Bamboo Processing Industry in Kerala: A study of an unorganised, household sector in Adimaly *panchayat* (Idukki district)

Jayasankar. B

Discussion Paper No. 26
December 2000

Kerala Research Programme on Local Level Development
Centre for Development Studies
Thiruvananthapuram

Bamboo Processing Industry in Kerala: A study of an unorganised, household sector in Adimaly *panchayat* (Idukki district)

Jayasankar. B

English
Discussion Paper

First published December 2000
Editorial Board: Prof. P. R. Gopinathan Nair, H. Shaji
Printed at:
Kerala Research Programme on Local Level Development
Published by:
Dr. K. N. Nair, Programme Co-ordinator,
Kerala Research Programme on Local Level Development,
Centre for Development Studies,
Prasanth Nagar, Ulloor,
Thiruvananthapuram 695 011
Tel: 550 465, 550 491
Fax: 550 465
E-mail: krp@md1.vsnl.net.in
Url: http://www.krpcds.org/
Cover Design: Defacto Creations

ISBN No: 81-87621-26-5
Price: Rs 40
US$ 5

KRPLLD 12/2000 0750 ENG

Contents

Bamboo Processing Industry in Kerala: A study of an Unorganised, Household Sector in Adimaly *Panchayat* (Idukki district)

Jayasankar. B

1. Introduction

Forest-based small-scale processing sector

In Kerala, forest sector is an important resource, which provides opportunity for generating income and employment for rural landless people next only to agriculture. While the scope of agriculture in the State progressively declines for providing income-earning opportunities, the forestry sector emerges as an alternate source of employment and income for the rural masses. Forest products, especially Non Timber Forest Products (NTFPs)[1], are considered a potential source of income for people living in and around forests. The basic characteristic of most of the units processing NTFPs is their small scale and household nature. These forest-based small-scale enterprises attract special attention because a substantial proportion of their labour force is made up of economically disadvantaged groups including women and the landless. As the contribution of these enterprises to the local economy is quite high, the policies that affect the functioning of these enterprises would have a direct economic impact. Though these enterprises produce incredibly diverse products, they display similar characteristics and function under common constraints. The common characteristics include the following: (i) small, mostly seasonal, often labour-intensive, rural, and household based, (ii) predominantly based on simple techniques with low capital intensity; (iii) women constitute the majority of the labour force; (iv) limited access to markets, shortage of raw materials, finance, and appropriate technology, competition from new and cheaper products and lack of managerial, entrepreneurial, and organisational skills (FAO, 1987; 1991).

However, these enterprises have received very limited research attention, though the situation is changing slowly. An objective assessment of the contribution that the forest-based industries makes, changes taking place in their size, organisation, and diversity, the forces that inhibit or promote their growth as well as the factors that determine their economic efficiency, is urgently called for.

Forest-based traditional, small-scale bamboo/reed processing

There are several small-scale enterprises categorised as forest-based. Of these, basket/mat making, using reed and bamboos[2] are predominantly household-based and constitute a source

ACKNOWLEDGEMENTS: *I wish to express my sincere thanks to the following persons and organisations for their help and co-operation at various levels of this research work: Dr. Babu Ambat, Centre for Environment and Development; Mr Kurien, Department of Aquatic Biology and Fisheries (University of Kerala); Ms Gowri, President, Adimaly Women's Tribal Industrial Co-op Society; Ms Beena, Secretary, Adimaly Women's Tribal Industrial Co-operative Society; Staff, Neriyamangalam Forest Range; Staff, Kerala State Bamboo Corporation; and Dr. K. Nagaraj.*

* Jayasankar. B is an Economist with Kearala State Electricity Board, Thiruvananthapuram.

of livelihood for numerous households. Production of mats and baskets using reeds *(Ochlandra travancorica* and *O.scriptoria*) collected from forests is an important traditional cottage industry in Kerala. It provides employment to a large number of workers within the forest industries sector in Kerala (Nair, 1986). Reliable information on the extent of dependence of people in this activity is not readily available. According to an estimate of Government of Kerala made as early as 1983, nearly 30000 persons are involved directly or indirectly, in the reed industry (State Planning Board, 1983). Another study estimates that reed collection and processing in the organised traditional sector provides nearly 35 lakh man-days of employment annually (Joseph, 1994).

Reed-basket and mat-weaving used to be traditionally undertaken by Scheduled Castes and Tribes as a leisure time and off-season employment. About 90 per cent of the production is undertaken by the household sector (Nair and Muraleedharan, 1983). In earlier days, mats and baskets were produced for agricultural needs by these caste groups as a feudal obligation to the landed class. The salient features of the traditional bamboo reed-weaving sector are (i) its capital intensity is very low, as production needs only simple tools such as a bill hook and a sharp knife, the total cost of which comes to less than Rs.100 per family. (ii) the techniques of production are extremely simple and need no inputs other than reed and manpower. (iii) historically, this occupation was carried out by people of the socially and economically backward stratum; and (iv) its feminine intensity is very high. Owing to extremely low levels of returns, only few males are attracted to weaving (Nair, 1986).

The traditional reed-weaving industry in Kerala is spread throughout the State. Besides individual weavers and reed collectors, institutions such as co-operative societies, private entrepreneurs, and Kerala State Bamboo Corporation (KSBC) are involved in the activities. In view of the potential of traditional processing units in income and employment generation, Government supports this sector by creating institutions with legal, administrative, and operational powers and provides it financial support and subsidised raw material (reed and bamboo). The Kerala State Bamboo Corporation and Bamboo Weavers' Co-operative Societies were established in tune with these policies to free weavers from the exploitation of intermediaries.

The Corporation came into existence in 1971 following the recommendation by the committee appointed by the Government to look into the functioning of the traditional basket-mat weaving sector. The committee recommended the formation of a Corporation to organise the activities of collection and marketing of reed products in the traditional sector with a view to reducing the exploitation of weavers by middlemen in the sector (Kumar, 1985). Initially the Corporation focused attention only on marketing of products; later its functions were extended to organise the reed collection from forests and supplying them to weavers. With headquarters at Angamaly, the Corporation has succeeded in organising the collection and supply of reeds to weavers and buying mats from weavers in the traditional weaving areas in the Angamaly-Kalady region[3]. Though a sizeable proportion of traditional bamboo processing areas and workers spread throughout the State are now under the Corporation, still there are large chunks of people engaged in the collection and small scale processing of reeds and bamboo lying outside its purview. The highly scattered nature, disaggregated production pattern, want of managerial and entrepreneurial skills, and want of efficient assistance from

supporting agencies, etc., have together created an ideal climate for the functioning of intermediaries. The weavers, who produce low-value-added products, have always remained at a disadvantage and subjected to exploitation by traders and middlemen. In short, the creation of Kerala State Bamboo Corporation has divided the traditional bamboo-reed weaving sector into two, the organised and the unorganised.

Study area and the need for the present study

The unorganised bamboo reed-weaving sector in Kerala is at the crossroads. Its highly disorganised and scattered nature has made the situation worse. The plight is the same in this sector spread across Kerala. Though attempts were made to understand the problems of the organised sector in this industry, especially the functioning of KSBC, the attempts made to understand the problems of the unorganised sector are few. A clear understanding of its problems and the introduction of measures for their solution are essential because a large number of families depend on it for sustenance. There are many difficulties in understanding the functioning of this sector, as the production pattern, product mix, marketing pattern, etc., vary with region and even with different segments of people. Considering these aspects, the present study attempts to understand the functioning and problems of the unorganised traditional bamboo-weaving sector. The study is carried out in the Adimaly *panchayat* in Idukki district taking into consideration the following facts:

(i) Traditionally people in this area do reed/bamboo weaving and this area lies outside the purview of Bamboo Corporation[4];
(ii) The area is easily accessible to the major markets such as Maduari and Salem in Tamil Nadu, and Ernakulam and Aluva in Kerala;
(iii) All the traditional weaving centres in the area are situated near to reed forests, thus providing accessibility to raw material;
(iv) The area is also characterised by large numbers of migrant weavers from Tamil Nadu, who are mostly engaged by middlemen. They are in a way competitors to the native weavers, as they are prepared to work for extremely low wages;
(v) Many institutions exist at present to promote weaving but most of them are ineffec tive;
(vi) Dominance of middlemen in marketing the products is high;
(vii) Different communities such as Scheduled Castes, Scheduled Tribes, and migrant work ers from Tamil Nadu are engaged in weaving in this area.

Objectives

Broadly, the study attempts to understand the problems of household bamboo-processing in the unorganised sector. More specifically, it has the following objectives:

(i) To examine the role of household bamboo-processing in income and employment generation;
(ii) To study the role of intermediaries;
(iii) To explore the scope for improving value addition at the different stages of processing

and to suggest strategies for improving the working and living conditions of the house holds involved; and

(iv) To study the efficacy of institutions functioning in the unorganised bamboo-processing sector.

Methods

In the study area, different production systems exist. There are three groups of people engaged in weaving. They are Scheduled Castes, Scheduled Tribes, and migrant Tamils. The weavers are spread over all the different wards of the Adimaly *panchayat* - Mamalakandam, Pazhampallychall, Mannankala, Chattupara, Korangatty, Erunoorekker, Machiplavu, Pathinalaam mile, Chillithode, and Plakkayam. Most of these wards are Scheduled Tribe or Scheduled Caste colonies (Adimaly Panchayat, 1997). Representative samples from these three groups were selected on a purposive basis as shown in the Table 1.1. Of the selected samples, 50 per cent were fully and the rest partially dependent on this profession. Detailed interview schedules were used to collect information regarding the production pattern, socio-economic conditions, and marketing patterns of the weavers in the sample.

In the area, there were about a dozen middlemen engaged in marketing of bamboo products. Five of them were interviewed for collection of information on supply of raw material and marketing of products. The major institutions involved in the unorganised bamboo-processing sector are the forest department and the co-operative societies. The role of the forest department in the sector is as the custodian and supplier of raw material. It carries out the functions in a passive way. The co-operative societies act as promoters of the sector and work for the betterment of weavers. There are a number of them in the area. Unfortunately, most of the societies created for promoting the activities of this sector are defunct or are nearly so. As representative cases, we selected one defunct society located in the Chillithode Harijan colony and a partially functioning society at Adimaly for detailed investigation. Officials of these societies were interviewed using semi-structured interview schedules for understanding the problems of the sector. Available data from these societies were also collected to study the nature of working of these societies.

Section scheme

The second section gives a brief history of the development of the bamboo-weaving sector in Kerala and the formation of different institutions for the development of this sector as well as a discussion of the status of the present traditional bamboo-weaving sector. The third section is devoted for analysing the economics of bamboo-reed weaving in the unorganised traditional sector. Characteristics of the different communities engaged in the profession, the production processes, value additions in production, marketing channels and methods, are analysed in this section. The institutional aspects of the unorganised sector are presented in the fourth section. The working of the different institutions such as co-operative societies, government departments, and KSBC is discussed here. In the next section, the various options to improve the conditions of the weavers and their possible impact on the sector are examined. The final section draws the major conclusions of the study and presents a few recommendations.

Table 1.1 The study area and the sample

Study area (*panchayat* ward)	Caste/ Type	Total No. of families	Number of persons			No. of families depending on bamboo weaving	No. of families in the sample
			Male	Female	Total		
Machiplavu	Tamils	25	35	45	80	25*	10
Chillithode	SC	76	115	175	290	76**	20
Korangatty	ST	96	210	238	448	10***	5
Ancham mile	ST	47	70	80	150	47***	15

* Fully dependent on bamboo weaving

** 35 families partially and 41 completely dependent on bamboo weaving

*** Partially dependent on bamboo weaving

2. Evolution of the Traditional Bamboo-Weaving Sector

History

The skill for the use of reeds for production of artefacts and utensils might have been first developed by tribal communities who depend on forests for their daily life. This multipurpose forest produce is useful for various purposes such as construction of houses, production of mats and baskets for drying and storing and transportation of food grains, etc. Commercial use of reeds must have been a later phenomenon. Bourdillon (1893) in his book *Forest Resources of Travancore* mentions about the export of reed mats from Kerala. In early days, mats and baskets for different agricultural purposes were made for self-consumption or for exchange within the village itself. It was done mostly by tribes and people belonging to backward communities such as *Sambava* and *Paraya* mainly as a feudal obligation to their landlords. In those days, no organisation in production on commercial or marketing existed. Weavers collected reeds from forests and produced various products at home and marketed them locally.

The situation began to change in the early 1930s (Kumar, 1985). The British realised the importance of these products, especially the mats. As mats are cheap and strong, they thought of using them in the war front for construction of movable tents. The hostilities with Burma in the mid-1930s became an excellent opportunity for using this material in the battlefield (Nair and Muraleedharan, 1983; Chundamannil, 1988).

The British government placed demand for large quantity of reed mats for war purposes. This rise in demand led to sudden and large increase in production and a mostly part-time occupation became a full-time occupation. Many persons entered the lucrative business as middlemen and traders in and around Angamaly-Kalady area, to supply reed mats for the British. In order to increase the scale of production, they began to supply the raw material to producers and purchase the finished products for supply to the British (Kumar, 1985).

Probably the first organisational set-up of production in this sector must have been along these lines. The degree of specialisation kept on intensifying as demand for the products progressively increased. Two distinct groups of people emerged: the first specialised in organising and financing collection of reeds and the other specialised in the supply of reeds to weavers and purchase of finished products from them (Kumar, 1985). These two groups came, in general, from rich forward communities.

The activities were concentrated in the Angamaly-Kalady area in Ernakulam district and the Nedumangad-Aryanad area in Thiruvananthapuram district. Easy availability of raw material, proximity to reed forests, and well-developed transportation facilities were some of the favourable factors. By the end of World War II, the hierarchical and community-based set-up of the bamboo industry had undergone some changes. Before the war *Sambava* community held a near-monopoly in this industry and *Parayas* treated this industry as their prerogative. But the increasing demand for reed mats led to the expansion of this occupation beyond caste barriers, and even members in the forward communities began to engage themselves in these activities.The war demand also made a new class of merchant - wholesalers who started

investing large amounts of money in the business. The prosperity of the mat-weaving sector began to decline after the war as demand fell sharply (Chundamannil, 1988). The weavers and merchants who were affected seriously by the decline began to search for new bulk consumers; the sugar mills in Maharashtra emerged as one of the potential buyers. Thereupon, the use to which mats were put, also changed; they began to be used as a dunnage material in the sugar factories and for construction of temporary labour sheds for large sugar fields during the time of harvest. Yet, the prices continued to decline. The wholesale merchants shifted the burden of falling prices on to the shoulders of weavers. Demand slowly began to pick up after a time; the buoyant market did not, however, improve the condition of the weavers since the burden of price reduction had fallen on weavers and the merchants had kept their profit share constant (Kumar, 1985).

In the meantime, basket-weaving grew in other areas also, but the market for baskets remained restricted to local areas. The rise in demand for baskets was in line with the expansion of the agricultural sector, as most of the uses were for storage and transport of grains, pepper, vegetables, copra, fish, farmyard manure, soil, and other household items. Basket weaving expanded mainly because of the seasonal nature of agricultural employment especially among the landless Scheduled Castes. Slowly the demand for baskets from neighbouring States increased as they found baskets a cheap mode of transporting agricultural products. The increase in demand strengthened the role of intermediaries since marketing to far off places needed specialised services. With the domination of intermediaries, weavers were reduced to a highly disadvantaged state.

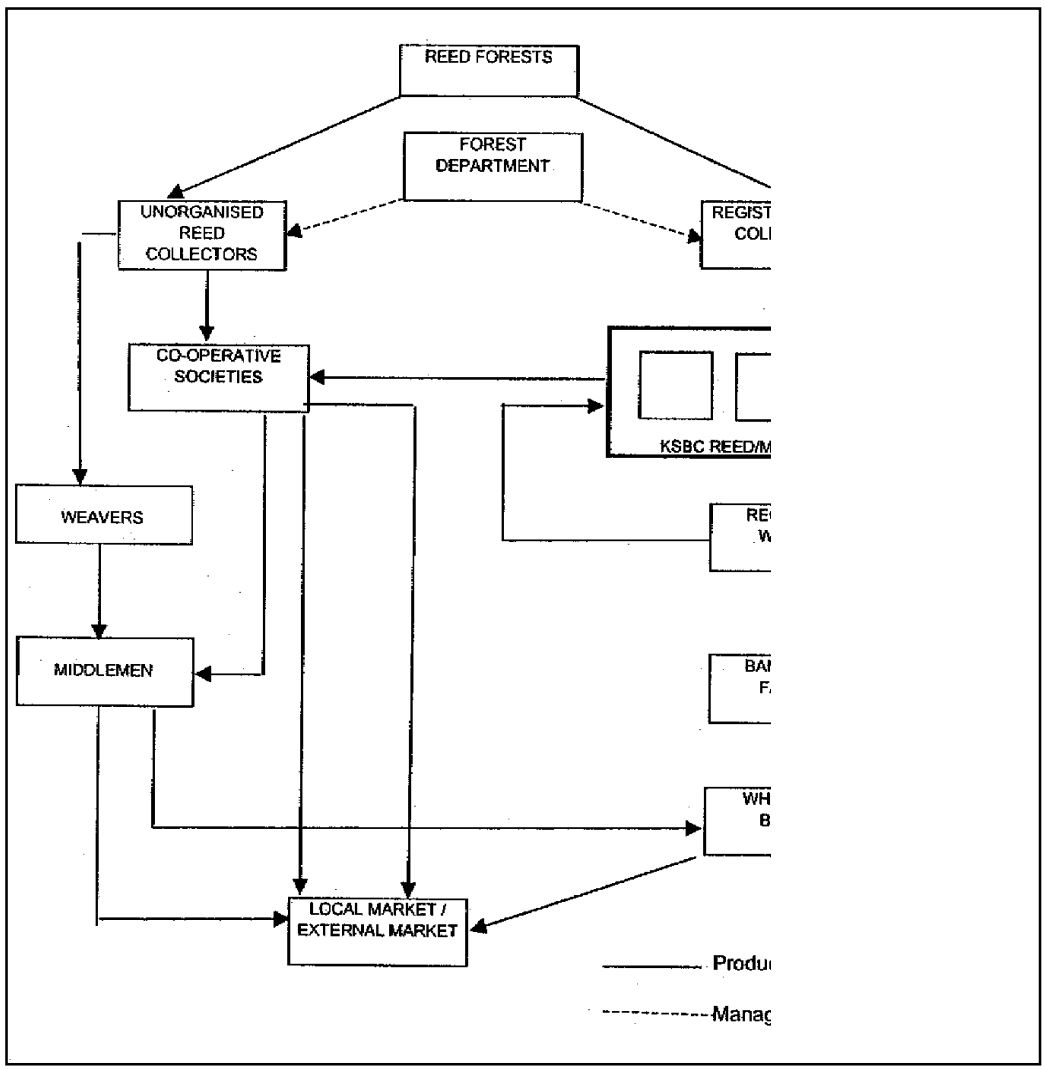
These developments led to the intervention of government for improving the condition of the weavers. A committee chaired by Sri. Nanukuttan Nair was appointed in 1951 to study the status of bamboo forests and bamboo industry in particular (Kumar, 1985). The committee recommended the government to take immediate steps to improve the condition of workers as there existed a 'long chain of intermediaries between primary production and final consumption', which had to be reduced to improve the life of weavers. Though the report of the committee was accepted by the government most of the recommendations were not implemented. Later another committee was appointed to look into the operation of the industry and to suggest measures for streamlining the activity with the primary objective of enhancing the well being of the weavers. The committee submitted its report in 1970, in which it recommended the creation of a state-owned corporation to co-ordinate the different activities, especially trading.

Thus Kerala State Bamboo Corporation came into existence in 1971, primarily as a marketing function agent for the products (Chundamannil, 1988). But the experience proved that taking over the marketing alone may not eliminate the traders from the scene as supply of products was linked to supply of reeds, which was still under the control of traders. Thus in 1977 the right of collection of reeds and supply of reeds to traditional weavers, co-operative societies and other *bona fide* consumers was entrusted to the Corporation. The Corporation has standardised the products and limited its marketing activities to mats alone. The main buyers are Central Warehousing Corporations are large sugar mills. Now Corporation has 108 reed-distribution and mat-collection centres functioning mostly in central and southern Kerala with 15000 registered beneficiary families (End Note 3).

Present status

Currently, the organised traditional reed-weaving activities carried out under KSBC are concentrated in the Angamaly-Kalady region of Ernakulam district and the Nedumangad-Aryanad region of Thiruvananthapuram district. Mats from the former area cater mainly to the demand outside the State such as of Food Corporation of India (FCI) and Central Warehousing Corporation (CWC). The production from the latter area is mainly utilised within the State. Mat production in the unorganised sector is also found in places such as Pathanapuram, Punalur, and Parakode. The baskets are produced in many areas where chances of getting raw material and concentration of traditional weavers are high. The present structure of the bamboo-weaving sector is depicted in Fig. 2.1

Figure 2.1 Overview of traditional reed industry in Kerala



Though Corporation has succeeded in eliminating the middlemen in the supply of reeds and the marketing of products and thereby in increasing the income of weavers, many areas of the State lie still outside its purview. It was envisaged that Corporation would supply reeds to the weavers in these areas; but in practice this seldom happened. In the areas where Corporation is not functioning, government encouraged the formation of co-operative societies. Though co-operative societies were established in several places, owing to lack of commitment, inefficient management, and the pressure from traders, most of them have become defunct or fallen under the control of middlemen. Wherever local weavers became unavailable because of their migration to the casual labour market lured by rising wages, middlemen started employing cheap migrant labour from Tamil Nadu.

They were attracted by offering cash advance and, in some cases accommodation. Tamil weavers migrate with their whole families the members of which engage themselves in the weaving activities. All of them work for long hours in the day and thus the output is high. This has created a highly competitive condition in the labour market for weavers and the middlemen are able to keep the wage rates under control. In many areas, weavers have joined together to form co-operative societies with the active participation and financial assistance from government; most of them, however, failed because of their excessive dependence on middlemen for marketing their wares and inefficient management. Thus the misery of the workers in the unorganised areas continues. In the following sections, the unorganised weaving sector is examined more closely.

3. Traditional Bamboo Weaving: A Socio-Economic Profile

As explained earlier, four areas were selected for this study, which cover a cross section of the different groups of people working in the industry such as Scheduled Castes, Scheduled Tribes, and Tamil workers. The profiles of each of these groups are furnished below.

Scheduled Caste weavers

The selected Scheduled Caste colony is located at Chillithode, 8 km from Adimaly town. The colony known as Chillithode *Harijan* Colony has good infrastructure facilities including a primary school and a private clinic. The colony has easy access to other places as it is well connected with roads and has a good transport system. There are 76 families living in the colony. Most of the inhabitants are of the *Sambhava/Paraya*, and *Pulaya* communities. Of the 76 families, 35 depend completely on bamboo-weaving; the rest partially rely on this occupation. The employment opportunities available other than weaving in the area include agricultural work, casual labour, quarry work, and collection of non-timber forest products including reeds. Only men are employed for quarry work. A few work in other parts of Kerala, some of them occupying comparatively good government jobs.

The daily wage rate for quarry work is Rs 150; for male agricultural and casual labourers the rate is Rs 125 per day. The females earn Rs 70 per day of work. There is also a system for working half day (ie., from 8.00 hrs to 14.00 hrs) among casual and agricultural labourers. For this type of work, a male worker gets Rs 80 and a female worker Rs 60. Even with such high wage rates, the labour market is very tight and labourers are seldom available. This is because the younger generation is reluctant to go for hard jobs and works only when hard-pressed for money. Females prefer bamboo-weaving to daily wage labour, because bamboo -weaving may be done at home and give them time to attend to the family affairs and household activities. There are about 10 to 12 persons who regularly go for reed-cutting. The colony is situated on the outskirts of forests. Nearly four to six hours are needed to collect reeds from forests and bring them in bundles to the colony. Each bundle contains 30 to 35 reeds of 12 to 14 feet in length. It is sold at Rs. 60 per bundle.

All the families possess agricultural land. At the time of declaring this area as a *Harijan* Colony in 1951, the government had given three to five acres of land without title deeds (*pattayam*) to each family for cultivation. The present average land holding is 38 cents per household, ranging from 4 cents to 400 cents. The main crops include pepper, coconut, arecanut, coffee, and rubber. The land is of average fertility. As they do not have the *pattayam* (title deed) for their land, it is difficult for them to raise money on loan for land development activities. For getting money from government or other assisting agencies pledging of property is essential and most of them have only land on which they do not have ownership right. They have therefore to find resources for land development and raising the crops from other, more exploitative sources. As a result, they give little attention to agricultural activities.

One-tenth of the male population and 7 per cent of the women are illiterate and nearly half of the population have primary education. Nearly one-fifth of both men and women have passed SSLC or higher examinations (Table 3.1).

Table 3.1 Educational characteristics of the selected communities

Educational qualifications	Scheduled Castes		Scheduled Tribes		Tamil Migrants	
	Male (per cent)	Female (per cent)	Male (per cent)	Female (per cent)	Male (per cent)	Female (per cent)
Illiterate	10	7	30	40	15	25
Primary	40	57	40	35	65	60
Secondary	30	14	20	10		
SSLC & above	20	22	10	15	20	15
Total	100	100	100	100	100	100

Housing conditions are not, in general, too poor. Nearly 65 per cent have tiled houses. Thirty per cent have thatched houses and the rest have tin sheets for roof. The average number of rooms is 2.83 per house (Table 3.2). The colony is electrified and 40 per cent of the houses has electricity connection. For water, they depend mostly on wells.

Table 3.2 Housing conditions of the selected communities

Characteristics		SC (per cent)	ST (per cent)	Tamil Migrants (per cent)
House Type	Traditional	30	20	0
	Tiled	65	80	70
	Sheet	5	0	30
	Total	100	100	100
Roof	Grass	0	20	0
	Palm	30	0	0
	Tiled	65	80	70
	Sheet	5	0	30
	Total	100	100	100
Walls	Mud bricks	50	70	80
	Bricks	30	10	20
	Others	20	20	0
	Total	100	100	100
Floor	Cemented	10	15	60
	Cowdung	75	75	40
	Mud	15	10	0
	Yes	40	60	80
	No	60	40	20
	Total	100	100	100
No. of rooms		2.8	2.0	1.2
Overall condition		Moderate	Moderate	Moderate

Scheduled Tribes

Two colonies were selected to represent tribal weavers: the Korangatty tribal settlement and the Ancham mile tribal settlement. The Korangatty settlement is selected because an industrial co-operative society intended primarily for developing bamboo-weaving is functioning in it. Though situated deep inside the forests, the colony has an upper primary school, a post office, and a *balawadi*. Electricity and telephone facilities are also not any longer a mere luxury for them. The housing conditions are moderate to good. Most of the families have tiled houses (Table 3.2). The main occupation is agriculture and collection of non-timber forest products. The Forest Department has given them forestland for cultivation. Besides, they have encroached upon nearby forests. The size of land holdings varies from 20 cents to 400 cents with an average of 340 cents per household. The main crops are cardamom, coffee, cocoa, and pepper. Though traditionally they are bamboo weavers and a co-operative society primarily formed for their benefit is functioning in the colony, their interest in bamboo-weaving has declined in recent years.

In the case of Ancham mile settlement, similar conditions prevail, though the facilities at the settlement are not as good as those in the Korangatty settlement. The settlement is situated near the National Highway connecting Kochi and Madurai. The main occupations of the people in the colony are NTFP collection (including reed cutting), cultivation, and wage labour. Weaving is primarily a women's occupation. Men help women in the collection of reeds. The Forest Department has given them land for cultivation. The main crops include perennials such as rubber, arecanut, cocoa, coffee, and pepper and annuals like plantain and vegetables.

The size of land holdings varies between 100 cents and 350 cents with an average of 76 cents. Though the size of land holdings is high and valuable crops are cultivated, the benefits are taken away by middlemen. This is because, land leasing is common here[5]. The period of lease varies from one to three years. The lease amount would be very low, varying between Rs. 1000 and 2000 per acre per year. As one of the potential sources of income - the land - is taken away, they have no option but to depend on weaving and NTFP collection. They also get employed by the lessee for agricultural operations in the land. The wage rate for a half-day work (from 7:30 hrs to 14.00 hrs) for a male worker is Rs. 50-Rs. 70 and for female worker Rs. 40 per day.

Migrant Tamils

Other than these endemic groups, seasonal migrant Tamil families also are engaged in reed-weaving in a big way. Most of them come from Madurai and adjacent places. Their traditional occupation is bamboo-weaving and they belong to the *Medhra* community. They stay in groups of 15 to 20 families in a place. A large number of such groups are found at Adimaly. For this study a typical group staying at Pathinalaam mile was selected. There are 25 families staying at this place;10 families were selected as the sample for our study. Generally, the whole family engages itself in weaving. Tamil weavers never go for reed collection. Reeds are procured from the tribespeople. One bundle of reed numbering 30 to 35 reeds costs Rs. 65. Mainly two types of groups are found in the area. One group is engaged by the

middlemen. They advance funds to these families and buy back the products after adjusting the advance amount. Sometimes the middlemen also supply the reeds; in this case, they are paid on the basis of piece rate i.e., based on the products they make. The other group purchase raw material by itself and produce the products and sell them to middlemen. The first category is the more common in the area, and the Tamilian families belong to it.

Production processes

Reed procurement

Government has allowed the *bona fide* users to collect forest products for their livelihood by paying the *seigniorage* rate. Based on this, the Forest Department issues reed permit to *Harijans* (Scheduled Castes) and *Girijans* (Scheduled Tribes) for collecting reeds from the forests. The reed-permits are needed for obtaining pass for transporting finished products also. Permits are issued to individuals by the Range Officer of the respective forest ranges on the recommendation from Deputy Rangers at the Forest Stations. The permit is usually valid for a day and the permit holder is permitted to collect a bundle of 20 to 25 reeds per permit. The cost of the permit is Rs. 12 (Rs. 10 for the permit, Re. 1 for sales tax and Re. 1 for Forest Development Tax). Normally two-to-three days are needed for getting one permit. The duration may be less if the officials are available at the office. It is seldom that the reed collectors take reed permits daily from the Forest Department. Normally they take one permit, which is mostly used for a whole month. It is usual that the Forest Department officials catch non-permit reed-cutters. Though collecting forest products without permit is an offence, most of the officials understand the plight of the reed-cutters and let them off them after warning.

For collecting reed, one has to walk four to five km to the interior of the forests. Two-year-old culms are considered to be ideal for weaving. Older culms are not suitable for weaving, as it is difficult to take slivers from them. Suitable culms having three to five cm diameter are selectively felled from the clump. They are then cut into pieces of 10 to 12 feet length; a bundle of 30 to 35 is made, which is then carried by head load. The whole process takes about five to seven hours. This is then sold to weavers. The method of cutting reeds is highly labour-intensive and the technology is primitive. No attempts have gone into improving the method of collection. Only a billhook is used to cut the reeds. After clearing the under growth around, the clump is selectively cut at a height of 45 to 60 cm above the ground level (See Appendix A for reed felling rules prescribed by the Forest Department). The reason for employing the primitive method may be its adaptability (such as terrain, method of harvest such as selection system) and cost effectiveness. Under selection system of harvesting in which only mature culms are selectively removed, capital-intensive methods are virtually ruled out. Moreover sophisticated methods of harvesting may not yield returns to additional investments.

The products

Different products are made in the study area unlike in the traditional areas under the Kerala State Bamboo Corporation in which only mats are produced. The products include baskets

of different kinds to *murams*[6] and mats. Baskets are of 7 types and in 12 sizes. A list of items made in the area is given in Table 3.3. The durability of products also varies. Some baskets can be used for a number of times, but some last only for a single use. For example, the fish baskets are very delicately produced and will not last for more than a single use. However, the baskets made for agricultural purposes are sturdy and will last for use for more than a year. Sometimes to strengthen the products, they are plastered with cow dung.

Table 3.3 Details of products made in the study area

Community	Type of basket	Size (Dia* height)	No.of baskets made per bundle of reed
Scheduled Castes	Fish basket	18*12	35
	Grape basket	12*12	28
	Small basket	16*12	18
	Medium basket	24*12	15
	Large basket	30*24	4
	Muram	24*18	22
Scheduled Tribes	Mat	36*72	6
		44*88	3
Tamils	Egg basket	18*12	20
		16*9	28
	Fish basket	15*12	24
	Tomato basket	15*8	30
		18*8	25
	Grape basket	12*6	38
		20*12	18

The items of production of the different sample communities are also different. For example, in Chillithode *Harijan* Colony the main product is *muram*, whereas the Tamils make only baskets. Barring some types of baskets, the other products are produced only seasonally. For example, fish basket and egg basket are made throughout the year; but grape baskets, tomato baskets, and tamarind baskets are made only seasonally. The other type of baskets locally known as *vallom* or *chandakooda* is in great demand at the local markets and produced during December-March season, which coincides with the harvesting season of some crops. In general, men used to make the big and sturdy baskets like *vallom* and *chandakooda*, for the production of which much physical strength is required. Women make small types of baskets such as egg baskets, fish baskets, and grape baskets, which do not require great physical strength for production.

Weavers in Ancham mile colony make only mats. Big and small mats are produced here. The size of the small mat is slightly bigger than the popular Bamboo Corporation mats. The large mats are used for drying paddy and small mats are used as dunnage material at godowns. The female members of the family are largely involved in mat-making while male members help them in the collection of reeds.

Weaving

The following are the important stages in the production process.

Baskets	**Mats**	**Muram**
Cutting and splitting	Cutting and splitting	Cutting and splitting
Slivering	Slivering	Slivering
Making skeletons	Weaving slivers	Weaving slivers
Weaving slivers	Cutting edges and finishing	Making frames and finishing
Making frames and finishing		

Depending on the size of the products reeds are cut into pieces of different lengths. Then they are split into six to eight pieces. From each split slivers are taken. The thickness of slivers depends on the quality and type of the product. For low-quality fish baskets, thick slivers are taken. For making fine mats and quality baskets, thin slivers are taken and they are smoothened to give the products a good finish. Slivers are dried under the sun for a while before weaving. For making baskets, initially skeletons are made; weaving is done afterwards. After weaving the baskets, finishing works such as cutting the edges, making handles, and putting edge frames, if needed, are carried out.

Splitting and slivering is the most difficult of all the weaving processes. As weavers use very sharp tools for cutting and splitting reeds, the chances of injury are high, unless due care is taken. Since cutting and splitting reeds needs physical strength, male members help their female counterparts in this work.

In the case of mats, the process comprises three stages: slivering, weaving, and finishing. For making *muram*, the weaving stage is split into two.(i) weaving of slivers in specified sizes and (ii) making of a frame around them. In the Chillithode colony, these two processes are done by different families. i.e., some families, which do only the first part of production (weaving), sell the output to others @ Rs. 5 per piece. They in turn complete the frames and give the finishing touches to the product.

This practice is common in the families in which women are primarily engaged in weaving, since making the frame is a difficult task unlikely for women to undertake with ease. It is this finishing part that makes the product sturdy and gives it a good appearance. Some persons specialised in making frames buy half-finished *murams* and convert them into finished products.

For making each product, the time requirement varies. Though each production process is distinctly divided, the degree of division of labour in this activity is found to be very limited. Each person, irrespective of whether male or female, does all the processes by himself/ herself. Only in limited cases, men folk help women in the tedious parts of the process such as splitting and slivering. Among the Tamil weavers, this practice is seen more largely than among the others.

Tools

At present, different processes are undertaken using simple tools. The types of the tools used vary among the communities. The Tamil weavers use only big knives, whereas the SC/ STs use small knives for taking slivers. In all cases, the whole production process is carried out using a single knife and a bill hook. Details of the implements used in the different processes are shown below.

Processes	**Tools**
Cutting and splitting	Bill hook
Slivering	Sharp knife
Cutting the edges	" "

Time requirement

It is useful to compare and analyse the effort put in by individual workers (male or female) in the three communities in the weaving activity. This analysis gives an idea of the allocation of time on each item of work and its value addition. As the products made by different communities vary, it is difficult to compare the production efficiency and income generation among the communities, by study of the same products. In order to look at production and value addition at each stage in the process and their differences across communities, typical products made by them are selected (See Table 3.3 for the whole range of products). Since ST families make only mats, only mat is selected to understand the value addition process of this community. SC families make all products except mats. So, *muram*, small baskets, and fish baskets are selected to discuss their production process and value addition. In the case of Tamil weavers, the products selected are fish basket and egg basket.

The analysis is made on the assumption that all the weavers (men or women) work for their usual weaving day of 8 to 12 hours i.e., on a full-time basis. Also the time required for producing an item and the number of items produced per day are supposed to remain constant. Normally a female worker combines other household work together with weaving[7]. This may not be the situation in the case of men as weaving is mostly a part-time activity for men, except for the Tamil workers. In most of the SC and ST families, men are employed as wage labourers outside home and women combine their household work with weaving. For the present analysis, the normal weaving day is compared with their normal working hours in other types of employment such as agricultural work which is a maximum of 8 hours a day.

All the sample families responded that the time required for making products differs as between men and women. It may be seen from Table 3.4 that except for *muram*, splitting and slivering takes more time. Nearly 40 per cent of the total time is required to complete this part of the process. It ranges between 36 per cent for *muram* and 71 per cent for fish basket. On an average, the total time required to produce a mat is 3.00 hrs per man and 3.45 hrs per woman. Based on this static, in a standard working day of 8 hours a man would produce 2.67 *murams* and a woman 2.32 *murams*. Actually, they produce four *murams* and three *murams*

respectively, thereby implying that they work for more hours than the normal working day. This is the case with all the products and the three communities. The ratio of the number of products made per day to what can be made in a normal working day of 8 hours shows the extra time, if any, that a weaver works. If this ratio is more than one, the weaver works more than normal working day. Our investigation shows that the ratio ranges between 1.25 and 1.89 for males and 1.25 to 1.59 for females. It is also interesting to compare the performance among the communities. For the SC and ST communities the ratio is less than 1.5, whereas for the Tamils it is above 1.5. This shows that an average Tamil weaver works for more than 12 hour a day. However, the SC/ST weavers work only for 10 to 12 hours a day.

Marketing channels

The products are sold in the markets at Madurai and Salem in Tamil Nadu and in Ernakulam, Aluva, Neriayamangalam, and the local markets at Adimaly in Kerala. All the weavers depend on middlemen for selling their products. In each area more than one middleman/sub trader operate; depending on the status and bargaining power of the weavers, they offer different prices for the same product. Each middleman covers a certain area and weaver families in that area. In most cases, producers are therefore forced to accept the person operating in that area as their middleman/subtrader. It is difficult for a new person to start business in that area because he has then to find the weavers who would supply him with their products. This is seldom possible because all the weavers are in one way or the other dependent on the middleman who is already operating in the area. These traditional links are also reinforced with financial links, which the sub-trader uses to keep control over the weaver.

In Chillithode colony, three persons are engaged in the procurement of products from the weavers. They collect the products from different houses and sell them to the main dealers located at Aluva and Ernakulam. The process of collecting the products is as follows: Once or twice in a week (generally Wednesdays and Saturdays) the sub-trader purchases the products from the colony. The prices offered for the different products are shown in Table 3.5. If sufficient quantities of baskets are available, he hires a jeep (or mini truck) and transports the wares to the main market at Aluva. Otherwise, the means of transportation would be bus. The marketing costs borne by the middleman are substantial. He has to pay Rs. 15 for properly arranging and tying one bundle of baskets numbering 100 to 150. Rs. 7.50 per bundle has to be paid for transporting a bundle to the main roadside; Rs. 15 is paid for loading charges to the bus.

A maximum of three bundles per person would be allowed in the bus. In addition to the transportation charges, he has to pay the unloading charges also. For transporting the reed products, *kutta* pass (basket pass) from the Forest Department is required. This pass is issued by the Forest Range Officer when the weaver surrenders his reed pass. As most of the weavers do not take reed passes, the sub-traders are smart enough to arrange basket passes through the Co-operative society[8]. The society charges Rs. 20 per basket pass. There is one Forest Check Post *en route* to Ernakulam to which the middlemen most often pay bribes. On an average, the total marketing cost for the middlemen comes to Rs. 0.8 to Rs.1.00 per basket.

Table 3.4 Time requirement (in hrs) for different production process

Processes	Scheduled Tribe		Scheduled Caste						Tamils			
	Mat		Muram		Small Basket		Fish Basket		Egg Basket		Fish Basket	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Splitting & Slivening	1.33	1.53	0.67	0.92	0.56	0.70	0.26	0.43	0.46	0.55	0.50	0.67
Skeleton Preparation	N/a	N/a	N/a	N/a	0.36	0.43	0.13	0.17	0.17	0.20	0.25	0.30
Weaving	1.33	1.58	0.33	0.42	0.47	0.58	0.20	0.33	0.17	0.25	0.21	0.25
Frame/Finishing	0.33	0.33	0.88	1.17	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a
Total Time	3.00	3.45	1.88	2.50	1.39	1.72	0.58	0.93	0.79	1.00	0.96	1.22
Splitting & Slivening	44%	44%	36%	37%	40%	41%	44%	46%	58%	55%	52%	55%
Skeleton Preparation	N/a	N/a	N/a	N/a	26%	25%	22%	18%	21%	20%	26%	25%
Weaving	44%	46%	18%	17%	34%	34%	34%	36%	21%	25%	22%	21%
Frame/Finishing	11%	10%	47%	47%	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a
Total Time	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Average no. of items made per day	4.00	3.00	5.33	4.00	8.00	6.50	20.50	12.67	18.00	12.50	15.00	10.25
Average no. of items that can be done if working for 8 hours	2.67	2.32	4.27	3.20	5.76	4.66	13.71	8.57	10.11	8.00	8.35	6.58
Ratio of Actual Working hours to 8 hours a day	1.50	1.29	1.25	1.25	1.39	1.39	1.49	1.48	1.78	1.56	1.80	1.56

At times weavers also resort to direct selling at the major markets. The direct selling at the market is not, however, always a good option. Since the middleman and the dealer have good rapport with each other, the dealer offers lower prices or even refuses to take the product, if the weaver resorts to direct marketing; the weaver has to do distress sales. In order to avoid this mishap, most of the weavers approach the middleman for marketing of their wares.

The ratio of price received by the weaver to market price gives an idea on the portion appropriated by the sub-traders. The ratio in Chillithode is higher compared to that in other areas and it varies between 0.7 and 0.8. This shows that the amount of exploitation by the middlemen is low in this locality (Table 3.5).

Table 3.5 Prices of different products

Community	Type of basket	Size (Dia* height)	priced received by the weaver(Rs)	market price(Rs)	Ratio of sale price to make price
Scheduled	Fish basket	18*12	3.3	5.0	0.65
	Grape basket	12*12	7.0	10.0	0.70
	Small basket	16*12	13.0	17.0	0.76
	Medium basket	24*12	15.0	20.0	0.75
	Large basket	30*24	40.0	60.0	0.67
	Muram	24*18	13.0	20.0	0.65
Scheduled Tribes	Mat	36*72	11.0	18.0	0.61
		44*88	20.0	35.0	0.57
Tamils	Egg basket	18*12	7.0	12.0	0.58
	Fish basket	16*9	5.0	9.0	0.56
		15*12	5.0	9.5	0.53
	Tomato basket	15*8	4.0	6.0	0.67
	Grape basket	18*8	5.0	8.0	0.63
		12*6	2.5	5.0	0.50
		20*12	8.0	13.0	0.62

At Ancham mile settlement, the only option of marketing the product is through the middleman. The process of marketing and marketing costs is mostly the same as explained above. Two

sub-traders are functioning in this colony. The system of payment of advance is prevalent here. The weavers receive advance from the middlemen before the products are supplied. The advance is adjusted when the products are sold to the middlemen. The advance offered ranges between Rs. 100 to Rs. 600 per family. Offering advance is a method of pre-empting the products from of the weavers. Since the system is common, the prices offered by traders are very low (Table 3.5). The ratio of price received by the weaver to the market price is as low as 0.6. This shows that the middlemen in the locality are appropriating a higher share of the market price than in other areas. One of the reasons for the lower prices may be the credit obligation that the tribespeople have with the middlemen.

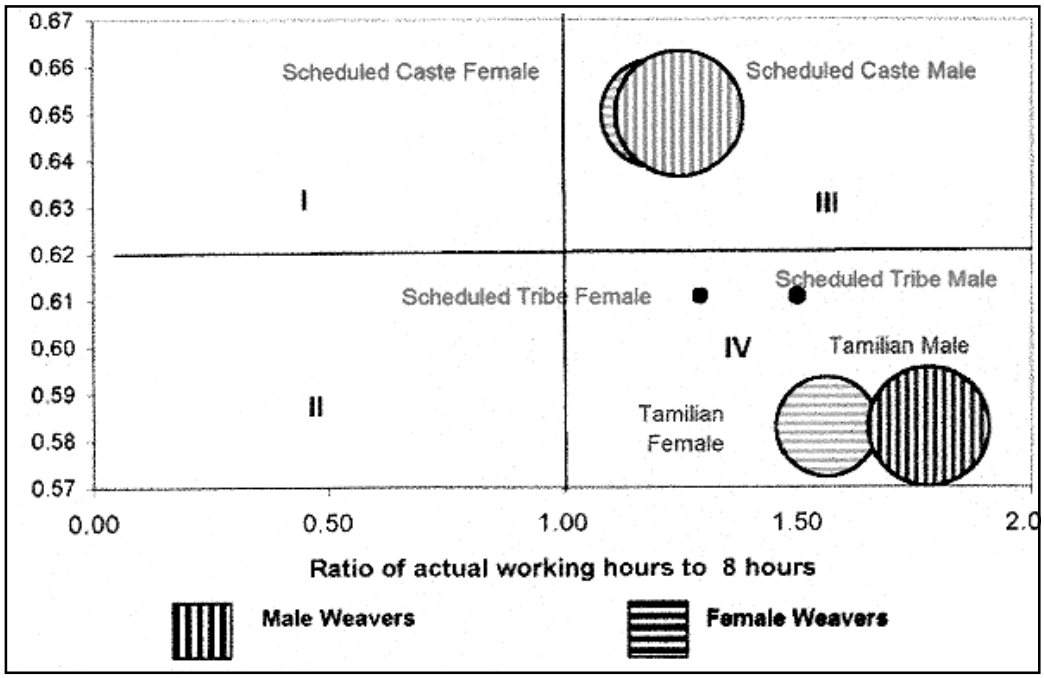
In the case of Tamils weavers, the advance system is even more prevalent. They receive advance of Rs. 2000 to Rs. 3000 per family in the beginning of the production activity. This amount is adjusted when the products are supplied. Two persons collect the finished products from the selected Tamil weavers in the area. They sell the products, in turn, at Madurai and Ernakulam. As the weavers receive advance the prices offered are very low. The ratio of price received by the weaver to market price is very low, between 0.5 to 0.6. This means that 40 to 50 per cent of the market price is appropriated by the middlemen.

As shown in Table 3.5, the marketing margin as the proportion of the price received by the weaver is different among communities. It is the lowest for Scheduled Castes, and the highest for the Tamil weavers.

In Fig 3.1, ratio of the price received by the weaver to the marketing price, the ratio of actual working hours to the normal working day of 8 hours and the net value added by different groups are shown. Each circle represents a group of weavers. The size and position of the circle shows the relative standards of each group. Zone I shows the most advantageous position where the ratio of actual working hours to 8 hours is low and the price which the weaver receives is high – a position of low exploitation by middlemen. Zone II represents a situation where exploitation of the middlemen is high and the weavers work for only lower number of hours than the norm for a working day. Zone III represents a situation where exploitation of the middlemen is low, but workers have to work more hours than what the normal working day prescribes. The Zone IV is the worst situation where exploitation of middlemen and the intensity of work are both high. The size of the circle shows the net value addition whereas the big circle shows a higher value addition (net contribution of the labour).

It may be seen that none of the groups are in Zones I or II. Tamil weavers and Scheduled Tribes are in Zone IV, where both exploitation of workers and intensity of work are high. Among the weavers, Scheduled Tribes are highly disadvantageous not only because of their position, but because of the small size of the circle as well (which represents net value addition). The exploitation of middlemen is high for the Tamil weavers as they are found to be located fully in the lowest position compared to other groups, but their net value addition is higher than that of the Scheduled Tribes. The Scheduled Castes are situated at the upper portion, which shows their returns are comparatively high, though they have to work for more hours than the normal. The net value added as represented by the size of the circle is also the highest among them.

Figure. 3.1 Relative standards of different groups



Value addition

The total income generated per day differs among the three communities as it depends largely on how intensively they work in a day. Under the present work structure, Tamil weavers earn more in a day as they work for more hours a day and more intensity too. If they work only for 8 hours a day, the total income generated would have varied between Rs. 30.00 and Rs.70.00 among males and Rs. 27 to Rs. 68 among females. In the matter of the number of hours of work and the intensity of effort, the Tamil workers and the Scheduled Castes are far more efficient than the Scheduled Tribes. If we assume that all the weavers purchase reeds the value of reeds varies between 22 per cent (for SCs) to 99 per cent (STs). The net value added per day is Rs. 0.5 to Rs. 56 among the communities and the products per day. The net value addition for a tribal is very low as Rs. 0.50 per day, if we take into account the cost of reeds. This clearly shows the extent of exploitation built in the industry by middlemen. However, in all cases, tribal families never buy reeds and in actual practice, the total sale proceeds is value added (Table 3.6 and Fig 3.2 A & B).

Another comparison would be between the labour incomes of weavers and the labour cost of production calculated in terms of market wage rates prevalent in the study area. At market rates, wage income received by the weaver should be much higher than what he gets. For example, instead of Rs. 11 for a mat, it should be Rs. 39 if it is produced by a male and it should be Rs. 38 if it is produced by a female (as the wage rate of females is low, the opportunity cost is also low). This means that, the prices offered for the weavers should be at least 350 per cent higher than what they receive at present if weaving is considered

Table 3.6 Actual and potential value of products, cost of raw materials and value added for value products

Per day	Scheduled Tribe		Scheduled Caste						Tamils			
	Mat		Muram		Small Basket		Fish Basket		Egg Basket		Fish Basket	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Total value of products in an actual working day	44.0	33.0	64.0	48.0	96.0	78.0	61.5	38.0	90.0	62.5	105.0	71.8
Total value of products in 8 hrs day	29.4	25.5	51.2	38.4	69.1	55.9	41.1	25.7	50.5	40.0	58.4	46.0
Cost of reeds in an actual working day	43.3	32.5	15.5	11.6	34.7	28.2	33.3	20.6	45.6	31.7	48.8	33.3
Cost of reeds based in 8 hrs day	28.9	25.1	12.4	9.3	25.0	20.2	22.3	13.9	25.6	20.3	27.1	21.4
Net value added in an actual working day	0.7	0.5	48.5	36.4	61.3	49.8	28.2	17.4	44.4	30.8	56.3	38.4
Net value of based in 8 hrs day	0.5	0.4	38.8	29.1	44.2	35.7	18.9	11.8	24.9	19.7	31.3	24.7
Per Product												
Market value of the product	18.0	18.0	20.0	20.0	17.0	17.0	5.0	5.0	12.0	12.0	9.5	9.5
Sale price of the product	11.0	11.0	13.0	13.0	13.0	13.0	3.3	3.3	7.0	7.0	5.0	5.0
Value of raw material per product in an actual working day	10.8	10.8	2.9	2.9	4.3	4.3	1.6	1.6	2.5	2.5	3.3	3.3

Value of raw material per product in 8 hrs day	10.8	10.8	2.9	2.9	4.3	4.3	1.6	1.6	2.5	2.5	3.3	3.3
Cost of labour/product at market wage in an actual working day	28.0	26.7	21.0	20.0	14.0	12.3	5.5	6.3	6.2	6.4	7.5	7.8
Cost of labour/product at market wage 8 hrs day	42.0	34.5	26.3	25.0	19.4	17.2	8.2	9.3	11.1	10.0	13.4	12.2
Value added per product in an actual working day	0.2	0.2	9.1	9.1	7.7	7.7	1.4	1.4	2.5	2.5	3.8	3.8
Value added per product in 8 hrs day	0.2	0.2	9.1	9.1	7.7	7.7	1.4	1.4	2.5	2.5	3.8	3.8
True value of product at market wage rate in actual working day	38.8	37.5	23.9	22.9	18.3	15.6	7.1	7.9	8.8	8.9	10.7	11.1
True value of product at market wage rate in 8 hrs day	52.8	45.3	29.2	27.9	23.8	21.5	9.8	11.0	13.6	12.5	16.7	15.4

Figure 3-2A Marketing cost, value of rawmaterials, and value added per product male weavers

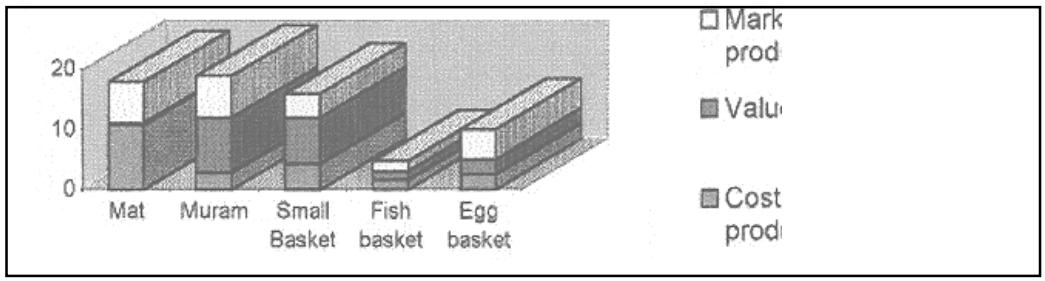
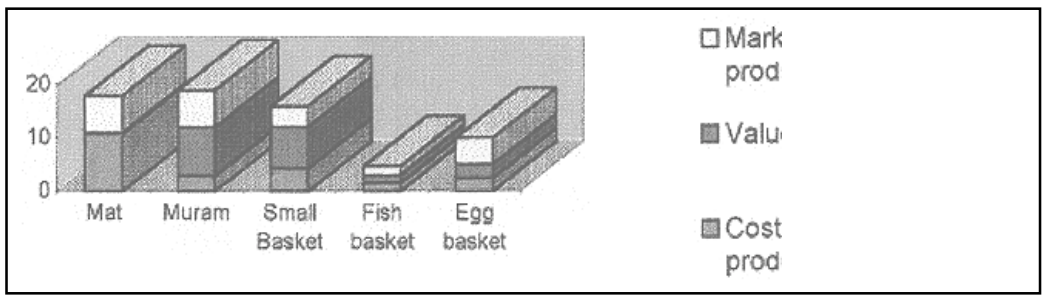


Figure 3-2B Marketing cost, value of rawmaterials, and value added per product female weavers



equivalent to other types of casual labour. The percentage is much higher (480 per cent) if we assume that the normal working day for the weaver is only 8 hours a day. In simple terms if weaving is to be as remunerative as other types of casual labour, the prices offered by the middlemen should increase to at least 480 per cent of the present level. The values for the various weaving products are shown in Table 3.7.

The preceding discussion was made under the assumption that the male and the female weavers work on a full time basis. But in most of the cases (except for the Tamilis) it is not, in fact, the case. The weavers also have other sources of income (except for the Tamils). Table 3.8 and Fig.3.3 show the average family income of different weaver families in a month from all sources.

In all communities, weaving is the major source of income. In the case of Tamils it is the only source of income; income from weaving is also the highest for them among the three communities. The other communities have other sources of income from activities such as NTFP collection, reed-cutting, casual labour, and land. For the selected sample households, the average size is almost the same for all the communities, whereas the number of earning members is very low among the Tamil workers. The average per capita income of the weavers is comparable to the per capita SDP for the State, which was Rs 8005 in 1995'96. The average annual income of all the selected communities is higher than the poverty level income; however, 30 per cent of Tamil households, 20 per cent of SC households, and 35 per cent of the ST households had incomes below Rs. 20,000 per annum.

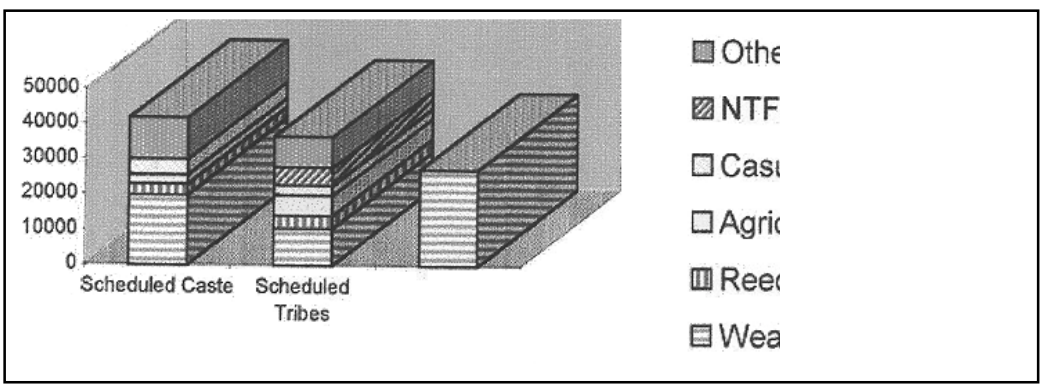
Table 3.7 Marketing margins, cost of labour, value added and product prices

	Scheduled Tribe		Scheduled Caste						Tamils			
	Mat		Muram		Small Basket		Fish Basket		Egg Basket		Fish Basket	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Marketing margin as % of price received by the weaver	63.6%	63.6%	53.8%	53.8%	30.8%	30.8%	53.8%	53.8%	71.4%	71.4%	90.0%	90.0%
Marketing margin as % of market price	38.9%	38.9%	35.0%	35.0%	23.5%	23.5%	35.0%	35.0%	41.7%	41.7%	47.4%	47.4%
Value of reeds as% of market price	60.2%	60.2%	14.6%	14.6%	25.5%	25.5%	32.5%	32.5%	21.1%	21.1%	34.2%	34.2%
Value of reeds as% of price received by the weaver	98.5%	98.5%	22.4%	22.4%	33.3%	33.3%	50.0%	50.0%	36.2%	36.2%	65.0%	65.0%
Cost of labour as % of market price	0.9%	0.9%	45.4%	45.4%	45.1%	45.1%	27.5%	27.5%	20.6%	20.6%	39.5%	39.5%
Cost of labour as % of price received by the weaver	1.5%	1.5%	69.9%	69.9%	59.0%	59.0%	42.3%	42.3%	35.3%	35.3%	75.0%	75.0%
Value added as % of market price	0.9%	0.9%	45.4%	45.4%	45.1%	45.1%	27.5%	27.5%	20.6%	20.6%	39.5%	39.5%
Value added a % of price received by the weaver	1.5%	1.5%	69.9%	69.9%	59.0%	59.0%	42.3%	42.3%	35.3%	35.3%	75.0%	75.0%
True value as % of market price	215.7%	208.3%	119.6%	114.6%	107.8%	97.9%	141.8%	158.8%	73.0%	74.4%	112.8%	116.4%
True value as % of price received by the weaver	353.0%	340.9%	183.9%	176.2%	141.0%	128.0%	218.1%	244.3%	125.1%	127.6%	214.3%	221.1%
True value on 8 hrs day as % of market price	293.5%	251.9%	145.8%	139.6%	139.9%	126.5%	195.8%	219.2%	113.5%	104.4%	175.4%	162.3%
True value on 8 hrs day as %of price received by the weaver	480.3%	412.1%	224.3%	214.7%	182.9%	165.4%	301.3%	337.2%	194.5%	179.0%	333.3%	308.3%

Table 3.8 Annual income of families by community and sources

Sources	Scheduled Caste		Scheduled Tribes		Tamils	
	Rs.	% to total	Rs.	% to total	Rs.	% to toal
Weaving	19964	53.3	10502	29.5	27415	100.0
Reed Collection	3120	8.3	3680	10.3	0	0.0
Agriculture	2520	6.7	5740	16.1	0	0.0
Casual labour	4570	12.2	2880	8.1	0	0.0
NTFPs other than reed	0	0.0	5116	14.3	0	0.0
Others	11844	31.6	8700	24.4	0	0.0
Total	37481	100.0	35659	100.0	27415	100.0
Average no. of members in the family	4.3		4.0		4.0	
Average no. of earning members	3		3.3		2.9	
Average per capita income	8716		8915		6854	
Average per capita earning member	12494		10806		9454	

Figure. 3.3. Composition of annual family income of different groups



Constraints in the unorganised bamboo-weaving sector

Technological

The bamboo-weaving sector may be the only traditional handicrafts sector in which no technological improvements have taken place. This sector still uses a primitive technology for collection and processing of the raw material. There are several reasons for the lack of technological improvement in this sector.

(i) It is not possible to mechanise the processes mainly because of thier inherent characteristics and patterns of production
(ii) Even if one finds the possibilities of technological improvements, their implementation would require large investment not warranted by the prevailing levels of return;
(iii) Sometimes capital-intensive methods of production may become more inefficient than or equally efficient as, the ongoing labour-intensive production
(iv) Mechanisation may not be acceptable from the employment point of view, as handicrafts industries such as bamboo-weaving are considered an avenue for providing employment in labour-surplus economies. This may be the reason why the government has given only scant attention for the technological aspect of value addition in this activity.

The primitive technology in use has, however, its advantages. Primarily it uses a simple, self-reliant local technology, which does not need imported capital, an aspect advantageous for a country like India. The highly labour-intensive nature also has the positive feature of providing large employment opportunities. The social opportunity cost of labour in this activity is very low, which may be one of the reasons why women dominate in it. The method in use for reed-cutting is also ecologically sound as it promotes reed growth and maintenance of ecological balance.

In the present circumstances, for collection of reeds, the reed cutter follows a selective system, as all the culms may not be suitable for weaving. For cutting, he uses only a bill hook. The collected reeds are transported by head load. There are several reasons for using this primitive technology. In the collection of reeds, as already mentioned, the scope of mechanisation is practically nil because in the present system of selective felling, mechanisation is difficult as the reed-cutter has to choose the mature and the most suitable culms from the clump. There are, however, methods available (FAO, 1987) for large-scale felling of bamboos /reeds for pulping. For pulping, any type of bamboos/reeds (mature or tender) culms can be used and clear-felling of the clump completely or partly is possible using machines. However, it cannot be applied in a situation in which reeds are to be collected selectively. Another factor is that the Forest Department has stipulated felling rules which ban the clear-felling system. Thus on technological and administrative considerations, full or even partial mechanisation in the collection of reeds is impossible.

In the case of weaving, the main processes include cutting and slivering, making frames, and weaving. The majority of the time is spent on the cutting and the slivering activities. At present, they are performed manually with the help of a knife. It is true that hand-made slivers are very thin, good in appearance and suited for making high-value baskets. In the case of low-value baskets, such as fish baskets, which are used for a single use only, the quality of slivers is not of much importance.

Of the different processes, increasing efficiency by introducing low capital-intensive, cheap mechanisation is possible only in the cutting and slivering stage. This is because, the process can be made more standardised than actual weaving or making skeletons and frames. Presently in most of the South-East Asian economies, where the bamboo crafts are highly developed, small tools are available for splitting and slivering bamboo pieces. Compared to the varieties of bamboo in use in these countries, bamboos used here are of a different type and size;

however, with simple modifications, the technology could be used in the present conditions also.

Several advantages may accrue if the level of inefficiency of the process of cutting and slivering is reduced by means of small-scale mechanisation. Firstly, this stage is considered the most difficult because the chances of injury are very high. Secondly, this stage accounts for the major part of the total time taken in the process; any reduction in the time spent on this stage, could enable the worker to spend more time on weaving and thus producing more products which in turn would increase total income. Thirdly, it helps to reduce the difficulties involved in the process and enable women to perform the job easily. Fourthly, it has the advantage of maintaining the labour-intensive nature of the weaving sector in tact.

Though such a small improvement seems to be viable, appropriate technology has to be developed to suit the prevailing conditions. The problem lies in the fact that till now no institutions either in the government or in the co-operative sector or the Bamboo Corporation has taken any steps in this direction. Though the government has invested a lot of funds for training the weavers and sustaining the unviable institutions, it has not done much in improving the working conditions by improving the production techniques.

Financial

It is difficult to maintain that this profession offers a reasonable level of income to the weavers. This is because, in order to get a reasonable level of income, the weaver has to work more hours per day than in any other type of activity. As has been shown, earlier, about 20 per cent to 50 per cent more time is normally spent on work per day by the weavers than the normal working hours. In the case of weaving this is rendered possible by the fact that the weaver works at home and that he/she can therefore utilise the time even by clubbing weaving with other household activities. As revealed from Table 3.8, the total family income is just sufficient for its subsistence. It is difficult to generate surplus out of the income generated, which is the main reason for the credit obligation that the weaver has with the middlemen. In the study area, almost 90 per cent of the Tamils, 75 per cent of the tribespeople, and 50 per cent of Scheduled Castes are indebted to middlemen. Indebtedness to middlemen is the main reason for the low prices offered by the traders.

The problem of lack of finance is faced not only by the weavers, but by the co-operative societies as well. Inadequacy of financial resources is the major reason for the poor performance of most of the co-operatives existing in the area.

Marketing

Only very few weavers resort to direct marketing of products in the study area. The option of direct marketing is very difficult and highly non-remunerative as the wholesale traders in the far off markets deliberately reduce prices if weavers bring their products direct to the market. This is because of the links existing between wholesale traders and middlemen. Though there are only a few middlemen existing in the area, they are able to control sales in their respective territories. Another reason is that, direct marketing takes away the time available

for weaving. Marketing through middlemen leaves the weaver with more time for weaving. Middlemen try to sabotage the marketing attempts of co-operative societies by devious manoeuvres of influencing functionaries of societies to serve their purpose.

Most of the workers being women, it is difficult for the workers to market their products directly at the major trading centres. It is difficult for them to carry on headload the bundle of baskets to market centres situated at far off places and sell the baskets in ones and twos. They are therefore forced to depend on the services of middlemen who are highly specialised in these activities. The credit obligation on the part of the weavers is another reason for the dependence.

Demand for most types of the baskets produced in the study area is seasonal. During the off-season, their prices fall to extremely low levels. The success of Kerala State Bamboo Corporation in sustaining a large number of weaving families is through its price support programme. Weavers in areas in which the Corporation activities are absent, do not have any such protection from the vagaries of price fluctuation.

Pricing

It is also true that the products do not fetch prices commensurate to the toil and trouble that go into their production. As shown in the earlier sections, at the going wage rate of casual workers the cost of production of these products is much higher than their market prices. Further, these prices seldom increase in tune with increases in prices/wages of other products. Such a situation has forced the weaver to work harder and longer to maintain a standard of living comparable to that of other workers such as casual workers.

Institutional

The problems in the institutional set-up in the unorganised bamboo-weaving sector are dealt elaborately in the next section. It seems that the formal institutions concerned with the welfare of this sector have utterly failed to keep the workers' interests. This would be the case with the Kerala State Bamboo Corporation and the other related agencies. The R&D works related to technological improvements are seldom undertaken by any agency working in this sector. These issues are also discussed in the next section.

4. Institutions in the Traditional Bamboo Weaving Sector

The major institutions involved in the organised traditional bamboo processing sector are Kerala State Bamboo Corporation, Co-operative societies, Forest Department, and other government departments. In the unorganised sector also, all these organisations except Kerala State Bamboo Corporation, are actively involved. It is the absence of intervention by Bamboo Corporation that makes this sector unorganised. In the following sections, we briefly describe the role of the institutions and the role played by each in the unorganised sector.

Co-operative societies

There is no dearth of co-operative societies in the study area. But the fact is that most of them are defunct. As already mentioned, two societies viz., Chillithode *Harijan* Handicrafts Industrial Co-operative Society and Adimaly Tribal Women's Handicrafts Industrial (workshop) Co-operative Society are selected for the present study. The first is almost defunct and the second is functioning but nominally. The first began functioning in 1986, and the membership is open only to *Harijans* (Scheduled Castes); in the latter, which started functioning in 1989, membership is limited to *Adivasi* (Scheduled Tribe) women only. The area of operation of the Chillithode Society falls in the Mannankandam *panchayat*, whereas the Adimaly Society was formed for the tribal settlements (of Korangatty, Nooiramkara, Thalamaly, Kuthirayala, Kudakallu, Pettymudi, Kuttamudy, Thattekannan, and Thunbipara) in Mannankandom *panchayat*. The major objective of both is the uplift of workers engaged in traditional handicrafts activities. This objective is sought to be achieved through organising the procurement of raw materials such as bamboos, reeds, and canes; undertaking the production of handicrafts items such as basket, mat, and *muram;* marketing the products; and offering financial assistance to members (primarily to weavers). The other common objectives include the promotion of thrift and self-reliance among the members. The objectives given above are the general objectives laid down by most of the co-operatives engaged in this and similar activities.

Source of funds

The co-operative societies generate funds mainly in two ways: (i) through shares subscribed to by the individuals and institutions and (ii) loans, grants, deposits, etc., from government and other institutions. The total share capital of Chillithode Society is Rs 90,000 of which Rs. 60,000 is government contribution and Rs 27,000 is government subsidy. The balance is the contribution of 30 members in the form of share capital worth Rs 100 each. The society does not have own land or building and occupies a rented building. In the case of Adimaly society the total share capital is Rs 10,00,000 i.e., 1000 shares worth of Rs 1000. Of this, Rs 100 is collected from each member and the rest is treated as the government contribution. The society has managed to get a government contribution of Rs 1,10,000. It had also received building loan of Rs 25,000 and a grant of Rs 10,500. The society owns an office building and a spacious workshed.

In addition, the Industries Department is providing managerial grant of Rs. 9,000 per year (for first five years only), which is used to pay the salary of the Secretary. Another assistance

received by these societies is the training grant, which is meant for giving training in basket- and mat-weaving to the members of the society and to non-members in the community. The realisation of benefits from the government largely depends on the dynamism and commitment of the management of the societies. This is evident from the differences in the amount of grants received by the societies. The President of the Adimaly society is an enthusiastic tribal leader. The enthusiasm and hard work of the President keeps the society at least in a state of nominal functioning.

The co-operative societies may raise funds also from other sources, to which they quite often resort, such as middlemen in this business. Though this source is easy to tap and no direct cost such as interest payments is involved, many unwritten commitments are attached to it, which include supply of finished products to them and acceptance of prices lower than the ruling market rates.

Scale of operation and financial performance

The Chillithode Society is at present virtually defunct. It does not procure baskets or supply reed to its members. The members collect or arrange for the supply of reed on their own and sell the products to middlemen/sub-traders. Its present function is limited to arranging *kutta pass* to middlemen/sub-traders. Each month, they apply for five to eight reed passes, which is used for obtaining the *kutta passes*. The *kutta pass* is needed by middlemen for transportation to the market of baskets they collect from the colony. The society charges Rs. 20 for each pass. The net income from each pass is only Rs. 8. Thus, the income for the society limited to Rs. 40 a month. However, in order to attract funds from government and to show that the society is functioning, the accounts of the society are so managed as to show in the records that the society operated and transacted the number of baskets as mentioned in the passes. The statements of annual accounts of the society are not available as they were not prepared in the past years. There is no staff (even the secretary) for the society.

The condition of the Adimaly Society is slightly better as this society has a paid secretary. As already stated, the salary is paid from the government's managerial grant. Initially it was envisaged that the weavers from the different tribal settlements in far away places would work in the society's workshed located in Adimaly. The society purchases reed from reed collectors and sells it to the weavers; it buys back the products from the weavers and arranges for marketing the products. Thus, income accrues from sale of reeds and products. This programme later failed when it became difficult for the workers to come to the workshed every day. Production was therefore allowed to be carried out at the settlements themselves and the products were brought to the society for sale.

This arrangement was also found to be difficult as the weavers found other better income-earning activities. At present, the society has sublet its workshed to Tamil weavers in order to stay in business. The process of selling reeds and buying products is recorded but does not, in fact, take place. The Tamil weavers pay Rs. 5 for each bundle of reeds and Rs. 0.50 for the products. These payments are entered in the society records as transactions carried out by the society.

Social benefits and contribution to the sector

As seen in the foregoing sections, neither of the co-operative societies existing in the area is able to fulfil the objectives for which they were formed. The success of these institutions should be judged based on the success they have achieved in increasing the income of the workers by eliminating intermediaries in the business. On this count, both the societies have failed; in fact, they remain now at the mercy of the intermediaries.

The major financial crisis of the Chillithode society was the result of misappropriation of funds by office-bearers. At the time of its establishment, the society was able to eliminate intermediaries in the collection of reeds and the marketing of products. The functioning of the society helped to increase the prices of the products as the intermediaries offered increasingly higher prices to obtain the products from the weavers.

The society was not able to withstand for long, however, the pressure from intermediaries and other stakeholders. The effort of the intermediaries in collusion with the managers of the society who had their vested interests to serve, led first to malfunctioning and ultimately to the breakdown of the society. At present, in order to stay in business, the society is forced to arrange all help as desired by the intermediaries. This shows that the formation of the society has neither helped improvement of the condition of weavers, nor the development of the sector in general. It has also wasted large amounts of government funds, whose opportunity cost must have been very high.

The financial assistance received from the government in the form of working capital and other managerial grants has not become beneficial for the society; it has indirectly benefitted traders and intermediaries attached to the society more than it has the actual weavers. None of the weavers in our sample had a positive view on the functioning of the society; they were invariably dissatisfied with its functioning and had strong dislike for the persons involved. Ninety-six per cent of them expressed dissatisfaction and 4 per cent offered no comments. It is to be remembered that the society functions in an area in which a large number of persons are engaged in the weaving activities. The efficient functioning of the society would have been much helpful in realising higher income for them and hence in the development of the sector as a whole. Thus, the expected social benefits out of the functioning of the society have not at all been realised; the society has caused definite social loss.

In the case of Adimaly society, the reason for the slackening of activities is quite different. It is the wrong location of the society, far away from the settlements, that is the major factor for failure. The locational disadvantage has not only increased the difficulties of the weavers, but of the reed cutters who supply reed to the society as well. Though the society managed to get some forest land for the construction of a workshed much nearer to the settlements, unfortunately the workshop did not materialise. Another is the availability of alternative income- earning opportunities in the area, a factor that reduced the enthusiasm of the weavers in the profession. The society is able to attract funds and other benefits from the government largely owing to the perseverance of its enthusiastic president. This society has also provided an annual accounts statement to the study team, which is presented in Annexure B.

Reasons for the inefficient functioning of co-operative societies

The presence of co-operative societies in the traditional unorganised bamboo-weaving sector is supposed to increase the social and economic benefits of its members and the weavers in general by reducing the presence of intermediaries and offering fair remuneration to workers. However, in actual practice not only have these institutions been able to function properly to help the weavers, but also have misused government resources for private benefits. It is important to find out the reasons for the failure of most of the co-operative societies in achieving their objectives.

General structure of co-operative societies

Theoretically, co-operative societies have a horizontal structure, which enhances participation of members in decision-making. In general, each co-operative society has a general body consisting of all its members, considered to be its supreme decision-making body. In order to execute the day-to-day affairs, the general body elects a director board. The general body also has the power to appoint the board of directors, scrutinise and approve the annual accounts and the budget, enact the changes in the byelaws, and review the function of the society in general. Normally the director board consists of 7 to 11 members of whom usually three are nominated by the government and the rest elected by and among the members.

The board of directors look after the day-to-day affairs and the secretary helps the board in this process. The board elects the president from among the directors, and he is responsible for all the financial transactions of the society. The board is also empowered for enrolling and removing members, incurring expenditure according to the approved budget, sanctioning loans for the members, and ensuring that the approved budgets are properly utilised. In the present case both the societies are established for the respective communities (one for Scheduled Castes and the other for Scheduled Tribes); therefore, the members and the director board should be able to understand the specific problems of the community concerned and their interests should be taken care of. However, in actual practice, community support is often seen to be utilised for personal gains and not for benefit of the community as a whole.

Though the co-operative societies are expected, structurally speaking, to function in a democratic way, in actual practice, this seldom happens. Despite the fact that the ultimate power is vested with the general body, in most cases, it is unable to function properly due to many factors. The most important factor is the lack of interest on the part of members for the proper functioning of the society. If the members are not dynamic and remain passive towards the functioning of the society, the desired results would not be achieved. Another factor is the illiteracy of the members and thier lack of exposure to the rules and regulations regarding the functioning of societies. These shortcomings have led to a situation in which the control of the society is taken over by relatively literate and cunning persons whose decisions happen to be accepted without criticism. In this situation, individual gains get greater value than social gains; misappropriation of funds by the interested persons concerned also becomes rampant; and intermediaries and middlemen intervene in the functions of the society and turn it to their favour. Owing to lack of expertise, the society officials tend to receive guidance from outsiders at whose behest decisions are made and transactions are conducted. Office-

bearers remain most often unaware of the goings-on in the society. The by-law clearly prohibits the board members from functioning as sales agents and traders. This stipulation was violated in the Chillithode Society; the board members failed to pay the amount due to the society, because of which the society became bankrupt. The members of the society came to know about the details only when the situation went out of control and the information could no longer be kept hushed up. Moreover, the rivalry among local political parties and division of members on political lines undermine to a large extent the effectiveness of the functioning of the society. Control of co-operative societies has come to be considered an easy way to distribute benefits and patronage to party supporters and sympathisers (Oommen, 1974). Efficient functioning of a co-operative society would depend largely on the commitment of its President, Board of Directors, and the Secretary. Though in principle, members control the activities of office-bearers, such control is seldom effective; the office-bearers most often tend to be influenced by external forces and personal or partisan interests.

In short, the failure of the co-operative societies as an institution promoting bamboo- weaving and raising the standard of living of bamboo workers has been clearly due to the lack of commitment and professionalism of the persons entrusted with the task of managing these institutions. Illiteracy and lack of interest and enthusiasm among the members created excellent breeding ground for the forces of vested interest to destabilise the institution for their private gain. The societies are created primarily to eliminate intermediaries in the collection of raw materials and marketing of products. This goal has not materialised; the intermediaries have succeeded to topple the functioning of the societies and to make the societies function to serve their private interests.

Bamboo Corporation

The Kerala State Bamboo Corporation has a vertical structure with the State Government at its top and the various categories of managers and officials at its base. The Corporation has a Board of Directors and a Managing Director appointed by the Government. The Board of Directors include four ex-officio members, one each from Forest Department, Industries Department, Handicrafts Development Corporation, and the Managing Director of the Bamboo Corporation. The Chairman is appointed by the Government, which is made mostly on political considerations. There are also non-official members in the Board comprising representatives of workers and other groups involved in mat-making, nominated by the Government. The participation of workers in decision-making is very limited in the Corporation except the nominal representation from workers' group in the Board. However, the presence of various trade unions representing different kinds of workers is a safeguard of the interests of workers.

Being a public sector undertaking, the Corporation has the benefit of getting adequate financial assistance from government for its various activities thus minimising the need for dependence on other agencies and institutions. Various credit schemes for assisting reed-cutters and weavers are in operation. Since the Corporation has the absolute monopoly of supplying raw material to workers within their jurisdiction, competition from private traders for attracting weavers for their finished products, has been eliminated. A worker getting supply of reeds on credit basis from the Corporation depots is obliged to supply his/her finished products to

the Corporation. The Corporation supplies mats received directly to the users such as Food Corporation and Central Ware Housing Corporation at remunerative prices and pass on the sale proceeds to the weavers. Even if the local traders try to purchase mats, they have to pay prices higher than those prevailing in the market since the Corporation also provides to the workers several welfare benefits. The weaver, therefore, seldom tries to forego the benefits from the Corporation and to supply their wares to private traders. In this way the Corporation has not only been able to increase the welfare of weavers, but also has succeeded in freeing the workers from the exploitation of local private traders, by eliminating them altogether from the scene.

Forest Department

The role of Forest Department in the unorganised bamboo-processing sector has been multifaceted. First, it provides permission for collecting the basic raw material. Secondly, it provides the permission for transportation of finished products. The system of issuing pass is introduced to minimise pilferage and to control the over-exploitation of raw material. The reed collectors have to pay the forest department a seigniorage for obtaining reed collection passes. The cost of the pass alone comes to Rs. 12 per bundle of 30 reeds. The same pass is converted to transport the finished products, for which no additional payment is required. The process of obtaining the pass is difficult, as the worker has to spend three-to-four days at the office for the purpose. Since there is much difficulty in obtaining passes, the workers seldom bother to take them. They also know that the Department officials are lenient towards them as reed collection is essential for their survival. In this context, it is to be mentioned that the Bamboo Corporation is allowed to collect the raw material free from the forests, whereas workers in the unorganised sector have to pay, by way of the cost of the pass, for its collection. Another fact is that, for large pulp and paper industries, reeds are supplied at very low rates, the maximum being is Rs 500 per Metric Tonne. In comparison to this rate, the rate paid by weavers is high.

Thus, considering the large social gain, it is only fair that the supply of raw material to the weavers is also made free. The present rate is very high compared to their daily earnings. This is the reason why most weavers are reluctant to take passes. In order to ensure proper exploitation of reed resources, the same pass system may be continued and at the same time, the process of obtaining the passes may be simplified. This may be done by entrusting the power of issuing passes to the Deputy Range Officer who is placed at the Forest Stations, which are situated in general near to the forest areas. At present, this is done by the Range Officers who are burdened with several other official responsibilities.

Other government departments

There are many other institutions directly involved in this sector. They include Industries Department, Co-operative Department, and Scheduled Caste and Scheduled Tribe Development Department. All these departments have budget allocation for assisting the traditional weaving sector. Industries Department gives training grants and managerial grants to the co-operative societies. But it is observed that most of the funds allocated to these societies for various purposes are not utilised properly. For example, training grants are

given to the societies for providing training in mat-, and basket-weaving to the members of the society. In most cases, they do not, however, require training because weaving is a traditional occupation and the skills are easily transferred to members of the family from generation to generation. What they need are only directions helpful for them to improve their income levels from weaving. The financial assistance of these sorts is not normally aimed at augmentating the larger social gain. The officials of these institutions are interested to direct the funds to societies and other agencies engaged in the sector mainly because they have to achieve the targets envisaged in the budgetary provision. In this process the ways in which the programmes are conducted or the quality of the programmes are never looked into.

5. Strengthening Unorganised Bamboo Weaving Sector: A Scenario Analysis

This section is devoted to an analysis of the different options that could be considered for increasing the income and standard of living of the weaver families. Here six scenarios are analysed, and all the options are considered in a mutually exclusive way. The following are the different scenarios

(i) Supply of cheap raw material
(ii) Increasing the price of products
(iii) Removal of intermediaries
(iv) Increasing production through partial mechanisation
(v) Diversification of products
(vi) Improving institutional arrangements

Raw material

At present reeds are collected based on the seigniorage rate paid to the Forest Department, which comes to about 20 per cent of the total market price of reeds. The seigniorage rate and the pricing of passes are introduced mainly to reduce loss of forest wealth due to pilferage; it is also considered a source of revenue for the Forest Department. It is true that only a limited number of persons regularly collect passes from Forest Department due to difficulties of obtaining them. Compared to the revenue collected for timber and other forest products, the revenue from the seigniorage rate paid by the *bona fide* consumers is negligible. It may be seen that Forest Department cross-subsidises the other sectors by pricing reeds. For example, for Bamboo Corporation reeds are supplied free.

In addition, the maximum charges fixed for the extraction of reeds by the pulp and paper companies are only Rs 250-Rs 500 per metric tonne. It is ironic that the unorganised and poor mat-, and basket-weavers are made to pay prices for their raw material higher than those levied from Pulp and Paper industries. Since the Forest Department earns only limited revenue from this source, the seigniorage rate may be waived for traditional basket and mat weavers. Such a waiver would add to their income levels. But once the collection becomes free, the chance of over-exploitation of the resources would become high. In order to avoid this, the pass system may have to be continued; but the process should be simplified. Instead of the Forest Range Officer issuing passes, the responsibility could be entrusted with the Deputy Ranger, whose office is located mostly near to the forests. This arrangement would considerably reduce the time required for obtaining passes.

Another option that may be considered is the introduction of a quota system. On the average, a family needs two to three bundles of reeds and the specified quantity of reeds could be supplied free. For requirement over and above the quota, the seigniorage rate may be charged.

By exemption from seniorage, the family income of a weaver could be enhanced by Rs 24 to Rs 36 per month and Rs 288 to Rs 432 per year.

Price of products

Though it is difficult (but not impossible) to increase the price of the reed products as substitute plastic products are available in the market, increase in the prices received by the producers could be achieved by reducing the marketing margins. At present, prices are fixed either by the trader or by the sub-trader. The producer has no say in determining prices and hence marketing margins. If strong institutional arrangement were present, this option would be no longer a difficult one. This fact has been exemplified by the operation of KSBC.

Increase in the price received by the weaver by Re 1 per product would increase his/her income by 8 per cent to 15 per cent per day. As stated above, the possible way of increasing product price is by having a strong marketing agency, which would protect the interests of the weavers.

Intermediaries

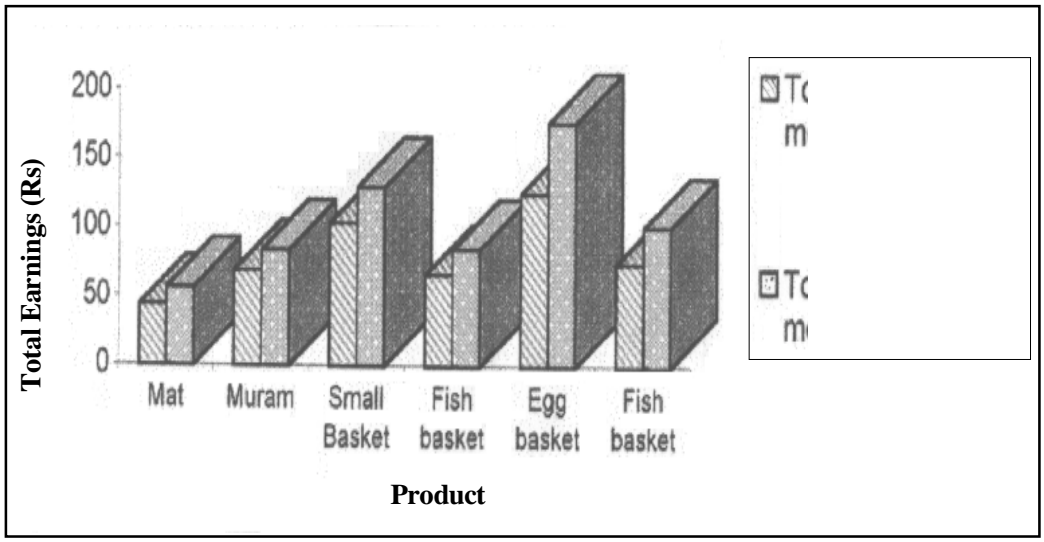
Elimination of intermediaries from the business also seems to be difficult. Currently, middlemen and traders have good mutual relations, as a result of which lower prices have come to be offered for direct marketing by weavers. As most of the market is located in and around the State, it will be a hard task to break the trader-intermediary links. However, the experience of the Bamboo Corporation and the initial success of the selected co-operative societies shows that direct marketing need not necessarily lower prices if adequate institutional support is available.

The mere presence of a society in the marketing of products had increased competition and forced traders to offer higher prices for the products if weavers had to be attracted to them. Thus, an optimum approach would be the creation of agencies dedicated to marketing of the products. At present marketing costs are quite high; if alternate arrangements are made, it is possible to bring them down considerably.

Partial mechanisation

Because of the inherent nature of the environment from which the raw material is collected, there exists hardly any scope for improvement in raw material collection processes. However, as mentioned earlier, some improvement is possible in technology but only at the stage of cutting and slivering, as the improvement at this stage has the advantage of increasing the productivity of the worker. If small tools are developed (at present, they are available for processing large bamboos) to split and sliver reed pieces, time can be saved. As noted earlier, nearly 36 per cent to 70 per cent of the total time is devoted to this activity. If it is possible to reduce the time taken for cutting and slivering, the income of the weaver could be increased by 22 per cent to 40 per cent per day (Fig. 5.1 and Table 5.1). Another benefit is that feminine intensity may be further increased, as improvement in the most difficult part of the process would enable women workers to reduce their dependence on men for this activity. The increase in income accruing to women has higher social benefits as women's income is entirely spent for the welfare of the family.

Figure. 5.1. Changes in income due to partial mechanisation: For male member



Diversification

Another possibility is to switch over from the production of baskets and mats to production of more valuable handicrafts products, or to carry on the present pattern and include the others. But there are difficulties in introducing changes. Firstly, the products made should be marketed. The handicrafts products might command higher prices; but they are likely to be demanded only by a selected clientele. The demand from the local markets would be limited and development of export markets would need strong marketing agencies. Mats and baskets have the advantage that they are necessary items and their demand is almost constant (even with many substitutes for them). Even if the market demand were available, production of high-value-added items requires skills, which are at present limited in the communities concerned. Skill development in itself is a big task and it will not be possible if dedicated agencies (eg. NGOs) are not available. Thus, the scope of this option is dependent on the availability many positive factors, which are in scarce supply in the present circumstances.

Institutional arrangements

The absence of effective working of institutions in the study area has created a situation of dominance of the intermediaries. If a strong institutional set-up is present to supply raw materials and market commodities, the level of exploitation of the intermediaries could have been brought down largely. If that were done, the price received by the weaver could have gone up at least by 5 to 20 per cent of the existing rates. Efficient functioning of an agency would force the intermediaries to increase the prices they offer to weavers.

One possibility of raising prices for the weavers may be to extend the activities of the Bamboo Corporation to these areas also. It should be easy since the Corporation is collecting reeds from the nearby forests. At present, it is not a difficult task; the mandate of the

Table. 5.1 Details of advantages of partial mechanization in cutting and slivering

Processes	Scheduled Tribe		Scheduled Caste						Tamils			
	Mat		Muram		Small Basket		Fish Basket		Egg Basket		Fish Basket	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Before Mechanisation												
Total time required per product (Hrs)	3.00	3.45	1.88	2.50	1.39	1.72	0.58	0.93	0.79	1.00	0.96	1.22
Average no. of items made per day	4.00	3.00	5.33	4.00	8.00	6.50	20.50	12.67	18.00	12.50	15.00	10.25
Sale price (Rs.)	11.00	11.00	13.00	13.00	13.00	13.00	3.25	3.25	7.00	7.00	5.00	5.00
Total time spent per day (Hrs)	12.00	10.35	10.00	10.00	11.11	11.16	11.96	11.82	14.25	12.50	14.38	12.47
After mechanization												
Decrease in time when splitting time is reduced (Hrs)	2.33	2.68	1.54	2.04	1.11	1.37	0.46	0.72	0.56	0.73	0.71	0.88
Possible number of products made per day	5.14	3.86	6.49	1.90	10.00	8.16	26.25	16.50	25.33	17.24	20.29	14.12
Total earning before mechanization (Rs.)	44.00	33.00	69.33	52.00	104.00	84.50	66.63	41.17	126.00	87.50	75.00	51.25
Total earning after mechanization (Rs.)	56.57	42.43	84.32	63.67	130.00	106.14	85.31	53.61	177.33	120.69	101.47	70.59
Percentage increase in income per day	0.29	0.29	0.22	0.22	0.25	0.26	0.28	0.30	0.41	0.38	0.35	0.38

Corporation lays it down that it has to supply the raw material to all the needy weavers. The problem lies in the fact that the collection and the supply of reeds are dealt with differently by the Corporation. If a request comes for the supply of reeds, the Corporation supplies them from its reed collection depots situated elsewhere and not from the collection points, which are nearer to the weaver who makes the request.

This may lead to unnecessary increase in the price of reeds, which is even at present higher than the rates prevailing in the study area. This option is therefore ruled out. The other option is to market the products through the Corporation. But the Corporation deals only with mats of specified sizes and the other products produced in the area such as basket and *muram* may not be accepted for marketing by the Corporation, particularly because these items are not produced according to any prescribed standard. There may also be difficulty in extending the scope of the product range of the Corporation, as the demands for basket and *muram* are more local in nature, a market which the Corporation might find difficult to cater to given its existing structure.

Thus, each of the alternatives presented has its own merits and demerits. In these circumstances, a combination of viable alternatives that have positive effects in enhancing the income of the weavers would be of practical importance. Of the viable alternatives, the most important would be the development of a marketing agency for the different products from this area. A strong marketing agency would enhance the price received by the weavers, by reducing the marketing margins. It might also minimise the degree of interference of middlemen in the area. In due course, further diversification of products could be thought of. The different agencies now supporting the sector could use part of their funds to bring about technical improvements in the production processes. Simple mechanisation not only has the benefit of enhancing income; it would also raise the socio-economic status of women workers in the sector.

6. Conclusions And Recommendations

Conclusions

Reed basket/mat weaving in the rural areas in the State is an important forest-based small-scale household enterprise providing income and employment to a few socially and economically backward communities. Convinced of the employment and income-generating potential of this sector the government has supported this sector by way of financial assistance and through the creation of institutions. The formation of the Kerala State Bamboo Corporation has succeeded in organising the mat weavers in the Ernakulam and the Thiruvananthapuram districts. However, many areas lie outside the purview of the Corporation and the workers in these areas are at the mercy of intermediaries.

In the study area, intermediaries dominate the marketing scene and the prices offered for the products of weavers are much below market prices. The inter-linkages between middlemen and dealers have practically stalled the possibility of direct marketing of the products by the producers themselves. The middlemen have also attracted cheap Tamil weavers to the area by offering them advances. By this action the middlemen have succeeded in creating a competitive environment in the area. Because of their credit obligation to middlemen, the migrant weavers get much lower prices for their products than what the local weavers receive. However, the incomes of all communities of weavers are extremely low. They therefore work for more hours daily to get reasonable income.

Production is carried out using simple tools and primitive technology. Though the stages of production are distinct and separate, the extent of division of labour in the production process seems to be very limited. Only in some cases is the difficult part of the work (i.e., cutting, splitting, and slivering) carried out by men workers. Reduction in the time required for this part of the process increases the productivity of weaving considerably by 22 per cent to 40 per cent.

The analysis of value addition shows that among the communities, it is the tribespeople, socially and economically the weakest, which are exploited the most by middlemen. As these people get raw material free of cost, they manage to make a living by weaving. Data on sources of family income show that weaving contributes the major share. Other sources of income are farming, casual labour, and NTFPs.

There is no dearth of co-operative societies in the area. The middlemen have been able to turn working co-operatives into defunct ones. The absence of an effective institutional set-up is one of reasons for the continuance of exploitation by middlemen. It is evident that the present structure of co-operative societies, even with ample support from the government both on financial and administrative fronts, failed to provide any positive results. Though in the initial stages, the societies functioned effectively, lack of management skills and illiteracy among the members created a vulnerable situation, which was fully exploited by the interest groups, which wanted to demolish these institutions. Coupled with the onslaught of external negative forces, some members and officials of the societies themselves acted as a destabilising force in many of the societies. For an effective functioning of a co-operative society, dedi-

cated and responsible management is necessary, especially in a situation in which it has to work among communities steeped in illiteracy.

In this count, one of the merits of Bamboo Corporation is its management structure. Though representation of ordinary workers in the Corporation is kept at a minimum, a responsible management and its dedicated work has resulted in significant positive results.

Recommendations

Based on the analysis presented in the earlier sections, we find that improvement of the working and living conditions of the weavers in the study area under present circumstances is not an easy task. In order to achieve a standard of living comparable to those of workers of their respective communities engaged in other occupations, the weaver has to work longer and harder. The prices offered for their products are much lower than their cost reckoned in terms of the value of labour that has gone into their production, calculated at the market rates of wages. Compared to workers under the Bamboo Corporation, the weavers in the study area have to pay more for the raw material but receive only less for their products because of domination of middlemen. Though structurally viable institutions are present on records, in practice they are not at all viable; they have become inefficient in achieving their task of enhancing the benefits of workers. For improving the conditions of the workers, the following measures may be considered.

(i) The weavers in the unorganised sector have at present to pay higher prices for the raw material mainly because of the policy of the Forest Department. As the income accrued to the Forest Department from the seigniorage rate is very low, in the larger scocial interest, the Forest Department has waived the seigniorage charges for reed collected by the Bamboo Corporation; the collection of other NTFPs by the Kerala State Co-operative Scheduled Caste and Schedule Tribe Federation is also exempted from seigniorage. Thus it is only reasonable and fair to exclude the traditional bamboo weavers also from paying seigniorage rates. To control over- exploitation of resources, the present system of issuing passes may be continued.

(ii) At present, weavers have to spend three to four days for collecting reeds passes. The process may be simplified and steps may be taken to issue passes from the Forest Station level.

(iii) Excessive financial support to the co-operative societies has resulted in misappropria tion of funds by vested interest groups and the creation of co-operative societies for getting financial assistance from the government. These practices have to be curtailed and financial assistance should be provided only on loan basis; grants should be reduced to the minimum, if not completely avoided. Effective accountability systems may be built into the set-up to reduce this type of irregularities

(iv) The majority of co-operative societies failed because of the lack of professional man agement and illiteracy of members. As one cannot expect professional managers to come up from these societies themselves, which are created by the educationally and

socially backward communities, the solution would lie in carefully monitoring their activities. At present, many institutions assist these societies, and, technically, their control is vested with the Co-operative Department. The funding departments do not, however, have any control over the societies. It is only reasonable to entrust all the funds to be channelled to the societies, to any one department and to vest on it also the responsibility of the societies.

(v) The government may take steps to improve the technological aspects of various production processes. This would lead to increase in productivity of workers; and small-scale mechanisation seldom replaces the labour. Investment of this kind from a private entrepreneur is difficult, as this may not ensure adequately high private returns.

(vi) KSBC may think of expanding services to the study area, which would be of benefit to weavers. Such a step would be more beneficial for Tribal weavers as they are the most exploited group. KSBC can also encourage weavers in this area to produce more value-added products like the mats used for producing bamboo ply.

(vii) The demand for high-value handicrafts is very high in the country; such handicrafts products also have great potential for exports. At present weavers have little idea of producing this type of items. The institutions working for the betterment of workers should arrange for training of weavers in these crafts.

End Notes

[1] The NTFPs include all products other than timber and firewood. Common items of NTFPs from the forests of Kerala are Bamboo, Reed, Cane, Honey, Dammer, Cheevakai, Wild pepper, and Wild cardamom.

[2] Reed, scientifically known as *Ochlandra* and falls in the grass family, is a type of thin variety bamboo. Many species of reed are seen in the forests of Kerala of which two species *O.travancorica* and *O.scriptoria* are commercially important. It is widely seen as the undergrowth of rain forests in the leeward side of Western Ghats. *O. travancorica* is abundant in southern Kerala especially in the Thiruvananthapruam, Thenmala, Ranni, and Konni Forest Divisions. Though technically reeds are bamboos, in this report reeds are dealt with separately unless otherwise specified.

[3] About 15,000 mat-weaving families, 2500 reed-cutters and nearly 1000 other workers at present get employment from the Corporation. The Corporation also produces and markets bamboo ply boards. The total turnover of the Corporation in 1995/96 was Rs 778 lakh and it earned a net profit of Rs 4 lakh during that year. The total expenditure towards welfare schemes such as medical reimbursement, assistance for marriages, education and payment at the event of death for weavers comes about Rs 10 lakh per year (State Planning Board, 1996).

[4] Bamboo Corporation is collecting reeds from the some of the forests adjacent to Adimaly. However, there are no reed collection /distribution depots or mat collection deports existing in the area.

[5] Land leasing is common in Ancham mile mainly at times when urgent cash needs arise. The tribes approach moneylenders for funds. They are forced to pledge some assets to the latter, which invariably will be land, as they have no other valuable assets. This is different from mortgaging, because, they never return the money they borrowed; instead they are allowed to cultivate the lands and take the produce.

[6] *Muram* is used to winnow grains.

[7] Some households are engaged in part-time weaving. Part-time occupation implies a situation in which workers engage themselves in the activity only when their primary jobs are not available. There are also cases where weaving is done as off-time occupation. In this case, the number of items made per day per worker would not give any idea of the real productivity of the worker; hence information on production done by off-time workers is not analysed in this report.

[8] The societies at Chillithode and Korangatty arrange basket passes for the traders. In the beginning of the month the Society applies for 8 to 10 reed passes in the name of the weaver members; using these passes, they arrange to obtain the basket passes. Two benefits accrue

from the strategy: (i) in the society records these can shown as the activities done by the society; (ii) it is a small source of income to the society. After meeting the expenses the society earns Rs 5 to 8 per pass. This is the only activity that most societies are doing at present.

References

Adimaly *Panchayat*. 1997. 'People's Planning - Development Report'.

Bourdillon, T. F. 1893. *Report on the Forest of Travancore*, Government Press, Trivandrum.

Chundamannil, M. 1988. 'Inter-sectoral Allocation of Bamboo Resources: The Social and Economic Issues'. In. 'Bamboos Current Research', Proceedings of the International Bamboo Workshop Nov-24-28.

FAO. 1987. 'Small-scale forest-based processing enterprises', FAO Forestry Paper No. 79, Rome.

FAO. 1991. 'Case studies in forest based small scale enterprises in Asia', Community Forestry Case Study. No.4, Rome.

Joseph, K.J. 1995. *Reed People,* the report submitted for FAO. 'The Land People', Trivandrum (Unpublished).

Kumar, A. 1985. 'The Impact of the Working of the Kerala State Bamboo Corporation in Development of Bamboo Industry in Kerala'. Ph. D Thesis, University of Cochin.

Nair, C. T. S 1986. 'Bamboo-based industry in Kerala State, India' In 'Appropriate Forest Industries', FAO Forestry Paper, 63, Rome.

Nair, C.T. S and Muraleedharan, P. K. 1983. 'Rural Institutions for the Development of Appropriate Forestry Enterprises: A Case study of Traditional Reed industry in Kerala' Research Report No. 18. Kerala Forest Research Institute, Peechi.

Oommen, T. K. 1974. 'FAO Survey on peasant organisation in India: The case of Alleppey', Jawaharlal Nehru University, New Delhi.

State Planning Board. 1983. *Economic Review,* Trivandrum.

State Planning Board, 1996. *Economic Review*, Trivandrum.

Varalekshmy, V. 1992. *Economics of bamboo basket making - A case study,* Haryana Forest Department and Tata Energy Research Institute.

APPENDIX - A

Felling rules prescribed for reeds

The reed forests in the State are categorised into different reed working circles and each circle is worked in four-years' cycle. The categorisation is extremely important for commercial exploitation of reeds for pulp and paper mills. The following are the general felling rules prescribed for both commercial and *bonafide* felling:

(i) No clump less than two years should be cut

(ii) All new culms and 25 per cent of the old culms should be left intact

(iii) No clump should be clear-felled except after flowering and seeding have been completed.

(iv) Clums should be cut as low as possible leaving an inter-node above ground.

(v) Cutting should begin from the side opposite to where new sprouts are emerging.

(vi) Felling and collection of reeds should be restricted within the prescribed annual coups only.

(vii) All matured culms with a clump subject to a maximum of 60 per cent should be removed.

(viii) Culms should be retained evenly-spaced in the clump.

(ix) All dead malformed culms irrespective of size and age should be removed from a clump.

(x) All utilisable length will be collected and no wastage will be permitted.

(xi) All branches above 20 mm girth should also be collected.

(xii) No felling should be allowed during the sprouting season i.e., from 15 of June to 15 of September and tract shall be closed for any human interference (mainly for commercial extraction).

Appendix B

Annual Accounts of Adimaly Co-operative Society as on 30-6-1996

Revenue		**Disbursements**	
Drawings from Sub Treasury	15375	Purchase	15100
Drawings from DCB	5000	Wages	4545
Labour Advance	1175	Stationary	619
Sales	16767	Postage	32
Staff security with interest	5084	TA	1389
President Advance	55	Stipend	9000
Security Advance	500	General Body Expenses	116
Thrift Deposit	42	Staff security with interest	5084
Staff Security Deposit	2000	Pass	344
Opening Cash Balance	209	Salary	1975
		Mis. Expenses	4940
		Office expenses	100
		Secretary Advance	500
		President Advance	500
		Staff Security Deposit	2000
		Cash balance difference	3
		Closing balance	1020
Total	**46257.**	**Total**	**46257**
Trading Account			
To Opening Stock	347	Sales	16767
Purchase	15100	Closing Stock	870
Pass	344		
Gross profit	1846		
	17637		**17637**
Profit and Loss Account			
Printing and Stationary	619	Gross profit B/d	1846
Wages	4545	Staff securi8ty with interest	5084
Postage	32	Training Grant	13500
TA	1389	Managerial Grant	1875
Stipend	9000	Dr. from DCB	5000
General body Expenses	116	Net loss	494
Salary	1975		

Mis. Expenses	4940		
Office Expenses	100		
Staff Security with interest	5084		
Total	**57800**	**Total**	**27500**
Balance Sheet as on 30.06.97			
Assets		**Liabilities**	
Share capital Members	25500	Cash in hand	10
" " Government	110000	Cash at DCB	706
Building load	25000	Training Account	40662
Working capital Loan	17911	Furniture	10489
Staff Security Deposit	2000	Land	48800
Thrift Deposit	42	Building	125000
		Closing Stock	870
		Advances	2445
		Sales	1579
		Building construction	2000
		Staff security deposit	2000
		Toilet construction	5250
		Net loss	1141
	240953		**240953**

Kerala Research Programme on Local Level Development

List of Publications

Discussion Paper Series

1. *Regional Disparities in Development in Kerala:* K. N. Nair, A. C. Dhas, R. Anandaraj & R. Sanjith (*Out of print*)

2. *Decentralisation in Kerala: A Note*: K. Nagaraj (*Out of print*)

3. *Environmental Factors of Malaria Persistence: A study at Valiyathura, Thiruvananthapuram City:* S. Rema Devi & S. Dass (ISBN No. 81-87621-02-3)

4. *Technological Change in Kerala Industry: Lessons from Coir Yarn Spinning:* K. T. Rammohan (ISBN No. 81-87621-03-6)

5. *Development of Women in Rural Areas: A Study of DWCRA in Thrissur District:* U. T. Damayanthi (ISBN No. 81-87621-04-4)

6. *Inland Fishermen and Inland Fishing: A Study in Neelamperoor Village (Alappuzha District)*: R. V. Jose (ISBN No. 81-87621-05-2)

7. *Educational Development At Micro Level: Case study of two villages in Kerala:* A. Abdul Salim (ISBN No. 81-87621-06-0)

8. *Performance Evaluation of Krishi Bhavan Set-up in Kerala*: Jinraj P. V (ISBN No. 81-87621-07-9)

9. *Employment of Women in the Garment Industry*: Sheela Varghese (ISBN No. 81-87621-08-7)

10. *Health Transition in Kerala*: P. G. K. Panikar (ISBN No. 81-87621-09-5)

11. *Causes and Consequences of Change in Cropping Pattern: A Location-specific Study*: R. Mahesh (ISBN No. 81-876210-10-9)

12. A*wareness and Utilisation of Educational Development Schemes by Tribesfolk of Wayanad, Kerala*: C. Krishnan (ISBN No. 81-87621-11-7)

13. *Family Counselling in Family Court: An analysis of Psycho-Social Dynamics of Families of Litigants*: Lizy James (ISBN No. 81-87621-12-5)

14. *Panchayat Resource Mapping to Panchayat-level Planning in Kerala: An Analytical Study*: Srikumar Chattopadhyay, P. Krishna Kumar & K. Rajalakshmi (ISBN No. 81-87621-13-3)

15. ***Wetland Resources of Northern Kerala: A Case Study of Pazhayangadi and Kunhimangalam in Kannur District*****: Nalini Nayak, D. Nandakumar, M. Amruth, P. Unnikrishnan, T. P. Padmanabhan (ISBN No: 81-87621-14-1)**

16. ***People's Planning in Kerala: A Case Study of Two Village Panchayats*****: N. D. Gopinathan Nair (ISBN No. 81-87621-15-X)**

17. ***Crop Losses to Rodent Pests in Kerala: A Pre-harvest Survey in Select Crop Fields and Survey on Grain Storage Losses*****: Punnen Kurian (ISBN No. 81-87621-16-8)**

18. ***Evaluation and Planning of the Activities of a Rural Library in Kerala*****: S. Gopalakrishnan Nair (late), K. Vijayakumar (ISBN No. 81-87621-18-4)**

19. ***Pattern of helminthic infestation in primary schoolchildren of Thiruvananthapuram district*****: V. Raman Kutty, C. R. Soman, K. Vijaya Kumar (ISBN No. 81-87621-19-2)**

20. ***Changes in Health Status of Kerala: 1987-1997*****: T. P. Kunhikannan, K. P. Aravindan (ISBN No. 81-87621-23-0)**

21. ***From Decentralisation of Planning to People's Planning: Experiences of the Indian States of West Bengal and Kerala:*** **Charvak (ISBN No. 81-87621-21-4)**

22. ***Building materials and builders in Kerala: Commodification of buildings and labour market dynamics:*** **K. N. Harilal, Mathew Andrews (ISBN No. 81-87621-22-2)**

23. ***Distribution loss of electricity and influence of energy flows: A case study of a major section in Kerala*****: P. R. Suresh (ISBN No. 81-87621-24-9)**

24. ***Women's participation in rural housing schemes: A case study of Kerala*****: C. S. Meenakshi, P. Ajith Kumar (ISBN No. 81-87621-20-6)**

25. ***Solid waste management: Preparation of an action plan and establishment of an environmental information system for Thiruvananthapuram City*****: Babu Ambatt (ISBN No. 81-87621-25-7)**

Research Bulletin

1. Q*uality of School Education in Kerala: Dimensions and Determinants* **(ISBN No. 81-87621-01-X)**