organic Carbon (SOC) improvement using , crop residue, Silvi-pasture, IRESA
Land Restoration	Agro-horti-forestry (Wadi)
	Soil and Water Conservation - Watershed development approach
	Efficient Water Management: Gravity drip, Sprinklers, Mulching etc.

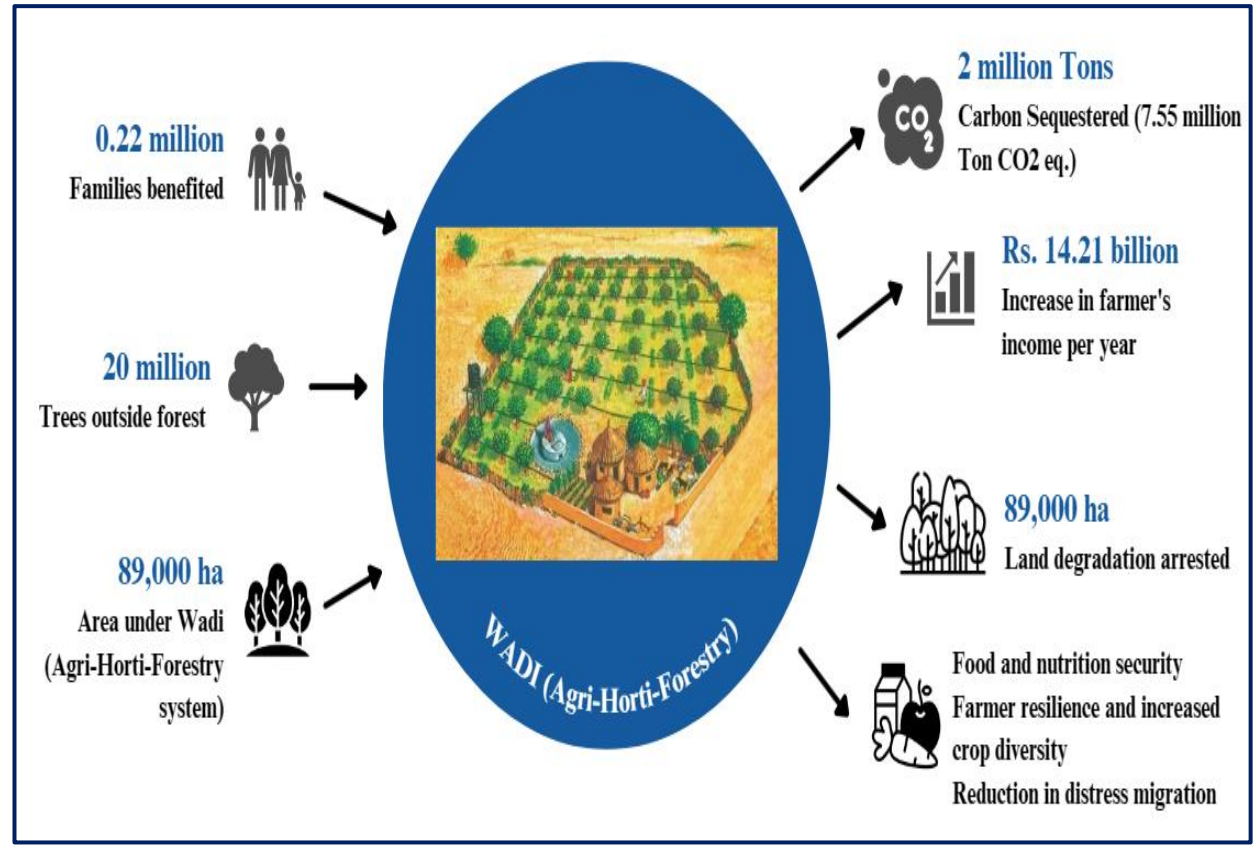
Outcome

- Crop productivity improvement by 21%
- SOC improved from 0.49 to 0.58
- Biochar from cotton residue produced by FPO
- Application of BIOPROM and BIOCHAR considered as best practice at National level to improve soil health
- IRESA approach widely accepted for carbon offsetting

Soil Fertility and Productivity Improvement through Soil testing, Intercropping, Green manuring and Integrated Nutrient Management

Land Restoration and Carbon sequestration: Agri-horti-forestry model (Wadi)

- 'Wadi'-Combination of Fruit and Forestry trees with Intercrops
- Short Gestation- High Remuneration from small plot cash crops
- Soil conservation and organic matter recycling
- Moisture conservation
- Value Addition: FPO

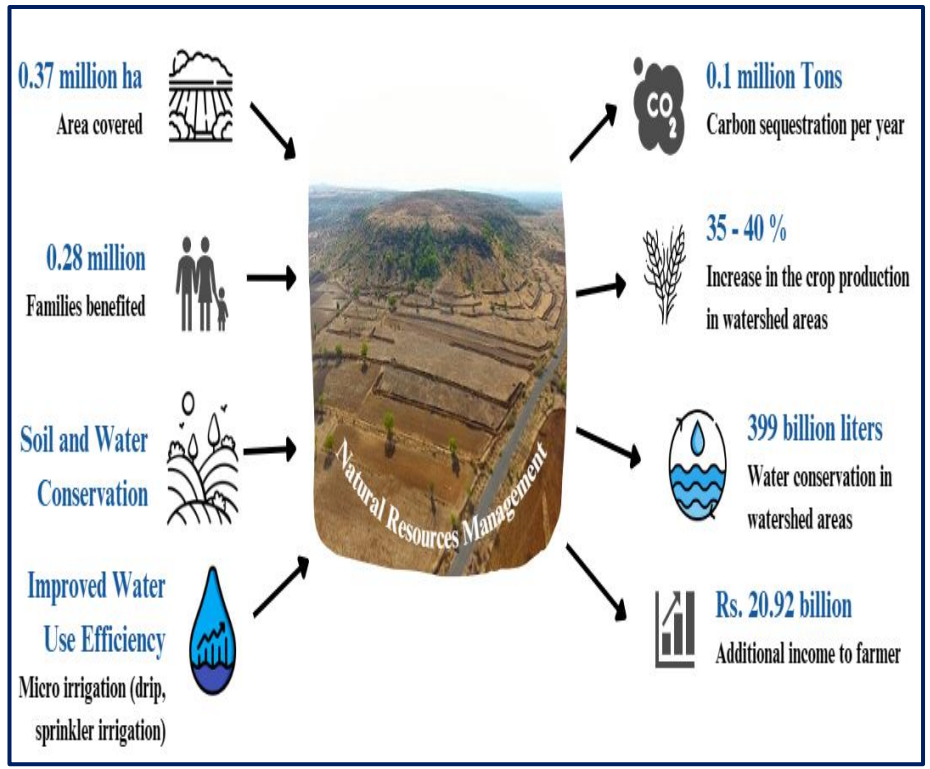


- Widely accepted sustainable livelihood development model
- Potential to sequester carbon (23 t/ ha) in 10 years
- Replicated by NABARD and State Government in 22 states of India

Resilience building through Integrated Watershed Management with Climate Proofing Actions

Community-led Approaches

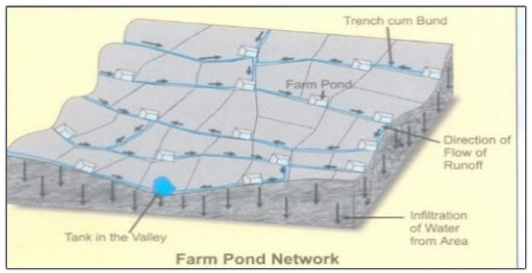
- Silvi-pasture development and plantation
- Farm Pond-linked Water Management
- Landscape Restoration
- Natural Spring Rejuvenation
- Climate Proofing Practices
- Revival of traditional Water Management Systems
- Comprehensive approach to drinking water management



Outcomes:

- Round the year safe drinking water
- Reduction in drudgery and health problems.
- Improved ground water level
- Reduction in land degradation and climate risks
- Increase in family income
- Increase in rain fed crop yields
- Social and environmental benefits

Silvi-pasture on commons



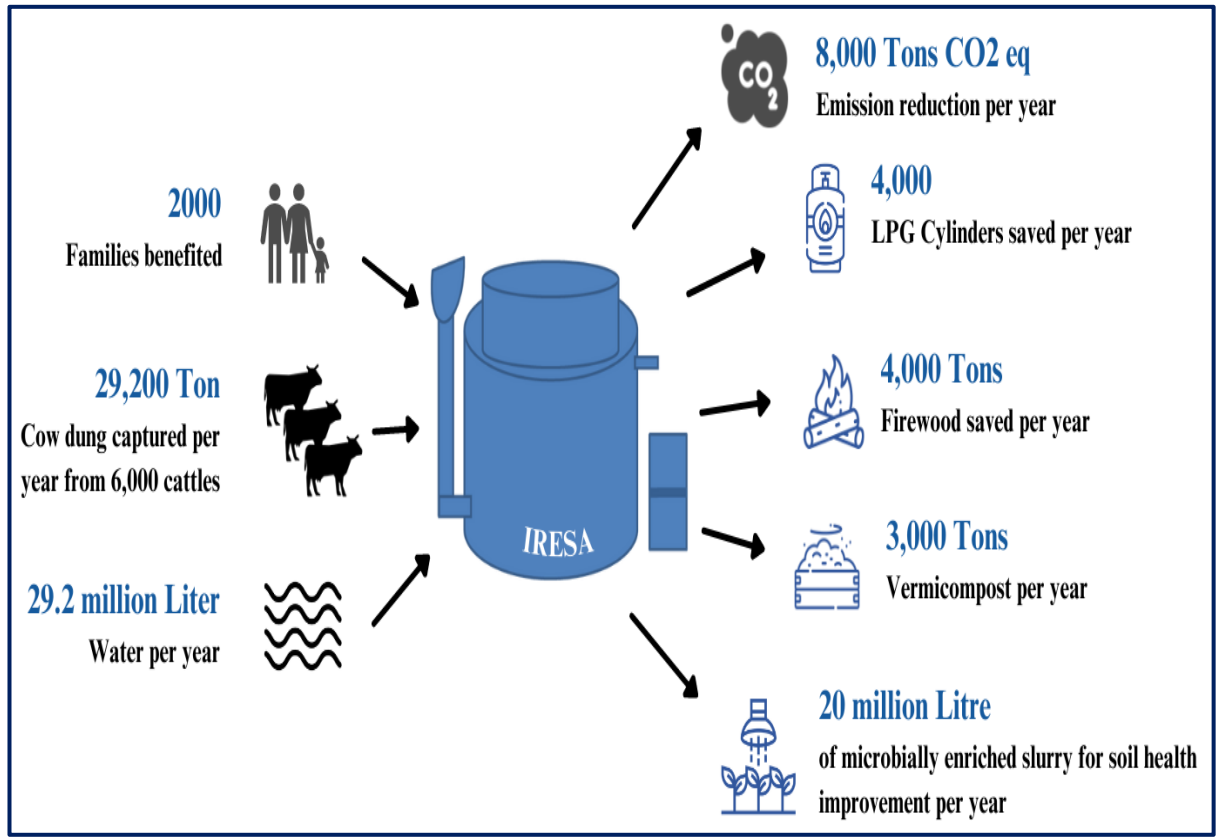
Farm Pond Network model

Soil protection on degraded land

Afforestation

Integrated Renewable Energy and Sustainable Agriculture (IRESA)

- BAIF has promoted IRESA which involves the use of cow dung for producing biogas at the family level thereby replacing fuel wood with clean fuel and subsequently reducing methane emissions.
- The slurry of the biogas is fortified with rock phosphate to produce Phosphate Rich Organic Manure (Bio-PROM) which replaces synthetic fertilizers.
- Thus, IRESA reduces emissions caused by cow dung as well as by fuel-wood. The use of Bio-PROM further reduces emissions by replacing synthetic fertilizers.



Community led Conservation & Management of Crop Cultivars, Wild Edible Plants & NTFP's for Food Security and Nutrition through Agro biodiversity

Focus Areas : Agro biodiversity

- Nutri Rich crop cultivar Diversity
- Wild Edible Plants
- Non Timber Forest produce
- Nutri Gardens

Outcomes

- Reduce use of chemical fertilizers and pesticides
- Adaptation of Agro ecological practices
- Understand Traditional Food Systems
- *Ex situ* and *In situ* Conservation of local seeds
- Establishing Nutri gardens
- Entrepreneurship: Iindigenous tribal cuisine

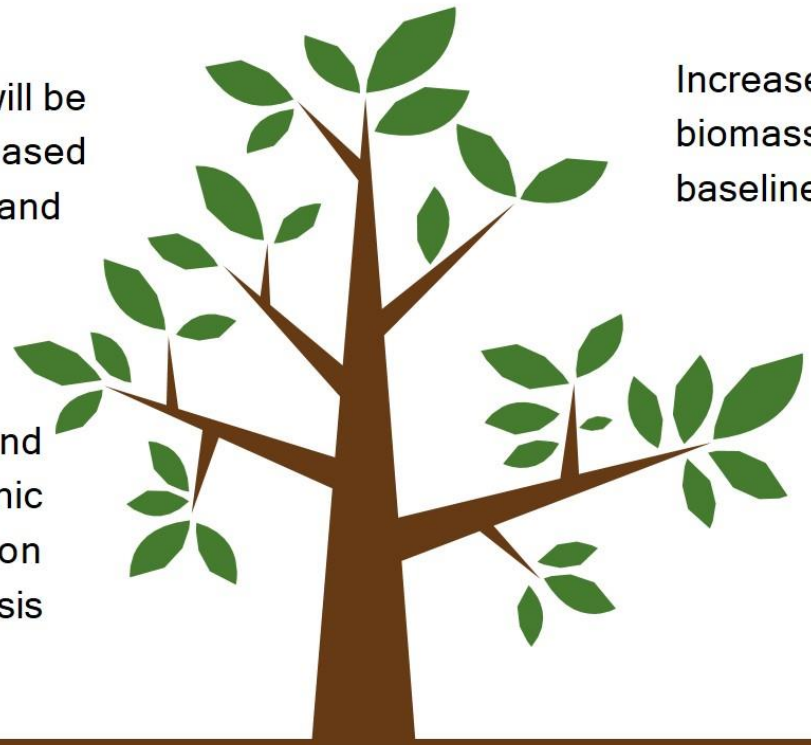
#	Crops	Accessions
1	Rice	183
2	Millets	53
3	Maize	25
4	Sorghum	19
5	Hyacinth bean	54
6	Pulses	76
7	Oil seed crops	26
8	Vegetables	154
9	Tubers & roots	6
	Total	**597**

PROJECT OUTCOMES & IMPACTS

Increase in the adoption of climate-smart practices and soil restoration measures

Carbon sequestration will be achieved through tree-based farming on degraded land (23 Tons/ha)

Increase in crop yield and biomass up to 20% over the baseline



Restoration of vulnerable land showing an increment in Soil Organic Carbon(SOC)over the baseline on sustainable basis

Biodiversity and ecosystem services will also be improved over the baseline

Integrated Soil Fertility Restoration Measure

Applied Research

Climate Smart Actions

Thank You

Visit www.baif.org.in