

ROLE OF SOCIAL FORESTRY IN SUSTAINABLE DEVELOPMENT - A MICRO LEVEL STUDY

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Abstract

Forests are an important natural resource, and also play a major role in ecological balance. With economic growth and development, pressure on the immensely valuable natural forests is increasing. The depletion of natural forests triggers many environmental and social problems. Of the many attempts that have been made towards conservation of our natural forest resources, Social Forestry (SF) has emerged as a champion. Sf provides fuel, fodder and many minor products that have contributed substantially in reducing the pressure on natural forests. Although SF was introduced in India way back in 1980's, it did not gain much success initially. With experience a new attempt was made after 2000 that had an increased participation of community.

Thane district in the state of Maharashtra, India is a unique example of such a success story, where the forest officials along with the community have produced unprecedented results in the success of SF. This paper is an attempt to look into this success story.

Key Words: *economic growth and development, sustainable development of rural areas*

JEL Classification: O1

Hypothesis- "Social Forestry can be a role model for sustainable development of rural areas"

A village is selected for watershed development for a period of five years after the preliminary need-based investigation is carried out with the help of field survey. A master plan is made with the public actively participating in the process of decision-making and implementation. Most of the work is

carried out with *Shramadan**. Diversified activities are carried out systematically by taking special consideration of weaker section of society.

The present paper investigates the role of mainly Social Forestry Department (SFD) and people in the conservation of environment along with the economic development of the people. The paper attempts to highlight the all round development and success achieved, and puts forth the suggestion that such exercises may be emulated in other areas for similar results.

Note: *Shramadan*- In *Marathi* language this word used for free labour service provided by village people.

1. INTRODUCTION

'Social Forestry' was first used by Mr. Westoby in Ninth Commonwealth Forestry Congress in 1968 at Delhi. As per his definition SF is a forestry which aims at continuously providing protection and recreation benefits for the community. SF means the management and protection of forests and afforestation on barren lands with the purpose of helping in the environmental, social and rural development (Negi, 1986).

First attempt of tree plantation outside forest boundary was made in 1935 in United Province. In 1952 attempts were made to plant trees on private farm bunds. In 1973 National Commission on Agriculture (NCA) stressed the need for manmade forests outside the existing forest. After 1975 with financial help from various international organizations, SF plantation started on large scale in many states of India.

2. CATEGORIES OF SOCIAL FORESTRY SCHEME

SF scheme can be categorized into following groups:

- **Farm forestry:** Individual farmers are being encouraged to plant trees on their own farmland to meet the domestic needs of the family.
- **Community forestry:** In this scheme trees are planted on community land.
- **Extension forestry:** Planting of trees on the sides of roads, canals and railways, along with planting on wastelands.
- **Agro forestry:** Means practice of agriculture and forestry on the same piece of land.

3. OBJECTIVES OF SOCIAL FORESTRY

- Improve the environment for protecting agriculture from adverse climatic factors and thereby reducing the pressure on the conventional forest area.
- Increase the supply of fuel wood, small timber for rural housing, fodder for livestock, and minor forest produce for local industries.
- Increase the natural beauty of the landscape; create recreational forests for the benefit of rural and urban population.
- Provide jobs for unskilled workers and control the out migration.
- Check problems like soil erosion, loss of biodiversity, depletion of ground water, over grazing, etc.
- To raise the standard of living and quality of life of the rural and urban people. (NCA-1973)

4. SOCIAL FORESTRY IN MAHARASHTRA

Maharashtra has a total geographical area of 30.7713 million ha (Hectors) of which, forests account for 6.387 million ha. As per National Remote Sensing Agency's estimates, the State possesses 7.06 million ha of waste land.

Being the most urbanized State in the country, the resultant biotic and other developmental pressures have resulted in land degradation in the State proceeding at an alarming pace. The fact that unevenly distributed and under-stocked forests of the State are unable to meet even the basic needs, has given credence to the option for adopting SF practices in a big way on all the available non-forest lands.

In Maharashtra SF project was started in 1982 with financial help from United States Agency for International Development. Fifteen projects were implemented in the period between 1982 and 1989 in 4300 villages. Plantations were carried out on 25.70 lakhs ha of land and 16.79 lakhs saplings were distributed (Social Forestry in Maharashtra- 2007). SFD took care of new plantations for three years and then handed them over to Gram Panchayats (local self-governments at the village).

In regions like Konkan (A Physiographic unit in Maharashtra) which receives heavy rainfall, large tracts are still barren or wastelands. The work carried out by SFD in Konkan is not sufficient and there is still scope to make use this land for afforestation. **Table 1** show

plantations carried out by SFD in Konkan.

Table 1: Wasteland and Plantations in Konkan

Sr. no	District	Total Wasteland in ha	Area planted under social forestry from 1982- 2010 in ha	% to total wasteland
1	Thane	241,952	17,486.08	7.23
2	Raigad	215,691	10,820.31	5.02
3	Ratnagiri	345,393	8,825.89	2.56
4	Sindhudurg	242,614	16,749.06	6.90
	Total	1,045,650	53,881.34	5.15

Source: Jt. Director Konkan Social Forestry Circle - 2011

(1. Note written in reply to the question asked in legislative Assembly of Maharashtra 2. Wasteland area is as per Survey conducted by Land Resource Development Ministry Govt. India.)

4.1. Reasons behind Poor Success of Social Forestry:

Dr Anand Maslekar former director of SF of Maharashtra had listed some reasons responsible for poor success of SF:

- People were not much interested in government implemented schemes as they never got convinced that the scheme is for their own benefit.
- In their daily routine of poverty related problems they never thought of future benefits of this scheme.
- People's participation in the scheme never went beyond the daily labour work.
- The government failed to develop sustainable institutions from this scheme. Many schemes stopped functioning as soon as the government grants got over.
- There was unequal distribution of the benefits and only few farmers took the advantage of it.
- There was very poor marketing of products that were produced under SF. So farmers received very less returns.
- The strict rules of Forest Department and regulations about transportation and sale of forest products harmed the farmers.

Other Reasons:

- Social forestry was not in position to carry out plantations on many private plots due to absentee landowners mainly in Konkan region.
- The biomass produced by SF was not of much use to the poor people as they were not in a position to use it as fodder or fuel.

- Many plantations got destroyed as soon as SF handed back the plots to Gram Panchayats; several Gram Panchayats were not ready to take back the plots after plantation by the SFD.

5. SOCIAL FORESTRY AFTER 2000

After 2000 SF activities are expected to be carried out in a comprehensive manner in conjunction with other related activities such as soil conservation, rain-water harvesting, minor irrigation work, suitable treatment wastelands and afforestation. With the introduction of this scheme the government is formally encouraging rural participation in the management of natural resources. In order to achieve these new objectives of social forestry, various schemes have been implemented that include:

- **Plan plantation activities under** - Integrated Watershed Development Projects, Western Ghat Development Programme, Drought Prone Area Programme, Employment Guarantee Scheme etc.
- **Non plan activities such as-** Kisan Ropwatika Yojana (Plant Nursery by a farmer), Vanamahotsava (First Week of July is celebrated for protecting forests) and development of Central Nursery.

After 2001 SFD was given responsibility to implement watershed development projects under 'Hariyali' in some watersheds. In this project there was involvement of villagers in the planning, implementation and monitoring of project.

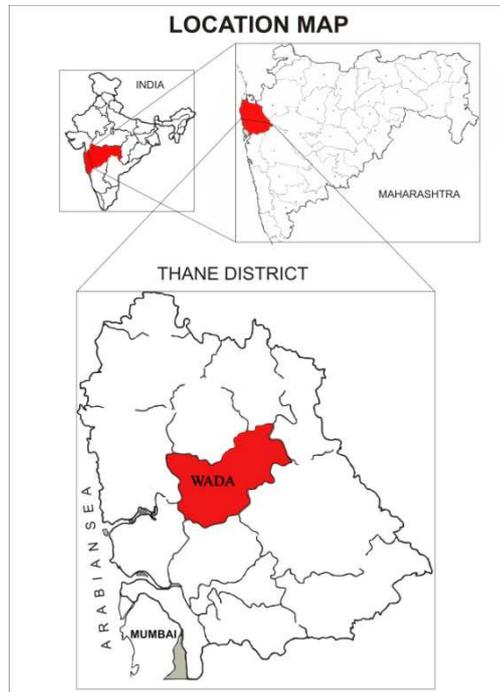
6. HARIYALI PROJECT IN WADA TAHSIL OF THANE DISTRICT

Thane district of Maharashtra SFD implemented Hariyali project in Wada tahsil. The period of this project was five years i.e. from 2004 to 2009. This project was innovative and brought many social, economic and environmental changes in the tahsil's micro watershed.

6.1. Geographical Aspects of Thane District:

Thane is a district in Western India, in Maharashtra state. The district is situated between 18°42' and 20°20' N and 72°45' and 73°48' E. The district is the northernmost part of the Konkan lowlands of coastal Maharashtra. It comprises the wide Ulhas basin in the south and hilly Vaitarna valley in the

north, together with plateaus and the slopes of Sahyadri. The climate in the district is hot and humid. The average annual rainfall in the district is 2293 mm and it is mainly during monsoon season.



The district has 15 tahsils. They are broadly divided into two groups as economically developed and urbanized southern and coastal tahsils and economically underdeveloped hilly northern and eastern tahsils. Wada tahsil is an underdeveloped and has concentration of poor tribal population.

6.2. Wada Tahsil:

Tahsil Wada has central location in Thane, lying between 19.36°N and 19.48°N and 72.45°E and 73.16° E. The tahsil is covered with low hills; River Vaitarna and River Pinjal pass through it. It has an area of 755.49 kms² comprising 167 villages. 10 % of the population is urban, there being only one urban settlement in the tahsil.

Deforestation, over-grazing, forest fires, shifting cultivation and other factors are responsible for environmental degradation in tahsil. Some visible environmental problems in tahsil are soil erosion, flash floods, water shortage in summer, fodder shortage, siltation in lakes and dams. The socio-economic problems of this tahsil are emigration, seasonal unemployment, illiteracy, poverty, malnutrition, drug addiction, etc. To solve some of these problems Rural Development Ministry of Government of India sanctioned a micro-watershed development project under Integrated Wasteland Development Project (Hariyali) on 27/10/2004. In this project SDF of Government of

Maharashtra acted as Project Implementation Agency for the period of five years. This paper examines details of this project.

7. MICRO WATERSHED MANAGEMENT IN TAHSIL WADA

Watershed is a geographic region within which hydrological conditions are such that water becomes concentrated within a particular location. Watershed management implies the judicious use of all the resources i.e. land, water and vegetation in an area for providing an answer to alleviate drought, moderate floods, prevent soil erosion, improve water availability and increase food, fodder, fuel and fiber on sustained basis. Watershed management has to achieve maximum production with minimum hazard to the natural resources and for the well being of people.

The selected watershed is located in the northern part of the tahsil and it is drained by River Pinjal. This watershed covers an area of about 5203.56 ha, in 14 villages. **Table 2**, shows the villages administered in five group gram Panchayats. In most of these villages the tribal population is more than 60%. More than 80% farmers in these villages are small farmers (farm size less than 2 ha). Out of 14 villages 9 villages were facing acute shortage of water in summer. Agriculture is the main activity as industries and other activities are absent here. Poverty, unemployment, malnutrition, seasonal migration etc were most important problems in many of these villages.

Table 2: Villages in Group Gram Panchayat

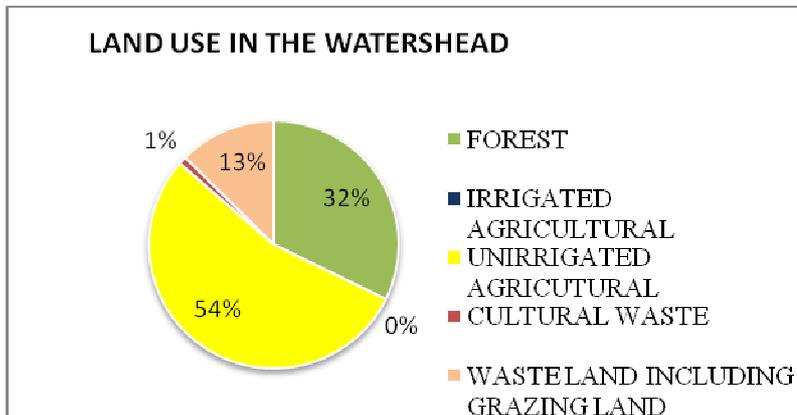
Sr.No	Name of group gram Panchayat	Included villages	Area in hectares
1	Piak (2)	Piak and Shilottar	958.28
2	Manivali (4)	Manivali, Khaire, Sasne and Paste	822.46
3	Devali (3)	Devali, Thunave and Umrothe	736.38
4	Dahe (2)	Dahe and Devali- Kumbhiste	1123.75
5	Sapane (3)	Sapane Khurd, Sapane Budruk, Karanje	1363.12

Source: Yashogatha – Hariyali, Social Forestry, Division Thane, 2011

The types of land uses and their proportions in the watershed are shown in Fig. 1. Out of total area of the watershed, 54% is under agricultural use. As irrigation facilities are not available, farmers are in a position to grow only kharif crop i.e. rice. Government forest occupies 32 % area of watershed. Some patches private forests are also observed in this area. 1% area is under cultural waste that includes land under roads, houses, playground, temple, etc. 13% area is under wasteland that includes grazing land, stony waste,

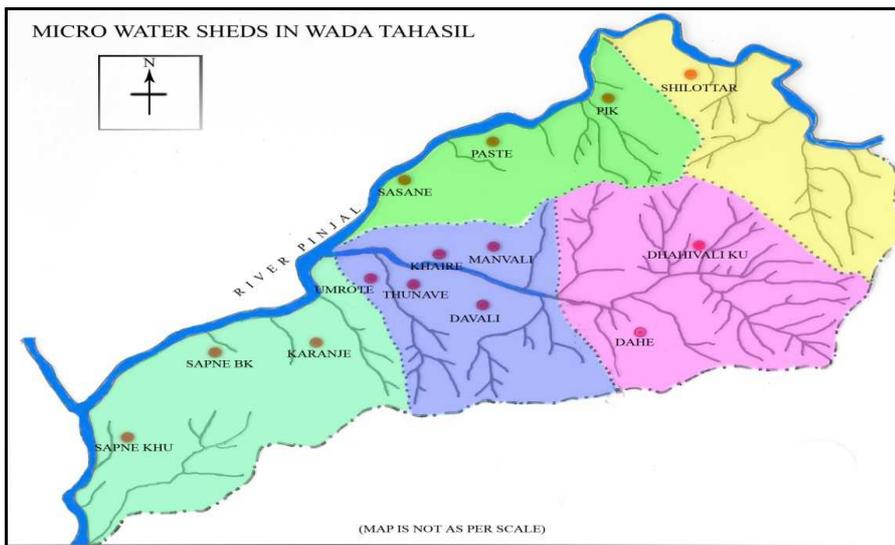
barren land etc. In this area population density is 149 persons per kms² (Census 2001). On an average there are 5 persons in a family. Almost all the 14 villages have a primary school, but there are no high schools. 50% villages here are connected by paved road. Two villages are also connected by navigable river. Primary medical facilities are not available in 12 villages of the watershed. Fig-2 shows the locations of villages with important streams and micro watershed boundaries.

Fig – 1: Types of land uses and their proportion in the watershed



Source: District Census Handbook 2001.

Fig.2- Map of selected Watershed



7.1. Suggested Measures for Watershed Treatment In Wada:

A need-based investigation was carried out with the help of field survey. Mass awareness was created through street plays, study tours, documentary films, speeches and public meetings. After the scientific survey of the natural resources by satellite imagery, toposheets, soil survey and ground water survey a master plan was made with the public actively participating in the process of decision-making. **Table 3** shows activities that are suggested by villagers for watershed treatment.

Table 3: Suggestions for Watershed Treatment

Sr. No	Activity suggested by villagers	Part of Village	Purpose
1	Afforestation	Wasteland, road sides, stream banks	Increase biomass, fodder, fuel wood
2	Contour trenches/recharging trench	Forest land, waste land	Rain water percolation, control soil erosion
3.	Plantation on farm bund	Farm bunds	Control erosion, increase farmer's income
4	Plantation of fruit trees	Farm and around house	Increases income, improves nutrition
5.	Repairing / construction of farm bunds	Farm bund	Increase water storage (paddy fields), improve water percolation, reduce impact of dry spells during monsoon
6.	Brush wood clearing and coppicing	Degraded forest/ shrubs	Improves forest productivity and biomass production
7	Well digging, repairing and desiltation	Farm and other land	More water storage for drinking and irrigation, solves problem of water shortage during summer
8	Tanks and lakes digging and desiltation	Farm and other land	Rain water harvesting, water storage for irrigation, fishing
9	Construction of water outlets	Paddy field (Sandwa)	To remove excess water from field.
10	Loose boulder structure	On small streams	To reduce speed of surface water flow, improve percolation, reduce siltation in dams
11	Cement Nala bunds	On large streams	Water storage for irrigation, fishing, flood control, reduce siltation

			in dams
12	Gabian structure	On medium size stream	To reduce speed of surface water flow, control soil erosion
13	Paddy field bunding	Paddy farms on slope (Majgi)	Water storage, improve percolation, control soil erosion
14	Bamboo plantation	On banks of streams	Control soil erosion, help in income generation

Source: Mr. R.S.Zagade , "Mrudugangh", Hind Sawaraj Trust, Ahmednagar , India

Diversified activities related to rainwater harvesting, soil conservation, afforestation, horticulture, fishing, dairy development etc. are carried out systematically and simultaneously in these villages under the guidance of experts during the project period of five years and thereafter. Special consideration is also taken of weaker sections of society including females and scheduled caste and scheduled tribes. Number of self-help groups of tribal women was formed in these villages. These groups received training and guidance from experts, to start small business such as plant nurseries, dairy farming, grocery shop, collection and sale of minor forest products, processing of agro products etc.

7.2. Treatment details in watershed in Wada:

Table 4 shows details of watershed treatment activities and expenditure carried out under project:

Table 4: Proposed and Actual Work carried under Hariyali Project

Sr. No	Details of work	Proposed works		Work completed up to Dec-2009	
		No./ hectares	Amount in Rs.	No./ hectares	Amount in Rs.
1	Afforestation programme	529	75,11,406	341	46,73,928
2	Plantation of Fruit tree	251	72,83,803	257	76,04,400
3	Plantation on farm bunds	47	3,17,591	52	2,49,193
4	Raising height of old bunds	234462	21,10,149	2,34,790	32,98,722
5	Construction of new bunds	3575	64,350	3,479	74,632
6	Loose boulder structures	438	3,24,120	12	14,997
7	Construction of Gabian dams	32	2,15,060	22	1,59,600
8	Repairing of cement check dams	3	1,20,000	3	1,00,900
9	Construction of cement check dams	2	9,00,000	4	16,94,295
10	Drainage outlet in paddy field	97	9,70,000	76	7,52,000

11	Removal of silt from tank	1	10,000	1	10,000
12	Farm tank	20	9,60,000	25	14,77,900
13	Tank digging	16	7,68,000	12	7,56,000
14	Well repairing	39	3,90,000	41	3,94,952
15	Digging new well	9	6,75,000	5	3,20,000
16	Courtyard fruit tree plantation	2040	4,08,000	2045	3,28,720
17	Water sinkholes	2040	61,200	605	25,800
18	Generation of Non conventional energy	0	4,47,000	14	4,56,980
19	Medical camp for humans/ animals	80	5,60,000	0	0
20	Forest area	1472	13,97,882	0	0
21	Coordinators remuneration	-	-	-	-
Total			254,93,561		223,93,019

Source: Yashogatha – Hariyali, Social Forestry, Division Thane (Marathi-2011).

7.2. Major impact of watershed treatment in Wada:

After the completion of project a questionnaire survey was carried out in all villages to get an idea of impact of project. **Table 5** shows the impacts of project Hariyali, which was carried out in the period 2004 to 2009.

Table 5: Major Changes in the Watershed

Sr. No.	Details of work	Before project	After project
1.	Number of wells	35	79
2	Number of bore wells	02	02
3	Ground water level in meters	4.4	3.53
4	Area under cultivation in hectors	2850	4217
5	Irrigated area in hectors	20	260
6	Crops cultivated	Rice	Rice, vegetables, pulses, fruits
7	Area under vegetable cultivation in hectors	35	340
8	Area under fruit plants in hectors	0	257
9	Number of cattle and buffaloes	1616	2660
10	Fodder production in tons	2546	4490
11	Plantation by Social Forestry in hectors	0	348
12	Number of labours emigrated	1831	644

Source: Yashogatha – Hariyali, Social Forestry, Division Thane -2011

a) Agricultural sector: In this watershed, agriculture is the most important economic activity. Area under cultivation increased by 1367 hectors i.e. by 26%. Number of wells has increased from 35 to 79. This has increased area under irrigation, from zero hectors in 2001 to 20 hectors in 2004 and 260

hectars in 2009. With the help of irrigation facilities crop intensity has increased and farmers started cultivation of vegetables, pulses, and other crops along with their traditional crops. Today many farmers sell their cash crops in markets of cities like Bhiwandi, Thane and Mumbai. Farmers brought their waste land under fruit crop plantation as finance was available in this project. This has given assurance of income to farmers for next 20 to 25 years. The newly constructed farm tanks and other tanks helped the farmer to start fish rearing.

b) Dairy farming: The selected watershed is located close to many urban centers and so there is scope for dairy farming. Number of milk giving animals increased from 1616 to 2660. This has provided farmers an additional source of income. The animal waste provided manure for agriculture. After the treatment fodder production increased by 57%. In this watershed still there is scope to increase dairy and poultry- related activities

c) Employment: Before the project people of this watershed use to get employment only during rainy season. After the harvesting season, people used to migrate to Bhiwandi tahsil to work as casual labourers on brick kilns. After the implementation of the project the outmigration got reduced and people started getting work throughout the year in fields or dairy farms or plant nurseries or in SF. Wages have increased, and that helped people to improve their living conditions.

d) Environment: There is a close relationship between the environment and the human community living within for its livelihood. The deteriorating economic condition of a community leads to over-exploitation and degradation of natural resources, as man then tries to satisfy almost all his basic needs from the surrounding environment. Environmental regeneration is possible only when the concerned people realize a need for it and are empowered to have control over the process of resource utilization, management and conservation. Following environmental changes have been observed in this watershed:

- Increase in biomass production and biodiversity.
- Control on soil erosion, which has increased the per ha yield.
- Improvement in underground water level.
- Increase in area under tree cover due to afforestation and horticulture.
- Time and effort to get drinking water got reduced.

- At few places there was use of non conventional non polluting sources of energy such as biogas and solar energy.
- Mass awareness related to environmental problems.

8. CONCLUSION

Hariyali Project of Government of India has brought many socio-economic and environmental changes. The project was operational only up to March 2011. The functioning of the project was comparatively transparent and was planned to involve local village people under the guidance of experts. In spite of many positive observations, certain negative observations related to this project are as following;

- Involvement of local people was up to a limited extent, and government employees were trying their level best to improve it.
- Only few watersheds got selected; area under this project is very small. In this case the project covers only 7 % of the area of Wada tahsil.
- The contributions towards development funds from beneficiary farmers are meager, so maintenance of created assets after project tenure is very difficult or impossible.
- There is increase in production of fodder but in comparison dairy farming is not developed. This means people are happy to sell only grass instead of milk.
- Surprisingly in site of having provision to conduct medical camps during project period no camps were held. This indicates that no attention paid towards health and hygiene.
- Out of the total wasteland of Konkan region, afforestation by social forestry is carried out only on 5% area.

Such success stories need to be publicized and emulated to cover larger areas so as to gradually improve the environmental quality of an entire region. This can be an example for others to follow, but the crucial issue is obtaining funds for such schemes. As part of CSR, it may be worthwhile to approach major industries to take up such projects or to work in public-private partnership. Joint management of resources like the JFM is able to achieve greater success. Only government funded schemes will not bring sustainable changes to any region of the country. The involvement of local people, their vision and implementation under proactive, dynamic and result-oriented leadership will bring real socio-economic changes. Grass-root level mass

awareness and educational programs will make people think scientifically and logically towards solving the present environmental issues.

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