

COST-EFFECTIVE ANALYSIS OF RUBBER PLANTATION: A STRATEGY FOR SOCIO-ECONOMIC EMPOWERMENT OF SCHEDULED TRIBES IN TRIPURA

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ABSTRACT

This paper attempts to highlight the cost-effective analysis of rubber plantation in Tripura. The result indicates that the initial capital investment on rubber comprised establishment and maintenance of rubber plantation during the gestation period (upto 6th year). Among various components of labour cost, the prime cost was that of the application of manures and fertilizers which constituted largest of the total establishment cost, followed by weeding, land preparation, digging and pit filling, cost of insecticide application, cost of planting and shading. Rubber Block Plantation for socio-economic settlement of the 'Jhumias' in Tripura has been considered a great success. An international organization like the World Bank has commended it as outstanding. The scheme has so far adopted about 3000 families along with their 20000 dependents and settled them permanently with 3251 hectares of rubber in 53 different parts of the state. The paper suggests that rubber plantation should be incorporated in policy of the government. for empowerment of scheduled tribes and a way towards afforestation.

Keywords: Economic analysis, empowerment, Income, jhumias, rubber plantation.

INTRODUCTION

Rubber plantations have been a main historical cause of tropical deforestation and are generally responsible for a range of environmental and social ills. The three largest producers, Thailand, Indonesia, and Malaysia, together account for around 72 percent of all-natural

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rubber production. Rubber plantation development is one of the lucrative farming ventures in Kerala, and Tripura (Adikari and Sharma, 2018). Rubber latex is extracted from rubber trees. The economic life of rubber trees in plantations is around 32 years, with up to seven years being an immature phase and about 25 years of productive phase (Bhattacharya, 1992).

The people of Tripura have placed rubber plantation in their heart and made it the major source of income within 45 years of inception. It has become a popular cash crop providing a lot of employment opportunities in the rural areas (Bhattacharyya *et al.*, 1996). The major quantity of rubber produced in the State is now transported to other States for consumption.

The proposed Rubber Park which is being set up at Bodhjungle Industrial area may increase the consumption of more rubber goods. It will also provide more employment opportunities to the people of Tripura (Alexander and Haran, 2016).

The most successful story in rubber cultivation in Tripura is the establishment of marketing set up. The wide network of rubber dealers, spread over most of the areas, ensures for the growers, the country's best farm gate price of an agriculture commodity (George *et al.*, 1988). The increased global demand also contributes to price stability. Two other factors, which are of prime effectiveness, are regular market intervention by the Rubber Board- promoted companies and the bargaining capacity built up by the Rubber Producers' Societies (Chandy, 2006).

OBJECTIVES OF THE STUDY

The objectives of this paper are:

- (a) to examine the economic analysis of rubber plantation in Tripura; and
- (b) to study the implementation of rubber plantation scheme for socio-economic upliftment of scheduled tribes in Tripura.

MATERIAL AND METHODS

(a) Study area description: Tripura is a state in Northeast India. The third-smallest state in the country, it covers 10,491 km², and the seventh-least populous state with a population of 3.67 million. It is bordered by Assam and Mizoram to the east and by Bangladesh to the north, south and west. Tripura is divided into 8 districts and 23 sub-divisions. Agartala is the capital and the largest city in the state. Tripura has 19 different tribal communities with a majority Bengali population. Bengali, English and Kokborok are the state's official languages.

(b) Design and approach: This study is descriptive in design and has utilized a qualitative approach. Secondary data were used in this study. The secondary



Map: Political Map of Tripura

data are collected from various government reports, report of Rubber board, report of international agencies, research papers, published or unpublished thesis, articles etc.

- (c) **Method of analysis:** To reveal the rubber plantation in general and the socio-economic empowerment of tribals in particular, different methods of qualitative analysis comprising of descriptive analysis, content and text analysis were performed.

RESULTS AND DISCUSSION

(a) Economic Analysis of Rubber Plantation

Tribal populations are prominent in North-east region of India. Rubber cultivation, which has already attracted large scale participation of tribals is proving to be an effective means of weaning away the 'jhumias' to settled cultivation. Considering this situation, the Rubber Board in collaboration with the Tribal Welfare Department of the Government of Tripura is implementing a series of block planting programmes in which large blocks of tribal areas are planted with rubber initially engaging beneficiaries as wage earners (Sarkar, 2011).

Rubber plantation is classified as mature plantation, and immature plantation. Rubber plantation having age upto 6th years is known as immature plantation. Initial capital investment on rubber comprised establishment and maintenance of rubber plantation during the gestation period (upto 6th year). Among various components of labour cost, the prime cost was that of the application of manures and fertilizers which constituted largest of the total establishment cost, followed by weeding, land preparation, digging and pit filling, cost of insecticide application, cost planting and cost of shading (Choudhary and Tayal, 2010).

Table 1: Summary of Cost of Establishment of One Acre of Rubber Plantation

Year	Labour cost	Material cost	Ratio of material cost to labour cost	Total cost	Percentage to total cost
I	9850.00	9700.00	0.98	19550.00	48.75
II	3400.00	2550.00	0.75	5950.00	14.84
III	2100.00	1950.00	0.93	4050.00	10.10
IV	2650.00	1400.00	0.53	4050.00	10.10
V	2100.00	1250.00	0.59	3350.00	8.35
VI	1900.00	1250.00	0.66	3150.00	7.86
Total	22000.00	18100.00	0.82	40100.00	100.00
Percentages to total cost	54.86	45.14			

Source: Yogish, S. (2020). *Economic Analysis of Rubber Plantation – A Case Study of Shivamogga District, Proceedings of the Sixth Middle East Conference on Global Business, Economics, Finance and Banking (ME17Dubai Conference), Dubai - UAE. 6-8, p.8*

Table (1) demonstrates the cost of establishment of one acre of rubber plantation. It is seen that the ratio for the six-year period was less than one, which indicates that rubber production was labour intensive. The material cost formed 45.14 percent of the total initial capital investment. Out of the total establishment cost, 48.75 per cent was incurred in the first year

and for remaining years the establishment and maintenance cost accounted for 14.84, 10.10, 10.10, 8.35 and 7.86 percent and during second, third, fourth, fifth and sixth years, respectively (Yogish, 2017). The cost of cultivation comprises both fixed and variable costs. The cost of cultivation of rubber has been worked out for small and large plantations separately.

Table 2: Cost of Cultivation of Rubber Plantation (Rs. /acre)

Particular	Small Plantations		Large Plantations	
	Amount (in Rs.)	Percentage to total cost	Amount (in Rs.)	Percentages to total cost
A. Variable costs				
Manures	1512.00	5.75	1720.00	6.26
Fertilizers	2680.00	10.19	2800.00	10.18
Plant protection chemicals	450.00	16.72	500.00	1.89
Rain guard	550.00	2.10	824.00	3.00
Processing chemical	4520.00	17.19	6110.00	22.22
Maintenance of implements	202.00	0.77	238.00	0.87
Labour costs	13280.00	50.51	12020.00	43.72
Interest on fixed cost assets	3098.00	11.78	3280.00	11.93
Total variable cost	26292.00	85.26	27492.00	84.46
B. Fixed Cost				
Authorised cost of establishment	2513.70	55.28	2582.00	51.05
Rental value of land	1815.00	39.92	1914.00	37.84
Depreciation	98.00	2.16	230.00	0.40
Land revenue	8.00	0.18	8.00	0.16
Interest on fixed assets	112.24	2.47	324.00	6.41
Total fixed cost	4546.24	14.74	5058.00	15.54
Total cost	30838.24		32550.00	

Source: Yogish, S. (2020). *Economic Analysis of Rubber Plantation – A Case Study of Shivamogga District, Proceedings of the Sixth Middle East Conference on Global Business, Economics, Finance and Banking (MEI7Dubai Conference), Dubai - UAE. 6-8, p.8. Note: The wage rate is Rs. 125 per manday and Rs. 75 per woman day.*

Table (2) shows the cost of cultivation of rubber plantation. It has been found that components of variable costs, labour cost, is the prime cost constituting 50.51 per cent of the total variable cost. Ammortized cost of establishment is the major item among fixed cost, constituting 55.28 per cent of the total fixed cost. The next important cost is rental value of land, which forms 39.92 per cent of the total cost, while fixed cost accounts for 39.92 per cent of the total cost (Yogish, 2017).

Rubber smallholdings of Kerala, indicates that tapping task in a unit gets reduced with diminishing size of operational holding and thus forces the tapper to attach himself with more

than one grower. The earning of the workers in the rubber plantations are low earning compared to other comparable activities, which has led to withdrawal of skilled and experienced workers from the market (Chouhan and Bhowmik, 2017). Rubber plantations are considered to be a profitable economic investment for people from all sections of life. The opening up of the economy following economic reforms in 1991 saw the Indian rubber economy integrate with the world market. Several private initiatives occurred with an expectation to reap in as much profit as possible (Bhowmik, 2006).

(b) Implementation of Rubber Plantation Scheme

Tripura, which is India's second-largest rubber-producing state after Kerala, now has over 70,000 hectares, or nearly seven per cent of the state's land area, under rubber plantations, compared to under 700 hectares in the mid-1970s. Assam's rubber cultivation has increased three-fold to over 49,000 hectares over the past decade, while Manipur, Meghalaya, Mizoram and Nagaland have also seen increases in areas under rubber plantations in recent years. The potential of rubber plantations in Tripura being well identified by the mid-1970s saw the Rubber Board set up its regional office in 1979 at Agartala (Sreelakshmi *et. al.*, 2007). The introduction of cash subsidy as an incentive for new plantations by the Rubber Board in 1980 had seen a significant growth in new areas under rubber all over the rubber growing regions and Tripura was no exception. By 1971-72, with the commencement of tapping and processing, Tripura was on the verge of a new age of development (George *et. al.*, 2002).

Table 3: Area and Production of Natural Rubber in Tripura

District	New Planting	Immature Area	Mature Area	Total Area	Production	Productivity	Mature Area	Production
	(ha)	(ha)	(ha)	(ha)	(mt)	(Kg/ha)	(%)	(%)
North	301.29	1662.91	8325.71	9988.62	9450.52	1197.00	11	10
Unakoti	199.53	702.50	3245.30	3947.80	3630.68	1188.50	4	4
Dhalai	426.63	1510.32	5042.90	6553.22	5861.98	1174.00	7	6
Khowai	303.90	246.64	4369.50	4616.14	4217.36	1200.00	5	5
West	61.12	3081.29	13580.49	16661.78	17521.29	1295.00	19	19
Sepahijala	297.08	2619.45	15699.43	18318.88	20739.12	1412.00	21	22
Gomati	318.5	1476.30	10611.06	12087.36	15893.31	1657.00	14	17
South	464.47	3359.69	13730.74	17090.43	16056.93	1185.00	19	17
Total	2372.52	14659.10	74605.13	89264.23	93371.19	1288.56	100	100

Source: Economic Review of Tripura (2021-22), Government of Tripura.

Table (3) discusses the area and production of natural rubber in Tripura. It has been found that Sepahijala has the highest percentage of mature plantations followed by the West Tripura, and South Tripura district. Sepahijala district has the highest production of natural rubber, followed by the West Tripura district. Gomati district has highest productivity of natural rubber followed by the Sepahijala, and Kowai district.

The Block Planting Scheme (BPS) was introduced by the Rubber Board in Tripura in 1992 in three different units/blocks with a total area of 113.99 ha. Under such scheme, a compact

land (block) owned by SC/ST households is identified and the plantation is raised by engaging family labour as wage earners (Pal and Dey, 2000). The Tripura Block plantation is a joint venture between the Government of Tripura and the Rubber Board. The principal objective of the project is the economic upliftment of tribal Jhumia families engaged in rubber plantation on allotted lands, through an integrated approach (Subramanian, 2000). The participation in rubber plantation would enable the farmers to shift from shifting cultivation to a more settled form of livelihood and would also promote an eco-friendly method of cultivation (Joseph *et. al.*, 2010).

The different agencies involved in production and extension of rubber in Tripura have all been increasing their area under operation for successive years (Raju, 2016). The agency wise coverage of area under rubber plantation depicts that TFDPC has the lead in the South Tripura and North Tripura district, while in the West Tripura district the private sector is the lead unit while in Dhalai district, the TRPC is the dominant agency. The success story of TFDPC and TRPC has encouraged private initiatives in rubber plantations within the state. Rubber plantations and cultivation were considered a viable means of economic development and the state government formed the Tripura Forest Development and Plantation Corporation in 1976-77 (Dey, 2011).

The TRPC is the dominant agency for rubber plantation in five subdivisions namely, Khowai, Amarpur, Kamalpur, Ambasa and Longtraï valley. On the other hand, the private sector has the maximum area in the subdivisions of Sadar, Bishalgarh, Sonamura and Udaipur. In terms of total area, however we find private sector marginally ahead of the TFDPC in the state and in terms of coverage in the subdivisions. However, there are private initiatives in all other subdivisions though the range of coverage among them varies for various economic and non-economic factors (Bhowmik, 2006). The efforts at rehabilitation of landless tribals and people from other weaker section have received thrust under the schemes sponsored by the Department of Rural Development and the Department of Tribal Welfare (Joseph, 1986). TRPC is actively engaged in raising rubber plantations for the rehabilitation of the landless tribals in fourteen subdivisions (Rubber Board, 1997).

Table 4: Tripura Rehabilitation Plantation Corporation and Its Beneficiaries

Districts/ Areas	No. of location	No. of Beneficiaries	Districts/ Areas	No. of location	No. of Beneficiaries
Sadar	3	277	South Tripura	20	944
Bishalgarh	9	563	Kamalpur	3	301
Sonamura	3	95	Ambasa	4	122
Khowai	5	429	L.T.V	7	397
Teliamura	0	0	Gandacharra	0	0
West Tripura	19	1364	Dhalai	14	820
Udaipur	4	73	Dharmanagar	1	55
Belonia	0	0	Kailasahar	4	258
Santibazar	5	182	Kanchanpur	5	323
Sabroom	4	235	North Tripura	10	636
Amarpur	7	454	TOTAL	63	3764

Source: Tripura Rehabilitation Plantation Corporation

The above Table (4) shows that West Tripura district has the highest number of beneficiaries, followed by South Tripura, Dhalai, and North Tripura. Tripura Rehabilitation Plantation Corporation is the apex agency for raising rubber plantations in Dhalai district and the dominance is exhibited by the fact that 62.76 percent of the plantations have been raised by it (George, 1992).

The Rubber Board has been implementing special programmes for the benefit of tribal people. The most successful of the various schemes has been the economic rehabilitation programmes for tribals implemented jointly with the state governments (George *et. al.*, 1988). In Tripura, a block plantation project is being implemented for tribal shifting cultivators in the land allotted to them, engaging them as wage earners during the immaturity period. The project, with an integrated approach, aims at an overall development (Varkey and Kumar, 2013). The plantations have already entered tapping phase and the Board also is providing support by forming Rubber Processing Centers (RPSs) and assisting them in community processing and marketing with the required infrastructure. Rubber being a long gestation crop, taking about seven years to come to yielding, the tribal families must be supported during the immature phase (Min *et. al.*, 2017).

The project involves taking up of block plantation of rubber in a specific area with about 40-50 ha. The implementation includes simultaneous development of the plantation areas as well as providing various services including village roads, *anganwadi* centers, health sub centers, drinking water facilities, primary schools, power connectivity etc. Community participation is ensured through empowerment groups comprising rubber producer's societies and women thrift groups (Raju, 2016). Plantation is taken up on individual lands that are owned by the beneficiaries who work on their plantations. Each beneficiary is paid wages. Non-tribal workers and non-owners are not allowed as workers. Such a method creates a sense of ownership and attachment to the plantation among the beneficiaries (George *et. al.*, 1988).

CONCLUSION

Rubber plantation needs initial capital investment as establishment and maintenance of rubber plantation during the long gestation period (upto 6th year) is needed. Among various components of labour cost, the prime cost is that of the application of manures and fertilizers which constitutes largest of the total establishment cost, followed by weeding, land preparation, digging and pit filling, cost of insecticide application, cost planting and cost of shading.

Rubber plantation is expanding rapidly in Tripura. Rubber Block Plantation for socio-economic settlement of the 'Jhumias' in Tripura has been considered a great success. A block plantation project is being implemented for tribals engaged in shifting cultivators in the land allotted to them, engaging them as wage earners during the immaturity period. Community participation is ensured through empowerment groups comprising rubber producer's societies and women thrift groups. Department of Rural Development, Department of Tribal Welfare and Tripura Rehabilitation Plantation corporation are actively engaged in raising rubber plantations for the rehabilitation of the landless tribals.

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