

# **The Bamboo Economy of Kerala, India: an Analysis of the Production-to-Consumption Systems**

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## FOREWORD

Non-timber Forest Products (NTFPs) have attracted the attention of academicians and policy-makers only in a secondary sense. This interest too is largely because of the concern for providing employment to a large number of people who depend on the bounties of nature to make a living.

Coordination of the multitude of programs and activities of a number of agencies engaged in bamboo and rattan development itself requires a scientific perception and understanding of the overall functioning and logic of the bamboo/rattan sector. Since its inception, the International Network for Bamboo and Rattan (INBAR) has been able to marshal a new interest and policy concern in this vital area.

This study, carried out by a team of experts headed by P.M. Mathew, is part of a wider program of research on production-to-consumption systems of bamboo and rattan economies of several Asian countries. Several other institutions, including the Kerala Forest Research Institute, the Kerala State Bamboo Corporation (KSBC), different departments of the Government of Kerala, as well as a number of bamboo workers cooperated considerably with this project.

It is our hope that this study will be a starting point for wide-ranging discussions on the bamboo production-to-consumption system in Kerala and elsewhere, and for action programs that would help raise the socio-economic conditions of all those who make a living from this important NTFP.

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# 1 INTRODUCTION

## Background

Poverty was broadcast as a major developmental problem in the 1960, although several issues relating to development were being discussed in detail even before this. The theory of economic development had earlier attempted to identify the factors inhibiting development, of which the scarcity of raw materials was considered to be a major 'inhibitor'. However, since the 1960s; the question of scarcity began to be examined more closely in terms of its different facets.

## Commodities and People

Discussion on commodities in the world economy became alive with the formation of the United Nations Conference on Trade and Development (UNCTAD) in the year 1963. Several rounds of discussions by UNCTAD brought to light the importance of a variety of exportable commodities. At the instance of UNCTAD and the International Trade Centre (ITC), attempts were initiated to identify new exportable commodities in the international market.

In the case of most exportable commodities, policy responses from the national governments came mainly in the form of productivity-enhancing interventions. The needs for export promotion and for productivity enhancement necessitated the need for effective strategies, wherever the involvement of people was found necessary. Gradually, the problem of poverty got dovetailed with the problem of productivity enhancement. Thus, commodities began to be discussed against the background of the people involved with them.

The primacy given to exports by governments gradually led to a dual treatment of commodities. Premier export commodities received a major status, while others were relegated to a minor status. Thus, while strong developmental policies were involved in the case of many exportable tropical timbers, such policies were absent in the case of non-timber forest products.

## Technology as the Lever of Change

The commodity approach to development had given substantial importance to the technology aspect. It was assumed that an advancement in technology would naturally lead to enhanced productivity. The distributional effect was considered spontaneous, requiring no active interventions. The finding that the distributional effects of enhanced productivity was not satisfactory led to the search for an alternative institutional framework. This was the rationale behind the setting up of institutions like cooperatives. Such institutions were considered innovations with zero transaction cost. However, in the real world, the fundamental assumptions on scarcity, competition and economic rationality are often incorrect. Information, which is crucial for rational economic -decision-making by players in a competitive market, is rarely complete. Moreover, individuals have different ideas (mental models) about the way in which the world around them works. Transactions often have costs-such as those.



for finding out what the relevant prices are, for initiating and concluding contracts, and for monitoring and enforcing the contracts-associated with them, costs which are assumed not to exist in the neoclassical economic theory. Institutions are, broadly defined, means of reducing such information and transaction costs.

This very relevant role of institutions have often not been realized well in the real world. Institutions such as cooperatives, with noble ideals behind them, often fall in the actual world. This failure can largely be explained in terms of the discrepancy between what the participants of a system consider as good for them and what is perceived to be good for them by the policy-makers.

Development policies in many countries often consider some commodities as important in their economic agenda and hence, evolve policies which are expected to develop them. Governments also consider which institutional arrangement is, and what operational strategies are, best for the development of these commodities. But to make such policies successful, active involvement of the people (participants) is necessary. For this, the institutions and operational strategies associated with the interests of the participants need to be evolved carefully. Herein lies the argument for flexible strategies.

Commodity development policies are generally geared. to new information and technical skills. However, primary dissemination of information to the participants is required to translate such information into skills and skills into effective developmental strategies. For this, two things are crucial:

- (1) A correct perspective on the part of the policy-maker regarding the scope of the commodity; and
- (2) Evolution of effective developmental strategies with the involvement of the participants.

It is in this context, that an understanding of the production-to-consumption system of any commodity become relevant,

## **New Institutional Economics**

Studies on forest-based raw materials in the past have been geared largely to identify areas requiring policy interventions. The basic assumption of these studies has been that effecting a policy intervention is cost-free and that, other things being equal, policy measures have a direct impact. If evaluations indicated unsatisfactory impact, the reasons for the same have been explained in terms of “contingencies”. A provision for this was often built in the program itself. The rationale was that as “other things”, in some cases, do not remain constant, a contingency plan has to be drawn up.

The above perception of policy modelling and evaluation is based on the basic tenets of neoclassical economics. What neoclassical economics retains and builds on is the fundamental- assumption of scarcity, and hence competition-the basis of the theoretical approach to micro-economics. The theoretical paradigm does not consider the role of institutions, whereas in the practical world, institutions are necessary-ideas and ideologies do not matter-and efficient markets characterize economies.

Cost of transaction arises because information has a value and is asymmetrically held by the parties to that exchange. The costs of measuring the value of the goods and services exchanged and the performance of agents, as well as the cost of enforcing agreements together determine the cost of a transaction. The approach of Ronald Coase (1937, 1960), who revealed the connection among institutions, transaction costs and neoclassical theory, is relevant in this context.

The production-to-consumption system of bamboo is a long chain which is quite complex. This needs to be analysed in terms of sub-sectors in order to arrive at meaningful conclusions and to be able to suggest suitable policies.

## **Conceptual Framework**

### **Bamboo**

This study differentiates between the economist's and planner's concept of bamboo and that of those belonging to other disciplines. To the economist and the planner, bamboo is a generic term, which includes several species but are generally considered in total. Bamboo activities in central Kerala are mostly based on reed (*Ochlandra travancorica*) and therefore, this study is largely confined to this specific- species and the activities based on it.

### **Production-to-consumption system**

The term 'production-to-consumption system' refers to the entire chain of activities, from production of raw materials (including the input market, where it exists) through various stages of intermediate sales and processes to final consumption level. The very concept of a 'system' implies a structure that is elaborate and complex. It embodies a framework of theoretical concepts which are relevant to the situation. The system includes the technologies used to process the material as well as the social, political and economic environment in which these processes operate.

Bamboo utilized by various enterprises is extracted mainly from the forest, either as a free gift of nature or under specified contracts with the Forest Department or the Kerala State Bamboo Corporation (KSBC). The production system thus includes bamboo cutters, on the one hand, and regulatory agencies on the other. The production system has been set in motion by the interplay of these two participants.

Bamboo households-that is, those households that work mainly with bamboo for subsistence-have both cutters and weavers. Therefore, the cutters themselves appear as participants in the processing system. what is important is the actual nature of the organization of production, based on the nature of which the earnings of bamboo households vary.

The consumption system includes a variety of players, including final consumers who buy bamboo handicrafts and intermediate consumers, such as KSBC Factory at Angamaly, who procure a bamboo product for further value addition (for instance, mats to manufacture mat board).

## **Sub-sector approach**

The sub-sector approach to small enterprise research is of recent origin. Under this, small enterprises are analysed as part of a larger marketing and production chain (Boomgard et al, 1992). The small producers procure inputs from a variety of suppliers, translate these into finished or intermediate products, and market the output among buyers. The marketing and production chain, aggregated for a specific set of products, form a sub-sector system. Within such a sub-sector, certain nodes can be discerned. A node can be a wholesale market for finished products as well as big buyers of final or intermediate products. Such system nodes can also be called leading firms.

## **Institutions**

As said earlier, institutions are a necessity for the smooth functioning of a production-to-consumption system. They form the rules of the game, and have "formal written rules as well as typically unwritten codes of conduct.. (North and Weingast 1990) that define and limit the set of choice for the players in a specific society at a particular period of time. Institutions shape the conditions that pose some constraints and leave specific options to the players.

## **Economic action and actors**

Economic action keeps alive the production-to-consumption system. Actors are individuals directly or indirectly involved in the industry. Those who take the more strategic decisions and attempt to purposively exploit perceived economic options are the leading actors; the lagging actors undertake economic action by supplying to the leading actors or by finding employment in the leading or supplying firms.

There are two contradictory perceptions on economic action: (a) voluntaristic and (b) deterministic. Gramovetter (1985) points out that actors make an attempt at action, and any economic action is always embedded in the prevailing institutional setting, but not ruled by it. So economic actors "do not behave or decide as actors outside a social context, nor do they adhere slavishly to a script written for them by the particular intersection of social categories that they happen to occupy."

## **Economic rationality**

Economic rationality, a major postulate of neoclassical economic theory, has been criticized by New Institutional Economics. Such criticism has been mainly on the ground that "...people do not know everything and so they make mistakes; moreover, each person may know different things" (Alchian and Woodward 1988). Actors try to satisfy their respective perceived objectives to the best of their knowledge and take account of institutional constraints. Plattner (1989) points out that "individuals in any culture are seen as fully 'rational' in the sense that their solutions to economic problems make sense once the many constraints (social, cultural, cognitive, political and economic), that individuals must take into account, are understood".

The entire way of production can be controlled by a leading firm by setting the boundary conditions for production and marketing of the final product. The leading firms having

greater access to information and resources can determine product specifications, and where and when to use different categories of small enterprises. Controls executed over small enterprises in terms of output and input stand through the supply of materials, equipment and advance payments. This is a method by which the leading firms make the small enterprises dependent. It also gives the benefit of lower cost of production by the small enterprise to the former while allowing to keep control over the entire production process.

## **Clusters**

Clusters have a crucial role to play in many industrial development strategies. Identification of such a cluster, industrial networks within that cluster, and the actors within those industrial networks are important in evolving the specificities of such strategies. Such a strategy assumes competitive success based on efficient and flexible production and marketing of quality-competitive products (Asheim 1992). Angamaly, about 25 km north of Cochin city, is an excellent example of a cluster of bamboo production in Central Kerala. Within this cluster, one can identify different types of networks in which small-scale production units participate. There are also different actors who set the boundary conditions for production and marketing of the final products.

## **Networks**

A network is a series of limits which are interconnected through varied types of social relations. A close correspondence between technique and organization is central to the successful functioning of a network. Commodity exchange, information exchange, exchange of services, subcontracting, mutual reliance on technical specifications or standards, a common labour force, etc. are some of its features. In a network, the social production units are not fixed entities and their relations, technological and others, are not completely determined by the network. Networks are conceived to be in a state of constant evolution and are malleable.

## **The triangle of coordination**

Transaction costs, as mentioned above, is a major item which inhibits automatic operation of the market forces. Williamson (1975, 1985) discusses these issues in the context of a dichotomous situation: market versus hierarchy. It assumes that within the extreme situation of pure market and pure hierarchy (which are governed by price and authority, respectively), the opportunistic behaviour of transaction partners can be kept in check. This basic proposition by Williamson has led to significant contributions in this area by a number of scholars. Transaction costs arise out of the unpredictability regarding the decisions of the other party in the transaction. In an attempt to underhand the moves of the other party, substantial costs are incurred. Trust reduces the transaction costs, as it increases the predictability of the other's behaviour. If trust becomes the guiding inspiration, based on the understanding with its mutual beneficiaries, it leads to cooperation between the comparatives. The number of competitive decisions and the costs involved in executing a business can be brought down significantly through voluntary cooperation. In a cluster, it gradually becomes the visible thumb-rule that guides business behaviour of individual clusters. In patterns of transactions based on voluntary cooperation, opportunistic behaviour is restrained in a way that is essentially different from pure market or hierarchical coordination. In this scheme, the extremes are supported by a third force-cooperation. In any transaction, a combination of three

principles of coordination- market, hierarchy and cooperation, controlled through prices, authority and trust, respectively-is visible. The relation between various factors in a transaction is governed by a mix of these three (Fig. 1).

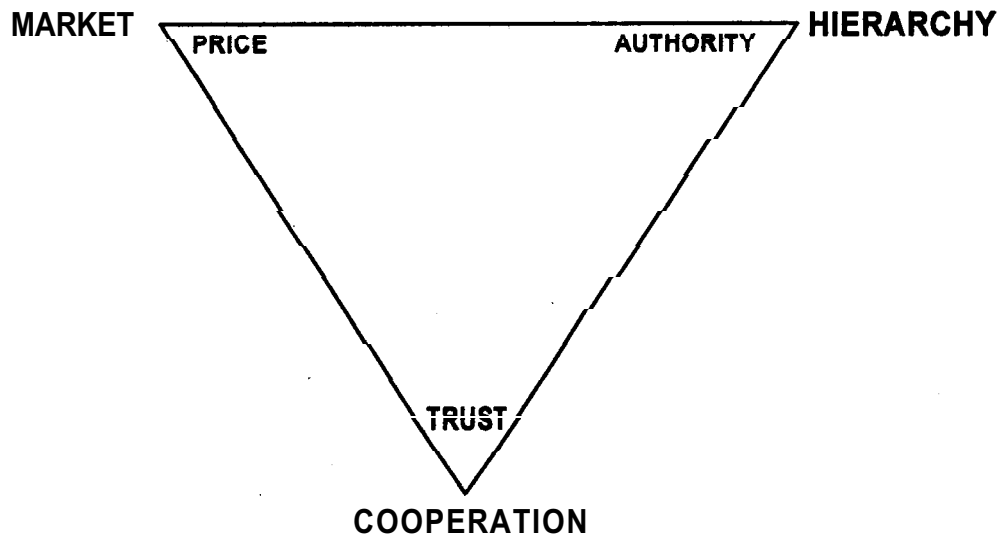


Fig. 1: The relation between various factors in a transaction.

## Objectives of the Study

The objectives of this study are:

- 1 To describe the bamboo production-to-consumption system in Kerala, taking into consideration the flow, volume and prices of materials from primary extraction to final use;
- 2 To identify the major stakeholders in the system and assess their interests and conflicts;
- 3 To identify groups within the system as potential targets for development interventions based on poverty, number of people involved, the degree of its economic importance to the said group, and importance of disadvantaged groups such as harijans, women and children;
- 4 To describe the decision-making environment of the target groups in terms of knowledge, resources and incentives;
- 5 To identify opportunities for change within the system which will lead to sustainable development within the target, groups;
- 6 To review the prevailing sectoral and other policies which influence the functioning of the bamboo sector; and
- 7 To recommend courses of action to INBAR client groups, which include the poor and &advantaged people involved in the bamboo sector, donors and multilateral development banks, governments, NGOs and community-based development groups, researchers, and the private sector, including foreign investors.

## Review of Literature

Unlike other traditional industries of Kerala--such as coir, cashew and handloom-bamboo

had traditionally attracted relatively low academic interest. The interest in bamboo shown by the Food and Agriculture Organization (FAO) has of late served to inspire some interest on the industry in academic and policy circles. At the instance of FAO, the Kerala Forest Research Institute (KFRI) conducted a detailed study on the role of rural institutions in the development of the traditional reed industry (Nair and Muraleedharan 1983). This study looks into the historical background of the development of rural institutions, such as KSBC, and the bamboo cooperatives. It examines the technological status with regard to various bamboo products, the economic viability of these enterprises, as well as the associated social costs and benefits. It also makes an attempt at examining the people involved in reed-based activities and its implication on the functioning of their institutions.

KSBC, as an institutional innovation, also attracted some academic enquiries. The study by Kumar (1985) examines the impact of the working of KSBC in the development of bamboo industry in Kerala. He reviews its performance against its two important functions: (1) regular supply of raw materials to the bamboo workers; and (2) marketing arrangements. These functions have been treated against the two major problems faced by the bamboo workers: (1) scarcity of raw materials; and (2) inadequacy of non-exploitative marketing arrangements. The working of KSBC is examined against the background of the circumstances which led to its formation. Kumar also looks at the shortcomings of KBSC with respect to nine major factors; (1) shortage of raw materials; (2) governmental indifference; (3) low technology level; (4) labour problems; (5) marketing problems; (6) administrative problems; (7) unviability of schemes; (8) disproportionate non-developmental expenditure; and (9) increasing liabilities.

The initiatives and support of KFRI, the International Development Research Centre (IDRC) and the International Network for Bamboo and Rattan (INBAR) gave considerable importance to studies on this industry. Many of the available studies, however, do not provide concrete recommendations in the area of policy formulation which could be taken up by development finance institutions, the government, and all who are concerned with an orderly development of this industry. A study conducted by the Institute of Small Enterprises and Development in 1994 attempted to make some corrections to this situation. The study caught the attention of the Governments of Kerala and India, and the Asian Productivity Organization (APO) considered it one of the best policy studies of the year in the area of small enterprises development.

Recent researches at the Indian Plywood Industries Research and Training Institute (IPIRTI), carried out under a project sponsored by IDRC, have considerable practical relevance to development of bamboo-ply. IPIRTI later brought out a monograph (Anonymous 1992), which looks into the techno-economic feasibility of bamboo mat board manufacture. The IPIRTI/IDRC research has generated considerable interest in academic and business circles on bamboo mat board. A national workshop on production, evaluation and application of bamboo mat board was organized by IPIRTI in Bangalore on 12 February 1993. The proceedings of this workshop has given considerable insights into the subject matter of the present study. As a follow-up of the studies and the workshop conducted the IPIRTI, an important initiative was taken by the Agricultural Finance Corporation Ltd.(AFC) to explore the commercial application of the new bamboo mat board in various end-uses. Accordingly, a brainstorming session was convened by AFC at Bangalore on 5 September 1993. The initiatives of AFC resulted in detailed enquiries into the feasibility of projects using bamboo mat board as a raw

material. An expert team from AFC visited several parts of the country in order to identify potential projects that could use bamboo mat board in commercial applications in a significant way.

Any study on bamboo industry, to be fruitful, should take into account the resource position. An early study by the Asian Institute of Development and Entrepreneurship (Anonymous 1984) looked into this problem at the micro-level and made some broad conclusions. An understanding of the causatives of resources depletion is necessary to arrive at corrective measures. The paper by Aravindakshan and Jayashree (1992) has a techno-managerial approach to the problem.

Although many studies have focused on the socio-economic aspects of bamboo development, techno-economic aspects have not received adequate attention, particularly in the case of handicrafts. Studies by KIRTADS have focused on aspects such as weaving techniques and improvements that can be made in this area. In addition to an assessment of the impact of development projects (Anonymous 1990), such studies also provide a historical account of the emergence of bamboo craft (Nair 1982).

The task of this project was to learn from the rich contributions in the past, and to generate new ideas of academic interest as well as practical application.

## **Methodology**

The available literature, as mentioned above, provides some information on bamboo economy of Kerala. However, they do not address several issues covered by the present study. Therefore, statistical and other information had to be collected afresh from various participants of the bamboo economy in Kerala. A cluster approach was perceived to be the ideal one. Angamaly in Ernakulam District -was identified as a suitable centre and cluster for a detailed investigation.

The Angamaly cluster, in this study, covers an area comprising three taluks of Ernakulam District. Angamaly is a small township on a junction connecting two arterial roads: the National Highway 47 and the Main Central Road. The importance of Angamaly for this study arises out of two reasons: first, it is the largest single centre of bamboo-weaving and trade in Kerala; second, it is the headquarters of KSBC, which has a network of 19 major depots (79% of the total depots in Kerala State). There are several bamboo workers attached to these depots.

Data of a varied nature have been collected for this study. In the case of bamboo cutters and weavers, data were collected from a random sample of 35 and 40 workers each, using a specially designed interview schedule. However, considering the sensitive nature of the transactions involved, only informal interviews were possible in the case of the other intermediaries. Before such interviews, detailed checklists were prepared so as to cover all relevant areas of the subject. Details relating to the sample study are given in Table 1.

Table 1 : Sample used for studying bamboo workers

Region/Centre	Cutters	Weavers	Total
Pooyamkutty	2	0	2
Vadattupara	11	14	25
Cheranallur	0	5	5
Manjapra	0	7	7
Mattur	0	6	6
Puthiyakara	0	1	1
Thattampady	0	7	7
Neriyamangalam	13	0	13
Kuttampuzha	5	0	5
Pazhampillichal	4	0	4
Total	35	40	75

The bamboo extraction activities of the Hindustan Newsprint Limited (HNL) also form a part of the Angamaly cluster. Since the industrial utilization of bamboo extracted takes place outside the cluster, the role of HNL does not appear prominently in this report. However, available information has been made use of at appropriate places.



## **2 BAMBOO ECONOMY: THE MACRO SCENE**

### **Introduction**

Since the scope of the present study is the production-to-consumption system of bamboo, it is necessary to have a comprehensive view of the two systems: the production system and the consumption system. The production system includes the resources-base, as well as the different sub-systems of extraction: (1) natural forests and bamboo plantations; and (2) the different means of extraction-harvesting of bamboo by the self-employed and the wage-employed bamboo cutters. Since bamboo plantations are very rare in India, the primary extraction system involves mainly harvesting from government-owned forests.

The consumption system includes the forest stages and processes related to the conversion of raw bamboo into intermediate or finished products. While utilization of bamboo in India is largely in the final consumption sector, it has also been used for intermediate consumption to a limited extent (e.g. mat board).

A major feature of the bamboo economy of India, Kerala in particular, is the continuity of utilization of family labour at various stages of bamboo extraction and consumption. This is mainly because the bamboo enterprises are basically cottage level.

### **The Resource Base**

Bamboo resources in India are widely distributed. It is available in states like Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Madhya Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura, Eastern Uttar Pradesh, West Bengal, Orissa, Kerala, Andaman and Nicobar Islands, and Western and Eastern Ghats. India has 136 bamboo species belonging to 21 genera. Of these 24 species consisting of eight genera are known to occur in peninsular India. Nine species of *Ochlandra* are used by the pulp and paper industry, and for mat and basket making by micro enterprises. While reeds are mainly a forest resource, other species of bamboo are found both in the forests and homesteads.

Although Kerala has one of the best databases on different sectors of the economy, this does not extend to bamboo economy. The task of collection of data on forest resources is vested with the Office of the Chief Conservator of Forests (CCF). Collection of the data at the field level is done mainly by the forest guards who make them available on a periodic basis. These data are forwarded through Regional Forest Offices to the Office of the CCF. The Statistical Cell at the CCF Office processes and disseminates them in an annual publication. Although the publication contains some information on the State's bamboo economy, it is extremely difficult to establish consistency of data. Detailed discussions with the officials of the CCF Office revealed that the correctness of the data is suspect owing to various constraints. The Directorate of Economics and Statistics (DES) of the Government of Kerala scrutinizes and presents the available data for planning purposes. Such data include the area of forest plantations and the annual extraction of bamboo resources (Tables 2 and 3). The planning process in Kerala, directed by the State Planning Board, is backed by data provided by DES and the

occasional studies conducted by the Evaluation Division of the Board. However, DES has not conducted any special study on bamboo economy. Besides, forest statistics have been handled by a Deputy Director of the Directorate, who has been posted at the Office of the CCF. It should also be noted that the State Planning Board has conducted many studies on traditional industries on various occasions, wherein the data provided by the Office of the CCF were used. Fig. 2 gives a graphic representation of the bamboo data collection process in Kerala.

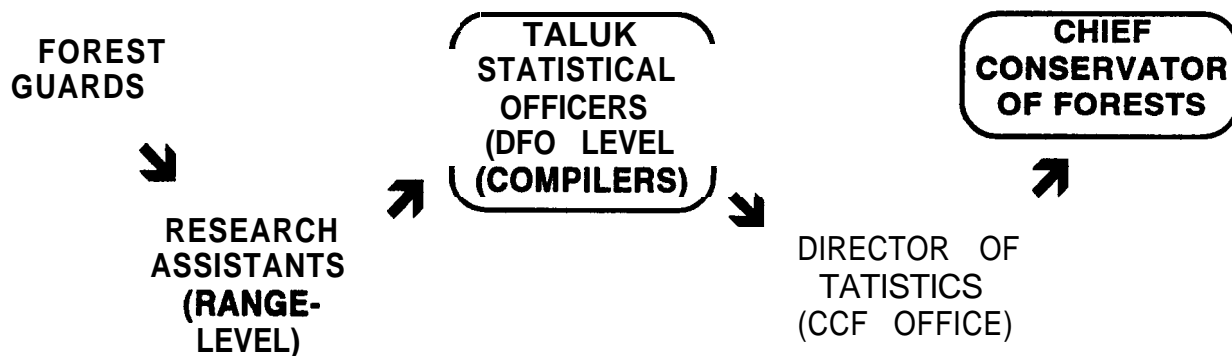


Fig. 2: Bamboo collection process in India

Table 2: Annual extraction of bamboo

Year	Quantity (x 1000)	Year	Quantity (x 1000)
1981-82	895	1982-83	420
1983-84	33	1984-85	1016
1985-86	414	1986-87	6281
1987-88	4225	1988-89	374
1989-90	1283	1990-91	3756
1991-92	1006	1992-93	1077

Source: Statistics for Planning & Forest Statistics (various issues).

## Resource management

Prior to 1971, Kerala had two types of forests: (1) the reserve forests owned by the government and (2) the private forests. By a legislation of the Kerala Legislative Assembly in May 1971, all private forests were nationalized. This effectively concentrated the whole bamboo not consider cultivation of bamboo as an economically viable proposition. Although no scientific studies have taken place in the area the general attitude of the peasants goes against the cultivation of bamboo as it is often considered a nuisance, and is grown only for such marginal purposes as fencing.

Regeneration of resources, and application of productivity-enhancing techniques at various stages--such as cultivation, extraction and processing--are vital aspects of a resource management policy. Although the social forestry program of the Government of India during the mid-1970s received substantial attention in Kerala as well, this program was geared to promoting cultivation of teak and eucalyptus. Since there were no takers for bamboo cultivation

in the private sector, this possibility was ruled out. Besides, even the specialized public sector agency, Kerala State Forest Development Corporation Limited, was reluctant to go for bamboo. The very limited attempts of the Forest Department resulted in some bamboo cultivation in otherwise barren lands in the forest areas. In the absence of a serious monitoring mechanism, however, such efforts have not taken off the ground.

Table 3: Division-wise area of plantations (as on 31.03.1993) (area in hectares)

Forest Division	Bamboo & Reeds	Total Forests	Percentage %
<b>A. Territorial Divisions</b>			
1. Thiruvananthapuram	18.0	369.88	4.87
2. Thenmala	91.8	311.30	29.49
3. Punalur	72.2	280.22	25.77
4. Konni	38.8	331.66	11.70
5. Ranni	68.0	1 059.07	6.42
6. Achancovil	61.6	269.21	22.88
7. Kottayam	—	692.15	—
8. Munnar	51	715.84	0.71
9. Kothamangalam	12.6	317.02	3.97
10. Mankulam	9.0	—	—
11. Malayattoor	69.5	617.77	11.25
12. Vazhachal	87.0	413.94	21.01
13. Chalakkudy	—	—	—
14. Thrissur	76.3	337.36	22.62
15. Nenmara	43.1	340.68	12.65
16. Nilambur (South)	—	366.10	—
17. Nilambur (North)	10.0	394.05	2.54
18. Mannarkkad	30.0	669.38	4.48
19. Palakkad	—	240.36	—
20. Kozhikode	50.6	293.28	17.25
21. Wynad (South)	172.0	323.63	53.15
22. Wynad (North)	130.0	216.09	60.16
23. Kannur	30.6	285.82	10.71
<b>B. Wildlife Divisions</b>			
1. Thiruvananthapuram	35.7	181.00	19.72
2. Agastyavanam	—	31.12	—
3. Idukki	37.5	289.60	12.95
4. Thekkady	—	777.54	—
5. Parambikkulam	—	274.14	—
6. Silent Valley	—	89.52	—
7. Wynad	—	399.55	—
<b>Total</b>	<b>1 149.4</b>	<b>11 241.99</b>	

Source: Forest Statistics 1993 issues & Economic Review 1994 issues.

Central to the management of bamboo resources in the State is the allocation of the total bamboo resources that the government has among the three major consuming companies at

predetermined rates. Based on the situation which prevailed during the early 1970s, cutting rights were assigned to four companies (one of the companies is now closed). The Hindustan Newsprint Limited (HNL) entered into a long-term agreement with the Government of Kerala in 1974, and KSBC followed suit in 1977. According to the long-term agreement, HNL has to pay a royalty of Rs. 110/ton to the Government of Kerala, in addition to a regenerating charge of Rs. 25/ton. Considering the welfare orientation that guides its mandate, KSBC is exempted from royalty payment by the government from time to time.

The Government of Kerala has not specified a clear policy on assignment of cutting rights. (Because of such ambiguity, there was an instance of a private dealer approaching the court against denial of his application for cutting rights. However, the argument of this dealer was not accepted by the court). In addition to the three large consumers, cutting rights are assigned to bamboo workers inhabiting a radius of five kilometres from the forest boundary.

Cutting rights are assigned under the following terms and conditions:

- 1 Division of the total allotted area into strips of 100 ha;
- 2 Identification of fire-lines of 5.2 m width each around each strip;
- 3 Stipulation of the length of the node, above which the culms can be cut;
- 4 Ban on cutting immature reeds;
- 5 Protection to other forest resources;
- 6 Protection to the cut stump;
- 7 Rules regarding disposal of the waste material; and
- 8 Terms relating to royalty.

The Department of Forest has clear norms on cutting rights. In the case of HNL, cutting areas have been allocated on a triennial basis. The peak cutting season for this company is from September to April. However, in the case of KSBC, cutting is a year-round activity, although the peak season is December-March.

## Extraction

The system of extraction of bamboo is really complex, and it is difficult to say how much of the extracted bamboo is distributed to each of the different consuming sectors. Moreover, official data do not indicate the role of the black sector at all. However, a broad picture of the distribution pattern could be made based on field reports, and this is as given in Fig. 3.

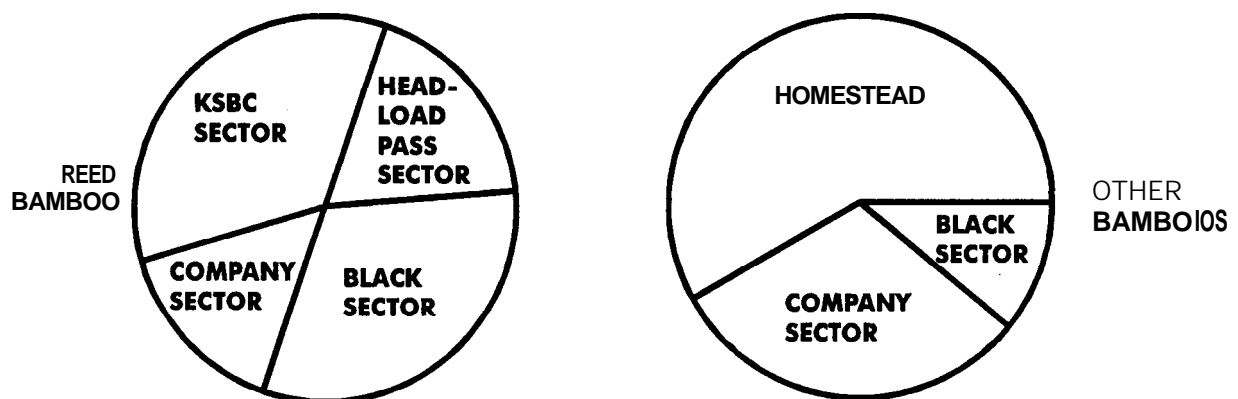


Fig. 3: Sectoral classification of resource extraction

In the case of reeds, KSBC sector, the company sector and the headload-pass sector are the 'legal' channels. These channels are subject to leakages (mainly from KSBC sector and the head-load pass sector). Therefore, although the size of the various sectors are officially fixed at a particular point of time, in practice, it is continuously fluctuating. Sizes of the officially approved sectors are greatly influenced by the size of the black sector.

In the case of other species of bamboo, homesteads are the major source. The forests are leased out to two pulp manufacturing companies which, in turn, extract it employing their cutters. A small part of the resources go out of the forests through illegal channels.

## The Industry

Despite several development initiatives by a number of governmental agencies, bamboo has generally been viewed in official circles just as a means of livelihood. Its wide potential as a crucial industrial raw material has not been fully understood in the past. Therefore, the official data collection machinery in the country is still unable to accurately state the present and potential status of the bamboo industry in terms of economic indicators. The Khadi and Village Industries Commission (KVIC) is the only agency that provides at least some data, although the authenticity of the data is doubtful since KVIC does not have an industry-wise development plan. Besides, part-time and full-time employment has not been clearly demarcated, thereby vitiating the correctness of the estimates. Even with all these limitations, the data provided by KVIC form a reference point on the industry. (Tables 46).

Table 4: Bamboo and rattan industry in India: macro-level performance indicators

Year/Period	Production	Sales	Employment	Earnings
Fourth Plan	105.20	107.11	0.10	44.31
Fifth Plan	388.26	443.26	0.66	194.69
Sixth Plan	4 250.90	5 128.85	2.77	1 693.93
Seventh Plan	17 744.19	21 600.20	6 31	8 066.54
1990-91	6 950.97	8 601.18	1'81	3 622.19
1991-92	7 639.10	9 691.64	1'93	3 880.10
1992-93	8 972.52	11 424.98	2'16 .	4 579.63

Note: All figures are in Rs. 100 000. Source: Computed from KVIC data (Anonymous 1994).

Table 5: Bamboo and rattan industry in Kerala: macro-level performance indicators

Year/Period	Production	Sales	Employment	Earnings
Fourth Plan	12.23	11.95	0.02	6.74
Fifth Plan	46.42	45.71	0.06	35.05
Sixth Plan	205.48	219.18	0.26	116.59
Seventh Plan	407.79	410.15	0.22	257.20
1990-91	176.58	172.51	0.03	84.38
1991-92	235.26	222.66	0.04	116.73
1992-93	264.70	285.95	0.05	139.12

Note: All figures are in Rs. 100 000. Source: Computed from KVIC data (Anonymous 1994).

Table 6: Macro-level performance indicators: all-India ranking of Kerala

Indicator	Year			
	1980-81	1990-91	1991-92	1992-93
Production	5	<b>11</b>	<b>10</b>	<b>10</b>
Sales	<b>6</b>	<b>11</b>	<b>11</b>	<b>11</b>
Employment	3	<b>12</b>	<b>10</b>	<b>10</b>
Earnings	5	<b>10</b>	<b>10</b>	<b>10</b>

**Source: Computed from KVIC data (Anonymous 1994)**

Database on the cooperative institutions in the bamboo industry is also debilitated to some extent. The cooperative are registered with two agencies: Khadi and Village industries Board, and District Industries Centres. Unfortunately, these two agencies are unable to provide correct data on the number of functioning cooperatives in the State. Hence, with appropriate corrections to the data available from these sources, an attempt was made to arrive at the total number of functioning cooperative societies in the State. According to our estimates, the total number of societies functioning in the State today is only 15 (about 5% of the total number of registered cooperatives). Even these are in different states of health. It may be noted that the Angamaly cluster does not have any functioning bamboo cooperative institution.

In the absence of proper scientific methodology for data collection and presentation, there has been substantial 'guesstimates' on the bamboo economy of Kerala. For instance, the importance of the industry has often been highlighted in terms of its vast employment potential. The number of people employed by the bamboo industry has been put at 300 000 in several documents of the State Planning Board for the last 30 years or so. The same figure has been quoted also in the reports of several high-level committees appointed by the government. This 'guesstimate' has elevated the industry as the second largest traditional industry in the State, after coir.

## The Danger of Ad hoc Approach

The position of "second largest traditional industry" in terms of employment should have effected a serious effort at planning for bamboo's development. Unfortunately, this has not happened and instead, several ad hoc projects were undertaken. Notable among these are the formation of KSBC, mainly with a welfare orientation, and the subsequent setting-up of the Bamboo Mat Board Project for income generating activities. Propagation of bamboo was carried out mainly on the initiatives of KFRI (which is under the Forest Department) and not as a part of planning for resource conservation. It is important to note that, even with wide access to data sources, KFRI has not undertaken any comprehensive studies on the resource-base in the State.

As part of the ad hoc research/action projects, some database has emerged. KSBC, involved in the implementation of various welfare measures targeting bamboo workers, has identified **15 000** households involved in bamboo activity in the Angamaly region alone. However, since its activities are largely confined to reeds and not to other types of bamboo, the coverage of the data may be limited.

Several research projects have looked into different aspects of the development of the industry. Based on a stratified random sampling method, Krishnankutty (1990) had put the size of homestead bamboo resources in the State at 39 million culms. During 1987-88, the harvest from homesteads and the quantity of bamboo used by the household sector were estimated at 3.6 and 3.2 million culms, respectively. Krishnankutty et al (1995) later looked into the resource position in the context of the Integrated Rural Bamboo Project, funded by ODA of UK, to estimate the size of demand and supply for homestead bamboo in the State. The total demand for bamboo in 1993-94 was 169 000 tons, with pulp-based industries accounting for 38%, inter-state transfers 22%, and household and other uses 40%. The study also estimated that, of the total supply, home-gardens contributed 63% and forests 37% (Table 7).

**Table 7: Bamboo supply and demand in Kerala, 1993-94**

Demand			SUPPLY		
<b>Consuming sectors</b>	<b>Quantity (in tons)</b>	<b>Percent</b>	<b>Sources</b>	<b>Quantity (in tons)</b>	<b>Percent</b>
<b>Pulp-based industry</b>	64 902	38	<b>Forests</b>	62 463	37
			Home-gardens	2439	1
<b>Transfer out of State</b>	37488	22	Home-gardens	37488	22
<b>Household and other uses</b>	66887	40	<b>Home-gardens</b>	66887	40
<b>Total</b>	169 277	100	<b>Forests</b>	62 463	37
			<b>Home-gardens</b>	106 814	63

Source: Krishnankutty et al. (1995).

A major weakness in the studies mentioned above is the inability to make an allowance for illicit transactions. The quantity of bamboo illicitly collected from the forest has not been considered. Another major weakness relates to the data on the resource position and extraction of reeds, which form the mainstay of bamboo activity in the State. It is this material that brings together the largest number of craftspersons in Kerala, as well as in other parts of the country. Moreover, it is based on reeds that a number of institutions such as the cooperatives and KSBC were founded.

## **The Product Structure**

The product structure of the industry has been examined in detail in an earlier study carried out by the Institute of Small Enterprises and Development (Mathew and Joseph 1994). The study examined the production structure and marketing of the main bamboo products—mats, handicraft items, baskets and mat board—in Kerala.

### **Bamboo mats**

The production of bamboo mats of various qualities and specifications form the mainstay of bamboo activity in Kerala. Three types of mats are generally woven. The conventional type

called, *cbanthapanambu*, woven in sizes of 6 x 12 ft and 8 x 4 ft, is tailored to the needs of agricultural households (for spreading paddy, pepper etc., for drying). This type of mat is mainly consumed within Kerala. Commercial mats, generally of sizes 5 x 3 ft and 6 x 4 ft, moves out of Kerala largely for dunnage purpose. Special mats of 6-1/4 x 4-1/4 ft are used as an intermediate material for the manufacture of mat boards. KSBC purchases a substantial amount of the commercial and special mats woven (Table 8).

Table 8: Purchase and sale of bamboo mats by KSBC

Year	All mats				Special mats
	Purchase		Turnover		Turnover
	Quantity	Value	Quantity	Value	Value
1982	845.17	73.83	877.80	123.37	-
1983	698.98	74.13	726.64	119.04	-
1984	648.38	80.58	635.03	123.90	-
1985	460.50	72.96	488.67	120.41	-
1986	505.75	82.85	418.21	108.18	0.303
1987	525.46'	93.41	501.67	136.45	0.985
1988	648.64	126.42	628.96	174.07	0.439
1989-90	705.73	140.52	667.26	220.36	7.20
1990-91	779.60	171.30	805.96	297.04	20.62
1991-92	755.12	184.06	767.58	329.68	33.79
1992-93	665.08	189.23	634.83	3030.40	44.16
1993-94	698.21	231.61	636.68	380.22	56.92.
1994-95*	741.65	267.75	631.68	416.18	76.78
1995-96*	646.45	305.30	639.12	425.31	85.81

Notes: .Quantities are expressed in 100 000 square feet and values in Rs. 100000.

\* : Estimates.

Source: Computed from KSBC files

Although several states in the country produce bamboo mats, Kerala craftsmen are known for their skills in making bamboo mats.

## Handicrafts

Bamboo handicrafts as a market segment has emerged only in the recent past. According to a study conducted by the Indian Council for Research on International Economic Relations (ICRIER) (Anonymous 1985), bamboo and rattan products made the largest single contribution in the handicrafts sector in India in terms of employment: 690 000 additional jobs (main workers) during 1961-81. Moreover, the growth of this sub-sector has been reported to be steady. Between 1961 and 1971, employment rose from 297 000 to 517 000. During 1971-81, it rose from 517 000 to 906 000. This sub-sector has also been noted for the high share of female employment. According to estimates, women employment in absolute terms rose from 169 000 to 362 000 between 1971 and 1981.

The growth of handicrafts sector in Kerala is mainly because of the promotional activities of the Kerala State Handicrafts Development Corporation and the Kerala State Handicrafts Co-operative Federation. The marketing facilities offered by these two agencies and the new



designs introduced by them helped invoke some interest among craftspersons. Besides, the technical training facilities offered by agencies such as the Office of the Development Commissioner (Handicrafts) and schemes like TRYSEM helped to provide some visibility to bamboo handicrafts as an activity which could be pursued even by persons other than those from the traditional bamboo-working communities.

## **Baskets**

Baskets are probably the oldest major bamboo product. Baskets of various sizes and shapes have been used in agricultural households for different farm and off-farm activities. However, a diversification of this product has taken place in the recent past, owing mainly to the non-agricultural applications for which baskets are being increasingly used. In the coastal areas of Kerala, baskets have been traditionally used for carrying fish. Thus emerged a special type of baskets called fish baskets. Similarly, in many parts of Thrissur, Palakkad and Malappuram Districts, mango baskets and betel leaf baskets have become popular in the recent past. For instance, mangoes get transported from Kerala to other parts of the country in such special baskets. Betel leaves are exported in the special baskets meant for carrying them.

## **Bamboo mat board**

Bamboo mat board is a specialized secondary product which has become popular recently. The first commercial project in the country was set up in Angamaly, Kerala, in 1983. Subsequently, minor ventures were established in other parts of the State. More recently, a few plywood units have diversified into the production of Bamboo mat board. Although the project at Angamaly is a successful one, the output from this unit is small.

## **Pulp industry**

Pulp industry is the largest single consumer of bamboo in Kerala. There are two large consumers of bamboo for pulp making in Kerala. Krishnankutty et al. (1995) have estimated the demand at 64 902 tons. While the major part of the consumption of HNL Limited is reed bamboo, Grasim Industries Limited uses other types of bamboo.

## **Construction**

Construction is a major sector where bamboo poles of different types and sizes are used. Culms generally of 10-12 feet length are used for rafters and scaffolding.

## **Other uses**

Among the other end-uses, the major ones are in agriculture and fishing. Bamboo has also been used as support for earth bunts, ladders, cattle stays, fencing, bullock carts, platforms, poles for country boats, etc. However, it is difficult to arrive at any estimate on the utilization of the material in these applications.

## **The Transformation Points**

A major objective of this study is to describe the bamboo production-to-consumption system in terms of the various actors at different transformation points. This can be best done in

terms of a description of the working of KSBC. Besides being part of the Angamaly cluster, it is the only agency which simultaneously operates at various transformation points.

As indicated in Fig. 4, the Commercial Division of KSBC takes care of the activities related to bamboo extraction and primary processing. The reed cutters and mat weavers are attached to the reed depots and mat collection depots, respectively.

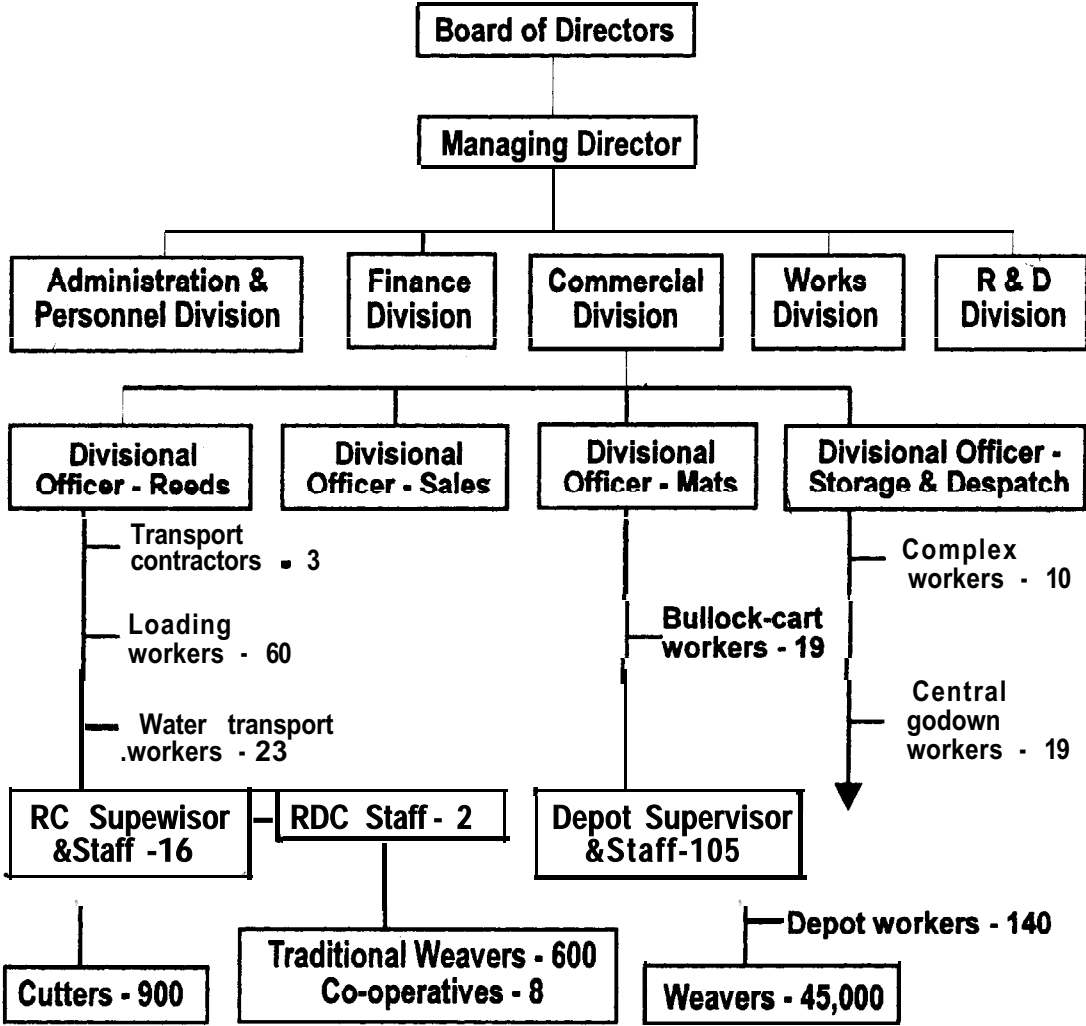


Fig. 4. Organizational chart of KSBC (figures apply only to Angamaly cluster).

Several intermediaries operate in between and, though small in number, have established their role over time and have gained some form of “job security”. It has, for instance, been reported that the role of bullock-cart workers and depot workers could be done away with; but the Corporation has not been able to do so owing to trade union pressures.

## Vertical and horizontal linkages

### KSBC sector

The linkages of KSBC sector are as shown in Fig. 5.

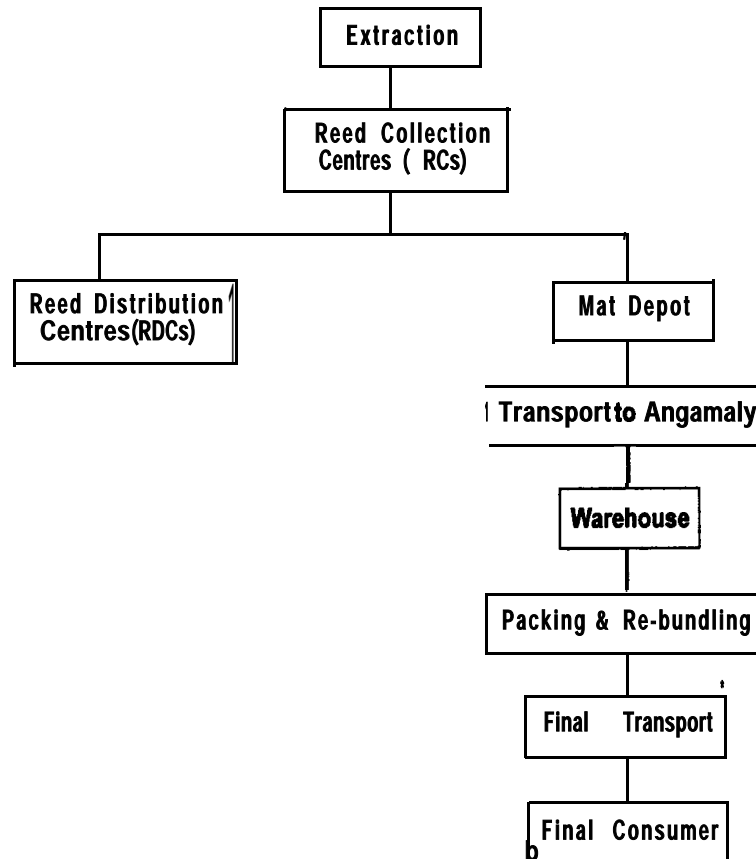


Fig. 5: Vertical linkages in KSBC sector

Cutting passes are issued based on the best judgement of the Supervisor. Generally, passes are issued to cutters who supply a minimum of Rs. 1 000 worth of reeds per year. However, during some seasons when cutters are only scarcely available, this minimum comes down even to the level of Rs. 200. There is also a stipulation that the relevant forest laws should not be violated. In order to ensure this, a photo pass is issued for a period of three years. If the rules are violated, the violator's pass is either not renewed or cancelled outright.

KSBC has Reed Collection Centres (RCCs), for the collection of reeds extracted by registered cutters, with one Supervisor and two or three Field Assistants. These centres often have a small office space, minimum furniture and a telephone connection. Besides, reed bundles if any, are stocked outside. From here, reed bundles are transported to a Mat Depot or a Reed Distribution Centre. The Angamaly cluster has five RCCs.

The functions and responsibilities of the Supervisor of an RCC are:

- 1 Grading (visual grading) and pricing of reed bundles;
- 2 Distribution of wages to cutters;
- 3 Managing the loading workers;
- 4 Arranging transport;
- 5 Despatching reeds as per directives from Head Office to various Mat Depots;
- 6 Collecting passes from the Forest Department;
- 7 Making arrangements for adequate extraction of reed throughout the seasons to ensure that no depot is facing shortage of reed; and
- 8 Selection of cutters.

Mat Depots have a Depot Supervisor (DS) each, and a few Depot Field Assistants (FAs). The number of DFAs depend on the number of sub-depots under each depot. Usually a depot has two or three DFAs. DFAs work at sub-depots and report daily to the main depot. Besides, a depot (both main and sub) has at least two depot workers. The main depot maintains a cash book. Unloading of reed at a depot is done by general workers on a turn basis. A Mat Depot has a small office and some space for storage of mat. KSBC has 97 mat Depots, including 23 main depots.

The Depot Supervisor has the following functions and responsibilities:

- 1 Distribution of reeds among registered weavers;
- 2 Procurement of mat;
- 3 Distribution of cash to weavers after deducting the cost of reed;
- 4 Ensuring mat-reed ratio;
- 5 Arranging transportation of mat to Angamaly; and
- 6 Ensuring supply of reed as per the requirements of weavers.

Bullock cart is the main means for transporting mat in Angamaly cluster. Recently, transportation by mini trucks owned by KSBC has also started. Both loading and unloading are done by bullock cart workers.

The central warehouse of KSBC is situated close to the Angamaly railway station. The Divisional Officer (Storage and Despatch) is in charge of this activity. The warehouse has 29 workers who do the unloading, re-bundling, stacking, wagon loading, etc. Mats are finally transported by rail or road.

From a Reed Distribution Centre (RDC), reeds are sold to traditional workers of baskets, handicrafts, etc. Traditional workers are mainly sambbavas. The Angamaly cluster has two RDCs. An RDC has a small office with one Sales Assistant. It functions under the RCC Supervisor. In Angamaly cluster, RCCs and RDCs operate under the same roof. From RDCs, cooperatives get their supply of reeds.

## The HNL sector

The vertical linkages in the HNL sub-sector are given in Fig. 6.

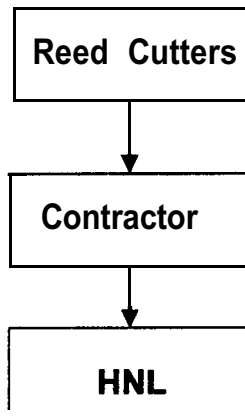


Fig. 6: Vertical linkages in the HNL sector

HNL operates with 50 contractors for regular supply of reeds. The contractors select cutters and issue them with cutting passes obtained from the Forest Department. Besides, the Zonal Office of HNL issues a permit for each load after checking. The selection criteria for cutters are rather flexible. Sometimes, the contractors organize cutters by offering them advance payment. For any offence committed by the cutter while in the forest, HNL is liable and will be penalized by the Forest Department. HNL has the right to charge penalty from the contractor in such cases. If a contractor is not found suitable, he will be replaced.

There are five zonal offices for HNL in Kerala: Thiruvananthapuram, Pathanamthitta, Vandiperiyar, Munnar, Perumbavoor and Thrissur. Each Zonal Office is under a Deputy Manager, supported by an Assistant Manager, Executives, Supervisors and Field Assistants. Each Zonal Office has about 10 employees. Some Zonal Office have base camps near the forests.

The functions and responsibilities of a Zonal Deputy Manager are:

- 1 To ensure that cutting is done as per the specifications of HNL;
- 2 To ensure that the contractor abstains from the practice of clear felling;
- 3 To issue permit (chah) to each load after checking it;
- 4 To ensure that adequate quantity of reed is extracted; and
- 5 Overall management of cutting.

After getting passes, the contractors transport reeds in bundles. Near each weigh bridge of HNL, an office of the Forest Department also operates. They get a computer printout of the weight of each load. After such verification, the load moves to the HNL plant at Mevelloor, in Kottayam District.

## 3 THE ANGAMALY BAMBOO CLUSTER

### Introduction

Conclusions of the present study are drawn on the experience of a bamboo cluster at Angamaly. The Angamaly cluster has some peculiar features in relation to the general features of bamboo economy in other parts of the country, and a number of important components relevant for a strategy of 'flexible specialization'. The 'flexible specialization' debate has shifted attention from individual firms to clusters and networks. Within a cluster, how do the actors behave? Why bamboo workers of Angamaly are unemployed during some of the years and not during others? Why some workers are able to identify alternative employers while they are not able to get an employment from the original employers? Why the younger generation of bamboo workers are generally reluctant to enter into the traditional occupation of their ancestors? Why the workers work as wage labourers during some months of the year and as entrepreneurs during other months? Why bamboo weaving in general is considered an inferior occupation, while other activities, such as transporting, are not? An enquiry into these questions can be meaningfully done through an analysis of clusters.

### Main Features

An important feature of the bamboo industry in Angamaly is its metamorphosis from a traditional means of livelihood for the poor people around the forest to an organized industry. Traditionally, the bamboo workers, mostly belonging to backward communities, have been subsistence workers gathering all forest products including bamboo for their livelihood. Forest products like honey and lacquer were collected from the forest and sold to the nearby agricultural households, and items such as baskets and mats were woven for meeting the requirements of the immediate local market.

Since the 1930s, bamboo-based items began to attract a wider market. Around the time of World War II, it acquired the status of an industry following significant structural changes. Two major features of this change were the employment of wage labour and the production for a wider market. With the introduction of bamboo as an industrial raw material, the production process of the industry was widened with the involvement of a number of households who were not traditionally dependent on them. Gradually, although bamboo cutting and weaving were concentrated around the forests, the hub of activities shifted to the central areas of new clusters. Thus, Angamaly emerged as a centre of bamboo activity in the industrial map of the country (Tables 9 and 10).

Bamboo activity in Angamaly is essentially household-based. The raw material is brought to the towns from depots of KSBC and is processed particularly as the collective effort of all the family members. The concept of a profit margin was introduced into the system by KSBC which supplies the raw materials. This margin is decided by the Corporation from time to time and is adjusted as the finished product is returned to the Corporation at a prefixed rate. The difference between the price of the end-product and that of the raw materials is the margin appropriated by the bamboo entrepreneurs.

Table 9: Main features of the Angamaly cluster

Name of reed distribution centre	Weavers	Active weavers	Reeds distributed		Mats procured	
	(Nos.)	(Nos.)	Nos. (100 000)	Value (Rs. 100 000)	Quantity (100 000 ft <sup>2</sup> )	Value (Rs. 100 000)
D 1. Kavaraparambu	900	343	2.64	2.10	22.94	19.57
D 2. Mukkannur	798	204	2.31	1.86	20.49	16.54
D 3*. Thuravoor	957	295	5.34	4.07	50.50	44.38
D 4. Kidangoor	300	200	2.41	1.90	22.68	18.71
D 5. Puthiyakara	520	139	3.48	2.86	35.66	31.60
D 6. Thottakam	753	117	6.37	5.74	65.23	59.47
D 7. Neelewaram	445	107	5.21	4.60	50.42	46.09
D 8. Kottmam	624	291	4.04	3.25	38.73	36.49
D 9. Okkal	743	146	2.44	1.90	22.51	17.92
D 10. Kalambattupuram	242	132	3.01	2.63	32.68	31.16
D 11. Cheranallur	480	69	2.06	1.82	15.95	14.14
D 12. Cheranallur	501	152	3.87	2.68	35.40	27.68
D 13. Parappuram	270	245	2.20	1.76	18.83	16.03
D 14. Kalambattupuram	792	286	5.55	4.94	56.08	53.09
D 15. Kaipattoor	597	345	2.49	2.09	23.18	22.48
D 16. Manjara	933	301	4.79	4.29	46.04	42.74
D 17. Koodalappad	1257	1008	6.41	5.50	52.41	50.39
D 19. Kuttampuzha	921	402	—	—	1.77	1.33
D 25. Mamalakandom	500	200	—	—	0.37	0.30
<b>Total</b>	12533	4982	64.62	53.99	611.87	550.11

Table 10: Main features of the cluster periphery

Name of collection centre	Collection	
	Quantity	Value
	(100 000)	(Rs. 100 000)
Adimaly	16.40	21.19
Edamalayar	14.03	15.86
Pooyamkutty	30.76	37.04
Mankulam	3.57	4.39
Thalumkandam	6.43	7.48
Kuttampuzha	-	-
Mamalakandom	-	-
<b>Total</b>	<b>71.19</b>	<b>85.96</b>

Note: Kuttampuzha and Mamalakandom have both cutting and weaving activities.

KSBC has estimated a total number of 17 000 registered weaver households in the State. Of this, the Angamaly cluster accounts for 15 000. Assuming an average household size of three (based on field data), the weaver population in this cluster is approximately 45 000. The total number of registered cutters in the State is 2 054.

## Institutional Setting

Like many rural clusters in India, Angamaly is also known for certain features that facilitate the thriving of a rural industry. There are three main institutional peculiarities which influence economic relations in the cluster: instability; social stigma; and the legal framework in which the bamboo institutions work.

### Instability

Instability in the bamboo industry arises mainly out of the peculiar features of the regional economy. Angamaly is basically an agrarian pocket, with very fertile soil and blessed with the river Periyar. This agrarian setting offers alternative employment opportunities to the bamboo workers. Bamboo weaving was traditionally undertaken by landless agricultural labourers, particularly those belonging to the Scheduled Castes and Scheduled Tribes as a leisure time/off-season occupation, and as part of their feudal obligation to the landed class. This situation has changed substantially as bamboo mat emerged as a major tradeable commodity.

Because of the backward class domination of bamboo activity, and also because of the very low earnings, gradually a social stigma developed around bamboo working. Because of this, the able-bodied men generally did not consider bamboo as an attractive occupation. An offsetting factor, however, came into play during the past few decades. Family labour demand of the household system of production facilitated the absorption of a large number of women, who were otherwise hesitant to enter into the labour market because of poor health, social taboos, etc. Similarly, a substantial number of aged people began to join the family production system, irrespective of whether or not they had previous experience in the



bamboo industry. Thus, a highly unbalanced production system came into being, wherein able-bodied men were reluctant to be even known as bamboo workers while women and aged persons actively took part in the system (Table 11).

No industry or economic activity can assimilate change unless it is able to attract the active involvement of human resources-both as entrepreneurs and as workers. Data on the respondent workers clearly demonstrate the elderly-age concentration of worker-entrepreneurs. Family labour, which is the crucial offsetting mechanism, conceals the crisis present in the industry. It helps to keep at bay the decay of the industry which would otherwise have taken place much earlier owing to technological lethargy and organizational stagnancy.

Table 11: Age distribution of working population

Age class	Cutters		Weavers		Others	
	Male	Female	Male	Female	Male	Female
0 - 15	0 (0.0)	0 (0.0)	0 (0-0)	0 (0.0)	0 (0.0)	0 (0.0)
15 - 20	3 (5.9)	0 (0.0)	0 (0.0)	2 (3.8)	4 (10.0)	5 (33.3)
20 - 25	4 (7.8)	1 (5.0)	1 (6.7)	3 (5.7)	4 (10.0)	1 (6.7)
25 - 30	5 (9.8)	0 (0.0)	1 (6.7)	8 (15.1)	8 (20.0)	3 (20.0)
30 - 35	9 (17.6)	1 (5.0)	1 (6.7)	9 (17.0)	3 (7.5)	3 (20.0)
35 - 40	8 (15.7)	3 (15.0)	2 (13.2)	7 (13.2)	8 (40.0)	0 (0.0)
40 - 45	5 (9.8)	12 (60.0)	1 (6.7)	5 (9.4)	5 (12.5)	0 (0.0)
45 - 50	8 (15.7)	3 (15.0)	1 (6.7)	6 (11.3)	4 (10.0)	2 (13.3)
50 - 55	6 (11.8)	0 (0.0)	3 (20.0)	2 (3.8)	0 (0.0)	0 (0.0)
55 & above	3 (5.9)	0 (0.0)	5 (33.3)	11 (20.8)	4 (10.0)	1 (6.7)
Total	51 (100)	20 (100)	15 (100)	53 (100)	40 (100)	15 (100)

Note: Figures in brackets are percentages.

## Alternative employment

As already noted, Angamaly is an agrarian pocket which offers significant employment opportunities in the farm sector. A large number of bamboo workers work both in the farm and

on bamboo. Hence, bamboo weaving is active during the monsoon seasons and weak during the busy agricultural season. It should also be noted that the earnings from farm work (approximately Rs. 75 for eight hour's work) are larger than those from bamboo work (about Rs. 40 for a working day of 12 hours). Even so, weaver families are reluctant to leave the industry because of the welfare measures offered by KSBC to bamboo workers (see Annexe).

This coexistence of a high element of economism and the essentially populist welfare schemes has created absenteeism in the industry. This partly explains why the younger generation has lost interest in this industry, whereas, the elders keep at least some links. This situation makes the task of development planning too difficult as planning needs to aim at sustainable schemes, integrating the wider overall schemes and programs.

While choice of occupation is limited in most farm activities, it is substantial in bamboo industry. As indicated by Table 12, there is a consistently low involvement of men in bamboo work and a consistently high involvement in non-bamboo work. In the case of women, the involvement in bamboo work is slightly higher. This trend acts basically as an instability factor. Where the earnings of the micro-entrepreneurs are fixed through administered prices of raw materials and end-products, a worker has no incentive to look for innovative ideas and to cooperate using forms of organization. This is detrimental to the long-term interests of the industry.

Table 12: Composition and variability of working days

Categories of members	Average	Standard deviation	Coefficient of variation
(A) Bamboo workers			
Males	204.44	68.88	33.69
Females	253.19	63.91	25.24
(B) Non-bamboo workers			
Males	292.00	75.21	25.76
Females	250.00	0	0

## The legal infrastructure

Extraction and utilization of bamboo in Kerala is regulated. There are three major bamboo users in the State: Grasim Industries Limited and Hindustan Newsprint Limited, which are the leading consumers of bamboo as a raw material, and KSBC, which is officially considered as the protector of the interests of the unorganized sector. Before the formation of KSBC, any quantity of bamboo could be extracted by the weavers who were dependent on the forest for their raw material. With the introduction of KSBC came the regulatory pass system controlling the process of extraction of resources.

Conceptually, cutting pass is issued to genuine bamboo workers by the concerned administering agencies: KSBC or the contractors employed by the large consuming companies. This pass authorizes the worker to enter the forest and to cut bamboo, which should invariably be submitted to the agency which has issued the pass. The basic eligibility criterion for getting a

pass from KSBC is that the cutter must have a proven extraction rate of a minimum of Rs. 3 000 worth of bamboo per year. However, the irony is that, as per the existing laws, no one can extract bamboo without a valid pass.

The above contradiction has led to the nurturing of an 'informal sector' by KSBC itself. It has been estimated that about 10% of workers under KSBC do not possess any pass. However, the existing laws make it imperative that the produce of these workers be procured by KSBC. If the bamboo extracted is found left behind in the forest, the Forest Department can sue KSBC for misutilization of forest resources. The officials of KSBC and the Forest Department fail to explain as to how so many workers could operate in the forest without valid passes.

A cutting pass, in addition to providing a right to enter the forest and to cut the resources, is associated with a number of privileges offered by KSBC. These include the welfare measures implemented by KSBC and, beyond that, a number of future benefits that could be expected on virtue of being attached to a government corporation. These present and potential benefits associated with a cutting pass give it a market premium. This market premium has several implications on the course of bamboo extraction as well as on the socio-economic status of the workers. The market premium implies that the pass, which is a title, can be (illegally) exchanged in the market. This exchange does not mean parting with the title as such, but sub-letting it to another group of people who actually does the work. Our detailed field investigation among cutters indicate that sub-letting is widespread in Neriyanangalam and Ranni Forest Ranges. In the former area, the *adivasis* (people of indigenous tribes) take the right from the registered cutters. For instance, a registered worker advances a small amount, say Rs. 100, to an *adivasi* for the supply of Rs. 200 worth of reeds within a specified time. As the latter returns with the reeds, an additional amount of Rs. 75 is given to him. By such an arrangement, the *adivasi* gets Rs. 175 as his wage. The registered worker earns Rs. 200 worth of reeds, which he supplies to KSBC. In addition, he gains an amount of Rs. 25 as a rent for his cutting pass. *The adivasi* is able to cut bamboo rather freely, using his special status as original inhabitant of the forest. In Ranni, workers from the adjacent Tamil Nadu State do such work to a large extent. Bamboo resources in specific areas have been allocated to the two companies other than KSBC. However, as extraction is on a rotation basis, the same areas are subjected to "selective felling" by all three, making the extraction a clear felling in practice.

There are indications that the regulatory regime relating to bamboo resources has become largely unpopular, and the participants of the various sub-sectors of the industry (including officials and workers of KSBC) unite to promote private interests rather than the wider long-term interests of the bamboo resources and workers. For instance, a tacit agreement is alleged between private traders and KSBC officials which facilitates a clandestine but systematic leakage from raw material and product streams. Similarly, Forest Department officials reportedly advise cutters to work for private companies and not for KSBC.

There are some objective factors, which facilitate a peaceful coexistence of the private and collective interests. The members of the same household work for different companies, or the same worker works for different companies during different seasons or different days of the same season. Decision-making by a bamboo household, in this context, is based on its assessment of the situation relating to a variety of factors such as, relative wage differentials, time spent on a specific quantity of bamboo extracted and health conditions of the workers.

From the above discussion it is clear that, despite the official policy of promoting public or collective interests, the practice has been one of promoting private interests. It is for this reason that the industry has been showing a trend towards stagnancy over the past decade or so. Why the official policy does not respond to the private interests dominant at the local level is a question that needs to be examined in the wider canvas of the policy environment and the process of policy formulation for the traditional industries of Kerala.

The current situation facilitates the coexistence of four categories of cutters:

- 1 Those exclusively attached to KSBC;
- 2 Those attached to other consuming companies;
- 3 Those who work for different companies; and
- 4 Self-employed entrepreneur-cutters.

Bamboo workers, who are exclusively attached to KSBC, are eligible for some incentives under specific programs of the Corporation. First of all they are eligible for the raw material through the bamboo depots of the Corporation. Besides, those who work for a minimum period every year are eligible for welfare schemes such as educational benefits for children, reimbursement of hospital bills and food subsidy. Although the value of these incentives, in real terms, is small, it raises the worker's expectations regarding future benefits. Therefore, being a registered worker under the Corporation has been considered prestigious despite a general aversion to bamboo work as an 'inferior' occupation. Workers attached to the two other consuming companies have relatively higher rates of wages.

The category of self-employed entrepreneur is fast disappearing. In the past, under feudal relations of production, workers used to engage themselves in an off-season bamboo activity in the farm and the product of their labour went to the landlord. This gradually changed when some workers began to collect raw materials from the forests and to sell the products in markets of their choice. The head-load pass system of KSBC helps bamboo workers within 5 km radius of the forest to collect raw materials from the forest area and to sell it wherever they like. Unfortunately, as the field findings indicate, the pass system is more helpful to the private contractors than to the workers themselves. Private contractors advance money to workers on the guarantee that they would receive the material collected. Production, thus, is organized by private contractors, who sell the product to a market outlet of their choice. This is the mechanism by which private contractors manage to operate side by side with KSBC. Thus, although the bamboo extracted through the registered cutters is supposed to reach KSBC, which then distributes the material among registered weavers, there is a significant leakage in this stream, implying the existence of a parallel and illegal production system organized by private traders.

## **Perceptions of the Workers**

The present operation of the bamboo sector in Kerala gives a clear reflection of the perceptions of bamboo workers. These perceptions have been shaped over a period of time, taking into consideration the constraints and opportunities as viewed by them. Therefore, the possibility of any change in the present system also depends on these perceptions.

Both subjective and objective factors have helped form the current perceptions of bamboo workers. On the one hand, there have been only limited substitution possibilities in the job

market because of the limited employment opportunities in the non-agricultural sector, and agricultural employment has been considered as “inferior” owing to some subjective factors. On the other hand, the persistently low level of earnings from bamboo activities, even under major institutional interventions like KSBC, has prompted the workers to consider bamboo as a non-remunerative industry. In addition, the history of this industry as one dominated by socially backward communities has also prompted a general social disfavour.

Under a situation where the perceptions on future opportunities relating to employment and income are generally not favourable, workers are likely to be more interested in maximizing immediate economic gains. But KSBC and the cooperatives highlight the possible long-term gains not the short-term ones, in contrast to the workers’ desire for immediate economic gains. This explains why the research team’s enquiry regarding the possibilities of developing the industry along cooperative lines was not favoured by majority of the workers. None of the respondents replied in the affirmative to our question, whether a cooperative institution could take up the organizational challenge at the local level, although they generally favoured cooperatives in other sectors, such as electronics and tailoring.

Despite the social message delivered-by the public sector and the cooperatives, both at action and ideological levels, 65% of the respondents favoured the role and relevance of private dealers in bamboo industry. Furthermore, the image of the private dealer which the workers had in their minds was one of trustworthiness, better economic terms, etc. This can be better explained in terms of the workers’ views on the standard of living. Only 23% of the respondents felt that the intervention of KSBC had helped improve their living standard; 68% of the respondents denied any impact, while the rest were of the view that the situation has really deteriorated.

Hopes on future levels of income and employment by the participants in the industry is vital for evolving any alternative development strategy. An attempt was made by the research team to identify the direction of their thinking in terms of reactions to specific issues, such as the proposed Pooyamkutty Hydroelectric Project, which is expected to destroy vast resources of reed forests. Only 32% of the respondents opposed the Project in view of its possible adverse impact on the reed resources; the remaining respondents were either neutral or were happy to have the Project for the potential alternative employment it would create.

It is evident that piecemeal efforts are not likely to raise the morale of the workers in the short run. One possible measure is to implement the present welfare programs in a reorganized form with greater involvement of the workers. Through such involvement, they may be attracted to alternative economic programs meant for a reorganization of the industry.

## 4 THE DYNAMICS OF THE CLUSTER

### Leading Actors and Market Agents: the Inter-relationships

In the case of many small-scale enterprises, the entrepreneurs do not sell directly to the consumers as they often do not have direct access to information on final demand. This is more significant in the case of intermediate products and produces. In the case of products which have a limited local market, the entrepreneurs' ability to decide on the product specification is also limited. As a rule, it is not the entrepreneurs but other actors who take the main decisions about what products are to be manufactured, what type of units should manufacture and where. It is also these leading actors who indirectly set the limits of employment in small-scale manufacturing units. Therefore, the policy questions relating to employment in these industries have to be addressed in terms of the strategies employed by the leading actors.

Table 13 shows the active role of various market actors. Before the setting up of KSBC, private dealers were the leading actors who could directly organize production through a large network of intermediaries. A formal taking over of this role by KSBC has led to a sharing of the leading actor's role among KSBC and the wholesalers/large dealers. Now, based on identified market segments, they can organize production within the cluster. While before the formation of KSBC this was done directly by private dealers, under KSBC regime this is done by a circuitous process. The market information is collected by the private dealers and KSBC simultaneously. Based on this information KSBC releases stock from its own pool, while private dealers assemble the stock through (a) inroads made into KSBC pool, and (b) workers engaged under the 'head-load pass' system.

Table 13: Market intermediaries: an overview

	Category	No. of units	Location
1.	KSBC Channel	Depots	Various centres
2.	Independent craftspersons	N.A.	Local market (interior villages)
3.	Itinerant dealers	N.A.	Interior villages
4.	Intermediate (local) dealers	-	Moovattupuzha, Kothamangalam, Perumbavoor.
5.	Large dealers (out of state)	-	Angamaly, Kothamangalam.

### Overlapping Channels

A major task of this study is to identify the leading actors and their strategies in the market. However, the overlapping nature of the market channels makes such an identification very

complex. As mentioned earlier, the prevailing legal framework does not allow private transactions in bamboo, except by actual weavers having a valid head-load pass. Any quantity dealt with, other than through this channel can be detected and penalized.

Both the Forest Department and KSBC have their Vigilance Squads for investigation on a regular basis. Although conceptually there is only a public channel for bamboo resources, in practice a really strong private channel also exists. This coexistence enables the redrawing of the production and marketing chains already noted (Fig.7), into an overlapping channel of a mix of public and private transactions (Fig. 8). The overlap is the area of operation of the market agent. In fact, market agents are the ones who channelize a controlled commodity into a free commodity.

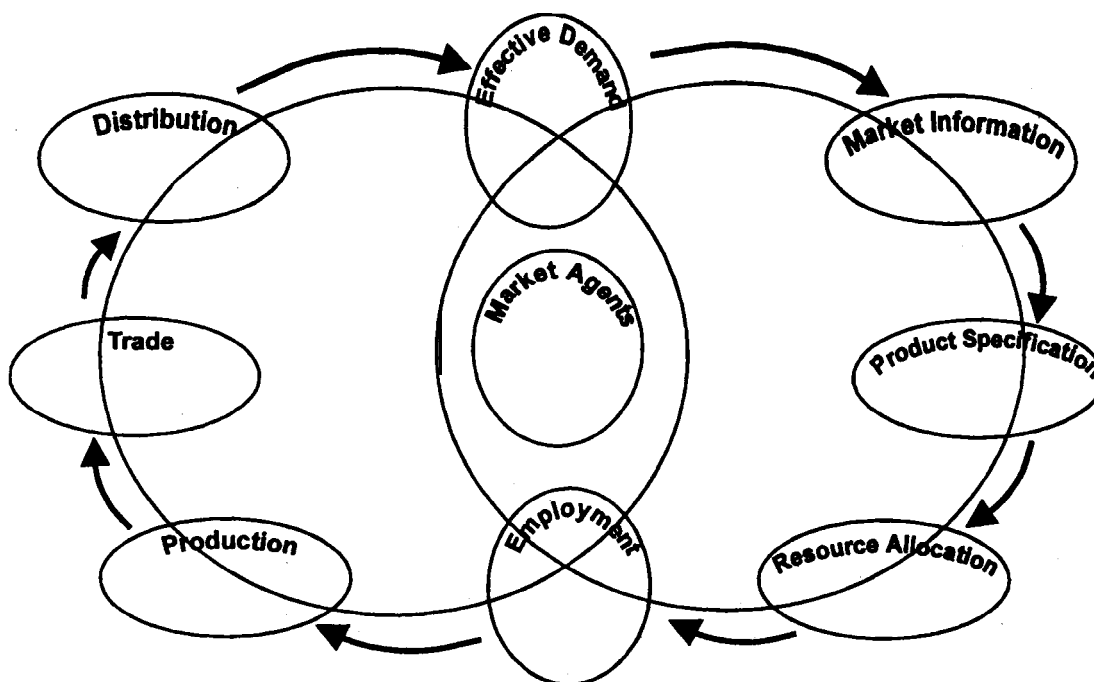


Fig. 7: A production and marketing chain

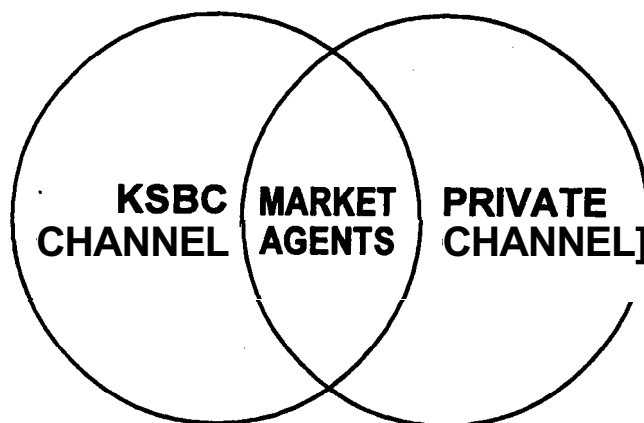


Fig. 8: The overlapping channels

The setting up of KSBC and its assumption of the role of transactions in bamboo mats (which forms the main bamboo product) imply that the market information is collected, product specifications decided and resource allocation made by the Corporation through its vast network of registered reed cutters and depots. This network assures employment of a sustainable nature in the Angamaly cluster. In the marketing chain, all functions are performed by the Corporation itself. Nevertheless, the recent re-emergence of private dealers demonstrates a complex situation, wherein the production-to-consumption chain operates in different fashions with a significantly high transactions cost.

There are various reasons which facilitate the coexistence of private and controlled markets. They can be broadly summarized as: (1) legal framework; (2) political environment; and (3) cultural factors.

## **Legal framework**

The legal framework relating to bamboo resources has only a limited view of conservation and development. Bamboo has been considered officially as something which has to be protected, but with no clear perception on what it is meant for. The relevant forest laws generally overlook the interests of the people who depend on forests. Hence, while there is a machinery to protect the valuable resources, such resources are being extracted indiscriminately for 'industrial' purposes. There has been no serious efforts to have a reconciliation of the conflicting interests relating to the industrial uses and the subsistence of the people who depend on forests. This shortcoming becomes evident at various stages of policy implementation in relation to the extraction and utilization of bamboo.

As a reflection of such anomalies in policies and implementation, it may be noted that the pricing of bamboo for industrial consumers and for traditional consumers itself is discriminatory. While the rates charged on industrial consumers is Rs. 0.10 per reed, in the case of traditional craftsmen it is Rs. 0.50. Besides, the traditional consumers bear another burden as selective felling implies significant transaction costs in identifying the resources to be extracted. For example, they have to travel extensively into the interior forests for harvesting, and it has been estimated that a substantial number of working days are lost in the process. In the case of industrial consumers, the mode of harvest is clear felling, leading to the denudation of forests for which they face no penalties.'

## **Political factors**

Bamboo is a politically sensitive commodity in Kerala. The high concentration of bamboo activity around Angamaly and the political visibility of the bamboo communities were the very reasons for the setting up of KSBC. It is on these grounds again that KSBC acquired a significant welfarist focus. KSBC, though a government company with a clear developmental mandate according to its memorandum of association, has consistently overlooked the vital need for sustainability and, has given too much thrust on implementing welfare programs.

The predominance of political factors have sown the seeds of disintegration within KSBC. On the one hand the formation of the Corporation gradually created an elite group of labour (bullock cart workers, bundling workers, warehouse workers, etc.). On the other, the expectations attached to being linked to KSBC (as a card-holder) gradually led to a large number of



absentee workers. In many households, bamboo work is retained just to keep the formal link with KSBC. As already noted, subletting of cutter-rights is an emerging phenomenon. It has been observed that there are a large number of unregistered bamboo cutters (mainly workers from Tamil Nadu, *adivasis*, etc.), who work on behalf of the registered cutters. The registered cutters, in turn, collect the material from the actual cutters and pay them lower wages than what they actually get from KSBC. Thus, the traditional bamboo workers themselves are gradually emerging as another level of intermediaries.

Another important political factor is the stimulants to the development of a private market channel. Although private marketing of an item like bamboo mats is totally banned, such markets are present in Kothamangalam, Perumbavoor and Moovattupuzha, the peripheral towns of the Angamaly cluster. From the cluster as well as from its periphery, bamboo mats move to these markets either against a head-load pass or as unaccompanied luggage in buses. In the peripheral market, transactions take place without having a significant assembling of the material. From these markets, the product moves to the terminal market. It may be stated here that the presence of such markets has not been officially acknowledged either by KSBC or by private dealers.

## **Cultural factors**

Cultural factors often play an important role in maintaining a corrupt institutional structure. Against the unique socio-economic milieu of Kerala, however, it is difficult to discern the threats of such cultural factors. The public sector offers a platform for the local political leaders to work from. Subsequently, an organized working class enjoying some privileges, actual or notional, becomes a crucial part of the set-up. The resultant trade unionism then offers a launching pad for the activities of political parties and leaders. A spread of such activities, in turn, creates vote banks. As vote banks become the mainstay of regional and state politics, there emerges an environment of unusual cooperation among the trade unions and the political parties with which they are associated. A multiplicity of trade unions has been noted as an emerging phenomenon among the bamboo workers of Kerala.

The perception of the bamboo workers essentially as vote banks leads to resistance to changes in the institutional structure and to efficiency enhancement of the existing structure. Both government and political parties have for several years contributed to policies that have generated and promoted inefficiency in KSBC and the cooperatives. The bureaucracy finds the official control mechanism as the main source of corruption. The local political leaders, on the other hand, try to protect any illegal behaviour by the bamboo workers. All these provide ground for the simultaneous operation of private and public marketing channels.

## **The Legal vs. Illegal Market: She and Structure**

The net output of the above situation is the phenomenal growth of the private market channels which make even the existence of KSBC precarious. The research team made an attempt to estimate the size of the illegal market. It has been noted that KSBC and wholesale dealers are the leading actors. KSBC deals directly with the registered weavers. The wholesalers are of two categories: (1) those who collect mat in small quantities locally and send it outside the State in bulk quantities; and (2) those who collect the mat and distribute it mostly in various parts of the State through a retail network. It is estimated that the number of

mats (with an average size of 52 ft<sup>2</sup>) that arrive weekly in Perumbavoor, Kothamangalam and Moovattupuzha is 2 000, 3 500 and 500, respectively (a total of 6 000 mats a week). Thus, according to a conservative estimate, the size of the illegal market around these three centres alone works out to 162 240 000 ft<sup>2</sup> annually. This is nearly 22% of the total procurement made by KSBC from the Angamaly cluster.

It is important to note that, the central region of Angamaly cluster itself is a major centre of private bamboo trade. If transactions in this area also is taken into account, the volume of private trade in the cluster goes up significantly. Table 14 shows that private channels account for 26.2% of the total mats transacted in the Angamaly cluster.-

**Table 14: Annual transaction of bamboo mat in Angamaly cluster**

Channels	Grade			Total
	Commercial	Chanda	panambu Special mat	
KSBC	550.00 (97.69%)	20.00 (9.09%)	30.00 (100%)	600.00 (73.8%)
Private dealers	13.00 (2.31%)	200.00 (90.91%)	-	213.00 (26.2%)
<b>Total</b>	<b>563.00</b>	<b>220.00</b>	<b>30.00</b>	<b>813.00</b>

**Note: All figures are in 100 000 ft<sup>2</sup>. Figures in parentheses are percentages.**

The above estimates on the size of the private channel, however, has to be interpreted with caution. Private transactions in commercial mats is too confidential, therefore, the evidences available are likely to be too much on the lower side. Moreover, a major dealer, who used to deal in substantial quantities, was caught by the KSBC Vigilance Cell, causing a sharp fall in his transactions. This large-scale dealer based at Angamaly has a sales tax registration, using which he dealt in bamboo mats (where private dealing in bamboo mats on a large-scale is illegal!). His connections with large consumers outside the State, especially with sugar mills in Maharashtra and Gujarat, and with large dealers in Mumbai and Pune, helped his activities. He used to send substantial quantities of mat by truck and train. On trial, the dealer's argument before the court was that KSBC had control only over the resources and not on the final product. He was able to get an injunction order from the Kerala High Court. At the time of writing this report, the matter was with the Division Bench of the High Court. The estimates, given in Table 14, indicate that shortages created by a regulatory mechanism prevent the dynamic development of the industry.

At another level, wastage of materials at extraction and processing stages is substantial. Mathew and Joseph (1994) estimated the process waste at 28-50%, depending upon the end-product.

## Technological Stagnancy

Another major weakness of the existing order of things in the industry is technological stagnancy. In an industry like bamboo, the limits to technological changes are substantial. However, at least within the strategies that are associated with small-scale production, conditions of employment are likely to improve if the leading actors are more oriented towards.

“high-road” strategies. For this, leading actors must be reactive, and invest in labour and stimulate collaborative interaction among actors to achieve competitiveness in higher market segments. In the case of private wholesale dealers, this cannot be expected in the short-run, as long as their markets are assured. However, in the case of KSBC, this is possible but absent.

In the terminology of New Institutional Economics, the present strategy of employment is basically a “sweatshop” strategy. Based on market demand, production is organized by the leading actors in terms of quantity; concern for productivity is almost totally absent. The thrust for high-road employment strategies demand a better focus on two vital but neglected aspects: (1) labour productivity; and (2) material productivity. While labour productivity needs to be enhanced, it should not be at the expense of a larger utilization of materials and longer working hours. Efforts should be oriented towards enhancing labour productivity and reducing material intensity. Such an approach will provide a new direction to bamboo development, the cornerstone of which should be sustainability and greater involvement of the workers. A lower material-labour ratio is desirable for achieving higher labour productivity (expressed as value added/labour). In the process, the involvement of labour is enhanced, and the material thus conserved can be used for further addition of value in future.

## **Strategies of the Leading Actors**

The leading actors employ a variety of strategies for organizing production. The conventional form of organization of production focuses on a rigid approach where decision-making is based on the criteria of economies of large-scale production. Described in development literature as “Fordism”, mass production, and the “Tayloristic” scientific management associated with it, put a heavy focus on standardization in product specification. These strategies have undergone substantial changes in many countries in the areas of market segmentation, technology, organizational strategies and employment.

In small-scale industries, the overall situation of employment and income generation depends largely on the decisions of the leading actors relating to strategies of employment. Conditions of employment necessarily improve if leading actors are more oriented towards high-road strategies. Hence, the choice is between a sweatshop strategy, with its low-road employment conditions, and a premier artisanal strategy primarily enjoying high-road employment conditions.

The leading actors, however, have some constraints at the operational level. The major constraint relates to establishment of direct contact with the small producer. The small producer may often be large in numbers and located in inaccessible areas. Similarly, the transaction costs in dealing with them directly may be substantial. It is here that the role of market agents emerge. Market agents are the direct link between the small enterprises and the leading firms. Actually, they are the representatives of leading firms. Market agents, generally with a small volume of operations, bargain with small enterprises on forward conditions against specific orders. The actual forward conditions are a reflection of the bargaining position of a small enterprise. Where the bargaining position of the enterprise is weak, the forward conditions remain largely static over a period of time. However, if there are different market agents who work on different channels developed by a few leading actors, the bargaining position of small enterprise improve to some extent. For instance, a market agent which is a public sector

company may have a strategy that differ from that of other market agents, but one that may advantageous to a particular small producer.

The role of market agent is the actual selection of specific entrepreneurs of small-scale units from a 'suitable' category. while the strategy of the leading actors identifies a suitable category of small-scale producers, within that category the selection of an enterprise is made by market agents. Both market agents and entrepreneurs bargain on. specific conditions-such as price, quantity, delivery schedule, payment schedule and arrangements for production-within broad boundaries.

## 5 PRODUCTION, CONSUMPTION AND EMPLOYMENT

### Introduction

A major task of this study is to examine how production is organized and as to how the system is sustained to assure income and employment opportunities. In the first chapter, the importance of trust as a crucial factor contributing to lower transaction costs, and thereby enabling voluntary cooperation, was discussed. In voluntary cooperation, the transaction partners have a real choice as they consciously choose to work together while having alternative options. This ideal situation does not often exist in the real world. Cooperation is often enforced and asymmetrical. In situations where voluntary cooperation exists, opportunistic behaviour is restrained in a way that is essentially different from the two extreme situations (pure market or hierarchical coordinations).

The main pillars of coordination are market, hierarchy and cooperation, which are governed, respectively, through prices, authority and trust (CPowell 1990). The triangle of coordination is the relation between the above three principles, and in the actual world, they exist in different degrees.

As noted in the previous chapters, leading actors in a production-to-consumption system decide the production and employment conditions, although they are often not visible on the scene. If a leading actor decides that it will be less costly to undertake a particular activity himself rather than depend on a possible opportunist, he will switch from market to hierarchy. Although in theory there are such extremes, in actual business, there are many intermediate forms that efficiently minimize transaction costs-specific contractual arrangements such as subcontracting, co-manufacture and ownership participation, and provide the continuum between perfect market and pure hierarchy (Mead 1984).

### Economic Structure of Production Units

A major feature of small-scale production units in the Angamaly bamboo cluster is their home-based character. In home-based production units, production is organized on a piece-rate basis. The concepts of material cost and labour cost do not figure directly. The material is advanced by the market agent and the final product is returned against a margin, which is a fixed rate. The earnings of the worker vary according to the volume of work done by him and the amount of family labour that has been performed.

While the basic logic of home-based production remains the same, the major differences in the functioning of production units arise in terms of production and market linkages.

In the Angamaly bamboo cluster, the major product turned out is mat. The institutional affiliations of bamboo-working households in the cluster are shown in Table 15. While the

production of bamboo mats is controlled by KSBC, cutting is not. Cutters work both for the private and public (KSBC) sectors. There are differences in the remunerative structure the two sectors apply to cutters. A cutter attached to KSBC receives per bundle Rs. 16.95, while a cutter linked to Hindustan Newsprint Ltd. (HNL) gets only Rs. 13.20. While the former gets an incentive earning of 11%, the latter receives a bonus of 20%.

Table 15: Institutional affiliation of households

Affiliation of workers	Number of workers		
	Cutters	Weavers	Total
KSBC sector	15 (27.27%)	40 (72.73%)	55 (100%)
Private sector/ dealers	27 (51.92%)	25 (48.08%)	52 (100%)
Both	10 (62.50)	6 (37.50%)	16 (100%)

Although the direct wage rates are higher for KSBC sector, the daily earnings of workers are relatively low, mainly because of selective felling adopted by the KSBC sector. The workers have to move into the interior forests, with an obviously low output. The HNL workers, on the other hand, have a greater output per day as they adopt clear felling.

The finding emerging from Table 15 is that there has been a general tendency of growth of private interests in the bamboo industry, despite the industry being highly controlled. Households are keen on maintaining a formal link with KSBC. Often this has been through the elderly; the younger workers generally prefer the private sector.

Production and marketing linkages are intertwined and therefore difficult to analyse separately. Even then, it is possible to discern the major influences on these linkages. Decision-making by the entrepreneur is present in both production and marketing, whether such decisions are influenced by external factors or not. From the policy angle, the task is to identify the major influences on production decisions made by an entrepreneur.

## Gender and Occupational Composition

An important aspect of the household form of organization of production is the significant involvement of family labour, especially women labour. In the Angamaly cluster, there is a significant involvement of women labour and this has many implications on household earnings and organization of production. Table 16 indicates a significant trade off between bamboo work and non-bamboo manual work in the cluster.

Table 16: Income disparities in the Angamaly cluster

Category	Mean	Standard deviation	Coefficient of variation
<b>Bamboo work</b>			
Males	11402 .43	6 049.36	53.05
Females	4 953.73	3 097.12	62.52
<b>Non-bamboo work</b>			
Males	11251.00	7 777.84	69.13
Females	4 278.61	4336.22	1.35
<b>Other services</b>			
Males	13 997.75	2 864.73	20.47
<b>Females</b>	3011.25	1480.00	52.47

In a household system of production, the total earning of the household are assumed to be shared equally among the participating members. Hence, variations in per capita income of the working members arise only from the variation in the number of days worked by individual members. The high variability of earnings of female bamboo workers (CV - 62.52), therefore, is an indicator of the greater extent of casualness of labour among them. In the case of non-bamboo manual work (e.g., agricultural work) daily rates are prevalent and therefore, the chances of casual work are limited. The higher mean wages in bamboo work explains why women workers are attracted to it. In the case of males, the aggregate earnings of cutters and weavers conceal the actual wage disparities among the two segments.

The results of the field survey indicate that, in the case of males, agricultural work and casual labour are the next best options preferred. Female workers have limited or no options, implying that their earnings tend to remain the same.

The female dominance of and the casual approach to employment in the bamboo industry can be better understood in terms of the overall alienation that has been taking place. Official figures available from KSBC indicate an alarming picture of massive alienation. Table 17 shows that in most depots of the Corporation, the active weavers constitute only a small portion of the total registered weavers. Besides, it has also been estimated that the active cutters at all-Kerala level constitute only 81% of the total number of registered cutters, which, as per latest figures, is 2 054. The conclusion is that the true representative character of bamboo policies has been eroding significantly over time.

Responses received from those who were surveyed do not indicate the number of working days available in a home-based production system. With a variety of alternatives available, the worker chooses one based on subjective and objective criteria. These criteria are not just work-related, but also pertains to the environment in which the worker functions. Therefore, it is important to understand the factors that determine the actual working days of a worker.

Table 17: Registered workers and active workers : a comparative view

Name of the centre	No. of registered workers	No. of active workers	Percentage
Kavaraparambu	900	343	38.11
Mookkannur	798	204	25.56
Thuravoor	957	295	30.38
Kidangoor	300	200	66.67
Pothiyakara	520	139	26.73
Thottakam	753	117	15.54
Neeleswaram	445	107	24.04
Kottaamam	624	291	46.63
Okkal	743	146	19.65
Kalambattupuram	242	132	54.55
Cheranalloor	480	69	14.38
Cheranalloor	501	152	30.34
Parappuram	270	245	90.74
Kalambattupuram	792	286	36.11
Kaippattur	597	345	57.79
Manjapra	933	301	32.26
Koodalappad	1257	1008	80.19
Kuttampuzha	921	402	43.65
Mamalakandom	500	200	40.00

## Role of Networks

To assess the potential dynamic role of small enterprises and delineate the growth paths open to them, it is necessary to examine specifically the technological characteristics of these small enterprises and networks. Any production-to-consumption system needs raw materials and other inputs, and distribution and transport are usually separate functions carried out by specialist enterprises. Hence, production can be considered as an interactive process involving several enterprises, although one producer unit could conceivably perform many of these functions. This contingency of relations within interactive enterprise networks are the key to other aspects, such as adaptability and innovativeness (Pedersen et al. 1994).

Social network are equally important as technological networks. The different phases in the production sequence can be matched by subsuming them under one management, or alternatively, through the activities of a variety of intermediaries (through hierarchies or markets). In real life, networks combine both these types of coordination mechanisms.

In most rural industries, where production is decentralized, the principles of mass production do not operate in a strict sense. Rural industries are but a transitory phase between the craft form of production and the modern mass production. Therefore, some elements of a strategy of flexible specialization are present in a very crude form in such industries and activities. A strategy of flexible specialization shifts the attention from an individual firm to a whole



cluster of firms. This, however, does not mean that all firms within a cluster actually have linkages with all other firms.

Irregularities in orders received and consequently in employment generated- are observed in many industries. Although lack of orders does not pose any threat to bamboo households, a major factor of irregularity is the availability of orders from two main sources: KSBC and private dealers. Moreover, depending upon the availability of employment in the agricultural sector or other higher-income earning sectors, labour moves across various economic activities. It is these complexities which make a network-level analysis more meaningful.

## **Market Channels**

The relations between entrepreneurs of small-scale manufacturing units that produce final products and the market agents who buy their products are crucial for the present study. A market channel is only one link in a more elaborate marketing and production chain. Therefore, it is necessary to understand how the leading actors of the bamboo production-to-consumption system, on whose orders production is carried out in Angamaly, behave.

The leading actors provide information on final demand and distribute final products to the consumers. The geographical setting is obviously important. Angamaly is a centre where the bulk of the bamboo products are transacted and where the leading actors and market agents are present. In this cluster, the leading actors can be divided into two categories: (1) the depots of KSBC which purchase bamboo mats; and (2) the wholesale dealers of bamboo mat. Since the wholesale private dealers cannot function legally, they operate as small, low-profile units or through their agents. Since raw material channels are not open to them, they can assure resource allocation only through leakages from KSBC supplies and/or by means of head-load passes issued to the cutters. Officials of the purchase depots of KSBC function effectively as market agents, facilitated by the practice of visual grading in the case of both the raw material and the final product. Visual "quality" norms have become the criterion by which the market agents operate. Based on such arrangements, the following market channels can be identified:

### **Channel A: direct sales to KSBC**

In the case of direct sales to KSBC, the production units procure raw material from KSBC depots and return the whole output directly to KSBC. In this case, the entrepreneur can gain only the prefixed rates per square feet of mats exchanged. Additional gains, if any, have been made possible by influencing the market agent to a limited extent.

### **Channel B: direct sales to private dealers**

Direct sales to private dealers is not easy for the production units as within the cluster, it is difficult to have direct dealings with the private dealers. Therefore, the transaction costs involved in terms of such items as bribing officials and political patronage are shared between the buyer and the seller. This sharing is reflected in the prices paid by the private dealers. In areas closer to the resource base, which are the periphery of the cluster, larger quantities of products are transacted between production units and private market agents.

This is made possible because of the lenient attitude of KSBC in those areas. It is in these areas that the private dealers involve in open transactions.

### Channel C: the twilight area

The third channel, which we may call the 'twilight area', is a new form of micro-entrepreneurship emerging within the cluster. This new form of entrepreneurship has been facilitated by the intervention of KSBC. Bamboo mat being a controlled commodity, the private dealers cannot get involved directly in transactions of larger volumes; This necessitates the presence of a large number of micro-entrepreneurs who are willing and able to develop an illegal market channel. For instance, take the case of an unemployed young boy who would like to start a small business. A large dealer will make use of his services by giving him an advance of about Rs. 20 000. With this money, he approaches a number of weaver households. Using all his family and personal connections, he manages to procure from a weaver household at least one mat a week. He thus assembles small quantities of mats from a number of households, paying wherever needed small advances of money. These mats subsequently reach the hands of the large dealer who, in turn, transports them to other parts of the country. It is difficult to estimate the actual quantities transacted through this process. However, it is important to note that this type of channel is really significant.

### Earning, Behaviour .

It is necessary to examine the marketing margins in order to have a picture of the relative importance of leading actors and market agents and the position of the weaver. Detailed investigations revealed the following market channels and their associated margins (Figs. 9-12, Tables 18, 19).

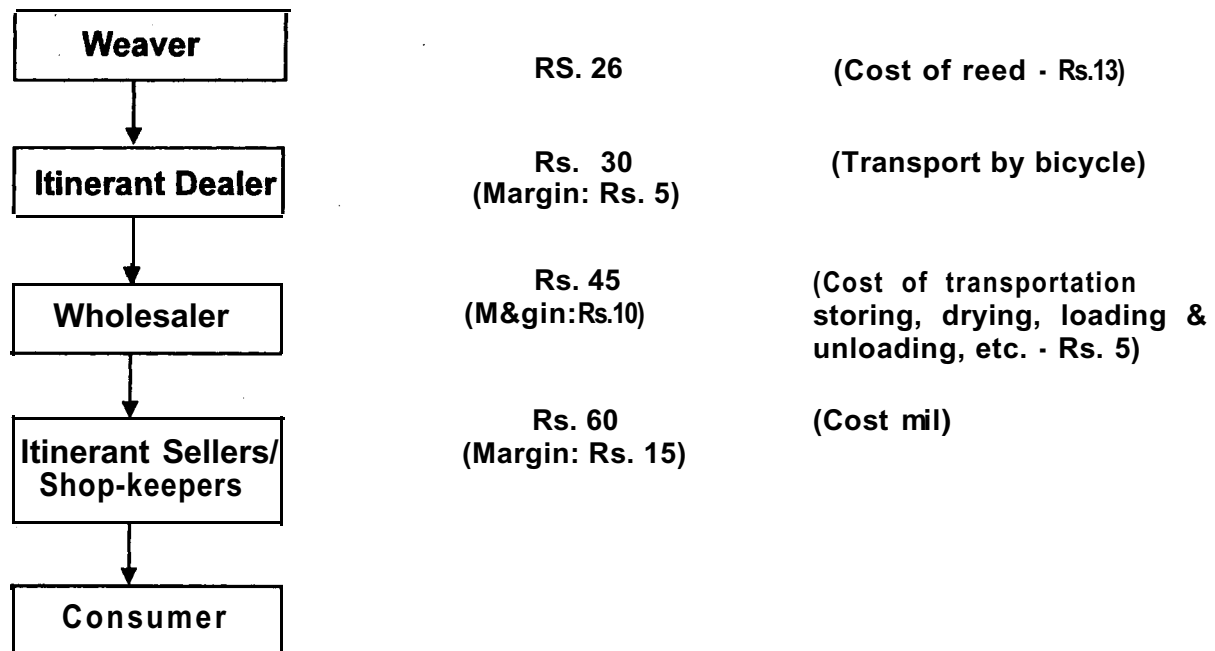


Fig. 9: Inter-district market channel for *chandapanambu* (8x4 ft)

Table 18: Market channel for commercial mats

Channel	Origin	Approx. numbers	Approx. qty. per week (ft*)	Approx. margin (Rs./ft*)
Producers	Villages	11922	25 000	-
Itinerant dealers	Small towns/ villages	20	1250 per person	0.13
Wholesalers	Small towns	5	5000 per person	0.07
Consumers	Small towns/ villages (inside & outside Kerala)	-	-	-

The market channels as well as the margins vary according to the extent of the market as well as the product specifications. The price-spread analysis, as given above, indicates that the coexistence of both public and private channels for bamboo mats results in an enhanced need and role of itinerant dealers, who get the largest share of the marketing margin. KSBC and the cooperatives cannot eliminate these dealers, as their volume of operation is small. However, the burden of their margins are heavily transferred on to the consumers.

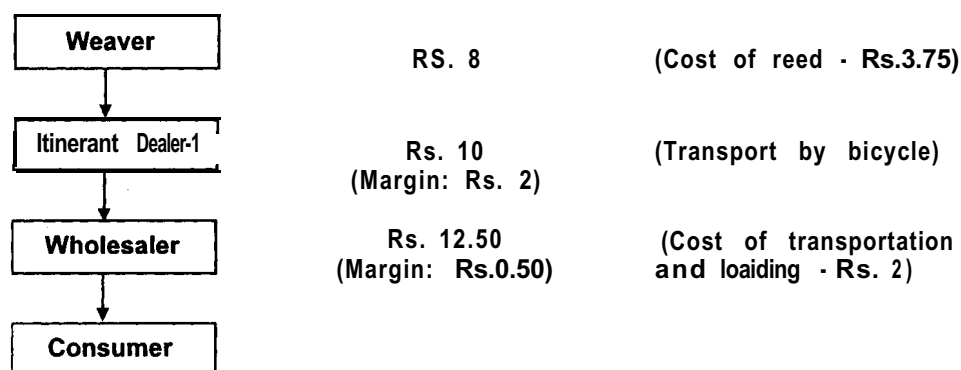


Fig. 10: Inter-state market channel for commercial mat (583 ft [Mumbai, Pune, etc.]

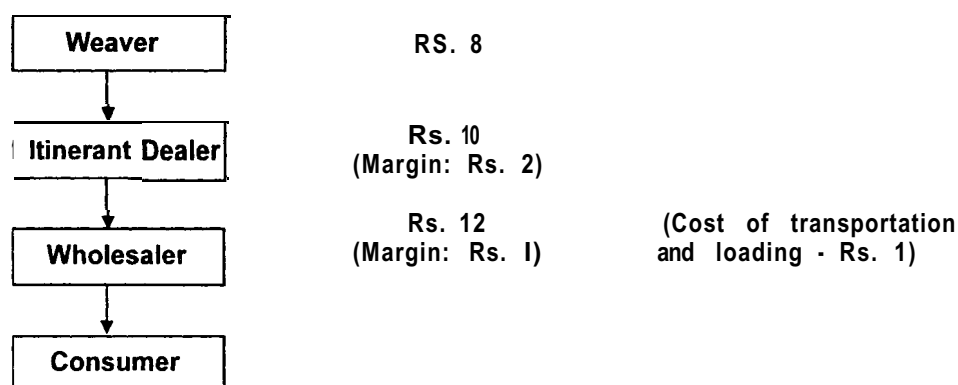


Fig. 11: Inter-state market channel for commercial mat (5x3 ft [Coimbatore, Salem]

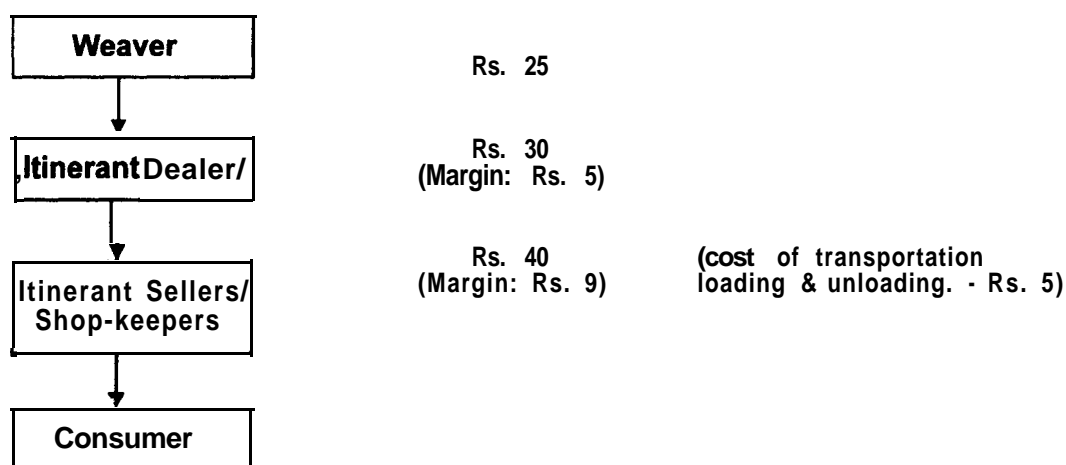


Fig. 12: Local market channel for *cbanda panambu(8x4 fi)*

Table 19: Market channel for *Chanda panambu*

Channel	Origin	Approx. numbers	Approx. qty. per week (ft <sup>2</sup> )	Approx. margin (Rs./ft <sup>2</sup> )
Producer	Villages	4 000	364 000	
Itinerant dealer/ shop keeper	Small towns/ villages	40	3 100 per person	0.15
<b>I. Local Market</b>				
Itinerant sellers and shops	Small towns/ villages	20	2 600 per person	0.28
<b>II. Inter-district Markets</b>				
Wholesalers	Villages & small towns	15	182 000	0.31
Itinerant sellers/ shop keepers	Villages & small towns	-		0.47
Consumers	-	-	-	-

## Earning Behaviour and Income Disparities

The specific earning behaviour of bamboo households is both a cause and a consequence of low levels of income. The low earnings induce workers to combine bamboo work with alternative channels of employment, thus bringing down the total earnings of these households from bamboo activity. This, in turn, tends to shape the perceptions of workers in general in such a way that they consider bamboo as a degraded activity. Over a period of time these perceptions develop into a negative demonstration effect. This explains concentration of elderly workers in the industry.

## 6 POLICY ENVIRONMENT

### The Experience of Development policy

An examination of the policy environment in which the bamboo industry functions is vital for the formulation of appropriate policies. Spelling out the major policy ingredients at the outset will simplify this task. These ingredients can be broadly classified under two heads: organization arrangements; and incentive schemes (of which finance is a major component).

At the national level, the pattern of organizational initiatives is largely uniform. KVIC and the state level KVI Boards (KWBs), follow the same pattern of schemes and organizational framework. However, data relating to the extent of effort and number of beneficiaries have not been properly brought out by these agencies. A major weakness of the database is the absence of a proper mechanism to evaluate the performance of various production units supported by KWC and KVIBs. Therefore, a substantial extent of sickness among these units could be expected. Data regarding incentive schemes are also not available to a satisfactory extent; the available data relate only to financial incentives, production and employment generated. Even so, the figures available at the national level enable us to arrive at some broad conclusions.

Till recently, the KVIC set-up, with a strategy focused on grants, was the largest supporter of cane and bamboo industry in the country. Of late, the focus has shifted more to loans than grants. KVIC support programs had received significant positive response, especially during the **1970s**. Employment generated per rupee disbursed was high when compared with the general standards in rural industries. Other data, given in Table 20 and 21, also indicate an encouraging response during the period.

Table 20: Bamboo and rattan incentive schemes and decadal economic performance: all - India

Indicators	1963-64	1973-74	1983-84	1992-93
1. Earnings/total disbursement	1.270	8.239	5.923	17.489
2. Earnings/grant		32.660	73.090	329.710
3. Earnings/loan	1.27;	11.020	6.450	18.470
4. Employment/total disbursement	0.008	0.018	0.009	0.008
5. Employment/grant	0.050	0.071	0.108	0.155
6. Employment/loan	0.009	0.024	0.009	0.009

Source: Computed from KVIC (Anonymous 1994).

Table 21: Bamboo and rattan incentive schemes and decadal economic performance: Kerala

Indicators	1963-64	1973-74	1983-84	1992-93
1. Earnings/total disbursement	-	41.250	6.53	11.51
2. Earnings/grant	-	41.250	66.60	-
3. Earnings/loan	-	-	7.24	11.51
4. Employment/total disbursement	-	0.125	0.014	0.004
5. Employment/grant	-	0.125	0.140	-
6. Employment/loan	-	-	0.015	0.004

Source: Computed from KVIC. (Anonymous 1994).

The situation since 1980s, however, saw a general decline in earnings and employment in this industry group. In Kerala, the employment position declined from 0.125 in the decade ending 1973-74 to 0.014 in 1983-84 to 0.004 in the decade ending 1992-93. The earnings ratio also went down steeply from 41.25 in 1973-74 to 6.53 in 1983-84 (it picked up during 1992-93 to a small extent, as can be seen from Table 21). Based on these figures, it can be concluded that the impact of financial assistance in the KVIC sector in employment generation has been far from encouraging. An examination of the policy environment in which the bamboo economy of Kerala function is therefore vital for policy formulation.

## Elements of the Policy Environment

An examination of the policy environment has to be made against the background of:

- 1 The perceptions behind policy formulation;
- 2 The objective political and social situation prevailing in the bamboo-growing regions; and
- 3 The reactions of the bamboo communities to existing policies.

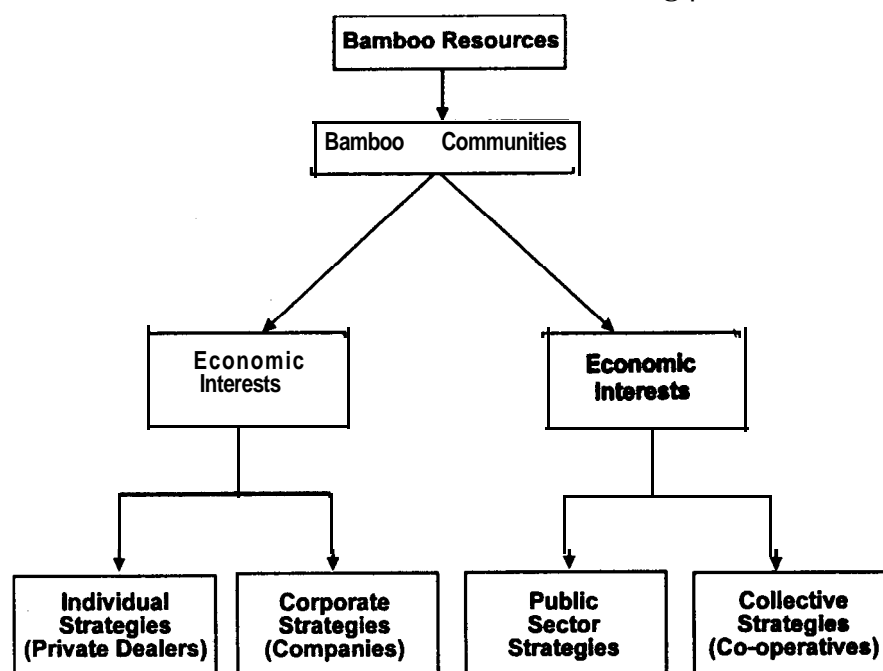


Fig. 13: Factors which shape policy environment

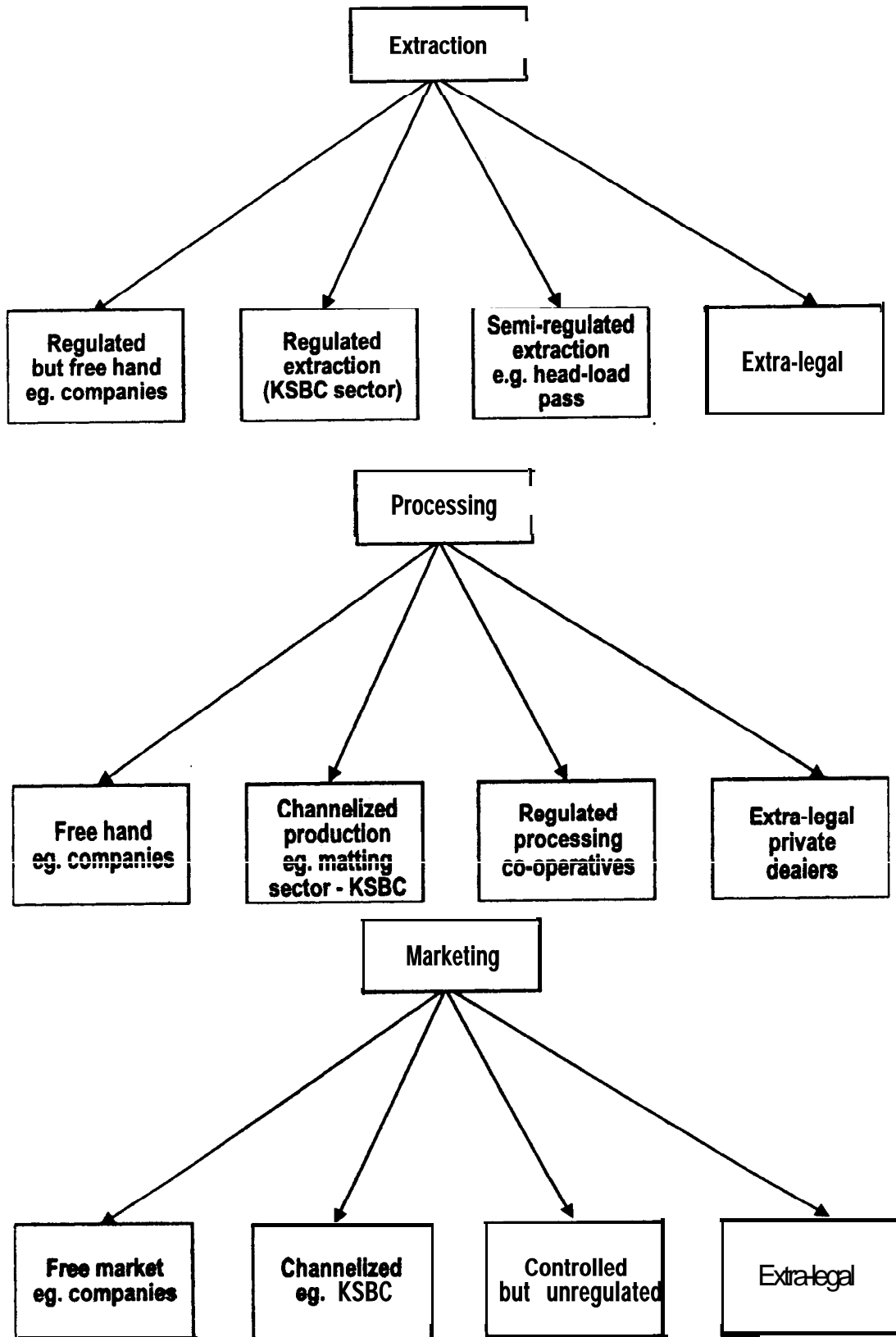


Fig. 14: Policy environment at key production-to-consumption stages

Official policies relating to the bamboo sector are shaped by the imperatives for employment generation. Under this wide umbrella of official policy, 'different interest groups react differently. Although, conceptually, these groups agree with the wider goal of employment generation, such reactions often do not lead substantially to generation of sustainable income and employment. KSBC emerged as a policy response to the exploitative situation then prevalent in the bamboo sector. The Government of Kerala's response to the demands of two large bamboo-consuming companies was also on the grounds of indirect employment they generate. The cost of massive bamboo consumption by these two companies was substantial; yet, the reasoning was that if they remained closed because of raw material shortage, it would have negative consequences on the employment side. This reasoning, however, was not in resonance with the reality that the companies had corporate strategies, which are largely strategies of maximization of private profit and not those of generating employment of a sustainable nature.

Cooperatives emerged as an alternative instrument to empower bamboo workers to an extent that they themselves could assert their position in a competitive world. In practice though, not only did the cooperatives fail to emerge as a viable alternative, but they have also become significantly subject to private interests through the market mechanism. Most cooperatives are forced to make distress sales, or sell as dictated by cooperative federations or government agencies, which are found to have very strong private interests.

Private traders, who are officially banned, are still very active in the bamboo industry. Their existence has been rationalized by the prevailing objective environment: they provide micro finance, thereby performing a crucial function not offered by the public sector; and they provide employment, thereby enhancing the government's main policy goal of generating employment. Fig. 13 outlines the various factors that shape the policy environment, while Fig. 14 shows the policy environment at key production-to-consumption stages.

Any policy environment naturally leads to some policy responses. These policy responses get reflected through strategies which conceptually are linked to the wider goal of official policy but in practice, are largely meant for pursuing private interests.

Governments, at the centre and in Kerala, address the importance of the bamboo sector through three major routes: (1) direct employment; (2) skill upgrading; and (3) export promotion. Employment promotion route is the traditional one. A national organization like KVIC and a state-level organization like KSBC perceive promotion of bamboo activity as a shortcut to employment generation. The former operates mainly through training and finance, while the latter operates through regular input supply and marketing assistance. The second route gets reflected in technical training programs, organized with two main goals: employment and export promotion. The rationale behind technical training programs for craftspersons has been that such training directly leads to skill generation which, in turn, leads to employment. The assumption that higher skills automatically respond better to market demand is an offshoot of neoclassical economic theory. In contrast, field investigations indicated that very few of those who underwent skill upgrading programs translated their skills into income-earning opportunities. The reasons for this is that the skills imported do not often take into consideration the critical local constraints. Yet, centrally sponsored programs like TKYSEM are based on such a rationale. Government of India also perceives skill



upgrading as an easy route to export promotion. The skill upgrading programs initiated by the Office of the Development Commissioner (Handicrafts) also follow the same rationale.

The upper stratum of official policy gets translated into concrete mainly through non-governmental organizations (NGOs). NGOs undertake various employment and skill upgrading programs on behalf of governmental agencies. Social visibility is their major concern. Sometimes, they also respond to market needs. Private sector responds to the official policy often in a negative sense, mainly to the inefficiencies of the official implementing machinery but makes use of them to pursue its own interests.

## **Towards an Alternative Approach**

The present policies, 'which encompass the regime of controls and the consequent corruption, are not conducive to the interests of the bamboo-working communities for whom these are meant. Therefore, it is important to have an alternative approach, wherein the controls are brought down to a minimum, and identify strategies aimed at well-defined and angible goals. Such strategies need to be internally consistent and should be made with the full involvement of the bamboo-working communities. It must also 'be borne in mind that a regime of total lack of controls, which allows a free play of the market forces, also may be damaging from the point of view of both economics-employment and income generation-and environment.

In this context, the thrust on sustainable income and employment is vital for policy formulation in the bamboo industry. The question of sustainability takes into consideration both environment and economics. Employment needs to be generated; but it has to be productive, long-term, sustainable and resource-conserving. Such an approach demands an enlightened "entrepreneurial route": to the development of the industry. The leading actors' strategies are crucial in triggering such an alternative approach. As noted earlier, the leading actors' strategies can range between the high-road and the low-road ones. The sweatshop strategy, which policy-makers are used to in the bamboo sector, focuses too much on quantities but very little on qualitative aspects. While KSBC and the Forest Department, conceptually, keep a strong vigilance 'on protecting and conserving the resources (incurring substantial transaction costs), utilization and regeneration of resources do not receive any significant attention.

The significance of entrepreneurial route is its focus on productive efficiency. Productive efficiency takes care of all the stages, from allocation of resources up to the marketing of the end-product. Such an approach requires the active involvement of the entrepreneur

An entrepreneur is one who is concerned with all the above stages, as the profit he earns is the reward for planning, coordination and execution. The intervention of governmental agencies, while being useful in achieving some long-term goals, has the danger of creating a culture of lack of coordination. The organizational form called household production is most efficient when it is subject to certain controls. Unfortunately, the creativity which was embedded in craft production got significantly eroded under the institutional intervention, KSBC, which appeared as the .protector of the interests of bamboo workers. Craftspersons got alienated from their rudimentary entrepreneurial skills to become the slaves of a system that feeds them regularly.

## Crucial Questions

Support mechanisms often provide some relief to small producers in a private enterprise economy; however, the task of public policy should be to protect the entrepreneurial qualities of the 'communities and of the society as a whole. It should also aim at nurturing such skills progressively to make them capable of taking harder decisions. Technological advancements may lead to enhanced productivity, but enhanced productivity will not automatically get translated into enhanced income and employment unless the entrepreneur works constantly at it. The thrust of policy formulation in the bamboo industry in the forthcoming years, therefore, should be not to offer greater incentives, concessions and welfare measures to these communities, but to plan the development of the industry with the active involvement of production units. This demands an answer to the following crucial questions:

- 1 Who are bamboo entrepreneurs?
- 2 What are their relative stakes?
- 3 Can their role be improved through existing policy measures? and
- 4 what are the alternative policies that can be thought of?

Enthusiasm for the micro-entrepreneur in Kerala's bamboo industry is a vexed question. Experiments in entrepreneurship development initiatives in India and abroad have amply demonstrated that the cultural context is, by far, the most important facet which decides the outcome of such initiatives. Many academic studies, and even policy documents, have tried to explain Kerala's development paradox (the Kerala Model) in terms of the limited supply of entrepreneurs.

The phenomenon of "limited supply" is more apparent than real. The basic issue is one of "entrepreneurship paradox" rather than of limited supply of entrepreneurs. The entrepreneurship paradox can be defined as a situation where undue influence of cultural factors act on the entrepreneur. Most Kerala entrepreneurs have a tendency 'of using informalism as a major business strategy. 'Such a behaviour is most visible in the labour market and the money market. The best examples are the heavy dependence on small labour size, female labour and preference for small size of investment. The paradox arises when such a behaviour coexists with a culture of formalism. Micro-entrepreneurs generally have a very low status in Kerala society and, naturally, they strive to keep up with the patterns of behaviour of a modern large entrepreneur. However, this urge for 'keeping up with the Joneses' does not get translated in his actual business life. Thus, while striving to reap the advantages of a culture of formalism, without really committing to it. Thus, as shown in Fig. 15, the entrepreneur remains the slave of a paradox, with all the associated constraints. On the one hand, he thinks that assimilation of a culture of formalism, in the form of high investment in overheads and other expenses of a demonstrative type raises his social status. On the other hand, he is rather inward-looking and reserved regarding expenditure on crucial items such as information, payment of taxes, R&D, etc.

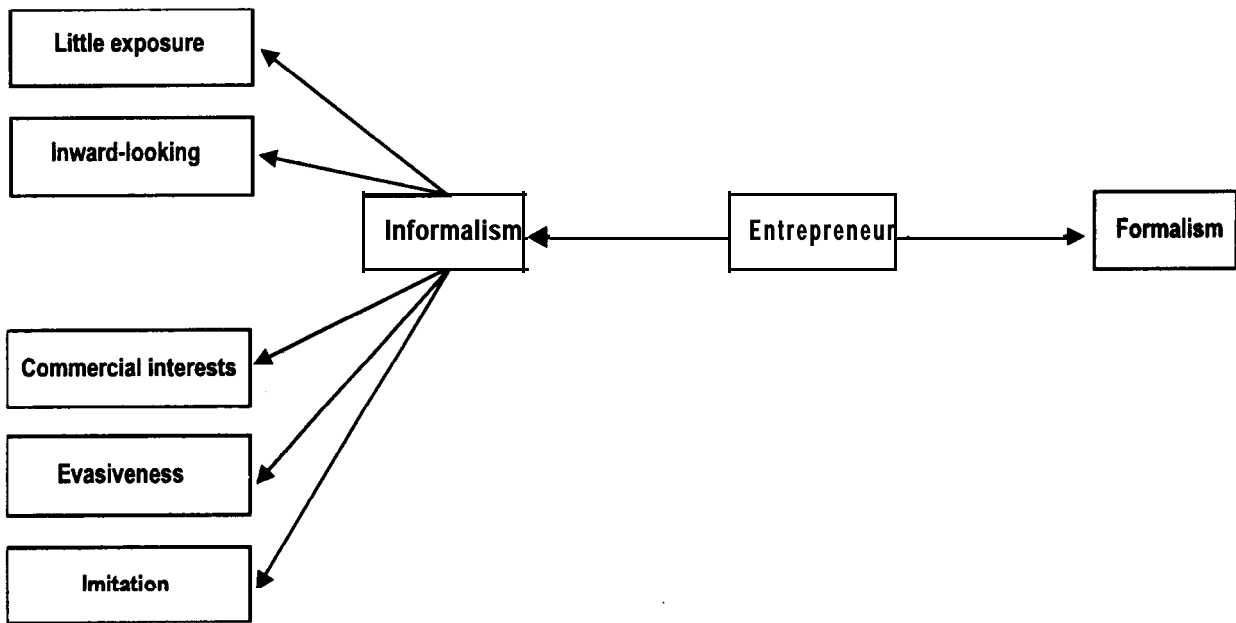


Fig. 15: The entrepreneurship paradox in Kerala

The paradox outlined above, is applicable not just in the case of individual entrepreneurs; the behaviour of governmental agencies, cooperatives and other development support agencies also belong to the same type. The younger generation of bamboo workers have lost much interest in their traditional occupation mainly because of the status factor. The cooperatives are unable to attract new members even if larger income and regular employment are assured. KSBC is unable to ensure improvement of the bamboo workers. All these indicate that there is need for alternative development strategies even to maintain the present level of activities in the bamboo industry.

## 7 ORGANIZATIONAL ISSUES

### **Official Rationale and Objective Reality**

The development of an industry, which is characteristically a network, requires substantial effort at the level of organization than of technology. The limits to modern technology arises mainly because of the employment-intensive nature of the industry as well as its location in interior areas. Better organization, however, can play a crucial role in enhancing productivity and employment in the bamboo industry.

The question of organization, like in the case of other rural industries, has received very little attention in bamboo industry as well. Organizational initiatives in the past suffered from a biased perception of organization. Moreover, the organizers decided what is good for the bamboo-working communities, rather than policies being evolved with the active cooperation of these communities.

In an economy based on private enterprise, development policies begin with the acceptance that entrepreneurs know what is good for them and that they are to take appropriate decisions. The role of public policy is to supplement the interests of individual entrepreneurs for the best interests of the community as a whole. In Kerala, policies were focused too much on the welfare aspect of bamboo development. This thrust was based on a misconception of the concept of welfare. Welfare becomes sustainable only when it takes a supplementary role. If welfarism takes the central stage, it gradually kills the initiative and drive of the entrepreneur. On the other hand, a dearth of welfare measures should not deprive entrepreneurs of a basic environment in which they can grow.

Each bamboo household is a micro-enterprise operating according to the principles of a business establishment. It goes through the processes of resource allocation, production and marketing of the end-product. In doing so, it will have to perform a few or many functions geared to ensure its sustainability. The presence of leading actors and market agents is inevitable for the smooth functioning of any industry. Where their role is highly exploitative, the task of the policy-maker is to evolve policies that influence the environment in a better way. In short, terms like "eliminating the middleman" do not convey much meaning in a functional sense. It becomes meaningful only when an alternative institutional mechanism of a comprehensive nature is introduced. Failure to have a proper substitution will only lead to a chaotic situation, as is the case of the bamboo industry in Kerala.

official policies in the past have not attempted to identify the entrepreneurial role in bamboo industry. The preoccupation of policy was largely to define the role of market agents. While intermediaries played a crucial role, which \*was largely exploitative, this role was a virtual reflection of a new market opportunity that emerged during the post-World War period. The introduction of bamboo as a commercially important item provided opportunities for exploitative labour relations. The government reacted to this situation by promoting cooperatives. While evolving a new organizational form, it is vital that both negative and positive aspects of the existing organizational form be fully understood in order to make offsetting

changes in the new organizational form. Unfortunately, this did not happen. The thrust was on the introduction of the new organizational form alone; the management aspects of the new organizational form was mostly ignored. This was the background which forced the cooperatives to function in the unsuitable, rigid bureaucratic administrative structure.

During the 1960s, when the commercial importance of bamboo products was adequately recognized, it was widely felt in policy circles. that cooperatives based on principles of self-help and mutual help was the answer to the exploitative linkages prevalent in the industry. A number of cooperatives were found during the 1960s; but most turned sick within a short period of time. Even with this significant failure, there were no initiatives taken at the policy-making level to look into the causes of such failure and to take remedial measures. It is surprising that bamboo cooperatives have been set up even lately in the face of the high level of sickness that continues to haunt them.

Cooperatives, which were viewed with great hope, became an almost totally inefficient institutional mechanism over a short time. It is important to note that, out of the total bamboo cooperatives registered in the State, only 10% are functioning now; even most of the functioning ones are chronically sick. It was at the failure of cooperatives that rationale for setting up KSBC was built upon. Unfortunately, homework was not done in this case too. It was rather a desperate effort at finding easy solutions to the mounting problems of the bamboo workers.

It is, therefore, not surprising that the formation of KSBC aggravated the process of disintegration of the cooperatives. While the cooperatives needed to find markets on their own and thus survive, KSBC umbrella brought to the industry a system of total dependency wherein the workers could tag on to it and survive without any marketing initiatives of their own. While cooperatives necessitated on the part of its member workers greater cooperation and cohesion for survival, KSBC created a semi-organized labour movement that could raise periodic demands involving substantial financial commitments. When KSBC was unable to cater to such demands on its own, liberal helpings from the public exchequer were relied upon. This, over a period of time, turned KSBC into a milch cow.

A major weakness of organizational innovations in the past has been that it was the government which decided what was good for the bamboo communities; not the communities themselves. It was such wrong moves that led to rigid development strategies.--For any government, which would like to assure the welfare of a particular section of society, various courses of action are open. They range from direct action to policies that stimulate or influence the behaviour of the members of that community.

“Eliminating the intermediaries” was a strategy which was perceived to be the correct one from the 1950s to the 1980s, but it failed in a number of sectors and activities. Some preconditions- market information, finance, location advantages, etc.-have to be fulfilled before intermediaries can be eliminated. Public interventions can, through indirect measures, influence the primary producers to achieve these. This ‘has not happened in the bamboo industry. For instance, neither the cooperatives nor KSBC has addressed the financial problems of microenterprises, and market information has not improved to any significant extent. These shortcomings are advantages to private traders, who move in quickly to fill the gap. Therefore, the process of eliminating intermediaries cannot be a simple process of outlawing

him. It should be achieved through a process which gradually eliminates the conditions on which they thrive, and reduces their profit margins to ensure greater returns for primary producers.

## **Alternative Strategies**

The core of a new approach to the development of bamboo industry in Kerala should not just be supply-side interventions, as was the case in the past. It should be more on organizational reforms with the active involvement of the bamboo communities. How to achieve this is a question that has to be answered at two levels: (1) at the level of macro-level policies; and (2) at the level of the profit-motivated entrepreneurs.

Under a situation where primary producers emerge as crucial decision-makers, the entrepreneurs know what is good for them. The role of the government is that of a facilitator; alternatively, welfare becomes a concern of both government and primary producers. Such a scenario requires some alternative institutional and operational strategies. Flexibility rather than rigidity should be the touchstone of the new form of organization.

The primary target of an alternative strategy should be information. Such information, both technical and managerial, should get translated into skills. Skills should then gradually get translated into effective organizational and managerial strategies with the full involvement of bamboo-working communities.

The vigorous thrust currently given by the Government of Kerala for the implementation of the Panchayati Raj Act, in letter and spirit, should provide the most ideal environment for the implementation of an alternative strategy, as indicated above. The new regime of Panchayati Raj envisages a transfer of 40% of the financial resources of the State governments into the hands of local self-governments. Such massive resource transfer offers considerable opportunities for the design and implementation of many innovative programs at the grassroot level.

## **Towards a bamboo village network**

It is against this background that Mathew and Joseph (1994) argued for the concept of Bamboo Village Network (BVN) (Fig. 16). Business networks and industrial districts have proved to be most effective in the development of small and medium enterprises in many countries. The Italian model has been cited to be highly successful in achieving geographical and temporal economies in small enterprises development. Subsequent studies in the context of countries like Germany, Spain and Denmark, by Pyke (1994) and others, have further demonstrated such success stories in the diverging economic and historical contexts of these countries. The story told by these successful models is that the relative advantages of small enterprises can be maximized and their constraints minimized through networking. Although the Italian Model has to be understood in the European cultural context, Kerala has many things to learn from it. A comparison of the two models is given in Table 22.

Table 22: A comparison of the Italian and Kerala models enterprise development

Parameter	Italian Model	Kerala Model
Character of government	High corruption, unstable government	Moderate corruption, unstable government
Strategy of business	Strengthening individual units through networks	Individual action
Role of government	Active developmental role of regional government	Passive role of regional government
Role of development support agencies	Close interaction with networks	Individual entrepreneurs at the receiving end
Entrepreneurship formation	High graduation 'of entrepreneurs from workers	Entrepreneurs with limited morale.

Most discussions on networking, however, have been focused on high-technology industries and industrial clusters. In such clusters and industries, many of the preconditions required for networking has already been achieved and therefore, quicker results are obtained. Some of these preconditions are, geographical contiguity, higher level of literacy and enlightenment among the entrepreneurs, and the presence of an overall u&an milieu. These preconditions facilitate the entrepreneurs to join together for exchange of capabilities. and ideas.

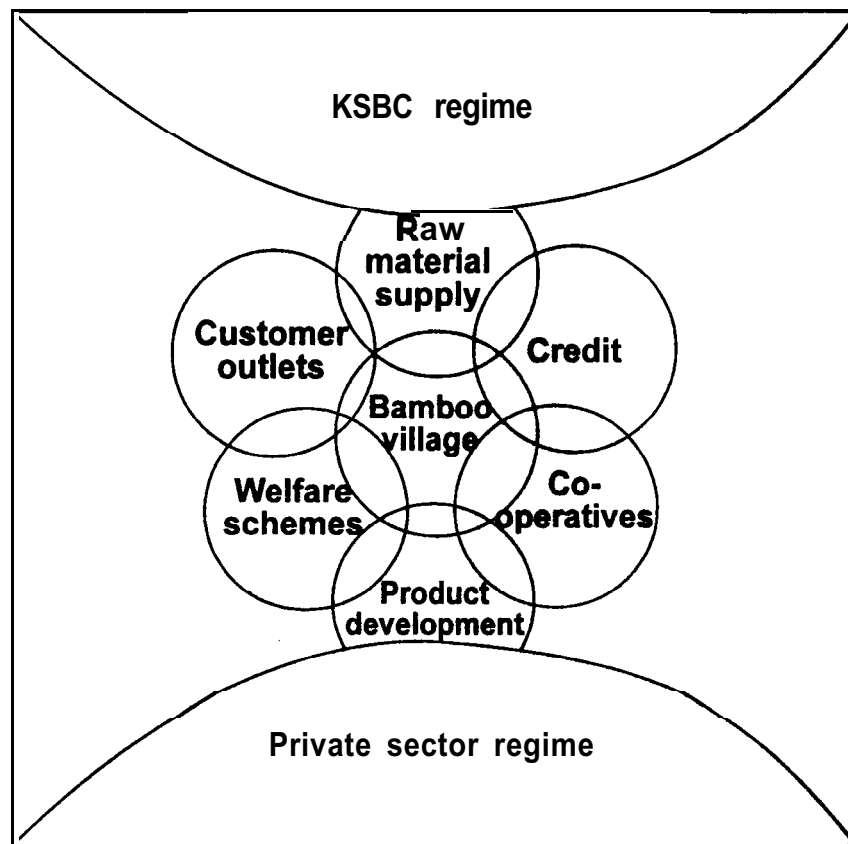


Fig. 16: Bamboo village network: an overview

There are several cultural factors that prevent the entrepreneurs from joining together (there are also factors such as caste, which facilitate some sort of solidarity). A major characteristic of many such industries has been developmental interventions thrust from outside. For example, cooperatives and public sector institutions evolve policies based on the mindset of the bureaucracy behind them.

The concept of a village must go beyond making the existing institutions more efficient, or providing more quantities of the same inputs. For instance, if the bamboo cooperatives become more efficient, they can significantly contribute to various social and economic objectives of bamboo development. However, structurally, the cooperatives will be doomed to continue as they are now. The people's perception on cooperation do not really reflect in cooperatives. Besides, the existing legal framework applicable to cooperatives will pressurize the members of the cooperatives to continue to operate in a particular fashion.

## **Planning as a serious exercise**

Basic steps for the implementation of a new strategy for the development of the bamboo industry, should be:

- 1 To accept micro-level planning as a serious exercise, actively involving the bamboo communities; and
- 2 A clear integration of micro-level plans with macro-planning exercise.

These will facilitate the planning process to capture the needs and aspirations of the bamboo communities.

The technical exercise of planning should start with an effort to identify local skills. However, this should be conceived as an exercise totally different from the run-of-the-mill surveys, most of which involves neither expertise nor beneficiary involvement.

A pioneering initiative by the Kerala Sastra Sahithya Parishad (KSSP) and the Centre for Earth Science Studies, Thiruvananthapuram, during 1994-95 evolved a model called "People's Resource Mapping". The aim of this initiative was a scientific mapping of all resources at the local level so that these may be used for local-planning.

The focus of resources-mapping has largely been on physical resources. It thus leads to the argument that if the resource chalked out are utilized in productive ventures, it will lead to enhancement of greater utilization of human resources. This assumption, however, is unrealistic. A major issue in planning is the modalities of organization of the process of production, which has to be performed by the entrepreneur. Unless entrepreneurial capabilities of the society grow over a period of time, the process of appropriate utilization of resources in the production process will not take place. Therefore, it is necessary to have an understanding of the skills embodied in human resources. Such skills, performed over the physical resources, lead to enhanced output and employment as they can be converted into clear entrepreneurial traits. A model in this context has been conceived and experimented by the Institute of Small Enterprises and Development (ISED), Cochin. This model, named Local-level Skill Mapping (LSM), was experimented by ISED in Kalady Panchayat, near Angamaly. It can as well be experimented, and subsequently implemented on a wider scale, in the Angamaly bamboo cluster.



The prelude to the process of evolving an alternative organizational framework should be a scientific investigation on the bamboo clusters, the opportunities and constraints of these clusters, and the perceptions, of the workers in these clusters. It should lead to a scientific mapping of skills and aptitudes of the members of these communities. A skill-mapping can lead to an estimate of the actual size of the clusters, as well as of the individual members and of their interests. Based on this understanding and with the active involvement of the communities, economic activities relevant for the communities can be designed and implemented. Thus, welfare measures can be a rallying point from where economic activities can be gradually shaped.

An examination of the bamboo policies, as on today, indicates two major concerns: welfare and economics. The concern for welfare can be translated into concrete policies strictly on the basis of what it is perceived to be and whom it is meant for. If not, efforts on that count are likely to become fruitless. The economic concern, though inalienable from the other requires considerable expertise to be converted into sound economic policies. Forward and backward linkages have to be properly nurtured to assure the maximum possible benefits to the community.

The spirit of decentralized decision-making demands a strong decentralized organizational framework, which has the capability and vision to execute programs at the village level. Production-cum-welfare societies is an ideal alternative institutional framework for the bamboo sector. These societies are a very advanced form of a self-help group, and their members can ensure active participation and cohesiveness among the bamboo communities. Issues of common concern are discussed with the active involvement of the members. These societies, are not subject to the constraints of a strong regulatory framework and hence, capable of taking appropriate decisions within themselves, in relation to similar groups. Conceptually, these societies are highly flexible in nature; such flexibility arising out of their strong democratic character.

Self-help groups are generally subject to conflicting interests, which, in many cases, get aggravated, leading to formal splits, operational lethargy, etc. Such conflicting interests often emerge from the varying perceptions on sharing material benefits. However, where the overall size and the relative share of material benefits are clear, reasons for conflicts may not be serious. This is an ideal setting for the implementation of welfare programs.

In any welfare program, three crucial aspects have to be stressed: (1) cost-effectiveness; (2) sustainability of the program; and (3) involvement. Unless the transaction costs involved in the implementation of a program is kept at a minimum level, such programs are likely to create a ratchet effect difficult to overcome. In the implementation of a welfare program, the involvement of the beneficiaries is also vital. It is this involvement which assures, to some extent, cost-effectiveness and sustainability. In the case of welfare programs of KSBC, all these three aspects are not satisfactory. The transaction costs are substantially high, the sustainability of welfare measures is doubtful, and the involvement of beneficiaries is just notional since labour unions alone can represent the labourers.

It is likely that the capabilities of individual production-cum-welfare societies are small. This constraint can be overcome through a polling of resources, exchange of ideas and mobilization of opinion. It is in this context that the concept of a bamboo village arises.

Table 23: Estimate of post-mechanization output and material use

Region	Slivering time(%)		Raw material (reeds)		output (ft <sup>2</sup> )		Commercial mat (ft <sup>2</sup> )		Special mat (ft <sup>2</sup> )	
	Pre-mech.	Post-mech.	Pre-mech.	Post-mech.	Pre-mech.	Post-mech.	Pre-mech.	Post-mech.	Pre-mech.	Post-mech.
Aryanadu	24.740	0.000	9.000	11.227	44.313	55.276	24.000	29.938	20.313	25.33
Kalady	24.812	0.000	8.300	19.012	75.000	93.609	75.000	50.699	0.000	42.910
Kuttampuzha	30.075	0.000	8.900	19.814	75.000	97.556	75.000	52.837	0.000	44.719
Vadattupara	33.173	0.000	5.300	12.983	48.000	63.923	48.000	18.698	0.000	29.302
<b>Averages</b>	28.200	0.000	7.875	15.759	55.500	38.043	60.578	77.591	5.078	35.567

Source: Mathew and Joseph (1994).

A village is an agglomeration of people having conflicting as well as common interests, who agree to cohabit on some basic norms of coexistence. In order to make sure that such coexistence does not lead to an-anarchic situation, powers are delegated to a body or an individual, on majority principle. Such a valid ground can be the logical foundation of a bamboo village also. Conceptually, it can be perceived as a geographical area, perhaps, involving a single village or parts of several villages joining together, based on some common features. Some of these common features are a cluster of bamboo families, contiguity with developmental institutions and the presence of the operation of majority principle in decision-making, at least at the elementary level. In such a village, homogeneous entities (production-cum-welfare societies) may be set up for administrative purposes. These different entities will join together to pursue common interests and oppose each other when their specific interests conflict. Such a network helps its members:

- 1 To tap the possibilities of common gain through collective action;
- 2 To fight common threats; and
- 3 To achieve new hights which cannot be individually achieved.

Such an organizational innovation brings in the need for exchange of ideas at a higher plane as well as the pooling of resources of a substantial size to implement programs for the common good.

## **Bamboo Village Network: Scope and Functions**

The idea of a bamboo village. presupposes bringing back the democratic impulses which vanished from the bamboo communities over a period of time. The setting in motion of a democratic process requires the opinion of the bamboo communities and of the craftsman, both on economic and welfare concerns.

### **Welfare programs,**

The production-cum-welfare societies are best suited for the implementation of welfare programs applicable for bamboo workers. Welfare programs can be successfully implemented only through principles of active involvement and accountability. If these two aspects are not present, or present inadequately, the outcomes are likely to be corruption and nepotism. Moreover, in order to assure sustainability, welfare programs need to be made cost-effective through serious monitoring. The demonstration and monitoring through bureaucracy often enhance transaction costs and thus, are self-defeating. Therefore, it is suggested that KSBC should progressively withdraw from its welfare function and hand it over to a production-cum-welfare society. This will facilitate the Corporation to concentrate more on product development and projects like the Bamboo Board Factory.

### **Resources management**

In the case of most forest-based raw materials, there has often been a limited approach to resource management. The focus had been too much on preventing illegal extraction of resources. However, the vigilance mechanism at two levels (by KSBC and the Forest Department) has proved too expensive. The process of resources regeneration has also been demonstrated to be biased because, in most cases, the attempt has been to plant bamboo in

forests which are already denuded through human intervention. On the other hand; attempts to cultivate bamboo in waste lands has also not been significant. Fortunately, the recent ODA-assisted Integrated Rural Bamboo Project has aroused some interest in managing bamboo resources in the homesteads.

Another crucial area, totally neglected in the past, is the enhancement of material productivity, which requires; a minimization of wastage during extraction of resources and manufacture of products; and recycling of waste. This is important because bamboo is considered to be one of the richest in biomass and can be utilized in a variety of applications.

## **Vertical and horizontal integration**

In a strategy of flexible specialization, both vertical and horizontal integration of enterprises have a crucial role to play. The idea of networking has generally been discussed in the content of horizontal integration. It assumes that an integrated system of similar enterprises having different capabilities can mutually benefit through horizontal integration. However, vertical integration becomes necessary when technologies of a higher order and wider market are to be considered Mathew and Joseph (1994) have demonstrated the feasibility and potential of integration in the bamboo industry in the context of mechanization of some activities and distribution of the gains within the Bamboo Village Network (Table 23). Their study showed that, besides enhancing productivity in the present level of activities, integration also has the potential to enhance material efficiency. They estimated the benefits of introduction of silvering machines and their implications on output and material efficiency.

## **Technology upgrading**

As already mentioned, the bamboo industry in Kerala has much latent potential of technology upgrading. However, a detailed discussion on the pros and cons of available technologies and their implications on the present level of income and employment has to take place. Hence, the decision regarding appropriateness of alternative technologies has to be made through production-cum-welfare societies. This is likely to be the ideal means 'because the cost of any change in the existing order of things. has to be borne by the community as a whole. The Bamboo Village Network and the production-cum-welfare societies are likely to be the best forum to handle such a situation effectively.

## 8 CONCLUSIONS AND RECOMMENDATIONS

### Conclusions

1 Attempts in the past, both in research and policy making, were to specify the role of intermediaries and to evolve appropriate strategies to eliminate them. But intermediaries are not purely an external influence that can be banned; they are part of the existing structure. The elimination of one structure needs its substitution by an appropriate alternative structure. How effectively such alternative structures can function, depends on the objective environment.

2 Two major organizational interventions in the bamboo sector of Kerala was the introduction of cooperatives and the involvement of public sector, both aimed to support the bamboo-working communities. As the bamboo worker became the centre of policy intervention, his role was used indirectly by vested interests to propagate private interests. The leading actors play a key role in perpetuating a less productive and exploitative system which does not cater to the long-term interest of bamboo households. A rapid process of alienation of the younger generation of bamboo workers from these traditional activities is taking place. The basic features of Angamaly cluster are: social stigma, high instability; a legal framework propagating a parallel/corrupt system of production and exchange, coexistence of the public sector with an illegal private sector, technological stagnancy and exploitative gender roles.

3 The perpetration of an inefficient and exploitative system has been facilitated by an excessive thrust on welfarism, which does not take into account the long-term objectives of sustainability and growth of the sector.

4 Before thinking of alternative development strategies for this industry, it is necessary to ensure the participation of the bamboo workers in such an initiative. Several anomalies present in the administration of this industry are largely because of the limited participation of bamboo workers.

5 Entrepreneur is the key agent and prime mover of the process of development. Considering the constrained role of the public sector and the cooperatives, policies, which immortalizes the private entrepreneur can have a damaging effect on the economy. The alternative institutional mechanisms introduced-cooperatives and the public sector involvement-gradually led to a weakening of the entrepreneurial base of the bamboo communities. The entrepreneur gradually turned into a slave of a large bureaucratic network with very little involvement in the development process. This lack of involvement has led to a serious alienation of bamboo workers from public sector enterprises meant for them.

6 A developmental approach to micro-enterprise is an integrated approach, where all important aspects-technology, employment, regional development, etc.-have to be taken into account. Such an approach is likely to lead to a sustainable development, which assures welfare of the maximum number of its participants. A focus exclusively on welfare cannot lead to a significant achievement of any economic objectives satisfactorily.

7 The core of a cost-effective development approach to this industry is to accept bamboo as a material for which a policy of sustainable development is vital. The major ingredients of such a policy are: (1) the effective conservation of the resources at various stages of cutting and processing; and (2) the development of skills among the craft persons, without uprooting them from their basic environment.

8 Technical skills can be translated into income opportunities only by a person having a real entrepreneurial aptitude. Therefore, it is necessary to identify the entrepreneurial potential in a regional context in most scientific terms. The usefulness of local-level skill mapping, a model developed by the Institute of Small Enterprises and Development and now being widely recognized in planning circles as a significant experiment in decentralized planning, could be explored to study the potential of bamboo communities in income and employment generation.

9 The concept of a Bamboo Village Network attempts to look at the welfare of the bamboo workers from a different perspective. It considers that welfare cannot be brought in by public policy alone. The mindset for ensuring the greatest welfare to the largest number of people should come from the bamboo communities themselves in a collective venture, welfare is likely to become a reality only if the cost of welfare is understood by each and all.

The Bamboo Village Network, a loose network of several production-cum-welfare societies in a cluster, is visualized as an alternative organizational initiative. The advantages of this alternative are: democratization of the administration of welfare, community management of resources, tapping the long-term advantages of vertical and horizontal integration of the industry, a realistic understanding of technology needs, development of appropriate technology, and the integration of women into the productive system based on a mutual understanding of gender roles.

10 Any development support in the form of funding depends upon the receptivity of the community which accepts it. The best means of assuring sustainable development is through the entrepreneurship route. In an economy where private initiatives have a crucial role, the perceptions of the entrepreneur act as a major signpost. The role of development intervention can only be supportive of this judgement.

11 The challenge of bamboo development is not simply lack of funds or programs, but of tailoring programs and funds to the local needs and to fill-up the missing links. Being an international network, INBAR's ability to influence local-level policies, is not likely to be substantial as these operate in the wider framework of the existing policies and strategies in the country. The need of the hour is for local voluntary action. However, such action by an NGO or a professional agency should be supported by networks like INBAR, which can provide the required expertise and exposure. Such support can also generate enthusiasm among governmental agencies and the financial institutions.

## **Recommendations**

Although micro-enterprise development has been widely discussed in academic and policy circles, the inherent dynamics of the development of this sector have not been explored much. Moreover, external involvement in these enterprises, especially relating

to support systems, has often been in isolation. In order to have a holistic view of what could be done from a policy angle, with active involvement of several development support agencies, it is desirable to undertake skill mapping on a wider scale in several bamboo clusters. It is suggested that the mapping be tried in three main bamboo clusters of Kerala: Angamaly, Thrissur and Aryanand.

2 The emerging trend towards decentralization of administration (Panchayati Raj) provides an ideal ground and rationale for setting up production-cum-welfare societies at the local-level, which could take up production and welfare activities relevant to bamboo communities. In Kerala, this is highly relevant and timely considering the people's planning methodology implemented for the formulation of the Ninth Five-Year Plan.

3 It is necessary to equip the production-cum-welfare societies with facilities for technical training, design development and a strong information network. It is possible to undertake a Training Needs Analysis at the local-level. Based on this, training programs presently undertaken by several agencies could be modified and better coordinated. Under a skill mapping exercise, these training activities can be better linked with credit programs. Neglected areas like design should find a major place in such programs.

4 It is necessary to develop the Bamboo Village Network (BVN) with official recognition so that it gets the status of a business association which could articulate the common interest of the bamboo community as a whole. Subsequently, the network could enter into several related areas such as technology development, marketing, etc. BVN should be designed in such a way as to make use of the potential of women to the maximum. Another important task is to improve, through training, the performance of existing women's enterprises.

5 Material conservation is an area which has been grossly neglected. It is necessary to undertake a series of studies on the material utilization pattern in several bamboo productlines, as well as among several bamboo clusters. Simultaneously, the potential for recycling of bamboo wastes also needs to be investigated.

6 Integrating credit with economic activities and local resource generation is an area hitherto neglected. It is necessary to undertake in-depth studies on the process of local resource generation, the role of development support systems in the process of resource generation and on the mismatch between the two.

7 Governmental initiatives so far have focused mostly on worker's skill upgrading, but without any program to stimulate a process of translation of technical skills into income opportunities. Training oriented towards integrating skills and entrepreneurial qualities is badly need. Funding agencies can assist in this area through funding of training programs.

8 As already noted, sickness among existing units (both private and cooperatives) is a major problem in this industry. Performance improvement programs under implementation should be tailored to the specific requirements of the bamboo industry.

9 The problems of bamboo industry in Kerala has to be discussed in the context of decentralization of planning in the state. The question as to why cooperatives failed in this

industry is likely to be a fertile area of research. Since the findings are likely to be applicable to other traditional industries as well, it should evoke considerable interest in policy circles.

10 The findings of studies such as these should be widely disseminated. Booklets in the regional language as well as video films are likely to reach the maximum number of people. Besides, seminars/workshops on the findings of these studies are also likely to be immensely useful.



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## ANNEXE

### Welfare Measures (as on 31 March 1996)

Item	Category	Rate
1 Bonus	All registered workers with minimum turnover of Rs. 3000/year	11.5%
2 Death compensation	All registered workers	Rs. 1000
3 Accident insurance (accidental death in forest)	All registered cutters	Rs. 50000
4 Medical reimbursement	All registered workers	
a. Serious injury		45% of the medical bill
b. Normal injury		20% of the medical bill
5 Educational subsidy	Children of all registered workers	
a. Class 10		Rs. 50
b. Pre-degree		Rs. 100
c. Graduation		Rs. 200
6 Marriage contribution	Daughters of all registered workers	Rs. 1200

Notes: (1) The rates are subject to decision by the Director Board of the Corporation, and are revised from time to time.  
(2) The Welfare Fund created is contributory in nature; the annual contribution of a worker is Rs. 20.