



MANAGEMENT OF WATER RESOURCES FOR FOOD SECURITY AND SUSTAINABLE LIVELIHOOD

Background

Water is the lifeline of every civilisation. Water is essential for survival and progress. For Indian farmers in particular, water is a basic necessity as the agricultural productivity and their livelihood is heavily dependent on the availability of water. Over 40% of the agricultural land in India is located in arid regions, and often, the farmers are not even able to recover their investments in agriculture. In other regions, where the rainfall is moderate or high, the farmers are not able to make efficient use of the available water. It has been reported that hardly 35% of the rain water is used effectively while the remaining 65% runs off to the sea, causing severe soil erosion, flooding of rivers and siltation of water bodies. Hence, this valuable asset has turned out to be a liability. Due to improper water resources management, over 25% of the villages are not able to provide year round water supply. Even in those villages where water is available, 75% of the water sources are not able to meet the W.H.O. standards, due to pollution.



Thus Rural India cannot prosper without efficient use of water. Hence, BAIF has undertaken Water Resources Development as an important component of Rural Development throughout the country. BAIF is engaged in water resources management through watershed development in selected village clusters of Gujarat, Maharashtra, Karnataka, Rajasthan, Madhya Pradesh and Uttar Pradesh over a decade, with the primary objective of drinking water security, to boost agriculture and livestock production, particularly to benefit weaker sections of the community. This was also considered as an opportunity to conserve the ecosystem, empower the women and to develop community based organisations which are essential for promoting sustainable development.

Strategy



The focus of this programme is based on the following strategy.

- Participation of the entire community with special focus on the weaker sections, in planning and implementation
- Efficient water conservation with appropriate technologies and systems
- Convergence for holistic development, particularly for food and water security, supply of drinking water, health and hygiene and environmental conservation.

Participation of Weaker Sections of the Community

Credibility of the Implementing Agency and awareness about the project being important factors influencing participation of the target population, suitable entry point activities are selected through Gram Sabha, to benefit larger sections of the community immediately. Closer interaction of the villagers with project staff, and efficient and transparent method of working could help in obtaining confidence of



the community and identifying the poor. While the User Groups, consisting of members from different hamlets in the watershed, discuss the plan of implementation, Self Help Groups of women and men, particularly those belonging to weaker sections are encouraged to look beyond watershed to empower themselves. They meet regularly, contribute a sum for their saving fund, disburse credit to needy members and identify various opportunities to enhance their income.



With increase in soil productivity and confidence in the participants, many SHGs demanded agricultural inputs for improving agricultural production and livestock for supplementary income. Many groups have set up community grain banks, seed banks and agro-service centres. Simultaneously, many social problems which were affecting their morale and progress, have also been solved by the women themselves. Formation of village level watershed committees at the initiation of the project has helped to prepare an action plan, based on the local priorities.

Coverage

State	No. of Units (Micro Watersheds) Cum.	Area covered in ha. Cum.	No. of villages Cum.	No. of families benefitted Cum.
MITTRA Maharashtra	58	4819	80	2884
GRISERV Gujarat	268	134839	277	26800
DHRUVA Gujarat	13	5259	28	3665
BIRD-K Karnataka	392	196019	202	8365
RRIDMA Rajasthan	4	3910	20	2382
BIRD-UP Uttar Pradesh	11	8402	18	2888
Bihar	7	7200	21	2020
SPESD- Madhya Pradesh	81	40065	131	20031
Andhra Pradesh	49	5249	59	8555
Total	883	405762	836	77589

Appropriate Technologies for Water Conservation

While adopting a ridge-to-valley approach, for conservation of rain water, modern technologies such as Geographic Information System and Remote Sensing have been adopted for improving the efficiency of watershed development. Suitable technologies have been adopted based on local conditions and traditional knowledge and scientific skills. In this process, many innovative approaches have been evolved to ensure equitable distribution, effective use of water and improved agricultural production.



- The network of farm ponds established by BIRD-Karnataka, has not only reduced the soil and nutrient loss and eased the supply of water for protective irrigation, but has also demonstrated the potential of recharging the ground water table. These decentralised water storage structures could revive open wells, bore wells and rivulets throughout the year.



- Watershed development combined with community pasture development and introduction of improved agricultural practices for small farmers could ensure participation of the community. In Bhilwara and Bundi districts of Rajasthan, the initiative taken by RRIDMA led to silvipasture development, covering 2825 ha in 85 villages and demonstrated an increase in fodder, fuelwood and agricultural production while raising the ground water table.



- In Gujarat, GRISERV and DHRUVA implemented over 120 micro-watershed projects, the immediate benefit of which was in the form of grass production on field bunds and common lands. As a result of efficient recharging of groundwater, the salt

content of well water has reduced significantly. There is also a significant increase in crop production.

- In Kanpur (Rural) district of Uttar Pradesh, soil conservation and efficient use of water resources was taken up on ravine lands by BIRD-Uttar Pradesh. Gully plugging fortified with vegetation on community owned ravines could reduce soil erosion and recharge the ground water. The villagers could take advantage of the increase in ground water table by installing shallow tube wells under joint ownership of a few farmers and harvest two bumper crops annually. Annual maintenance of field bunds and common lands has been introduced to ensure soil and water conservation.

Convergence for Sustainable Livelihood

To enhance the economic benefits and ensure food security, various activities are being initiated through people's organizations, apart from Water Resource development, efficient water use and improvement in land productivity. These include the following.

- Increase in Cropping Intensity - reclamation of wastelands, intensive and multiple cropping, introduction of improved varieties and new crops, Integrated Pest Management.
- Promotion of eco-friendly technologies and use of Nutritional Supplements - farmyard manure, green manuring, vermicomposting, biofertilisers.
- Post Production Activities - efficient harvesting, processing and storage facilities, marketing, consumer stores, grain banks, micro-credit.
- Improved livestock husbandry practices - dairy husbandry, stall feeding, goat rearing.
- Micro enterprises for landless and women's groups for livelihood.

- Chlorination of wells, health camps and promotion of toilets for improved health and hygiene.

Achievements and Impact

- 4.0 million ha spread over 850 villages has been covered, benefiting over 75,000 families, intensifying the cropping area and increasing the yield by 30-40%. As a result, the annual income has increased.



- In Saurashtra region of Gujarat, where soil fertility is high, the impact of watershed development had a significant impact on the crop yields.

- In most of these villages, the water table has risen significantly and potable drinking water is available throughout the year. As the time taken now to fetch drinking water, fuel and fodder has reduced by 50%, drudgery of women has reduced significantly.

- Many women's groups have established their grain banks, to provide foodgrains on loan to their members, who return it after the harvest, without being exploited by the money lenders.

- Increased crop yields and enhancement in employment have reduced migration, particularly of women and children. This has had a favourable impact on health and education of children.

- With improved soil and water conservation, and enhanced green cover, there is an improvement in the micro-environment and eco-system, leading to sustainable development of rural India.

- The average additional employment generated per village is about 1,58,000 person days per annum.



- The landholders are earning an additional gross income of Rs 20,000 to Rs 25,000 over the baseline from agriculture, livestock and agricultural labour within the watershed.

- The watershed development approaches,

especially farmpond networking and community pasture management have been widely replicated by various Government and Non-Government organisations and farmers.

- In Madhya Pradesh, promotion of soya bean in watersheds, with application of micro-nutrients such as boron and sulphur gave a boost to the crop yield by 30%.

To ensure the transfer of new technologies in water resource management, improved agriculture and livestock husbandry, processing and marketing to strengthen linkages with financial institutions, Panchayati Raj institutions, information services, BAIF has adopted a policy of continuing its presence as a service provider to the community at cost, even after formal completion of the project.

THE BAIF 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. This is being achieved through development research, effective use of local resources, extension of appropriate technologies and upgradation of skills and capabilities with community participation. BAIF is a non-political, secular and professionally managed organisation.

BAIF is a Public Charitable Trust and a recognised Research Organisation founded by Late Dr. Manibhai Desai. Contributions made to BAIF are exempt from Income Tax under Section 35 (1)(ii).



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