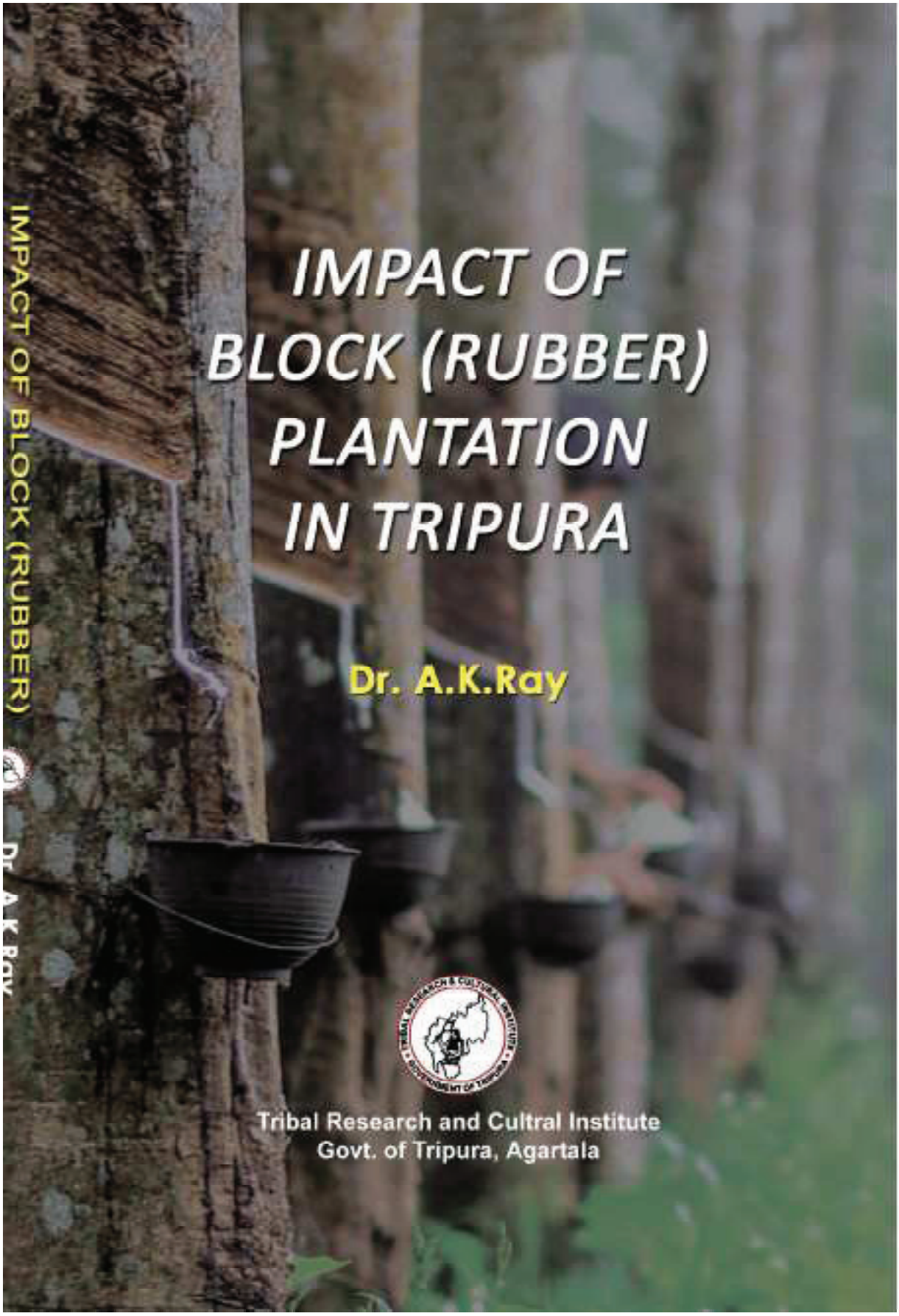
IMPACT OF BLOCK (RUBBER) PLANTATION IN TRIPURA
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Tribal Research and Cultral Institute
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Government of Tripura

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Dr. A.K.Ray

Foreward

The Tripura Block (Rubber) Plantation (BPS) is a joint between the Government of Tripura and the Rubber Board. The prime necessity and objective of the project was the economic up-liftment of tribal Jhumia families engaged in rubber plantation on allotted lands, through an integrated approach.

The necessity was the mother of invention of Block (Rubber) Plantation Scheme in Tripura.

The idea was that participation in Block (Rubber) Plantation would surely enable the farmers to shift from jhum cultivation to a more settled form of livelihood and would also promote an eco-friendly method of plantation.

In this project each male member of the family is inducted into the Rubber Producing Societies (RPS), which formulates several strategies for cultural operations, protects the rubber plantation, takes up income generating activities and acts as a forum for dissemination of knowledge and transfer of technology. The RPS holds regular monthly meetings to discuss issues related to rubber and other associated aspects. It is organized on the concept of self help groups (SHGs). The RPS is involved in all operations of rubber production, including latex collection, processing, marketing and distribution of sale proceeds to all members. RPS was formed initially to distribute sale proceeds equally among all members.

The present study is based on the research project conducted by Prof. (Dr.) A. K. Ray, an Ex-Dean & Professor, NIT & ICFAI University, Dr. Milton Acharjee and Dr. Sukanta Sarkar of Tripura. The major objectives of this study is to evaluate the impact of Block (Rubber) Plantation scheme on the income, employment, health, educational, socio-political status of different tribal communities of Tripura. It is expected that the results of this study will definitely help to motivate and wean away jhum cultivators to adopt rubber plantation.

16.10.2020

(D.Debbarma)
Director,
Tribal Research & Cultural Institute,
Government of Tripura

Dated, Agartala
16th October, 2020

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Abbreviations

AMC	:	Agartala Municipal Corporation
BPA	:	Block Plantation Approach
BPO	:	Block Plantation Officer
BPS	:	Block (Rubber) Plantation Scheme
BRPP	:	Bulk Rubber Plantation Project
DRC	:	Dry Rubber Content
FDA	:	Forestry Development Authority
ICAR	:	Indian Council of Agricultural Research
ITDA	:	Integrated Tribal Development Agency
MGREGA	:	Mahatma Gandhi Rural Employment Gurantee Scheme
NABARD	:	National Bank for Agriculture and Rural Development
PLUP	:	Participatory Land Use Plans
PPP	:	Public Private Partnership
PPS	:	Probability Proportion to Size
RPS	:	Rubber Producing Societies
SHGs	:	Self -Help Groups
TFDPC	:	Tripura Forest Development and Plantation Corporation Ltd.
TRPC	:	Tripura Rehabilitation Plantation Corporation Ltd
TTAADC	:	Tripura Tribal Areas Autonomous District Council
TUEP	:	Tripura Urban Employment Programme
UNDP	:	United Nations Development Programme
USAID	:	United States Agency for International Development
WBRAP	:	World Bank Aided Rubber Project

SUMMARY

Before adoption of Block (Rubber) Plantation Scheme all the tribal families of all the sample districts were below poverty Line and due to adoption of Block (Rubber) Plantation Scheme, all of them in all the districts are now above the poverty line. This is one of the best schemes in India, implementation of which has raised all the member families, from below poverty line to above poverty line.

At present average income per month from agriculture for the non- tribal families in Tripura was much higher as compared to jhum cultivators of Tripura. The average income from jhum was highest in North Tripura followed by Unakoti whereas it was lowest in Sipahijala district. However, for non-tribal farming, the income was highest in Unakoti followed by West Tripura district. The incomes per family per month, of non-tribal families were substantially higher as compared to jhum cultivators because, they used modern technologies in farming while the method of cultivation of jhumias was totally primitive in nature.

Net income from rubber plantation was highest in West Tripura followed by Siphaijala district and it was lowest in Unakoti district. But income from jhum was highest in North Tripura followed by Unakoti. However the change of income from jhum to rubber was about 10 times or more almost in every district. Thus, jhuming to tapping brought a revolution in the livelihood and life style of Block (Rubber) Plantation beneficiaries in Tripura.

The habit of pan, biri and cigarette taking has reduced due to adoption of Block (Rubber) Plantation, in all the districts except in North Tripura. The habit of drinking desi wine had also been declined or remained same in all the districts after acceptance of

Block (Rubber) Plantation scheme. The habits of drinking or smoking have declined among the beneficiaries of Block (Rubber) Plantation, because they have became more health conscious as an impact of high voltage campaign, by the Tripura Government through different electronic media and health extension machineries about the harm full effect of taking on regularly basis pan,biri, cigarette,wine etc.on health .

Before implementation of Block (Rubber) Plantation scheme, most of the tribal families were dependent on village kabiraj, owner of medical shops and village tantrick. But after adoption of Block (Rubber) Plantation scheme, they were going mostly to nearby Primary Health Centers rather than to village kabiraj, medical shops owner and village tantric. This clearly indicated that due to adoption of Block (Rubber) Plantation scheme, the beneficiaries became more health conscious as an impact of intensive campaign by the Tripura Government through different electronic media and health extension machineries about the draw backs of taking treatment as per advice of village kabiraj, medical shops and tantrick. Another reason for the adopter of Block (Rubber) Plantation scheme, now going for the treatment to the PHC is that, PHC's are available even in their villages and the doctors are treating them in free of cost. The prompt and positive effect of treatment was also attracting more and more tribal beneficiaries of Block (Rubber) Plantation scheme, to the nearby Primary Health Centers.

Before implementation of Block (Rubber) Plantation scheme, most of the children's of tribal's families of the study areas were either not going to school or irregular in going school. But after implementation of Block (Rubber) Plantation scheme, the picture changed completely. Due to increase in income from rubber plantation on the one hand and for intensive campaign and giving different incentives by the Tripura Government for the education of tribal communities on the other , most of the children's of Block (Rubber) plantation beneficiaries were almost regularly going to school.

Before implementation of Block (Rubber) Plantation scheme, no one was guiding most of the tribal family students. Because,

most of these tribal families were struggling for food and they could not give any attention for the education of their children's. But after acceptance of Block, (Rubber) plantation scheme, the income of the beneficiaries increased by many folds and they gave full attention for the education of their children's. Moreover, Government's continuous extension activities and propaganda about the bright future of tribal educated boys and girls in the Government services also attracted tribal families to provide higher education to their children's.

Before implementation of Block (Rubber) Plantation scheme; most of the beneficiaries were living in Government land in all the districts under study. But due to adoption of Block (Rubber) Plantation scheme, most of the beneficiaries are now living in their own land handed over to them in all the districts. This could be possible because of increase of their income by many folds, as compared to their earlier income from jhum, farm laborer and other occupations, from Block (Rubber) Plantation scheme and they were able to save required amount of money for construction of house on their own land.

Before implementation of Block (Rubber) Plantation scheme most of the beneficiaries were living in mud wall and straw covered house whereas due to adoption of Block (Rubber) Plantation scheme, most of the beneficiaries are now shifted to their brick built and tin roofed house in all most all the districts. Because as an impact of adoption of Block (Rubber) Plantation scheme, their income increased substantially and that's why they could save necessary amount to build up brick built house. It is also interesting to note that majority of the beneficiaries of Block (Rubber) Plantation scheme, became eligible for House Building Loan from bank, once they own title of land and could take loan, if required, for construction of house.

Before implementation of Block (Rubber) Plantation scheme, most of the tribal families of the study areas were using forest wood as a fuel which was not only caused environmental pollution and de- forestation but also caused environmental degradation in long run. However, due to adoption of Block (Rubber) Plantation scheme, some beneficiaries of all the districts

were started using LPG, if supply is available in their area, and it was proved to be helpful for saving from both forest resources and environmental pollution problems.

Before implementation of Block (Rubber) Plantation scheme, most of the tribal families were using subsidized kerosene for lighting their houses, but after adoption of Block (Rubber) Plantation, most of them were started using electricity. The use of electricity in lieu of kerosene saved time and money of Block (Rubber) Plantation scheme members of all the districts of Tripura.

Before implementation of Block (Rubber) Plantation scheme, well and tank water was the main sources of drinking water for sample households. However, after adoption of Block (Rubber) Plantation, this picture changed dramatically and most of the tribal families started using municipal supply and tube wall water for drinking purposes in all the districts. This has happen because of adoption of Block (Rubber) plantation scheme, the members of the adopter families, visited different Government programmers, schemes and offices which improved their awareness level about the benefits of use of clean drinking water and they replaced the relatively clean municipal supply and tube wall water in place of unhealthy tank and well water. It is also to be noted that after implemented of the block plantation scheme, Government took initiatives to supply municipal water and dig tube wells in the block plantation areas, which was also an important cause for shifting drinking water pattern by the beneficiaries of Block (Rubber) plantation scheme.

Before implementation of Block (Rubber) Plantation scheme, there was almost no brick built toilet and normally tribal people used open place or polithin paper covered place as their toilet. But after adoption of Block (Rubber) Plantation scheme, the adopter families had not only enough saving but also became more health conscious and hence, majority of them constructed brick built toilets. The Tripura Government's tiredless efforts also helped to convince and motivate the tribal people to understand the benefits of use of brick built latrine and bath rooms and as a result now more than 60 to 100 percent latrine and bath rooms are now brick built in the study areas of Tripura.

Before implementation of Block (Rubber) Plantation scheme, most of the tribal families were not getting full meals a day regularly in all the districts but the adoption of Block (Rubber) Plantation, enhanced their income substantially therefore, most of them could now afford to eat required meals regularly, both the times, in all the districts. Before implementation of Block (Rubber) Plantation scheme, 64 to 95 percent of tribal people of different districts of Tripura were not getting regularly two meals a day, but after adoption of Block (Rubber) Plantation scheme, 90 to 100 persons families afforded to eat two full meals regularly in a day and for the whole month.. It may be noted that in West Tripura and Sipahijala almost 100 percent families could regularly started getting food as an impact of adoption of Block (Rubber) Plantation scheme. Areas of West Tripura and Sipahijala being nearest to Agartala, , got relatively more income from Block (Rubber) Plantation scheme and therefore all the adopter families of these two districts were getting food regularly while far away districts like North, South and Unakoti about 90 to 92 percent tribal families were getting two times meal regularly.

The rice is the common and most favoured food for all the tribal families of Tripura. But they could not afford rice, for their family members every day as their income from jhum and miscellaneous sources were very low .But after taking part in Block (Rubber) Plantation project, the income of tribal families increased considerably hence, almost all of them can now afford to take rice both in lunch and dinner.

Before implementation of Block (Rubber) Plantation scheme, most of the tribal families were not having any saving account or any other kind of account in any kind of institutional or private organizations, except in West district. After implementation of Block (Rubber) Plantation scheme, about 75 to 100 percent beneficiaries opened saving accounts in bank in all the districts. This could be happened because of on the one hand enhanced saving of beneficiaries and on the other hand continuous effort of bank and project officials to convince the tribal families, the benefits of opening account in bank. Such activities motivated them to open saving account in bank. It is also important to note

that about100 percent participants of West Tripura and Sipahijala opened saving account in bank because the impact of extension activities of bank and Government, being nearer to capital, was more on these two districts as compared to other districts.

Before implementation of Block (Rubber) Plantation scheme, the sources of credit and or loan for the tribal families, was primarily money lenders but after implementation of Block (Rubber) Plantation scheme, the picture changed drastically and majority of the beneficiaries were took interest to take loan and or credit from institutional sources only. The quickly spreading education among the Block (Rubber) Plantation scheme members helped them to understand the negative and fatal effect of taking loan from money lenders and hence, they opted bank as their major source of credit and thus, freed themselves from the age old clutches of money lenders.

It can be seen that before implementation of Block (Rubber) Plantation scheme, own house was the preferred place of saving, if any for the tribal families. But after implementation of Block (Rubber) Plantation scheme, the picture changed completely and majority of the beneficiaries were started saving at their bank account, except for south district where majority of tribal families did not have any saving, hence there was no question of saving either in their own house or in bank.

Before implementation of Block (Rubber) Plantation scheme, the tribal families' saving was negligible and on the other hand, they were ignorant about the benefit of saving in bank therefore, they kept their little bit saving, if any, in own house only. However, after implementation of Block (Rubber) Plantation scheme, about 60 to 100 percent beneficiaries saved their excess income in bank. This tremendous change could take place only due to continuous extension activities of the Government, bank and Block (Rubber) Plantation scheme officials.

It clear that before implementation of Block (Rubber) Plantation scheme, major means of transportation was walking or public bus or bicycle in all the districts. But after adoption of this scheme scooter or motor cycle became the most common means of transport in all the districts because, for enhanced income, the

beneficiaries could now afford motor cycle and a few of them even afford to buy car .

Before implementation of Block (Rubber) Plantation scheme, most of the tribal families was in-active in politics. Due to implementation of scheme, their participation in politics, increased considerably in all the districts. This has happened may be due to spread of formal and informal education, by the State Government among the beneficiaries of scheme. The spread of rural road net work even in the remotest corner, by the State Government was also an important reason for increasing political activities among the beneficiaries of Block (Rubber) Plantation scheme.

After implementation of Block (Rubber) Plantation scheme, most of the tribal family's participation in social actives improved marginally in most of the districts. This has happened may be due to spread of formal and informal education, among the beneficiaries of Block (Rubber) Plantation scheme, by the State Government. The spread of rural road net work even in the remotest corner by the State Government was an important reason behind increasing social activities among the beneficiaries of Block (Rubber) Plantation scheme.

Nearly 30 percent beneficiaries fully agreed that due to Block (Rubber) plantation, income of women increased substantially whereas another 70 percent respondents also some how agreed that due to Block (Rubber) plantation, income of women of the beneficiaries families, increased in Unakoti**.** About 20 percent respondent strongly agreed that due to Block (Rubber) plantation, social dignity of Women increased but 60 percent agreed that social dignity of Women increased to some extent, due to Block (Rubber) plantation and 20 percent did note express any opinion. Similarly, opinion of 80 percent respondents was that Block (Rubber) plantation socially improved importance Women and other 20 percent were not clear, whether Block(Rubber) plantation socially improved importance of women or not.

Further, 50 percent women of beneficiary families, fully agreed that Block (Rubber) plantation improved the decision making power of women, 40 percent mildly agreed and 10 percent

expressed no option. It was the opinion of 40 percent of the beneficiary respondents that due to Block (Rubber) plantation, scope of employment outside the Rubber Producing Society (RPS) increased but 60 percent did not expressed any opinion. It was the mild opinion of about 20 percent block(Rubber) plantation participants that Women became more conscious about programmes and activities of Government, after adoption of Block(Rubber) Plantation, while 80 percent ,unable to express any opinion. Thus, it can be safely concluded that as per the opinion of Block (Rubber) plantation scheme members, the women of this district were substantially empowered due to adoption of Block (Rubber) plantation scheme.

Nearly 20 percent beneficiaries fully agreed that due to Block (Rubber) plantation, income of women increased substantially whereas another 80 percent respondents also somehow agreed that due to Block(Rubber) plantation, income of women of the beneficiaries families, increased in Sipahijala. 15 percent respondent strongly agreed that due to Block (Rubber) plantation, social dignity of Women increased but 80 percent agreed that social dignity of Women increased to some extent, due to Block (Rubber) plantation in Sipahijala and five percent did note express any opinion. Similarly, opinion of 80 percent respondents was that Block (Rubber) plantation socially improved importance Women and other 10 percent were not clear, whether Block (Rubber) plantation socially improved importance of women or not.

Further, 80 percent women of beneficiary families, agreed that Block (Rubber) plantation improved the decision making power of women and 20 percent expressed no option. It was the opinion of most of the beneficiary respondents that due to Block (Rubber) plantation, scope of employment outside the Rubber Producing Society increased but 20 percent did not expressed any opinion. It was the opinion of about 90 percent Block (Rubber) plantation participants that Women became more conscious about programmes and activities of Government, after adoption of Block (Rubber) Plantation, while 10 percent, unable to express any opinion. Thus, it can be safely concluded that as per the opinion

of Block (Rubber) plantation scheme members, the women of Sipahijala district were substantially empowered due to adoption of Block (Rubber) plantation scheme.

Nearly 55 percent beneficiaries fully agreed that due to Block (Rubber) plantation, income of women increased substantially whereas another 45 percent also somehow agreed that due to Block (Rubber) plantation, income of women beneficiaries' family, increased but another five percent beneficiaries fully disagreed that due to Block (Rubber) plantation improved the women prestige in the society of North district.

Nearly 40 percent respondent fully agreed thatBlock(Rubber) plantation enhanced, social dignity of Women but 55 percent simply agreed that social dignity of Women increased to some extent, due to Block(Rubber) plantation in North District and five percent express their disagreement on this issue. Similarly, 80 percent respondents of Block (Rubber) plantation fully agreed, 10 percent simply agreed that women women's decision taking power increase due to adoption of Block (Rubber) plantation, but five percent did not express any opinion while another five percent not agreed on this issue.

About 20 percent adopter of Block (Rubber) plantation scheme opined that they fully agreed that due to Block(Rubber) plantation, scope of employment of women outside RPSincreased another 25 percent participants also mildly supported this view when30 expressed no view while rest 25 percent disagreed with this view. Nearly 45 percent beneficiaries fully agreed and 40 percent mildly agreed that due to Block (Rubber) plantation, women became more aware about different programmes of Government while 10 percent did not agree with this view and another five percent participants of Block (Rubber) plantation scheme could not say anything on this issue in North District.

About 55 percent beneficiaries fully agreed and 35 percent simply agreed that due to Block (Rubber) plantation scheme, income of women increased substantially whereas another 10 percent did not agree with this view in south district. Further, about 40 percent fully agreed and another 40 percent mildly agreed that Block (Rubber) plantation scheme improved prestige

of women in society while 20 percent did not express their opinion in South District. It is also clear from data that 35 percent beneficiaries of South District fully agreed while 25 percent also mildly agreed that Block (Rubber) plantation scheme, improved importance of women within their family, while rest 20 percent opposed this view.

About 10 percent participant of this project fully agreed that due to Block (Rubber) plantation scheme, their decision making power improved, while 20 mildly agreed but 25 percent disagreed and 35 percent strongly opposed this view. Similarly, 15 percent participants fully agreed and 25 persons agreed that due to Block (Rubber) plantation scope of employment outside RPS of Women increased but 35 percent did not express any opinion, while 20 percent opposed and another 10 percent strongly opposed this view.

About 15 percent beneficiaries fully agreed and 25 percent mildly agreed that due to Block (Rubber) plantation, women became more aware about different programmes of Government while 35 percent did not agree with this view and 10 percent participants of Block (Rubber) plantation scheme did not agree and another 10 percent fully disagreed with this view. About 95 percent participants opined that right price i.e. profitable price of rubber is the greatest problems of Block (Rubber) plantation scheme in Unakoti District of Tripura. Both disease of rubber tree and insect attack on rubber tree were also serious problems of rubber production in this district. Timely pesticide availability of fertilizers was also considered as serious constraints by 65 percent members of Block (Rubber) plantation scheme members.

About 20 percent members of Block (Rubber) plantation scheme agreed that seedlings of rubber supplied to them are not of expected quality while 80 percent expressed no opinion about this in Unakoti District. As per most of the Block (Rubber) plantation scheme members, theft of rubber sheet is not a problem in Unokoti District. It is very important to note that the almost 80 to 85 percent members of Block (Rubber) Plantation scheme, did not think that rubber plantation caused any kind of environmental pollution or low rain fall in the District and or State.

About 90 to 100 percent participant opined in West District that quality of rubber seedlings and timely availability of seedlings are the two critical problems. In time availability of labour sand right price of rubber were also very serious problems of Block (Rubber) plantation scheme in Unakoti District of Tripura. Both disease of rubber tree and insect attack on rubber trees were not serious problems of rubber production in this district. InSipahijala District, right price i.e. profitable price of rubber , good quality seedlings , in time availability of seedlings, timely availability of labour, insect attack, timely pesticide availability, timely availability of fertilizers and theft of rubber sheet were the most serious problems of Block (Rubber) plantation scheme.

But environmental pollution, low rainfalls are not serious problems of rubber production in this district. About 80 percent participants of North District opined that Block (Rubber) plantation did not create any environmental dis-balance in this district. The trends of constraints faced by the North Districts were more or less same except that some people of this district opined that Block (Rubber) plantation create to some extent environmental pollution, low rainfall and *environmental dis-balance.*

In GomotiDistrict right price i.e. profitable price of rubber, disease of rubber tree, good quality seedlings, price inflation of seedlings, in time availability of seedlings, timely availability of labour, insect attack, timely pesticide availability, and timely availability of fertilizers, were the most serious problems of Block (Rubber) plantation scheme. But environmental pollution, low rainfalls are not serious problems of rubber production in this district. About 70 percent participants of North District opined that Block (Rubber) plantation did not create any environmental dis-balance in this district. It is also clear from data, that 80 percent participants of Gomoti opined thatthat Block (Rubber) plantation, did not reduce rainfall of the district and another 50 percent felt that Block(Rubber) plantation, did not create any environmental pollution and about 70 felt that Block(Rubber) plantation, did not create any environmental dis-balance of the area.

In South District right price of rubber, disease of rubber tree, timely availability of labour, insect attack, timely pesticide

availability and timely availability of fertilizers were the most serious problems of Block (Rubber) plantation scheme. About 95 percent participants of south District opined that, Block (Rubber) plantation did not create any environmental dis-balance. It is also clear from data, that 90 percent participants of South District opined that Block (Rubber) plantation ,did not reduce rainfall of the district and another 80 percent felt that Block (Rubber) plantation, did not create any environmental pollution and about 95 felt that Block (Rubber) plantation, did not create any environmental dis-balance of the area.

Thus, as per opinion of majority of participants of Block (Rubber) plantation scheme of Tripura, lower price of rubber, disease of rubber tree, timely availability of labor, insect attack, timely pesticide availability, timely availability of fertilizers, good quality seedlings, and timely availability of seedlings were the most serious problems of Block (Rubber) plantation scheme. It is also clear from data, that Block (Rubber) plantation beneficiaries did not agree that it has reduced rainfall or created any environmental pollution and dis- balance of the State.

CHAPTER 1

INTRODUCTION

- Strategies for Successful Block Rubber Plantation Scheme
- Statement of the Problems
- Review of Literature
- Objectives of the Study
- Methodology of the Study
- Hypothesizes
- Distribution of Samples
- Limitations of the Study

Chapter I

Introduction

Growth of natural rubber plantation has been one of the important success stories of Tripura. Rubber has been identified as one of the thrust areas in Tripura. In terms of area under rubber cultivation, estimated to be about 62,000 hectares. It ranks second at the all India level after Kerala. As per latest statistics, rubber production in Tripura is around 37,277 MT (2013-14), Contributing an annual income of around Rs.600 Crore to the State's economy.

The Block plantation approach introduced in Tripura has emerged as a good example of an initiative where the cohesive development of the rubber sector has resulted in the empowerment of tribal communities to raise, manage and sustain cultivation of the crop. The BPA was introduced by Shri G. Kameswara Rao, Ex-Director and Secretary, Tribal Welfare Department, Government of Tripura and Dr. A. K. Krishna Kumar, ex-Joint Rubber Production Commissioner, Rubber Board of India, Agartala in the year 1992.

1.1 Strategies for Successful Block Rubber Plantation Scheme :

The Tripura Block (Rubber) Plantation Scheme (BPS) is a joint venture between the Government of Tripura and the Rubber Board. The principal objective of the project was the economic up liftment of tribal Jhumia families engaged in rubber plantation on allotted lands, through an integrated approach. The participation in rubber plantation would enable the farmers to shift from jhum cultivation to a more settled form of livelihood and would also promote an eco-friendly method of cultivation.

By 2015, the project covered 3724 ha and benefited 3490 jhumia families with an annual income of Rs. 60 Crore. All the 3490 families have crossed poverty line with annual net income of Rs. 1.86 lakh per family.

Each male member of the family is inducted into the Rubber Producing Societies (RPS), which formulates several strategies for cultural operations, protects the rubber plantation, takes up income generating activities and acts as a forum for dissemination of knowledge and transfer of technology. It holds regular monthly meetings to discuss issues related to rubber and other associated aspects. It is organized on the concept of self – help groups (SHGs). The RPS is involved in all operations of rubber production, including latex collection, processing, marketing and distribution of sale proceeds to all members. RPSs were formed initially distribute sale proceeds equally among all members but RPSs formed subsequently distribute sale proceeds based on the latex supplied to RPSs by the members. Dry Rubber Content (DRC) is also taken into consideration while distributing sale proceeds.

The Rubber Producing Societies (RPSs) and WTGs monitor are working of the schools, Anganwadi centers, Health Sub-centers in their area to ensure their proper functioning. They encourage families to send their children to school on regular basis. Small village roads connecting plantations and habitations have been developed and drinking water sources have been created in the block plantation areas with the help of Rural Development department.

The WTGs play a vital role both in empowerment of women and generating additional income for families working in block plantations. They are formed with a single women member of each rubber-growing family. The motto of the its is save, borrow, Repay. They encourage individuals or groups to take up income-generating activities. This strategy has improved the confidence of women participants to deal with political functionaries and administrative staff. Additionally, the participation of women in rubber plantation activities has ensured the involvement of the entire family, thus, making BPA a family based involvement. In

order to sustain the families when the rubber plantation is relatively immature, especially during the first three years, the RPSs and WTGs have been encouraged to generate additional income through non-rubber economic activities like piggery, fishery, weaving, and other farm activities.

There is a history of Jhum cultivation by tribal families in certain forest areas of the state, a practice which has survived for 9000 years in the world. Jhum cultivation is economically unsustainable. Rubber plantation in Tripura was generally taken up on uplands (locally called tilla). These lands are ideally suitable for rubber cultivation as unutilized and fellow in nature. The BPA has brought these tilla jhum lands into productive use, thus contributing to the economic wellbeing of jhumia tribal families.

The Jhum cultivation is an age old technique of cultivation of Tribal population of Tripura. It is also known as slash-and-burn cultivation. Slash-and-burn is an agricultural technique which involves cutting and burning of forests or woodlands to create fields. It is the subsistence agriculture that typically uses little technology. Historically, slash-and-burn cultivation was practiced in grasslands and as well as woodlands in most of the countries of the world. Tribal groups in the northeastern states like Arunachal Pradesh, Tripura, Meghalaya, Mizoram, Nagaland and in some districts of Bangladesh like Khagrachari and Sylhet are involved in such practices of cultivation. It is an alternative that alleviates some of the negative ecological implications of traditional slash-and-burn techniques.

Initially it worked well, as Jhum cycle was ranging from 20 to 30 years, but with the increase in size of population and rise in their demand for land, the Jhum cycle has been reduced to 5-6 years. Jhum cultivation has caused serious land degradation and ecological problems. As reported by the Indian Council of Agricultural Research (ICAR) for North-Eastern Hill Region, about 14.66 lakh hectares has been affected by shifting cultivation in the states of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura. As Jhum requires tremendous amount of physical labour, the cultivators in an effort to divert their minds indulge in singing and dancing. The

dance depicts their life style, mode of cultivation, culture and traditions. The 'working song' serves as an inspiration for them to work harder (Tripura, 2013). There has been specific policy regarding the rights of farmers in north-east India to practice shifting cultivation (Sule, 2006).

Rubber is an impotent commercial crop in India. Kerala is the largest producer of natural rubber and Tripura is the second largest producer of natural rubber in the country, which is of superior quality. In Tripura, rubber plantation was introduced on trial basis by Forest Department, Government of Tripura during 1963. In 1982, Tripura Rehabilitation Plantation Corporation Ltd. was formed with the main objective of economic rehabilitation for the shifting cultivators and tribal marginal farmers through rubber plantation. Rubber Board started implementing Group and Block Plantation schemes from 1992 and thus a revolution set off. Recently Rubber Mission has been set up by Government of Tripura for better co-ordination of all the agencies involved in taking up plantation and marketing of rubber. Rubber has now attained the status of the most important plantation crop in Tripura not merely because of its commercial viability, but due to its innovative application for economic rehabilitation of shifting cultivators, which delivered with a great degree of success in a manner hitherto not experienced in any rehabilitation package on un-arable uplands (Zee News, August 31, 2012). Tripura Government wants to wean away tribals from jhum and settle them in rubber cultivation as slashing and burning forests are destructive practice (Business Line, Nov. 22, 2005).

Now, Tripura has registered a much lower productivity in rubber production even in terms of national average, despite being the second largest natural rubber producer in the country. Tripura has the potential for rubber cultivation in 76,637 hectare of land. But so far only 61,082 hectares is brought under rubber cultivation, which is only eight per cent of the total area of the state (The Times of India, April 19, 2013). Paddy cultivation has increased and its yield is 1020 kilogram per hectare in Jhum cultivated field in hilly tracts of Tripura. The State Government

had been trying to bring indigenous tribal population to settle them in agriculture instead of their century old Jhum cultivation (Sunil, 2012).

Traditionally, the village community owns/controls the forest land and decides on the rotational cultivation pattern to be adapted. The community cultivates land for its livelihood while practicing conservation they are not taking care of the ecological balance (Sule, 2006). Rubber has already started influencing the socio-economic profile of rural Tripura. The state government, right from the beginning has given more importance to rubber plantation. The Rubber Board has been implementing a number of programmes to enhance the area coverage of rubber plantation in the state. The state government agencies like Tripura Forest Development and Plantation Corporation Ltd. (TFDPC) and Tripura Rehabilitation Plantation Corporation Ltd (TRPC) also contributed significantly for the rehabilitation of jhumias in rubber cultivation in the state.

The area coverage under rubber plantation has shown an increasing trend during the period from 1976-77 to 2011-12 in the state. It has rapidly increased from 574 hectares in 1976-77 to 3,590 hectares in 1981-82 then increased to 10,085 hectares in 1986-87. It was further increased from 17,860 hectares in 1991-92 to 61,082 hectares in 2011-12 (Rubber Board, Tripura). The Rubber Board is providing both technical as well as financial assistance for promotion of rubber cultivation in the state. The state government agencies like TFDPC Ltd., TRPC, *Tripura Tribal Areas Autonomous District Council (*TTAADC) etc. are also putting their own efforts for expansion of rubber cultivation in the state. The Rubber Board, Tripura Forest Development and Plantation Corporation Ltd., Tripura Rehabilitation Plantation Corporation Ltd., the North Eastern Council and the state government are working together for the rehabilitation and upliftment of the tribals in the state.

Deforestation and forest degradation represent a significant fraction of the annual worldwide human-induced emission of greenhouse gases to the atmosphere. It is the main source of biodiversity losses and the destruction of millions of people's

homes. Despite local/regional causes, its consequences are worldwide. Shifting cultivation has been widely practised by hill communities in Asia, Africa, and Latin America since the Neolithic period (13,000 to 3,000 BC). In this shifting cultivation method, land is widely used to cultivate crops for a few years, then allowed to lie fallow for several years after which it is reused again. The practice is characterised by a cultivation phase, which involves clearing of primary or secondary forest and crop cultivation for one to three years, followed by a fallow phase, during which cultivation is suspended to allow recovery of soil fertility. It is considered as a major driver of deforestation. Shifting cultivation throughout the tropics is largely a subsistence activity practised in areas with few alternative options and is a practice that is likely to continue. It fallows have been shown to recover vegetation faster in terms of basal area, regeneration, and accumulation of species than other human-modified and subsequently abandoned lands such as pastures, agro forestry sites, and plantations (Karthik et al., 2009).

The agricultural production systems in the hilly areas differ from the plough cultivation in the plain areas. In one side highly modern agricultural cultivation practices flourishes while on other side age old agricultural practices dominates. Dualism in agriculture still persists in the hilly areas. This system of dualism determines the standard of living of people. There are two distinct agricultural production systems in the hilly areas, viz., settled and shifting cultivation. The tribal people practice the shifting cultivation which is locally known as jhuming and this system is the first step of transition from hunting to food production system. Usually the settled cultivation is practiced in foothills and terraces' in gentle slopes. The production behaviour in both the system is more or less similar as crop mixtures are grown in both the production system. The productivity under settled cultivation is higher than that of shifting cultivation (Kalita & Bhowmick, 2012).

Slash-and-burn agriculture often follows soon after the natural tropical forest has been commercially logged, mostly because the network of logging roads that is constructed allows access to the

otherwise almost impenetrable forest interior. Slash-and-burn agriculture may be facilitated by government agencies, through the construction of roads that are specifically intended to help poor, landless people convert the forest into agricultural land.

In other cases, it occurs in the absence of logging and planned roads, as a rapidly creeping deforestation that advances as poor people migrate to the forest frontier in search of land on which to grow food. It is an agricultural system in which a person uses a piece of land, only to abandon or alter the initial use a short time later. This system often involves clearing of a piece of land followed by several years of wood harvesting or farming until the soil loses fertility. Once the land becomes inadequate for crop production, it is left to be reclaimed by natural vegetation, or sometimes converted to a different long term cyclical farming practice. This system of agriculture is often practised at the level of an individual or family, but sometimes may involve an entire village (Shifting cultivation, 2014).

Most families grow for subsistence purposes, just to eat and live. In other cases, the crops grown by each village vary by local customs and taste. The predominant crops include upland rice in Southeast Asia, maize (corn) and manioc (cassava) in South America, and sorghum in Africa. Yams, sugarcane, plantain, and vegetables are grown in some regions (Agriculture, 2014).Shifting agriculture is an adaptation to tropical soil conditions in regions where long-term, continued cultivation of the same field, without advanced techniques of soil conservation and the use of fertilizers, would be extremely detrimental to the fertility of the land. In such environments it may be preferable to cultivate a field for a short period and then abandon it before the soil is completely exhausted of nutrients.

Shifting cultivation in a variety of forms has been practiced successfully and safely for centuries, fully adapted to the specific climatic conditions prevailing in a given forest region. Social change in Africa over the last few decades has been characterised by increasing population densities; the expansion of areas under cultivation, largely through the introduction and expansion of cash cropping; increasingly difficult access to land; and the

increasing participation of small communities in regional, national and international markets. Changes in agricultural techniques can be understood in this framework, for what has been happening in Africa is that these techniques have been adapting fast to the changing circumstances, in particular the decreasing availability of land.

In Liberia, an alternative way of controlling the amount of land available to each taungya farmer was introduced by the Forestry Development Authority (FDA) in 1974. Land preparation, up to and including the phase of burning, is carried out by the FDA, and then the farmers come in to plant one rice crop at a nominal fee. A fee is charged to control the acreage given to each household and to help retain part of the cost for land preparation. The main benefits are reported as reduction in the cost of reforestation, as farmers perform the initial task of tending the plantations, and an increase in the production of upland rice through an increase in cultivated acreage and improved seeds (Forest Department, 2014).

Regardless of past human influence on Africa's tropical forests, the important question of whether or not the practice is actually unsustainable today still remains (Ickowitz, 2004). It is practiced in the thickly forested areas of Amazon basin, topical Africa, parts of south East Asia and north east India. Farmers clear a plot of land by felling trees and burning them. The ashes are mixed with the soil, and crops like maize, yam, potatoes and cassava are grown. When the soil fertility decreases, the farmers shift and clear a fresh patch of land for cultivation. Production in this type of farming is low, as the farmers do not use fertilizers and other inputs. It is known by different names in different parts of the world.

In 1950, the central African forest region subjected to shifting cultivation was composed of 92 percent forest and that in 1990 the forest covers had been reduced to 80 percent of the total simulated land area. The results of the simulation showed that with the current level of technology and consumptive habitats, shifting cultivation under projected rates of rural population growth would increase the annual rate of deforestation to 1.3

percent, converting 94 percent of the land area into cropland, fallow and secondary forests by 2050. At that time, only 40 percent of the potential above-ground biomass carbon (i.e., assuming all the simulated area is occupied by dense forests) will remain, compared to 85 and 74 percent in 1950 and 1990, respectively (Zhang et al., 2002).

Nobody really knows how many people depend on the form of land use called shifting cultivation for their livelihoods. It has been estimated that globally it could be up to one billion. They live in tropical and subtropical countries and belong to at least 3,000 different ethnic groups. In Asia, around 400 million people live in and with the forest, and most of them practice some form of shifting cultivation. The concrete manifestations of what is commonly called shifting cultivation are as diverse as the people who practice it, and it is therefore a difficult concept to define. During the 1960s, about 12 million households in South and Southeast *Asia* were involved in *shifting cultivation*.In Asia, the majority of the people practicing shifting cultivation belongs to ethnic groups that are generally subsumed under categories like ethnic minorities, tribal people, hill tribes, aboriginal people or indigenous peoples.

The popular prejudices against shifting cultivation common in countries are conflated with other negative attributes ascribed to indigenous peoples throughout the region: that they are backward, primitive, a hindrance to national progress, disloyal to and a security problem for the state etc. In the age of global climate change resource use and management practices that rely on the use of fire are coming under increased pressure. This is particularly the case with shifting cultivation. In the name of forest conservation and development, colonial and post-colonial governments in Asia have since more than a century devised policies and laws seeking to eradicate shifting cultivation (Erni, 2009).

In Bangladesh, extensive and shifting agriculture, due to an increasing demand for food and fodder is the main driver of drastic deforestation and land degradation. In the case of eastern Bangladesh, a drastic reduction of the shifting cultivation cycle due to high population growth is contributing to signiûcant

deforestation. This is also resulting in negative downstream effects on the environment creating a cycle of poverty that particularly affects rural farmers. The people in the uplands of eastern Bangladesh have been practicing shifting cultivation from time immemorial and it is closely related with their socio-cultural identity. Forest loss and degradation in the upper streams of watersheds, in particular, do not only inversely affect the socio-economic activities of local people, but also negatively inûuence downstream life and production, e.g., frequent and serious ûooding, rapid siltation and deposits of gravel in delta areas which also have negative effects on agricultural productivity (Rahman et al., 2011).

Currently, fewer shifting cultivators can allow for long fallow periods and regeneration of forests because they do not control large enough areas due to population densities, political pressures, and economic demands in tropical regions. The historical system of shifting cultivation, which can be sustainable in areas with low population densities and large land areas, is rare and has mostly been supplanted by agricultural intensification (Lininger, 2010).

The current practice of shifting cultivation in eastern and north eastern regions of India is an extravagant and unscientific form of land use. The evil effects of shifting cultivation are devastating and far-reaching in degrading the environment and ecology of these regions. The earlier 15–20 year cycle of shifting cultivation on a particular land has reduced to 2–3 years now. This has resulted in large-scale deforestation, soil and nutrient loss, and invasion by weeds and other species. The indigenous biodiversity has been affected to a large extent. The people of eastern and north-eastern region practice shifting cultivation on hill slopes. Shifting cultivation is an age-old practice, particularly being practised in the Eastern Ghats. Orissa accounts for the largest area under shifting cultivation in India. Shifting cultivation is locally known as the podu cultivation.

About 5298 sq km area annually is under this primitive agriculture practice. Many festivals and other such rituals revolve around the podu fields, because the tribal's view podu cultivation

not just as a means of their livelihood, but as a way of life. Crocklin (1961) described shifting cultivation as use of human labour, use of stick or hoe, short periods of soil occupancy alternating with long fallow periods. It served as the economic mainstay. The tribal's were totally dependent on it for survival. It is widely practised in the northeastern states of India. In India about 10 million hectares of tribal land stretched across 16 states is under shifting cultivation. Based on satellite image, Forest Survey of India estimate 1.73 million hectares of land is affected by shifting cultivation.

In the Himalayan region of the north east, the agricultural practice of shifting cultivation also known as jhum cultivation or rotational agro-forestry, prevalent since prehistoric times, is being carried out by traditional tribal societies even today (India Today, 2006). It is being practised on the Revenue, Reserve Forests and protected forests. Although shifting cultivation is a non-viable resource-utilization practice, tribals are still clinging to this primitive practice to sustain themselves and their families mainly due to non-availability of timely employment avenues. The mountain eco-systems of these regions with shifting cultivation practice have to be made ecologically sustainable.

Formulating an eco-development plan for the region for environmental sustainability, could consider completely replacing agricultural practice with farm forestry. Agricultural practices are at the cost of loss of biodiversity resources; estimates indicate that one unit of energy in agronomic production costs loss of greater energy from the forests (Ranjan & Upadhyay, 1999).Shifting cultivation is practiced in some form or other in almost all the tribal areas of Orissa.A number of tribes inhabiting different areas of the state are practicing shifting cultivation. These tribes are Bondo, Didayi, Koya, Gadaba, Paroja, Soura, Kutia Kondha, dongaria Kondha, Kandha, Parenga, Jatapur, Juang, Paudi Bhuyan, Erenga Kolha etc. The problem of shifting cultivation is perhaps most acute in Orissa than any other State in the country. Although at present an accurate data on the areas under shifting cultivation is not available, yet some rough estimates have been made (Dash, 2006).

Impact of block (Rubber) plantation in Tripura

Jhum cultivation is a local name for slash and burn agriculture practiced by the tribal groups in the northeastern states of India like Arunachal Pradesh, Meghalaya, Mizoram and Nagaland and also in the districts of Bangladesh like Khagrachari and Sylhet. This system involves clearing a piece of land by setting fire or clear felling and using the area for growing crops of agricultural importance such as upland rice, vegetables or fruits. After a few cycles, the land loses fertility and a new area is chosen. Most farmers make huts near their land for shelter. Jhum cultivation is most practiced on the slopes of hills in thickly forested landscapes. The cultivators cut the treetops to allow sunlight to reach the land. They burn all the trees and grasses for clean and fresh soil.

It is believed that this helps to fertilize the land, but can leave it vulnerable to erosion. Later seeds and crops are planted. Plants on the slopes survive the rainy season floods. Looking at all the effects, the government of Mizoram has launched a policy to end Jhum cultivation in the state. Shifting cultivation is a pernicious activity. It results in soil erosion and degradation of forests. It is a common land use in many states and particularly so in the North-Eastern region of the country. There are varying estimates of areas affected by shifting cultivation by different agencies. The area affected by shifting cultivation in the region was reported to be 3.81 million ha by a Task Force on shifting cultivation (1983). Other such estimates are 2.80 million ha by Northeastern Council (1975) and 7.40 million ha by FAO (1975).

In 1984, the Central Forestry Commission estimated that 6.7 million hactor of cultivable area was affected by jhum in India. According to the Task Force on Shifting Cultivation, as many as 70,000 families in Manipur practiced jhum cultivation bringing 90,000 ha under this method of cultivation annually. The continuance of jhum in the state is closely linked to ecological, socio-economic, cultural and land tenure systems of tribal communities. Since the community owns the lands the village council or elders divide the jhum land among families for their subsistence on a rotational basis.In the hilly areas of Manipur, shifting cultivation is widely practiced, with settled terrace

farming in foothill or low slope areas, above the adjacent rivers and streams.

The Registrar General of India and the Principal Chief Conservator of Forests, Manipur, reported an average 40,000 hectares in the 1990s, while the Agricultural Census, Department of Agriculture, Government of Manipur, reported an average of 90,000 hectares and the Directorate of Economics & Statistics reported around 44,000 hectares in the same period. The most widely quoted estimate is that of the study by the 'Task Force on Shifting Cultivation, Ministry of Agriculture, according to which, 90,000 ha are cultivated by 70,000 families in the state. Much of the area under rice in the hills, and about 40 per cent of it in the state as a whole is under jhum cultivation.

In Manipur the practice of jhum cultivation is as old as its civilisation and still continues unabated because the people as well as the government are yet to realise the environmental impacts of jhum cultivation. It is a hilly region with large portion of its geographical areas being covered by forests. The topography of the region apart from fertility of the soil can be attributed as one of the factors for widespread practice of jhum cultivation. The sloppy hills, fertile soil and accessibility to the forests are an ideal site for jhuming not to speak of its productivity (Khongsai, 2014).

Shifting cultivation in Mizoram is an integral part of the socio-cultural life of Mizos. With increase in population the jhuming cycle has shortened considerably and the productivity of land has fallen with devastating impact on the environment. The Govt. of Mizoram in 1984 launched a programme called New Land Use Policy with an objective to put an end to the practice of jhuming by providing alternative land based permanent occupation and stable income to the families practicing jhuming in rural areas thereby raising their standard of living. Assistance is provided for various trades or occupation for a period of three years. The programme is operated on yearly basis (*Garbyal, 2009).*

Jhum burning is always a busy period in a typical Mizo village. Traditionally, the entire community is involved, and every able-bodied member is expected to be available. All members of the

village will prepare for the different responsibilities assigned to them. This may include speedy preparation of fire lines in strategic locations. Now-a-days, the community seeks the help of the local government, Fire Fighting Authority to control forest fires. Subsequently, the Village Fire Fighting Authority and the government may conduct an enquiry to determine the causes of fires and try to identify the culprits, if any. Increasing incidence of jhum-related forest fires has prompted the Mizoram government to introduce the Mizoram (Prevention & Control of Fire in the Village Ram) Rules 1983 for effective prevention and control of forest fires. It has set up fire prevention committees at the village (headed by the Village Council President), district (headed by the Deputy Commissioner) and state (headed by the Chief Minister) levels, each with distinct duties and functions (Darlong, 2000).

Under its New Land Use Policy, Mizoram is laying emphasis on ending the age-old jhum shifting cultivation and has allocated Rs.410 crore in budget to enable about 30,000 more tribal families to shift to stable farming. Already 90,139 farmers families have benefited under the State Government's flagship scheme and 29,861 more families would be benefited during this financial year. The Planning Commission has appreciated the Mizoram government for launching such a unique scheme. The NLUP's success could be a model for other Northeastern States. The Mizoram government initiated its New Land Use Policy in January 2010 to put an end to the age-old shifting or slash-and-burn method of cultivation, and help the tribal farmers to shift to stable cultivation of various cash crops.

In jhum, bamboo forests are cut, burnt, cultivated, and then rested and regenerated for several years until the next round of cultivation, making bamboos vanish and return on the slopes in a cyclic ecological dance of field and fallow. While Cheraw is cherished by all, jhum is actively discouraged by the State and the agri-horticulture bureaucracy. Although jhum is a regenerative system of organic farming, Mizoram, the first Indian State to enact legislation to promote organic farming, is now pushing hard to eradicate jhum under its New Land Use Policy.

Labeling jhum as unproductive and destructive of forest cover, policy makers and industry now promote settled cultivation and plantations, such as pineapple and oil palm, claiming they are better land use than jhum. Oil palm, rubber and horticultural plantations are monocultures that cause permanent deforestation, a fact that the India State of Forest Report 2011 notes to explain declines in Mizoram's forest cover (The Hindu, 2014).

While the area of jhum cultivation in Mizoram decreased by 36 per cent that of wet rice cultivation increased by 28.4 per cent during 2010. While the area of shifting cultivation in 2010-2011 has decreased from 44,947 hectares to 28,562, the area of wet rice cultivation has increased from 9,446 hectares to 12,130 hectares. At present, Mizoram produces only 25 per cent of the total rice consumption. Mizoram produces only 44,950 metric tonnes of rice, against the total consumption of 1,80,000 metric tones (The Shillong Times, 2011).

Slash and burn to sustainability project, in partnership with the government of Nagaland, aims to address land degradation in shifting cultivation locations in three districts of Nagaland through participatory planning, generating awareness, building institutions and supporting integrated farm development that enable sustainable land and ecological management. Horticulture, agro-forestry plantations and soil and water conservation measures have improved vegetation cover by over 2,000 hectares of land in project areas. Incomes of 4,400 women have increased by 10 percent as a result of sale of organic farm produce from jhum fields. Average incomes of 5,008 households have increased by 15-20 percent annually through access to existing credit facilities, agriculture revolving fund and sales from increased yield of jhum fields.

The jhum cropping phase has increased from two to three years in pilot jhum farms as a result of timely introduction of soil and water conservation measures. Informed decision is making by traditional institutions on land management systems through participatory land use plans (PLUP). Formal codification of land use has led to more effective participatory planning and management. It has helped to address conservation challenges

including rampant burning of jhum fields, protection of forest and water bodies, land degradation, etc (Slash and Burn to Sustainability, 2014).

The Tripura government has targeted to achieve paddy cultivation in more than 17,000 hectares of hill land under improvised Jhuming method in 2011-12. The traditional method of Jhum had been banned in the state few years ago and the government had introduced various rehabilitation packages for the hardcore Jhumias. Despite sincere effort and initiative for alternative sustainable livelihood opportunities, still about 25,000 primitive tribal people are practicing Jhum but we are able to motivate them to give up the traditional method, which reduced the environmental degradation as well as increased the productivity (The Shillong Times, 2011). Shifting cultivation has been identified as one of the main human impacts influencing biodiversity in Tripura. Over the last few years a new class of shifting cultivators has emerged that has adopted non-traditional forms of jhooming, which have been responsible for the loss of biological diversity in the state (Gupta, 2000).

The people of Tripura were mainly dependent on agriculture for their livelihood and the aborigines of the princely state were primarily depended on the shifting cultivation, commonly known as Jhum cultivation. It is a very primitive, uneconomic and exhaustive form of cultivation. Plough cultivation was unknown to the tribal's living in the interior of the state. Only the Bengali and Manipuri cultivators along with some tribal communities living in the plain lands and in the border land of Hill Tipperah were acquainted with the plough cultivations before partition. As J. B. Ganguly had mentioned that, in the year 1955, there are 25,000 Jhumia families in Tripura and the total area of land under shifting cultivation was 16,00,000 acres, i.e. about 60 percent of the total area of the territory.

On the basis of the report of Census of India 1961, S. Dev Varman opined that, while the total number of tribal population in Tripura in the year 1961 was 3,60,070, the number of tribal people depending on Jhum cultivation were 1,75,000, i.e. half of the tribal population were engaged in Jhum cultivation. Following

the partition of India large number of Bengali displaced persons immigrated into Tripura for settlement. Most of the immigrants were rehabilitated in rural areas where tribal's practicing shifting cultivation was also being settled in permanent colonies. This created its own problems of adjustment, as there was pressure on land (De, 2012).

The Reang tribe in Tripura, which practised shifting cultivation and still does to an extent, faces serious problems with the state government implementing measures to turn them into settled cultivators. Government programmes have widened social disparities among the Reangs and brought in alternatives that cannot sustain them round the year. It argues that shifting cultivation, which aims at self-sufficiency, is still remunerative compared to other forms of cultivation if traditional forest and land rights are restored to the tribal people (Sengupta, 2013).

Shifting cultivation has traditionally been practised in Meghalaya for generations. This has created a mosaic of forested and *jhummed* areas, resulting in disrupted connectivity of forests, fragmenting populations of wild animals and increasing incidents of human-animal conflicts. The problem is most acute in the Garo Hills; three quarters of the state's total number of households involved in shifting cultivation, belong to the Garo hills. As a result of *jhum* cultivation which involves slashing and burning of forests, rich wild habitats have been fragmented, affecting all kinds of wildlife.

Some reports indicated a marked decrease in the number of families practising jhum cultivation in Meghalaya, but it was difficult to assess its success due to lack of reliable data. The implementation of the schemes to control jhum cultivation should not be a water-tight compartment, but has an integrated approach. Barring the decrease in the jhuming cycle from 20-30 years to 3-6 years, this method of cultivation is arguably the one that is most suited in the hills of Meghalaya and perhaps in the whole of north eastern region. The present allocation of funds of Rs.10,000 per hectare for treatable areas was not sufficient for the required treatment because of the terrain and rainfall conditions in Meghalaya (The Times of India, Feb 1, 2008).

Arunachal Pradesh has made a significant progress in gradually doing away with the age-old practice of jhum cultivation, which degrades the environment. In line with the Centre's stress on conventional methods of cultivation, the state with a 72 per cent forest cover had been able to reduce the total area under jhum cultivation from 1,10,000 hectares to 84,000 hectares in the last 10 years. About 8.4 lakh metric tonnes of biomass gets lost due to burning of trees resulting in a huge emission of carbon monoxide, carbon dioxide, nitrous oxides and other gases. The emission has been reduced by taking up rice and maize cultivation in terraces.

The harmful effects of jhum cultivation included rapid soil erosion due to deforestation of hill tops and slopes and high runoff velocity and siltation of reservoirs, rivulets and valleys. The harmful effects resulted in the rapid decrease of jhum productivity due to removal of top soil by runoff water and very little time to recuperate soil fertility due to reduced jhum cycle. Sixteen districts encompassing the eight Northeastern states, including West Kameng and East Siang districts in Arunachal Pradesh, are among the recently-identified 100 most climate-sensitive districts of the country.

Slashing or felling down of trees, herbs and shrubs for jhum cultivation reduces oxygen generation and burning of them pumps harmful carbon-monoxide, nitrous oxides and many other gases into the air. The state government's attachment of top priority to agriculture, horticulture and allied sectors, would add to the national food productivity and help achieve 6.5 per cent annual growth by the end of 12th Five Year Plan set by the Agriculture Ministry (The Times of India, Aug 9, 2013).

The practice of the shifting cultivation is a major occupation for the people of Arunachal Pradesh. Some people have shifted from village to urban areas due to varied reason but majority of people do reside in the remote rural villages of the state. The only means of livelihood is to practice this kind of agriculture. Jhumming is very closely associated with the culture and tradition. The Jhumias have been depending on their Jhum and as they have cultivated many economical plants which may

include vegetables, medicinal plants, spices, taroos and yams, grain etc. They practice rearing of pigs, cows, goats etc. The fodder and feeds of these animals also comes from the field thereby decreasing pressure on pastoral land. Hence it is linked to their economy (Murtem et. al, 2008).

Recently, under National Afforestation Programme, problem of jhum cultivation was given special focus. Mid-term appraisal of Eleventh Five Year Plan mentions that as per report of Ministry of Rural Development, only 6.5 per cent of households have been reportedly engaged in shifting cultivation in the country. The percentage of area under jhum cultivation is 9.5 in North-Eastern region, while it is 0.5 per cent for central tribal belt (Jhum cultivation, 2011).

1.2 Statement of the Problems

Although the North Eastern Region lies far outside the traditional rubber growing zone, the agro-climatic conditions are unique and tropical features are experienced in most parts of this region owing to its low elevations, exposure to monsoons and other moderating influences. The people of Tripura were mainly dependent on agriculture for their livelihood and the aborigines of the princely state were primarily depends on the shifting cultivation. It is a very primitive, uneconomic and exhaustive form of cultivation. Plough cultivation was unknown to the tribals living in the interior parts of the state. Only the Bengali and Manipuri cultivators along with some tribal communities living in the plain lands and the border land of Hill Tipperah were acquainted with the plough cultivations before partition.

Tripura, a hilly State in the North-Eastern region of India, is the homeland of different tribes. Altogether there are 19 (nineteen) tribes in the State. They could be divided into 2 (two) major groups as (i) aboriginal and (ii) immigrants.hum cultivation was the primitive source of income for the tribal's but the situation has changed when jhum cultivation was restricted by the government. So, jhumias of the state have placed rubber plantation in their heart and made it the major source of income since its inception about 45 years ago. It has become a popular

plantation in Tripura, providing a lot of employment opportunities in the rural areas. It acts as an alternative source of income for jhumias.

The first phase of TRPC project for creation of 1200 hectare of rubber plantation for 800 shifting cultivators was supported by bank loan under NABARD refinance scheme channeled through a consortium of three banks viz., State Bank of India, United Bank of India and Tripura Gramin Bank. The TRPC has received a loan amount of Rs. 173.82 lakh under the World Bank Aided Rubber Project (WBRAP) for raising 1000 hectare of rubber plantation for tribal small farmers owning un-arable uplands as against which 924 hectare of rubber plantation was created for 720 beneficiaries during 1993-94 to 2000-01. The TRPC promotes formation of Rubber Producers Societies with beneficiary families as its members, one for each plantation centre. The TRPC also organises training programmes on rubber cultivation and its management including tapping and processing for beneficiaries (Economic Review of Tripura, 2008-09). The Tripura Rehabilitation Plantation Corporation of the Tripura government played a crucial role in weaning tribals from shifting cultivation and making them involved in rubber plantation. Tripura could march ahead in rubber production because of its focused policy approach to this sector. The focus of the Rubber Board has shifted from traditional rubber-producing belts like Kerala and Tamil Nadu to the northeast as far as plantation is concerned.

The TTAADC under the central aided Jhumia Resettlement Scheme is motivating the hill people to settle down in rubber cultivation. The council has provided each family one hectare of land and paying wages at the rate of Rs. 87 per day for developing the garden which continued for seven years. Till date TFDPC has rehabilitated 5000 tribal families. These families have a monthly earning between Rs.10,000/- to Rs.15,000/- from per hectare of rubber plantation. Again, the TRPC has raised 5094 hectares of rubber plantation rehabilitating an additional 3977 tribal families permanently.

Locals visualize both business and employment opportunities from the rubber based new industries.Moreover, hundreds of

small rubber wood based factories are mushrooming throughout the state. Future expansion and growth of natural rubber cultivation in India lies in the north-eastern states. This region is agro-climatically most suitable for rubber cultivation and it is cultivated in an estimated area of about 72,000 hectares. Out of which, Tripura and Assam have accounted for 46,600 and 19,000 hectares respectively. Natural Rubber based activities have already been declared as the thrust sector because of its special significance for the state. Added benefits under the Tripura Incentive Scheme are being provided for setting up of natural rubber based industries.

So far, a few studies have been done on the impact of rubber plantation in economic development of the state. Rubber board and other agencies also did various surveys on impact of rubber plantation on socio-economic life of rubber growers and tappers. But studies on Rubber plantation as a technique for jhumia rehabilitation and its impact on their level of living are scanty. Therefore, this area needs further empirical research using different indicators and method of analysis.

1.3 Review of Literatures :

A brief review of studies on different aspect of rubber cultivation undertaken in different parts of the country vis-a-vis in other countries of the World is presented in this section.

Ushadevi et al. (2001) in their project on Socio-economic profile of rubber tappers in small holding sector have noticed that the decline in the world rubber economy and trade liberalization policies of the nation have drastically affected the price of the natural rubber in India. This, in turn, adversely affects the income of small-scale rubber growers and the socio- economic conditions of rubber tappers. Moreover, disappointed with the decreasing remuneration, growers are reluctant to adopt better techniques of rubber cultivation and tapping. The subsequent fall in the productivity growth increases the gravity of the crisis.

Gopal (2004) was carried out a project on the rubber tappers monthly wage issue and the impact of the collective agreement to analyse different aspect of monthly wage fixation and living

conditions of tappers. He concluded that the legitimate quest for a guaranteed stable level of income for rubber tappers in Malaysia may have been delayed unduly because the solution was thought to lie in a monthly wage scheme.

Mishra (2005) in his paper titled Growing discontent of adivasis in Assam has examined the problems of tribals in Assam. He found that the local factors pushing the adivasis of Assam into poverty are manifold. Alcoholism is a major drain on income which forces women and children's mobility outside their village in search of work, resulting in high drop out rate among the school going children. The community has poor access to anti-poverty, social security and scholarship schemes and is deprived from agriculture extension services. There are instances in rural Assam where adivasis are affected more severely by natural disasters.

Rantala (2006) concluded that the wood production potential of rubber in northeastern Thailand can on suitable sites be comparable to that in the South. The highest wood production potential among the areas of present study lies in Nong Khai, where environmental conditions, apparently the rainfall, appear to favour rubber-growing. Unfavourable climatic conditions would more easily affect the latex yield than the wood production capacity of rubber trees. Growing rubber for timber could have a potential in northeastern Thailand in particular, if the market prices for rubber wood would increase, thus making combined latex-timber or even timber-only production more profitable.

Talukdar (2007) in his paper on Tripura taps the rubber economy evaluated the growth of rubber plantation in Tripura. He found that Rubber Board and the Department of Tribal Welfare had taken a lot of initiation for expanding the rubber plantation in the state.*Ananthanarayanan (2008) in her paper on* Northeast India's 'jhum' cultivation under stress found that unlike many other parts of India, people in rural hills of North-East India mostly engage in pre-capitalistic activities with surplus produce sold in nearby bazaars. Women often played a dominant role especially in deciding the distribution of the produce and selling of the surplus.

Kaiyoorawong et al. (2008) in their project report on Thailand: Rubber plantations against forests, people and health has observed that the first rubber trees brought from Malesiya and planted in Thailand in 1899. Later, rubber plantations was included in a national scheme of integrated plantation, where rubber trees were grown in combination with indigenous plants and other fruit trees and food plants. Such pattern allowed farmers not only to harvest the rubber but also to collect vegetables, wild animals, herbs, fuel wood and wood for construction.

Shrivastava (2009) in his paper has examined the growth of rubber plantation in Tripura. He found that the TTAADC under the central aided Jhumia Resettlement Scheme is motivating the hill people to settle down in rubber cultivation. The council has provided each family one hectare of land and paying wages at the rate of Rs 87 per day for developing the garden which would continue for seven years.

Giroh et al. (2009) in their paper analysed the inefficiency model that education, training and gender were found to have significant effect on tappers efficiency at one percent level of significance.Rajasenan (2010) in his project report has examined the employment opportunity in rubber plantation. He observed that the institutional role played by government was very significant during the early days. The settlement of workers also resulted in the participation of women in large numbers. The report discusses the livelihood assets of plantation workers according to the components identified by USAID and UNDP for a sustainable livelihood and for poverty alleviation.

Sarkar (2010) in his paper on Revolution of Jhumias through rubber plantation concluded that rubber plantation has changed the life style of jhumia people of Tripura. Both economic and social conditions of tribals are better off after rubber plantation and now they are able to maintain a good standard of living.

Shanley et al. (2011) in their paper on Brazil's social movement, women and forests: A case study from the National Council of Rubber Tappers discussed the evolution of the roles of Brazilian women within one of the most prominent organizations of the

Amazonian social movement i.e. the National Council of Extractives' Populations. Their work across sectors, cultivation of ties with the State, capacity building and acknowledgement of women's cultural connections to forests, provide a strong foundation for an increasing role of Amazonian women to promote sustainable forest management and conservation.

Gonçalves (2011) evaluate the performance of 15 clones of the IAC 500 series of Hevea brasiliensis, developed at Instituto Agronomico, over a 12-year period, in the northwest region of Sao Paulo State, Brazil. The 15 new clones evaluated are primary clones obtained from selected ortets within half-sib progenies. The clone RRIM 600, of Malaysian origin, was used as the control.

Dararath et al (2011) found that the government of Cambodia has implemented several new policy instruments established under the 2001 Land Law, especially Social Land Concessions (distribution of state private lands to the poor) and Economic Land Concessions (long-term contracts for plantation-type developments on state private lands). The latter relates especially to forest-covered areas of the State asset. For this study, surveys were conducted in Chamkar Andong, Krek and Tumring rubber plantations to assess the livelihood of local populations and the impacts of different forms of land conversion. The results show significant changes in people's livelihoods from forest dependence to sell their labor.

Overbeek et al (2012) found that over the past two decades, industrial tree plantations, typically large-scale, intensively managed, even-age monoculture plantations, mostly exotic trees like fast-growing eucalyptus, pine and acacia species, but also rubber and oil palm, all destined for industrial processes to produce paper, palm oil and rubber products, increased their area in the global South about fourfold.

Viswanathan (2012) provides a comparative perspective on the performance of smallholder rubber farm livelihood systems based on case studies of two regions in India and Thailand. The analysis of the emerging farming systems in the two countries rubber farms reveals that the rubber monocrop system is viable, provided prices remain remunerative and primary markets

efficient. Findings further indicate the dominant contribution of rubber production to the gross household income of the rubber growers in the integrated farming systems. Nevertheless, from a sustainable livelihoods perspective, the socioeconomic significance of the rubber integrated farming systems assumes greater prominence, given the fact that small producers are highly vulnerable to market uncertainties.

Chang (2012) discuss the planning and design of rubber plantation estates in British Malaya in early twentieth century. It focuses on design and planning of laborer housing in these rubber plantations. In this study, the planning of rubber plantation estates is understood in relation to various aspects of tropical production in British Malaya, particularly ecological transformations, malaria, estate sanitation and the management of laborers.

AE Assessment (2012) report "Rubber Plantation in Liberia: An Exploratory Assessment of Living and Working Conditions, with Special Attention to Forced Labor" presented background information on Liberia and the rubber sector, the exploratory methodology that was developed to study working conditions – with special attention to forced labor indicators – on two company-owned rubber plantations in Liberia, and the findings yielded by the study. The findings presented herein are not statistically representative of Liberia or the rubber sector, and this report does not claim to determine the existence of forced labor or the scale of exploitative working conditions in Liberia. The report does provide an overview of working and living conditions of concern uncovered amongst rubber plantation workers on two rubber plantations in Liberia.

Onokpise & Louime (2012) found that in the history of humankind, there are only few reports of a global intentional biological invasion. The deliberate use of anthrax in 2001 was limited to the United States alone. Subsequently this incident resulted in a substantial increase in funding to counter the threat of bioterrorism the world over. Global initiatives to detect and respond to biological threats were suddenly becoming increasingly vital to most nations. Worldwide models and

scenarios were constructed and consequently attacks potentially disruptive to global supply chains and human welfare, remain exceedingly low.

Bhat (2012) in his paper on multiple health problems haunt rubber tappers in Kerala discussed the health problem of rubber tappers. He found that those who are engaged with rubber tapping suffer from both physiological and psychological health issues. Regular rubber tapping has caused health problems among rubber tapping workers. It varies from simple musculoskeletal aches to more serious and complicated structural damage to bone, muscles, tendons and nerves of musculoskeletal system.

Das et al. (2012) in their paper on the Success Story of Rehabilitation of Jhumias in Tripura- AStudy on Baramura-Deutamura Range examined the status and change in shifting cultivation in one of the hill ranges of Tripura, called Baramura-Deutamura hill range, using GIS and remote sensing technique. The recent strategy adopted for jhumia rehabilitation in Tripura was to increase the area coverage of rubber plantation in the state. The rubber plantation project was conceived to provide a lucrative alternative to jhum cultivation. During the Ninth Five-Year Plan, the increasing trend of rubber plantation had become one of the main strategies for rehabilitation of jhumias through the World Bank Aided India Rubber Project.

Chakraborty (2012) in his paper on how rubber cultivation transformed life for Tripura tribals concluded thatin Northeast India especially in Tripura, rubber cultivation is yielding a better quality of life for poor tribals who were previously practicing the jhum or slash-and-burn method of cultivation. Sinha (2012) in his paperexamined the situation of rubber plantation in North-East India. Rubber is grown in the northeast in uplands degraded and impoverished as a result of shifting cultivation. Almost the entire rubber latex in the northeast is processed into sheets for sale as a large majority of the plantations are in small holdings. While most of the rubber planters are found to be happy with the handsome returns from their plantations in Tripura, their women folks often express their desperation in missing the

bamboo shoots, delicious wild vegetables, tuber crops and medicinal herbs delivered by the erstwhile natural vegetation.

Bose (2012) in his paper on Tripura plans to double area under rubber examined the strategies adopted by the government for rubber plantation. He concluded that North Eastern state currently producing approximately 32,000 tonnes of natural rubber is planning to nearly double the area under rubber plantation to nearly one lakh hectare. Tripura is the second largest rubber producing State in the country after Kerala. While Kerala contributes nearly 90 per cent of domestic production, unofficial estimates suggest Tripura's contribution is limited to approximately eight per cent.

Bhaskar (2013) in his paper on Rubber plantation project changes tribal people's lifestyle found that Bulk Rubber Plantation Project (BRPP) taken up by the Rubber Board, Rampachodavaram in collaboration with the Integrated Tribal Development Agency (ITDA) in three phases in Maredumillimandal during1994. This project has brought a significant change in the life style of tribal people, particularly primitive groups like Kondareddys. Tribals who were familiar only with podu and kondapodu cultivation, from which they produced only cereals, are now talking about rubber products and about the prices and marketing of such products.

Sangaralingam (2013) in her paper on Plantation workers face poverty and poison has examined the effects of rubber plantation on its workers. Plantation workers who sustain the nation's palm oil and rubber production are still the poorest and most vulnerable. They receive very poor wages, endure sexual harassment and are the victims of agro-chemical poisoning.

Behm et al (2013) found that non-breeding habitat is selected based on microhabitat characteristics which prevent desiccation, facilitate movement, and provide food and safety. Most amphibians are thought to exist in a metapopulation structure thus dispersal between populations, mostly in the juvenile stage, is incredibly important to maintaining amphibian population persistence.

Ray et al (2014) predict that more areas will become suitable for rubber cultivation by the middle of the 21st century in the Brahmaputra valley, while some areas under current cultivation may become partially unsuitable for this species in the Western Ghats. This result can help planners in deriving a comprehensive rubber plantation policy for India considering the existing land-use scenarios. Govindara et al (2014) conducted in the oil palm plantations following qualitative research methods like direct interviews, focus group discussions and Delphi technique arrive at factors and categories related to the ergonomic issues of workers in oil palm plantations. The study provides better insight into the ergonomic issues of workers in oil palm plantations in the Sabah region of Malaysia.

Ghosal (2014) found that during last decade the rising demand of natural rubber due to, steep rise in the price of synthetic rubber and reduced supply from some previously dominant countries have contributed to a sharp rising trend in the price of natural rubber. The price rise has naturally induced steps for increased production. As the scope of further area expansion in traditional areas are being limited in India, there has been some effort to extend rubber plantation to non-traditional areas, like Tripura, Assam and Meghalaya in the northeastern part of the country.

Josehf and Kumar (2015) in their report concluded that at the going market price, the recorded net operating income and net total income for those with holding size below two hectares and depending entirely on rubber cultivation for their livelihood is likely to be below the poverty line. In the current context, the need to ensure remunerative prices along with measures that contribute to cost minimization, higher yield and improving output quality by revamping the R&D, extension, training and developmental activities of the Rubber Board with a new orientation cannot be over emphasized.

Nair. et.al. (2016) in their project found that efforts should be made to enhance access to healthcare for vulnerable sections of society like unorganized sector workers. Periodic health checkups are a must to improve health among these workers. Awareness of no communicable diseases & the importance of

early diagnosis and continuous treatment should also be increased through health education campaigns.

1.4 Specific Objectives of this Study

- To evaluate the impact of Block (Rubber) plantation scheme on the income, employment, health, educational, socio-political status of different tribal communities of Tripura.
- To ascertain the impact of Block (Rubber) plantation on women empowerment, and
- To identify constraints and suggest policy measures for improvement in income, employment, health, educational and socio-political status of through adoption of Block (Rubber) plantation by different tribal communities of Tripura.

1.5 Methodology of the Study

The present study is an empirical study based on both primary and secondary data. Primary data collected with the help of a well-structured questionnaire from 600 tribal households randomly selected from the six districts of the year 2016 for the block plantation programme implemented by Tripura Tribal Welfare Department. The latest available secondary data has been collected from the various annual reports of the Tribal Welfare Department, Tripura Rehabilitation Plantation Corporation, internet pages, various newspaper clips, journals, various published or unpublished reports and working papers available at different state and national level institutions.

1.5.1 Research Design :

It outlines what the researcher will do right from data collection to the final analysis of the data. Research design of this study is both descriptive and analytical. To analyze the primary data simple statistical tools like percentage analysis, cross tabulation analysis, mean, mode, frequency, bar diagram and graphshave been used. Further, to study the opinion of the rubber growers on different aspect of their level of living, a three or five point Likert-type scales (for example, strongly agree -1, agree -2, undecided -3, disagree-4, strongly disagree-5) will be used.

1.5.2 Data Collection :

Tripura is a small hilly state in the North-East India and about seventy percent of its land area is covered by the hills and forests. Tribals are the main inhabitant in those areas of the state.Block (Rubber) Plantation project Implemented by the T. W. Department of Tripura for improving conditions of tribal's through rubber plantation. There are eight districts in Tripura and Rubber Block Plantation project implemented by the T. W. Department mostly in six districts that is inWest,Sipahijala, North, South, Gomoti and Unokoti districts.A total of 600 tribalhouseholdshave been selected from different Block (Rubber) Plantation (BRP) schemeof these districts.

1.5.3 Sampling Design :

Initiallysix districts where coverage is maximum by the block (rubber) plantation project have been purposively selected on the basis of records, in the first stage. In the second stage, 3 or 4 RPS have beenrandomlyselected (on the basis of secondary data) from each district of the study area. In the third stage, a complete list of tribal's beneficiaries by the block rubber plantation project has been prepared separately for each sample RPS and 150tribal beneficiaries from both of West and Sipahijala districts were selected. Thus, the sample size is 300beneficiaries from these twodistricts. From South 65, North60, andGomoti Districts 115 and Unakoti 60 beneficiaries have been selected during the year 2016 for data collection. Number of samples from each district was selected as per the proportion of total number of beneficiaries of that district by using probability proportion to size (PPS) sampling technique. This has been decided also as per consultation with the officials of Rubber Board.

1.5.4 Questionnaire Design :

A well-structured questionnaire which includes both open ended and close ended questions will be prepared to collect primary date from the sample households. The questionnaires have two sections: the first section relates to demographical

profile of the sample household and the second part relates to the improvement in their level of living through rubber plantation. Data was collected directly from the head of the beneficiaries sample household by personal interview method. The sample respondents were requested to give free and frank answers. Care hasbeen taken to include women respondents in all discussions and interviews. The field study are combined with participant's observation, interviews with individual tappers and group of tappers, rubber growers, village level political leaders and other officials and non-official agencies. This help to a great extent in understanding the living standards of the people.

1.6 Hypothesizes :

The hypotheses formulated for this study are as follows:

- Rubber plantation has improved the overall income, education, and employment health and socio political status of tribal throughthe adoption of rubber (block) plantation scheme.
- Rubber (block) plantation scheme has a significant positive impact on women empowerment in different districts of Tripura, and.
- The tribal communities are encountering large numbers of constraints in adopting rubber (block) plantation, in Tripura.

1.7 Distribution of Samples

The Rubber Board started implementing Group and Block Plantation schemes from 1992 and thus a revolution set off. At present 5 out of 8 districts of Tripura are major adopters of Block (Rubber) plantation scheme. Most of this Rubber Production Society has got their own office and processing place where they prepare and dry the rubber sheets. The every RPS has got President, Secretary, Manager and large number of members. The following table shows distribution of samples in details:

Table No. 1.1 Distribution of Samples

District	Name of RPS	Number of samples	Comments
West District	BasiKobra	40	Collected
	Hathanca	84	Collected
	Rambabu Para	26	Collected
Sipahijala District	Purna Senapati (PS)Para	30	Collected
	Kangalia Choudhury (KC) Para	15	Collected
	Ram Sundar (RS) Para	25	Collected
	Konarban -I	30	Collected
	Kilamura	50	Collected
Gomati District	Darya Bagma	60	Collected
	Kanchani Colony	55	Collected
North District (Dharmanagar)	Bairagibari	60	Collected
South District (Bilonia)	Kamalpur	65	Collected
Unokoti	Rangachara	60	Collected
GrandTotal		**600**	**Collected**

Data collected for the year 2016.

Basic Information of Survey Areas and the Respondents

Basikobra is a RPS of Jampuijala R.D. Block and nearly 12 kms away from Ranir Bazar. Most of the beneficiaries of this RPS belong to Debbarmaa sub-tribe of Tripuri Tribe and Sri. Swadesh Debbarma is the president of this RPS. Before implementation of block (rubber) plantation scheme, all the beneficiary members of this RPS were engaged in jhum

cultivation and as a daily labourer. The Hathanca RPS also belongs to Jampuijala Block and located about 10 kms from Ranir Bazar. All the beneficiaries of this RPSbelong to Debbarmasub-tribe of Tripuri tribe andSri SukramDebbarma is the president of this RPS.Before implementation of block (rubber) plantation scheme, all the beneficiary members of this RPS were engaged in jhum cultivation, daily wage earner and firewood seller.Rambabu Para RPS is also belonging geographically to Jampuijala Block. It is nearly 15 km away from Rani Bazar.All the beneficiaries of this RPS belong to Debbarma sub- tribe and Sri. Rakhal Debbarma is the president of this RPS. The dominant occupation prior to adoption of block rubber plantation was jhum cultivation.

The Purna Senapati Para is a RPS of Bishalgarh R.D. Block. It is nearly 5kms from Madhupur bazaar. Most of the beneficiaries of this RPS belong to Debbarma sub- tribe and Sri. Haricharan Debbarma is the presedent of this RPS.Prior adoption of block rubber plantation, jhuming was their major profession.Kangalia Choudhury Para is also a RPS of Bishalgarh R.D. Block. It is nearly 4kms away from Madhupur bazaar. Most of the tribal beneficiaries of this RPS belong to Debbarma sub-tribe and all the members of this RPS were jhum cultivation and casual labour work before adoption of block plantation. Ram Sundar Para is anther RPS of Bishalgarh R.D. Block. It is nearly 4 kms away from Madhupur bazaar. All the beneficiaries of this RPS belong to Debbarma sub-tribe and Sri. Surja Debbarma is the leader of this RPS and before adoption of block rubber scheme, all the members of this RPS were engaged in jhum cultivation.Konaban is a RPS of Bishalgarh R.D. Block. It is nearly 6 km away from Madhupur bazaar. All the beneficiaries of this RPS belong to Debbarma sub-tribe of Tripuri tribe and Sri. KishorDebbarma is the president of this RPS.Before adoption of block rubber plantationall the member's dominant occupation was also jhum cultivation and firewood selling.Kilamura is a RPS of Charilam R.D. Block. It is nearly 8 km from Bishramganj bazaar. Most of the beneficiaries of this RPS belong to Debbarma sub-tribe and Sri Sushil Debbarma is the president of this RPS.

Prior to adoption of block plantation,all the members of this RPS were engaged in jhum farming and farm labourer.

Darya Bagma is a RPS of Killa R.D. Block. It's distance is nearly 3 kms from Bagma School. Most of the beneficiaries of this RPS belong to Jamatiatribe and Sri Rabatimohan Jamatia is the president of this RPS. Almost all the members of this RPS, before adoption of block rubber plantation,were engaged in jhum cultivationand casual labourer. Kanchani Coloni is also a RPS of Killa R.D. Block. It is nearly 4 kms awayfrom Bagma School. All the beneficiaries of this RPS belong to Jamatia tribe and Sri Nirpal Jamatia is the president of this RPS. All of them were engaged in jhum cultivation and farm labourer before engagement in block (rubber) plantation work.

Bairagibari is situated in Halflong R.D. Block of North Tripura District. Most of the beneficiaries of this RPS are belong to Tripuri tribe and Sunil Tripura is the president of the RPS.Before implementation of RPS all the beneficiaries were engaged mainly in jhum cultivation and firewood selling activities.

Kamalpur RPSis situated in Rajnagar R.D. Block of South Tripura District. All the beneficiaries of this RPS belong to Bhil tribe and Babul Bhil is the president of this RPS. Before implementation of block (rubber) plantation scheme most of the members were engaged in jhuming, tea garden and brick killon worker.

Rangachara is situated in Pathala R.D. Block in Kumarghat sub-division of Unokoti District. Most of the beneficiaries of this RPS belong to Chakma and Reang tribes and Sri Dibanshu Dibang is the president of this RPS. Prior implementation of block (rubber) plantation scheme, they were mostly engaged in jhuming and daily wage earning activities.

1.8 Limitations of the Study

The limitations of the study are as Follows:

1. The study is limited to a cross-section sample of 600 households of the selected sample RPS beneficiaries of different districts in Tripura.

2. It is assumed that respondents are true and honest in expressing their views and have filled the questionnaire honestly and without any bias.
3. Level of satisfaction' is a relative term and in this regards the views of the beneficiaries are not accepted whole-heartedly.
4. Different local languages may create problem while collecting data by personal interview method.

In spite of these limitations, attempt has been made to make the study more scientific and reliable one by testing the reliability of the primary data.

CHAPTER 2

SCENARIO OF RUBBER PLANTATION

- Rubber Plantation in India
- Rubber Plantation in Tripura
- Block Rubber Plantation

Chapter 2

SCENARIO OF RUBBER PLANTATION

Introduction

Rubber plantation is an important commercial crop in North-east India. Hevea brasiliensis is the most important commercial source of natural rubber. It is a native of the Amazon River basin of South America. It was introduced to tropical Asia in 1876 through Kew Garden in the United Kingdom with the seeds brought from Brazil. Rubber cultivation in India had been traditionally confined to a narrow belt extending from Kanyakumari district of Tamil Nadu in the South to Dakshin and Kannada and Kodagu districts of Karnataka in the north and lying in general west of the Western Ghats and parallel to them for approximately 400 km. Later on, it was extended to non-traditional regions including north east India, hinterlands of Coastal Karnataka, Goa, Konkan region of Maharashtra, hinterlands of coastal Andhra Pradesh, Orissa and certain areas of West Bengal.

Rubber plantation is mostly situated on sloping and undulating lands. Rubber plantation can be classified in two ways, immature plantation and mature plantation. Immature plants are those whose age is less than seven years and if it is more than seven year than it is called as mature plant. The rubber tree is sturdy, quick growing and tall. Rubber trees have a well develop tap root and laterals. The bark on tapping yields latex. The young plants show characteristic growth pattern of alternating period of rapid elongation and consolidated development. The leaves are trifoliate with long stalks. Normal annual leaf fall of mature trees known as wintering occurs during the period of December to February. In North-east India, June/ July is the best season for planting and so all preparations should be completed before that period.

2.1 Rubber Plantation in India

The rubber plant is not a native plant of India. Dutch colonialists who also cultivated rubber in their plantations in Indonesia introduced the rubber plant to Kerala, because of its similar tropical climate. Rubber is traditionally grown in India in the hinterlands of the South West comprising the Kerala State and adjoining Kanyakumari District of Tamil Nadu. Kerala is the leader in rubber production among the states of India. More than 90 percent of the Rubber produced in India is from Kerala.

India is the fourth largest producer of natural rubber next only to Thailand, Indonesia and Malaysia, accounting for more than 9 percent of the global output. India ranks fifth in terms of acreage, fourth in terms of production and first in terms of productivity in the world. This sector is dominated by small holdings (0.5 ha or less) contributing to 88 percent of the area and production while there are about one million large holdings (more than 20 ha). The rubber plantation sector employs about four lakh persons directly with a good number of them being women. Being a tree plant, it has tremendous potential in eco-restoration. Rubber plantations also provide a variety of ancillary products like seed oil, seed oil cake, wood and scope for rearing honeybees.

While area under rubber cultivation had relentlessly continued in the traditional regions, especially, Kerala, the need for expanding it to the non-traditional regions became imperative ever since the late 1980s. This was mainly due to: (a) the ever increasing domestic demand for natural rubber from the manufacturing sector (dominated by tyre industry); and (b) the saturation of agro-climatically suitable lands in the traditional regions, especially, Kerala. In the process of expansion, the North Eastern states have been identified as the potential regions due to the agro-climatic suitability of the region. The current scenario of development of rubber plantations in India is quite revealing in that the share of traditional regions (Southern states, dominated by Kerala) had declined from almost 100% during 1960-61 to 82% during 2011-12

The non-traditional regions cultivating rubber include coastal Karnataka, Goa, Konkan region of Maharashtra, coastal Andhra Pradesh, Orissa, the North Eastern states and Andaman & Nicobar Islands.

Table 2.1 : State wise Area and Production of Natural Rubber in India

State/ Territory	**Total Area (ha)**	**% Share**	**Production (Tonnes)**	**% Share**
1. Traditional Region				
Kerala	502740	81.72	783275	91.84
Tamil Nadu	19233	3.13	24020	2.82
Sub Total	521973	84.85	807225	94.65
2. Non Traditional Region				
a) North Eastern States				
Tripura	37846	6.15	18705	2.19
Assam	15890	2.58	4932	0.58
Meghalaya	5331	0.87	3967	0.47
Nagaland	2486	0.4	660	0.08
Manipur	1859	0.3	139	0.02
Mizoram	525	0.09	88	0.01
Arunachal	446	0.07	114	0.01
Pradesh				
Sub Total	446	10.47	28605	3.35
b) Other States				
Karnataka	26035	4.23	16125	1.89
Andaman &	729	0.12	236	0.03
Nicobar Islands				
Goa	772	0.13	317	0.04
Maharashtra	171	0.03	76	0.01
Orissa	500	0.08	89	0.01
West Bengal	526	0.09	132	0.02
Andhra	111	0.02	20	0
Pradesh				
Sub Total	28844	4.69	16995	1.99
Grand Total (India)	**615200**	**100**	**852895**	**100.00**

Source: Rubber Board (India) (2016)

The Rubber Board is organizing an orientation programme (Sathadarshan) for the growers from non-traditional area. Selected growers from non-traditional area are brought to Kerala and taken to plantations, small holdings, nurseries and industries in Kerala and Tamil Nadu in order to give firsthand knowledge of plantation industry. Small growers in non-traditional areas other than Karnataka face great difficulties in procuring various rubber plantation essentials such as rubber sheeting rollers, tapping knieves, sisevs, coagulating dishes, cup hangers, spouts, plastics cups for latex collection, panel protection chemicals, etc. as these things not readily available there. To help them in this regard, the Board is implementing a scheme for supplying them items at cost price.

Surveys and trial plantations carried out in selected localities of Orissa, Madhya Pradesh, Andhra Pradesh and West Bengal have proved that there is considerable potential for rubber cultivation. Accordingly, necessary development infrastructure has been set up in the regions. Two public sector corporations of Orissa, namely the Orissa Forest Corporation and Similipahar Development Corporation have already raised rubber plantations successfully in the state. Many entrepreneurs from the private sector have also joined hands in raising rubber plantations. Further developments are expected to take place in the years to come. Rubber grows easily in the North East regions owing to large tracts of unused land and inexpensive labour. Not only it gives higher income but also it has various other positive impacts on the society and the way of living of the beneficiaries. In North-East India, Tripura is well known for rubber plantation.

Kerala

Kerala is home to about 4.5 lakh hectares of rubber plantation, which produces around 7.5 lakhtons of rubber with five percent estimated increase every year.The growth of area under natural rubber (NR) cultivation in Kerala has been unique as compared to other crops in the state and major NR producing state of the country. Thus, Kerala state is highest rubber producing state in India. Most of the Malanaadu and Idanaadu areas of Kerala state

are growing rubber. Years back people farmers used to plant coconut in their fields. But today people plant rubber trees instead, as it gives a daily income. There are various farmhouses to for rubber plantation in Kerala. Most renowned plantation areas in Kerala are Mundakkal Home Stay; Kalaketty Estate; Vanilla County; Mundackal Homestay; Estate Bunglows; Planter Homestay; Spice Garden Bungalows; and Malabar Escapes.

Rubber is the major cash crop in kerala. It is grown in 109,582 hectares - the largest area under rubber cultivation in the State and its production is going up gradually. Here, 120946 tons of Rubber is produced per annum and its productivity being 1104 kgs./ha. Kottayam district being the predominant rubber producing district in Kerala, having 1,08,433 hectares of rubber area, produced 1,13,225 tones of rubber which is 24percent of the total production in the country. Kottayam district is one of the best yielding rubber areas in the country. Rubber Board, headquarters at Kottayam, has a unique role in enhancing productivity in rubber plantations. Oppoottil group of companies is having activities spread over the south Indian states of Kerala & Tamil Nadu with its headquarters in Kottayam in Kerala.

Kurian Abraham Ltd. is the largest manufacturers and processors of centrifuged latex in India. The Velimalai estate is the major contributor to the Velimalai Rubber Company. Currently 1350 acres of the plantation is utilised for rubber cultivation by this company. The Kootathukulam Estate was acquired as part of the Velimalai Rubber Company in 1955. This plantation is located in the verdant surroundings near Chittar in Kerala. Rubber is the primary crop here, cultivated in over 300 acres. The highland area of Kerala is also famous for its spice, rubber plantations and dense vegetation that provide natural habitat to exotic wildlife.

Karnataka

The main rubber-growing areas are Dakshina Kannada, Udupi and Shimoga districts. In addition, it is cultivated in parts of Chikmagalur, Kodagu and Uttara Kannada districts. In Dakshina Kannada, there was no rubber cultivation in the region

before the arrival of the repatriates from Sri Lanka. The area had found a place in the world map of rubber growers during the sixties and that was the story of two countries. India had to re-settle 5, 25,000 Sri Lankan repatriates belonging to 1, 50,000 families in 15 years. Of these 22,000 were trained only in working in rubber plantations. They brought nearly 2,000 hectares of land under rubber growing areas in 10 years from 1965. In the spirit of the pact between Sri Lanka and India, the Union Government had directed the State Government to bring 3,200 hectares of land under rubber cultivation at a cost of Rs. 2.75 crores.

The Rubber Board has drawn up plans to promote rubber cultivation in Dakshina Kannada. While the area under rubber cultivation in the district is 15,000 hectares, the Board intends to add another 10,000 hectares in Belthangady, Puttur and Sullia taluks in the district as well as Karkala and Kundapur taluks in Udupi district.Dakshina Kannada and Udupi districts are non-traditional rubber growing areas. When rubber cultivation was introduced in the region 25 years ago, the main intention was to convert barren lands into fertile tracts. Along with cultivation, the Government wanted to encourage rubber-based industries in the region.

Although Karnataka is treated as a non-traditional area for rubber, historically rubber has been successfully grown in Dakshin Kannada and Kodagu Districts on moderate scales for the last about half a century. The most extensive rubber plantations in Karnataka are owned by the Karnataka Forest Development Corporation Ltd. They are mostly in Dakshin Kannada District. Private owned plantations exist in Dakshin Kannada, Uttar Kannada, Kodagu, Shimoga and Chikamangular District

Tamil Nadu

Tamil Nadu is the state in India by area and the seventh most populous state. The state is the second largest producer of natural rubber.Arasu Rubber Corporation is a Government of Tamil Nadu Company functioning under the Department of Environment & Forests. The entire area of 4279.78 hector is within

Kanyakumri District as this is the only suitable district for the growth of rubber in the State. Arasu Rubber Corporation Limited has rubber plantations over an area of 4279.78 hectares of forestlands taken on lease from the Forest Department in Kanyakumari district, where the soil, climate and topography are conducive for the growth of rubber trees. There are 1536 permanent workers and among them 386 are Sri Lankan repatriates. In addition, there are 365 contract workers also employed by the Corporation. More than 70percent of rubber trees in the plantations of the Arasu Rubber Corporation were planted during 1960s and 1970s.

To make the Corporation more viable and to provide continuous employment opportunities to the workers, it has been decided to undertake replanting works with high yielding clones as advised by the Rubber Board, after felling of the less productive matured rubber trees.The Corporation has provided employment for around 1792 daily paid workers. Among these 1420 are locals and 376 are repatriates from Srilanka. The main activities of these workers are to tap the rubber trees for natural rubber and to maintain the plantation area.

Odisha

To protect the degraded hill slopes of Eastern Ghats, rubber plantation have been taken up by Rubber Board in Orissa. Bright prospect for the growth and development of natural rubber exist in the northern Orissa, i.e. in the districts of Mayurbhanj, Kendujhar and Baleshwar due to favourable agro-climatic conditions. Orissa is a non-traditional area for rubber plantations. Inland hill areas of Cuttack, Puri, Ganjam and Dhenkanal districts have also agro-climatic conditions suitable for rubber cultivation.

Maharashtra

Many farmers of Karnataka are migrated from Karnataka to Maharashtra for some internal matters and the result of this migration is rubber plantations taking strong roots in Maharashtra's coastal Konkan region. Locals believe the climate in Konkan regions (both in Karnataka and Maharashtra) are

conducive to rubber plantations and the Maharashtra Government has been pro-active in promoting this development. The Government is also planning to form co-operative models for rubber since Maharashtra's agri-products have flourished historicallyunder co-operative model. These are the regions which have enough rainfall, humidity and soil, fit for rubber plantation.

Rubber plantations are taking strong roots in Maharashtra's coastal Konkan region, as several farmers from Kerala, the traditional home for rubber plantations, have invested in the business. Data available with the Rubber Board shows that in the Konkan region, the average yield per hectare is 2.1 tonnes, almost 25 percent higher than the all-India average of 1.5 tonnes. The board, along with the state government, is trying to popularise rubber cultivation among Maharashtra farmers. Farmers are given 100 percent subsidy on an initial investment of Rs.150, 000, apart from subsidies on irrigation and labour costs of around Rs.80, 000 per annum per hectare for the first six years.

The rubber planters in Maharashtra are generally very adept in scientific method of rubber cultivation. But it is a fact that a majority of them are ignorant of high yielding clones, their method of reproduction, their advantages and disadvantages, so on. So far there is no considerable attempts found form the parts of any private agencies in propagating all these available and valuable information's that are prevalent in the field of rubber cultivation. So, with pleasure and pride, majikhomes rubber plantation, Rubber Nursery makes an attempt on raising a novel propagation among rubber planters for rubber cultivation on a large scale.

Andhra Pradesh

Rubber Board to contribute Rs. 120 crore, for the Rs 240-crore project prepared for the development of rubber plantation in Andhra Pradesh. The project is aimed at increasing the rubber acreage from 250 acres to 31,000 acres in tribal areas of East Godavari districts in the next six years. About 20 km from Rampachodavaram is a hill station called Marademalli, which is rich in coffee and rubber plantations.

Rubber Plantation Development Scheme in India

From 1980, the Rubber Board has given equal importance to replanting and new planting and promoted both alike under common integrated schemes. These are called Rubber Plantation Development schemes. In the 10th plan, Rubber Plantation Development Scheme has been modified incorporating various components in addition to replanting and new planting. The scheme is implemented throughout India except the North Eastern region (For north eastern region, a separate scheme, 'Rubber Development in the North East', has been approved by the Govt. of India.

The Rubber Production Department of Rubber Board has a well-structured network of field establishments under it is rendering advisory and extension services to growers on allaspects of rubber cultivation including processing besides playing the role of a facilitator in organizing the small growers to voluntary organizations with the objective of devolution of extension functions. The major extension and development functions discharged through this department of Rubber Board are :

- free advisory service to the growers at their door steps,
- financial assistance as a performance incentive for adoption of technology,
- assisting the growers organizations in setting up environment friendly group processing and Technology Transfer Centers.
- on and off' campus training for small growers as well as workers,
- supply of agro inputs and generation and supply of planting materials, and
- periodic impact assessment studies, collection of statistics, etc.

Requirements of planting materials of improved cultivars required by the rubber plantation industry are met from grower's own nurseries, run by the Board and private commercial nurseries. Seeds meant for raising stock plants for bud grafting are procured from suitable plantations during the seed fall season. The Board has approved restricted use of seedlings raised from polyclonal seeds of approved seed gardens as Category III planting material. Budwood and budded stumps of high yielding

clones produced in the Board's nurseries are distributed to growers during planting season. The prices of planting materials are fixed every year on a no loss no profit basis after due cost evaluation. Small growers receive supplies at concessional rates. If any residual supplies are given to large growers, those will be at cost price.

The Board operates a scheme for procurement and supply of seeds of cover crops Pereira phaseoloides and Mucunabracteataevery year for small growers. The seeds are made available in polythene packets of convenient sizes. Distribution is at cost prices and through regional offices subject to availability. Rubber Board is the designated agency for export promotion of natural rubber. The Rubber Act 1947 provides amongst other functions that it shall be the duty of the Board to secure better working conditions and the provisions and improvement of amenities and incentives for rubber plantation workers.

2.2 Rubber Plantation in Tripura

India ranks third in terms of production of Natural Rubber in the world after Thailand and Malayasia. Kerala is the largest and Tripura is the second largest producer of natural rubber in the country. In Tripura rubber plants were introduced for soil and moisture conservation by Forest Department in 1963. Rubber is a tropical crop and grows well in Tripura. The rubber has proved excellent scope for permanent settlement of Tribal jhumias.

Although the North Eastern region lies far outside the traditional rubber growing zone, the agro-climatic conditions obtained there are unique in as much as near tropical features are experienced in most parts owing to low elevations, exposure to monsoons and other moderating influences.

Encouraged by the positive results obtained from trial plantations undertaken in early 1960s in the then undivided Assam and Tripura, commercial scale plantations were raised by Government Forest and Soil Conservation Departments. Public sector corporations set up later joined rubber planting endeavours on extensive scales. Thus, while in Assam and Tripura, public

sector corporations are leading in the rubber plantation sector, their counterparts in Meghalaya, Manipur, Mizoram and Arunachal Pradesh are the State Forest and Soil Conservation Departments. Widespread plantings by individual growers are also contributing to fast growth of rubber cultivation in the region.

Table 2.2 : State-wise Share of Area and Production of Rubber in North-Eastern States

States	2005-06		2006-07	
	% Share of Area	% Share of Production	% Share of Area	% Share of Production
Tripura	5.72	2.03	6.15	2.19
Assam	2.48	0.42	2.58	0.58
Meghalaya	0.85	0.42	0.87	0.47
Nagaland	0.38	0.07	0.4	0.08
Manipur	0.31	0.01	0.3	0.02
Mizoram	0.08	0.01	0.09	0.01
Arunachal Pradesh	0.07	0.01	0.07	0.01
Total	9.89	2.97	10.47	3.35

Source: Rubber Board, Guwahati

Table 2.2 shows that in rubber cultivation and production Tripura is far ahead than the other states in the region. Tripura is able to get first position which is followed by Assam, Meghalaya, Nagaland, Manipur, Mizoram and Arunachal Pradesh.

Table 2.3 : Extensions in Area of Rubber Plantation

Sl. No.	Year	Area (in Ha.)
1.	1976-77	574
2.	1981-82	3590
3.	1986-87	10085
4.	1991-92	17860

5.	1996-97	23936
6.	2001-02	30576
7.	2006-07	35760
8.	2007-08	39670
9.	2008-09	46588
10	2011-12	57,620
11.	2012-13	61,231
12.	2013-14	62529
13.	2014-15	70295
14.	2015-16	74335

Source: Rubber Board, Tripura

Table 2.3 indicates that in Tripura rubber plantation is increasing very rapidly from the initial stages when it was introduced. Rubber has already started influencing the socio-economic profile of rural Tripura. The State Government, right from the beginning has been giving great importance to rubber and the Rubber Board has been implementing a variety of programmes for the development of rubber in the state. The state government agencies like Tripura Forest Development and Plantation Corporation Ltd. (TFDPC) and Tripura Rehabilitation Plantation Corporation Ltd (TRPC) also have contributed significantly for the rubber plantation development in the state.

Table 2.4 : Agency wise Area brought under Rubber Plantation

Sl. No.	Name of the agency	Area promoted by the agency(ha)	Proportional share
1	TFDPC Ltd	10744	30.04
2	TRPC Ltd	6047	16.91
3	TTADC	1100	3.08
4	Rubber Board	17869	49.97
	Total	**35760**	**100**

Source: Rubber Board, Tripura

Rubber Board is providing both technical as well as financial assistance for promotion of rubber cultivation in the state. State Govt. agencies like TFDPC Ltd. TRPC, TTAADC etc. are also doing their own efforts for expansion of rubber cultivation in the state. The Rubber Board, Tripura Forest Development and Plantation Corporation Ltd (TFDPC), Tripura Rehabilitation Plantation Corporation Ltd (TRPC), Development Unit, North Eastern Council and the state government are working together towards the goal of rehabilitation under the upliftment of the tribals of the state.

The TFDPC Ltd. is the major producer of rubber in the state and it functions under the administrative control of State Forest Department. TFDPC Ltd. markets rubber in the form of ribbed smoke sheet, cenex, crepe rubber and scrap form. It has taken up the treatment of rubber wood for production of substitute wood to reduce the demand on forests. Treated rubber wood is similar in properties to natural teak wood and is in fashion in western world for its shining white cream colour and better properties.

TFDPC implemented, alongside commercial cultivation of rubber, a pilot project for rehabilitation of 100 tribal shifting cultivators through rubber plantation at its Warangbari Plantation Centre in West Tripura under a centrally sponsored scheme. The families worked on payment of wages for establishment of their own plantation with the hope and assurance of a good earning from sale of latex on maturity. Success of this project caught the imagination of the planners and generated some trust and confidence amongst the poor tribes dwelling in the hills and uplands. The Warangbari experience was the precursor to the adoption of a new model for rehabilitation of shifting cultivators and other landless and poor through rubber plantation on uplands considerations of poor productivity and very limited utility till then.

TRPC Ltd. was registered on the 3rd February, 1983 under the Companies Act, 1956 with the objective to economically rehabilitate shifting cultivators (jhumia), tribal landless and small farmers principally through rubber plantation. Tribal Welfare is the administrative department of the corporation. The first phase of TRPC project for creation of 1200 ha. of rubber plantation for 800 shifting cultivators was supported by bank loan under

NABARD refinance scheme channeled through a consortium of tree banks, State Bank of India, United Bank of India and Tripura Gramin Bank. TRPC received a loan of Rs. 173.82 lakh under the World Bank Aided Rubber Project (WBRAP) for raising 1000 ha of rubber plantation for tribal small farmers owning un-arable uplands; and against that 924 ha of rubber plantation was created for 720 beneficiaries during 1993-94 to 2000-01. TRPC promotes formation of Rubber Producers Societies (RPS) with beneficiary families as members, one for each plantation centre. TRPC also organizes training on rubber cultivation and management including tapping and processing for beneficiaries.

The Rubber Board played a major role in the World Bank Assisted Rubber Project implemented from 1992 with the main objective of expanding and strengthening the rubber plantation sector in Tripura to increase production of smallholdings, improves processing and increase on-farm and off-farm employment. The Rubber Board has devised a novel method of helping small growers to organize themselves at grass-root level and to jointly work to acquire up-to-date know-how in the improvement of productive efficiency, group processing and competitive marketing. These voluntary organizations of growers are known as Rubber Producers Societies (RPSs). Very recently another type of organization called Rubber Growers Society (RGS), comprising only immature growers, is also taking shape. The RGS members adopt group approach to raise nurseries and supply planting materials, procure and supply farm inputs and acquire modern farming technology.

Table 2.5 : District LevelRubber Plantation

Sl. No	District	Mature area (ha)	Immature area (ha)	Total are (ha)	Production (MT)
1.	West	11089.19	10396.49	21485.68	12238
2.	South	6988.21	9812.11	16800.32	10400
3.	North	2929.45	2394.50	5323.95	2394
4.	Dhalai	2268.55	709.50	2978.05	556
	Total	23275.40	23312.60	46588	25588

Source: Rubber Board 2016, Tripura

Table 2.5 shows that out of four districts, West Tripura is far ahead in rubber cultivation than the other districts.

Block Plantation Scheme is a rubber based rehabilitation project intended to wean away tribal Jhumias from shifting cultivation and also achieve the dual goals of eco-restoration and sustainable income for the beneficiaries. The scheme is also extended to the Scheduled Caste community of the state. This is a collaborative project of the Rubber Board and Tribal Welfare Department. Under this scheme a compact land (block) owned by SC/ST families is identified. The plantation is raised by engaging the SC/ST families as wage earners. The work is done under the direct supervision of the Rubber Board officials. On attaining tappability, the beneficiaries are imparted training in tapping and processing and marketing procedures under the Rubber Producers Society.

Rubber Block Plantation for socio-economic settlement of the 'Jhumias' in Tripura has been considered a great success. An international organization like 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. Beneficiaries in 25 colonies (block plantation units) have already begun to sell rubber produced in their units and earn money, as tapping has commenced their 1992 and subsequent plantations.

The most successful story in the 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 countries best farm gate price of an agriculture commodity. The increased global demand also contributed to price stability. Two other factors, which were of prime effectiveness, are regular market intervention by the Rubber Board- promoted companies and the bargaining capacity built up by the Rubber Producers' Societies.

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 crop in Tripura providing a

lot of employment opportunities in the rural areas. 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 Bodhjungnagar Industrial area may increase the consumption by providing more value added rubber goods. It will also provide more employment opportunities to the people of Tripura.

The initiatives of the state government in setting up the two major agencies for rehabilitation deserve some mention in this regard:

(a) Tripura Forests Development & Plantation Corporation Ltd. (TFDPC Ltd.)

It is the pioneer in the state that launched the rubber development as a source of economic settlement of jhumias. The TFDPC model explored the possibilities of resettlement of landless jhum cultivators through rubber plantations. This has been a major success and beneficiaries of the scheme were given usufruct benefits. Thereafter, rubber plantations were raised over 3178 ha of lands released by the GOI involving 3200 beneficiaries. The success achieved by TFDPC induced the state Government to adopt rubber plantations as viable economic activity for the tribal jhumias/shifting cultivators.

(b) Tripura Réhabilitation Plantation Corporation Ltd

It was set up on 3rd February, 1983 with the primary objective of rehabilitating the Tribal Shifting Cultivators (Jhumias) and landless people of Tripura through Rubber. The corporation helps the tribal beneficiaries in setting up the plantation and as the trees mature, it procures the latex from them and sells the processed rubber as sheets and scraps in the market. TRPC has since then played a significant role in expanding rubber plantations in Tripura including the rehabilitation of the surrendered extremists after the peace accord between the state government and the Tribal National Volunteers (TNV) in 1988-89. Till date, the corporation has raised 6600 ha Rubber plantations benefiting 7285 jhumias.

It is akin to the model of TFDPC for Jhumia rehabilitation, but the difference lies in status of land. TFDPC raised plantations over government lands whereas TRPC has raised plantations over private lands with the funding support of the Tribal welfare department. The beneficiaries are engaged as plantation workers during the immature period of the plantations. The latex collected by the Beneficiaries is purchased by the Corporation at a fixed price and is sold in the market after processing. A beneficiary earns an average of Rs. 1.5-2.0 lakhs per annum which is quite sufficient for a household to come out of poverty within 3 to 5 years.

2.3 Block Rubber Plantation

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. The participation in rubber plantation would enable the farmers to shift from jhum cultivation to a more settled form of livelihood and would also promote an eco-friendly method of cultivation.

Tribal populations are prominent in the NE region. Rubber cultivation which has already attracted large scale participation of tribals is proving to be an effective means of weaning away the 'jhumiyas' 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. The plantation on attaining maturity will be parcelled out and handed over to the beneficiaries and they will be collectively helped to produce and market the rubber from their individual holdings.

Where compact blocks of tribal lands are not available, the tribal families in each hamlet are being helped to raise rubber plantation in their individual land holdings under the group planting programme. Along with rubber, energy plantations are

also being raised on as much of fringe lands as feasible for ensuring ecology improvements and availability of fuel wood to the tribal families.

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. 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. At the end of 2004-05 an area of 2962 hectares were planted covering around 2603 families. Similar projects are being implemented in Orissa, Andhra Pradesh, Karnataka and Kerala. The plantations have already entered tapping phase and the Board also is providing support by forming 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 have to be supported during the immature phase. To supplement the income derived through wages additional income generation activities were provided to the tribal families involving women by forming Self Help Groups (SHG) in Tripura under the World Bank Assisted Rubber Project. About 4000 families were assisted through these activities and the scheme has been very successful. Besides income generation activities emphasis also was given to education, health, hygiene, savings etc.

The Board is continuing supporting these groups in a limited way. In the traditional region programmes for women development have been implemented aimed at additional income generation and improving health and sanitation to women small growers/spouses of small growers and women workers in plantation sector. These activities have been aimed at making rubber plantation development more sustainable by not only increasing the net family income but also by improving the quality of life. Four SHGs have been supported by creating infrastructure for making rubber wood handicrafts and the units attached to

the RPS are working satisfactorily. These efforts are aimed at the development of the small holding sector in general

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 the BPS, a compact land (block) owned by SC/ST households is identified and the plantation is raised by engaging family labour as wage earners. The important criteria for raising a block planting unit (BPU) are: (i) minimum extent of land available in each colony shall be around 50 ha.; (ii) the land shall be in contiguous plots; (iii) tribal beneficiaries who own land should hand over the land to the Rubber Board for a period of seven years; (iv) assurance from beneficiaries for the engagement of family labour during the immature phase; (v) the beneficiary should have the clear title to the land; (vi) the extent of land ranges from around 1 ha to 2 ha; (vii) formation of RPS after BPUs start yielding rubber; (viii) retention of the plantation by Rubber Board for two more years after opening the trees for stabilizing harvesting, processing and marketing procedures before handing over the plots back to the beneficiaries; (ix) the financial expenditure will be borne by the State Government and the Rubber Board, while beneficiaries contributions are in the form of family labour. The compulsory engagement of family labour as wage earners ensures employment and income to the beneficiary households during the immature phase.

Salient Features

Salient feature of the project are:

1. The Block Plantation Officer (BPO) appointed by the Rubber Board ensures that all inputs required for plantation of rubber are readily available, and facilitates coordination with local authorities of the State Government.
2. The BPO is the focal point for all services at the block plantation level. Several ongoing state government schemes like immunization drives, health camps, sanitation campaign and animal husbandry camps are organized for the families in the block plantation.

3. The Rubber Board and Government of Tripura share 80 percent of the cost of raising rubber plantation and the beneficiaries contribute 20 percent through their own labour.

Implementation

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. schemes. Community participation is ensured through empowerment groups comprising rubber producer's societies and women thrift groups. Each BPA has one rubber Board officer in-charge of this operation.

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. One of the main objective is to provide wage employment opportunities to the tribal communities. The BPA has involved community level institutions as important participations in rubber participations in rubber related aspects and socio-economic development of the region.

Strategies

Each male member of the family is inducted into the Rubber Processing Society (RPS), which formulates several strategies for cultural operations, protects the rubber plantation, takes up income generating activities and acts as a forum for dissemination of knowledge and transfer of technology. It holds regular monthly meetings to discuss issues relating to rubber and associated aspects. It is organized on the concept of self-help groups. The RPS is involved in all operations of rubber production, including latex collection, processing, marketing and distribution of sale proceeds to all members. RPSs which were formed initially distribute sale proceeds equally among all members but RPSs

formed subsequently distribute sale proceeds based on the latex supplied to RPSs by the members. Dry Rubber Content (DRC) is also taken into consideration while distributing sale proceeds.

The RPSs and Women Thrift Groups (WTGs) monitor working of the schools, Anganwadi centers, Health Sub-centers in their area to ensure their proper functioning. They encourage families to send their children to school on regular basis. Small village roads connecting plantations and habitations have been developed and drinking water sources have been created in the block plantation areas with the help of Rural Development department.

The WTGs play a vital role both in empowerment of women and generating additional income for families working in block plantations. The WTGs are formed with a single women member of each rubber-growing family. The motto of the WTGs is saving, borrow, repay. They encourage individuals or groups to take up income-generating activities. This strategy has improved the confidence of women participants to deal with political functionaries and administrative staff. Additionally, the participation of women in rubber plantation activities has ensured the involvement of the entire family, thus, making BPA a family based involvement.

In order to sustain the families when the rubber plantation is relatively immature, especially during the first three years, the RPSs and WTGs have been encouraged to generate additional income through non-rubber economic activities, like as piggery, fishery, weaving, and other farm activities. The RPSs and WTGs are also encouraged to raise nurseries of rubber as buy back by the rubber board to supply to next year BPAs as well as other rubber growers. The clones/ bud wood materials, fertilizers etc., are supplied by the Rubber board.

Allocation of Land :

Initially the members of a RPS planned and started the scheme on a particular piece of khas land suitable for rubber cultivation. Once the scheme is started, the head workers of that scheme, in consultation with the rubber board, prepared a proposal to

transfer the ownership of the scheme area equally among the members. After preparing the proposal, he sends it to the director of Tribal Welfare Department through head office of rubber board. The Tribal welfare office forwarded it to the district tribal welfare office. District welfare office sends it to local tehsil. Tehsildar send it to SDM office and finally SDM office approved and transferred land ownership to the beneficiary members. Thereafter rubber board implements the list for rehabilitation of jhumias. Normally share of each member was 1 to 1.5 hectares depending on the number of members and area covered by the scheme .But it is to be noted that a particular beneficiary member cannot claim a particular piece of scheme land as his own.

CHAPTER 3

SURVEY AREAS

Chapter 3

SURVEY AREA

3.1 Tripura: Overview

Tripura is a state in Northeast India. The third-smallest state in the country, it covers 10,491 km^2 and is bordered by Bangladesh to the north, south, and west, and the Indian states of Assam and Mizoram to the east. It is a landlocked state in North East India. As of 2011, the state had 3,671,032 residents, constituting 0.3 percent of the country's population. Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura are collectively known as the Seven Sister States. The State is isolated within India, and to overcome this hardship, the State needs modern, reliable, quick and cheap methods of communication and transport facilities with the rest of India, and particularly with trade hubs such as Kolkata and Guwahati.

Table 3.1 : Area & Population of NE States

Sl. No.	States	Area	Population (sq.km.)	Decadal growth rate(1991-2011)
1.	Arunachal Pradesh	83,743	13,83,727	26.0
2.	Assam	78,438	3,12,05,576	17.1
3.	Meghalaya	22,429	29,66,889	27.9
4.	Manipur	22,327	25,70,390	18.6
5.	Mizoram	21,081	10,97,206	23.5
6.	Nagaland	16,579	19,78,502	(-) 0.6
7.	Tripura	10,492	36,73,917	14.8
8.	Sikkim	7,096	6,10,577	12.9

Source: - RGI &CSO, New Delhi

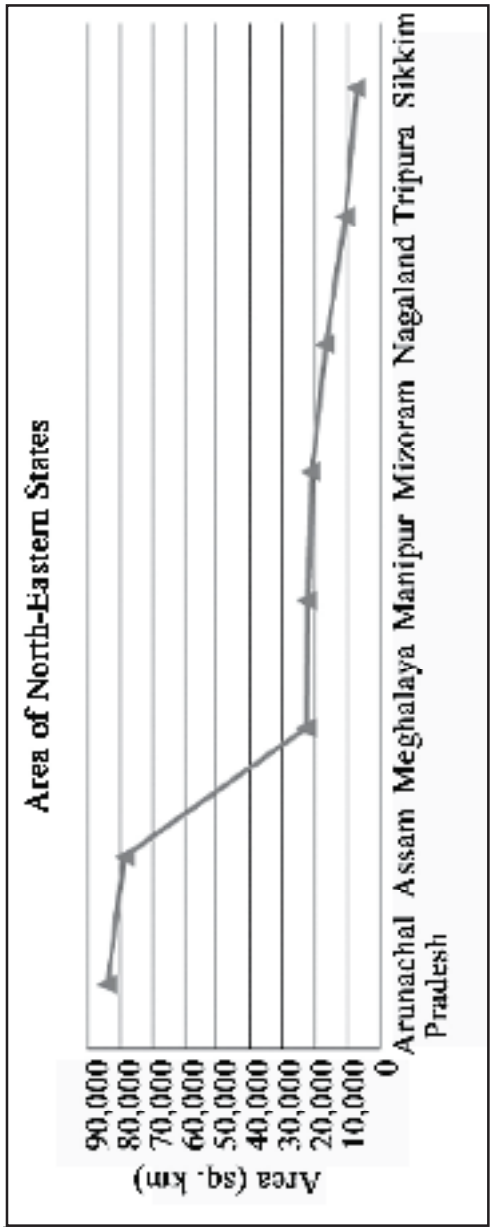


Figure No. 3.1 : Area and Population of NE States

The area of modern Tripura was ruled for several centuries by the Tripuri dynasty. It was a princely state during British rule, and joined the newly independent India in 1949. Mainstream Indian cultural elements, especially from Bengali culture, coexist with traditional practices of the ethnic groups, such as various dances to celebrate religious occasions, weddings and festivities; the use of locally crafted musical instruments and clothes; and the worship of regional deities. Dating back to the time of Mahabharatha, the very helm of the Kingdom of Tripura encompassed the greater part of Eastern Bengal stretching from the Bay of Bengal in the South to the Brahmaputra in the North and west and Burma, now Myanmarin the East.

The earliest trace of the history of Tripura can be found in the Ashokan pillar inscriptions. The Royal history of Tripura ended when the princely state acceded to the Indian Union on October 15, 1949. After death of the last king Maharaja Bir Bikram Kishore Manikya on May 17, 1947, a Regency Council was formed headed by Maharani Kanchan Prabha Devi, for aid of the minor Prince, Kirit Bikram Kishore Manikya Bahadur. On January 21, 1972 Tripura became full-fledged State by the Act of Parliament called the North Eastern Areas (Reorganization) Act, 1971.

Table 3.2 : Demographic Feature of Tripura (2001-2011)

Sl.	Item	Unit	2001 Census		2011 Census	
			Tripura	India	Tripura	India
1	Population	In lakhs	31.99	10287	36.73	12105
2	Decadal	percent	16.0	21.5	14.80	17.70
	growth rate					
3	Density	per Sq. Km.	305	325	350	382
4	Sex-rate	per'000 males	948	933	960	943
5	Literacy rate	percent	73.2	64.8	87.2	73.0
6	ST population	percent	31.1	8.2	31.8	8.6
7	SC population	percent	17.4	16.2	17.8	16.6

Source: Census-2001 & 2011, RGI

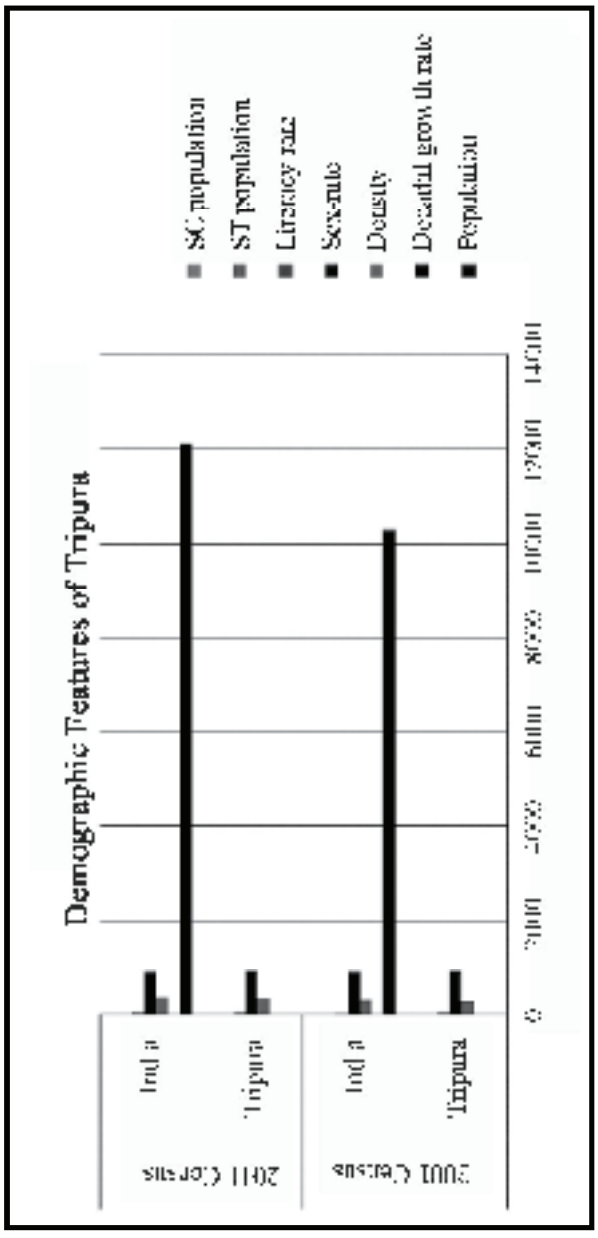


Figure No. 3.2 : Demographic Features of Tripura

Survey area

Tripura has a tropical climate and receives adequate rainfall during the monsoons. The State has situated between latitudes 22°56' and 24°32' North, and longitudes 90°09' and 92°20' East. It has an area of 10,491.69 sq. km. Economy of Tripura is basically agrarian and characterized by high rate of poverty, low per-capita income, low capital formation, in-adequate infrastructure facilities, geographical isolation and communication bottleneck, inadequate exploitation and use of forest and mineral resources, low progress in industrial field and high un-employment problem. The Registrar General & Census Commissioner, India has released the provisional population figures for Census-2011.The population of Tripura for 2011 was 36,73,917, out of which 18,74,376 males and 17,99,541 females. The data of Census-2011 shows that Tripura ranks 18th in terms of density of population at all India level. The population density of Tripura in 2011 was 350 persons per sq. km., which means that 45 more people live in a sq. km. area in the State then they lived a decade ago. The population density for all India in 2011 was 324.

The agriculture and allied sector is the backbone of the State's economy. Agriculture and allied activities primarily refers to cultivation, animal husbandry, pisiculture, horticulture and floriculture. Economy of Tripura is basically an agrarian and rural based. Tripura is endowed with wide forest covers of 60 percent of the geographical area. The land available for agricultural cultivation is only about 27 percent, which is far below the national average. The latest Census-2011 data reveals that about 42 percent of total main workers are engaged in agriculture including 22.9 percent cultivators and 18.74 percent agricultural labourers. The similar proportion of total main workers engaged in agriculture was about 51 percent in 2001.

Food security as well as providing the gainful employment to the rural labour force is the main attention of the Government planning and policy making. The State's favourable agro-climatic conditions, fertile soils, sub-tropical climate with pockets of temperate zones, large tilla lands and abundance of rainfall really offers immense scope for development of horticulture sector comprising of fruits, vegetables, spices, plantation crops,

floriculture, medicinal and aromatic plants etc. The Cropping pattern in Tripura acquires typical character of hill agriculture in the North Eastern Region where two distinct and parallel farming system viz., (i) shifting cultivation or jhum in the hill slopes (ii) settle farming cultivation in the plains are in vogue. Rice is the predominant crop in both the systems.

Tripura grows huge number of vegetables from temperate to humid tropics. Vegetables are excellent source of vitamins, particularly niacin, riboflavin, thiamin and vitamins A and C. They also supply minerals such as calcium and iron besides proteins and carbohydrates. The vegetables combat under nourishment and are known to be cheapest source of natural protective tools. Most of the vegetables, being short duration crops, fit very well in the intensive cropping system and are capable of giving high yields and better economic returns to the growers. Floriculture is a sunrise sector in Tripura. Owing to steady increase in demand of cut flower commercial approach of floriculture has become one of the important sectors in the State.

The State is endowed with rich flora and fauna and growing of medical plants and herbs as well as other forest based industries including traditionally rich handloom and handicrafts industries have an immense potential to develop. Besides, there is ample scope for development of eco-tourism in the State. Tripura has some unique traditional design and arts in handloom textile. These earliest skillful arts have its own place of pride, even today. These arts are survived despite of all odds. These elegant art and design are mainly of tribal and Manipuri communities. Tripura is enclosed with rich and diverse bamboo resources. Bamboo has been traditionally used in Tripura for various domestic purposes as well as commercial use like marketing of bamboo mats, agarbati sticks, handicrafts etc. Cane and bamboo handicrafts of Tripura are considered to be among the best in the country for their exquisite designs, wide range of products and artistic appeal.

The literacy and education are reasonably good indicators of development in a society. The literacy rate for Tripura in 2011 works out to 87.22 percent for the population seven years and above. The population of Tripura is characterized by social

diversity. The people of the Scheduled Tribes comprise about one-third of the population. As per Census-2011, ST population of the State was 11,66,813 which is 31.75 percent of the total population of the State.

The Census-2011 data reveals that the overall ST literacy rate reached to 79.05 percent from earlier 56.50 percent in 2001. The

Figure No.3.3 : Eight Districts of Tripura

ST literacy rate has significantly increased during intra-census period of 2001-2011 in the State, i.e., about 22.55 percent, which is quite impressive. The Census-2011 data shows that SC population of the State was 6,54,918 (17.8 percent). The total SC male was 3,34,370 and SC female was 3,20,548. The demography of Scheduled Castes in the State is not confined to any particular 'paras' or 'bastis'. The SC literacy rate has increased to 89.45 percent in 2011 from earlier level of 74.68 percent in 2001. During intra-census period of 2001-2011 an increase of 14.77 percent is noticed for SC literacy.

Agriculture forms a primary sector of the economy of Tripura. More than 75 percent of the state's total workforce is dependent on agriculture for their subsistence. In fact, about 24.3 percent of the state's net area is reserved for agricultural purposes of which, about 2.5 lakh hectares fall under the net cultivated area. Paddy is the principal crop that is reaped in Tripura. Besides paddy, jute, sugarcane, wheat, oilseeds, coconut and turmeric are grown in plenitude in the northeast Indian state. The remote location, lack of power facilities as well as a well developed transport and communication network hindered the growth and development until the year 1950.

Today several small scale industries have mushroomed in the state that deals with the manufacture and production of handicrafts and handloom products, jute and tea. Natural gas and fruit processing units have also sprung up in the state. Agriculture of Tripura mainly comprises of horticulture products. Blessed with a salubrious climate and an average rainfall of 2500 mm, Tripura produces several delicious fruits that add to the economic strength of the state. The warm and humid climatic condition is perfect for producing plenty of fruits, spices and vegetables. Rubber and tea are produced in some parts of Tripura. Agriculture is the backbone of the economy. Most of the indigenous local inhabitants of the state are engaged in the traditional occupation of cultivating fruits, and vegetables.

The religion figure for Census- 2001 reveals that 85.60 percent of the population was the Hindu population. The Muslims, Christians and Buddhists population were eight percent, 3.2

percent and 3.1 percent, respectively in 2001.The economy of Tripura had suffered from disturbed conditions of extremism and insurgency over the last two decades, which directly hindered the human safety as well as economic development process in the recent past. The State is characterised by geographical isolation, poor infrastructure facilities, communication bottlenecks, inadequate exploitation of natural resources (natural gas, rubber, forest etc.), higher incidence of poverty, low capital formation, backward in industrialisation and high level of un-employment. Natural gas deposits are among the most important feature of Tripura's natural resource base. Natural gas-based thermal power plants have already been set-up at Barmura in Khowai District and Rokhiain in Sepahijala District.

Table 3.3 : Religions Communities in Tripura

Religious/ Communities	2001		2011	
	Tripura	All India	Tripura	All India
Hindu	27,39,310 (85.62%)	827578868 (80.46%)	3063903 (83.40%)	966257353 (79.80%)
Muslims	2,54,442 (3.20%)	138188240 (2.34%)	316042 (8.60%)	72245158 (14.23%)
Buddhists	98,922 (3.09%)	7955207 (0.77%)	125385 (3.41%)	8442972 (0.70%)
Sikhs	1,182 (0.04%)	19215730 (1.87%)	1070 (0.03%)	20833116 (1.72%)
Jains	477 (0.01%)	4225053 (0.41%)	860 (0.02%)	4451753 (0.37%)
Others	1,277 (0.04%)	6639626 (0.65%)	1514 (0.04%)	7937734 (0.66%)
Religion	1,104 (0.03%)	727588 (0.07%)	5261 (0.14%)	2867303 (0.24%)

Source: Census-20011, RGI.

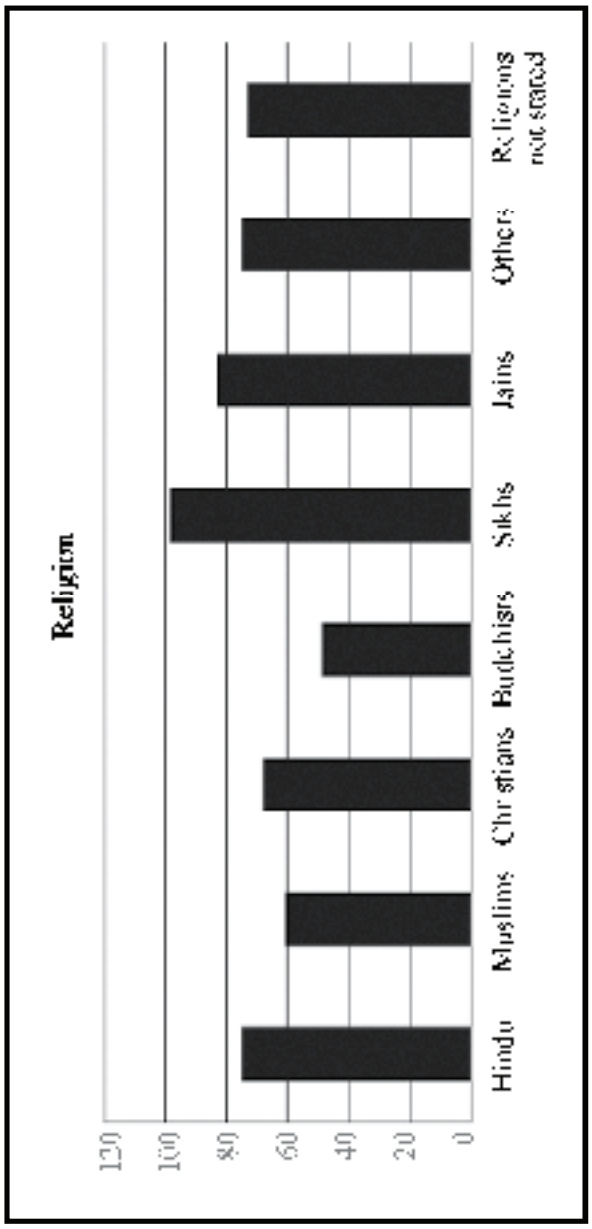


Figure No.3.4 : Literacy Rate of Various Religious Groups

Survey area

Tripura is a State of three million persons located in the North East of India and surrounded on three sides by Bangladesh. At the time of Tripura's merger with the Indian Union, the major mode of farming in the State was shifting cultivation or jhum, which produced little surplus. Only a small proportion of the State's plain lands were under settled agriculture (mainly by Bengali settlers), and the main crop was rice. The State is divided into four districts, namely, North District, South District, West District and Dhalai (formed in 1995).

Agartala, the capital is in West District. In Tripura, full participation in economic and political life has been affected by insurgency movements led by separatist and divisive forces. In 2001, the literacy rate for persons above the age of six years was 73 per cent in Tripura, 63 per cent in India and 65 per cent in the North East. The literacy rate for the rural population in 2001 (70 per cent) was substantially lower than the literacy rate for the urban population in the same year (89 per cent).

There are regional variations in literacy. Dhalai was the most backward district in respect of literacy, while West District had the lowest proportion of illiterates in the population. The gender gap was the largest in Dhalai, but even Dhalai performed better than the Indian average. There has been substantial improvement in school attendance rates in Tripura between 1991 and 2001. The proportion of children in the age group 6–14 years who were not attending school halved during this decade, from 43.4 per cent in 1991 to 23 per cent in 2001. There was also a decline in the absolute number of children not attending school, from 2.54 lakhs in 1991 to 1.64 lakhs in 2001.

While the State has made commendable progress in terms of absolute levels of economic growth, its per capita income is low and below the national average. Within Tripura, Dhalai stands out as the economically backward district. Rice is Tripura's main crop, 91 per cent of the cropped area is sown to rice. The acreage under rice is highest in West District, followed by South District. Other important crops are pulses, oilseeds, potato and jute. Plains land cultivation is concentrated in West and South Districts, and these two districts account for the bulk of cereal production. North

District and Dhalai, by contrast, contribute less to cereal production and more to the production of fruit.

The major industries in the State are based on natural gas and plantation crops, specifically, rubber, tea and bamboo. There is a traditional handloom and handicraft industry. The natural resources of Tripura include its forests and major natural gas reserves. Natural gas has been struck in the Baramura Hills and in Rokhia in South District, and natural gas-based thermal power generation is operational at both places. Of the forested land in the State, more than 70 per cent falls under the Sixth Schedule, that is, under the jurisdiction of the Tripura Tribal Areas Autonomous Development Council.

Partition choked off Tripura's major lines of transport and communication by severing inland waterway, roadways and railway networks. The State is entirely dependent on its roadways for basic transport. The Assam–Agartala National Highway 44 (NH-44), constructed after Independence, is still the only road link with the rest of India. The proportion of surfaced road length to total road length in Tripura is the second lowest after Assam among the North Eastern States. Rural electrification is inadequate: only 32 per cent of rural households reported the use of electricity for lighting at the Census of 2001.

Table No.3.4 : Existing Administrative Set-up of the State in 2011

Year	**1972**	**2011**
Districts	3	4
Sub-Divisions	10	17
Blocks	17	40
Revenue Circles	17	31
Nagar Panchayats	9	15
Agartala Municipal Council	1	1
Police Stations	24	64
Revenue Vilages	871	874
Tehsil Offices	177	183

Tripura Tribal Areas Autonomous		
District Council (TTAADC)	Nil	1
Zonal Offices of TTAADC	Nil	4
Sub-Zonal Offices of TTAADC	Nil	32
Gram Panchayats	476	511
TTADC Village Committees	Nil	527

Source: Economic Review of Tripura 2011

A positive feature of the employment situation in Tripura is that the rates of child labour are low. Estimates of poverty prepared by the Government of Tripura show a higher incidence of poverty than the Planning Commission estimates. The incidence of rural poverty in Tripura is higher than the all- India average; the reverse is the case for urban poverty. The Government of Tripura is one of the few in India (besides Kerala and West Bengal) to have been committed to land reforms. The Scheduled Tribes and other Forest Dwellers (Recognition of Forest Rights) Act 2006 can be a major step forward in meeting the development needs of forest dwellers. The diversification of employment of tribal people requires also that attention be paid to vocational training and to utilization of local raw materials.

The ST population of the State was 11,66,813 that consist 31.8 percent of the total population in 2011. Out of this, 5,88,327 were ST males and remaining 5,78,486 the ST females. The total literacy rate of ST population was 56.48 percent, out of which male- ST literate was 67.97 percent while female- ST literate was 44.60 percent in 2001. The literacy data of ST/SC are yet to be released by the Government of India. The Census-2011 data also reveals that total SC population was 6,54,918 which consists 17.82 percent of the total population in the State. Out of this, total SC males were 3,34,370 and remaining 3,20,548 were females. The total literacy rate of SC population was 74.68 percent, out of which male- SC literate was 81.85 percent while female- S.T. literate was 67.24 percent.

The population of Tripura is characterized by social diversity. The people of the Scheduled Tribes comprise about

one-third of the population. According to the Census-2001, ST population are comprises 31 percent of the total population of the State. There are 19- sub tribes among the ST population of the State with their own cultural identity, namely: i) Tripuri, ii) Reang, iii) Jamatia, iv) Chakma, v) Lusai, vi) Mog, vii) Garo, viii) Kuki, ix) Chaimal, x) Uchai, xi) Halam, xii) Khasia, xiii) Bhutia, xiv) Munda, xv) Orang, xvi) Lepcha, xvii) Santal, xviii) Bhil and xix) Noatia. The same Census 2001 data reveales that SC populations are consists nearly 17.37 per cent of the total population in the State. The demography of Scheduled Castes in the State is not confined to 'paras' or 'bastis' like other parts of the country.

Most of the parts of the State are rural and about 74 percent of the State's population live in rural areas. The upliftment of rural poor as well as improvement in the quality of life of the economically weaker section of the society has been one of the basic objectives of development planning in the State. The State has adopted multi pronged strategy which focuses on building infrastructure, strengthening social infrastructure, inclusive and sustainable growth, social and regional equity, improving quality of life, capacity building and skilled development, widening livelihood opportunities, etc.

The Tripura Forest Environmental Improvement and Poverty Alleviation Project funded by the Japan Bank of International Cooperation have been implemented since 2007-08. It has a project cost of Rs.399 crore. The repayment of the loan will start from 10th year and is to be completed within 40 years. The objective of the project is poverty reduction of the people dependent on forest resources to be implemented over eight years. 'Participatory Natural Resource Management in Tripura'' project funded by the German Development Cooperation was launched during 2008-09. The objectives of the project is to ''Improve natural resource condition supporting enhanced livelihood of forest dependent communities ''through ''equitable improvement in the general standard of living of all section of population, especially Scheduled Tribes, Scheduled Castes, Minorities and Backward Classes''.

The Central Government has been laying emphasis on adoption of Public Private Partnership (PPP) model for development of infrastructure. In view of the high incidence of poverty and limited paying capacity, there are inherent constraints in developing infrastructure under PPP model. The Mahatma Gandhi Rural Employment Gurantee Scheme (MGREGA) has been implemented in all the eight districts of the State. Till March 2014 the number of job card holders were 6,49,543, which was 6,37,195 in March 2013.

The population of Tripura has grown steadily during the period 1901 to 1951. The period from 1951 to 1961 was characterized by very high rates of growth, influenced by large-scale immigration from the neighbouring country of Bangladesh (then East Pakistan).

Table No 3.5 : ST and SC Population in Tripura

Census Years	Scheduled Caste	Scheduled Tribe	Total	Decadal Variation
1901	NA	91,679	1,73,325	NA
1911	NA	1,11,308	2,29,613	32.48
1921	NA	1,71,610	3,04,437	32.59
1931	NA	1,92,240	3,82,450	25.63
1941	NA	2,56,991	5,13,010	34.14
1951	40,457	2,37,953	6,45,707	25.87
1961	1,19,725	3,60,070	11,42,005	76.86
1971	1,92,860	4,50,544	15,56,342	36.28
1981	3,10,384	5,83,960	20,53,058	31.92
1991	4,51,116	8,53,345	27,57,205	34.30
2001	5,55,724	9,93,426	31,99,203	16.03
2011	6,54,918	11,66,813	36,73,917	14.8

Source: Census Reports, 2011.

The rate of growth of population was lower from 1961 to 1991, but still higher than all India rate. Population growth during this period was also affected by immigration from Bangladesh,

particularly around 1971, when that country gained independence. However, there was a striking decline in the decadal growth rate during 1991-2001 (16.03 percent), which went further down to 14.8 percent during 2001-2011.

Tripura enjoys a stable polity and continuity in developmental strategy and policy direction. The developmental thrust and the new policies being constantly conceived, implemented and monitored at the highest levels of the State Government is being reflected in the up-turn of the real economy of this small and isolated State of the North-East. This considerable turn-out in the elections was in itself a strong indication of the commitment of the common people of Tripura to the representative democracy and peace which has now returned to the State after a prolonged phase of insurgency. The principal strategy of decentralization in Tripura as adopted by the State Government is the area based planning on the basis of the available local resources and with active people's participation. During 1999-2000, the state Government launched 'Gramoday', the preparation of the village level development plan with people's participation after taking into account the available resources (natural, human and financial) in one district.

The basic human needs are usually listed in the material dimension as the need to be adequately nourished, the need to be decently clothed, the need to be reasonably sheltered, the need to escape avoidable diseases, the need to be (at least) minimally educated and the need to be mobile for purposes of social interaction and participation of economic activity. Poverty is one of the main barriers between entitlement and access to income, employment, education, housing, health and other basic necessities of life such as food, clothing, shelter and safe drinking water.

Based on the estimates of the Tendulkar Committee, the final set of new poverty ratio for Tripura in 2004-05 comes about 44.5 percent for rural areas and 22.55 percent for urban areas. The all India similar poverty ratio is 41.8 percent for rural areas and 25.7 percent for urban areas, respectively. The total poverty ratio combining the rural and urban stood at 40.6 percent for Tripura

against 37.2 percent for all India in 2004-05 as per the new expert group estimates.

The new expert group has also given the final poverty lines for all the states including the North-Eastern states. The final poverty line for Tripura was Rs.450.49 for rural areas and Rs.555.79 for urban areas as against Rs.446.68 for rural areas and Rs.578.8 for all India in 2004-05. The next large scale survey of house hold consumer expenditure was conducted in 2009-10. Following the Tendulkar Committee methodology, Planning Commission made estimates of poverty for 2009-10 ahich were released through a Press Note on 19th March 2012. The following table shows the poverty ratio by Tendulkar Methodology using Mixed Reference Period (MRP) for 2004-05 and 2011-12 as released by the Planning Commission.

Table No 3.6 : Poverty Ratio

Year		Rural	Urban	Total
2004-05:	Tripura	44.50	22.50	40.60
	All India	41.80	25.70	37.20
2011-12	Tripura	16.53	7.42	14.05
	All India	25.70	13.70	21.90

Source: Economic Review of Tripura 2013-14.

Since several representation were made suggesting the Tendulkar that the Tendulkar Committee estimate was too low, the Planning Commission in June 2012, constituted an Expert Committee under Chairmanship of Dr.C.Ramgarajan to once again review the methodology for the measurement of poverty.Tripura Urban Employment Programme (TUEP) has been launched since 2009-10 by the Government of Tripura. It is modeled on Mahatma Gandhi National Rural Employment Guarantee Act. The vision of this scheme is to provide employment to one adult member of each listed BPL family of each ULB in AMC areas. State of Tripura has decided to provide 75 days employment in a year. The Scheme is fully funded by the State Government of Tripura from its own budget.

Table No 3.7 : Physical Achievements of MGNREGA in 2013-14

(Rs in Lakhs)

District	Total job card issued	Employment demanded	Employment provided	Persons generated	Persondays generated for women	% of women participation
West	109210	102096	101560	7952505	3929047	39
Sepahijala	94111	88090	87337	7619153	3306644	52
Khowai	68473	64986	64295	5578612	2420817	39
Gomati	86443	79759	78937	7577127	3947350	50
South	89950	83299	82200	8013578	4276434	40
Unakoti	52787	47439	46962	4036674	1547815	35
North	69417	63765	62995	5087984	1984111	36
Dhalai	79152	75756	75245	6707150	3355410	41
Total	649543	605189	599531	52572783	24767628	41.5

Source: - RD Department, Tripura.

The State's economy is characterized by high rate of poverty, low per-capita income, low capital formation, in-adequate infrastructure facilities, geographical isolation and communication bottleneck, inadequate exploitation and use of forest and mineral resources, low progress in industrial field and high un-employment problem. For reducing the absolute poverty emphasise would be given for generating more employment opportunities particularly for the weaker and poorer section of the people. In order to ensure food security to the people of the State, the State Food Department arranges lifting, storage of food grains, levy sugar and salt etc. and ensures proper distribution of those ration commodities including kerosene oil through its 1,770 fair price shops.

3.1 Districts

For administrative purposes, the state has been divided into 8 districts, 23 subdivisions and 58 development blocks - with effect from 21 January 2012, after a Government of Tripura Decision, out of which the newly created districts are 4, subdivisions 6, development blocks 5. The four new Districts are Khowai Unakoti, Sipahijala and Gomati; the six new sub-divisions are Jirania, Mohanpur, Kumarghat, Panisagar, Jampuijala and Karbook; the five new development blocks are Yuvarajnagar, Durga Chawmuhani, Jolaibari, Silachari and Lefunga.

Literacy and education are reasonably good indicators of development in a society. The literacy rate for Tripura in 2011 works out to 87.22 percent for the population 7 years and above, which was 73.2 percent in 2001 and 60.44 percent in 1991. The corresponding figures in 2011 for males and females were 91.53 percent and 82.73 percent, respectively. At the State level, gap in male-female literacy rate in the State reduced to 8.80 percent in 2011 as against 16.1 percent in 2001. The Census-2011 data also reveals that the child population in the age group 0-6 was 4,58,014 out of which 2,34,008 males and 2,24,006 females in the state. The proportion of child population in the age group 0-6 years was 12.5 percent in 2011 as against13.6 percent in 2001.

Table No 3.8 : Administrative Divisions of Tripura

District	Headquarter	Sub-divisions	Development Blocks	Municipals	Population (2011 census)
Sipahijala	Bishramganj	1.Bishalgarh 2.Jampuijala 3.Sonamura	1.Bishalgarh 2.Jampuijala 3.Melaghar 4.Kathalia 5.Boxanagar	1.Bishalgarh Municipal CounciL 2.Sonamura Nagar Panchayet 3.Melaghar Municipal Council	484,233
Gomati	Udaipur	1. Udaipur 2. Amarpur 3. Karbook	1. Matabari 2.Kakraban 3.Killa 4.Amarpur 5.Ompi 6.Karbook 7.Silachari	1. Udaipur Municipal Council 2. Amarpur Nagar Panchayet	436,868
Unakoti	Kailashahar	1.Kumarghat 2.Kailashahar	1.Kumarghat 2.Pecharthal 3.Gournaga	1. Kumarghat Municipal CounciL 2. Kailashahar Municipal Council	277,335
North Tripura	Dharmanagar	1.Dharmanagar 2. Kanchanpur 3. Panisagar	1. Kadamtala 2.Yuvarajnagar 3. Dasda 4. Jampuihill	Dharmanagar Municipal Council	415,946

			5.Laljuri 6.Panisagar 7.Damchara		
West Tripura	Agartala	1. Sadar 2. Mohanpur 3. Jirania	1. Dukli 2. Mohanpur 3.Hezamara 4.Lefunga 5.Jirania 6.Mandai	1. Agartala Municipal Corporation 2. Ranirbazar Municipal Council	917,534
Dhalai	Ambassa	1. Kamalpur 2. Ambassa 3. Longtarai Valley 4.Gandachera	1. Salema 2.Durga Chawmuhani 3.Ambassa 4.Manu 5.Chawmanu 6.Dumburnagar 7.Raishyabar	1. Kamalpur Nagar Panchayet 2. Ambassa Municipal Council	377,988
Khowai	Khowai	1. Khowai 2.Teliamura	1. Khowai 2.Tulashikhar 3.Padmabil 4.Teliamura 5.Kalyanpur 6.Mungiakami	1. Khowai Municipal Council 2. Teliamura Municipal Council	327,391

Source:https://en.wikipedia.org/wiki/List_of_districts_of_Tripura

The following is a list of the basic demographic data for the districts of Tripura based on the size of the district's area, arranged in descending order. (The data input here is taken from 2011 Census; however the new four districts were formed in 2012 so information on those are of 2012)

Table No 3.9 : Demographic Status of Districts in Tripura

District	Area in km².	Sex Ratio	Literacy	Density/KM
Dhalai	2400	945	86.82	157
South Tripura	1534.2	956	85.09	283
Gomati	1522.8	959	86.19	287
North Tripura	1444.5	968	88.77	288
Sipahijala	1044.78	952	84.14	463
Khowai	1005.67	961	88.37	326
West Tripura	942.55	972	91.69	973
Unakoti	591.93	966	87.58	469

Source: Economic Review of Tripura, 2015-16.

Literacy and education are reasonably good indicators of development in a society. The literacy rate for Tripura is in 2011 works out to 87.22 percent for the population 7 years and above, which was 73.2 percent in 2001 and 60.44 percent in 1991. The corresponding figures in 2011 for males and females were 91.53 percent and 82.73 percent, respectively. At the State level, gap in male-female literacy rate in the State reduced to 8.80 percent in 2011 as against 16.1 percent in 2001.

Table No3.10 : Literacy Rate by Districts in Tripura

District	Literates			Literacy rate (%)		
	Male	Female	Persons	Male	Female	Persons
West Tripura	3,93,423	3,57,973	7,51,396	94.04	88.01	91.07
South Tripura	1,72,705	1,45,274	3,17,979	89.96	79.16	84.68

Dhalai	1,51,643	1,24,574	2,76,217	91.31	79.79	85.72
Shepa-hijala	1,94,993	1,64,351	3,59,344	89.80	79.49	84.78
Khowai	1,36,183	1,17,408	2,53,591	92.17	83.17	87.78
Unokati	1,10,146	97,575	2,07,721	90.92	82.79	86.91
Gomati	1,76,776	1,49,078	3,25,854	89.94	78.90	84.53
Tripura	15,01,369	13,03,414	28,04,783	91.53	82.73	87.22

Source: Economic Review of Tripura, 2015-16.

The above table shows that male and female literacy rate is highest in West Tripura compare to other seven districts.

CHAPTER 4

RESULTS AND DISCUSSION

- Impact of Block (Rubber) Plantation Scheme on the Income, Health, Educational, Socio-Political Status of Different Tribal Communities of Tripura
- Impact of Block (Rubber) Plantation on Women Empowerment
- Constraints of Block (Rubber) Plantation

Chapter 4

RESULTS AND DISCUSSION

Poverty Level of Tripura before and After Adoption of Rubber Plantation Scheme :

Table No. 4.1 : Percentage of Tribal Families above Poverty Line Before Adoption of Block (Rubber) Plantation Scheme.

District	Poverty Level per Day Per Person in Rural Area) [Rs. 20]*	Size of Family (No. of persons)	Poverty Level per Family per Month during 1990-91	Average Income from Jhum and miscell-aneous Sources (Rs.) (monthly)	Percent-age of Families Below Poverty Line	Percent-age of Fami-lies Above Poverty Line
Unokoti	20	4	2400	1226	100	0
West Tripura	20	4 (4.2)	2400	378	100	0
Sipahijala Tripura	20	5 (4.7)	3000	454	100	0
North	20	4 (4.2)	2400	1242	100	0
Gomati	20	5 (4.8)	3000	693	100	0
South Tripura	20	4 (4.3)	2400	766	100	0

**As perExpert Group chaired by Lakdawala (1993)*

Table No. 4.1 : Percentage of Tribal Families above Poverty Line Before Adoption of Block (Rubber) Plantation Scheme.

District	Poverty Level per Day Per Person in Rural Area) [Rs. 20]*	Size of Family (No. of persons)	Poverty Level per Family per Month during 1990-91	Average Income from Jhum and miscell-aneous Sources (Rs.) (monthly)	Percent-age of Families Below Poverty Line	Percent-age of Fami-lies Above Poverty Line
Unokoti	27	4	3240	12200	0	100
West Tripura	27	4 (4.2)	3240	16500	0	100
Sipahijala	27	5 (4.7)	4050	12280	0	100
North Tripura	27	4 (4.2)	3240	12956	0	100
Gomati	27	5 (4.8)	4050	15620	0	100
South Tripura	27	4 (4.3)	3240	14320	0	100

** As per Suresh Tendulkar panel's recommendations in 2011-12*

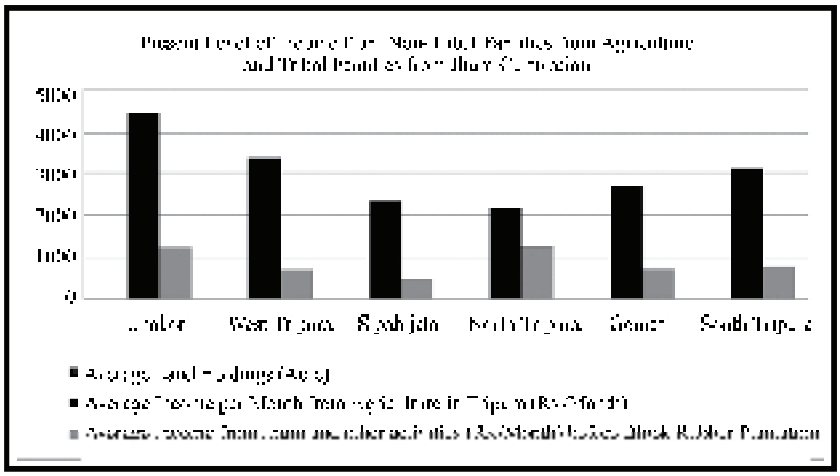
It is clear from the data in Table No.4.1 that before adoption of Block (Rubber) Plantation Scheme all the tribal families of all the sample districts were below poverty Line and due to adoption of Block (Rubber) Plantation Scheme, all of them in all the districts are now above the poverty line (Table. 4.2). This is one of the best scheme in India, implementation of which has raised all the member families, from below poverty line to above poverty line.

Table No 4.3 : Present Level of Income of Non-Tribal Families from Agriculture and Tribal Families from Jhum Cultivation

District	Average Land Holdings	Average Income per Month from Agriculture in Tripura (Rs./ Month)	Average Income from Jhum and other activities(Rs/ Month) before Block Rubber Plantation)
Unokoti	10	1333 x 3.33 =4438	1226(2470)
West Tripura	6.8	1333 x 2.25 = 3375	678(1430)
Sipahijala	4.7	1333 x 1.57 =2355	454(920)
North Tripura	4.8	1333 x 1.6 =2132	1242(2535)
Gomati	6	1333 x 2 =2666	693(1430)
South Tripura	7	1333 x 2.33 =3110	766(1560)

The number in bracket indicates the present value of corresponding past income from jhum and other activities.

Figure 4.1 : Present Level of Income of Non-Tribal Families from Agriculture and Tribal Families from Jhum Cultivation



It is clear from data in Table. No.4.3 and Figure 4.1 that at present average income per month from agriculture for the non-tribal families in Tripura was much higher as compared to jhum cultivators of Tripura. The average income from jhum was highest in North Tripura followed by Unokoti whereas it was lowest in Sipahijala district. However, for non –tribal farming, the income was highest in Unokoti followed by West Tripura district. The incomes per family per month, of non-tribal families were substantially higher as compared to jhum cultivators because, they used modern technologies in farming while the method of cultivation of jhumias was totally primitive in nature.

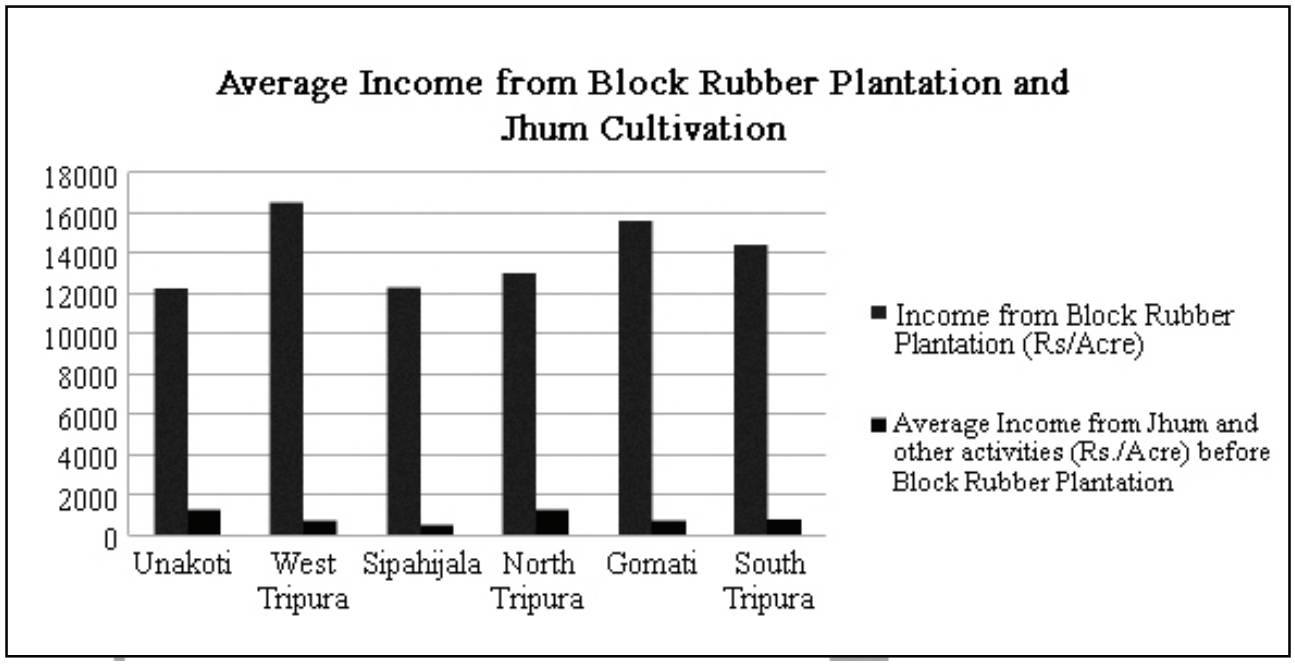
Table No. 4.4 : Average Income from Block (Rubber) Plantation and Jhum Cultivation

District	Average Income from Block Rubber Plantation (Rs./ Month)	Average Income from Jhum and other activities(Rs/ Month) before Block Rubber Plantation)	Change in Income due to adoption of Block Rubber Plantation Scheme in terms of Present value (Rs./ Month)**
Unokoti	12200	1226 (2470)	9730
West Tripura	16500	678(1430)	15070
Sipahijala	12280	454 (920)	11360
North Tripura	12956	1242 (2535)	10421
Gomati	15620	693 (1430)	14190
South Tripura	14320	766 (1560)	12760

Source: Survey Data for the year 2016.

** The number in bracket indicates the present value of corresponding past income from jhum and other activities. The present value of past income has been calculated taking 1995 as the base year as all the RPS started during this year.

Figure 4.2 :Average Income from Block (Rubber) Plantation and Jhum Cultivation



It is clear from Table 4.4 and Figure 4.2 that net income from rubber plantation was highest in West Tripura followed by Gomati district and it was lowest in Unokoti district. But income from jhum was highest in North Tripura followed by Unokoti. However the change of income from jhum to rubber wasabout 6 times (in present value) or more in every district. Thus, jhuming to tapping brought a revolution in the livelihood and life style of Block(Rubber) Plantation beneficiaries in Tripura.

4.1 Impact Block (Rubber) Plantation Scheme:

Table No 4.5 : Impact of Block (Rubber) Plantation on Land Ownership and Housing Patterns.

(Percentage)

Districts	**Land Ownership**					
	Before			**After**		
	Own	Rented	Govt.	Own	Rented	Govt.
Unakoti	30 (18)	0	70 (42)	62 (37)	0	38 (23)
West Tripura	0	0	100 (150)	100 (150)	0	0
Sipahijala	10 (15)	0	90 (135)	100 (150)	0	0
North Tripura	25 (15)	0	75 (45)	95 (57)	0	36 (21)
Gomati	24 (28)	0	76 (88)	60 (69)	0	40 (46)
South Tripura	5 (3)	0	95 (95)	90 (58)	0	10 (7)

Source: Field Survey (2016), Figure in parenthesis indicates frequency. Sample size: Total 600 (Unokoti-60, North-60, South-65, Gomoti-115, West-150 and Siphijala-150)

Table No 4.5 : Impact of Block (Rubber) Plantation on Land Ownership and Housing Patterns.

(Percentage)

Districts	Housing Pattern					
	Before			After		
	Mud	Brick Built	TIn and Brick Built	Mud	Brick Built	TIn and Brick Built
Unakoti	92 (59)	0	8 (1)	24 (13)	16 (10)	60 (36)
West Tripura	90 (135)	0	10 (15)	10 (15)	0	90 (135)
Sipahijala	100 (150)	0	0	02 (2)	06 (7)	92 (141)
North Tripura	80 (15)	4 (1)	16 (10)	16 (10)	48 (29)	36 (21)
Gomati	92 (105)	4 (5)	4 (5)	12 (14)	12 (14)	76 (87)
South Tripura	95 (62)	0	5 (3)	30 (20)	20 (13)	50 (32)

Source: Field Survey (2016), Figure in parenthesis indicates frequency. Sample size: Total 600 (Unokoti-60, North-60, South-65, Gomoti-115, West-150 and Siphijala-150)

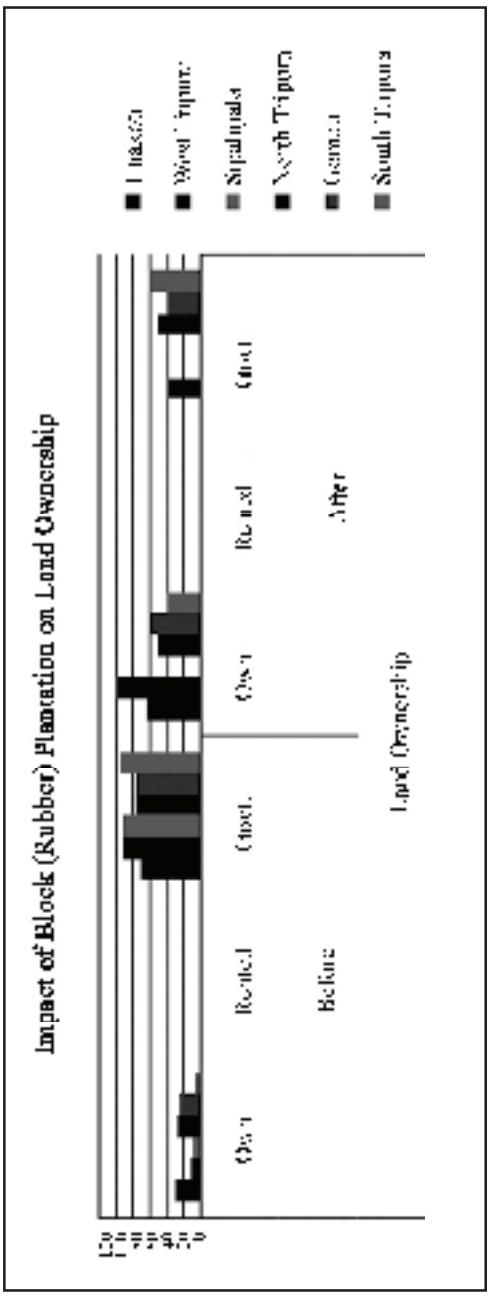
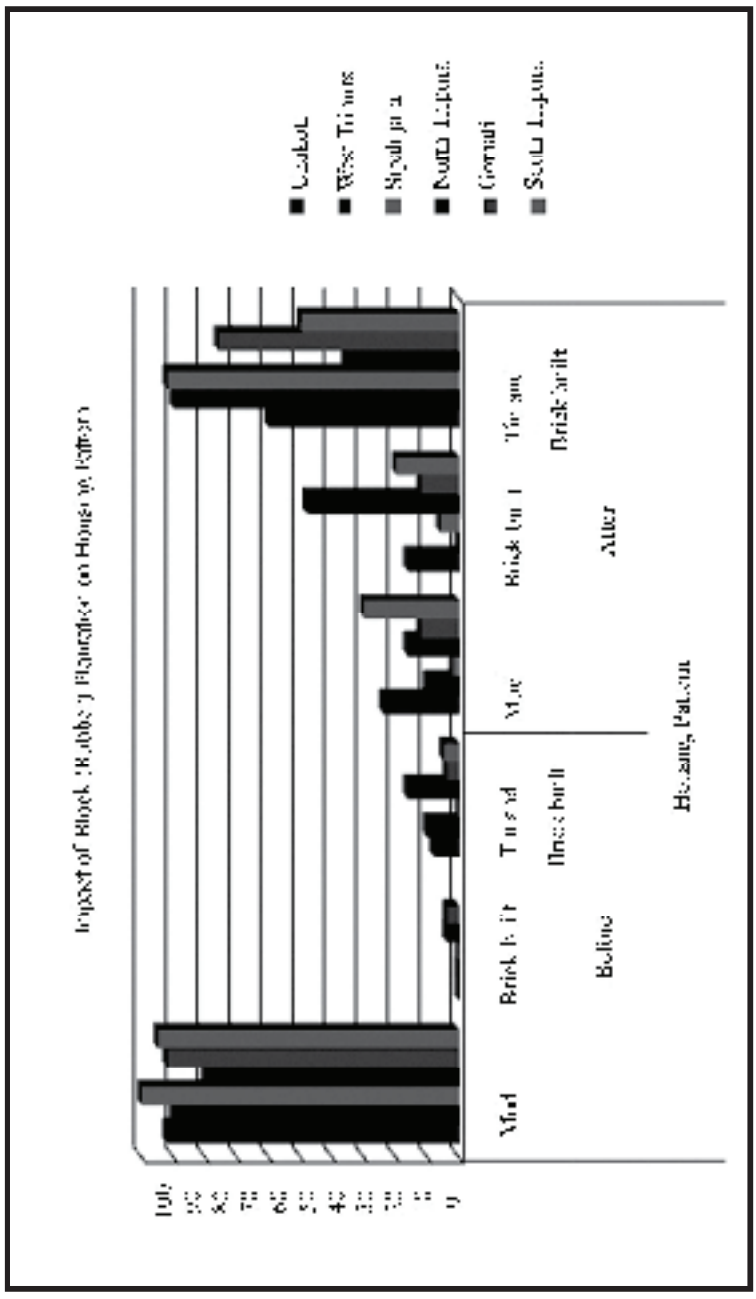


Figure 4.3 : Impact of Block (Rubber) Plantation on Land Ownership and Housing Patterns.



It is clear from Table No. 4.5 and Figure 4.3 that before implementation of Block (Rubber) Plantation scheme; 70 to 100 percent beneficiaries' i.e. lowest 42 out of 70 beneficiaries in Unokoti district and as high as 150 out of 150 beneficiaries in West district were living in Government land. But due to adoption of Block (Rubber) Plantation scheme, most of the beneficiaries i.e. lowest 37 in Unokoti and all 150 beneficiaries, both in West and Sipahijala districts were shifted in their own land . This could be possible because of substantial saving from their increased in income from Block (Rubber) Plantation,whichcreated capacity among most of the scheme members, to construct a house on their own land.

It may also be seen from Table. 4.5 and Figure 4.3 that before implementation of Block (Rubber) Plantation scheme ,most of the beneficiaries were living in mud wall and straw covered house whereas due to adoption of Block (Rubber) Plantation, most of the beneficiaries were shifted to their brick built and tin roofed house in all most all the districts. To be specific, lowest 48 out of 60 participants of North district and all 150 participants of Sipahijala districts were living in mud house but after adoption of Block (Rubber) Plantation scheme, lowest number 2 out of 150 participants of Sipahijala and highest 20 out of 65 participants of South districts were living in mud house. This was possible because, as an impact of adoption of Block (Rubber) Plantation scheme, their income increased substantially and that's why they could save necessary amount to build up brick built house. It is also interesting to note that majority of the beneficiaries of Block (Rubber) Plantation scheme, became eligible for House Building Loan from bank, once they own title of land and could take loan, if required, for construction of house.

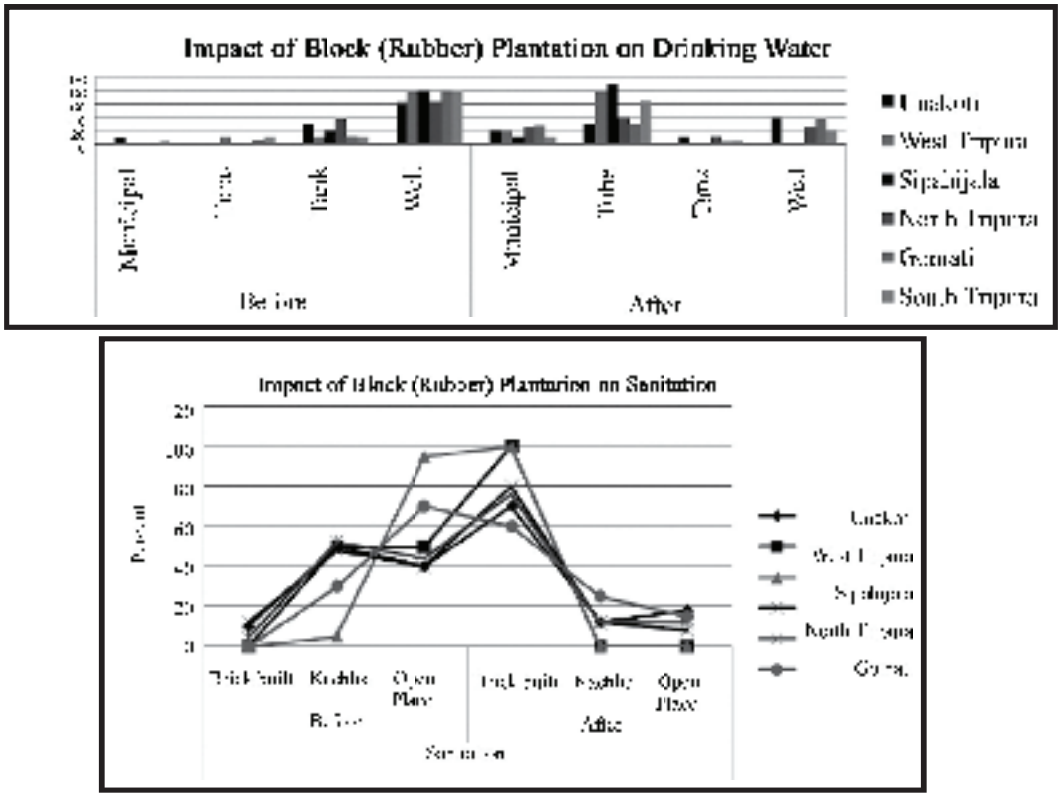
Table No 4.6: Impact of Block (Rubber) Plantation Scheme on Drinking Water and Sanitation.

(Percentage)

Districts	Drinking Water								Sanitation					
	Before				After				Before			After		
	Municipal	Tube well	Tank	Well	Municipal	Tube well	Tank	Well	Brick built	Kachha	Open place	Brick built	Kachha	Open place
Unakoti	8 (5)	0	30 (18)	62 (37)	20 (12)	30 (18)	10 (6)	40 (24)	10 (6)	50 (30)	40 (24)	70 (42)	12 (7)	18 (11)
West Tripura	0	10 (15)	10 (15)	80 (120)	20 (30)	80 (120)	0	0	0	50 (75)	50 (75)	100 (150)	0	0
Sipahijala	0	0	20 (30)	80 (120)	10 (15)	90 (135)	0	0	0	05 (8)	95 (142)	100 (150)	0	0
North Tripura	0	0	36 (22)	64 (38)	24 (14)	40 (24)	12 (8)	24 (14)	12 (7)	48 (29)	40 (24)	80 (48)	12 (7)	8 (5)
Gomati	4 (5)	6 (7)	12 (14)	78 (89)	28 (32)	30 (36)	4 (5)	36 (42)	4 (5)	52 (60)	44 (50)	76 (87)	12 (14)	12 (14)
South Tripura	0	10 (7)	10 (6)	80 (52)	10 (7)	65 (41)	5 (4)	20 (13)	0	30 (20)	70 (45)	60 (39)	25 (16)	15 (10)

Source: Field Survey (2016), Figure in parenthesis indicates frequency.
Sample size: Total 600 (Unokoti-60, North-60, South-65, Gomoti-115, West-150 and Siphijala-150),

Figure 4.4 : Impact of Block (Rubber) Plantation Scheme on Drinking Water and Sanitation.



Impact of Block (Rubber) Plantation onDrinking Water and Sanitation:

Table 4.6 and Figure4.4 revealed that before implementation of Block (Rubber) Plantation scheme, well and tank water was the main sources of drinking water for sample households. However, after adoption of Block (Rubber) Plantation scheme, this picture changed dramatically and most of the tribal families started using municipal supply and tube wall water for drinking in all the districts. It is to be highlighted that before adoption of this scheme most of the tribal families ranging 62 percent in Unokoti to 78 percent in Gomoti district were used to drink well water only, but after adoption of Block (Rubber) Plantation ranging, lowest zero percent in West and Sipahijala to 40 percent beneficiaries only of Unokoti were using well water. This has happen because of adoption of Block (Rubber) plantation scheme, the members of the adopter families, visited different Government programmers, schemes and offices which improved their awareness level about the benefits of use of clean drinking water and they replaced the relatively clean municipal supply and tube wall water in place of unhealthy tank and well water. It is also to be noted that after implementationof BlockPlantation Scheme, Government took initiatives to supply municipal water and provided tube wells in the block plantation areas, which was also an important cause for shifting drinking water pattern by the beneficiaries of Block (Rubber) plantation scheme.

Table 4.6 and Figure 4.4 alsorevealed that before implementation of Block (Rubber) Plantation scheme, there was almost no brick built toilet and normally tribal people used open place or polithin covered place as their toilet. But after adoption of Block (Rubber) Plantation scheme, the adopter families had not only enough saving but also became more health conscious and hence, majority of them constructed brick built toilets. It is to be noted that before adoption of Block (Rubber) plantation, there was no brick built toilet but after adoption of this scheme, all of them could built up brick built toilet. The Tripura Government's tired less efforts also helped to convince and motivate the tribal people to understand the benefits of use of

brick built latrine and bath rooms and as a result now more than 60 to 100 percent latrine and bath rooms are brick built in the study areas of Tripura.

Table No. 4.7 : Impact of Block (Rubber) Plantation on Fuel and Power Use Pattern

(Percentage)

Districts	Fuel						Power Use Pattern			
	Before			After			Before		After	
	Gas	wood	Kerosine	Gas	wood	Kerosine	Electric	Kero-sine	Electric	Kero-sine
Unakoti	0	80 (48)	20 (12)	75 (45)	10 (6)	15 (9)	15 (9)	85 (51)	95 (57)	5 (3)
West Tripura	0	100 (150)	0	25 (38)	75 (112)	0	30 (45)	70 (105)	90 (135)	10 (15)
Sipahi jala	0	100 (150)	0	40 (60)	52 (78)	8 (12)	5 (8)	95 (142)	88 (132)	12 (18)
North Tripura		86 (52)	14	80 (48)	8 (5)	12 (7)	12 (7)	88 (53)	69 (42)	31 (18)
Gomati	0	98 (113)	2	55 (63)	25 (29)	20 (23)	16 (19)	84 (96)	75 (86)	25 (29)
South Tripura	0	95 (62)	5	50 (58)	35 (39)	15 (18)	10 (7)	90 (63)	70 (42)	30 (18)

Source: Field Survey (2016), Figure in parenthesis indicates frequency,
Sample size: Total 600 (Unokoti-60, North-60, South-65, Gomoti-115, West-150 and Siphijala-150),

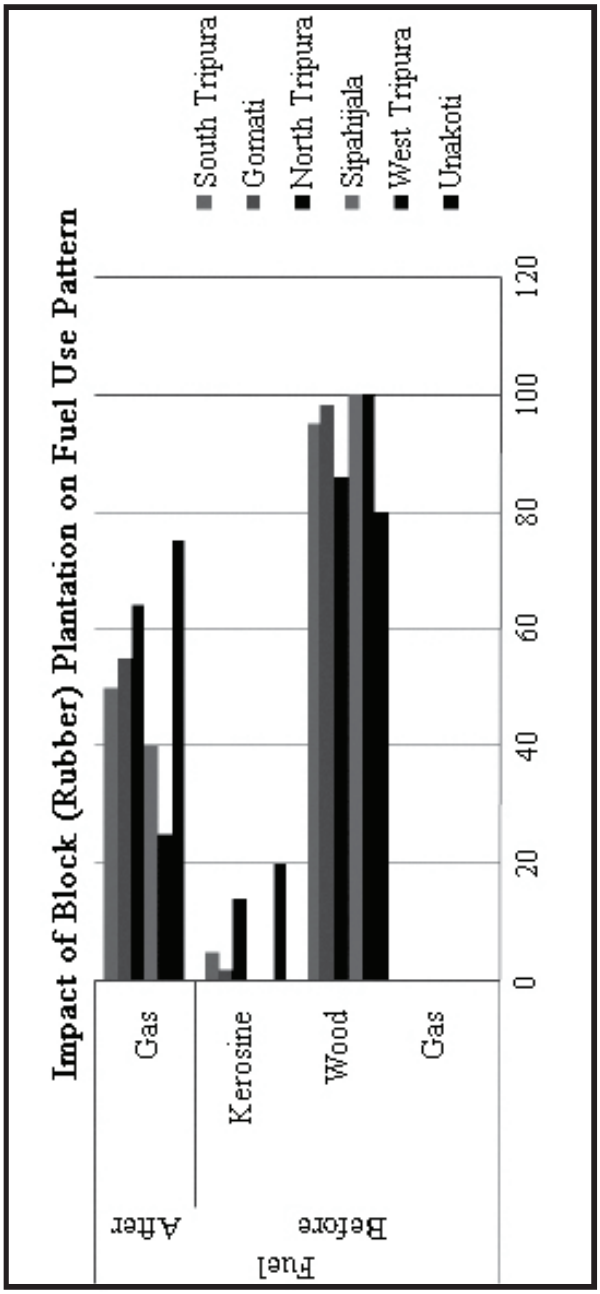
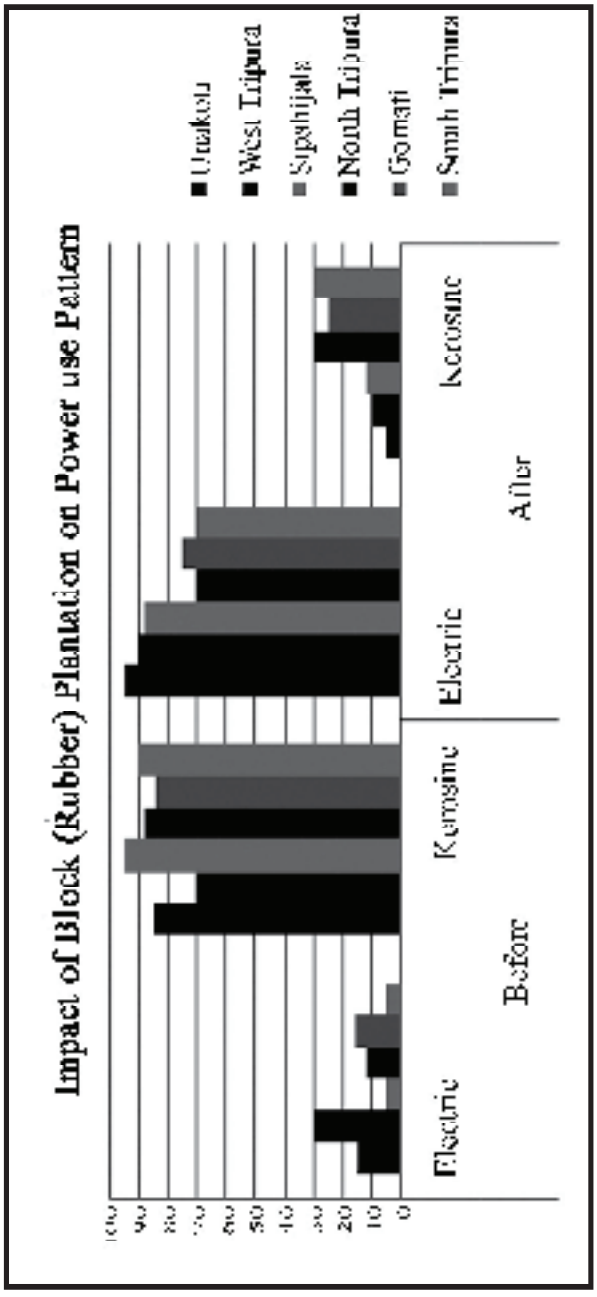


Figure 4.5 : Impact of Block (Rubber) Plantation on Fuel and Power Use Pattern

Impact of block (Rubber) plantation in Tripura



Impact of Block (Rubber)Plantation Scheme on Fuel and Power Use Patterns :

From Table No. 4.7 and Figure 4.5 it is clear that before implementation of Block (Rubber) Plantation scheme, most of the tribal families of the study area, were using forest wood as a fuel which was not only caused environmental pollution and de-forestation but also caused environmental degradation in long run. However, due to adoption of Block (Rubber) Plantation scheme, some beneficiaries adopted gas which was helpful for saving from both forest resources and environmental pollution problems.

It is clear from above table4.7 and figure 4.5 that before implementation of Block (Rubber) Plantation scheme, most of the tribal families were using (ranging 95 percent in sipahijalato 70 percent in West district) subsidized kerosene for lighting their houses, but after adoption of Block (Rubber) Plantation, picture became reverse and most of them (ranging 95 percent in Unokoti to 69 percent in North district) were started using electricity, if connection is available. The use of electricity in lieu of kerosene saved time and money of Block (Rubber) Plantation scheme members of all the 6 districts of Tripura.

Table No 4.8 : Impact of Block (Rubber Plantation on Schooling of Children's and Home Guidance Pattern

(Percentage)

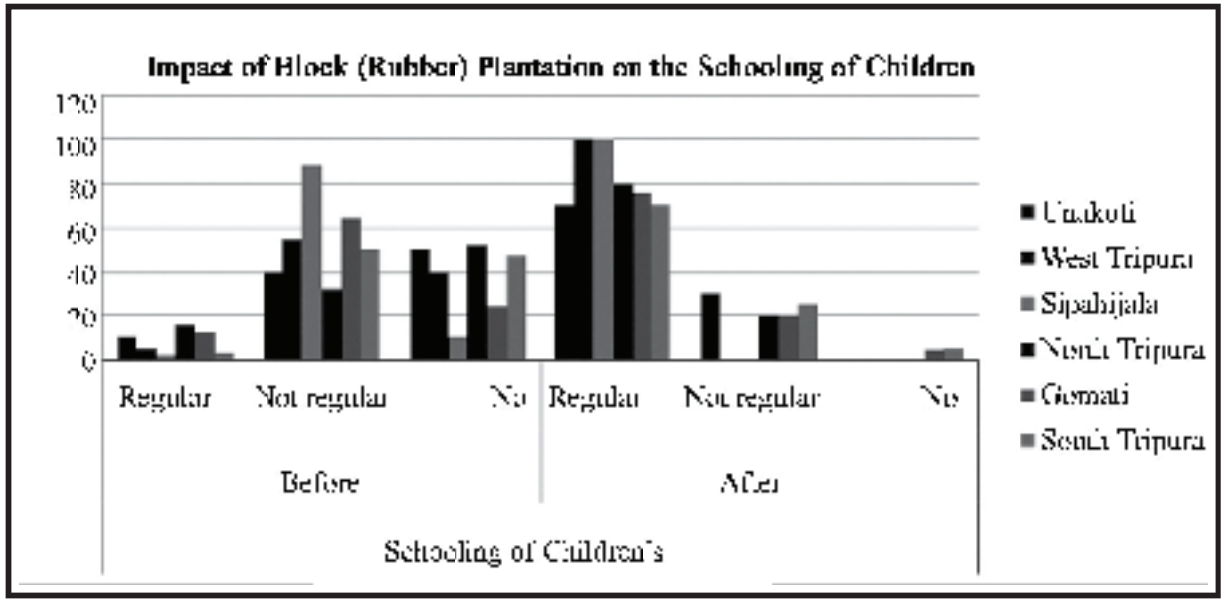
Districts	Schooling of Children's					
	Before			After		
	Regu lar	Not Re gular	Not Going	Regu lar	Not Re gular	Not Going
Unakoti	10 (6)	40 (24)	50 (30)	70 (42)	30 (18)	0
West Tripura	5 (8)	55 (82)	40 (60)	100 (150)	0	0
Sipahijala	2 (3)	88 (132)	10 (15)	100 (150)	0	0

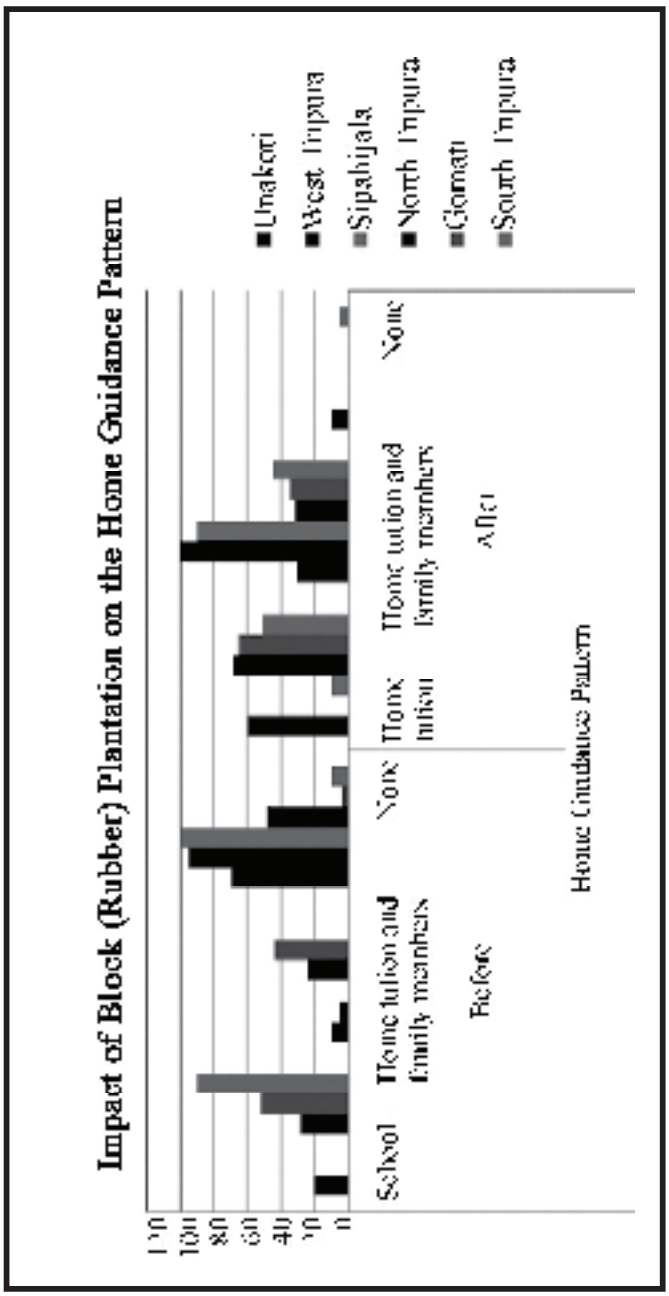
North Tripura	16 (10)	32 (19)	52 (31)	80 (48)	20 (12)	0
Gomati	12 (14)	64 (73)	24 (28)	76 (87)	20 (23)	4 (5)
South Tripura	3 (2)	50 (32)	47 (26)	69 (46)	25 (16)	6 3)

Districts	**Home Guidance Pattern**					
	Before			**After**		
	School	Home tuitu tion and family mem bers	None	Mud	Brick Built	TIn and Brick Built
Unakoti	20 (12)	10 (6)	70 (42)	15 (10)	75 (44)	10 (6)
West Tripura	0	5 (8)	95 (142)	0	100 (150)	0
Sipahijala	0	0	100 (150)	10 (15)	90 (135)	0
North Tripura	28 (17)	24 (14)	48 (29)	20 (12)	82 (48)	0
Gomati	15 (17)	12 (10)	73 (88)	20 (23)	80 (92)	0
South Tripura	20 (13)	0	80 (52)	20 (13)	75 (49)	5 (3)

Source: Field Survey (2016), Figure in parenthesis indicates frequency. Sample size: Total 600 (Unokoti-60, North-60, South-65, Gomoti-115, West-150 and Siphijala-150),

Figure 4.6 : Impact of Block (Rubber Plantation on Schooling of Children's and Home Guidance Pattern




Impact of Block (Rubber) Plantation on the Home Guidance Pattern
Unakoti
West Tripura
Sipahijala
North Tripura
Gomati
South Tripura
100
80
60
40
20
0
School
Home tution and Family members
None
Home tution
Home tution and Family members
None
Before
After
Home Guidance Pattern

Impact of Block (Rubber Plantation) on Schooling of Children's and Home Guidance Pattern :

Table No. 4.8 and Figure 4.6 revealed that before implementation of Block (Rubber) Plantation scheme, most of the childrens of tribal's families of the study areas ranging 52 percent in North district to 40 percent in West district, were not going to school. But after implementation of Block (Rubber) Plantation scheme, the picture changed completely and 100 percent children's of both West and Sipahijala started regularly going to school. Due to increase in income from rubber plantation on the one hand and for intensive campaign and giving different incentives by the Tripura Government for the education of tribal communities on the other, most of the children's of Block (Rubber)plantation beneficiaries were started regularly going to school.

Table No. 4.8 and Figure 4.6 also depicted that, before implementation of Block (Rubber) Plantation scheme, no one was guiding most of the tribal family students. Because, most of these tribal families were struggling for food and they could not give any attention for the education of their childrens. But after acceptance of Block (Rubber) plantation scheme, 100 percent in West and 90 percent of Sipahijala districts ,student were guided by home tuition and family members. In other districts also the trends were more or less similar. This hashappened due to income of the beneficiaries increased by many folds in all districts and they gave full attention for the education of their children's. Moreover, Government's continuous extension activities and propaganda about the bright future of tribal educated boys and girls in the Government services also attracted tribal families to provide higher education of their children's.

Table No. 4.9 : Impact of Block (Rubber) Plantation on Type of Disease Occurrence

(Percentage**)**

Districts	**Disease Occurrence**									
	Before					**After**				
	B.P	Indigestion	Headque	*Spondylitis*	Others	B.P	Indigestion	Headque	*Spondylitis*	Others
Unakoti	10 (10)	32 (19)	28 (17)	30 (18)	-	12 (6)	20 (12)	20 (12)	40 (24)	8 (6)
West	0	20 (12)	25 (15)	50 (30)	5 (3)	5 (3)	15 (21)	25 (15)	45 (15)	10 (6)
Sipahijala	10 (15)	30 (45)	30 (45)	30 (45)	0	9 (14)	20 (30)	20 (30)	30 (45)	21 (31)
North	13 (7)	32 (19)	31 (19)	22 (14)	2 (1)	12 (7)	10 (12)	30 (24)	20 (12)	28 (5)
Gomati	9 (12)	25 (28)	22 (24)	28 (32)	16 (19)	8 (9)	24 (28)	20 (23)	24 (23)	28 (32)
South	5 (3)	42 (24)	33 (20)	13 (8)	7 (5)	3 (2)	40 (24)	25 (15)	10 (6)	22 (13)

Source: Field Survey (2016). , Figure in parenthesis indicates frequency
Sample size: Total 600 (Unokoti-60, North-60, South-65, Gomoti-115, West-150 and Siphijala-150),

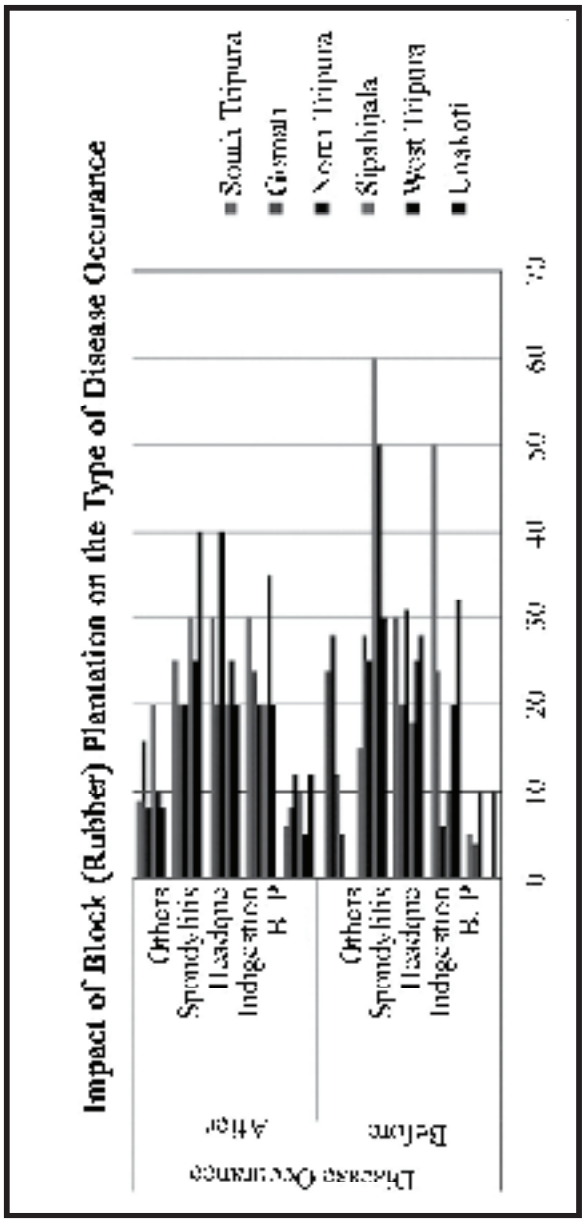


Figure 4.7 :Impact of Block (Rubber) Plantation on Type of Disease Occurrence

Impact of Block (Rubber Plantation) on Type of disease Occurrence :

It can be seen from above Table No. 4.9 and Figure 4.7 stated that rate of indigestion before implementation of Block (plantation) scheme was quite high among thetribals,but it declined to some extent in all the districts due to adoption of this scheme.Before implementation of this scheme about32,20, 30,32,25 and 42 percentstribals in Unokoti,West,Sipahijala, North, Gomoti and South districts respectively were suffering from indigestion which had declined to 20,15,20,10,24 and 40 percents respectively in these districts, due to adoption Block (plantation)scheme.Occurrence of BP, headque and*spondylitis*also showeddeclining trends due to adoption of Block (Rubber) Plantation scheme in the study areas of Tripura. This has due to adoption of this scheme, beneficiary member's educational level enhanced substantially which made them more health conscious, as a result their suffering from different diseases declined considerably.

Impact of Block (Rubber) Plantation on Pattern of Treatment of Beneficiaries

Table No. 4.10 and Figure 4.8 revealedthat before implementation of Block (Rubber) Plantation scheme, 50 percent tribal families were dependent on village kabiraj, 10 percent on owner of medical shops and 18 percent on village tantrick in Unokoti. But after adoption of Block (Rubber) Plantation scheme, they were going mostly to nearby Primary Health Centers(PHCs) (60 percent) rather than to village kabiraj (30 percent) and village tantric (4 percent)in Unokoti district. It is also interesting to note that before adoption of Block (Rubber) Plantation in West and Sipahijala no one liked to go to PHCs for treatment but after adoption of this scheme 70 percent from West and 90 percent tribal beneficiaries of Sipahijala were taking treatment from PHC. Similarly, in South district only two percent tribals were visiting PHCs for treatment before participation in Block (rubber) plantation but after adoption of Block (Rubber) Plantation scheme, about40 percent beneficiaries were taking treatment from PHCs.

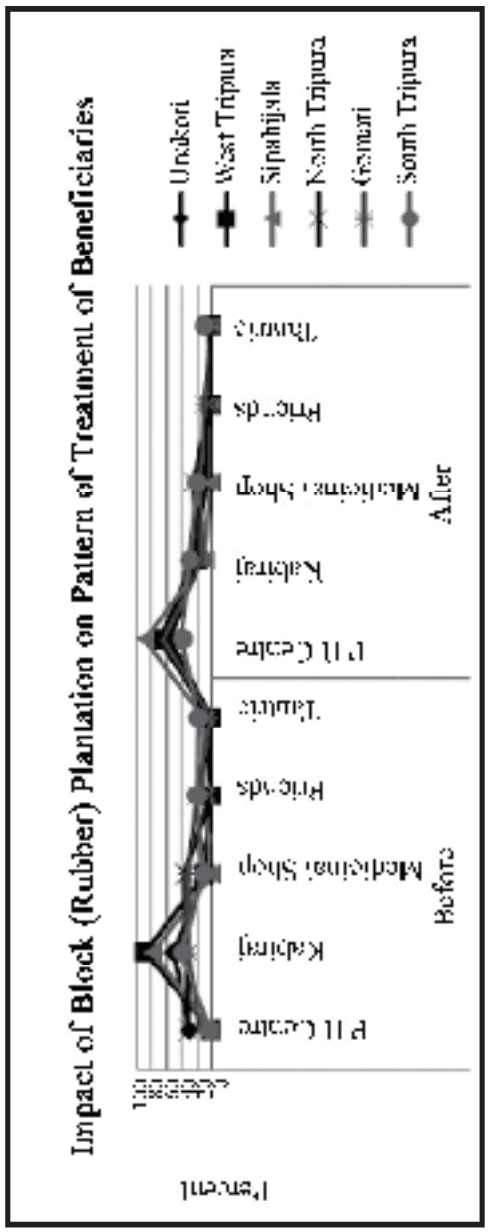


Figure 4.8 : Impact of Block (Rubber) Plantation on Pattern of Treatment of Beneficiaries.

Table No. 4.10 : Impact of Block (Rubber) Plantation on Pattern of Treatment of Beneficiaries.

(Percentage)

Districts	Treatment									
	Before					After				
	PHCentre	Kabiraj	Medical shop	friends	*Tantric*	PHCentre	Kabiraj	Medical shop	friends	*Tantric*
Unakoti	20 (12)	50 (31)	10 (6)	0	18 (11)	60 (36)	30 (18)	6 (4)	0	4 (2)
West Tripura	0	90 (135)	10 (15)	0	0	70 (105)	20 (300)	10 (15)	0	0
Sipahi jala	0	80 (120)		10 (15)	10 (15)	90 (135)	10 (15)	0	0	0
North Tripura	32 (19)	32 (19)	36 (22)	0	0	56 (34)	20 (12)	24 (14)	0	0
Gomati	16 (18)	32 (37)	32 (37)	20 (23)	0	66 (76)	12 (14)	15 (16)	9 (9)	0
South Tripura	2 (1)	40 (26)	10 (7)	20 (13)	28 (18)	40 (26)	30 (19)	20 (13)	0	10 (7)

Source: Field Survey (2016), PHC-Primary Health Centre ,Figure in parenthesis indicates frequency
Sample size: Total 600 (Unokoti-60, North-60, South-65, Gomoti-115, West-150 and Siphijala-150),

This clearly indicates that due to adoption of Block (Rubber) Plantation scheme, the beneficiaries became more health conscious as an impact of intensive campaign by the Tripura Government through different electronic media and health extension machineries about the draw backs of geting treatment as per advice of village kabiraj, medical shops and village tantrick. Another reason for the adopter of Block (Rubber) Plantation

scheme, now going for the treatment to the PHCs is that,as per the opinion of key officials of rubber board ,number of PHCs have increased considerably due to strong organized and continuous effort of the leading members of the RPS and for this effort,PHC's are now available even in their villages and the doctors are treating them in free of cost. The prompt and positive effect of treatment was also attracting more and more tribal beneficiaries of Block (Rubber) Plantation scheme, to the nearby Primary Health Centers (PHCs).

Table No 4.11 : Impact of Block (Rubber) Plantation on Habits of Addictions.

(Percentage**)**

Districts	**Habits of Addictions**									
	Before					**After**				
	Pan	Biri/cigarate	P+B+C	Desi wine	Nil	Pan	Biri/cigarate	P+B+C	Desi wine	Nil
Unakoti	25 (15)	10 (6)	20 (12)	40 (24)	5 (3)	30 (18)	20 (12)	19 (12)	20 (12)	11 (6)
West Tripura	5 (8)	20 (30)	60 (90)	15 (22)	0	10 (15)	20 (30)	50 (75)	10 (15)	20 (30)
Sipahi jala	10 (15)	40 (60)	20 (30)	20 (30)	1 (15)	10 (15)	30 (45)	10 (15)	15 (22)	35 (51)
North Tripura	24 (14)	24 (14)	24 (14)	12 (7)	16 (11)	20 (12)	21 (13)	19 (12)	8 (5)	32 (18)
Gomati	32 (37)	4 (5)	32 (37)	12 (14)	20 (22)	24 (28)	20 (23)	16 (18)	8 (9)	32 (37)
South Tripura	30 (20)	20 (12)	30 (20)	20 (13)	0	35 (22)	24 (16)	25 (17)	15 (10)	01 (0)

Source: Field Survey (2016), Figure in parenthesis indicates frequency. Sample size: Total 600 (Unokoti-60, North-60, South-65, Gomoti-115, West-150 and Siphijala-150),

Source: Field Survey, P+B+C= Taking by an individual pan, biri and sigarate also.

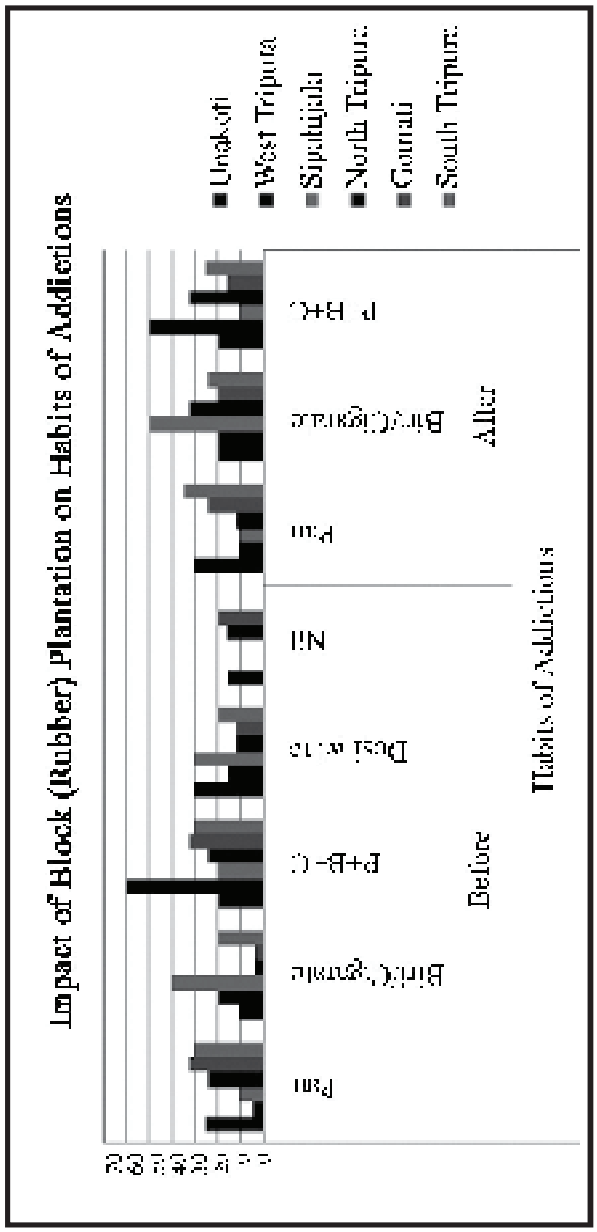


Figure 4.9 : Impact of Block (Rubber) Plantation on Habits of Addictions

Impact of Block (Rubber) Plantation on Habits of Addictions :

The habit of pan plus biriplus cigarette taking has reduced considerably due to adoption of Block (Rubber) Plantation, in all the six districts. It is most interesting to point out thatthe opinion and obs of leading members ervation of RPS and rubber board official that the habit of drinking desi- wine had been declined in all the districts after acceptanceof Block (Rubber) Plantation scheme. The habits of drinking or smoking have declined among the beneficiaries of Block (Rubber) Plantation, because they have now became more health conscious as an impact of high voltage campaign, by the Tripura Government through different electronic media and health extension machineries about the harm full effect of taking on regularly basis pan +,biri,+ cigarettes and or wine. on health .

Table No. 4.12 : Impact of Block (Rubber) Plantation on FoodIntake Pattern.

(Percentage)

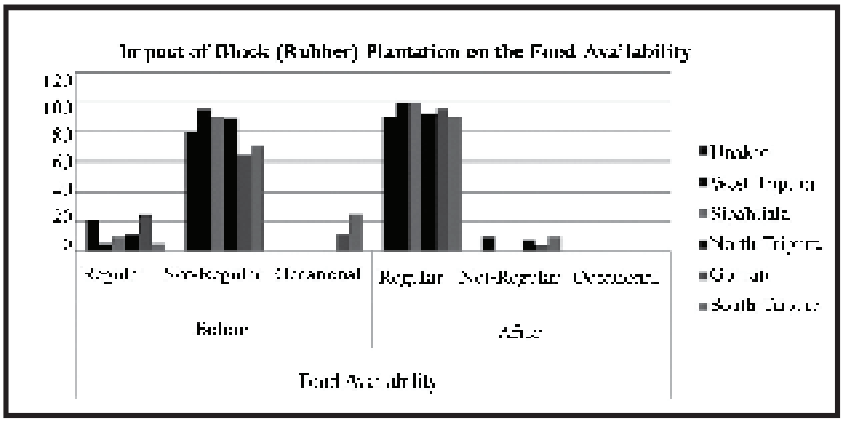
Districts	Food Availability					
	Before			After		
	Regular	Not Regular	Occa tional	Regular	Not Regular	Occa tional
Unakoti	20 (12)	80 (48)	0	90 (54)	10 (6)	0
West Tripura	5 (8)	95 (142)	0	100	0	0
Sipahi jala	10 (15)	90 (135)	0	100 (150)	0	0
North Tripura	12 (7)	88 (53)	0	92 (55)	8 (5)	0
Gomati	24 (28)	64 (73)	12 (14)	96 (100)	4 (5)	0
South Tripura	5 (4)	70 (45)	25 (216)	90 (58)	10 (7)	0

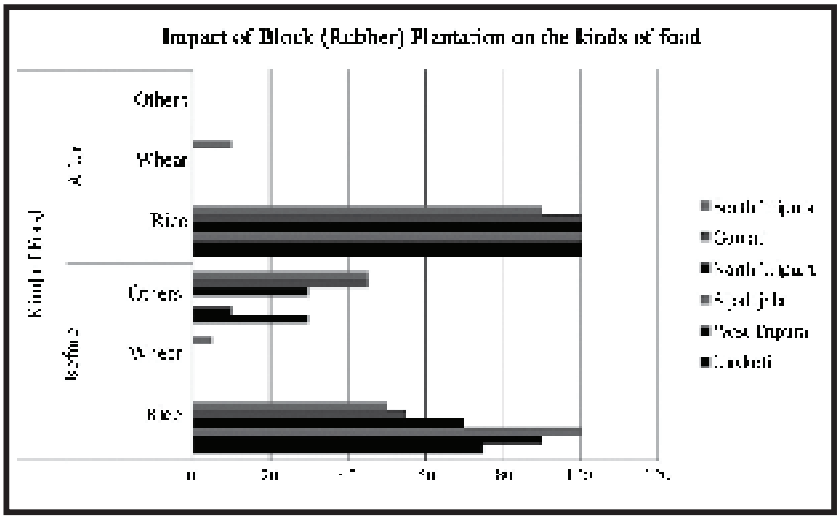
Impact of block (Rubber) plantation in Tripura

Districts	Kind of Food					
	Before			After		
Unakoti	70 (42)	0	30 (18)	100 (60)	0	0
West Tripura	90 (135)	0	10 (15)	100 (150)	0	0
Sipahijala	100 (150)	0	0	100 (150)	0	0
North Tripura	70 (42)	0	30 (18)	100 (60)	0	0
Gomati	55 (63)	0	45 (52)	100 (115)	0	0
South Tripura	50 (32)	5 (3)	45 (30)	90 (58)	10 (7)	0

Source: Field Survey (2016), Figure in parenthesis indicates frequency. Sample size: Total 600 (Unokoti-60, North-60, South-65, Gomoti-115, West-150 and Siphijala-150),

Figure 4.10 : Impact of Block (Rubber) Plantation on Food Intake Pattern.





Impact of Block (Rubber) Plantation on Food Intake Pattern :

It is clear from Table 4.12 and Figure4.10 that before implementation of Block (Rubber) Plantation scheme, most of the tribal families were not getting full meals in a day regularly in all the districts but the adoption of Block (Rubber) Plantation, enhanced their income substantially therefore, most of them could now afford to eat required meals regularly, both the times, in all the districts. Data in Table also4.12 depicts that before implementation of Block (Rubber) Plantation scheme, 64 to 95 percent of tribal people of different districts of Tripura were not getting regularly two meals a day, but after adoption of Block (Rubber) Plantation scheme, 90 to 100 persons families afforded to eat two full meals regularly in a day and for the whole month round the year.

It may be noted that in West Tripura and Sipahijala almost 100 percent families could regularly started taking food as an impact of adoption of Block (Rubber) Plantation scheme. Areas of West Tripura and Sipahijala being nearest to Agartala,, got relatively more income from Block (Rubber) Plantation scheme and therefore all the adopter families of these two districts were

getting food regularly while far away districts like North, South and Unokotiditricts about 90 to 92 percent tribal families were getting two times meala day regularly.

The rice is the common and most favoured food for all the tribal families of Tripura. But they could not afford rice, for their family members every day as their income from jhum and miscellaneous sources were very low before adoption of this scheme. But after taking part in Block (Rubber) Plantation project, the income of tribal families increased considerably hence, almost all of them can now afford to take rice both in lunch and dinner.

TableNo 4.13 : Impact of Block (Rubber) Plantation on Institutional Use Behaviors.

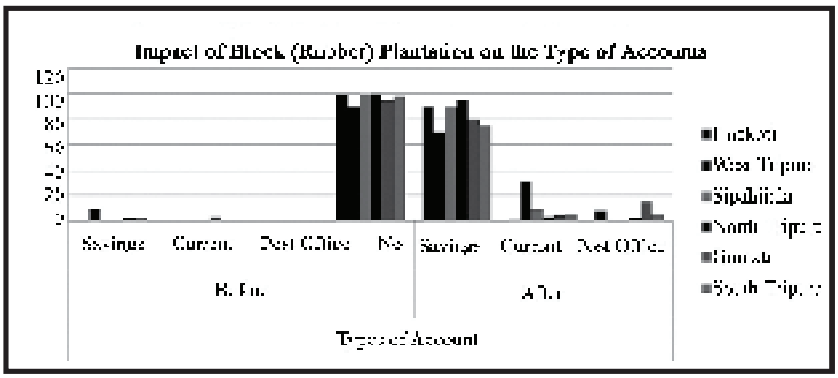
(Percentage**)**

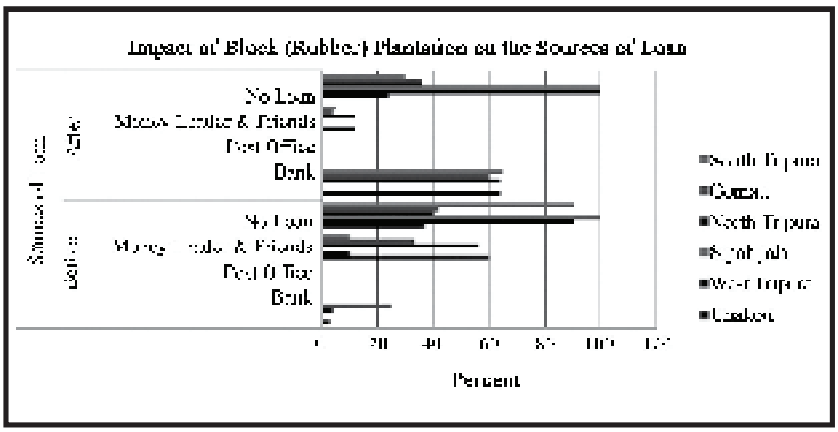
Districts	**Type of Accounts**							
	Before				**After**			
	Sav ing	Cur rent	Post Office	No	Sav ing	Cur rent	Post Office	No
Unakoti	0	0	0	100 (60)	90 (54)	1 (1)	9 (5)	0
West Tripura	10 (15)	0	0	90 (135)	70 (42)	30 (18)	0	0
Sipahijala	0	0	0	100 (150)	90 (135)	10 (15)	0	0
North Tripura	0	0	0	100 (60)	95 (135)	3 (2)	2 (1)	0
Gomati	2 (2)	3 (3)	0	95 (110)	80 (90)	4 (5)	0	25 (29)
South Tripura	2 (1)	0	0	98 (64)	75 (49)	5 (3)	5 (3)	15 (10)

Districts	Sources of Loan							
	Before				After			
	Saving	Current	Post Office	No	Saving	Current	Post Office	No
Unakoti	3 (2)	0	60 (36)	37 (22)	64 (39)	0	12 (7)	24 (14)
West Tripura	0	0	10 (15)	90 (135)	0	0	0	100 (150)
Sipahijala	0	0	0	100 (150)	0	0	0	100 (150)
North Tripura	4 (3)	0	56 (33)	40 (24)	64 (32)	0	12 (7)	36 (21)
Gomati	25 (29)		33 (38)	42 (48)	60 (69)	0	4 (5)	36 (41)
South Tripura	0	0	10 (7)	90 (58)	65 (44)	0	5 (3)	30 (18)

Source: Field Survey (2016), Figure in parenthesis indicates frequency. Sample size: Total 600 (Unokoti-60, North-60, South-65, Gomoti-115, West-150 and Siphijala-150)

Figure 4.11 : Impact of Block (Rubber) Plantation on Institutional Use Behaviors.





Impact of Block (Rubber) Plantation on Institutional Use Behaviors :

It can be seen from Table No 4.13 and Figure 4.11that before implementation of Block (Rubber) Plantation scheme, most of the tribal families were not having any saving account or any other kind of account in any kind of institutional or private organizations, exception West district. However, it is clear from data that after implementation of Block (Rubber) Plantation scheme; about 70 to 95 percent beneficiaries opened saving accounts in bank in the study areas. This could be happened because of on the one hand saving of beneficiaries enhanced and on the other hand continuous effort of bank and project officials to convince the tribal families, the benefits of opening account in bank. Such activities motivated them to open saving account in bank. It is also important to note that about 135 number of participants of Sipahijala opened saving account in bank because the impact of extension activities of bank and Government, being nearer to capital, was more on these two districts as compared to other districts.

From Table No.4.13 and Figure 4.11 it can again be seen that before implementation of Block (Rubber) Plantation scheme, the sources of credit and or loan for the tribal families, was primarily money lenders but after implementation of Block (Rubber) Plantation scheme, the picture changed drastically and majority

of the beneficiaries took interest to take loan and or credit from institutional sources only. The quickly spreading education among the Block (Rubber) Plantation scheme members helped them to understand the negative and fatal effectof taking loan from money lenders and hence, they opted bank as their major source of credit and thus, freed themselves from the age old clutches of money lenders.

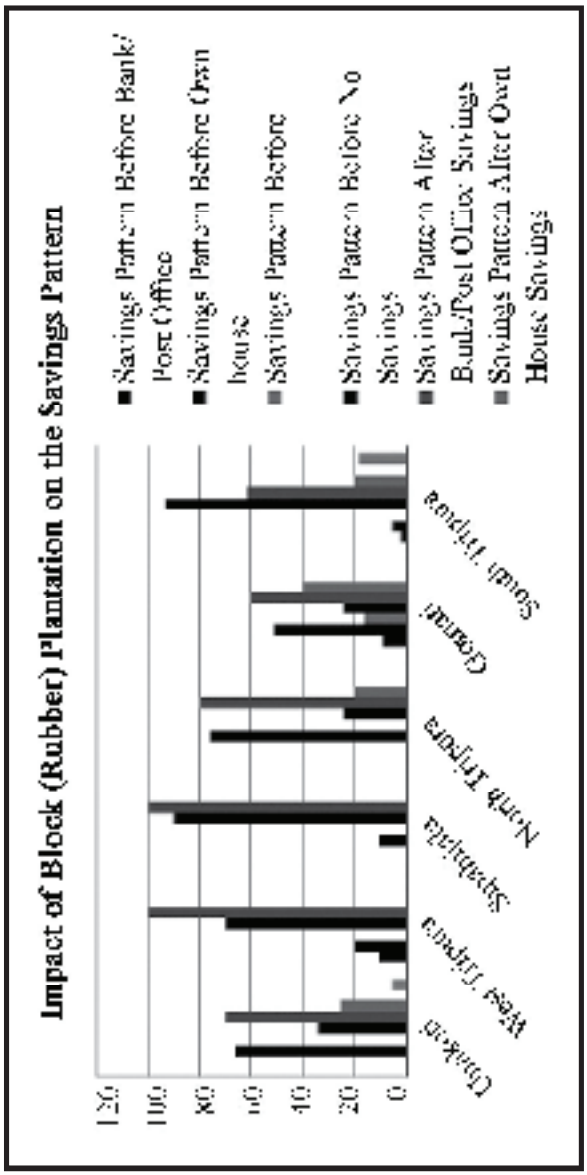
Table No. 4.14 : Impact of Block (Rubber) Plantation on Savings Pattern.

(Percentage)

Districts	Savings Pattern							
	Before				After			
	Bank/ Post Office	Own house	Fri end	No Sav ings	Bank/ Post Office	Own house	Fri end	No Sav ings
Unakoti	0	66 (40)	0	34 (20)	70 (42)	25 (15)	0	5 (3)
West Tripura	10 (15)	20 (30)	0	70 (105)	100 (150)	0	0	0
Sipahijala	0	10 (15)	0	90 (135)	100 (100)	0	0	0
North Tripura	0	76 (46)	0	24 (14)	80 (48)	20 (12)	0	0
Gomati	9 (10)	51 (59)	16 (18)	24 (38)	60 (68)	40 (47)	0	0
South Tripura	2 (1)	5 (3)	0	93 (61)	62 (40)	20 (13)	0	18 (12)

Source: Field Survey (2016), Figure in parenthesis indicates frequency.
Sample size: Total 600 (Unokoti-60, North-60, South-65, Gomoti-115, West-150 and Siphijala-150),

Table No. 4.12 : Impact of Block (Rubber) Plantation on Savings Pattern



Impact of Block (Rubber) Plantation on Savings Pattern :

From Table No. 4.14 and Figure 4.12 it can be seen that before implementation of Block (Rubber) Plantation scheme, own house was the preferred place of saving, if any for the 76 percent in North to 5 percent South district tribal families. It is to be noted that 93 percent tribal families did not have any saving in South district however, they liked to save mainly at home whatever saving they had. But after implementation of Block (Rubber) Plantation scheme, the picture changed completely and majority of the beneficiaries of all the sample districts including, started saving at their bank account It is again can be seen from data that even after implementation of Block (Rubber) Plantation,47 out of 115 families preferred to save at home in Gomoti district.

Before implementation of Block (Rubber) Plantation scheme, on the one hand the tribal families' saving was negligible and on the other hand, they were ignorant about the benefit of saving in bank therefore, they kept their little bitsaving, if any, in own house only. However, after implementation of Block (Rubber) Plantation scheme, about 60 to 100 percent beneficiaries saved their excess income in bank. This tremendous change could take place only due to continuous extension activities of the Government, bank and Block (Rubber) Plantation scheme officials.

Table No. 4.15 (A) : Impact of Block (Rubber Plantation) on Transport Use Pattern.

(Percentage)

Districts	Transport Pattern (Before)				
	Car	Bus & walk	Scooter	Bi-cycle	Walk
Unakoti	0	30 (18)	10 (6)	60 (36)	0
West Tripura	0	0	0	0	100 (150)
Sipahijala	0	0	0	0	100 (150)

Districts	Transport Pattern (Before)				
	Car	Bus & walk	Scooter	Bi-cycle	Walk
North Tripura	0	36 (22)	32 (19)	32 (19)	0
Gomati	0	52 (60)	0	48 (55)	0
South Tripura	0	90 (58)	0	10 (7)	0

Source: Field Survey (2016), Figure in parenthesis indicates frequency. Sample size: Total 600 (Unokoti-60, North-60, South-65, Gomoti-115, West-150 and Siphijala-150)

Table No. 4.15 (B) : Impact of Block (Rubber Plantation) on Transport Use Pattern.

(Percentage)

Districts	Transport Pattern (after)				
	Car	Bus & walk	Scooter	Bi-cycle	Walk
Unakoti	10 (6)	4 (2)	50 (30)	36 (22)	0
West Tripura	0	0	0	60 (90)	40 (60)
Sipahijala	0	0	10 (15)	46 (69)	44 (66)
North Tripura	16 (10)	12 (7)	48 (29)	24 (14)	0
Gomati	8 (9)	12 (14)	60 (69)	20 (23)	0
South Tripura	2 (1)	30 (20)	50 (33)	18 (11)	0

Source: Field Survey (2016), Figure in parenthesis indicates frequency. Sample size: Total 600 (Unokoti-60, North-60, South-65, Gomoti-115, West-150 and Siphijala-150)

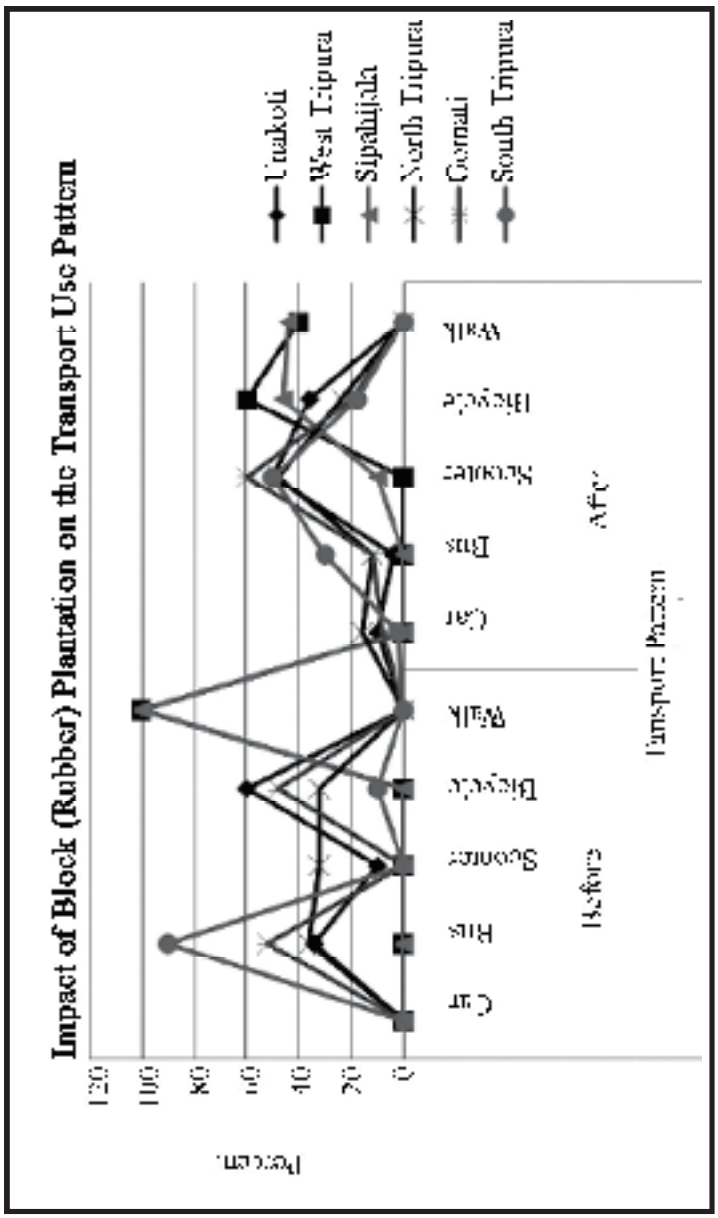


Figure 4.13 : Impact of Block (Rubber Plantation) on Transport Use Pattern.

Impact of Block (Rubber Plantation) on Transport Use Pattern :

Table No 4.15 and Figure 4.13 made it clear that before implementation of Block (Rubber) Plantation scheme, major means of transportation was walking or public bus or bicycle in all the districts. But after adoption of this scheme scooter or motor cycle became the most common means of transport in all the districts because of enhanced income, the beneficiaries could now afford motor cycle and a few of them even afford to buy car .

Table No 4.16 : Impact of Block (Rubber) Plantation on Political and Social Activities.

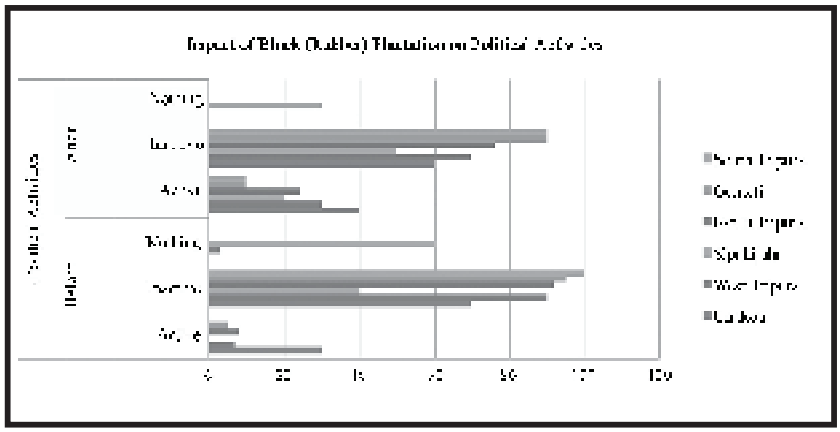
Districts	Political Activities					
	Before			After		
	Active	Inactive	Nothing	Active	Inactive	Nothing
Unakoti	30 (18)	70 (42)	0	40 (24)	60 (36)	0
West Tripura	7 (10)	90 (140)	3 (5)	30 (45)	70 (105)	0
Sipahijala	0	40 (60)	60 (90)	20 (30)	50 (75)	30 (45)
North Tripura	8 (5)	92 (55)	0	24 (14)	76 (46)	0
Gomati	5 (6)	95 (109)	0	10 (12)	90 (103)	0
South Tripura	0	100 (65)	0	10 (7)	90 (58)	0

Districts	Social Activities							
	Before				After			
	Song	Dance	Drama	None	Song	Dance	Drama	None
Unakoti	12 (7)	5 (3)	0	83 (50)	15 (9)	10 (6)	0	75 (45)
West Tripura	20 (30)	10 (15)	0	70 (105)	10 (15)	10 (15)	0	80 (120)

Districts	Social Activities							
	Before				After			
	Song	Dance	Drama	None	Song	Dance	Drama	None
Sipahijala	10 (15)	0	5 (8)	85 (127)	20 (30)	10 (15)	0	70 (105)
North Tripura	8 (5)	0	0	92 (55)	24 (14)	0	0	76 (46)
Gomati	10 (12)	12 (14)	0	78 (89)	15 (13)	15 (13)	0	70 (89)
South Tripura	5 (3)	10 (7)	0	85 (55)	8 (5)	10 (7)	0	82 (53)

Source: Field Survey (2016),Figure in parenthesis indicates frequency. Sample size: Total 600 (Unokoti-60, North-60, South-65, Gomoti-115, West-150 and Siphijala-150)

Figure 4.14 : Impact of Block (Rubber) Plantation on Political and Social Activities



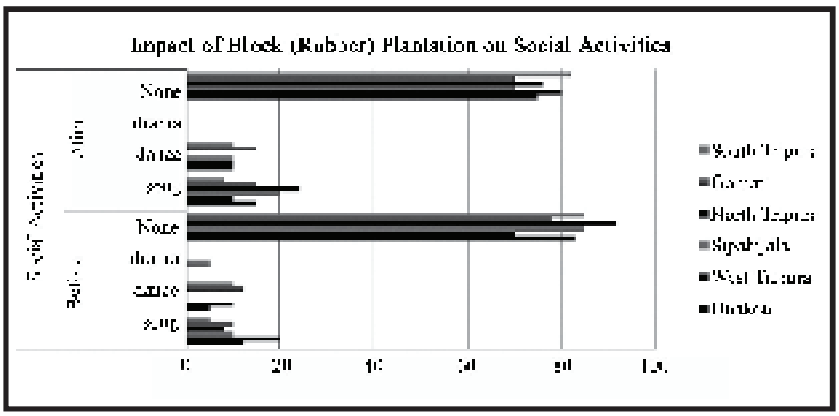


Table No. 4.16 and Figure 4.14showedthat before implementation of Block (Rubber) Plantation scheme, most of the tribal families was, in-active in politics. Ranging highest about 100 percent participants of south district to lowest 40 percent participant of Sipahijala district were inactive However, due to implementation of Block (Rubber) Plantation scheme, their participation in politics, increased considerably in all the 6districts. This has happened due to spread of formal and informaleducation, by the State Government among the beneficiaries of Block (Rubber) Plantation scheme. The spread of rural road network even in the remotest corner, by the State Government,was alsoan important reason for increasing political activities among the beneficiaries of Block (Rubber) Plantation scheme.

Table No. 4.16 and Figure 4.14 also shows that before implementation of Block (Rubber) Plantation scheme, most of the tribal family's ranging 70 percent in West to 92 percent in North district were not participated in any social activities but participation in social actives improved marginally in all the 6 districts due to adoption of this scheme. This has happened due to spread of formal and informal education, among the beneficiaries of Block (Rubber) Plantation scheme, by the State Government. The spread of rural road network even in the remotest corner by the State Government was an important reason behind increasing social activities among the beneficiaries of Block (Rubber) Plantation scheme

4.2 Impact of Block (Rubber) Plantation on Women Empowerment :

Table No. 4.17 : Impact of Rubber Plantation on Women Empowerment in Unakoti District

(Opinion in Percentage)

Activities	Fully Agree	Agree*	No Idea	Not Agree**	Fully Dis-agree
Due to Block (Rubber) Plantation, Income of Women Increased	30	70	0	0	0
Due to Block (Rubber) Plantation Social Dignity of Women Increased	20	60	20	0	0
Due to Block (Rubber) Plantation Socially Importance of Women Increased	0	80	20	0	0
Due to Block(Rubber) Plantation their Decision Making Power of Women Increased	50	40	10	0	0
Due to Block (Rubber) Plantation Scope of Employment Outside RPS of Women Increased	0	40	60	0	0
Women Became More Conscious about Programmes and Activities of Govt. after Adoption of Block (Rubber) Plantation	0	20	80	0	0

Source: Field Survey (2016)
*[*mildly agreed; ** mildly disagreed)*

Figure 4.15 : Impact of Rubber Plantation on Women Empowerment in Unakoti District

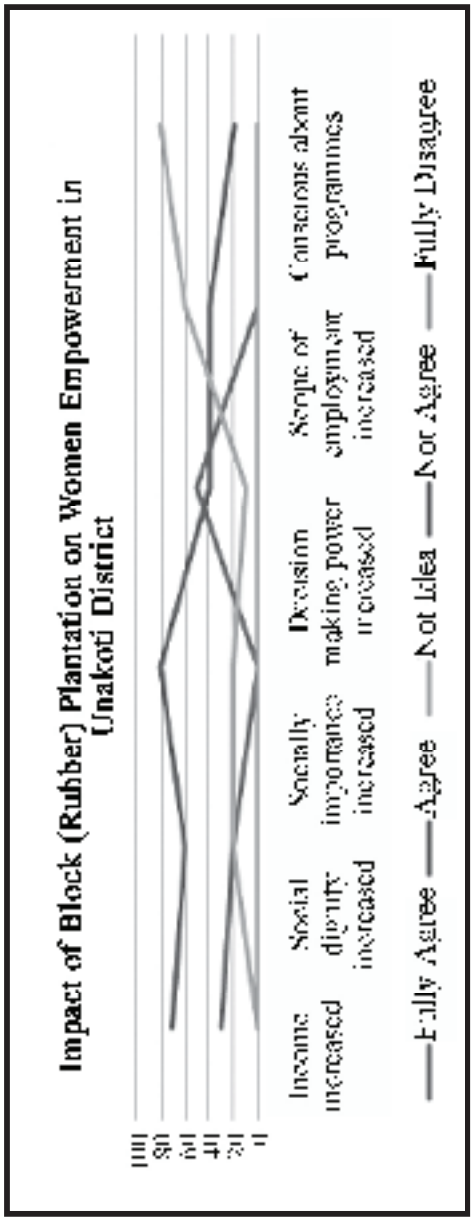


Table No. 4.18 : Impact of Rubber Plantation on Women Empowerment in West Tripura District

(Opinion in Percentage)

Activities	Fully Agree	Agree*	No Idea	Not Agree**	Fully Dis-agree
Due to Block (Rubber) Plantation, Income of Women Increased	80	20	0	0	0
Due to Block (Rubber) Plantation Social Dignity of Women Increased	70	30	0	0	0
Due to Block (Rubber) Plantation Socially Importance of Women Increased	90	10	0	0	0
Due to Block(Rubber) Plantation their Decision Making Power of Women Increased	40	55	05	0	0
Due to Block (Rubber) Plantation Scope of Employment Outside RPS of Women Increased	60	30	10	0	0
Women Became More Conscious about Programmes and Activities of Govt. after Adoption of Block (Rubber) Plantation	80	20	0	0	0

Source: Field Survey (2016)
*[*mildly agreed; ** mildly disagreed)*

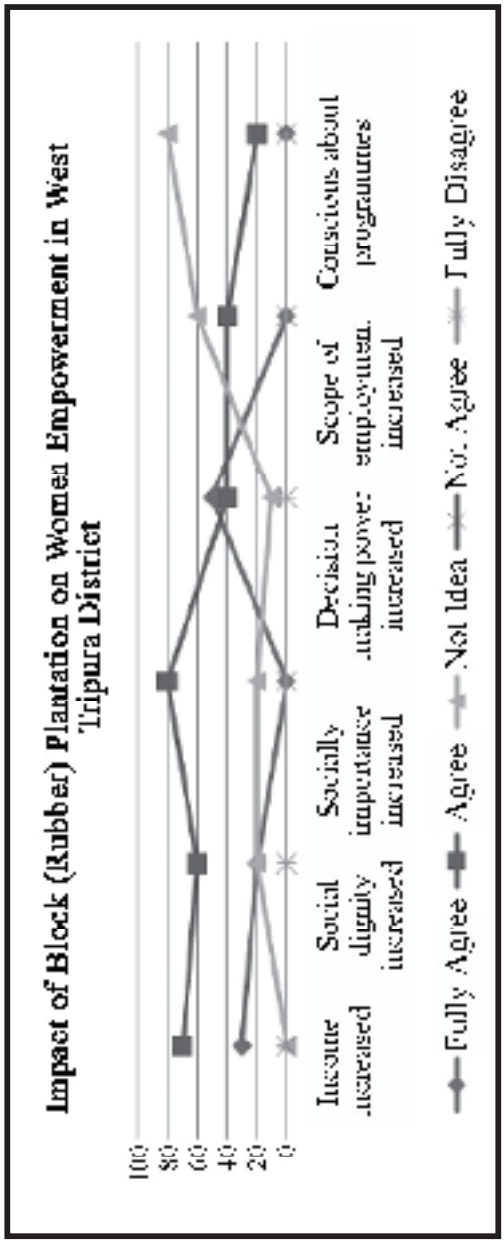


Figure 4.16 :Impact of Rubber Plantation on Women Empowerment in West Tripura District

Impact of Rubber Plantation on Women Empowerment in Unakoti and West Tripura Districts :

Table No 4.17 and Figure 4.15 indicate that30 percent beneficiaries fully agreed that due to Block(Rubber) plantation, income of women increased substantially whereas another 70 percent respondents also mildly agreed that due to Block(Rubber) plantation, income of women of the beneficiaries families, increased in Unokoti**.** Data in table 4.17 also indicates that 20 percent respondent strongly agreed that due to block (rubber) plantation, social dignity of Women increased but 60 percent agreed that social dignity of Women increased to some extent, due to Block(Rubber) plantation and 20 percent did note express any opinion. Similarly,mildly opinion of 80 percent respondents was that Block(Rubber) plantation socially improved importance Women and other 20 percent were not clear, whether Block(Rubber) plantation socially improved importance of women or not.

Further, 50 percent women of beneficiary families, fully agreed that Block (Rubber) plantation improved the decision making power of women, 40 percent mildly agreed and 10 percent expressed no option. It was the opinion of 40 percent of the beneficiary respondents that due to Block (Rubber) plantation, scope of employment outside the Rubber Producing Society (RPS) increased but 60 percent did not expressed any opinion. It was the mild opinion of about 20 percent block(Rubber) plantation participants that Women became more conscious about programmes and activities of Government, after adoption of Block(Rubber) Plantation, while 80 percent ,unable to express any opinion.

Thus, it can be safely concluded that as per the opinion of Block (Rubber) plantation scheme members, the women of this district were substantially empowered due to adoption of Block (Rubber) plantation scheme. From data in Table 4.18 and Figure4.16 it is clear that more or less same kind of trends were also present in West districts of Tripura.

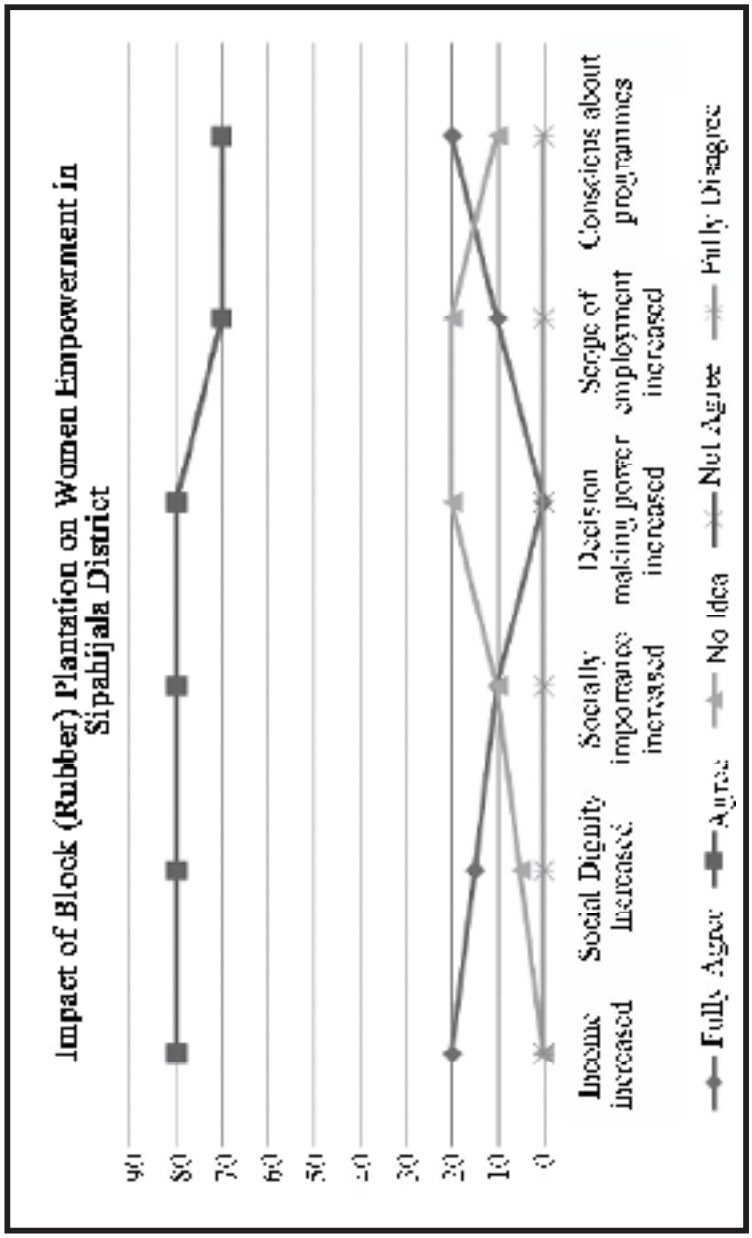
Table No. 4.19 : Impact of Block (Rubber) Plantation on Women Empowerment in Sipahijala District

(Opinion in Percentage)

Activities	Fully Agree	Agree*	No Idea	Not Agree**	Fully Dis-agree
Due to Block (Rubber) Plantation, Income of Women Increased	20	80	0	0	0
Due to Block (Rubber) Plantation Social Dignity of Women Increased	15	80	05	0	0
Due to Block (Rubber) Plantation Socially Importance of Women Increased	10	80	10	0	0
Due to Block (Rubber) Plantation their Decision Making Power of Women Increased	0	80	20	0	0
Due to Block (Rubber) Plantation Scope of Employment Outside RPS of Women Increased	10	70	20	0	0
Women Became More Conscious about Programmes and Activities of Govt. after Adoption of Block (Rubber) Plantation	20	70	10	0	0

Source: Field Survey (2016)
*[*mildly agreed; ** mildly disagreed)*

Figure 4.17 : Impact of Block (Rubber) Plantation on Women Empowerment in Sipahijala District



Impact of Rubber Plantation on Women Empowerment Sipahijala District :

Table No. 4.19 and Figure 4.17 indicate that20 percent beneficiaries fully agreed that due to Block(Rubber) plantation, income of women increased substantially whereas another 80 percent respondent also mildly agreed that due to Block(Rubber) plantation, income of women of the beneficiaries families, increased in Sipahijala**.** Data in table 4.19also indicates that 15 percent respondent strongly agreed that due to Block(Rubber) plantation ,social dignity of Women increased but 80 percent agreed that social dignity of Women increased to some extent, due to Block(Rubber) plantation in Sipahijala and five percent did note express any opinion. Similarly,10 percent strongly and 80 percent respondents mildly agreeds that Block(Rubber) plantation socially improved importance women and other 10 percent were not clear, whether Block(Rubber) plantation socially improved importance of women or not.

Further, 80 percent women of beneficiary families, agreed that Block (Rubber) plantation improved the decision making power of women and 20percent expressed no option. It was the opinion of most of the beneficiary respondents that due to Block (Rubber) plantation, scope of employment outside the Rubber Producing Society increased but 20 percent did not expressed any opinion. It was the strong opinion of 20percent and another70 percent block(Rubber) plantation participants agreed that Women became more conscious about programmes and activities of Government, after adoption of Block(Rubber) Plantation, while 10 percent ,unable to express any opinion.

Thus, it can be safely concluded that as per the opinion of Block (Rubber) plantation scheme members, the women of Sipahijala district were substantially empowered due to adoption of Block (Rubber) plantation scheme.

Table No. 4.20 : Impact of Block (Rubber) Plantation on Women Empowerment in North Tripura District

(Opinion in Percentage)

Activities	Fully Agree	Agree*	No Idea	Not Agree**	Fully Dis-agree
Due to Block (Rubber) Plantation, Income of Women Increased	55	45	0	0	0
Due to Block (Rubber) Plantation Social Dignity of Women Increased	45	50	0	0	5
Due to Block (Rubber) Plantation Socially Importance of Women Increased	40	55	0	0	5
Due to Block (Rubber) Plantation their Decision Making Power of Women Increased	80	10	5	5	0
Due to Block (Rubber) Plantation Scope of Employment Outside RPS of Women Increased	20	25	30	25	0
Women Became More Conscious about Programmes and Activities of Govt. after Adoption of Block (Rubber) Plantation	45	40	5	10	0

Source: Field Survey (2016)
*[*mildly agreed; ** mildly disagreed)*

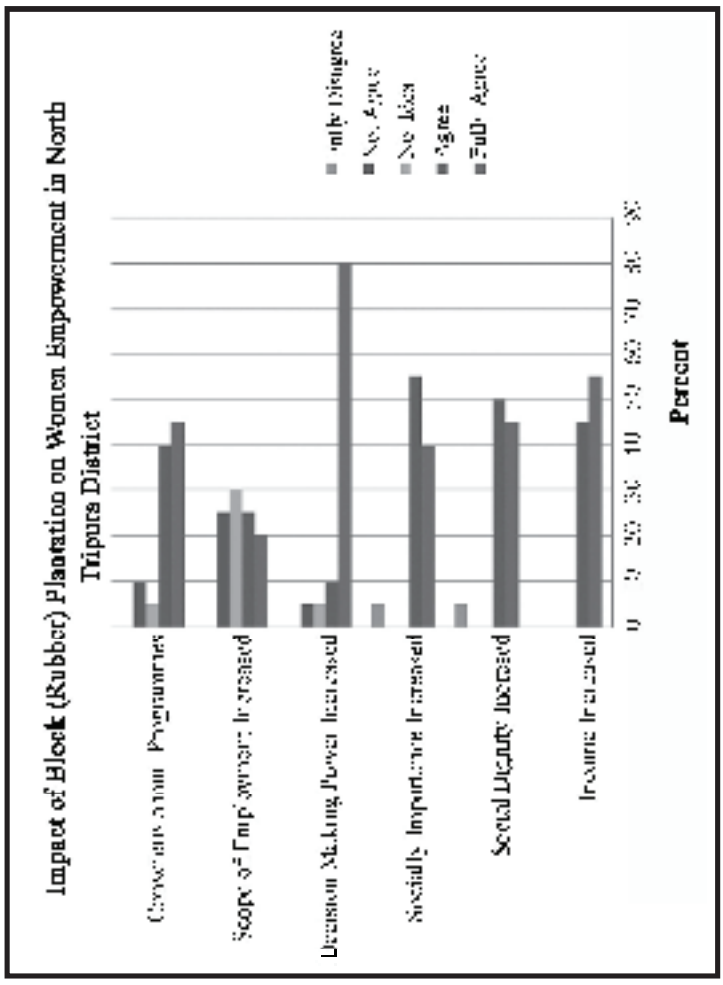


Figure 4.18 : Impact of Block (Rubber) Plantation on Women Empowerment in North Tripura District

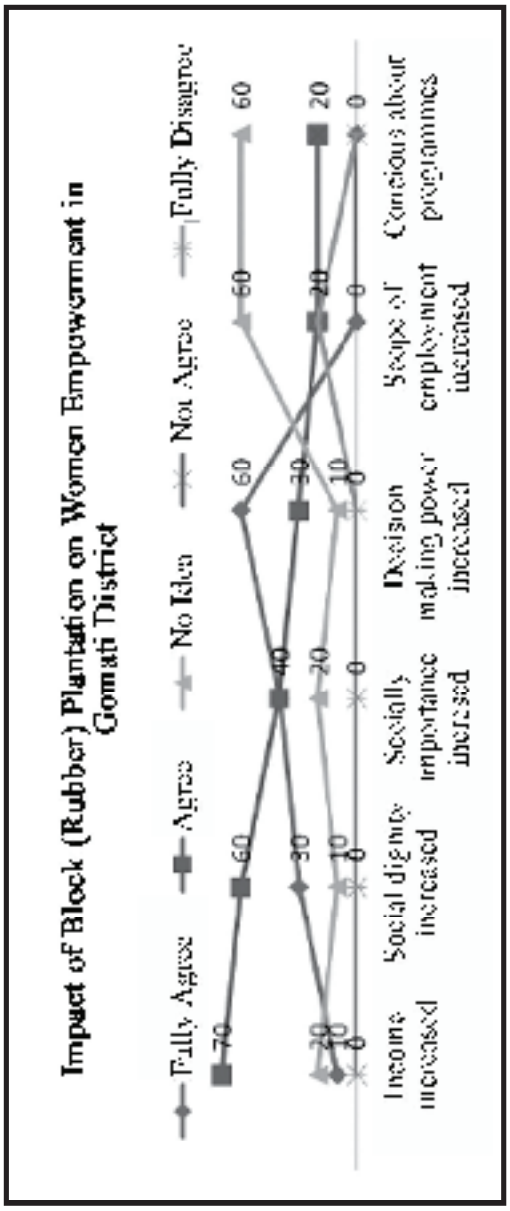
Table No. 4.21 : Impact of Block (Rubber) Plantation on Women Empowerment in Gomati District

(Opinion in Percentage)

Activities	Fully Agree	Agree*	No Idea	Not Agree**	Fully Dis-agree
Due to Block (Rubber) Plantation, Income of Women Increased	10	70	20	0	0
Due to Block (Rubber) Plantation Social Dignity of Women Increased	30	60	10	0	0
Due to Block (Rubber) Plantation Socially Importance of Women Increased	40	40	20	0	0
Due to Block (Rubber) Plantation their Decision Making Power of Women Increased	60	30	10	0	0
Due to Block (Rubber) Plantation Scope of Employment Outside RPS of Women Increased	0	20	60	0	20
Women Became More Conscious about Programmes and Activities of Govt. after Adoption of Block (Rubber) Plantation	0	20	60	20	0

Source: Field Survey (2016)
*[*mildly agreed; ** mildly disagreed)*

Figure 4.19 : Impact of Block (Rubber) Plantation on Women Empowerment in Gomati District



Impact of Rubber Plantation on Women Empowerment in North Tripura andGomatiDistricts

Table No.4.20 and Figure 4.18 indicate that 55 percent beneficiaries fully agreed that due to Block (Rubber) plantation, income of women increased substantially whereas another 45 percent also mildly agreed that due to Block (Rubber) plantation, income of women beneficiaries family, increased. But another 5 percent beneficiaries fully disagreed that due to Block (Rubber) plantation improved the women prestige in the society of North district.

Data in table 4.20 also indicates that 40 percent respondent fully agreed that Block (Rubber) plantation enhanced, social dignity of Women but 55 percent simply agreed that social dignity of Women increased to some extent ,due to block(Rubber) plantation in North District and five percent express their disagreement on this issue. Similarly, 80 percent respondents of Block (Rubber) plantation fully agreed, 10 percent simply agreed that women women's decision taking power increase due to adoption of Block (Rubber) plantation, but 5 percent did not express any opinion while another five percent not agreed on this issue.

About 20 percent adopter of Block (Rubber) plantation scheme opined that they fully agreed that due to Block(Rubber) plantation, scope of employment of women outside RPS increased another 25 percent participants also mildly supported this view when30 expressed no view while rest 25 percent disagreed with this view. Table 4.20 also indicated that45 percent beneficiaries fully agreed and 40 percent mildly agreed that due to Block (Rubber) plantation, women became more aware about different programmes of Government while 10 percent did not agree with this view and another 5 percent participants of Block (Rubber) plantation scheme could not say anything on this issue in North District. On women empowerment, more or less similar opinion was expressed by the participant of Gomati districts.

Table No. 4.22 : Impact of Block (Rubber) Plantation on Women Empowerment in South Tripura District

(Opinion in Percentage)

Activities	Fully Agree	Agree*	No Idea	Not Agree**	Fully Dis-agree
Due to Block (Rubber) Plantation, Income of Women Increased	55	35	0	10	0
Due to Block (Rubber) Plantation Social Dignity of Women Increased	40	40	20	0	0
Due to Block (Rubber) Plantation Socially Importance of Women Increased	35	25	20	20	0
Due to Block (Rubber) Plantation their Decision Making Power of Women Increased	10	20	25	35	0
Due to Block (Rubber) Plantation Scope of Employment Outside RPS of Women Increased	15	25	35	15	10
Women Became More Conscious about Programmes and Activities of Govt. after Adoption of Block (Rubber) Plantation	15	25	20	30	10

Source: Field Survey (2016)
*[*mildly agreed; ** mildly disagreed)*

Figure 4.20 : Impact of Block (Rubber) Plantation on Women Empowerment in South Tripura District

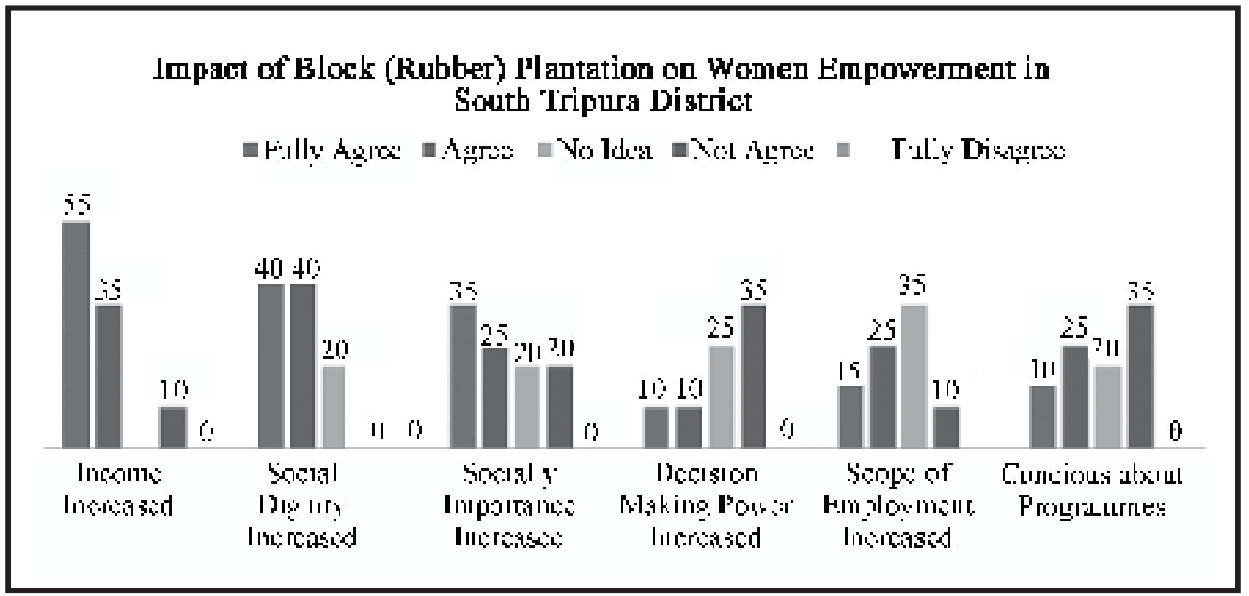


Table No 4.22 and Figure 4.20 revealed that55 percent beneficiaries fully agreed and35 percent simply agreed that due to Block (Rubber) plantation scheme, income of women increased substantially whereas another 10 percent did not agree with this view in south district. Further, about 40 percent fully agreed and another 40 percent mildly agreed that Block (Rubber) plantation scheme improved prestige of women in society while 20 percent did not express their opinion in South District. It is also clear from data that 35 percent beneficiaries of South District fully agreed while 25 percent also mildly agreed that Block (Rubber) plantation scheme, improved importance of women within their family, while rest 20 percent opposed this view.

About 10 percent participant of this project fully agreed that due to Block (Rubber) plantation scheme, their decision making power improved, while 20 mildly agreed but 25 percent said no idea and 35 percent strongly opposed this view. Similarly, 15 percent participants fully agreed and 25 persons agreed that due to Block (Rubber) plantation scope of employment outside RPS of Women increased but 35 percent did not express any opinion, while 15 percent opposed and another 10 percent strongly opposed this view.

Table No. 4.22 and Figure 4.20 also indicate that15 percent beneficiaries fully agreed and 25 percent mildly agreed that due to Block (Rubber) plantation, women became more aware about different programmes of Government while 30percent did not agree with this view and 20 percent participants of Block (Rubber) plantation scheme did not expressed any opinion and another 10 percent fully disagreed with this view.

Overall Impact of Block (Rubber) Plantation Scheme in Tripura :

It is clear from above results that socio-economic conditions of tribal beneficiary members of block (rubber) plantation scheme in Tripura increased and improved substantially. It is interesting to note that this scheme could bring all its members above poverty line. Moreover, due to adoption of RPS, the tribal women of all the sample districts of Tripura have also been substantially empowered in terms of their increase in income, social dignity

and importance, decision making power, employment opportunity and awareness level.

However, a realistic assessment of the Block Plantation Scheme shall also contain an analysis of its another two important dimensions, viz., the endogenous aspects of the scheme pertaining to the benefits realized by the targeted groups/ households and the exogenous dimensions related to the achievements of the larger socio-economic objectives which are the perceived impact on the regional economy. More precisely, the endogenous aspects of the scheme consisted of providing a sustainable income basis to the targeted groups through a settled mode of plantation whereas the exogenous dimensions are concerned with the resultant changes leading to improvements in the quality of life of the Block (Rubber)Plantation beneficiaries and their integration into the mainstream development process in Tripura. The assessment has to be contextualized in the backdrop of the inherited socio-economic background of the tribal communities, practices associated with shifting cultivation and the social unrest witnessed in the state during the 1980s and1990s.

Hence, the process of transition from the shifting cultivation and vestiges of the ethnic conflict has been challenging. Moreover, there are different views on the introduction of a new crop into a traditional society. The introduction of new crop in to an underprivileged traditional community showed the difficulties involved in the production process and appeared to have delivered less prosperity to adopters than initially promised (Carletto etal, 2008). However, rubber cultivation among the shifting cultivators revealed that rubber has not only complemented agriculture but also provided good economic opportunity for the farmers.

The Block Plantation Scheme in Tripura has been instrumental in evolving a settled mode of cultivation and led to significant improvement in the income profile of the beneficiary households. Unlike the wage employment schemes entangled with the consumption linkages, the scheme has the potential multiplier effects as it has been conferring ownership rights of a mature plantation with a guaranteed sustainable source of income. The

three important aspects of the process of change under the block plantation in Tripura have been an equitable distribution of land, clear title and control over land and an assured income from land. These changes have been crucial in the process of transformation from a primitive society.

The decline of the extended family system has deprived the Jhumiasof their co-operative spirits and ventures .The income impact was reflected more in the differences in savings and assets than in the consumption expenditure. The comparable consumption expenditure vis-à-vis the income differences underlines the pivotal role of traditional customs and conventions of tribal communities in determining the pattern of household consumption expenditure. However, the higher consumption expenditure of participant households is reflective of better awareness and access to more facilities by the tribal communities indicates their integration into the mainstream society.

The pattern of investment and utilization of the surplus generated is an important indicator of the prospective avenues of growth leading to gradual integration of the targeted groups with the development process of the region of Tripura. Although reliable evidences were not available, investing in land for non-rubber cultivation as individuals and groups has been receiving more attention of participant households.

The investment options other than purchase of land and buildings or deposits have been constrained by a variety of factors such as inadequate infrastructural facilities and quality of human capital in Tripura. In sum, the extent of awareness about the available and potential income diversification opportunities and options as well as skills possessed by the manpower to tap the same was inadequate among the beneficiary households. Nonetheless, the keen interest shown for education is a positive signal towards the empowerment of the targeted groups. The comparatively better literacy among younger generation in the Block Rubber Plantation participants shows an attitudinal change towards modern education. The idea of education among tribal's is mostly governed by economic returns and educational opportunities (Shah, 2005) whereas the

dropout in schools may be either due to the socio-cultural environment of their families/societies or due to inadequate educational institutions (Rao, 2016).

Therefore, the income impact of the Block Rubber Plantation Scheme on the build-up of human capital and the empowerment of the beneficiaries had been confined to acquisition of basic literacy without any notable linkage effects. This observation is in sharp contrast to the experience of Kerala where the surplus generated from the non rubber sector has been systematically channelized by the pioneering planters for the formal and professional education of their children (George,2005).

The impact of the Block Rubber Plantation Scheme in the context of the regional economy included the catalytic role in the integration of the tribal communities with the regional and national level development programmes, interactive relationships with the organized banking sector, facilitating the growth of local level infrastructures such as roads, transportation and communication facilities and participatory role in community based organizations. Another important outcome has been the mobilization of family labour as wage labour. The main destination of the surplus generated from the Block Rubber Plantation Scheme segment is land which led to a steady appreciation of the value of tribal land. As the transfer of tribal land to a non-tribal is legally restricted the benefits of value appreciation of land accrue to the households within the community. Another important outcome is the growth of a trading network to cater to the consumption requirements of the beneficiary households.

In spite of the observed changes and improvements in the profile of the tribal economy there is an explicit vacuum of linkage effects in the Block Rubber Plantation Scheme from the angle of the regional economy. The missing link is the absence of potential stimuli to generate growth impulses to capitalize the income impact of the Block Rubber Plantation Scheme. In this regard, the role of human capital is of critical importance in harnessing the inherent advantages and outcomes of the BPS from along-term policy perspective.

4.3 Constraints of Block (Rubber) Plantation :

Table No. 4.23 : Constraints of Block (Rubber) Plantation in Unakoti District

(Opinion in Percentage)

Constrains	Agree	No Idea	No Agree
Good Quality Seedlings (5)	60	40	0
In Time Availability of Seedlings (7)	20	80	0
Timely Availability of Labour (9)	10	60	30
Right Price of Rubber (1)	95	0	5
Disease of Rubber Tree (2)	85	15	0
Insect Attack on Rubber Tree (2)	85	15	0
Timely Fertilizer Availability (3)	80	15	5
Timely Pesticide Availability (4)	65	35	0
Theft of Rubber Sheet (8)	15	25	60
Environmental Pollution (8)	15	45	40
Low Rainfall (6)	30	40	30
Environmental Disagree (10)	10	10	80

Source: Field Survey (2016) ,
Figure in parenthesis indicates rank.

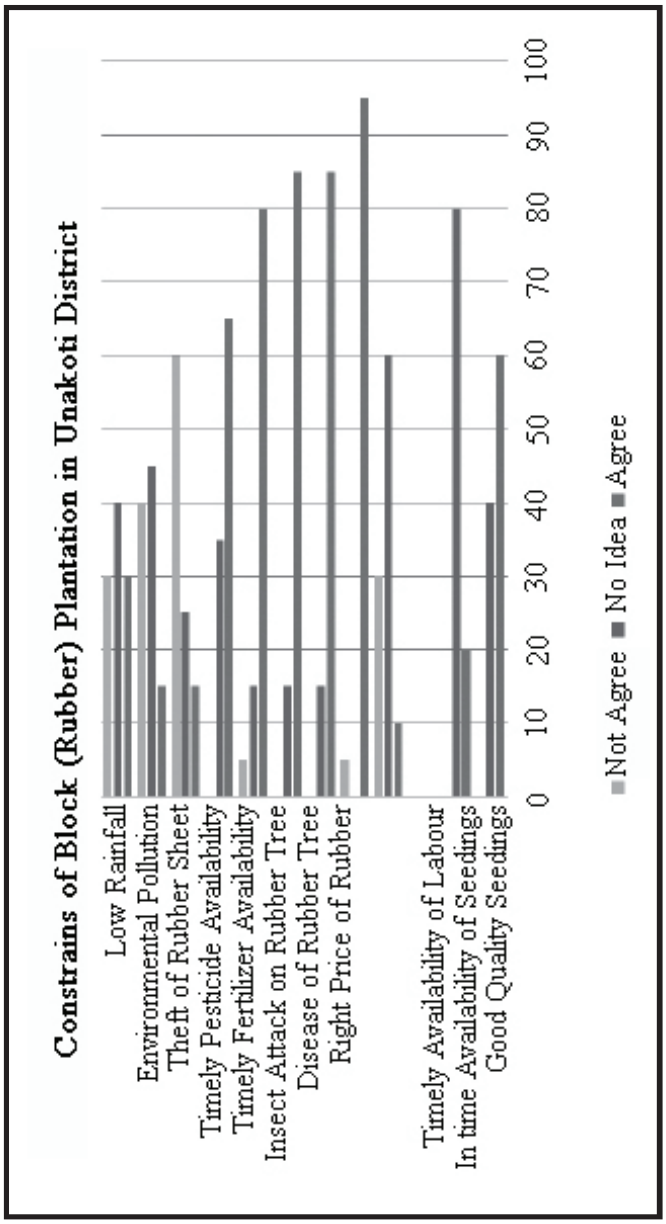


Figure. 4.21 : Constraints of Block (Rubber) Plantation in Unakoti District

Constraints ofBlock (Rubber) Plantation in Unokoti District :

It is clear from the data in Table 4.23 and Figure 4.21 that about 95 percent participants opined that profitable price of rubber is the greatest (rank 1) constraint of Block (Rubber) plantation inUnokoti district. Both disease of rubber tree and insect attack on rubber tree were also serious problems (ranked 2) of rubber production in this district.Timely fertilizers availability (ranked 3) andpesticideavailability (ranked 4) were also considered as serious constraints by 80 and 65 percent membersrespectively of Block (Rubber) plantation.

About 20 percent (ranked 7) members of Block (Rubber) plantation scheme agreed that seedlings of rubber supplied to them are not of expected in time in Unakoti district. As per most of the Block (Rubber) plantation scheme members, theft of rubber sheet is not a problem in Unokoti.

Table No. 4.24 : Constraints of Block (Rubber) Plantation in West Tripura District

(Opinion in Percentage)

Constrains	Agree	No Idea	No Agree
Good Quality Seedlings (1)	100	0	0
In Time Availability of Seedlings (2)	90	10	0
Timely Availability of Labour (3)	80	20	0
Right Price of Rubber (2)	90	10	0
Disease of Rubber Tree (5)	15	65	20
Insect Attack on Rubber Tree (4)	30	60	10
Timely Fertilizer Availability	0	10	90

Timely Pesticide Availability	0	0	80
Theft of Rubber Sheet	0	20	80
Environmental Pollution	0	0	100
Low Rainfall	0	20	60
Environmental Dis-balance	0	10	90

Source: Field Survey (2016) ,
Figure in parenthesis indicates rank.

Figure. 4.22 : Constraints of Block (Rubber) Plantation in West Tripura District

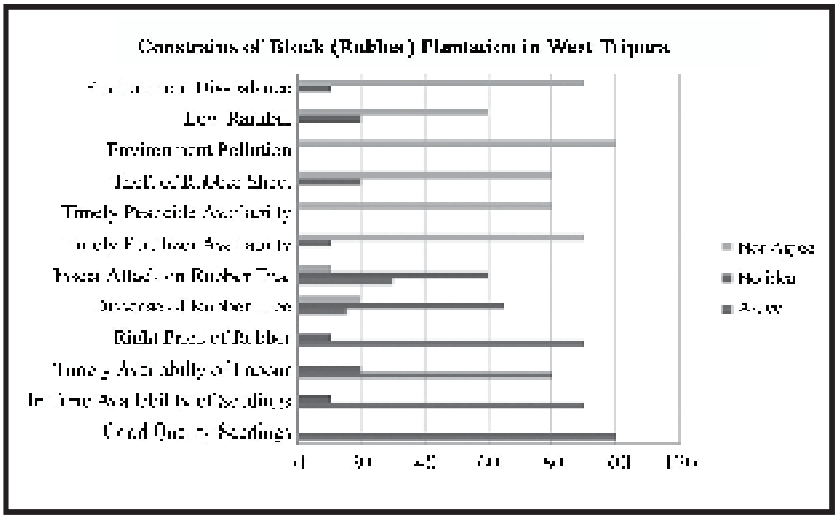


Table 4.24 and Figure 4.22 highlighted that about 100 to 90 percent participant felt in West district that quality of rubber seedlings and timely availability of seedlings are the two critical problems and ranked 1 and 2 respectively. Right price of rubber alsoranked 2 and timely availability of labour ranked 3 and

considered as serious problems of Block (Rubber) plantation in West district. Both disease of rubber tree and insect attack on rubber trees were not considered as serious problems of rubber production in West district. It is interesting to note that all participants of this district did not considered that environment can at all be polluted due to block (rubber)plantation whereas90percent participants disagreed that block (rubber)plantation can cause any kind of *environmental dis-balance.*

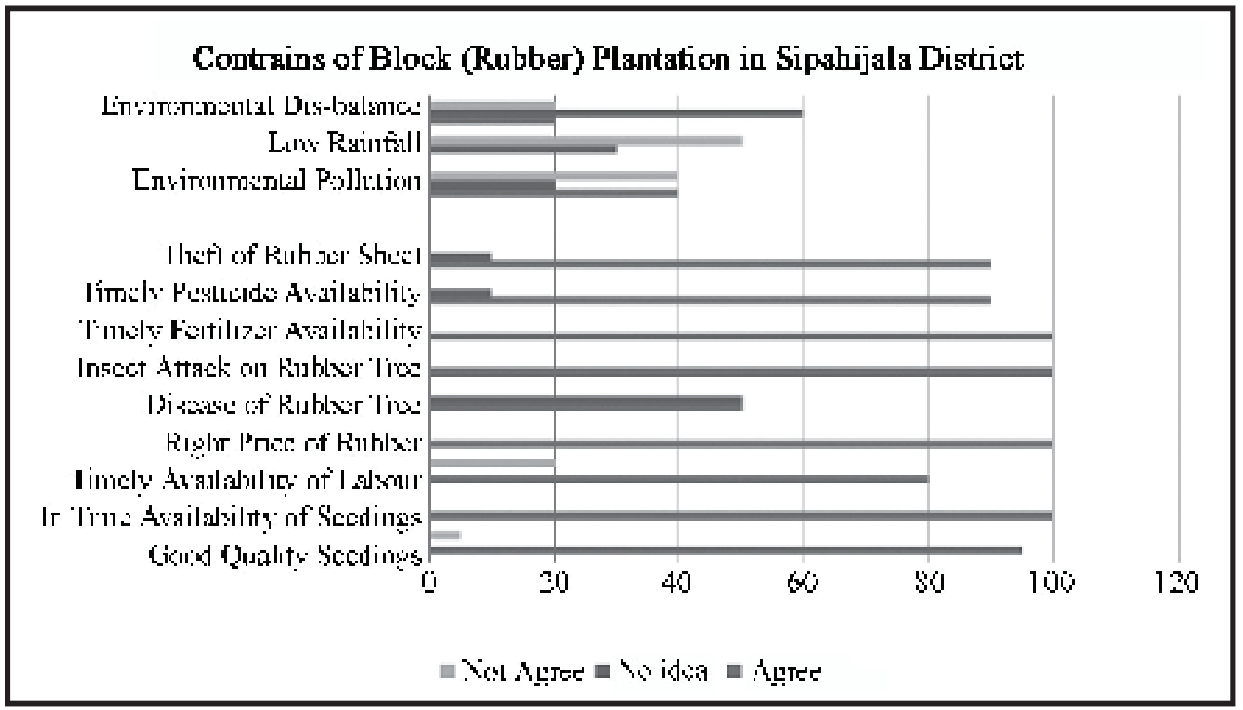
Table No 4.25 : Constraints of Block (Rubber) Rubber Plantation in Sipahijala District

(Opinion in Percentage)

Constrains	Agree	No Idea	No Agree
Good Quality Seedlings (2)	95	0	5
In Time Availability of Seedlings (1)	100	0	0
Timely Availability of Labour (4)	80	0	20
Right Price of Rubber (1)	100	0	0
Disease of Rubber Tree (5)	50	50	0
Insect Attack on Rubber Tree (1)	100	0	0
Timely Fertilizer Availability (1)	100	0	0
Timely Pesticide Availability (3)	90	10	0
Theft of Rubber Sheet (3)	90	10	0
Environmental Pollution (6)	40	20	40
Low Rainfall	0	30	50
Environmental Dis-balance (7)	20	60	20

Source: Field Survey (2016) , Figure in parenthesis indicates rank.

Figure 4.23 : Constraints of Block (Rubber) Rubber Plantation in Sipahijala District



The data in Table No 4.25 and Figure 4.23 revealed that inSipahijala District, right price i.e. profitable price of rubber, timely availability of fertilizers, timely availability of seedlings and insect attack are ranked no1 problem, whereas availability of good quality seedlings was the number 2 serious problems of the district. Timely availability of pesticide and theft of rubber were ranked 3, whereas timely availability of labour occupied rank4 in the list of constraints of Block (Rubber) plantation. But 40 percent (rank 6) beneficiaries considered environmental pollution was caused for rubber plantation and only 20 percent, participants of this district (rank 7) opined that Block (Rubber) plantation created environmental dis- balance while not a single participant,opioned that low rainfalls ,if any , can be caused due to block(rubber) production of this district.

Table No. 4.26 : Constraints of Block (Rubber) Plantation in North Tripura District

(Opinion in Percentage)

Constrains	Agree	No Idea	No Agree
Good Quality Seedlings (1)	100	0	0
In Time Availability of Seedlings (4)	75	15	10
Timely Availability of Labour (3)	80	5	15
Right Price of Rubber (4)	75	10	10
Disease of Rubber Tree (6)	55	30	15
Insect Attack on Rubber Tree (2)	90	10	0
Timely Fertilizer Availability (2)	90	5	5

Timely Pesticide Availability (4)	75	20	5
Theft of Rubber Sheet (5)	70	25	5
Environmental Pollution (7)	55	25	40
Low Rainfall (8)	30	30	40
Environmental Dis-balance (9)	25	40	40

Source: Field Survey (2016) ,
Figure in parenthesis indicates rank.

Figure 4.24 : Constraints of Block (Rubber) Plantation in North Tripura District

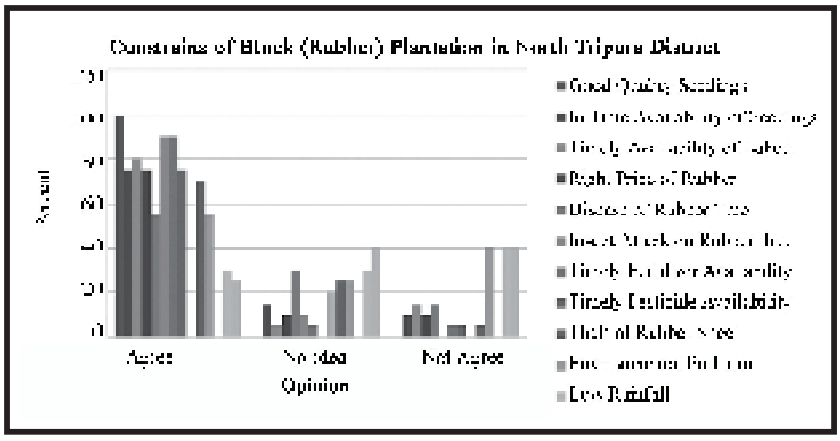


Table No. 4.26 and figure 4.24 revealed that availability of good quality seedlings is the rank 1 problem in while environmental dis-balance is not a serious problem (rank 9) in North district.

Table No. 4.27 : Constraints of Block (Rubber) Plantation in Gomati District

(Opinion in Percentage)

Constrains	Agree	No Idea	No Agree
Good Quality Seedlings (1)	100	0	0
In Time Availability of Seedlings (1)	100	0	0
Timely Availability of Labour (1)	100	0	0
Right Price of Rubber (1)	100	0	0
Disease of Rubber Tree (1)	100	0	0
Insect Attack on Rubber Tree (2)	95	5	0
Timely Fertilizer Availability (1)	100	0	0
Timely Pesticide Availability (3)	80	20	0
Theft of Rubber Sheet (4)	50	10	40
Environmental Pollution (4)	50	20	30
Low Rainfall (6)	20	50	30
Environmental Dis-balance (10)	30	20	50

Source: Field Survey (2016) ,
Figure in parenthesis indicates rank.

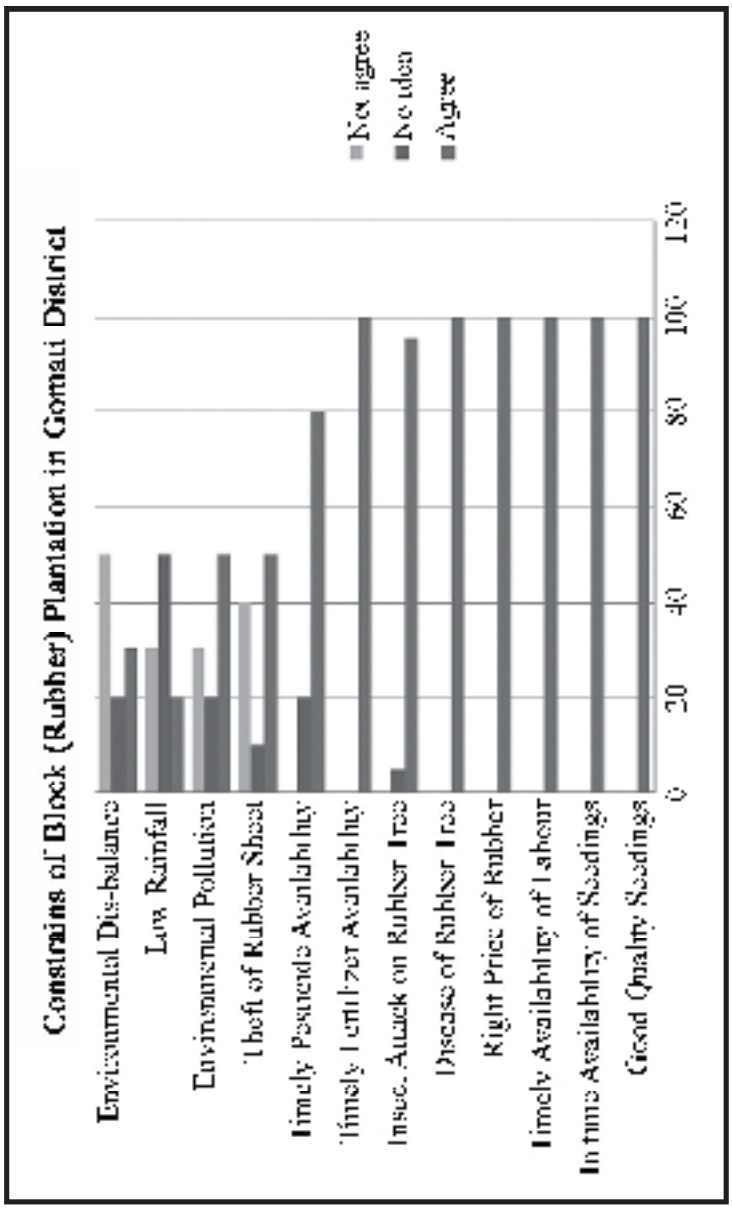


Figure4.25: Constraints of Block (Rubber) Plantation in Gomati District

The data in Table No 4.27 and Figure 4.25 also revealed that in Gomoti district right price i.e. profitable price of rubber, disease of rubber tree, good quality seedlings, price inflation of seedlings, timely availability of seedlings, timely availability of labour, timely seedlings availability, and timely availability of fertilizers, were the most serious problems (ranked 1) of Block (Rubber) plantation scheme.

But environmental pollution, low rainfalls were not serious problems of rubber production in this district. About 30 percent participants of Gomoti district opined that Block(Rubber) plantation created environmental dis-balance. It is also clear from data, that 20 percent participants of Gomoti opined that thatBlock (Rubber) plantation did not reduce rainfall of the district and another 50 percent felt that Block (Rubber) plantation did not create any environmental pollution.

Table No. 4.28 : Constraints of Block(Rubber) Plantation in South Tripura District

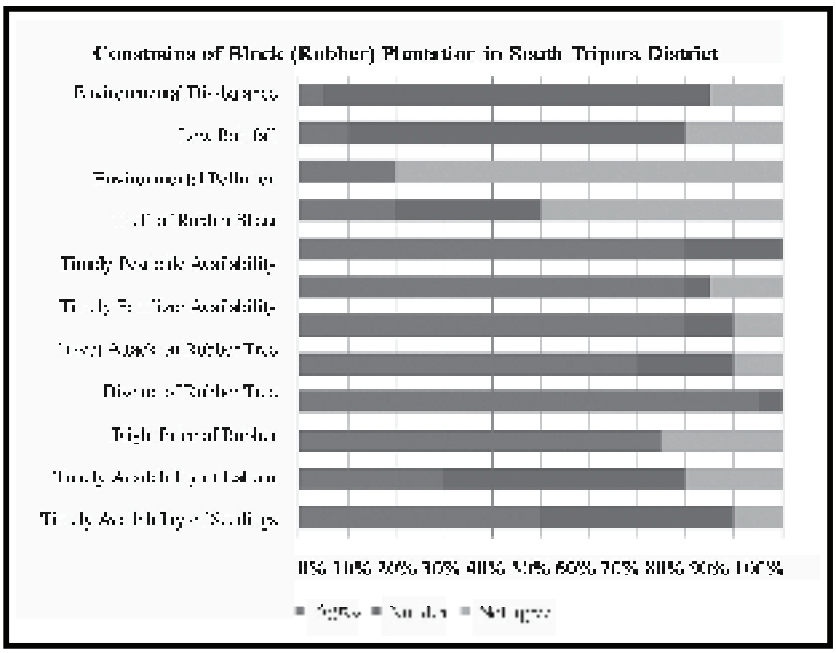
(Opinion in Percentage)

Constrains	Agree	No Idea	No Agree
Good Quality Seedlings (5)	50	40	10
In Time Availability of Seedlings (6)	30	50	20
Timely Availability of Labour (3)	75	0	25
Right Price of Rubber (1)	95	5	0
Disease of Rubber Tree (4)	70	20	10
Insect Attack on Rubber Tree (2)	80	10	10
Timely Fertilizer Availability (2)	80	5	15

Timely Pesticide Availability (2)	80	20	0
Theft of Rubber Sheet (7)	20	30	50
Environmental Pollution (7)	20	0	80
Low Rainfall (8)	10	70	20
Environmental Dis-balance (9)	5	80	15

Source: Field Survey (2016) ,
Figure in parenthesis indicates rank.

Figure 4.26: Constraints of Block (Rubber) Plantation in South Tripura District



Impact of block (Rubber) plantation in Tripura

The data in Table No 4.27 and Figure 4.26 revealedthat in South district, right price of rubber (ranked 1), insect attack, timely pesticide availability and timely availability of fertilizers were ranked 2 problems. Availability of Labour ranked 3 and disease ofrubber tree ranked 4 constraints of this scheme, whereas environmental disbalance was not considered as a serious problem (ranked 9).

Thus, as per opinion of majority of participants of Block (Rubber) plantation scheme of Tripura, lower price of rubber, disease of rubber tree, timely availability of labor, insect attack, timely pesticide availability, timely availability of fertilizers, good quality seedlings, and timely availability of seedlings were the most serious problems of Block (Rubber) plantation scheme. It is also clear from data, that Block (Rubber) plantation beneficiariesdid not agree that it has reduced rainfall or created any environmental pollution and dis- balance of the State.

CHAPTER 5

CONCLUSION AND SUGGESTIONS

Chapter 5

CONCLUSION AND SUGGESTIONS

5.1 Conclusion :

The above discussions made it clear that the Block (Rubber) Plantation Scheme (BPS) has led to an explicit shift from the conventional jhum cultivation to settled mode of modern plantation. In the process of change, the BPS has ensured an equitable distribution and control over land with an assured income to the beneficiary households. Also, there had been a gradual transformation in the social organization of the community, favouring the nucleus family concept with empowerment of women. However, to a certain extent, the community approach contained in the planting operations and group marketing had been helpful in retaining the traditional cooperative spirit among the beneficiary households.

In this connection, two potential operational level issues deserve attention: (i) the demarcation of individual holdings in the size of 1.5 hacters, within a block; and (ii) methods of equal income sharing among the beneficiaries. The contiguous land under majority of the blocks is not clearly demarcated for individual holdings. Similarly, the income from natural rubber was also shared on equal basis irrespective of the production from individual holdings. But it is true that the prevailing system of managements bears the potential for future disputes over individual holdings as well as income sharing in the context of the gradual shift towards nucleus families.

The two critical components required for the effective utilization of the income impact of the BPS are imparting

skills through technical/ professional education and providing access to infrastructural facilities related to higher education, healthcare, sanitation communication and transport. Any realistic attempt to launch development projects to fulfil such facilities shall make an assessment of the available facilities and the extent of access to the same. It is also essential to identify the gaps in the existing projects and linkages to potential projects for the diversification of the sources of income of the targeted groups. The visit of the study areas indicated the inadequacies of education, social activities, drinking water supply, healthcare etc.for the beneficiary households. From a policy perspective, potential linkage effects of higher household income from BPS depend on the removal of these infrastructural impediments. In the long-run, only such comprehensive approaches addressing multifaceted issues of the scheme implementation can facilitate diversification of the sources of income.

Going through the results & analysed data the, following conclusions can be drawn:

1. Due to adoption of Block (Rubber) plantation, the net income of the almost all beneficiaries has been increased substantially.
2. Due to adoption of Block (Rubber) plantation, in lieu of jhum and other activities, for all beneficiaries, social and political status has substantially enhanced.
3. Due to adoption of Block (Rubber) plantation, the health and sanitary status of the beneficiaries, increased substantially.
4. Due to adoption of Block (Rubber) plantation, the social status of the beneficiaries increased substantially.
5. Due to adoption of Block (Rubber) plantation, in lieu of jhum and other activities, for all beneficiaries, the banking habit has been developed.

6. Due to adoption of Block (Rubber) plantation, the educational level of children's of the beneficiaries has substantially improved.
7. Due to adoption of Block (Rubber) plantation, for all the beneficiaries the housing condition has been improved, and
8. It is the opinion of most of the beneficiaries that due to adoption of Block (Rubber) plantation scheme, the ecology and environmental balances have not been affected.

However, there are some minor draw backs of these projects which are (a) some RPS have no fund for constructing office building, (b) price of rubber is highly unstable and low, (c) drying of rubber sheets are a problem particularly in rainy season, (d) their un- even distribution of monthly income from rubber is a problem for which they need loan in low interest from bank in slack season.

In short-run, close monitoring and supervision by the Rubber Board are essential for two important reasons: (i) the beneficiary households are yet to fully assimilate themselves with the prescribed agro-management practices; and (ii) the RPSs are still requires the inputs and guidance of the Rubber Board. Meanwhile, the RPSs with surplus funds may diversify the activities and initiate short-term training programmes for the youth. There is a growing potential for self employment in industrial sector, information technology, marketing and agriculture related training courses,so as to impart skills and to empower the unemployed/ underemployed both girls and boys. The concerned agencies of the State Government may initiate such programmes along with improvements in the infrastructural facilities. The potential linkage effects of rehabilitation programmes like BPS can be tapped only with such comprehensive approaches as underlined by the observations emerging from the different studies.

5.2 Suggestions:

1. Area under block (rubber) plantation can be increased by bringing about 25000 hectares more available area under this scheme, as suggested by the ICAR.
2. Suitable community hall should be constructed for every rubber processing society.
3. The members should be trained for adoption of modern technologies for production and tapping of rubber.
4. The training of members is needed on information technology.
5. The rubber marketing infrastructure is to be improved.
6. Credit is to be advanced in cheaper rate by the Commercial Banks particularly in slack season.
7. Attractive returns to be arranged for the rubber.
8. Fertilisers should be made available in cheaper rate and in time.
9. Regular soil testing of plantation areas should be arranged every year.
10. The fertilisers and manures should be used as per results of soil testing.
11. Insect and pest control measures are to be adopted as per suggestions of experts.
12. Arrangement to construct office building is to be made for all RPS.

Future Potential for Extension of Block (Rubber) Plantation :

The block plantation method of rubber production has been considered as an excellent success story of the Rubber Board as well as of the Government of Tripura. The reasons for its success are as follows:-

The Lands required for block plantations have been identified in advance and in contiguous areas as against scattered individual plots. This has resulted in economies of scale. This has acclaim from all quarters. Compared to other forms of rubber plantation, the block plantation

mortality rate is very low. Block plantation ensures full participation by the stakeholders in raising, maintenance and in protection of the plantation. Community processing established at the block plantation level helped to generate additional income The concept of empowerment of women through SHGs has had tremendous possibilities among the tribal population of all the districts.

As opposed to schemes where a single beneficiary is considered a target, in block plantation, the entire family has considered equal stakeholder. All the members of a family participate, which generates a sense of belonging and responsibility. Rubber plantation has been accepted by the tribal's as an acceptable and sustainable and potential means of improvement of income, employment,socio-political status, and overall livelihood Status of beneficiary families.

The initiative has helped the tribal's shift from environmentally and economically unfriendly jhum cultivation to settle rubber plantation. This has encouraged other tribal's and poor Schedule Case and other higher income groups to take up rubber plantation in a massive scale with their own funds or bank loans. The industrialists from other states also were attracted to start rubber plantation in Tripura. Besides enhancing income, health, education and socio-political status of the participants, it brings a revolutionary change in the mental makeup of the members. It created confidence, self respect and sense of equality like a normal citizen, among the members which is very much necessary to become a productive and in true sense a nationalist citizen of the country.

As per a study conducted by the Bureau of National Land Use and Soil Survey, of ICAR, Tripura has the capacity to plant up-to 100000 ha of rubber. The state may take up rubber as a growth engine for development and rehabilitation of tribal jhumia families as well as development of downstream industries. Under recognition of Forest Rights Act 2006 (RoFR), 1.7 lakh hectores of land has been allotted to more than one lakh tribal families. Government of India also has

permitted to raise rubber in the lands allotted under RoFR to tribals. As Tripura is endowed with agro-climatic conditions suitable for rubber cultivation and Tripura is also considered 2nd rubber capital of India, all kinds of rubber plantations should be given a push by the state as well as by the Central Government to help Below Poverty Line tribal families to come up to Above Poverty Line(Rao,2016). This will also significantly improvehealth, educational and socio-political status of different tribal communities of Tripura.

Besides enhancing income, health, education and socio-political status of the participants, it brings a revolutionary change in the mental makeup of the members. It created confidence, self respect and sense of equality like a normal citizen, among the members which is very much necessary to become a productive and in true sense a nationalist citizen of the country.

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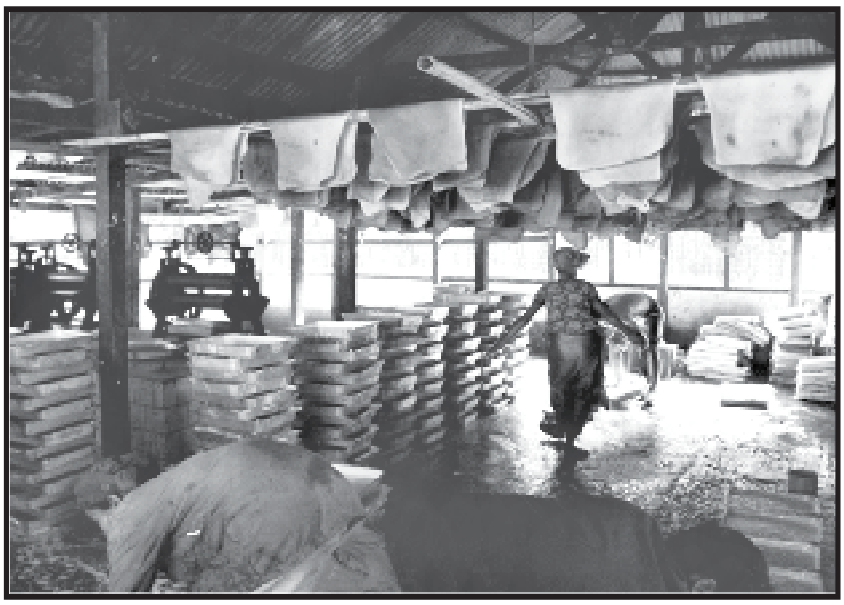
Picture of Survey Areas

Appendix- I (Drying of Rubber Sheets)

Picture 1: Drying of Rubber Sheet, North Tripura District

Picture 2: Rubber Sheet, South Tripura District



Picture 3: Women Participation, SouthTripura District

Picture 4: Jhum Cultivated Area, West TripuraDistrict

Picture 5: Rubber Plantation with Rainguard, West Tripura District

Picture 6: Rubber Plantation with Rainguard, West Tripura District

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