

Structure and Functioning of Bamboo Handicraft Industry in South India

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ABSTRACT OF THE PROJECT PROPOSAL

Project Number	KFRI/565/2009
Title	Structure and functioning of bamboo handicraft industry in south India
Objectives	<ol style="list-style-type: none">1. To identify and assess the problems of the handicraft industry2. To study the structure and functioning of the industry3. To sketch the socio-economic profile of the artisans4. To suggest strategies to improve the condition of the industry
Practical utility	The data generated can be used for the preparation of an action plan, aiming at the development of the handicraft industry of south India
Project period	May 2009 - March 2012
Funding agency	National Bamboo Mission, Government of India
Principal Investigators	Dr. V. Anitha ¹ Dr. P.K.Muraleedharan ² Dr. K.K.Seethalakshmi
Research Fellow	Mr. Aneesh P. Ram
¹ Dr. P.K.Muraleedharan was the Principal Investigator until his retirement in January 2011. ² Dr. K.K.Seethalakshmi co-investigator retired from service in May 2013.	

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ABSTRACT

The report synthesizes the findings of the state level studies on the structure and functioning of bamboo handicraft industry in south India carried out in the south Indian states of Kerala, Tamil Nadu, Karnataka, Andhra Pradesh and Goa. The study, with its several limitations, has however made a sincere attempt to understand the handicraft sector in south India. Although the project title is broad the study had the following specific objectives as of identifying and assessing the problems of the handicraft industry, study the structure and functioning of the industry, sketch the socioeconomic profile of the artisans and recommend strategies to improve the condition of the industry. Bamboo craft is one of the oldest of traditional cottage industries in south India. Traditional bamboo-based industries in south India are located in pockets where the socio-politically and economically weaker sections of the society are involved. Currently it is a highly vulnerable industry in south India when compared to other North- Eastern regions of India as far as technical progress and product diversity is concerned. The states of Karnataka, Tamil Nadu, Andhra Pradesh and Goa, among others, concentrate mainly in the production of traditional bamboo handicraft products. Lack of technological innovations along with inadequate policy support has resulted in the gradual but steady stagnation of this industry. The bamboo handicraft sector is under immense pressure as far as the artisans are concerned mainly due to its unorganized stature along with the additional inhibitors ,viz, poor development indicators and indices, low capital, poor exposure to new technologies, absence of market intelligence, presence of the formal and non-viable informal sector, lack of a proper institutional and organisational arrangements, significant policy support for the industrial upliftment, and adequate appropriate policy support for the traditional artisans in the south Indian states. The overall structure of bamboo based household enterprises depicts a formal, informal and private sector. The informal sector is a limiting factor to the optimal and sustainable development of the industry due to its unhindered growth. The small scale (micro enterprises) and cottage units in south India has low productive capacity mainly due to lack of mechanization. Tourism although an economically significant sector in the south Indian states, however, has not visibly benefited the traditional artisans and the marketing of traditional bamboo products continues to largely depend on exhibitions and trade fairs.

The cause and effect analysis for the stagnating handicraft industry performed for identifying the key problem of poor industrial development indicated the immediate causes as shortage of quality raw material, inferior processing technology employed, poor processing capacity, high input costs such as that of electricity/diesel, administrative

snags, such as, annual renewal of license and several other operational difficulties. Low domestic production, inadequate funds of the entrepreneurs and ineffective regulations act as causes for the deteriorating situation. Deficient institutional capabilities and ineffective policies have led to the poor operational environment. Low industrial outturn gives lower returns for the entrepreneurs, results in increased imports, promotes unemployment and increased product costs. The movement of bamboo from cottage to commercial industries, lacking strong marketing channels, is disturbing. There is an immediate need to frame necessary policies and strategies for the sustainable and optimal use of the resource, thereby sustaining livelihoods.

In spite of National and state level policies to address the major issues in handicraft sector the existence of the formal and informal sector makes the situation highly complex. All the benefits do not percolate down to the primary beneficiaries of the sector. The study puts forth strategies and action plan for sustainable and optimal utilisation and management of this sector emphasizing on; industry development, social development of the traditional artisans, sustainable development of resources, scientific support, marketing of bamboo and bamboo products, publicity and extension, Bamboo Information System and Institutional arrangements.

1. BACKGROUND

Bamboo handicraft sector is predominant in the Indian handicrafts and there are millions of people who depend on bamboo for part or all of their income. The co-existence of modern and traditional handcrafted production is one of the major features of Indian industrial scene. According to International Trade Centre, 1999 handcrafted items are artisans' products which are produced by artisans, either completely by hand or with the help of tools or even by mechanical means. However, the most substantial component of the finished products is the direct manual contribution of the artisans. The special nature of artisans' products is attributable to their distinctive features which make them '*utilitarian, aesthetic, artistic, creative, culturally attached, decorative, functional, traditional, religiously and socially symbolic and significant*'. Most of the features mentioned above can be applied to bamboo based industrial production in South India, which is carried out both in the traditional and non-traditional sectors. In the traditional sector, production of mats and baskets is the major activity undertaken by traditional artisans. Non-traditional sector mainly involves in the production of other handicraft products which are produced by traditional and non-traditional workers (members of all castes/ religions).

Bamboo Industry in India

- **Financial:** Market potential of Bamboo based products is estimated to be Rs.26,000/- crores by the year 2015.
- **Social :** Can help more than 5 million of our population across the poverty line if tapped optimally
- **Environmental:** minimizes CO₂ gases and generates up to 35 per cent more oxygen than equivalent stand of trees.

Producers acknowledge that the incomes generated from bamboo handicraft production are very low when compared to other employment opportunities. But Bamboo in India generates 432 million workdays annually. Some 25,000 bamboo- based industries provide employment to about 20 million people. Based on current trends, it is estimated that the bamboo industry in India could grow to \$5.6 billion (Rs 26,000 crore) by 2015. According to latest estimates, bamboo-based activities could easily generate 8.6 million additional jobs in India and thus enable 5.01 million families to cross the poverty line. Bamboo handicrafts as a market segment have emerged only in the recent past. According to a study conducted by the Indian Council for Research on International Economic Relations (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.

India's share as per the National Bamboo Mission in the global market is estimated to be US \$ 1 Billion and is expected to increase to US\$ 5.7 Billion (around 22800 crores) by 2015. Recent estimates place the bamboo market at about US \$12 Billion and the market is expected to double by 2015. The Indian Government is keen to support the development of bamboo industry and is aiming to garner nearly 27 per cent of the global market by 2015. Further, the industry is estimated to provide employment to nearly 8 million people (Anonymous, www.mpsidc.org). In India, especially in the south Indian region the bamboo handicrafts functions in the formal and informal sector and the major part of this industry is regulated by the informal cottage sectors. Artisans of the traditional sectors are the marginalized bamboo dependent (MBD) community who largely produce traditional items like mats, baskets and winnowers among others.

The potential of bamboo handicrafts has not been properly tapped; for instance, export of some of these items to other countries and proper marketing within the country have not received adequate attention. Intermediaries still play an important role in the industry which often hinders its progress. Profitability in the manufacturing of handicraft products is very low due to a variety of reasons. Technological progress is inadequate because of structural and financial constraints. The technical and financial capabilities of the new generation artisans to meet challenges in the industry in the context of globalization are less. Thus, the future of this industry depends on the resolution of several problems confronting it. This study is a modest attempt to examine the various socio-economic problems of bamboo handicraft industry in South Indian States of Kerala, Tamil Nadu, Karnataka, Andhra Pradesh and Goa and to suggest strategies for its optimal and sustainable development.

1.1. Objectives:

1. To identify and assess the problems of bamboo handicraft industry,
2. To study the structure and functioning of the industry,
3. To sketch the socioeconomic profile of the artisans, and
4. To suggest strategies to improve the condition of the industry.

1.2. Materials and Methods

The study relied on both primary and secondary sources of information for understanding the structure and function of the bamboo handicraft industry in the south Indian states of Kerala, Tamil Nadu, Karnataka, Andhra Pradesh and Goa. There are registered and unregistered bamboo handicraft units functioning in the different States under various institutions controlled by the state and central governments, key among them being the Directorate of Industries and Commerce, Office of the Handicraft Development Commissioner, Khadi and Village Industries Board, and Local self governments' (District and Block Panchayat). Simple random sampling method was adopted for the selection of sample size on the basis of available data from the respective concerned Departments.

In Kerala, both registered (77 units) and unregistered bamboo handicraft units were identified. Out of this total, 47 registered (organized) and 30 unregistered (unorganized) units are working in bamboo handicraft sector. The units are registered under the District Industries Centre, Khadi & Village Industries, Office of the Development Commissioner (Handicraft) and Local self government Offices. Of the 14 districts in Kerala, Thiruvananthapuram, Idukki, Ernakulam, Thrissur and Wayanad districts are dominant in this sector. Here, 25 per cent of samples were selected from the formal (12) and informal (8) sector and working participation of artisans in each unit and their socioeconomic status were assessed. In Tamil Nadu, the household units form the major functional unit of the bamboo handicraft sector. The reconnaissance revealed 1000 families engaged in the production of baskets, winnows, curtains, and other fancy decoration items. According to the list of Development Commissioner (Handicraft), there are three units registered under regional office of Handicraft Commissioner and out of these three, only one is functioning currently in Madurai district. Besides, these nine units are not registered under any formal structure. In Andhra Pradesh, traditional and non-traditional artisans function in the informal sector. The main locations of these artisans are *Warrangal*, *Khammam*, *Prakasam* and *Krishna* districts. Socioeconomic assessment coverage was restricted to these areas covering 10 per cent. Besides, the study also covered the major bamboo industrial units functioning here, i.e., the agarbathi production units in *Mancherial*, *Kaghaznagar* and *Bellampally Mandals* in the Adilabad District of the State. The study highlighted the traditional bamboo handicraft sector as dominant in Karnataka with approximately 800

families working in the sector in different districts and a very few engaged in the non-traditional handicraft production. A total of five units were selected for detailed studies and out of these five, one is registered under Office of the Development Commissioner (Handicraft) and other four is from the informal sector. The work participation and socioeconomic assessment was restricted to the number of regular artisans. In Goa, four units functioning in the bamboo handicraft sector are registered with the Goa Handicraft, Rural and Small Scale Industries Development Corporation. These units are situated in *Pernem*, *Valpoi*, *Bicholin* and *Porvorim* in North Goa district. These units and the regular artisans (30) formed the unit of study.

1.3. Limitations of the study: The major constraints confronted during primary data generation are the dominant presence of both the formal and informal sectors. It was highly difficult to generate information from the unregistered informal units functioning within each state which restricted data generation to the available ones. Furthermore, on the number of registered units under different governmental departments and organizations, many turned out as defunct or sick units. Besides, the functioning of the informal sector too has made it difficult to generate any systematic data that could be analyzed to make comparative assessment possible as well as reveal any major trends. Based on districts where maximum such units were functional samples were accordingly fixed in each State.

RESULTS AND DISCUSSIONS

2. THE BAMBOO HANDICRAFT INDUSTRY IN SOUTH INDIA

2.1. The resource base

Kerala: Majority of bamboos in Kerala are found at an elevation of 50-1500 m above sea level. *Ochlandra travancorica* or simply reeds is a species of bamboo found abundantly in the natural forests of Kerala. Bamboo resources are plentiful and spread over 4509.470 hectares of land in forest areas and it is 3.05 per cent of the total plantation of Kerala. Similarly, total out turn of bamboo and reeds are 1897907 and 19575186 numbers respectively. In Kerala forest and homestead, abundant bamboo resources growing and traditional extraction generate for different uses. Different species are available in the homesteads, such as, *Bambusa bambos*, *Bambusa vulgaris*, *Dendrocalamus strictus*, *Ochlandra* (reed), *Thyrsostachys oliveri* and *Pseudoxytenanthera stocksii*. Plantation in private lands is less in Kerala and more stocks are natural regeneration. According to Kerala State Bamboo Corporation (KSBC) around 13.61 millions numbers of culms (all species) are growing in the homestead in Kerala (Table 2.1.1).

Species	Bb	Bv	Ds	To	Reed	Ps	Total
No.of culms.	13003843	303835	16000	98440	188434	8360	13618912
(%)	(95.50)	(2.23)	(0.11)	(0.72)	(1.38)	(0.06)	(100)

Source: Kerala State Bamboo Corporation, Annual Report 2011

Bb - *Bambusa bambos*, Bv- *Bambusa vulgaris*, Ds- *Dendrocalamus strictus*, To- *Thyrsostachys oliveri*, Ps- *Pseudoxytenanthera stocksii*.

Bamboo mats woven from reeds is very popular in the state and so is bambooply, the resin bonded bamboo mats, which are a good substitute for wood/ plywood based applications. It plays an important role in the daily life of people; for house construction, agricultural tools and implements, as food material and weaponry, among others. Besides being a convenient source of cellulose for paper manufacture and rayon, it supports a number of traditional cottage industries. The State forest bamboo is supplied to the artisans through Kerala State Bamboo Corporation (KSBC) and to the pulp units through KFD. Unlike the rest of India, 67.3 per cent of the extracted bamboo in Kerala comes from home gardens rather than from the forest (Krishnankutty, 2004a).

Tamil Nadu: The natural bamboo resource of Tamil Nadu is meager and there are no bamboo depots under any Government Department. In the absence of government depots the major source of raw material for the MBDs is the private depots that are situated in the major cities and are often inaccessible. The major bamboo growing area in Tamil Nadu is the Cauvery river belt and major bamboo species used by the traditional bamboo dependents are *Bambusa bambos*, *Ochlandra Travancorica* (Table 2.1.2). The other important source is from Kerala from wherein bamboo and reed are imported. The import of bamboo from Kerala has increased from 33,340 MT in 1989-90 to 44, 197 in 2002-03 (Krishnankutty, 2004b).

No.	Species	Source
1	<i>Bambusa bambos</i>	Thanjavore, Kerala
2	Narrow bamboo	Forest/ river banks
3	<i>Bambusa nana</i>	River banks
4	<i>Ochlandra travancorica</i>	Kerala

Karnataka: Bamboo resources are in abundance in forest areas of Karnataka especially in Western Ghat and the resources are extracted and supplied under the control of Forest Department. Around 31479 hectares of land is used for bamboo plantation and 9652 hectares are raised during the last six years. Bamboo plantations are largely raised in *Shimoga, Dharwad, Kanara and Bellary* forest circle (Table 2.1.3).

Details of plantation	Up to 2003-04	During 2004-05	During 2005-06	During 2006-07	During 2007-08	During 2008-09	During 2009-10	Total
Bamboo	21827	1187	1937	2068	730	2000	1730	31479

Source: Karnataka Forest Department Annual Report - 2009-10.

Bamboo production in the State is in the forefront and various other activities were taken up for the development of Bamboo. As per the sanctioned retail sale rates for Medar (traditional community) and Non-Medar green bamboos are being supplied for their occupation subject to availability. During the current year in many areas bamboos have flowered and dried. Such flowered and dry bamboos are supplied to M/s. Mysore Paper Mills Ltd and also through tender dry bamboos are given to contractors. The number of

bamboos supplied to Medars and non Medars in the period under report is given the Table 2.1.4.

Sl. No.	Circle	Units	Medars	Organizations	Others	Total
1	Bangalore	Nos.	-	-	54	54
2	Belgaum	Nos.	-	-	318480	318480
3	Chikmangalur	Nos.	16146	1500	775	18421
4	Dharwad	Nos.	24578	14300	128486	167364
5	Kanara	Nos.	293062	-	497348	790410
6	Kodagu	Nos.	-	-	3781	3781
7	Mangalore	Nos.	-	1500	550	2050
8	Mysore	Nos.	1650	150	-	1800
9	Shimoga	Nos.	518672	12493	97953	629118
Total			854108	29943	1047427	1931478

Source: Karnataka Forest Department, Annual Report 2009-10,

Sufficient bamboo resources are available from the forest in Karnataka, but management inefficacy in the case of bamboo felling and distribution create scarcity of raw material. Most of the people depend on private bamboo depots for their bamboo requirements and the major source is from outside the state. The Karnataka Forest Department fell and distribute bamboo clump to the Medars, Buroods and other people through auction and retail sale. Woven bamboo is used in several sectors of which sericulture is quite important and compares with use in agricultural sector in South India. Silk industry in South India is a large user of bamboo next only to the pulping sector.

Andhra Pradesh: Bamboo occupies a place of economic prominence among the major economic forest products in the State. It covers over an area of 9,882 sq. km with a potential yield of 70,000 metric tons annually. It is also adopted by farmers as agro forestry species, planted along field bunds and in concentrated blocks. It has great

demand both in domestic and industrial sectors. Besides meeting the basic necessities of life i.e. food, shelter and clothing, it is also used in making baskets, fencing mats (thatties), toys, house hold articles and raw material in paper and pulpwood industries. Thus, it provides livelihood to millions of people. Bamboo occurs naturally in the forests and is also raised as a plantation crop. Most potential Bamboo forests are seen in Visakhapatnam, East Godavari, and West Godavari, Adilabad, Khammam, Prakasam and Kurnool districts. It also occurs to a limited extent in Srikakulam, Vizianagaram, Mahabubnagar, Karimnagar and Warangal districts (Table 2.1.5).

Sl. No.	Occurrence	Area (Sq.Kms)	Percentage
1	Scattered	4617.36	46.72
2	Dense	2768.72	28.02
3	Pure	2496.49	25.26
	Total	9882.57	100.00

Two important species of Bamboo occurring in the State of Andhra Pradesh are: *Dendrocalamus strictus* (Sadanam or solid bamboo) and *Bambusa bambos* (Mullem or hollow bamboo) (Table 2.1.6).

Species	Area (Sq km)
<i>Dendrocalamus strictus</i>	9126.38
<i>Bambusa bambos</i>	756.19
Total	9882.57

Besides the above species, *Dendrocalamus hamiltonii* (locally called as Jadi Veduru) is present in small patches in East Godavari, West Godavari, Khammam and Visakhapatnam districts. No other species of Bamboo is reported in the state.

The present pattern of utilization of Bamboos in Andhra Pradesh is primarily for paper and pulp industry, for handicrafts and domestic use (mostly by Buroods). Almost all the supplies for these two sectors are met by the Forest Department. The Vana Samrakshana Samithies (VSSs) though have a sizable production potential, are relatively new entrants into the scene and qualitatively and quantitatively are yet to make their presence felt. There is now a necessity to develop a supply chain commensurate with the value chain analysis of the existing and emerging utilities of Bamboo. It is in this regards that there is an urgent need not only to enhance quantitative production of Bamboos but also to

upgrade the quality of Bamboos. The existing Bamboo of *Dendrocalamus strictus* is suitable largely for pulp requirement of the paper industry and to meet the requirement of sticks for Agarabati Industry and for the fire crackers. Only about 25-30 per cent of this Bamboo is suitable for slicing for mat weaving industry and for making slats for further conversion to wood for furniture for use in any other applications.

The approach is to link all the players engaged in the production of bamboo with suitable consumers and marketers. Bamboo forms an excellent raw material for pulp in paper industries. Considering the quality and the quantity of bamboo requirement different supply strategies are suggested to meet the requirement of end users. Supply of Bamboo for the paper and pulp industry will be met from the forests managed by the forest department. To the extent of use of Bamboo mats for domestic use and limited industrial use, the Buroods will supply mats they weave from the bamboo supplied to them by the forest department at prefixed rates. The supply of bamboo raw material for the stick and strip based activity will be met from the forest managed by the VSS. The present quantity and quality of bamboos produced from the forests managed by the VSSs would be suitable to meet the requirement of the stick based industries like the Agarabathi industry and the fire cracker industry. For supply of bamboos slats for manufacturing wood for furniture applications, new species of bamboos will have to be cultivated and new cultivation practices will have to be standardized and adopted. The requirement for the handicrafts will be met partly by the broods from their supplies by the forest department and also directly by the forest department and from the bamboos grown from the forests of the VSSs. Bamboo is an important source of livelihood for the rural folk especially the Scheduled tribes, Scheduled castes and other poor traditional bamboo artisans. It is extensively used in construction of rural housing as posts, walls, roofing, fencing among others, and is often referred to as *poor man's timber*. The uses range from basket making, weaving mats to traditional implements, furniture, ply-bamboo panels, flooring and construction materials, medicines, food etc., Strength, straightness, lightness, fast rate of growth and ease in propagation makes bamboo an excellent wood substitute. In the past it used to form almost 40 per cent of the total raw material requirement of Paper Industry in Andhra Pradesh. However, with the change of technology and limited availability, hardwoods largely replaced bamboo.

Goa: Goa's forest cover is 82 per cent over hilly areas; hence management of forests is primarily guided by principles of soil conservation and improvement of tree cover. The Forest Department is involved in a) Afforestation of degraded forests, b) soil and water conservation, c) protection of forests, d) Meeting demands of local people, and e) social forestry on community lands. In case of bamboo production, private forest contribution is around 91 per cent, while that for government forest is around 9 per cent (Table 2.1.7).

Table 2.1.7. Bamboo Production from Government and Private Areas in Goa (M3) (During 1999-2000 to 2003-04)

Year	Bamboo (m3) from government forest	Bamboo (m3) from private forest
1999-2000	1800	129300
2000-01	16700	24300
2001-02	10000	132992
2002-03	13296	31100
2003-04	536	116144
2004-05	-	82645

Source : IRADE, Annual report 2008

3. STRUCTURE AND FUNCTION OF BAMBOO HANDICRAFT INDUSTRY IN SOUTH INDIA

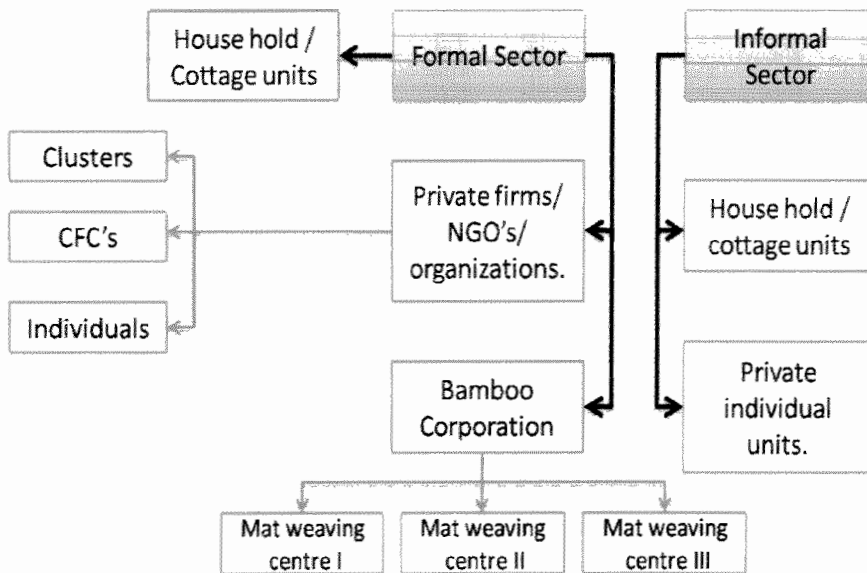
3.1. Formal and informal bamboo handicraft sector

The structure of bamboo handicraft industry depicts the existence of a formal and informal sector (Figure 3.1.1). The formal sector has three major components, i.e., the household units, private individual firms or organization and the bamboo corporation (only in Kerala). Traditional and non-traditional bamboo workers are included in first component and they are registered individually with the Office of Development Commissioner Handicrafts and they get personal Identity Card issued from this office. The identity card holders are selected for different regional exhibitions for marketing of their products and also to give others assistance like, in skill development training programs, health care and insurance facilities, among others.

Private individual firms or organizations form the second component of the formal sector owned by individuals, Non Government Office's (NGOs) and Co operative societies. They are registered under different government institutions according to their purpose/activity. These institutions are Directorate of Industries and Commerce, Office of the Development Commissioner

(Handicraft), Khadi & village Industries Board, under Co operative Society's Act and other Local Self government. The main benefits of registered units is the

Figure 3.1.1. Structure of Bamboo handicraft Industry in South India



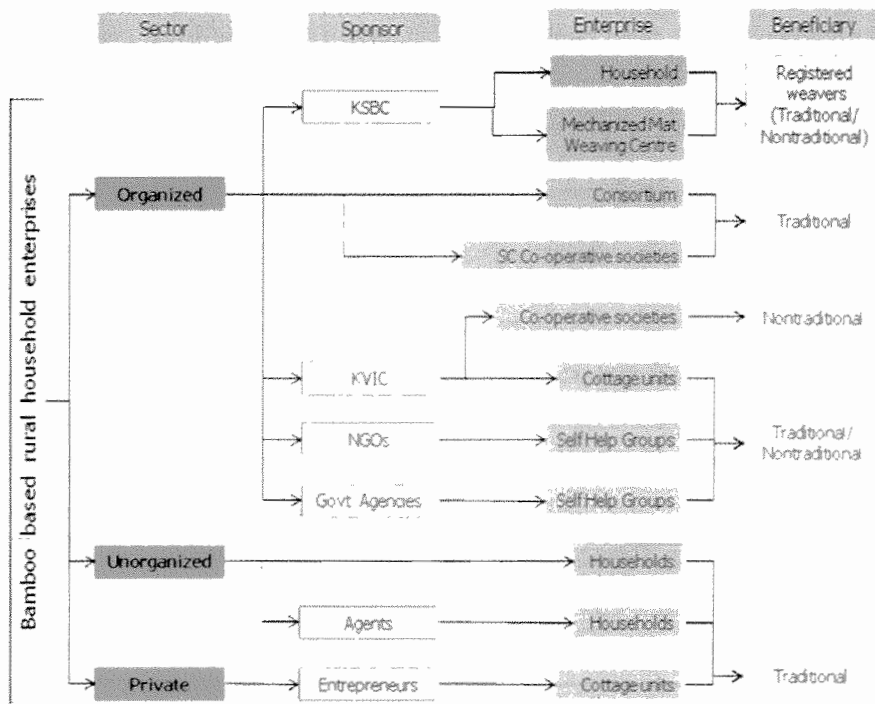
CFC- Common Facilitation Centre.

availability of infrastructure facilities, loans and other financial assistance from the banks and governments, marketing support, insurance coverage and health care facilities, among others. The Mat weaving centers of Kerala State Bamboo Corporation (KSBC) registered as Public Limited Company under the Companies Act in 1978 forms the third component in this sector. Kerala State Bamboo Corporation is one of the largest beneficiaries. About 3 million people in the state depend on reeds for income and employment. KSBC is having about 100 depots spread over Kerala. About 200 permanent staff is working in KSBC. About 3,500 local people are engaged for reed extraction and transport from the forests.

The informal sector has no structural frame work and authorized support from Government and other institutions. The traditional bamboo dependent people, individuals and individual private firm the key participants of this sector and they are found spread over all the states. In this sector the people produce bamboo products in their houses or a rented building and marketing is at their own risk. Formal sector is functioning with the help of different organizations and government institutions and they avail government assistance for their functioning. The structural formation of bamboo handicraft industry is same in all the states in south India and the entire handicraft sector comes under the direct control of the Office of the Development Commissioner (Handicraft) in India. According to the NCAER report (Census of Handicraft Artisans, 1993) among other medium of crafts, cane and bamboo accounts for 12.49 per cent of total handicraft artisans in India. This figure shows that very few people are engaged in the bamboo handicraft sector in south India. The informal sector is formed at a household and cottage level. These artisans have been exploited by the agents and merchants and there is no organizational support for their existence. The informal sector illustrates a scenario devoid of any institutional/organizational/ governmental support and is hence highly exploitative in nature.

The overall structure (Figure 3.1.2) of bamboo based household enterprise depicts an organized, unorganized and private sector with different government entities, non-government organizations and private enterprises. The beneficiaries being the registered weavers, traditional and non-traditional.

Figure 3.1.2. Key participants and beneficiaries of the bamboo rural enterprises

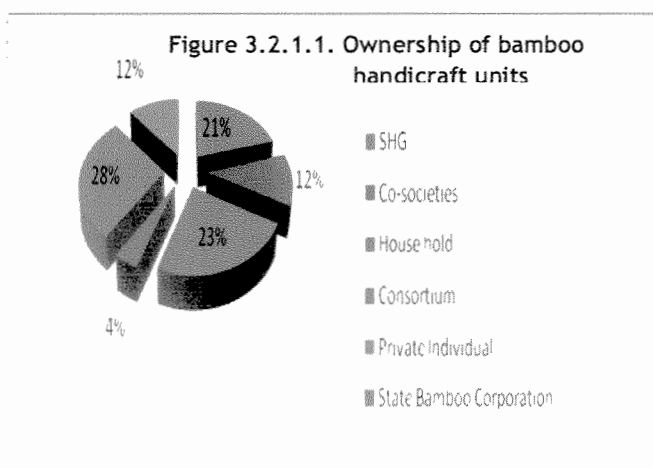


3.2. Functions of bamboo handicraft industry

3.2.1. Kerala: The small scale (micro enterprises) and cottage units in the State depict low productive capacity mainly due to lack of mechanization. Early 1980s saw the traditional artisans largely involved in the production of bamboo products for household and agriculture utility purpose and engaged in direct marketing via head load and local markets and directly to the end-user. Gradually they have shifted to bamboo fancy items seeking higher remuneration. 1995 onwards cluster model small scale units (SSI) were developed along with technological innovation and mechanization. The end of the 1990's saw small scale and cottage bamboo units full-fledged into the production of fancy and utility items.

Majority of the units in the State are traditional cottage SSI units (60 %) functioning with low investment and the remaining are micro enterprises. Similarly, ownership depicts

majority under private individuals and household unit's and the least under consortium (Figure 3.2.1.1).



Technological advancement and mechanization are less in the bamboo sector; approximately 60 per cent of the units are using simple tools and equipments in all stages of production and remaining use electric machineries like cutter, grinder, griller and sliver machines. Infrastructural facilities are devoid in almost all units and fixed capital investment is zero (60%) with working capital ranging from Rs. 5000 to 12.54 lakhs per annum.

Estimation of cost of production

The direct cost (raw material cost, chemicals and dyes, wages, direct consumables, utilities, and other miscellaneous cost) involved in the estimation of cost of production varies from product to product. The total cost of production of lampshade, oval basket and flower vase are Rs. 96.50, 66.50 and Rs.75 respectively and actual cost of bamboo is Rs.8 and Rs.4 respectively. For 1 sq.ft. of table mat and blinds the cost of production is Rs. 4.70 and Rs.36.70 respectively with the cost of raw material below Rs. 3 (Table 3.2.1.1). Utilities point of view electricity and others were required only in the case of blinds production. Considering the actual cost of raw material the profit margin is highest for blinds the production of which involves mechanization and comparatively low for table mat and lamp shade.

DIRECT COST	Lamp shade (H 6xD. 32 ")	Oval Basket (H4x d.30")	Flower vase (H.7.5xD.20")	Blinds(sq.ft) mechanized	Table mat
	Amount (Rs) Per unit (%)	Amount (Rs) Per unit (%)	Amount(Rs) Per unit (%)	Amount (Rs) Per sq.ft (%)	Amount (Rs) Per sq.ft (%)
Raw material (bamboo)	8.00(8.29)	4.00(6.02)	4.00(5.33)	3.00(8.17)	2.00
Chemicals& Dyes	0.40(.41)	0.20(.30)	0.20(.27)	0.70(1.91)	0.50
Wages	75.00(77.72)	50.00(75.19)	58.50(78)	12.00(32.70)	2.00
Direct consumables used in the production process	12.30(12.75)	11.90(17.89)	11.9(15.87)	9.00(24.52)	0.20
Utilities (electricity, water, etc.)	0	0	0	2.00(5.45)	0
Other costs	0.80(.83)	0.40(.60)	0.40(.53)	10.00(27.25)	0
Cost of production	96.50(100)	66.50(100)	75(100)	36.70(100)	4.70(100)
Gross profit margin	3.50	8.50	5.00	28.30	0.90
<i>Selling cost</i>	100.00	75.00	80.00	65.00	5.60
Primary data estimates					

Productive capacity and income generation

Income generation depicts artisans wage ranging from Rs.1875 to Rs. 9000 for the production of lamp shade, oval basket, flower vase, blinds and table mat per month (Table 3.2.1.2). The average working days calculated as 25 days per month and actual productivity of labour is two to three units on lampshade, oval basket and flower vase and 30 to 35.7 square feet on blinds and table mat per day. Therefore, among the five items, blinds making artisan earned more wages (Rs. 9000) than others. The productive capacity is high in case of blinds production because of mechanisation when compared to others.

Machineries' like cutter and spinning loom are used in the production of blinds and table mat. Productive capacity is average considering the time required for the production of these products, i.e., three to six hours.

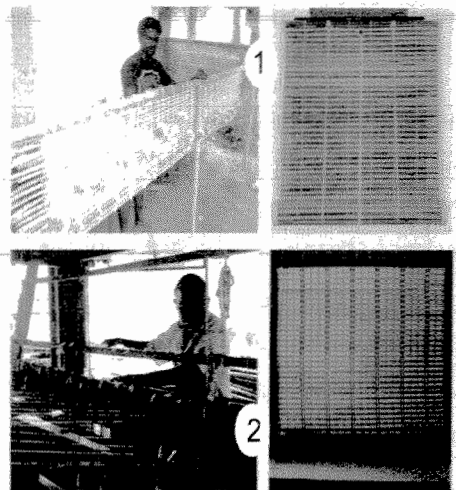
Products Pdn./cost	Lamp shade (h. 6xd.32 ")	Oval Basket (h. 4xd. 30")	Flower vase (h. 7.5xd. 20")	Blinds(sq.ft) mechanized	Table mat (sq.ft.)
Sq.ft (0.09m ²) produced per day	2	3	2	30	37.5
Production Time/unit (Hr.)	5.49	3.45	5.55	7.46	.35
No. of days Working/month	25	25	25	25	25
Production qty/ Month	50	75	50	750	937.5
Wages earned/month/ person	3750	3750	2925	9000	1875
Primary data estimates					

Mechanized and non-mechanized production of bamboo curtain

Bamboo curtain or window screen is one of the main products of this sector. Bamboo curtains are mainly used for interior decoration in houses and other luxury dwellings. Bamboo curtain making takes place in the formal and informal sectors. Two methods involved in the manufacture of curtain are the loom weaving and other is handmade (Plate 1).

Formal sector is advanced in its production when compared to the informal sector which uses traditional methods of production. Currently, reed is the main raw material in

Plate 1. Methods of curtain manufacturing



1. Hand made, 2.loom weaving

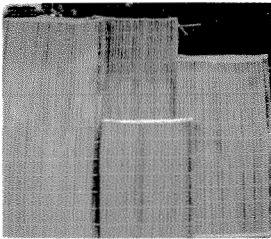
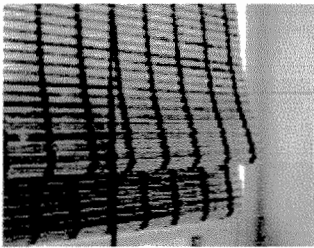
curtain making process and other materials like thread, metal rings, hook, wood reaper, paint, varnish and chemicals are used.

Traditional tools are used in the non mechanized units and number of modern machines and tools is used in mechanized units (Table 3.2.1.3). Therefore, the productive capacity and final output is different in these two sectors. The bamboo curtains of mechanized units maintain higher quality and finish than non-mechanized sector.

	Non- mechanized sector.	Mechanized sector
Tools used	Knife, hawk saw blade, scissors, and needle and meter tape.	Knife, hawk saw blade, scissors, hammer, chisel, and chisel hammer, screw driver, sand paper, and meter tape.
Machineries used	Nil	cutting machine, treatment machine, drying machine, handloom, stitching machine, gas lamp, compressor & painting gun
Production stages	<ol style="list-style-type: none"> 1. Bamboo cutting 2. Splitting and slivering 3. Treating and drying of slivers 4. Polishing of Slivers 5. Weaving of curtain 6. Edge cutting and framing 7. Painting 8. Side locking 	<ol style="list-style-type: none"> 1. Bamboo cutting 2. Splitting and slivering 3. Treating and drying of slivers 4. Polishing of Slivers 5. Weaving of curtain 6. Edge cutting and framing 7. Lamping 8. Painting 9. Side locking

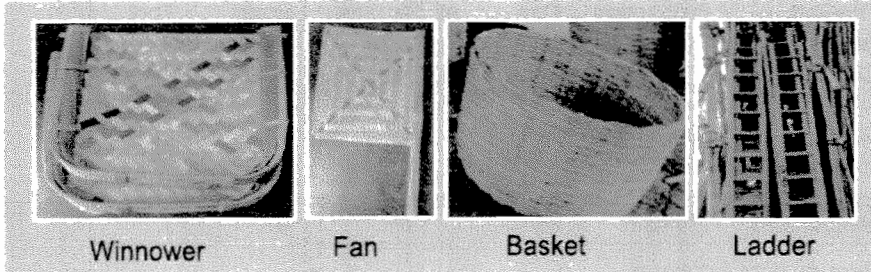
Mechanized and non-mechanized sectors are different in the production process; mechanized units produced premium items adding value with the use of costly materials (IDC,2001). Hence, the cost of production is higher than the non-mechanized units. The actual cost variation in the production of curtains is Rs.12 and price variation is Rs. 48 per sq.ft. in these two sectors and the profit margin of mechanized products is ten times that of non-mechanized products (Table 3.2.1.4). Mechanization thus increases the profit margin, productivity as a result of mass production, new designs and models as well as attains high quality and durability (Plate 2).

Product (sq.ft) Curtain	Production Qty/month	Cost of production (Rs.)	Selling rate (Rs.)	Profit margin (Rs.)	Tool used
Non-mechanized	600 sq.ft	13	17	4	1
Mechanized	750 sq ft	25	65	40	5
Primary data estimates					

Traditional bamboo curtain	Mechanized bamboo curtain
	
Price: Rs. 17 (sq Ft.)	Price: Rs. 65 (sq Ft.)

3.2.2. Tamil Nadu: Approximately 1000 families are working in informal sector of bamboo handicraft industry in Tamil Nadu and these are basically household units. They are traditional skilled artisans engaged in the production of bamboo items; numerous articles are produced in their units and marketed through local and other near places (Plate 3). Household articles like baskets, winnows, ladder, bamboo fans, mats, and window screen are their major products. Bamboo resource is sourced from natural areas and markets and price of one bamboo culm ranges between Rs 100-250 and that of reeds Rs.20-30. The wages of artisans depends upon their production and price of commodities and their actual earnings per day is approximately Rs. 100-200/-. Bamboo basket is the most moving items in Tamil Nadu and it is used for agriculture and household purpose. Different types and sizes of baskets are produced for different specific purposes, thus, its price too varies between Rs. 25- 250/-.

Plate 3. Household bamboo products (Tamil Nadu)



There are three units working in bamboo handicraft sector registered with the regional Office of the Development Commissioner (Handicraft) in *Salem* and *Nagarcoil*. These three units are individual owned units and not functioning on a regular basis. Contemporary and fancy items like bamboo tray, lampshade, flower baskets and bamboo bouquet are the most demanded products here. There is one modern and mechanized unit situated in *Madurai* district and it is also individual owned and registered. There are no permanent workers employed and

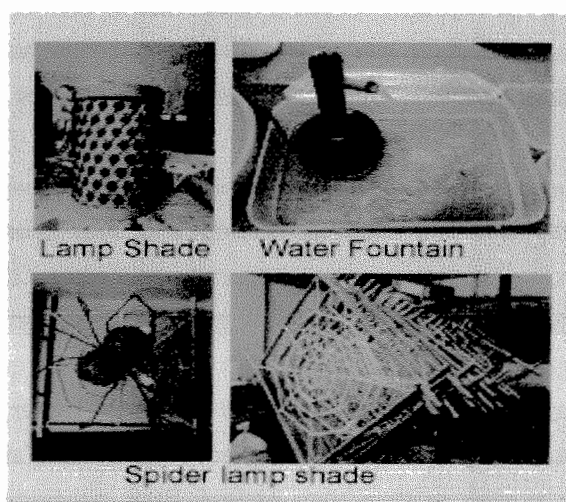
employment is generated as per orders placed. The daily wage of workers is Rs.150/- and around 5-10 people are employed for production. Bamboo, nanal (type of grass) and coconut shell are the main raw materials. Bamboo is procured from *Thanjavur* and *Gouri palayalam* and *nanal* from the river side of surrounding Panchayaths. Different types of machineries are used (Table 3.2.2.1).

Name of Machines	Use	Price(Rs.)
Drilling Machine(Big)	Punch & Hole making	7500
Drilling Machine(Small)	"	1500
Zig Zag machine	Shape cutting	22000
Sander Machine (1)	Polishing	1200
Sander Machine(2)	"	1800
Sander Machine(3)	"	4600
Cutting Machine	Cutting bamboo	20000
Bamboo tool Kit	Miscellaneous	5500
Primary data estimates		

All products (self designed) are premium in nature and capture wide markets within and outside the country (Plate 4). Design and production of items depends on the demand. All products are marketed and price is fixed with 50 per cent profit (Table 3.2.2.2).

Plate 4. Bamboo products in Tamil Nadu

Products	Price
Spider Lamp shade	350
Water fountain	350
Lamp shade	150
Lamp shade	400
Lamp shade	450
Bamboo wall clock	550
Table lamp	350
Primary data estimates	



3.2.3. Karnataka: The bamboo handicraft Industry in Karnataka like Kerala is functioning within a formal and informal system. The formal sector includes registered SSI units under the Office of the Development Commissioner (Handicraft) that obtain financial and other assistances for their existence. The informal sector, more traditional in nature is wide spread in the state and it includes skilled artisans who belong to the Meda community. Different types of bamboo products are being produced in the state and they include fancy, utility, furniture, and household items like baskets, ladder, winnows, fence and intermediary items, like agarbathi sticks and silk worm rearing tray. The raw bamboo is collected from the forest, local markets and also from outside the state. The informal bamboo handicraft industry in Karnataka generates more employment opportunities in the state.

The main limitation of this study is the number of units functioning in informal sector of which some are dormant; therefore, generating information has been very difficult. Some of the registered units are not functional and many of them are dormant after training periods. There are three registered SSIs functioning here in Karnataka under the Development Commissioner (Handicrafts) and these are situated in *Chitradurga*, *Dharwad* and *Mysore* districts. These units named as *Meda Industrial and Credit Cooperative Society, Hubli* in *Dharwad*, *Shivasharana Ketheswara Medar Kaigarika* in *Mysore* and

Bharath Cane and Bamboo Gramodaya Sangha in Chithradurga district. Of these, the last two are not regularly functioning because of lack of raw materials and finance. Here, the informal sector is more powerful than the formal sector but it lacks any kind of financial and other assistance from the government and other institutions.

Five units were taken for detailed study, out of which, four are functioning as cottage industry with individual ownership and they produce value added and intermediary products. Another one is functioning as *Credit Co Operative society* registered under Society Act, formed in 1944. It is a SSI unit sponsored by Office of the Development Commissioner (Handicrafts) and it produces different handicraft items and value added products. Infrastructure amenities are very meager in all units, and 80 per cent of the units lack fixed capital, i.e., lack of own building and land. They function from a rented outlet as well as from their houses. Basic necessities are lacking here and most of the units have no storage facilities, sales outlets, resting places and adequate safety measures. The annual working capital of these units is worked out (from their monthly statements) and around Rs. 4 to 6 lakhs is the actual working capital of the traditional household units and the bamboo cocoon tray making units have the working capital between Rs. 3 to 40 lakhs per annum. Similarly the production capacity of household units is Rs. 7 to 10 lakhs and small scale units is around Rs 20 to 70 lakhs per annum.

Bamboo is the main raw material in this sector procured largely from the Forest Department and local markets. There are a large number of bamboo markets functioning in the state and they collected bamboo from forest and neighboring states. Mainly three species, *Bambusa bambos*, *Dendrocalamus strictus* and *Oxytenanthera stocksii* are available from the forest. Total extraction of these three species from the forest is 58, 48,720 numbers in 2010 - 2011 and 43, 00,000 numbers that is comparatively more than that from 2009-2010. The numbers of green bamboo extracted from the forest in the last five years is depicted in Table 3.2.3.1 which indicates an increase. The price of the bamboo is different on the basis of its size and length. The Forest Department provided the raw material to the traditional people at reduced rates than others (Table 3.2.3.2).

Year	Total extraction (in numbers)
2006-2007	14,28,000
2007-2008	28,28,000
2008-2009	20,66,000
2009-2010	15,48,720
2010-2011	58,48,720

Source: Karnataka Forest Department, Annual Report (2011)

Size	Length	Rate (Meda)	Rate (others)
Big bamboo	18 Ft.	23	25
"	12-18 Ft.	18.50	20
Small Bamboo	18 Ft.	11.75	13
"	12-18Ft.	10.75	12

Source: Karnataka Forest Department, Annual Report (2010)

Production details of key products

The key handicraft products produced in Karnataka are: (i) silk worm rearing tray, (ii) bamboo curtain and (iii) show case items. Silk worm rearing tray and curtains are made by the traditional people which is basically a traditional skill for which no professional training is sought, while, they have availed training from the Development Commissioner (Handicrafts), Ministry of Textiles, Government of India, under the scheme of *Baba Saheb Ambedkar Hastshilp Vikas Yojana*, in the production of show case and fancy items.

Silk worm rearing tray: The production of rearing tray is mainly located in *Sidlaghatta* in Chikballapur district and Mathur in Mysore district.

Around eight cottage units are functioning in these places and all of them are same in structure and functions. Silk worm rearing tray is only used for sericulture and bamboo is more suitable material for its production. The main raw materials of silk worm rearing tray are bamboo mat, bamboo strips, stumps and coir. These raw materials are collected from the different parts of the state and outside the state. Bamboo mat came from Assam, bamboo strips from Andhra Pradesh, Coir from Kerala and bamboo stumps

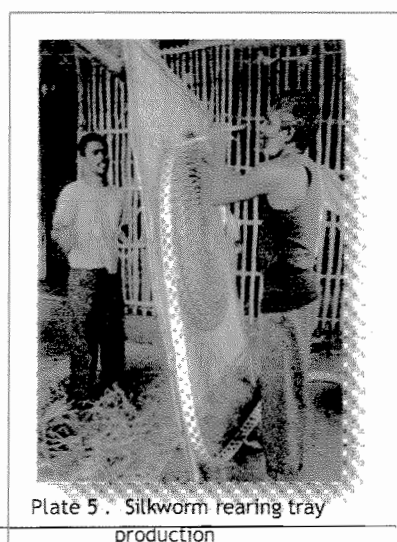


Plate 5 . Silkworm rearing tray production

from within the state.

Only assembling process takes place in the units and approximately fifteen minutes are required for the production of one tray which requires the labour of two workers (Plate 5). The fitting wage is Rs. 30 in each product and cost of bamboo stump, mat, bamboo strips and coir is Rs. 50,100,130 and 20 respectively. The actual selling price of one tray is Rs. 370- 400 and price varies on the basis of change in cost of raw materials. The total cost of production of one tray is Rs. 330/- and the entrepreneur accrues a profit in the range of Rs. 40-70/-. The units are devoid of appropriate infrastructural facilities and their main working area is a semi finished cottage. The artisans are working in an unhealthy atmosphere.

Bamboo Curtain making units: Large numbers of traditional bamboo curtain making units are identified in the urban areas of Karnataka state especially in Bangalore district (Plate 6). In recent years the demand of bamboo curtains has increased manifold in urban areas and some of the traditional people have changed their production from household articles to the production of bamboo curtains. The price and cost of one sq.ft. of bamboo curtains are given in Table 3.2.3.3, and the major cost incurred is the labour cost.

Plate 6 . Traditional artisan making curtain

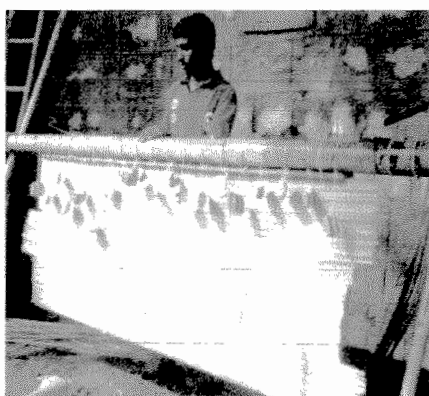


Table 3.2.3.3. Production cost of bamboo curtain/ sq.ft.

Materials	Cost (Rs.) /Sq.Ft.
Bamboo	10
Nylon Thread(10gm)	5
Labour wage	15
Total	30
Price	40
Profit	10
Primary data estimates	

Bamboo slivers and thread are the only raw materials for the production of bamboo curtains and the artisans procure bamboo at the rate of Rs. 250 for 10 Ft. Two workers are needed for production process and they get Rs.7.50 per sq.ft and a total wage of is Rs. 15 per sq.ft.

Fancy and utility articles: There are three units functioning in Karnataka state registered under Office of the Development Commissioner (Handicraft). These units are controlled by the *Sahakarana sangha*'s related in Meda community and is situated in Mysore, Chitradurga and Dharwad districts. The artisans, i.e., the traditional bamboo workers are members of the *sahakarana sangha*. The Office of the Development Commissioner (Handicrafts) distribute identity card to the members of this *Sangha* and also provides financial assistance for training in bamboo handicraft products. This Office arranges three and five months training programs in three districts separately and around 345 peoples have been promoted in bamboo handicraft production. The DCH and Meda Industrial & Credit Co-operative Society were jointly organized 15 days workshop at Hubli and 30 artisans from Meda community benefited from this. The main aim of this training is to encourage of semi skilled artisans in bamboo handicraft. They are exposed to new designs and methods and this is improvising their capability and helping them in producing value added products. Unfortunately these three units are not regularly functioning at present and the trained artisans are working separately in their households. The reasons are lack of raw materials, lack of financial follow up from the government institutions, unavailable market sources, inertia, and attitudinal lethargy, among others.

Price and cost of selected bamboo products: In the training periods lot of bamboo products are produced by the artisans and are marketed through exhibitions. In the production periods, the cost of production of these products was calculated (Table 3.2.3.4). The price varies for different products depending on the cost of production and market demand.

Products	Raw material cost	Wage	Total	Price	Profit margin (10%)
Lamp shade	150	100	250	275	25
Flower vase	70	150	220	242	22
Table mat	50	50	100	110	10
Pen holder	30	30	60	66	6
Fruit tray	60	70	130	143	13

Primary data estimates

3.2.4. Andhra Pradesh: Traditional bamboo dependent people are the beneficiaries of the bamboo handicraft sector of this state. Approximately 95 per cent of the bamboo artisans belonging to the traditional bamboo sector are engaged in the production of modern articles. Backward communities like Scheduled caste and Scheduled Tribes are

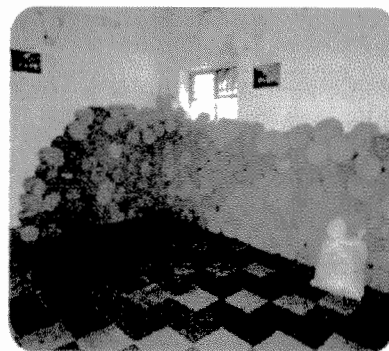
fully reliant on bamboo handicraft production thus their livelihood options are completely related to bamboo sector. The formal and informal sectors are functional in Andhra Pradesh too.

Bamboo based livelihood activities in Andhra are mainly three, namely, (i) production of household articles, (ii) bamboo agarbathi stick making and (iii) production of decorative and fancy articles. In rural areas majority of the traditional people produce household utility articles and market it through their bazaars and shops. The main household items produced include baskets, winnows, bamboo fan, ladder, and mat among others and sometimes they produce bamboo fence and scaffolding stand.

In the modern bamboo handicraft, they also produce decorative and fancy items through training and skill developments. Two Common Enterprise Groups (CEGs) are formed under this activity in Bellampally Forest division and members are given training for three months in preparation of bamboo decorative articles. The CEG members conduct regular exhibition in adjoining districts of Nizamabad and Karimnagar. Training is also imparted to the members on Bamboo furniture by engaging the master craftsman from Tripura. Training programs are organized by the Office of Development commissioner (Handicrafts) in bamboo decorative items through their regional office Vijayavada. Around Rs. 8 lakhs has been spend for training and designing of handicraft items since on 2001 onwards (Karnataka Forest Dept., 2010). Training programs were conducted by NGOs and Grant is allowed under the scheme of Baba Saheb Ambedkar Hatsshilp Vikas Yojana. Around 5 per cent of decorative items were produced in Andhra Pradesh and it is marketed through exhibitions and trade fares. Follow up activities are not provided by this office due to lack of working capital. The workers lack assets, hence banks do not provide loans and other finance. The modern and decorative items do not have proper markets and they depend on exhibitions and trade fares. Another drawback of the production of decorative items is lack of suitable bamboo species and therefore, the production of these items is limited.

Bamboo Stick making: The agarbathi stick making is another important livelihood activity in formal sector. This is mainly located in Adilabad district in Andhra Pradesh and Andhra Pradesh Community Forest Management (APCFM) project was implemented by Forest Department for improving rural livelihood and the Forest Department started Common Facilitation and Livelihood Centers in *Madaram, Tiryani* and *Asifabad* and it is managed by the VSSs members, presently they are involved in marketing of the products of VSS clusters. The CFCs

Plate 7. Bamboo Incense sticks.



receive the agarbathi sticks (Plate 7) from the clusters and assist in marketing. VSS members belonging to Kolam, Naikpod and Gond are the main target group and they are under Scheduled Tribes. The bamboo is available from the forest areas under management of VSS and bamboo culms are supplied by the Forest Department through their bamboo depots. The value addition and income generation activity has been initiated during September 2005. A total of 2335 families are involved in Agarbathi stick making in 78 VSS in Bellampally division. As on date a total quantity of 387.89 MTs is supplied and an income of Rs. 83.794 lakhs is generated with supply of Agarbathi sticks to the VSS through value addition.

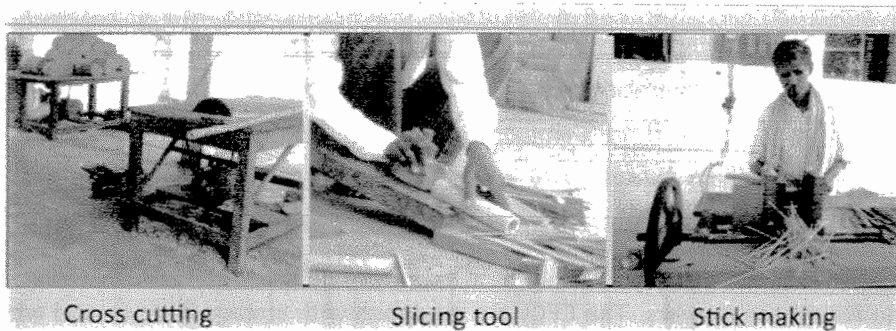
The bamboo-based agarbatti production system is functioning in *Mancherial, Kaghaznagar* and *Bellampally Mandals* in Adilabad District, supporting the Gonds through the VSSs. The value addition and income generation activity has been started during September 2005. In Bellampally division there are three Common Facilitation Centers (Tiryani, Asifabad and Bellampally) are functioning in Agarbathi sector and thirty manufacturing clusters are under this CFC. The CFCs are registered under the Companies Act Part IX A 1956 and they have adequate infrastructure facilities. The CFCs are located at a central place easily approachable for all the clusters. The CFCs are equipped with storage godown and with a technically trained person.

Common Facilitation Centre- Tiryani and Asifabad: Tiryani CFC is located in Bellampally Forest Division, 35 VSS are working under the Community Forest Management and the VSS members belonging to Kolam, Naikpod and Gond tribes. In Tiryani CFC have 82 Common

Entrepreneurs Group (CEG) and 10 clusters are functioning and total strength of members is 1189. Asifabad is a sub division of Bellampally Forest Division, 675 members are working under 45 CEGs in seven clusters. The members of the clusters consider that the Agarbathi stick making is a supplementary source and their main livelihood is agriculture. The average working days are 20 and each person produce 200 kg sticks and their average income is Rs.2000/- per month. The local wage rate is Rs.165 per day in this area and comparatively it is better than stick making. The agarbathi sticks are marketing to the Ambica Aroma Industries, Eluru in Andra Pradesh and they get Rs.30 per kg. The age group of the working community is in between 13-15 and above 60 years.

Production details of agarbathi sticks : Production of agarbathi sticks involves procurement of bamboo, cross cutting, slivering or slicing, stick making, drying and polishing. The raw bamboo supplied by the VSS members through Forest Department at Rs 5 per one. In the production stage, the remuneration of different stages are rate of cross cutting is Rs 1 per one pole, Rs. 3/Kg for slivering or slicing and Rs. 10/Kg for stick making. Different tools and machines are used for the production process that is, cross cutting machine, stick making machine and slicing tool. The fund is raised from the clusters for purchasing machines and tools with support of Forest Department. Different machines used for the stick making process as shown below (Plate 8).

Plate 8



The production capacity of clusters in Tiryani and Asifabad has indicated an increase from the period of 2006 to 2009 on account of mechanization of clusters and work participation of labours. In the starting year (2005-06) 15970 kg sticks were produced and Rs. 3.19 lakhs income was generated in Tiryani sub division and 14520 kg sticks and Rs. 2.61 lakhs income

was generated in Asifabad division. The quantity of production and income increased from year to year in the two sub divisions and Rs.63.53 lakhs of total income crated from the agarbathi stick making industry during the last four year (Table 3.2.4.1).

Year	Tiryani		Asifabad	
	Production (Kg.)	Income (Rs.)	Production (Kg.)	Income (Rs.)
2005-06	15970	319400	14520	261360
2006-07	37564	616452	29877	597540
2007-08	69752	1615852	57975	1333425
2008-09	25360	608640	40053	1001325
Total	148646	3160344	142425	3193650

Source: CFC Tiryani and Asifabad, Annual Reports 2005 -2008.

Cost analysis of agarbathi stick production : The total cost of one metric tonne of agarbathi sticks production is Rs. 24500 and sales revenue is Rs. 26000 (Table 3.2.4.2).

Labour is the main cost incurred in the cost of production. Approximately 1000 numbers of bamboo are used in the production of one metric tonne sticks and its cost is Rs. 6000. Manual production increases the cost of production as well as lowers productivity. The raw bamboo supplied by the Forest Department through VSS members is sourced from the forests and distributed to the units. The price of bamboo depends on the cutting and transportation charge, which causes variations in price

	Cost/ MT (Rs)
Raw Bamboo	6000
Cutting	1000
Slivering	3000
Making	10000
Other	4500
Total	24500
Sales revenue	26000
Profit	1500
Primary data estimates	

Value addition on Agarbathi sticks making: With one single bamboo pole 1 kg sticks on an average are produced, i.e., 2.50 MTs of bamboo (1000 nos) 1 MT of sticks can be

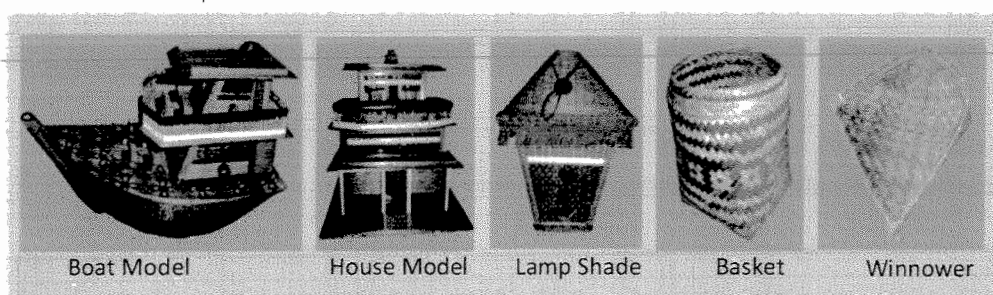
produced. The value addition ratio is about 1:2, that is total returns on value addition is Rs. 27,260 from the 1 MT of agarbathi stick production (Table 3.4.4.3). According to this value addition ratio, returns on value addition are two times more of its input costs in the case of agarbathi stick production and this ensures profit. Furthermore, the cost benefit ratio is 288.66 and this indicates that agarbathi production is economically viable.

Input cost for production of 1 MT. Sticks		Value Addition	
Cost of 2.50 MTs. Of bamboo (@ Rs. 6/- per bamboo)	Rs. 6000/-	Returns from 1 MT of Agarbathi sticks	Rs. 26,000/-
Recurring Expenditure	Rs. 4500/-	Bamboo waste cut ends 0.70MTs. per 2.50 MTs of bamboo used(@1800/- per MT)	Rs.1260/-
Total Input cost	Rs. 10500/-	Total returns on value addition	Rs. 27,260/-
Primary data estimates			

3.4.5. Goa: Goa Handicrafts, Rural and Small Scale Industries Development Corporation (GHRSSIDC) established in 1980 envisaged to bring to the fore the creativity of the artisans of Goa. The handicraft emporia set up by GHRSSIDC "Aparant" showcases the attractive range of Goan handicraft. They promote the artisans of terracotta, brassware, shell craft, wood craft, cane and bamboo among others. Being a tourism state demand for craft works is comparatively higher than other states. The GHRSSIDC facilitates artisans to market their own art works at different parts and outside of Goa. They have 12 emporias at *Panaji, Vasco, Margao, Mapusa, Calangute, Bicholim, and New Delhi*. There are four units working in the bamboo handicraft sector which are cottage units producing different bamboo handicraft products in North Goa district. These four units are registered with GHRSSIDC and their products are marketed through their emporiums. The bamboo handicraft units are very few and a large number of artisans have withdrawn from this sector because of lack of suitable raw materials. Their major source is the home gardens and forest areas. The four units are situated at *Porvorim, Bicholim, Pernem and Valpoi* in North Goa district. The traditional artisans are the Maratha and Mahar community and they produce conventional and modern items. Some have availed training in making modern bamboo items from the GHRSSIDC.

Production Details of bamboo products: There are traditional and non-traditional artisans working in the bamboo handicraft sector and they produce both conventional and modern items. Raw material is sourced from the home gardens as well as from forest and the price of one bamboo ranges between Rs. 25 to Rs. 100 depending on its length and size. Fancy and show case items such as, lamp shade, flower vase, house models and boat models and other household utility articles also produced like baskets, mats and winnows are the main products produced (Plate 9). Traditional and common tools are used for different stages of production purpose and there are no mechanized units. Trained artisans and traditional people are engaged in the bamboo sector with training obtained from the Office of the Development commissioner (Handicrafts). The main market source of bamboo products are GHRSSIDC emporiums, exhibitions and local markets.

Plate 9. Bamboo products in



Productivity and income generation of artisans: Production here is high labour intensive. In the case of boat and house model making, around 8 hours were needed, as well as lamp shade takes 4 hours and the production quantity of these products is one and two per day respectively. In the case of baskets, flower basket and winnows, the average production capacity is 5 to 8 per day. Profit margin is too low in these products because of high cost of production and low demand of products in markets. The cost of production includes the raw materials cost, wage rate, cost of transportation as well as cost of tools. The price of boat and house model and basket is Rs. 330, Rs. 350 and Rs.150 respectively and its profit margin is Rs. 50 in each one (Table 3.2.5.1). The average wage rate of artisans is Rs. 80 - 100 per day and it is lower than other sectors, thereby encountering threat to their livelihood.

Table 3.2.5.1. Production details of selected bamboo products

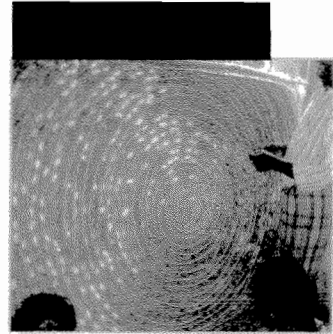
Products	No. of Labour used	Tools used	Time for one unit production	Quantity produced / day	Cost of production	Price	Profit margin
Lamp shade	1	Big & Small Knife, Scissors and Hawk saw	4 hours	2	125	150	25
Flower Basket	1	Big & Small Knife, Scissors and Hawk saw	1 hour	8	20	30	10
House model	1	Big & Small Knife, Scissors and Hawk saw	8 Hours	1	300	350	50
Boat model	1	Big & Small Knife, Scissors and Hawk saw	8 Hours	1	280	330	50
Big Basket	1	Big & Small Knife,	3 hours	3	100	150	50
Winnow	1	Big & Small Knife,	2 hours	4	50	70	20
Primary data estimates							

3.3. Bamboo handicraft products and market dynamics

Product categorization: Bamboo handicraft products in south India can be categorized into value added products, household utility items and intermediary products. *Value added products* are bamboo blinds, lamp shades, flower vase, bamboo tray, among others; *household utility items* are bamboo baskets, winnow, mat, and Kitchen wears and *intermediary products* include incense sticks, bamboo rearing trays and bamboo mats. These products are produced in all the south Indian states in varying numbers depending on the market demand. Approximately, around 10 per cent of the production constitutes value-added products in Goa, Karnataka, Andhra Pradesh and Tamil Nadu and they largely concentrate in the production of household utility products. Kerala on the other hand produces around 500 value added items along with household and intermediary products. In Andhra Pradesh, Karnataka and Tamil Nadu, most of the bamboo dependent people are involved in the production of household or traditional items which is largely marketed through local markets. Intermediary products, such as, incense sticks, bamboo rearing trays and mats are produced in Andhra Pradesh, Karnataka and Kerala and these items fetch markets within and outside the state.

Product linkages to other sectors: Bamboo and its products have various uses and this primary industry is linked to the other secondary and tertiary sectors of the economy. The main linkages of the handicraft sector in south India are with the agriculture sector, industry sector and tourism sector. Value added and finished products are demanded in the tourism sector and the production of intermediary products are largely linked to the agriculture and industrial sectors.

Agriculture sector : Bamboo baskets is the main item used in the agriculture sector and it is used for packing vegetables, fruits and flowers from the farms, betel leaves and sea food containers. The price of the packing baskets varies in each state in the range from Rs. 20 - 75. Silk worm rearing tray is another important bamboo product (Plate 10) used in the sericulture and these items are produced and marketed in the different places in Karnataka. The trays are largely fabricated near the farm centres, Chintamani in Kolar district, Vijayapura and Kanakapura in Bangalore rural district, Maddur and Malavalli in Mandya district, Sira in Tumkur district. The annual production of larger bamboo traders varies from 3000 to 10,000 trays and 2000 to 6000 per annum. Some manufacturers and traders in the traditional mulberry zone are major suppliers of trays. The market price varies from Rs.40/- to Rs.60/- each depending on size, quality and season.



Industrial sector: Bamboo products are used in the production of intermediary products in the industrial sector and the key product in south India is the incense stick and bamboo mat. Incense sticks used for the production of agarbathi stick and bamboo mat for the production of bamboo ply. The major part of the incense sticks are produced in Andhra Pradesh. The Clusters/ CFCs have supplied Agarbathi sticks to (1) ITC (Indian Tobacco Company)- Jaya perfumery works, Bangalore, Swasthick Agarbathi Company Haryana, Icon Company, Coimbatore, Sankranthi Agarbathi Company, Bangalore, and Cottage Industries, Amrita, Pondichery; (2) Ambica Aroma Industries, Eluru, (3) Vaibhav Gramodyog Sangh, Mysore and (4) Masthan Agarbathi Company, Hyderabad. For example, the total quantity of sticks production of Asifabad district in Andhra Pradesh is 115 tonnes and total revenue generated is Rs. 27 lakhs in 2007- 2010 period.

Bamboo mats is another industrial raw material for making bambooply and marketed to different dealers/customers in the Government/Private sector in Kerala (Plate 11). Bambooply sales are mainly conducted in Kerala through approximately 100 dealers. The product is superior quality, wood/plywood substitute; marine grade boards. The corporation collect mats namely 'Panambu' (local name) @ Rs.24.60 (6x3) and Rs.13.60 (5x 3 low

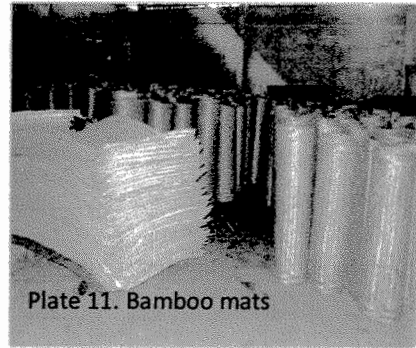


Plate 11. Bamboo mats

qualities) from the artisans. Sale of Bamboo mats-mainly outside Kerala are used by Food Corporation of India (FCI), Central/State Warehousing Corporations for storage purpose and for covering temporary shelters by the Sugar mills in Maharashtra & Tamil Nadu.

Tourism sector: Value added finished products are mainly marketed to the tourism centers where they are marketed through exhibitions, emporiums, and private outlets. Bamboo wall hanging is one of the major item (Plate 12) sold in Kerala and its price range is from Rs.150 - 800 depending on the theme of paintings. The major part of this products move to Kanyakumari and Kovalam through agents and private individuals. Goa Handicrafts, Rural and Small Scale Industries Development Corporation (GHRSSIDC) support the marketing of these bamboo products through their emporiums within state and outside the state.



Market size and nature: In the case of 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. The units are largely dependent on exhibitions as well as agents for marketing their products; that is detrimental to the smooth functioning and marketing of these products in the peak season of sales. There is limited market accessibility in the south Indian formal bamboo handicraft sector and the important marketing sources are the emporiums, exhibitions and private owned outlets. Emporiums are government owned under Handicraft Development Corporation, and they have established number of outlets in each state. Exhibitions have a major role in the

marketing of these products in South India. These exhibitions are organized by various government and non government institutions around India. Private owned outlets are formal but very few in South India. Unauthorized marketing channels play a dominant role in informal bamboo handicraft sector (Figures 3.3.1 & 3.3.2).

Figure 3.3.1. Marketing channels in formal bamboo sector

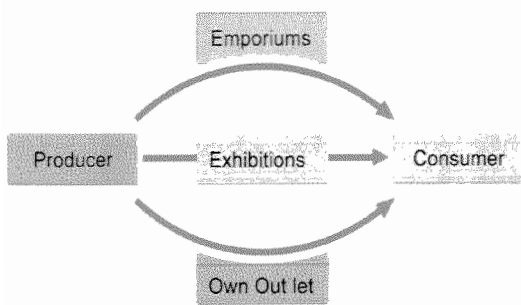
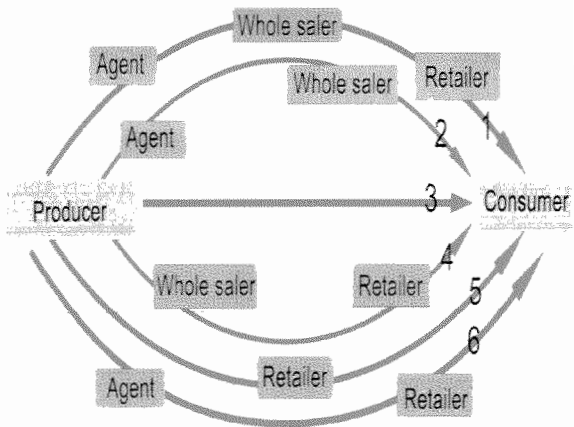


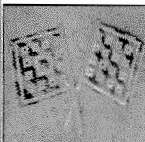

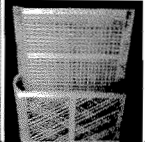
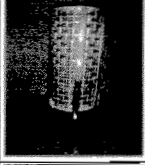
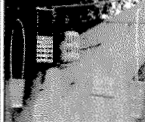
Figure 3.3.2. Marketing channels in informal bamboo sector



It is thus evident that the formal sector is organized in nature, such as, undertaken by Bamboo Corporation in Kerala, Forest Department in Andhra, Co-operative Societies, Self Help Groups and NGOs among others. Informal sector is unorganized in nature without any institutional support and guidelines. The nature of technological changes, including development and adoption of new technology is determined by the market forces. The private sector has been in the forefront in adopting new technologies, initiating research and development. There may also be a segment of more organized informal sector catering to global demand through unauthorized harvesting and marketing of bamboo products. The informal sector is expected to grow especially if the formal sector fails to expand to meet the growing demand of modern times. Lack of a structural market is the weakest link in the bamboo based productive chain. Intermediaries still play an important role in the industry which often hinders progress.

The product profile: The South Indian states produce on the whole different variety of bamboo products that include domestic, commercial, value added, premium, intermediary, interior decoration and furniture. The production of these items depends on

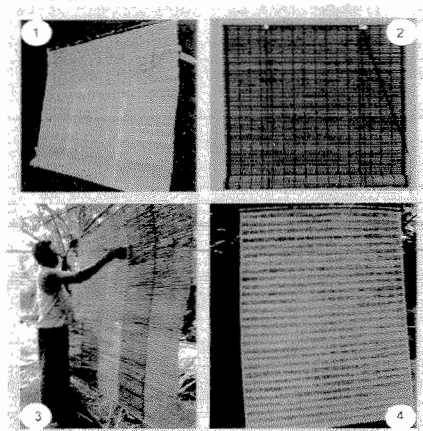
their local and domestic demand, technical skills and raw material accessibility. The production system varies between the different places and the artisans also exhibit different skills and capability although the basic traditional skills are the same. The artisans are traditional and non-traditional, while some are trained and others are not. The source and availability of bamboo and reed are different therefore the price of bamboo too varies and results in cost differences in each state. In Andhra Pradesh, Karnataka and Tamil Nadu people largely depend on private markets for bamboo, while in Goa the main source is the forest and homesteads, in Kerala, it is natural areas, home gardens and the KSBC. The artisans accrue profit in the range of 10 to 25 per cent of actual price of the commodity and it's fixed on the basis of cost of production and demand (Table 3.3.1). When the commodity demand is less the cost of production increases and the artisans reduce their profit margin and fix the price of commodities.

STATE	PRODUCT	COST (Rs.)	PRICE (Rs.)	PROFIT MARGIN (%)	REQUIRED TIME (hours)
Andhra Pradesh	 Bamboo Fan	15	20	25	1
Goa	 Basket (Murkhi)	112.50	150	25	2.5
Karnataka	 Pen Holder	60	66	10	3
Kerala	 Lamp Shade	225	300	25	4
Tamil Nadu	 Flower Baskets	30	40	25	1
Primary data estimates					

3.4. Economics of production in south India

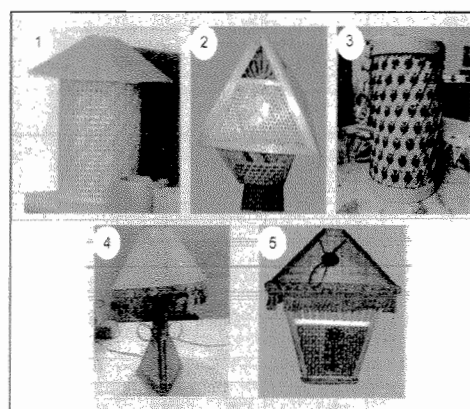
Two products, namely Bamboo curtain and lamp shade (Plate10 and 11), common in south India have been compared to ascertain the economics of production among the traditional artisans. Bamboo curtain production was not found in Goa whereas it is common in Kerala, Tamil Nadu, Karnataka and Andhra Pradesh. The causatives for the lack of bamboo curtain production in Goa are: lack of suitable raw material, inadequate market and availability of substitutes. Selling price and cost of bamboo curtain per sq.ft is different in each state, (Table 3.4.1) with Andhra Pradesh recording the highest. Kerala depicts high profit margin (61 %) followed by Tamil Nadu and Karnataka. This is due to mechanization and quality maintenance in the state when compared to other states following traditional methods of production. The wages labour is 7 to 11 per sq.ft in each state and Rs.210 to 330 is the earnings of artisans per day.

Plate 10. Bamboo curtain in south India



1. Karnataka, 2. Kerala, 3. Andhra Pradesh 4. Tamil Nadu

Plate 11. Bamboo Lamp shades in south India



1. Andhra Pradesh, 2. Karnataka, 3. Tamil Nadu, 4. Kerala 5. Goa.

Lamp shade production is common in all states although they come in different shapes and sizes. This reflects in variations in the selling price, cost of production and thereby their profits accrued. Time required for one piece production varies from 6 to 10 hours. The wage earned is per piece production and is Rs. 80 - 250 per one piece. The actual

entrepreneur gets 10-50 per cent of profit margin and this depends on the demand and price of its substitutes.

Table 3.4.1. Production details of curtain and lamp shade in South India								
BAMBOO CURTAIN (Sq.Ft.).								
States	Total Cost	Selling Price	Profit margin (%)	Required time	Labour involved	Machine ry used	Wage for labour	Uses
Andhra Pradesh	60	70	14	25 mnts	1	-	10	Window screen
Goa	-	-	-	-	-	-	-	-
Karnataka	35	45	22	30 mnts	1	-	8	Window screen
Kerala	25	65	61	10 mnts	1	Cutting, spinning	11	Window screen, interior decoration
Tamil Nadu	20	30	33	25 mnts	1	-	7	Window screen
LAMP SHADE								
Andhra Pradesh	100	125	20	6 Hrs	1	-	80	Light decoration
Goa	125	150	16	8 Hrs	1	-	80	"
Karnataka	250	275	10	6Hrs	1	Cutting,	100	"
Kerala	400	450	11	10 Hrs	1	Cutting,	250	"
Tamil Nadu	225	450	50	8 Hrs	1	Cutting	150	"
Primary data estimates								

There exist differences in the average prices of the same products produced in the different states (Table 3.4.2). It clearly indicate that majority of the workers earn low levels income compared to other sector. Therefore, systematic and scientific interventions are more necessary in bamboo handicraft sector.

Items	Andhra Pradesh Price(Rs)/unit	Karnataka Price(Rs)/unit	Kerala Price(Rs)/unit	Tamil Nadu Price(Rs)/unit	Goa Price(Rs)/unit
Basket	120	140	100	100	150
Small Basket	50-100	80	40	50	50
Mat	140	100	25	200	200

Source: Primary data estimates

Technological innovation: Technological advancement is the key factor for any production sector as it enhances productivity on one hand and reduces cost of production. The bamboo handicraft sector in south India technological advancement is poor and most of the people depend on traditional tools and equipments (Table 3.4.3).

Different stages.		Process	Tools and machinery used
Preparation	Primary	Cross cut and remove nodes	Knives ,cutting machine & Hawk saw
	Secondary	Extraction of gummy substances and reduction in starch content.	Knives
Processing	Primary	Splitting into strips	Knives & splitting machine
		Strips into splits and slivers	Knives & slivering machine
	Secondary	Treatment	Boiling machine
		Dying	-
		Weaving	-
		Finishing	Blow lamp, spray paint gun and grinding Machine.

Most of the units being small scale or cottage with poor financial capability use low cost tools and machineries in different stages of production. Being largely labour intensive they apply manual labour in all stages and these results in reduced productivity per day. These traditional tools are also often locally produced or purchased from the market. They use

different types of knives in different stages of production. According to their traditional and native difference, shapes of tools too vary in each state (Plate 12 and 13).

Plate 12. Tools

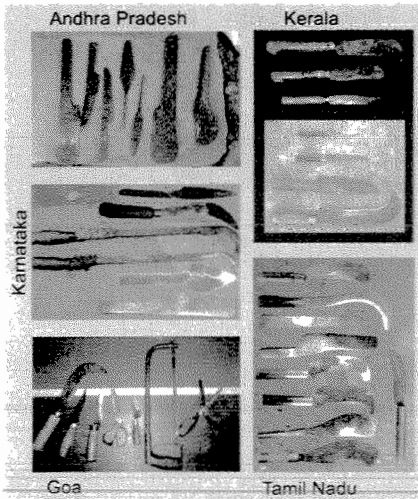


Plate 13. Tools used in different stage

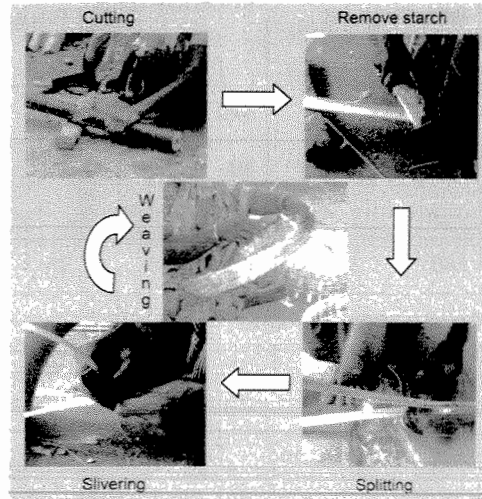
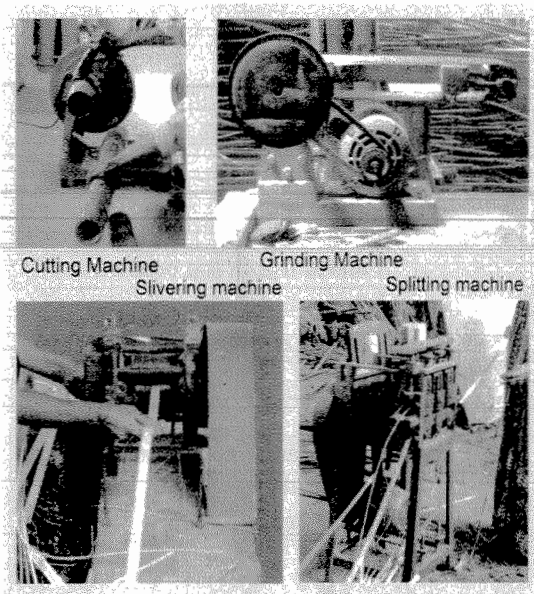


Plate 14. Machines and stages of production



Modern bamboo handicraft industry is now adopting mechanization and most of the units use different machineries in the different stages of production. Modern technology is very significant in the bamboo sector for maintaining quality of products and increasing the productivity of artisans, among others (Plate 14). These machineries are developed and distributed by several institutions and other private companies. In the south Indian

states, most of the bamboo producing units work on a cluster basis and these clusters are mechanized with the help of various schemes provided by the NMBA and Office of the Development Commissioner Handicraft.

Important features of mechanization are, increasing the productivity of labour, high quality maintained, large scale production, reducing the cost of production and create variety of design and shapes. Technical developments are more necessary in bamboo treatment methods in south India. One of the major weaknesses of bamboo used as raw material for production of various items is that it is prone to fungal and insect attacks unless treated appropriately. Therefore, it is necessary to treat the bamboos properly to prevent such occurrences. All over south India, chemical treatment of bamboo is one of the main methods adopted as a preservative technique. Borax, Boric acid and copper sulphate are commonly used components in treatments and it is not applied carefully and used properly in the required quantity in most places. Most of the artisans do not know the proper combination of the chemical solutions; therefore, it affects the durability and quality of products and largely the health of the users, causing respiratory, skin problems, and other severe ailments if not handled with care and caution. Treatment machines are not cost-effective (Table 3.4.4) and hence not in common use. This calls for low cost effective machines to cater to these small scale and cottage industrial units.

Sl.No	Chemical	Optimal Concentration	Cost/curtain of size 6x5m (Rs)	Remarks
1	Borax	2.5gms	1.26	Fungicide cum insecticide
2	Boric Acid	2.5gms	.90	Fungicide cum insecticide
3	Copper sulphate	100 gms	18	Fungicide
4	Castic soda	100gms	3.6	Fungicide
5	Hillban	10ml	2.3	insecticide
Primary data estimates				

4. PROFILES STUDIES OF TRADITIONAL HANDICRAFT ARTISANS

Kerala: The available information in the sector indicated approximately 77 handicraft units functioning with approximately 800 artisans are working in these units. Primary data estimates highlight that only about fifty per cent of artisans work habitually and others seldom participate. Among the 20 units 60 people (three from each unit) were selected as random sampling and through direct interview and questionnaire the information were collected. Kavara (SC), Paraya/Sambava, (SC), Pulaya (SC), Muthuvan (ST), and Mahendra Medara (Tamil migrants) are the major communities involved with this sector. The socioeconomic profile indicated 38.33 per cent of people to be in the age group between 31 to 40 years and very low percentage (1.67%) of people to the above 60 years age group. Out of total workers 60 per cent constitute the women.

In the community approximately 85 per cent have marital status and 3.33 per cent of the women are widows. It is largely the married group that depends on bamboo for their livelihood. Educational status depicts 82 per cent of artisans have primary and secondary level education and very few people availing higher education. All communities are working in bamboo handicraft sector and majority of them belong to SC (35%), ST (17%) and other backward communities (20%). Approximately 18 per cent of the general communities too are involved in this sector and they have benefitted from training from various sources. Housing scenario of the artisans is not encouraging as majority 67% reside in semi finished house structures. Electricity, drinking water and sanitary facilities are available in 90 per cent of houses. Land ownership indicates on lack of tenurial security among 33 per cent, 25 per cent with below 10 cents including their home garden and 20 per cent with below 5 cents. The income status illustrates 60 per cent of the artisans in the monthly income category of below Rs. 3000 and 25 per cent of workers below Rs. 5000. It clearly indicates that majority of the workers earn low levels income compared to other sector.

Tamil Nadu: Tamil Nadu bamboo handicraft industry predominantly concentrates in the traditional methods of production but a few modern mechanized units are functioning in the informal sector. The primary data are collected from the important places of bamboo clusters in Coimbatore, Salem, Dindigal, Madurai and Erode districts. The traditional

communities are the Mahendra Medara (OBC), Paraya, Goundar/Varriyar (BC), Kuravar and Adi Dravidar (SC) who are entirely dependent on bamboo for their livelihood. Primary data estimates highlight 80 per cent of the artisans as belonging to the OBC community and 22 per cent being the SC community. Approximately 56 per cent are the old aged people and 40 per cent are the age group between 30-50 years. One of the noteworthy aspects here is that the age groups below 30 years (4 %) is not keen in this age old traditional activity and are opting out for other more high income economic pursuits. Unlike Kerala here in Tamil Nadu male participation (70%) in the activity is more than females (30%). The mainstream workers are the age old people and 48 per cent constitute the illiterates, 28 per cent and 24 per cent having had primary and secondary level education respectively.

With an average family size of 3 the infrastructure facilities and access to basic amenities is extremely poor among the artisans in Tamil Nadu, which explains their living status. Majority people are living in the unfinished thatched house. Similarly, 86 per cent of the workers have no toilet facilities, 20 per cent have no electricity and 50 per cent have no access to own potable water source. Land holdings among them depict 58 per cent lacking tenurial security and 38 per cent with up to 5 cents of land holdings. Monthly income of the people is very low compared to other works and wage of casual labourers. The average income of the artisans (i.e., 44 %) is Rs. 3000 -5000 per month and they put in 12 hours of labour.

Karnataka: The Medas/Buroods and Korama are the dominant traditional bamboo artisans in Karnataka. Average work participation of each unit is seven and a total of 35 workers are selected for the study of socio- economic analysis. Direct interview and questionnaire survey were used. Unlike Kerala and Tamil Nadu 52 per cent of the artisans in the age group of 18 to 25 years are active in the modern bamboo handicraft sector. The old aged among the sample no longer work in this sector as they prefer making only traditional household items. According to sample analysis 97 per cent of the artisans are Medas (ST) and they are traditional bamboo dependent and only 3 per cent belong to other communities. Here, the work participation indicates the dominance of women (69%) over men (31%). This is basically easy handling of the weaving activities and an additional income for the household women.

Primary data estimates indicate 54.29 per cent of workers with secondary level education, 34.28 per cent with primary education and only 11.43 per cent as illiterates. Artisans living condition is impoverished in Karnataka with approximately 80 per cent of workers living in unfinished houses. Similarly, their land possession also indicates lack of tenurial security (34%) and 45 per cent with less than 5 cents of land. Essential resources like drinking water and electricity are available to the majority of the bamboo artisans, the 86 per cent of people are depends on public tap and 14 per cent have own well for water facilities. With low productive capacity of the artisans, price of the commodity and low demand the monthly income of artisans are very low in this sector. Approximately 80 per cent of the artisans earn below Rs. 3000 per month and it is less than the minimum wage level.

Andhra Pradesh: Burood and Yerukala are the main communities involved in the bamboo handicraft production in Andhra Pradesh along with the Kolam, Naikpod, Gond (ST), communities for whom agriculture is their primary occupation and bamboo only supplements their livelihood. The average income of the person per day in agarbathi stick making is Rs. 100 and monthly earnings are Rs. 2000. The traditional bamboo dependent artisans still engage in making value added fancy items, household and agriculture utility products for day today life of the people. The middle aged persons are the major work force in the bamboo sector, i.e., 57 per cent in the age group of 40 to 60 years and 17 per cent constitute those above 60 years. This distribution is indicative of the lack of interest among the younger generation to carry on with this traditional activity. Gender wise distribution depicts 57 per cent males and 43 per cent female artisans as being involved in the bamboo handicraft sector.

Social and economic backwardness is rampant with low literacy, lack of infrastructural amenities, and low income of the family. This group is highly exploited, is very vulnerable and lack social security. Primary data indicates average family size as 4.5, 63 per cent illiteracy and the remaining availing only primary level of education. Economic status reveals, low income in comparison to local wage (Rs.165), 50 per cent earn below Rs.3000/ per month, poor holding status (90 % with below 5 cents of land) and 90 per cent living in unfinished thatched houses. They have access to basic amenities like electricity and drinking water, but sanitary facilities are still a far cry.

Goa: Traditional bamboo based production has been the mainstay of this industry but now there is a gradual shift and change in attitude of the artisans (more so the younger group) to supplementary modern bamboo based handicraft production. The main stream of bamboo sector continues with the production of different household items catering to local demand. The mainstream traditional bamboo dependent group is the Mahar community constituting 93 per cent scattered in North Goa (75.6%) and South Goa (24.4 %). Major areas of Mahar bamboo dependents are *Pernem*, *Bicholim* and *Valpoi*. Male of this community works as agricultural labourers and casual labours but female depends on bamboo for their livelihood especially during off and lean seasons.

Primary data estimates indicate 80 per cent of the workers are in the age group of 40 to 45 and 90 per cent of them are women labourers. The participation of male workers is less in this sector because they are engaged in the other casual works. The social status illustrates literacy comparatively as better off with 53.33 per cent having primary level education and 40 per cent with secondary level. The average family size of 80 per cent of the population is 4. Economic status depicts 57 per cent of the artisans with tenurial security. The monthly income is comparatively low from bamboo based production with 57 per cent of the artisans earning an average monthly income between Rs. 2000 - 3000 and a 3 per cent above Rs. 3000 per month. Infrastructural facilities illustrate 76.67 per cent of the community in semi finished houses. The availability of sanitary toilet facilities and electricity supply are satisfactory in all houses and 26 per cent have their own drinking water source in their compound. The rest have to depend upon the public water distribution system or on the neighbor's well.

5. KEY PROBLEMS OF BAMBOO HANDICRAFT INDUSTRY IN SOUTH INDIA

The new economic policy has paved the way for new markets yet demand for the traditional bamboo products has declined and so has its production as a result of consumerism and modernization. The artisans are steadily moving over to alternate occupations due to the low economic potential of traditional bamboo handicraft production. The study has identified the various threats hindering the development and growth the industry in the south Indian states of Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, and Goa. The problems identified are related to (1) growing informal sector, (2) raw materials, (3) production, (4) marketing and (5) institutional and policy.

Growing informal sector: The informal sector is a limiting factor to the optimal and sustainable development of the industry due to its unhindered growth. The situation in the bamboo handicraft industry is a combination of market force dominance and growing informal sector. The informal sector is predominant in all the states. The nature of technological changes, including development and adoption of new technology is determined by the market forces. The private sector has been in the forefront in adopting new technologies, initiating research and development. There may also be a segment of more organized informal sector catering to global demand through unauthorized harvesting and marketing of bamboo products. The informal sector is expected to grow especially if the formal sector fails to expand to meet the growing demand. The most unfortunate impact of globalization is qualitative in the sense that now the priority is for greater utilization of market opportunities. The informal sector has larger presence and are eyeing at product diversification and geographical expansion, not only within the country but even globally.

Raw material procurement, availability and price inequity:

The bamboo resources are abundant in the forest areas of south Indian states. In all five states of south India, forest bamboo resources are under utilized in bamboo handicraft sector and most of the resources are going to the paper industries. Bamboo and reeds are abundantly available from the forest in each state excepting in Tamil Nadu, as extraction of bamboo from the forest is very less in Tamil Nadu. But in the case of handicraft sector, supply of bamboo is limited and the artisans of these states do not get sufficient quantity

of the resource. Most of the traditional artisans are dependent on the private depots, markets, individuals, and home gardens.

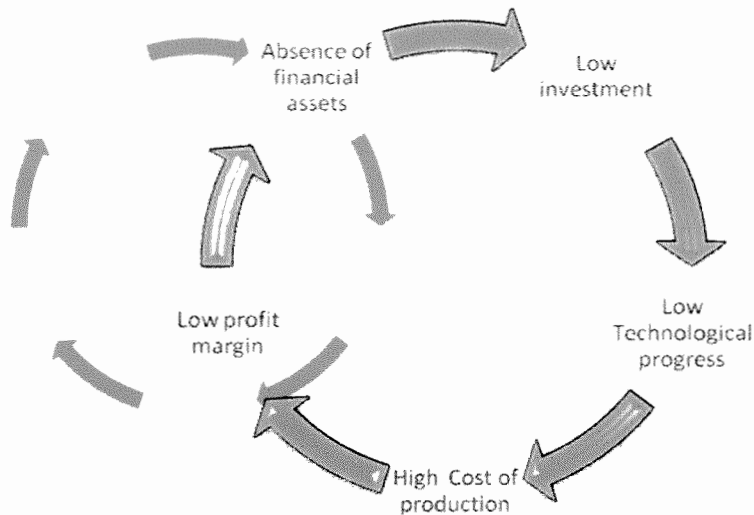
Furthermore, the high price of bamboo in markets makes it difficult for the primary producer. The majority of the bamboo markets are controlled by the private individuals in all states and they charge high rates from the artisans. For instance, in Andhra Pradesh, bamboo is supplied by the Forest Department through their depots and private individuals in markets. The price of one bamboo (small bamboo of 19 Feet) is Rs. 6 charged by the Department to the agarbathi manufacturing units and Rs. 70 by the private individuals in the markets. But the Department supplies the same only to the VSS members at concessional rates and therefore the other people are forced to look for other sources of procurement. The status in other states is similar while majority of the artisans in Goa meet their raw material requirements from the forest and home gardens. They have direct access to bamboo from the forest with or without permission of Forest department. The price of bamboo ranges between Rs. 25 -100 from the home gardens of Goa and they are largely dependent on the same for their day to day needs. There is no formal extraction and supply of bamboo from the forest to the artisans and hence there exists a scarcity for raw materials in the bamboo handicraft sector of Goa. Although Karnataka is rich in the resources the traditional artisans often have to depend on the local private markets/individual/depots that charge higher prices which varies from place to place in the range between Rs.100 and Rs. 300 per culm. Kerala is the only state in south India that has a government agency, i.e., the Kerala State Bamboo Corporation that cuts and distributes the raw material through its depots. Traditional artisans have membership cards for getting the raw material at low price, but they do not get sufficient quantity. Production largely being seasonal and demand driven are forced to depend on other sources. The traditional household workers and small units face different prices for the same quality and this variation ranges from Rs. 5 to 8. In Tamil Nadu raw material requirements of the primary producer is met largely from Kerala and Karnataka and private bamboo depots. For instance, one pole in Coimbatore costs Rs.250, in Salem Rs.75 and in Erode Rs.40/-. The other related constraints are low quality of bamboo culms sold at high price, high transportation cost and lack of storage facilities.

Production of bamboo articles: Lack of technological advancement, high cost of production, high relative price, low productivity of artisans, low durability of products, and poor infrastructure facilities are some of the major constraints in production.

Mechanized units are very less in this sector and they lack advanced technologies in the various stages of production. Different machineries like cutting, splitting, slivering, grinding machines are available from markets and in India it is supplied by the NMBA with low cost. The Mission is working to develop ranges of efficient, sturdy and low-cost tooling and processing machinery, suited to Indian conditions and species, to reduce drudgery, improve productivity and minimize wastage. Process technologies are being validated, and converted to techno-economic packages for use by entrepreneurs. But, the current situation highlights 90 per cent of units as low investment individual owned production units and they have no capability for high cost machineries and equipments. Similarly, the durability of bamboo products is affected by pests and insects

The artisans of south India mainly used the chemical treatment (Borax, Boric Acid and Copper sulphate solution) for preventing the attacks and it is not sufficient for long time prevention. Further application without knowledge of proper dosages and the know-how leads to disastrous short term and long term health effects. Absence of technological advancement and skill up gradation negatively affects the productivity of labour and high cost of production. For example, in the production of lamp shade in Kerala, there is no machinery and equipments, only traditional tools were used in the production process and its total production cost is Rs 96.50 and price of this product is Rs.100. The major part of this cost is wage (Rs. 75/day) as more time is spend in the production process, which is 5 hour and 49 minutes with one labour. This is cyclic production process which keeps their

Figure 5.1. Cyclic production processes of bamboo handicraft



production at a stagnant stage and thereby affecting all units (Figure 5.1).

Market imperfections and failures: Lack of a structural market is the weakest link in the traditional bamboo handicrafts sector. One of the major concerns is the growing informal sector, which although covers a wide social base contributes very little and is a place where market chains and trade linkages are unclear and unaccounted for. The traditional bamboo handicrafts industry is dominated by the informal sector and reflects an imperfect market scenario characterized by price wars.

In the case of 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. In the case of products which have a limited local market, the entrepreneurs' ability to decide on the product specification is also limited. These units largely depend on exhibitions as well as agents for marketing their products; where they are vulnerable to exploitation. The growth of bamboo handicraft units is further complicated by the existence of substitutes. For example, while in case of sift, the price elasticity of bamboo sift is higher than that of plastic sift. People prefer plastic products to bamboo because the consumer surplus of plastic product is higher than that of bamboo (Anitha, 2008).

Institutional and policy indent: Due to the lack of an institutional setup and growing informal sector the Government fund and financial supports cannot be utilized by the individual units efficiently. The Development Commissioner (Handicrafts) provides the financial assistance to the all the handicraft sectors which includes the bamboo sector as well. But this financial assistance is given through the NGO's and Societies to the handicraft sector and does not support individual private firms. And in cases where they are defunct or not efficiently functioning the support is hardly there. The government institutions have no specific policy for the development of individual bamboo handicraft units. Therefore, they are still out of the formal sector. The Office of the Development Commissioner Handicraft provides finance to the bamboo sector for various purposes that is, skill up gradation training programs, design and technical development programs and organizing exhibitions and fares. But after the fund utilization, most of the units lack any follow up or proper audit mechanism. Total Grant in Aid released from the Office of the Development Commissioner Handicraft in the financial year 2011-2012 given in table 5.1.

Country / State	Amount Sanctioned (Rs.)	Amount to be Released (Rs.)
India(All handicraft sector)	943,332,036	442,478,000
India(Only bamboo sector)	4,69,79,422	2,12,57,116
Kerala	44,00,072	16,29,500
Andhra Pradesh	27,60,000	12,62,750
Karnataka	3,25,000	1,62,500
Goa	9,01,300	4,50,500
South India	83,86,372	35,05,250
Source: Office of the Development Commissioner (2011-12)		

Total amount of grant released from this office to the total handicraft sector in India is Rs. 44 crores and only 2 crores (4.80%) were released to the bamboo handicraft sector in the financial year of 2011-2012. The percentage allotment to each state in south India too indicates a trivial amount which reflects on the state of affairs and the neglect on the part of the government in strengthening and upgrading this industry in the path of social and economic development. Major constraints (Table 5.2) identified are occupational, socio-cultural, economic and political problems.

Table 5.2. Major constraints faced by traditional artisans in south India (occupational, socio-cultural, economic and political problems)	
MAIN AREAS	CONSTRAINTS
Occupational	<p>Raw material acquisition Stringent forest laws High price per culm/ bundle Seasonal availability of culms</p> <p>Production Traditional tools and implements Lack of mechanization making the process time-consuming Labour intensive techniques Lack of scientific methods of treatment/ preservation</p> <p>Products Mostly traditional products (winnows, baskets) Low quality No product diversification</p> <p>Marketing Seasonal demand and prices for traditional products Availability of cheap substitutes like plastic and paper products No proper mechanisms for price-fixing No stable markets</p> <p>Training No formal training received (only traditional skills) Co-operative societies/ initiatives Lack of Governmental initiatives to form SSI units Lack of proper facilities and machineries in the co-operative societies/ SSI No social security for workers Presence of many unregistered SSI units (no proper coordinating bodies)</p>
Socio-cultural	<p>Social problems Lack of active Trade Unions/other associations Poor co-ordination among the existing associations Prevalent social problems like seasonal unemployment, poor health, alcoholism, low literacy rates, indebtedness, poor housing conditions (living in slums) Deterioration of traditional knowledge and skills related to bamboo occupation Disinterest among youths to take-up the traditional occupation Socio-cultural status Low position in the caste hierarchy (low social status) Closed communities Lack of competitive spirit, motivation and interest to utilize the available opportunities Development induced migration rampant with this sector</p>
Economic	<p>Assets Many of them lack agricultural land and other economic assets Low earnings, compare to local wage (local wage 200-250) Low income from the trade Less savings, more indebtedness</p>
Financial	<p>Negligent and Poor governmental allotment from the Handicrafts concerned National and State departments No financial support</p>
Political	<p>Lower percentage of representatives/ leaders/ political activists Gender differences in political participation (lesser number of women)</p>
Primary data estimates	

6. DISCUSSION AND CONCLUSIONS

Bamboo is a versatile plantation species and its afforestation is ecologically and economically viable. Since the plant propagates rapidly and the collection method is by select felling, the ecological balance is not disturbed even if bamboos are cut in large numbers. The core application and thrust areas of the Mission include wood substitutes and composites, structural and constructional applications, bamboo shoots, propagation and cultivation, machinery and process technologies, industrial products and energy. This is indicative that bamboo has immense potential for use in different spheres and has forward and backward linkages with many sectors of the larger economy.

The present scenario of bamboo craft of Kerala is to enhance the employment opportunity and livelihood security of the bamboo dependents, promotion of bamboo sector development as a part of rural development linked with forestry and agro forestry. Even the participation of prospective entrepreneurs with high investment and with foreign participation the bamboo craft of Kerala to occupy the international market. According to the plan of the government design and product development institutions like National Institute of Design and Industrial Design Center (IIT, Bombay) shall be involved in imparting training to the craftsmen to improve their skills and make value added crafts from bamboo and cane. The bamboo and cane crafts of Kerala get huge response in the exhibitions at the national level and this enables them to improve their skills as well as facilitate marketing of their products as well as increasing the demand of the crafts made out of bamboo and cane.

The bamboo and cane crafts of Tamil Nadu predominantly provide variety of household items and some items are made for home décor and other purposes. The bamboo and cane crafts of Tamil Nadu include the usage of the fibers of cane or rattan. These fibers are used largely for making furniture, bowls, baskets and other house hold items. One of the key products made from bamboo is basket. Apart from basketry the local artisans create items like dolls, toys, mats, trays, flower baskets, shopping bags, folding fans, among others, with bamboo, cane, grasses, reeds and fibers. Contemporary craftsmen also make utility items like baskets and trays. Another popular item of bamboo and cane crafts of Tamil Nadu include window screens made of bamboo slats and tied with plain or coloured

string in designs all over northern India. The main centers of bamboo and cane crafts are to be found in Dharampuri, Salem, Coimbatore, South Arcot and Tiruchirapalli districts of Tamil Nadu. Other centres that are widely known for manufacturing bamboo and cane items involve at Thanjavur and Arcot. Toys and dolls are also produced from grass, bamboo and cane. This craft is mainly centered at Dharampuri, Salem, Coimbatore, South Arcot and Tiruchirapalli Districts.

Karnataka like Kerala is basically an agricultural state with paddy being the principal crop. In every stage be it is sowing or after harvest, be it paddy or rice the use of bamboo basket is unavoidable. For vegetables and flowers too different types of baskets are used in this state. In Karnataka, bamboo handicraft units are functioning in all over the states and produce different types of bamboo products. The people are more concentrated in house hold and utility items like baskets, winnows, ladder and other fancy items. Industrially bamboo used for sericulture and agarbathi stick manufacturing and currently insufficiency of bamboo affected this industry and employment of the people. As per census 2001 the total population of Meda in Karnataka is 37371. But, according to rough estimate around 92000 members belongs to 25000 families are engaged in bamboo works in Karnataka state.

In Andhra Pradesh, bamboo is an important source of rural livelihood, especially for scheduled tribes and scheduled castes and traditional bamboo workers. Bamboo is extensively used in construction of rural housing as posts, walls, roofing, and fencing. It is also used to make storage baskets, implements, ladders and other functional articles. There are nearly 20,000 persons belonging to 425 Burood societies receiving bamboo from select depots of Forest Department (AP Forest Department, 2010). The crafts they produce traditionally are of utilitarian type. But as other materials are becoming dearer and scarce focus on bamboo crafts increased. While basic skill of weaving baskets remains the same, production of new type of products with proper value addition is now gaining prominence. With simple application of mind the same material could fetch better value. For example the traditional baskets when used as lampshades have almost ten times the value than when used as conventional baskets. Due to urbanization and industrialization life style of the people changed. Demand for fancy bamboo ware, bamboo furniture and decoration of walls and roof with bamboo and use of bamboo in internal decoration has increased manifold.

Traditional Goan society used to depend on local agriculture and local craft. Use of bamboo baskets are common in paddy fields similar to those found in other states. Western influence also brought in new ideas including mode of use of different types of baskets. Baskets traditionally used as different utilitarian items are now made colorful and used as lampshades by reversing them. Bamboo strips are also woven in to screens, table mats, among others. Goa Handicrafts, Rural and Small Scale Industries Development Corporation (GHRSSIDC) was established in 1980 to bring to the fore the creativity of the artisans of Goa. They promote the artisans of Terracotta, Brassware, Shell craft, and wood craft, Cane and Bamboo, Azulejos, among others. Particularly Goa is a tourism state, due to this, demand for craft works is comparatively high than other states. The GHRSSIDC facilitates artisans to market their own art works at different parts of Goa and outside. They have 12 Emporias at Panaji, Vasco, Margao, Mapusa, Calangute, Bicholim, and New Delhi. Bamboo handicraft units are largely concentrated in North Goa district and most of them are household and cottage units.

Bamboo handicraft industry produces variety of products and provides promising linkage between the organized and unorganized sectors and the potential of this sector depends on wide markets within the states and outside the states. The handicraft industry although predicted to be on the increase based on national and international markets, the industry seemed to be lagging due to severe competition from related units. Government intervention may be needed in this front. The traditional bamboo handicraft industry in south India has been facing a whole lot of issues viz., shrinking of human, social and economic capital of bamboo, inclusive of marginalization of the traditional bamboo artisans, lack of social protection and security, shift in focus from the production of traditional products to high end production, traditional raw material procurement, resource utilization, traditional versus modern techniques of production, product diversity and challenges, commercial threats to the traditional craftsmanship, market imperfections, existence of a formal and informal sector, information lacuna, failure of the existing institutional setup, support mechanism and policy framework.

Shrinking of Human, Social and Economic capital of bamboo handicraft sector: The traditional and non-traditional people belonging to different communities constitute the artisans of bamboo handicraft sector in south India. Since time immemorial they have been involved in these activities and this was their main source of livelihood and still

continues so for a large section while for others it constitutes only a supplementary source. Today, large numbers of traditional bamboo handicraft communities are marginalized from the main stream of bamboo development. The actual traditional workers of this sector are living under below average living standards. The human capital of bamboo sector is withdrawing at a disconcerting level from this industry due to various said reasons and this is the scene all over south India. Thus, deprived of their primary livelihood source they have moved over alternate options. The traditional bamboo handicraft artisans are socio-politically and economically weaker sections and are in the lowest rung of the social ladder.

There is no technological progress adopted in this sector, therefore, only traditional tools like big and small knife, needle, among others, are used for production. Largely, traditional workers are not trained; skills are acquired from their forefathers. Their products are largely used for household and agriculture purpose sold in local markets with very low remuneration. Alternative items like plastic baskets and winnows are easily available in the markets and decline the production of agriculture crops has further resulted in poor demand for traditional items. These reasons have resulted in low economic returns from the activity and have led to vast withdrawal of youngsters from the traditional sector of bamboo works. There is a paradigm shift in the production from traditional products to other commercial production due to technological development. For instance, from mat to bamboo ply, bamboo strips for flattened board and agarbathi sticks, among others.

Approximately, around three million people in Kerala depend on bamboo/reeds for income and employment with major concentration in the production of mat, baskets and winnow as cottage industries. Traditional method of weaving is largely followed in Andhra Pradesh, Tamil Nadu and Karnataka states. Goa is one of the main tourism zones of our country and portrays immense market potential for different handicraft products, but this potential has not been fully utilized as far as the traditional artisans are concerned. In this sector it is basically the women who largely undertake weaving while the men folk support in the procurement of raw material and production of bamboo items. The raw materials are sufficient in these states and its extraction and distribution is controlled by various institutions and is often inaccessible or priced highly. Bamboo sector gives livelihood options for marginalized artisans in south India and they are producing and marketing different household and utility bamboo items in their villages but the economic returns

are poor. Baskets, trays and mats are the common products in south India and other items like ladder, tree guard, fence and screens are made on seasonal and local demand. They are caught in a low investment -low income-low impact enterprise lacking social development and livelihood security. Although the MBDs have innate traditional skills and indigenous knowledge they are caught in a diminishing circular flow of development (Anitha, 2008). All these affect the livelihood of the MBDs. The marginalized, the old, the infirm and children suffer the most and are most often ignored. Approximately 80 per cent of traditional workers have already quit the field, existing are women and the age-old.

The unorganized bamboo sector: Bamboo based production activities, as a market segment, have emerged only in the recent past. The bamboo industry with immense economic potential in a labour surplus Indian economy has an important role in both the traditional and non-traditional sectors. The traditional handicraft industry is faced with a number of problems. Although both the traditional and non-traditional sectors use bamboo or reed as raw materials, their problems relating to production, marketing and technology are different. Unemployment and exploitation of labour in the industry are rampant. Due to a variety of reasons traditional sources of supply of raw materials are declining. Institutional support for its development is inadequate. In addition to these are certain specific economic problems such as operation of the industry and its competition for raw materials, market driven changes, among others, which pose problems to traditional sector and ultimately the livelihood of the bamboo dependents.

The bamboo handicraft sector faces many challenges in the various stages from collection to marketing and consumption in the domestic economy. The raw material requirement of the bamboo dependents is mainly sourced from forest or forest depots, local market, home gardens and natural areas. The extraction by the large stakeholders (eg. Paper and pulp industries) leads to fluctuating availability of the resources having an impact on the livelihood patterns and the socio-economic status of the hereditarily dependent weaver communities. The problems involved with the procurement of the bamboos for industries leads to shortage of supply for the local artisans. Raw material shortage in certain areas has compelled the MBDs to use substitute bamboo with alternate raw materials for their daily subsistence. For instance, the Kuravar from Puthukottai district of Tamil Nadu, Bellari district of Karnataka and Yerukulas from Visakhapatnam district of Andhra Pradesh use palm leaf and its parts, different grass varieties and jungle weeds as alternate raw

materials for production. The industry is labour intensive and is highly dependent on traditional skills and tools. Not all are aware or have availed of the merits of value addition, division of labour and product designing.

The growth of handicrafts sector in south India is mainly due to the promotional activities of the State Handicrafts Development Corporation. The marketing facilities offered by them have also encouraged persons other than those from the traditional bamboo-working communities. In the bamboo sector, the major development is the small-scale handicraft units. The handicraft items of bamboo or reed made by trained artisans have more marketing opportunities than that of the traditional weavers. The declining stocks of bamboo due to increasing demand in the rural, urban as well as international trade are as a result of incomplete knowledge on management programs as well as lack of regulatory techniques. In Karnataka, for instance, the major raw materials used in the agarbathi industry are bamboo, wood charcoal and processed perfumes. Currently, bamboo comes mostly from North-East India and as a result, the wholesale and retail prices of bamboo culms are rising. Appropriate policies and a technology transfer mechanism are needed to promote bamboo cultivation as a part of the farming systems practiced by general farmers and even at cluster level with the support of government, following the China model of bamboo sector supporting and sustaining livelihoods.

In Karnataka, bamboo is used as common household material in agriculture, horticulture, sericulture, housing, packaging, transport, storage, among others. Industrial uses of bamboo consist of pulping, mat boards and as core-sticks in agarbathis (scented sticks). Generally, green and straight bamboos are used in the domestic sector and in weaving. Slightly defective, bent and dry bamboos are used for pulping. Weaving and core sticks of agarbathis are possible from green bamboos or after soaking dry bamboos. A large section of weavers belong the backward community called Buroods also found in Andhra Pradesh. In Karnataka their population is 50,300 families and in Andhra Pradesh 2,900 families. Besides this community, weaving is a domestic profession among several families in the low income group of rural communities. Since villagers situated in the vicinity of natural bamboo forests enjoy the privilege of bringing head loads of bamboos for their weaving profession, there is no exact record of quantities being removed by head loads. 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 crafts persons although not all are benefitted. 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. In the bamboo sector one of the major developing sector is the small-scale handicraft units. The handicraft items of bamboo or reed have more marketing opportunities than the traditional weavers.

Formal and Informal sector: The informal sector is a limiting factor to the optimal development of the industry. The new economic reform of 1991 based on the globalization, liberalization and privatization has opened up new markets on the one hand and yet failed to set the traditional industry on track towards accelerated social and economic growth and development. It brought about focused shift towards high-end commercial production bringing along with it a whole set of issues to this traditional bamboo based primary sector which is a combination of a formal and more dominant informal sector. The formal sector envisages the well-being of its artisans/workers and the informal is without a authorized structure and hence is subject to market imperfections and failures. This categorization of the traditional bamboo handicraft sector at two levels is affected in all areas of this industry. Today, the informal sector is the major part of this industry and they are not registered under any institutions/organization and are working independently in all states. Lack of a structural market is the weakest link in the bamboo based productive chain. In fact, one of the major concerns facing the sector is the growing informal sector where market chains or trade linkages are ambiguous and unaccounted for. The informal sector is definitely covering a wider social base although contributing very little. The potential of bamboo products has not been properly tapped; for instance, the opportunity of export of some of handicraft items to other countries and proper marketing within the country has not received adequate attention. Intermediaries still play an important role in the industry which often hinders progress. Profitability in the manufacturing of these products is very low due to a variety of reasons. Technological progress is inadequate because of structural and financial constraints. The procurement of the quality inputs, the infrastructure for storage, processing machinery, proper assessment of the demand and supply all are required to develop a good turnover from the domestic market.

Changes are overdue if social forestry, farm forestry and urban forestry have to succeed under the prestigious National Afforestation Program (NAP), the National Rural Employment Guarantee (NREG) scheme and the Joint Forest Management (JFM) schemes and the Participatory Forest Management of the Government In South Indian states, Andhra Pradesh, Goa, Karnataka, Kerala and Tamil Nadu bamboo handicraft production is at the small, medium and large level. Kerala, Karnataka and Tamil Nadu are the most powerful in bamboo handicraft sector. Mechanically Kerala has advanced in bamboo production and they produce variety of products like fancy and utility items, other states follow traditional methods and more concentrated in house hold items like baskets, Winnows and blinds.

Policy shifts: Indian Handicraft Industry contributes significantly to the Indian economy. For the proper functioning and operation of industry it is very essential to have some policies and regulation in place. In India, the Ministry of Textile is responsible for the formulation of policy, planning, development, export promotion and regulation of the Handicraft Industry. There are several other bodies and organizations which help to formulate and execute these policies. All policies should be implemented for the greater development of the whole industry so that it can help to strengthen the economy. In

bamboo sector related different policies like National Forest policy, policy of National Bamboo Mission, Policy and schemes of Development Commissioner (Handicraft) and policy of NABARD are important. The revised National Forest Policy of 1988 gave emphasis on forest conservation and sustainable supply to meet the needs of the community (Adkoli, 1995, 2010). Handicrafts being a state subject, its development and promotion are the primary responsibility of the State Government. However, the Office of the Development Commissioner (Handicrafts) has been supplementing their efforts by implementing various developmental schemes at the central level for the handicrafts sector. The various schemes are the *Baba Saheb Ambedkar Hastshilp Vikas Yojana*, Design &

Key Elements of the National Bamboo Mission

1. Research and Development for Bamboo Development
2. Establishment of new Nurseries to raise bamboo seedlings
3. Raising high yielding bamboo plantations on commercial basis in Forest and Non- Forest areas
4. Improvement of senile bamboo plantations, Pest and Disease Management of bamboo.
5. Handicrafts, bamboo marketing and exports
6. Capacity building and Human Resource Development of farmers and personnel
7. Establishment of Bamboo Markets and new Marketing Strategy for Bamboo
8. Meticulous monitoring, evaluation and reporting, Database generation, compilation and analysis

Technical Up-gradation Scheme, Marketing Support and Services scheme, Human Resource

Development Scheme, Research & Development, Handicrafts Artisans Comprehensive Welfare Scheme through the Rajiv Gandhi Shilpi Swasthya Bima Yojana and the Bima Yojana for Handicrafts Artisans. National Bamboo Mission has some objectives and strategies for the development of bamboo sector. NABARD has recently formulated a Bamboo Development Policy to give real thrust to develop the sector with an integrated approach to commercialize bamboo at the farmer's level. The major goals for bamboo development would be proper use of available bamboo resources for value addition, creation of new technology based plantations, efficient marketing, new product development through technology up gradation, institutional development/strengthening, design support leading to economic upliftment of rural people (NABARD).

In spite of these policies, organizational and institutional arrangements put in place the organized and unorganized bamboo artisans do not actually get benefit from these due to their socio political and economic backwardness and other players in the field benefit further leading to the marginalization of the traditional artisan. Despite all these being in place the main focus of social development all encompassing economic development has been diluted. What is required is a social audit and Social impact assessment of the schemes implemented.

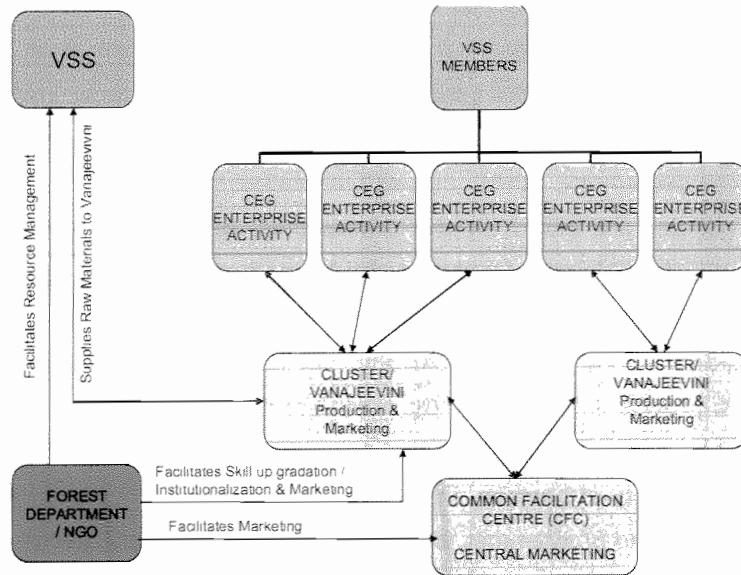
There is a policy shift in utilization of bamboo from subsistence to commercial (Anesh, et al.2012) the corresponding policy changes, change in management from centralized to decentralized management and the current dilemmas encountered in the context of bamboo management in the wake of FRA, 2006 (Anitha,2012) its socio-cultural and political dimensions. Among the Indian States, bamboo is nationalized in Andhra Pradesh, apart from Madhya Pradesh and Orissa. In the past it used to form almost 40 per cent of the total raw material requirement of Paper Industry in Andhra Pradesh. However, with the change of technology and limited availability, hardwoods largely replaced bamboo. Initially, to encourage industries, the Govt. allocated large extent of bamboo forests on long lease for working. This helped in opening of interior areas and utilization of bamboo in industrial production. With the promulgation of Forest (Conservation) Act: 1980, all these leases were withdrawn. Now government is not committed to any industrial supplies. Bamboo industrial cuts extracted from forests / plantations are sold on market price, (fixed by government). The paper industries in the state are progressively reducing their requirement of bamboo. While most of the current requirement is met from the

neighboring states namely Chhattisgarh, Maharashtra, Orissa and also West Bengal and Assam, nearly 55,000 MT of industrial cuts are procured from the state forests (Andhra Pradesh Bamboo mission).

There is a need to link policy, government schemes and missions on the lines of PFM and VSS, whereby, the community on a cluster basis is socially empowered too to sustain all the efforts of the government put in place for their betterment. Good example is the Agarbathi stick production under the VSS in Andhra Pradesh. Mechanization of clusters and work participation of labour has led to cluster level livelihood enhancement in Andhra Pradesh. Presently all the activities of Income generation / value addition are towards decentralization and sustainability of the management, production and marketing at CEGs cluster level for forestry livelihood enhancement. The current structure followed in the case of Agarbathi stick making (Figure 5.1) illustrates the *Vana Samrakshana Samithies* (VSS), the Common Enterprise Group, the cluster and the Common Facilitation and livelihood centers as the key elements. The VSS will harvest the bamboo as per the silviculture

principles and rotation and supply to the VSS clusters on a cost basis. The money shall be paid by the cluster and deposited into the VSS account.

Figure 5.1. Structure of Agarbathi sticks making units



Source: Andhra Pradesh Forest Department

Common Enterprise Group (CSG) is a formation of all the VSS members (15 members) who are actively involved in the participation of agrabathi stick making. The CEGs get the slivers from the clusters and prepare agarbathi sticks and supply to the clusters for

marketing. The *clusters* are formed with CEGs from the nearby VSS with 10 to 20 CEGs per cluster. Inclusion of CEGs in the cluster depends on the geographic distribution of the VSS and nearness of the VSS to each other. Each cluster is provided with revolving fund depending on productivity and required infrastructure facilities such as cross cutting machines, slivering machines and storage facilities among others. The clusters also purchase the agarbathi sticks from the CEG members and after grading and packing send the agarbathi sticks to the respective CFCs for marketing. The *Common Facilitation and Livelihood centers* receive the agarbathi sticks from the clusters and assist in marketing. The payments are received in favor of respective clusters and are directly deposited in to the Cluster Business Account.

One is to note here the lack of similar effort in identifying the traditional artisan and the existence of formal and informal sectors that use the resource and the products that have a higher potential to capture the global market. The National/State bamboo policy in the south Indian states and all the initiatives/programmes /schemes developed urgently needs to be reviewed, restructured and strengthened for resource enhancement, sustainable extraction and improving the livelihood of the marginalized communities. Although one of the principal objectives of the Mission is to use bamboo development as an instrument of poverty alleviation and employment generation, particularly rural sector, it failed to spell out social development. Social protection is not passive acceptance of the Policies/Acts/Schemes among others but active involvement of those who need such support. Most policies are based on the principal of making institutions and services available without making them accessible to the MBDs. Furthermore, the National Bamboo Mission, Government of India and State specific policies can effectively reach their goal of reviving the traditional industry and reaching out to the marginalized community by relaxing controls; provide incentives for the growth of farm forestry. Urgent measures are called for on the part of the Government to relax controls and provide the MBDs with a steady and regular supply of bamboo. Objectives of NMB also, as has been the mission of various other policies and programmes focused on the economic upliftment of the bamboo dependent population. This calls for a *social audit / social impact assessment* of the programmes and activities envisaged in the various bamboo sector related mission mode activities and other institutional arrangements put in place for the uplift of the MBDs. The government has a pivotal role in initiating innovative schemes to support the MBD efforts by structuring new marketing channels, i.e., linkages between the formal and informal systems, providing necessary infrastructure for new product development based on

demand as well as frame appropriate proper policies for the protection of intellectual rights.

Social Protection and security: The movement of bamboo from the cottage, lacking strong marketing channels, to the commercial industries is alarming. There is an immediate need to frame necessary policies and strategies for the sustainable and optimal use of the resource thereby sustaining livelihoods. It is important to examine social protection interventions that addresses access to existing social services benefits in health, education, water and sanitary sections, access to income, and address their livelihood concerns. This warrants a strong social economic security measures, economic and political support through effective legislation. For without social protection, all inclusive economic and social development stays a delusion.

Cause-effect analysis for a stagnating handicraft industry: The ADB framework as described by Saldanha and Whittle (1998) which involves a problem-oriented approach is an assessment of sector performance using corresponding indicators and is followed by identification of a key sector problem or opportunity. A cause and effect analysis is conducted which is later converted into an objective tree indicating the steps to be taken for achieving positive changes. During this process, several alternatives could emerge and there is the task of choosing the appropriate option (s) to address sector problem or opportunity. Here an attempt is made to pictorially represent the current problem scenario in the handicrafts industry. Figure 5.3 shows the cause and effect analysis performed for the key problem of decreasing outturn from industries. The immediate causes are identified as shortage of raw material, inferior processing technology employed, poor processing capacity, high input costs such as that of electricity/diesel, administrative snags such as annual renewal of license and several other operational difficulties. Low domestic production, inadequate funds of the entrepreneurs and ineffective regulations act as causes for the deteriorating situation. Deficient institutional capabilities and ineffective policies lead to the poor operational environment. Low industrial outturn gives lower returns for the entrepreneurs, results in increased imports, promotes unemployment and increased product costs. At the national level, this leads to economic recession, loss of foreign exchange, poverty and inflation.

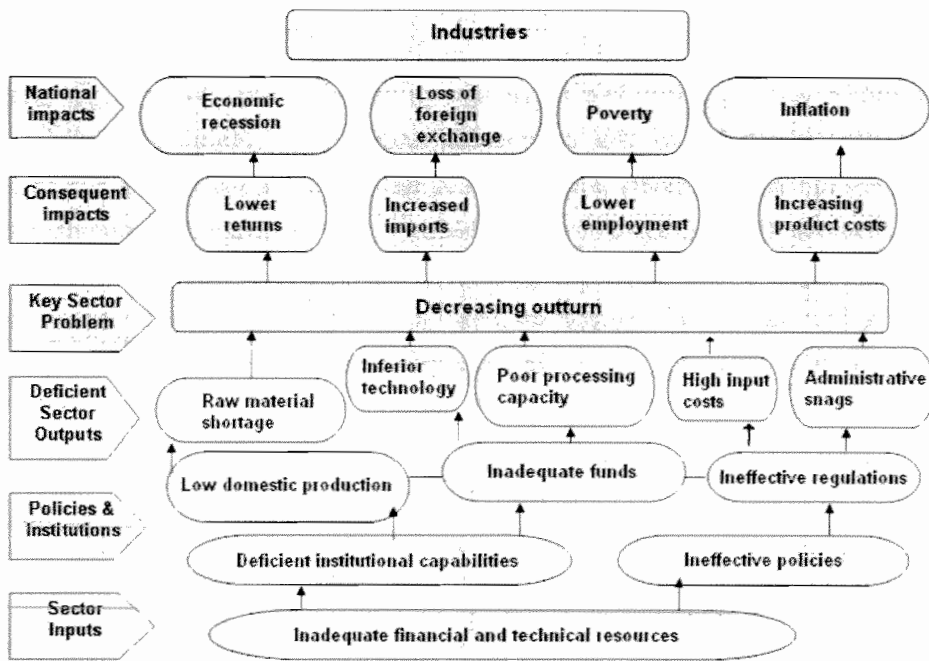


Figure 5.3. Key sector problem and cause and effect analysis for handicraft industry in south India

In the presence of adequate financial and technical resources, institutional capabilities are strengthened. Coupled with good policies, this leads to higher domestic production of raw materials, and effective regulations. The resulting sector outputs are adequate raw materials, better processing technology, higher processing capacity, low input costs and absence of unwanted administrative controls. Increased outturn leads to higher returns, less imports, higher employment rates and decreasing product costs with consequent impacts at the national level. Various strategies and action plan have been recommended for the industrial upliftment based on the field exposure and data generated and existing similar situation from other state policy, as in, Kerala (Muraleedharan et.al, 2007) are applicable for the other south Indian states with state specifications. The study on structure and functioning of bamboo handicraft industry in south India conducted for the south Indian states of Kerala, Tamil Nadu, Karnataka, Andhra Pradesh and Goa has indicated that although India projects good databases on different sectors of the economy, this does not extend to bamboo economy. This study is thus subject to certain limitations in data availability and related deficiencies as indicated in the report.

CONCLUSIONS

1. The bamboo handicraft industry is one of the important employment generating sectors in south India having immense economic potential. Unemployment and exploitation of labour in the industry is rampant.
2. The handicraft industry although predicted to be on the increase based on national and international markets, the industry is lagging due to severe competition from related units.
3. The overall structure of bamboo based household enterprise in south India depicts an organized, unorganized and private sector with different government entities, non-government organizations and private enterprises being involved.
4. Growing informal sector; raw material procurement, availability and price inequity; production of bamboo articles; market imperfections and failures; and institutional and policy indent are the major problems' facing the industry.
5. Shrinking of human, social and economic capital of bamboo, shift in focus from the production of traditional products to high end production, traditional raw material procurement, resource utilization, traditional versus modern techniques of production, product diversity and challenges, commercial threats to the traditional craftsmanship, existence of a formal and informal sector, information lacuna, failure of the existing institutional setup, support mechanism and policy framework are the key issues confronting the traditional bamboo handicraft industry in south India.
6. Majority of the bamboo markets are controlled by the private individuals in all states and they charge high rates from the artisans. Related constraints are low quality of bamboo culms sold at high price, high transportation cost and lack of storage facilities.
7. The small scale (micro-enterprises) and cottage units in south India depict low productive capacity mainly due to lack of mechanization Lack of technological advancement, high cost of production, high relative price, low productivity of artisans, low durability of products, and poor infrastructure facilities are some of the major constraints in production.
8. The informal sector is a limiting factor to the optimal and sustainable development of the industry due to its unhindered growth. The presence of an informal sector/market makes comparison between states highly non-viable. Intermediaries still play a

dominant role in the industry which is detrimental to its social and economic growth. The informal bamboo handicraft industry in south India generates more employment opportunities in the state. Here, the informal sector is more powerful than the formal sector but it lacks any kind of financial and other assistance from the government and other institutions.

9. Technological progress is inadequate because of structural and financial constraints. In addition to these are certain specific economic problems, i.e., operation of the industry and its competition for raw materials, market driven demand and respective changes.
10. The investment in this sector is less attractive due to its small size, low surplus generation, cost escalation, low technological development, and payment of interest on borrowed capital. With this inherent weakness this sector still supports a good fraction of the rural economy. The major constraints for the adoption of new tools are found to be lack of capital for investment, skilled labour and quality raw materials.
11. The traditional artisans are caught in a diminishing *circular flow of development* and *cyclical production process* reflecting stagnation of the industry and thereby affecting all smaller units. Market imperfections and failures are indicative of the lack of a structural market which is the weakest link in the bamboo based productive chain where price wars are common.
12. There is a shift in the policy focus in, utilization of bamboo from subsistence to commercial, the corresponding policy changes, management from centralized to decentralized management emphasizing on participation, and the current dilemmas encountered in the context of bamboo management in the wake of FRA, 2006, its socio-cultural and political dimensions.
13. Development of a supply chain commensurate with the value chain analysis of the existing and emerging utilities of Bamboo is the need of the hour. It is in this regard that there is an urgent need not only to enhance quantitative production of Bamboos but also to upgrade the quality of Bamboos.
14. The role of government in producing raw material will decline as this function is increasingly taken over by the market forces and the informal sector. The public sectors role will be limited to policy-making, regulatory functions and the provision of goods and services that the private sector is unlikely to provide.

STRATEGIES AND ACTION PLAN

STRATEGIES AND ACTION PLAN

INDUSTRY DEVELOPMENT

1. Promoting bamboo industry
 - a. Provide entrepreneurship development where required.
 - b. Provide single window clearance for starting industrial units.
 - c. Simplify procedures for securing loans.
 - d. Categorize the industry into cottage, small, medium and large scale to ensure development at each level.
2. Identifying products
 - a. Identify the products which are in demand (present and prospective) or local and export markets
 - b. Match the products with the level of industry. A guideline is provided.
 - i. **Cottage** (traditional and semi-mechanized): handicrafts, woven products, curtains, bamboo shoot and other food products
 - ii. **Small** (semi-mechanized): tooth picks, incense sticks, chopsticks, charcoal, curtains, bamboo shoot and other food products
 - iii. **Medium** (mechanized): bamboo shoot, furniture, curtains, preservative-treated poles, charcoal
 - iv. **Large**: ply board, corrugated sheet, floor board, paper pulp, activated carbon, building components
 - v. **Joint Venture** : floor board, specialty paper
3. Ensuring raw material supply
 - a. Ensure assured supply of raw material both in raw and semi-processed forms.
 - b. Streamline collection of reed and bamboo from forests.
 - c. Set up distribution points for all the industries, especially to the cottage industry including MBDs.
 - d. For optimal utilization of resources, species-product matching should be carried out. For example, reed bamboo with long internodes, should be used preferentially for woven products.
4. Ensuring skilled manpower
 - a. Ensure availability of trained/skilled manpower.
5. Facilitating availability of tools/ machinery/ technology

- a. Facilitate availability of hand tools and semi-mechanized and mechanized machinery for cross-cutting, slivering, slat/stick making, etc.
- b. Set up Common Facility Centers (CFCs) for pre, primary and secondary processing.
- c. Facilitate transfer/procurement of technology

SOCIAL DEVELOPMENT OF THE TRADITIONAL ARTISANS

1. Establish social protection systems directly linked to the right to social security included in the Universal Declaration of Human Rights (1948) and articulated in more details in the International Covenant of Economic, social and Cultural Rights (ICESCR) adopted by the UN General assembly 1996.

Bamboo based

1. Socio-political and economic empowerment programmes , i.e., focused socio-political and economic empowerment programmes on value addition techniques, entrepreneur skills, managerial skills, personality development and general awareness
2. Review, revive and restructure, if necessary, the existing institutional and organizational arrangements.
2. Assure supply of raw materials (both in raw and semi-processed form) at subsidized rates.
3. Promote bamboo cluster development at State/district level linked to Common Facility Centers.
4. Promote integrated farming system in a focused phased out manner for raw material security in the long run.
5. Provide market support.

Other alternatives

1. Ensure employment opportunity for the MBDs in any public/private enterprises.
 2. Promote bamboo cultivation as a community activity.
 3. Promote production of organic manure.
 4. Promote gender-based activities like tailoring, food processing, handicrafts, etc.
-
2. Creating necessary human resources in the bamboo sector
 1. Enhance local capability entrepreneurship through training in:
 - Confidence building

- leadership
 - Managerial skills
 - Accounting, costing, pricing
 - Market analysis development
 - Business management
2. Organise and conduct training programmes for farmers in
 - Seed technology and planting stock production
 - Establishment and management of plantations
 - Harvesting techniques
 3. Organise and conduct training programmes for artisans in
 - Product design
 - Tools
 - Manufacture of new and appropriate tools
 - Post harvest management
3. Improving social conditions
 - Improve community infrastructure (eg. roads, markets, etc.).
 - Improve Human Development Index (eg. Literacy, health and nutrition, housing, potable water, women empowerment, etc.).
 4. Promoting ITK (Indigenous Technology Knowledge): Document ITK and identify which can be financially exploited.

SUSTAINABLE AND SCIENTIFIC DEVELOPMENT AND MANAGEMENT OF RESOURCES

1. Scientific management of resource for quality and quantity enhancement
 - Manage the clumps by removing side branches, unhealthy and deformed culms, harvesting over matured culms and introducing maturity marking and
 - Selective annual extraction.
 - In addition to clump management, improve productivity by soil working, fertilizer application, irrigation and pest/disease control.
 - Extract edible shoots selectively without compromising sustainability.
 - Collect and process seeds for storage.
 - Practice scientific harvesting (eg. Horse-shoe method of extraction).

2. Establishing nurseries and plantations

- Establish units for seed storage in bulk.
- Produce planting stock of selected species using macro- and micro-propagation techniques developed by research institutions.
- Establish decentralized nurseries for large-scale multiplication of planting stock.
- Conduct trials with selected species for plantation establishment in different agro-climatic regions.
- Identify suitable areas and establish large-scale plantations in forest and non-forest areas with peoples' participation.

3. Encouraging and establishing integrated farming system

- Identify cluster level suitable areas for integrated farming system with peoples participation
- Identify the product specific economic potential species
- Establish nurseries and plantation at the cluster level
- Provide scientific input and expose the primary stakeholder to scientific management
- Constitute Market Information System (MIS) in all states/districts at cluster level to predict market fluctuations and market trends. Promote Collective Marketing Mechanism (like, MFP society of Kerala, Burood Cooperatives society, All Karnataka Meda Association) in all districts to overcome exploitation. If the MIS share this information to MBD, that will be helpful to find solutions to basic economic questions such as, what to produce? How much produce? Whom to produce for?
- Provide necessary appropriate policy support and make the system self-sustainable

Scientific support

1. Establishing germplasm, live collections and seed storage units

- Record flowering details of different species and populations of bamboo within and outside the State.
- Identify different flowering cohorts of the same species based on flowering records.
- Identify elite clumps from each cohort.
- Establish Germplasm to conserve intra-specific variability.

- Establish live collections of bamboo species.
1. Develop and standardize protocols for long term seed storage.
 - Enhancing resources
 - Estimate raw material demand of present and prospective industries for planning resource enhancement.
 - Develop tissue culture protocols for commercially important species.
 2. Providing input for technology/product development
 - Develop appropriate tools and technologies.
 - Upgrade tools and technologies.
 - Innovate products and add value to products.
 - Product design diversification
 - Efficiency improvement
 4. Conducting market research
 - Evaluate the existing market mechanism.
 - Carry out market surveys to understand the players, preferences and potentials.

V. MARKETING BAMBOO AND BAMBOO PRODUCTS

1. Providing market information
 - Collect, analyse and disseminate market information periodically.
2. Marketing quality bamboo and bamboo products at fair price
 1. *Seeds and planting stock*
 - Market quality seeds through seed storage units.
 - Market quality planting stock through decentralized nurseries.
 - Organise and conduct bamboo fests periodically.
 2. *Food Products*
 - Marketing bamboo-based food products including shoots through local and super markets.
 3. *Bamboo culms*
 - Strengthen existing market mechanisms.
 - Encourage setting up of new depots throughout the state.
 - Market graded bamboo for different end uses.
 4. *Semi-processed products*
 - Market treated and dried slivers, slats and sticks.

- Market treated poles.

5. *Bamboo products*

- Market handicrafts through existing mechanisms.
- Promote marketing through tourism destinations.
- Market woven products and industrial products.

6. *Market and market information*

- Establish appropriate institutional arrangement

3. Innovative market mechanisms

- Innovative market mechanism that offer efficient and low cost approach for their sustainable use and conservation, i.e., branding Certification and standard codes

PUBLICITY AND EXTENSION

1. Popularizing cultivation and utilization of bamboo and bamboo products

- Prepare materials (audio-video and print) to publicize the importance of bamboo and bamboo industry.
- Create awareness on the importance of bamboo, its environmental, ecological and industrial utility among all stakeholders including planners and policy makers.
- Create appreciation on bamboo and bamboo products by conducting exhibitions at different levels of Panchayathi Raj Institutions.
- Organize bamboo familiarization meetings and establishment of bamboo clubs to network all stakeholders.
- Motivate stakeholders to cultivate bamboo and, use bamboo and bamboo products.
- Establish demonstration plots of nurseries and plantations.
- Support participation of stakeholders in local, national and international fairs/exhibitions.
- Organise and conduct bamboo fests periodically

BAMBOO INFORMATION SYSTEM

1. Creating, updating and disseminating information on the bamboo sector

Develop databases on:

- a. Different bamboo species (Taxonomy, Flowering cycle, Ecology, distribution, Silviculture, Properties, Uses, etc...)
 - b. Demand and supply
 - c. Human resources (Experts, artisans, traders, etc...)
 - d. Marginalized Bamboo Dependents
 - e. Technologies
 - f. Industries
 - g. Products and markets
 - h. Rules and regulations
 - i. Policies and Institutions
 - j. Bibliography
 - k. Photo archive
2. Develop an interactive Bamboo Information System by integrating data bases.
 4. Disseminate the information through electronic and print media periodically.

INSTITUTIONAL ARRANGEMENT

1. Putting in place an institutional arrangement which supports sustainable development and management of the bamboo sector and marketing by reviewing, restricting and strengthening the existing ones
 - a. Prepare a state specific Bamboo Policy keeping in view state peculiarities and needs of the dependent population catering to the sustainable management of resources, industry development, and livelihood security of the Marginalised Bamboo Dependents, Human Resources Development and marketing.
 - b. Strengthen or set up, where necessary, institutional arrangements for
 - Bamboo research in centres like KFRI, TBGRI and Universities
 - Technical input to prospective entrepreneurs
 - Industry services
 - Common Facility Centers
 - Cluster development and management
 - Financial support
 - Bamboo Theme Park establishment
 - c. Set up an institutional arrangement exclusively for MBDs aimed at
 - Providing incentives to utilize improved technology.

- Encouraging private investments in the bamboo sector.
 - Providing machines like cross cutting, slivering, etc. on a grant or loan basis.
 - Providing timely adequate market information and access.
 - Protecting the rights of the workers/weavers by substituting bamboo/reed products for plastics; making it mandatory for the government owned units of agro processing, fishing, etc. to use these products.
 - Creating a general fund for the development of this sector by way of levying a tax (Green Tax) on environmentally hazardous products which can be substituted by bamboo products. (By using the fund, encourage the self-help groups to cultivate bamboo along riverbanks, government lands and other wastelands. A portion of the fund can be set aside exclusively for the MBD development.)
2. Sustainable bamboo based livelihood development model (Anitha, 2013). The sustainable bamboo based livelihood development model has four components, viz., Community, Village, District and State and is a community centered, decentralised, a participatory development model.
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