KFRI Research Report No. 480 ISSN 0970-8103

ROLE OF BAMBOO IN SUSTAINABLE RURAL LIVELIHOOD IN SOUTH INDIA

(Project sponsored by the National Bamboo Mission, Government of India)
(Final Report of the Research Project No. KFRI/564/2009)

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ABSTRACT OF THE PROJECT PROPOSAL

Project Number	KFRI/564/2009
Title	Role of Bamboo in sustainable rural livelihood in South India
Objectives	1. To identify and generate data on the socioeconomic and livelihood conditions of the MBDs in the southern states and understand the working of this sector. 2. To estimate the economic and livelihood potential of bamboo. 3. To document the indigenous knowledge on bamboo among the MBDs. 4. To develop strategies and prepare an action plan for the improvement of livelihood of MBDS in South India.
Practical utility	The data generated and results of the study would be useful for the policy makers to develop and implement social policies, suitable strategies and action plans to reach the beneficiaries, i.e., the poor and marginalised population through effective distribution of social programmes - a key element tackling poverty and vulnerability thereby aiming at the overall sustainable development of the bamboo sector of south India.
Project period	May 2009 - March 2012
Funding agency	National Bamboo Mission, Government of India.
Principal Investigator	Dr. V. Anitha
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ACKNOWLEDGEMENTS

The author is thankful to Dr. K.V. Sankaran and Dr. R Gnanaharan former Directors, Kerala Forest Research Institute for their kind support and encouragement. This project was funded by the National Bamboo Mission, Government of India, New Delhi and the author records her gratitude for the financial support provided. I would like to place on record my sincere thanks to all the Officials of the State Forest Departments, 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), the Kerala State Bamboo Corporation, the All Karnataka Meda Association, the Andhra Pradesh Burood Bamboo Co-operative Society, Goa Handicraft, Rural and Small Scale Industries Development Corporation, functioning registered and unregistered bamboo handicraft units, the identified primary stakeholders in the States of Kerala, Tamil Nadu, Karnataka, Andhra Pradesh and Goa for the help rendered in the field and cooperation in sharing their information and knowledge. I acknowledge with sincere gratitude the guidance and contributions of Dr. P.K. Muraleedharan, Dr. S. Sankar and Dr. K.K. Seethalaksmi, now retired from service for their valuable contributions and advice in the project. I am indebted to Drs. R.C.Pandalai, P.K. Muraleedharan, and K.K. Seethalakshmi for their valuable editorial comments and directions for improving this report. My special thanks go to Mr. K.P. Sajayan, Research Fellow and Mrs. Ambily M.K, Technical Assistant, for their research aptitude, assistance in data collection, data processing and related works. I also acknowledge the help rendered by Ms. Swathi K, Research Fellow who contributed to the study in the initial few months. My thanks also to Mr. Shahul Hameed, Mr. Roopesh, Mr. Rajendran, Mr. Mathai, Mr. Shabeer and Mr. Sunny for traversing difficult and endless terrain during the course of the study.

ABSTRACT

The report synthesizes findings of the State level studies on the role of bamboo in sustainable rural livelihoods carried out in five south Indian States of Kerala, Tamil Nadu, Karnataka, Andhra Pradesh and Goa. The bamboo industry with immense economic potential in a labour surplus south Indian economy has an important role in both the traditional and non-traditional sectors. In south India, bamboo has many domestic, agricultural and commercial uses and cultural linkage with the bamboo dependent and indigenous people. The artisans in this sector make bamboo products for their sustenance and they are endowed only with traditional skills, tools and work experience. Their bamboo based productive activities mainly involve the four stages of procurement, processing, production and marketing. The raw material requirement of the bamboo dependents is mainly sourced from natural areas/forest depots, private depots, local market and home gardens. There is no technological innovation and mechanisation involved in processing and production. The sector follows basically labour intensive methods and the role of capital is near zero. Production is a small scale household based activity with traditional tools, no product diversification and value addition. The bamboo-based traditional handicraft industry in south India functions through the formal and informal sectors. The formal bamboo sector is organized with the functioning of institutions like the Bamboo Corporation (KSBC) in Kerala, Goa Handicrafts, Rural and small Scale industries Development Corporation, Forest Department and the Burood Co-operative Industrial Society in Andhra Pradesh, All Karnataka Meda Association, Co-operative societies, Self Help Groups, NGOs, among others. Informal sector is unorganized in nature without any institutional support and guidelines. As the new economic policy has opened up market for the Indian manufacturers, including those working in the traditional and non-traditional bamboo sector, enhancing efficiency and competence is vital for the sustainable market existence of the sector. Profile studies highlight that the bamboo artisans are traditional, largely marginalized and involved with the unorganized bamboo based productive activities. They are caught in a diminishing circular flow of social and economic development, lacking social protection and security. There is no consensus on the exact number of marginalised traditional bamboo dependents in south India. The development indicators highlight socio-political and economic backwardness and a stagnant economy. The traditional bamboo based industry, which was an important source of employment to MBDs is now in a declining stage and consequently most of the traditional artisans have been involved with development induced migration largely due to irregular and inadequate supply of raw materials and lack of adequate marketing

facilities. This remains to be a part time/off-season job to many dependents which is today only a supplementary source of income. The products made by the MBDs are yet to reach the larger markets and attract national as well global attention. The opportunity cost is greater than the earned benefit as far as the MBDs are concerned. The average remuneration of a traditional weaver is much lower than the remuneration of other sectors. Local wages and minimum wage fixed by Government of India under Mahatma Gandhi National Rural Employment Guarantee Scheme (MNREGS) is greater than the remuneration from bamboo wage in south India. Policy, institutional indicator analysis matrix highlights diverse ownership, management, institutional and organizational arrangements from State to State in south India. The ownership and management rights are not clearly defined. Institutions started at the State level over a period of time depict institutional inefficiency, attitudinal inactivity, non-accountability and an overall lethargy. This alone is responsible for the growing informal sector where market (supply and demand) chains and trade linkages are ambiguous and unaccounted for, consequently adversely impacting the dependent communities. Despite National and State policies, technological improvements and value added high-end production, the actual benefits have not percolated down to the primary beneficiary. There is a shift in the focus in utilization of bamboo from subsistence to commercial, the corresponding policy changes, paradigm change from centralized to decentralized management and the current dilemmas encountered in the context of bamboo management in the wake of Forest Rights Act (FRA), 2006 and its socio-cultural and political dimensions. Based on the south Indian experience the study recommends the establishment of a sustainable bamboo based livelihood development model primarily focusing on the improvement of the traditional marginalised communities in south India. The study further emphasises the need to implement social policies to reach the beneficiaries. A comprehensive mix of social protection instrument with social security will help to improve the living standards of the poor and marginalised population through effective distribution of social programmes - a key element for tackling poverty and vulnerability.

1. BACKGROUND

Bamboo, a social common capital contributes to the social, economic, and ecological development of a region. In India it forms an important component of homesteads, unproductive lands, and is of common occurrence in the natural forests. Bamboo is a universally used plant, contributing to the subsistence needs of more than 2.5 billion (Anonymous 1994, INBAR,1997), an important component of the subsistence economy of bamboo-dependent sectors of the population and tribal forest dwellers, bamboo craftsman and artisans and local rural people (Nair et.al,1982, Muraleedharan et.al, 2007, Jayasankar1996, 2004; Anitha, 2008, 2012) and further estimated to provide employment to nearly 8 million people (Anonymous, www.mpsidc.org). For ex, in India it is estimated that there are 2 million traditional artisans whose livelihood depends almost entirely on the harvesting, processing and selling of bamboo and bamboo products, such as, baskets, mats and handicrafts. In China, there are millions of farmers who grow bamboo as a component in integrated farming systems. One of the major advantages of bamboo as an entry point to development is the fact that so many products can be produced from it and most of them can be produced by small and medium-scale enterprises. It can generate important political and economic support which can translate into true sustainable development (Rao and Shastry, 1996). Bamboo shoots provide rural people with income during the lean rainy season when no other major agricultural crops can be produced (Thammincha, 1987). It has many domestic and agricultural uses, ranging from household utility products, ornamentals to houses. It has been traditionally used in housing, raw material for handicrafts, food, fuel, fencing, among others, and in modern days, it is being used as industrial raw material for pulp and paper, engineering products, panel products, furniture, interior, among others.

BAMBOO AND ITS SYNONYMS

Poor man's timber (India)
Friend of the people (China)
Brother (Vietnam)
Miracle grass
Wonder plant
Medicinal plant
Food crop
Green gold
Global cooling agent
Carbon sequester
Bio-energy crop
Rich man's fancy
Social Common Capital

Trade and economics highlight that the world market for bamboo is vast and growing. Globally, domestic trade and subsistence use of bamboo are estimated to be worth US$4.5 billion per year, and export of bamboo generates another US$2.7 billion (INBAR 1999). Bamboo can now be turned into high-value products, known as 'engineered bamboo

products' such as floor tiles, panel boards, bamboo mat ply, corrugated sheets and charcoal. India is the world's second richest country in terms of bamboo genetic diversity with 136 species. Approximately 45 per cent of total production of bamboo of the Country is being utilized in paper industries (Kamesh Salam, 2009). The size of the domestic bamboo economy has been estimated at around 2000 crores by the Planning Commission. The market potential however is estimated at around 4500 crores. Bamboo based value added industry is expected to grow at a CAGR of 15 per cent in the period 2001 to 2015. India's bamboo industry is expected to grow to Rs. 26,000 Cr by 2015. India's share in world trade in bamboo which is Rs.2043 Cr. Currently is expected to be 27 per cent of the total market of Rs.100,000 Cr. Recent estimates place the bamboo market at about US $12 Billion and the market is expected to double by 2015. The commercial consumption of bamboo globally is worth around $ 10 Billion, India's share of the global market is estimated at $ 1 Billion while china's share is currently the highest at $ 5 Billion. Furthermore, the National Bamboo Mission estimated that India has utilized only a tenth of its bamboo-producing potential. The bamboo industry with immense economic potential in a labour surplus south Indian economy has an important role in both the traditional and non-traditional sectors.

Despite these technological improvements and value enhanced high-end production on the one hand the actual benefits have not percolated down to the primary stakeholders, i.e., the traditional bamboo dependent who have hence been gradually marginalized from the mainstream bamboo based social and economic development lacking social security (Anitha, 2008, 2012). According to the United Nations estimates, more than three quarters of the global population do not enjoy social guarantees that would enable them to cope with livelihood risks (Sergie, 2012).

The National Policies regulating forest tenure over a period of time has had adverse impacts on the value base of the resource (*i.e., defining bamboo as timber*) and on the acceptance regime of the cultivating and dependent population. There has been a shift in focus in utilization of bamboo, the corresponding legal changes and administration, constraints and present dilemmas in bamboo management in the wake of the most recent Forest Rights Act, 2006 (Anitha,2011,2012,2013), that classifies bamboo as Non Timber Forest Produce (NTFPs). The role of bamboo in supporting the livelihood security of the marginalized bamboo dependents (MBDs) is yet to be documented. Besides, the economic and livelihood potential of bamboo in supporting rural livelihoods has received very less attention of the researchers in India. This study is an attempt to fill this gap focusing on

south India. The data generated and the results of the study will be useful for the planners and policy makers in developing appropriate strategies and action plans aiming at the optimal sustainable development of the bamboo sector in south India giving prime importance to social protection and security of the poor and marginalized bamboo dependents (MBDs) in south India.

1.1. Objectives: The corpus of the study is to highlight the role of bamboo in sustainable rural livelihood in south India. To this end the specific objectives are:

1. To identify and generate data on the socioeconomic and livelihood conditions of the MBDs in the southern states and understand the working of this sector.
2. To estimate the economic and livelihood potential of bamboo.
3. To document the indigenous knowledge on bamboo among the MBDs.
4. To develop strategies and prepare an action plan for the improvement of livelihood of MBDS in South India.

1.2. Methodology: The study area covers the states of Kerala, Tamil Nadu, Karnataka, Andhra Pradesh and Goa in south India. The study is based on primary data and supplemented with secondary data wherever relevant. A three dimensional approach, viz., community, livelihood and market based, has been adopted in order to understand the role of bamboo in sustainable rural livelihood. The *community approach* focused on identifying the bamboo dependent marginalized communities and their concentrations in south India, demographic features, social and economic status. *Livelihood approach* looked into economic aspects, viz., opportunity cost, employment and income potential of bamboo value addition, productivity and policy initiatives, strengths, opportunities, weakness and threats of the traditional bamboo sector as well as focused on the livelihood Index. The *market approach* dealt with the identification of market locations and products, market structure and functioning, inter-sectoral linkages and raw material procurement and supply source. An interview schedule was constructed for assessing both the qualitative and the quantitative aspects of the project objectives.

Socioeconomic and livelihood studies: Socioeconomic and livelihood potential surveys of bamboo dependents was conducted (Appendix 1.1) to study and understand the standard of living, livelihood potential and value addition of the resource. The primary data is generated through a structured questionnaire, focal group discussions (FGDs) and

participant observation. The sample size, sampling design has been arrived at according to the respective targets and the required data has been generated through unit survey. The socio-economic condition of the selected communities has been analyzed in terms of the key development indicators and indices, i.e., demographic features, social status, livelihood index, economic status and basic amenity status. Understanding and documenting the adverse impact of modern techniques of preservation was attempted through a unit survey, participant observation, interviews and FGDs.

Sampling design and tool: A stratified random sampling method has been adopted; thereby each marginalized bamboo household living in each state has an equal chance of being chosen. All major communities and geographical locations were considered based on available information and field exposure. First stage involved the identification of the target group, i.e., the MBDs, and their population as per Census of India. Considering the limitations of large population numbers and geographical distribution in the south India, one per cent of the MBD population from the total was fixed as sample size. The total MBD community households were arrived at by dividing the total MBD communities' population by the State average family size as per the Ministry of Health and Family Welfare, 2007.

Economic and livelihood potential of bamboo: A macro assessment of the potential of bamboo was done based on a detailed market survey conducted in the key markets of the different states covering the different markets segments of the products. Separate pre-drafted market survey schedule was administrated along with FGDs during the survey period 2009-2011 in order to generate data and information on the market dynamics (i.e., market structure, functioning, channels and sectoral linkages) of this traditional sector. Estimation of the economic potential was done through the market analysis (*with available information*) and opportunity cost analysis. The study covered the primary stakeholders, i.e., the wholesalers, retailers, basket weavers, agents and the end-users. Data was collected from all South Indian states with the sample size fixed as 10 per cent of the identified market size. The economic and livelihood potential of the resource is ascertained restricted to case studies in different states mainly due to existence of informal sector and lack of authentic data.

Preparation of an Action Plan: Based on the data generated and field surveys/exposures in south India, an Action Plan for this unorganized sector was prepared, aiming at achieving better development of the bamboo sector in the State.

Secondary sources: The secondary sources include completed earlier studies, published and unpublished relevant documents, publications of Census of India, Official records of respective State Bamboo Mission offices, the State Forest Departments, District Scheduled Caste Development Office, District Tribal Development Office, District Industries Centre (DIC), District Khadi and Village Industries Office, Khadi and Village Industries Commission (KVIC), the Co-operative societies and other relevant institutions and organizations.

Regional Workshop: A Regional Workshop (Appendix 1.2) on the *'Bamboo industry in south India: structure, function and people'* was conducted in June 2010. Majority of the participants were from the south Indian states including various stakeholders of the bamboo sector (i.e., *the traditional artisan, researchers, scientists, non-governmental organizations, industrialist and government officials and policy makers*). The Regional Workshop covered the key focal areas of (a) structure and functioning of the bamboo industry, (b) technological development, product design, production and marketing, (c) Bamboo cluster development, (d) Economic and livelihood potential of bamboo, (e) Indigenous knowledge / Intellectual Property Rights and (f) Policy needs of the bamboo industry.

1.3. Limitations of the study: There were major limitations are at both primary and secondary data generation stages. The existence of both formal and informal sectors posed the major constraint. It was highly difficult to generate information from the unregistered informal units functioning within each state which restricted data generation to the available ones. Besides, the functioning of the informal sector too had made it difficult to generate any systematic data that could be analyzed to make comparative assessment possible as well reveal any major trends. Based on available information with the concerned departments samples were accordingly fixed in each State.

2. THE MARGINALIZED BAMBOO DEPENDENTS IN SOUTH INDIA

2.1. The bamboo dependents - profile studies: The marginalized bamboo dependents (MBDs) in the South Indian states of Kerala, Tamil Nadu, Karnataka, Andhra Pradesh and Goa are found both in rural and urban areas.

Kerala: Kavara, Paraya or Sambava, Pulaya, Muthuvan, Mahendra Medara (Tamil migrants) are the major bamboo dependents in the State who are involved in rural bamboo based productive activities. Muhari, a forward community also known as Mukkari and Muwari are found in at *Bangalam* village in *Kasaragod* district of Kerala and are also traditionally making baskets out of bamboo although off late have significantly moved over to other alternate sources of employment. The Kavara community also known as Gavara (Thurston 1909) belong to the traditional weaving castes in the state of Kerala. Traditionally making mats and baskets out of bamboo and reeds has been the Kavara's craft. They cover only a minority of the total Scheduled Caste (SC) population (0.44 % of the SCs) of the state (Figure 2.1). The majority of the Kavara population reside in the *Palakkad* district of the State. Many of the kin members of those residing in the *Palakkad* district have also migrated to *Kannur*, *Kozhikode* districts, among others, in search of employment. Only 46.4 per cent (Census 2001) of the total Kavara population falls into the literate groups, leaving behind a great majority of women as illiterates. Today they also work as agricultural labourers and casual labourers in construction sites and are seen in *Palakkad* (*Mundur*), *Thrissur* (*Avanoor*), *Malappuram* (*Vazhikadavu*), *Wayanad* (*Panamaram*) and in *Kannur* (*Payam*) district.

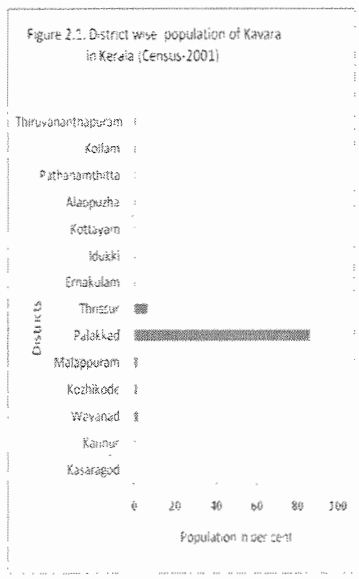
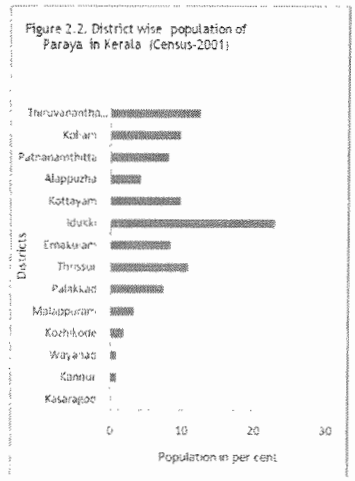


Figure 2.1. District wise population of Kavara in Kerala (Census-2001)

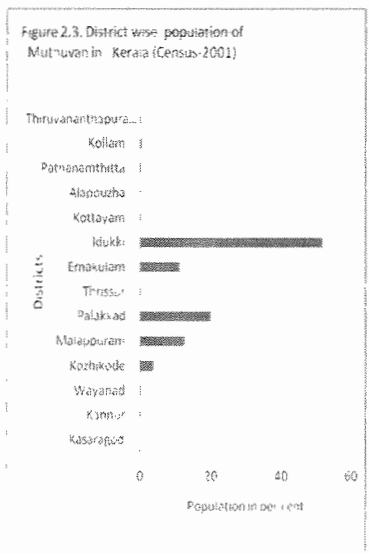
Paraiyar, Parayar & Sambavar also called *Adi-dravida* found in the Indian states of Kerala, Tamil Nadu and in Sri Lanka (Iyer, 1981). The community is known as Sambava (Paraya) in Kerala. In northern Tamil Nadu they are known as Paraiyars, while in the southern areas of that state they are traditionally known as Sambavar. The ancestors of this community earned their livelihood by the sale of bamboo wicker work (Singh, 2002). In Kerala, out of the sixty eight scheduled castes, the Paraiyan community forms the fourth highest

proportion (7.44%) of the total SC population. In highest concentration they are found in the districts of *Idukki*, *Thiruvananthapuram* and *Thrissur*. Unlike the Kavara members about 73.9 per cent (census 2001) of the Paraya community members in Kerala are literate (Figure 2.2).



The Pulaya is also known as Cheraman in southern Kerala. Many were known to be engaged as agricultural labourers, or as serving landowners (Thurston, 1909). The people are also known as talented craftsmen. Though the total population of Pulaya in Kerala is 1041540 (Census-2001), below 1 per cent of them are engaged with bamboo for their livelihood. Most of them are largely found in *Thiruvallur* and *Maniyoor* (Kozhikode district), *Kuttampuzha* (Ernakulam district), *Erumeli (*Kottayam district), *Adimali* (Idukki district) and *Ottasekharamangalam* (Thiruvananthapuram district) of Kerala.

The Muthuvan is a tribal community living in hilly forest regions bordering Kerala and Tamil Nadu. The highest concentration of this community is in *Idukki* and *Palakkad* districts of Kerala (Figure 2.3). The Tamil Muthuvan normally live in clusters and the Kerala Muthuvan are scattered in the cultivable land. Agriculture and NTFPs collection are the major sources of livelihood. The male (in Kerala) are largely working as reed cutters for Kerala State Bamboo Corporation (KSBC) and Hindustan News Print Ltd. on daily wage status. Females make bamboo baskets and mats for the market.

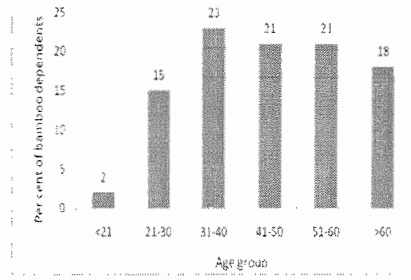


Development indicators and indices of the MBDs in Kerala (Table 2.1) depict a backward economy with a reasonable level of dependence on bamboo based activities. The demographic features of the MBDs in Kerala highlights community ratio at 4.11 per cent i.e, dependence on bamboo for their daily sustenance, of which the Kavara community depicts higher dependence when compared to the others. With an average family size of 4.06 (as against the State 4.9) the sex ratio depicts a preponderance of females over males which is

in par with the State sex ratio of 1084 among the SC communities whereas among the Scheduled Tribe(ST) community it depicts low female population highlighting poor health status among their woman population. Work Participation Rate (WPR) is highest among the Pulaya community. The Paraya community has been involved in the traditional pan (betel leaf) basket manufacture and their current WPR in this craft is equal to 41.49. Children ratio (0-15 years of age) is highest among the Muthuvan community indicating low awareness levels and backward social strictures. Whereas, the Senior Citizen Ratio is highest among the Kavara i.e., the unproductive and no potential group, aged 65 and above who are dependent on the productive population. Dependency ratio is the highest among the Kavara community which is indicative of an increased burden on the productive population (age 16-64 years). The economic status highlights lowest average land holding among the Kavaras.

The share of bamboo in the total household income is highest among the Mahendra Medara community in Kerala followed by the Kavara, Paraya, Pulaya and the Muthuvan. Financial liabilities too are highest among the Pulaya followed by kavara and others. The age group of the MBDs reflect a reasonably high population per cent in the productive age group (Figure 2.4). The social status of the MBDs depicts 85.28 per cent literacy rate as against 93.9 per cent of the State with the rate highest among the Mahendra Medara community. The post metric rate (above 15 years) is highest among the Paraya community. Female headed households is highest among the Kavaras indicating the lack of a male child above 18 years and this is indicative of a greater economic pressure on the women. The Muthuvan tribal community has the highest per cent of illiterate head of the family which has a bearing on the future generations need and aspiration for education among other major development indicators. The widow rate is comparatively higher among the Muthuvans which indicates the life expectancy of the male to be less than the female and it too causes immense economic pressure on the women. The livelihood Index of the MBDs (Table 2.1) reflects highest bamboo dependency ratio and household bamboo dependency ratio among the Mahendra Medara community with least senior bamboo dependency ratio. Bamboo dependency sex ratio is in par with the State with a pre-dominance of females over males while a reverse is noted among the Mahendra Medara community. As far as basic amenities are concerned the scenario

Figure 2.4 Age group of Marginalised Bamboo Dependents in Kerala



highlights access to basic amenities (i.e., drinking water within 500 m, cooking place, electricity and toilet facility) among the MBDs but among the Muthuvans who largely

Table 2.1. Development indicators of MBDs (Kerala)

Ratios	Paraya	Mahendra Medara	Pulaya	Kavara	Muthuvan
Demographic features					
Community ratio (2001)	0.73	--	3.27	0.04	0.07
Sex ratio	1029	--	1049	1034	976
Average family size	4.14	3.71	3.72	4.85	3.5
Children ratio	16.77	21.79	12.68	8.39	22.46
Senior citizen ratio	7.86	1.28	5.22	18.32	6.12
Work participation ratio	75.36	76.92	82.08	73.28	70.06
Dependency ratio	32.69	30.0	21.81	37.5	28.57
Social status					
Literacy rate	88.14	61.42	93.12	72.44	67.64
Post metric rate	17.37	4.92	16.81	8.49	16.07
Female headed households	2.63	4.76	2.77	7.40	6.8
Illiterate head of the family	21.53	61.90	8.33	48.14	70.45
Widow rate	10.22	3.33	1.49	6.45	14.28
Livelihood index					
Bamboo dependency ratio	58.54	80.32	58.40	71.69	56.25
Senior bamboo dependency ratio	14.96	2.04	7.57	11.84	11.11
Bamboo dependency sex ratio	160	81	128	117	350
Household bamboo dependency ratio	25.83	76.19	47.22	62.96	40.90
Economic (Asset-income-liability) status					
Average land holding (in cent)	7	0	12	4	60
Landless Households	0.0	100	0.0	14.8	0.0
Average monthly total household income (in Rs)	3960	2940	4200	4210	4340
Average monthly total household income from bamboo (in Rs)	1654	2895	1420	2415	1440
Share of bamboo works in total household income (in Rs)	41.76	98.46	33.80	57.36	33.17
Percentage of households have financial liabilities	17.70	0.0	22.22	18.51	2.27
Basic amenity status					
Drinking water within 500m	95.21	90.47	94.44	81.48	99.0
Cooking place	99.76	19.04	99.0	99.0	61.36
Electricity accessibility	98.56	95.23	91.66	81.48	29.54
Toilet facility	96.41	85.71	99.0	81.48	20.45
Primary data estimates					

reside in close proximity to natural areas comparatively low toilet facility was noted. Housing status highlights among the target group, 48.71 per cent with tile roofs and 26.92 per cent with concrete roofs. As far as floor is concerned 59.15 per cent possess houses with cement floors and 40.84 per cent with mud floors.

Tamil Nadu: Mahendra Medara, Kuravar, Vanniyar and Paraya are the major MBDs in Tamil Nadu. The Mahendra Medara community are listed as the Most Backward Class by the Tamil Nadu Government. The major clusters of the community are found in *Coimbatore*, *Erode*, *Salem*, *Madurai*, *Chittoor*, *Dindigal*, *Tirichirapally*, *Thiruvannamalai* and *Dharmapuri* (Figure 2.5).

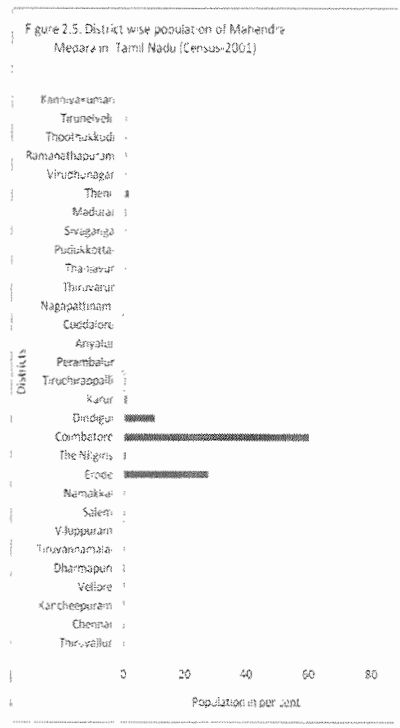


Figure 2.5. District wise population of Mahendra Medara in Tamil Nadu (Census-2001)

Kuravans form the sixth largest Scheduled Caste population in Tamil Nadu state. They make certain household items out of bamboos and palm leafs and sell them to earn their living. Kurava bamboo dependents are largely found in *Coimbatore*, *Villupuram*, *Cadallore*, *Thiruvannamalai*, *Dharmmapuri*, *Puthukottai* districts of Tamil Nadu. The Vanniyar, a bamboo dependent community, (also known as Vannyan, Vanneer, Gounder, Kounder, Naicker) are largely concentrated in *Dharmmapuri* and *Erode* districts of Tamil Nadu. Both male and female participates in bamboo based economic activities. The paraya community also found in Kerala and Srilanka are largely found in P. Nattamangalam in Salem district of Tamil Nadu. Most of them are working in private weaving centres established by merchants.

The development indicators assessed among the MBDs in Tamil Nadu cover demographic, social, economic, livelihood and basic amenity status (Table 2.2). With an average family size of 3.71 (as against the State 3.5) the sex ratio unlike in Kerala depicts a lower female population which is in par to the State sex ratio of 995. The CR indicates Paraya community having approximately 3 per cent dependence on bamboo for their daily sustenance when compared to others. WPR is highest among the Paraya community with 90.32 per cent adequately participating in social labour in the age group of 16-64 years.

The DR indicates least dependency among the Paraya community i.e., less number of dependent population. Children ratio (0-15 years of age) is least among the Paraya whereas the Senior Citizen Ratio though very less among the MBDs in Tamil Nadu is highest among the Mahendra Medara community. The age group of the MBDs reflect a reasonably high population per cent in the productive age group (Figure 2.6). The social status of the MBDs depicts 67.21 per cent literacy rate as against 80.3 per cent of the State with the rate highest among the Mahendra Medara community.

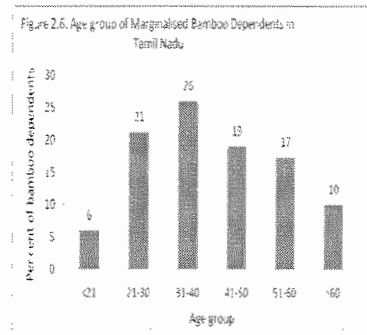
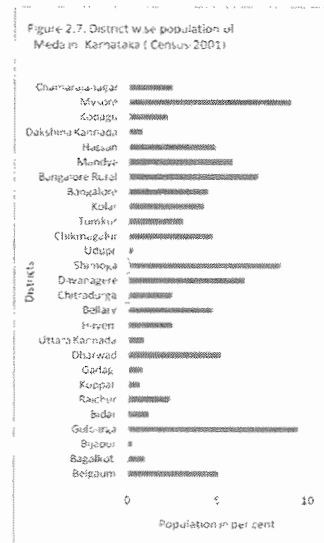


Table 2.2. Development indicators of MBDs (Tamil Nadu)

Ratios/Rates	Mahendra Medara	Kuravar	Vanniyar	Paraya
Demographic features				
Community ratio (2001)	0.40	0.16	--	2.99
Sex ratio	923	990	677	823
Average family size	3.4	4.13	3.46	3.87
Children ratio	18.22	24.2	21.15	6.45
Senior citizen ratio	8.0	1.36	5.76	3.22
Work participation ratio	73.77	74.42	73.07	90.32
Dependency ratio	35.54	34.35	36.84	10.71
Social status				
Literacy rate	75.0	61.5	56.25	55.17
Post metric rate	21.42	12.19	15.38	27.58
Female headed households	33.33	15.09	0	0
Illiterate head of the family	39.39	60.37	53.33	62.5
Widow rate	25.0	8.25	9.52	0
livelihood Index				
Bamboo dependency ratio	79.12	73.78	79.48	51.72
Senior bamboo dependency ratio	11.8	2.47	9.67	6.66
Bamboo dependency sex ratio	121	101	106	55
Household bamboo dependency ratio	87.87	77.35	77.33	37.5
Economic (Asset - Income - Liability) status				
Average land holding	1.5	2.5	3.5	2.7
Landless Households	74.24	47.16	60.0	0
Average monthly household income (in Rs)	6110	5240	5530	10716
Average monthly household income from bamboo (in Rs)	3230	3100	3210	2640
Share of bamboo works in total household income	52.86	59.16	58.04	24.63
Percentage of households have financial liabilities	0.0	0.0	0.0	0.0
Basic amenity status				
Portable water within 500m	99.0	79.24	53.33	25.0
Cooking place	59.09	28.30	26.66	50.0
Electricity accessibility	95.45	73.58	46.66	37.5
Toilet facility	10.6	16.98	26.66	12.5
Primary data estimates				

The post metric rate (above 15 years) is highest among the Paraya community. Unlike in Kerala the female headed households are highest among the Mahendra Medaras. The widow rate too is comparatively higher among the Mahendra Medara. The livelihood index of the MBDs (Table 2.2) reflects highest bamboo dependency ratio among the Vanniyar/Mahendra Medara community and household bamboo dependency ratio among the Mahendra Medara community with least senior bamboo dependency ratio among the Kuravar. Bamboo dependency sex ratio indicates a pre-dominance of females over males. Economic status indicates 58.45 per cent with no tenurial security. Share of bamboo to average household income is highest among the Kuruvars. The interesting feature here is that there is no financial liability among the MBDs in Tamil Nadu. As far as basic amenities are concerned the scenario highlights access drinking water, cooking place, electricity and toilet facility. Housing among the MBDs in Tamil Nadu highlights a better picture when compared to Kerala, with 73.23 per cent having tile roofs and 72.53 per cent possess houses with cement floors.

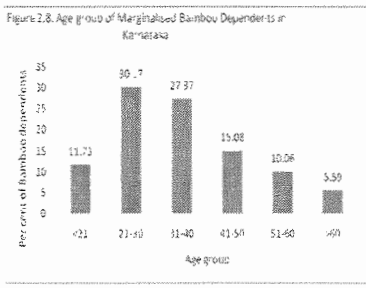
Karnataka: Meda, Korama are the major MBDs in the State. Meda a dominant bamboo dependent community in Karnataka is also known as Medar, Myadar, Burood/Burud. The term Burood is in use in northern districts of Karnataka. The Medas are primarily basket-makers and cultivators. Some of them also work as labourers in coffee plantations and in paddy fields. The Meda women participate in household work, economic activities, and social functions and contribute to the family income. *Gulbarga*, *Mysore* and *Shimoga* are the districts with large Meda population (Figure 2.7). Major clusters of this bamboo dependent community is found at *Belgaum*, *Hubli*, *Darwad*, *Bellari*, *Chithradurga*, *Shimoga*, *Mysore*, *Mandya*, *Madkeri*, *Davanagere*, *Chickmangalore* and *Sirsi* and in urban Bangalore. They are seen in *Nagarbhavi*, *Benchegry*, *KHB colony*, *Ramuth Nagar*, *New market*, *Kengeri*. They can be categorized into; (i) Rural poor (those who are dependent on bamboo year round except during agricultural season), (ii).Urban poor (those who depend on bamboo and undertake casual labour work) and (iii) Urban middle class (those involved with the sale of bamboo & bamboo article).



The community Korama is also known by different names, viz., Korama Chatti, Korachar, Kormar in Karnataka. Females of the community engage themselves in weaving bamboo baskets as an economic activity. They are largely found only at *Devanahally* in Rural Bangalore and Gopala in *Shimoga* district. As per the Census 2001, their population is about 115110. Development indicators and indices of the MBDs in Karnataka (Table 2.3) depict a backward economy. With an average family size of 5.04 (as against the State average 4.6) the sex ratio depicts low female population with the least among the Korama community. The community ratio indicates negligible dependence on bamboo for their daily sustenance.

Table 2.3. Development indicators of MBDs (Karnataka)

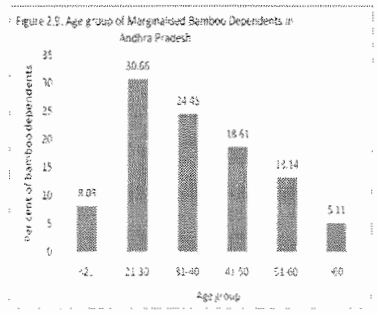
Ratios /Rates	Meda	Korama
Demographic features		
Community ratio (2001)	0.07	0.22
Sex ratio	951	786
Average family size	5.23	3.84
Children ratio	22.28	12.00
Senior citizen ratio	4.45	4.00
Work participation ratio	73.25	84.00
Dependency ratio	36.5	19.04
Social status		
Literacy rate	72.75	66.66
Post metric rate	14.98	0
Female headed households	1.47	7.69
Illiterate head of the family	47.05	61.53
Widow rate	9.14	9.09
Livelihood index		
Bamboo dependency ratio	62.72	43.18
Senior bamboo dependency ratio	43.75	50.0
Bamboo dependency sex ratio	90	171
Household bamboo dependency ratio	85.29	23.07
Economic (asset - income - liability) status		
Average land holding	1.0	2.5
Landless Households	48.52	15.38
Average monthly total household income (in Rs)	8106	2630
Average monthly total household income from bamboo (in Rs)	2502	2300
Share of bamboo works in total household income	30.86	87.45
Percentage of households have financial liabilities	0.0	0.0
Basic amenity status		
Portable water within 500m	85.29	99.0
Cooking place	76.47	46.15
Electricity accessibility	88.23	99.0
Toilet facility	67.64	76.92
Primary data estimates		



WPR is highest among the Korama community. Both children and senior citizen ratio is comparatively less in the Korama community. The age group of the MBDs reflect a reasonably high population per cent in the productive age group (Figure 2.8). The social status of the MBDs depicts 71.96 per cent literacy rate as against 75.6 per cent of the State with Meda community registering highest rate. Illiterate head of the family is high among the Korama community. The livelihood Index of the MBDs reflects highest bamboo dependency ratio and household bamboo dependency ratio among the Meda community. In Karnataka the actual bamboo workers constitute 57.34 per cent and 62.75 per cent workers are involved with bamboo sales while 13.96 per cent exclusively conduct only sales. Economic status indicates 48.52 per cent of the Meda without tenurial security indicating economic insecurity. The share of bamboo to average household income is high among the Korama community when compared to the Medas. Similar to the MBDs in Tamil Nadu here too no financial liability was recorded as per the primary investigation. The community has access to basic amenities with a comparative low percentage for cooking facilities. Housing status reflects 81.48 per cent possess houses with tiled roofs and a minimal 2.46 per cent having concrete roofs. Of them 40.75 per cent have cement floors and approximately 59.25 per cent have stone paved floors.

Andhra Pradesh: The major traditional bamboo dependent community in Andhra Pradesh are the Buroods'(Burud). Yerukala, the other bamboo dependent community is an indigenous group, also known as Erukala, Erukula, although traditionally were involved in wicker works, like, basket-making, mat weaving, have today moved over to others sources of livelihood, such as, pig rearing and rope-making. The Buroods are also known as Mahendra Medara, Medar, Meda, and Mederai. Bamboo is a major household sector where sizable quantity of the resource is utilized by this weaving community. Traditionally this community has been procuring bamboo and making livelihood by making baskets, mats, fencing mats, winnow, hand fans and other articles on local demand. Most of their bamboo dependents are concentrated in *Adilabad*, *Khammam*, *Krishna*, *Prakasam*, *Warangal*, *Karimnagar*, *Srikakkulam*, *Rajahmundry*, *Indhupuram*, and *Hyderabad* districts. The development indicators (Table 2.4) indicate CR at 0.05 per cent, i.e., the Burood communities' dependence on bamboo. With an average family size of 4.38 (as against the State 3.9) the sex ratio depicts a preponderance of females over males not in par to the

State sex ratio of 992. WPR is 74.73 per cent. A low Senior Citizen Ratio is noted while 33.81 dependency ratios have been worked out.



The age group of the MBDs in Andhra Pradesh reflects a reasonably high population per cent in the productive age group (Figure 2.9) The social status of the MBDs depicts 60.05 per cent literacy rate as against 67.7 per cent of the State.

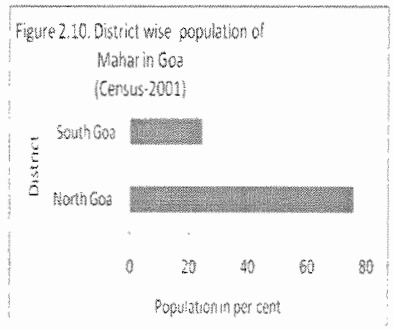
A high percentage of illiterate head of the family has been recorded. The livelihood Index of the MBDs reflects high bamboo dependency ratio and household bamboo dependency ratio. Economic status indicates an economic backwardness with 40.56 without tenurial security. A major share of their income comes from Bamboo based productive activities with Rs. 2795/- an average monthly household income from bamboo. As far as basic amenities are concerned the scenario highlights minimum access to basic amenities. Most of the people do not own land and house, they reside in rented houses and road side tents. When compared to Kerala they have no liabilities especially bank loans. They have no assistance from Government or any NGOs. Most of them are living in small huts or rented single rooms and

Table 2.4. Development indicators and indices of Burood community in Andhra Pradesh

Ratios / Rates	Burood
Demographic features	
Community ratio (2001)	0.05
Sex ratio	1004
Average family size	4.38
Children ratio	21.6
Senior citizen ratio	3.67
Work participation ratio	74.73
Dependency ratio	33.81
Social status	
Literacy rate	60.05
Post metric rate	15.7
Female headed households	16
Illiterate head of the family	56.6
Widow rate	8.18
livelihood index	
Bamboo dependency ratio	92.21
Senior bamboo dependency ratio	3.87
Bamboo dependency sex ratio	98
Household bamboo dependency ratio	94.33
Economic (Asset - Income - Liability) status	
Average land holding	1.99 cent
Landless Households	40.56
Average monthly total household income (in Rs)	3233
Average monthly total household income from bamboo (in Rs)	2795
Share of bamboo works in total household income	86.45
Percentage of households have financial liabilities	0.00
Basic amenity status	
Portable water within 500m	79.24
Cooking place	50.4
Electricity accessibility	91.51
Toilet facility	45.28
Primary data estimates	

working in open air and road side. They have no weaving hall, storage place of raw material and finished products. Absence of sufficient infrastructure often affects the productivity of the weaver especially during monsoon. The housing status among the Buroods depicts a poor housing scenario with 29.24 per cent owning houses with tiled roofs and the remaining having roofs made up of bamboo and thatching leaves, asbestos, tin sheet and concrete. With regard to the floor 51.88 per cent have cement floors with others having floors made of mud and stone.

GOA: Mahar is a traditional bamboo dependent community in Goa. The population status depicts 75.6 per cent in North Goa and 24.4 per cent in South Goa. Major areas of Mahar bamboo dependents are *Pernem*, *Bicholim* and *Valpoi* (Figure 2.10). Male of this community work as agricultural labourers and casual labour 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 the 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.

Table 2.5 summarizes the development indicators and indices of the MBDs in South India. Comparatively the community ratio highlights 4.11 per cent dependence on bamboo for their daily sustenance in Kerala. The average family size is high in Karnataka followed by Andhra Pradesh. The sex ratio depicts a preponderance of females over males in Kerala and Andhra Pradesh. Work Participation Rate is almost the same in all the states, ie.,

approximately 75 per cent are adequately participating in social labour to the total community population.

Table 2.5. Development Indicators of MBDs (South India)

RATIOS	KERALA	TAMIL NADU	KARNATAKA	ANDHRA PRADESH
Demographic features				
Community ratio (2001)	4.11	0.40	0.07	0.05
Sex ratio	1044	916	929	1004
Average family size	4.06	3.71	5.04	4.38
Children ratio	16.58	20.3	21.02	21.6
Senior citizen ratio	7.97	4.74	4.40	3.67
Work participation ratio	75.34	74.95	74.57	74.73
Dependency ratio	32.59	33.41	34.09	33.81
Social status				
Literacy rate	85.28	67.21	71.96	60.05
Post metric rate	16.31	17.63	12.94	15.7
Female headed households	3.29	21.12	2.46	16
Illiterate head of the family	27.47	50.0	49.38	56.6
Widow rate	9.54	15.07	9.13	8.18
Livelihood index of MBDs in South India				
Bamboo dependency ratio	59.91	75.12	55.41	92.21
Senior bamboo dependency ratio	13.56	7.71	44.44	3.87
Bamboo dependency sex ratio	156	108	97	98
Household bamboo dependency ratio	32.23	79.57	75.30	94.33
Economic (Asset - Income - Liability) status of MBDs in South India				
Average land holding (in Cents)	--	2.0	1.2	1.99 cent
Landless households	6.41	58.45	43.20	40.56
Average monthly total household income (in Rs)	3930	6899	5368	3233
Average monthly total household income from bamboo (in Rs)	1964	3045	2401	2795
Share of bamboo works in total household income	49.97	44.13	44.72	86.45
Percentage of households have financial liabilities	16.11	0.0	0.0	0.0
Primary data estimates				

The dependency ratio too records between 33-34 per cent. The Children ratio comparatively (0-15 years of age) is high in Karnataka and Andhra Pradesh and lowest in Kerala. The social status of the MBDs in South India highlights Kerala with highest literacy rate. The post metric rate (above 15 years) is highest in Tamil Nadu. Female headed households is highest in Tamil Nadu indicating the lack of a male child above 18 years and

thus can be inferred as a greater economic pressure on the women. The livelihood Index reflects highest bamboo dependency ratio and household bamboo dependency ratio in Andhra Pradesh with least senior bamboo dependency ratio.

Economic status indicates an economic backwardness with poor tenurial and economic security. The contribution of bamboo to average monthly total household income is higher in Andhra Pradesh followed by Tamil Nadu and least in Kerala. Financial liabilities were noted only among the MBDs in Kerala indicating poor institutional and government support. The traditional bamboo based industry, which was an important source of employment to MBDs is now in a declining stage. Largely due to irregular and inadequate supply of raw materials and lack of adequate marketing facilities, this remains to be a part time/off-season job to many dependents for whom it is today only a supplementary source of income.

3. THE TRADITIONAL BAMBOO SECTOR AND MARKET IMPERFECTIONS

3.1. Raw material procurement and supply chain

Bamboo forms an important species of the moist deciduous forest cover of Kerala. The most preferred and utilized species in Kerala is *Ochalandra travancorica* or reeds. The raw material requirement of the bamboo dependents is mainly sourced from the natural areas, home gardens, Kerala State Bamboo Corporation (KSBC) and private depots. The stock of bamboo in different regions of forest in Kerala highlight Olavakode region with maximum total area under bamboo and stock followed by Northern region (Table 3.1.1).

Table 3.1.1. Stock of Bamboo in different forest regions of Kerala

Circle	Total area (km2)	Bamboo stock (Dry)(Tonnes)	Yearly availability (Tonnes)	Per cent
Northern region	1,522. 74	807,151.00	67,262.59	30.68
Olavakode region	2,230. 98	895,130.80	74,594.25	34.03
Central region	1,723. 79	234,205.70	19,517.15	8.91
High range region	2,820. 51	122,726.80	10,227.23	4.66
Southern region	2,828. 44	571,232.00	47,602.67	21.72
Total	11,126.46	2,630,446.3	219,203.89	100.00

Source: KSBC, 2011

The bamboo species commonly available in Kerala market or government depots are *Bamboosa bambos, Dendrocalamus strictus and Ochlandra travancorica.* Stock of different bamboo species in the homesteads of Kerala highlight *bambusa bamboos* to be the most common (Table 3.1.2) followed by *Bambusa vulgaris, Oclandra* (Reedi), *Thyrsostachys oliveri, Dendrocalamus strictus* and *Pseudoxytenanthera stocksii.*

Table 3.1.2. Stock of Bamboo species in homesteads of Kerala

	Bambusa bambos	Bambusa vulgaris	Dendrocalamus strictus	Thyrsostachys oliveri	Oclandra (Reedi)	Pseudoxyt-enanthera-stocksii	Total
No. of culms	13003843 (95.50)	303835 (2.23)	16000 (0.11)	98440 (0.72)	188434 (1.38)	8360 (0.06)	13618912 (100)
Weight (tonnes)	326736	3767	405	486	262	46	331702

Source: KSBC, 2011

The KSBC has a monopoly over the collection and distribution of raw material from the natural areas to its primary stakeholders. Currently, the KSBC largely supplies reeds to the formal sector including the small scale industrial (SSI) units. The quantity supplied from KSBC to the traditional weavers and SSIs depicts a decrease in quantity from 12862 MT in 2000-01 to 6959 MT in 2009-10. The quantity supplied to the traditional weavers has also registered a decline from 9050 in 2000 to 5600 in 2009. The same has been noted for SSI units during the same period (KSBC, 2011). This trend according to the Corporation officials is due to decline in demand and a shift over from rural production to urban production. The Bamboo Corporation supplies reeds at subsidized rates and buys the mats from them for the manufacture and marketing of bambooply. KSBC has a price support programme (minimal wage) for registered mat weavers. Resource procurement among the MBDs, (i.e., who are not part of the formal sector) is largely a group activity and 98 per cent undertake weekly collections.

The natural bamboo resource of Tamil Nadu is very poor. 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 *Bamboosa bambos*, *Ochlandra travancorica* (Table 3.1.3). 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, 2004). Out of 33 districts the study identified depots in 16 districts where MBDs reside (Table 3.1.4). There are many depots in various other districts too, but, they often find the distance a detrimental factor in accessing the same.

Table 3.1.3.Major sources of bamboo (Tamil Nadu)

Sl No.	Species	Source
1	Bamboosa Bamboos	Thanjavore, Kerala
2	Narrow bamboo	Forest/ river banks
3	Bamboosa nana	River banks
4	Ochlandra Travancorica	Kerala

Table 3.1.4.District-wise families, sales outlet and number of depots				
Sl no	District	No. of families	No. of sale outlets	No. of depots
1	Coimbatore	65	9	10
2	Cuddalore	20	3	2
3	Dharmapuri	40	5	2
4	Dindigul	30	5	4
5	Erode	80	22	14
6	Krishnagiri	20	10	4
7	Madurai	60	10	6
8	Pudukkottai	10	3	4
9	Salem	55	3	6
10	Theni	30	4	4
11	Tiruchirappalli	50	10	5
12	Tiruppur	12	3	2
13	Tiruvannamalai	24	7	10
15	Vellore	15	6	2
16	Villupuram	10	3	6
Primary data estimates				

Over a period of time there has been an increase in bamboo extraction from the forest of Karnataka (Table 3.1.5), i.e., from 428000 numbers in 2006-07 to 554720 in 2010-11. The major source of raw material procurement in Karnataka is the natural areas, private and government depots and the Meda Sanga Co-operatives.

Table 3.1.5. Bamboo extracted from forests of Karnataka (in number)	
2006-07	428000
2007-08	282200
2008-09	206600
2009-10	154870
2010-11	554720
Source: Karnataka Forest Department, 2011	

Andhra Pradesh has a recorded forest area of 23.2 per cent (63,814 sq.kms of total geographical area) of which bamboos occupies approximately 16.1 per cent of forest area (10, 291 sq.kms) in various densities (Reddy, 2010). Andhra Pradesh is the most bamboo abundant southern state of India (Forest Survey of India, 2005). The two naturally occurring species in Andhra Pradesh are Dendrocalamus *strictus* and *Bamboosa arundinacea* (*B.bamboos*). Bamboo occurs abundantly in Adilabad (except the South-western region), Northern part of Warangal, Eastern part of Karimnagar, Khammam, Srikakulam, Vizianagaram, Visakhapatnam, East Godavari and northern part of Cuddapah districts. Bamboo is found in pure form, dense form, in medium density and also in scattered form (Table 3.1.6).

Table 3.1.6. Areas covered with Bamboos in all the Circles in the Andhra Pradesh (area in ha.)						
Circle	Pure Bamboo Area (above 200 clumps/ha)	Dense Bamboo Area (100-200 clumps/ha)	Medium Bamboo Area (50-100 clumps/ha)	Scattered Bamboo area (below 50 clumps/ha)	Total Bamboo Area	Bamboo Area Percentage
Adilabad	39740	36759	30798	43714	151011	21.3
Anantapur	2021	0	2021	5052	9094	2.3
Guntur	5377	6145	8450	7682	27654	4.3
Khammam	39435	74174	49673	23473	186755	23.5
Kurnool	29715	32262	22923	14433	99333	17.9
Rajahmundry	13260	29172	45967	47735	136134	29.3
Srisailam	39273	15526	10046	31053	95898	16.0
Tirupati	11803	10117	5058	7587	34565	8.3
Visakhapatnam	74698	35931	62406	52005	225040	34.2
Warangal	19339	11376	11376	21615	63706	10.0
Total	**274661**	**251462**	**248718**	**254349**	**1029190**	**16.1**
Source: Andhra Pradesh Forest Inventory Report, 2010.						

Bamboo is extensively grown by the farmers in farm forestry (pure Bamboo Plantations) agro-forestry (bund planting) and in households also. It is available only from forest depots through public auction, Burood Bamboo Industrial Co-operative Societies and private depots. Approximately, 1 lakh tonnes are made available to domestic sectors and Burood societies (NMBA report Andhra Pradesh, 2010).

In the Industrial sector, bamboo is mainly utilised by three paper mills, namely, (i) Sirpur Paper Mills, Kagaznagar, (ii) A.P. Paper Mills, Rajahmundry and (iii) ITC Limited, Bhadrachalam; as pulp wood. Bamboo is supplied in the form of bamboo industrial bundles to the paper mills at the rates fixed by the Government (Table 3.1.7). Approximately, 2 lakh metric tonnes are removed annually of which around 1 lakh tonnes are supplied to the three paper mills in the State (NMBA report Andhra Pradesh 2010). Government of A.P supplies bamboos to the Burood societies through government timber depots at subsidized rates (which are approximately 50% of market value). The quantity of bamboo supplied directly to the Burood community has depicted a decline from 2006-07 to

2010-11 (Table 3.1.7). During the same period bamboo sold via forest (government) depots has illustrated significant variations and there has been no supply to the paper mills since 2008-09.

Table 3.1.7. Supply of Bamboo in Andhra Pradesh

Year	Supply of bamboo to paper Mills (MTs)	Supply of Bamboo to Buroods (Nos)	Bamboo sold in Forest Depots (Nos)
2006-07	19885	2352288	9365076
2007-08	16307	2057728	6599409
2008-09	Nil	3329682	7754530
2009-10	Nil	1638726	11243447
2010-11	Nil	1192411	8182776

Source: Andhra Pradesh Forest Inventory Report, 2010

Over the years there has been considerable reduction in the extraction of bamboo from the natural forests (Tale 3.1.8). In Tamil Nadu the extraction of Bamboo from forest declined from 17,461 MT in 1980-85 to 1,500 MT in 1995-2000; similar is the case in Karnataka and Andhra Pradesh.

Table 3.1.8. Extractions of bamboo from forest (Quantity in MT)

State	1980-85	1985-90	1990-95	1995-2000
Tamil Nadu	17,461	6,635	4,010	1,500
Karnataka	1,17,192	48,948	25,169	21,882
Andhra Pradesh	13,29,255	2,36,090	NA	1,70,000

Source: Adkoli, 2010

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 (i.e., bamboo production from government lands and private forest has depicted a decrease i.e., from 1800 m^3 in 1999-2000 to 536 m^3 in2003-04 to 129300 m^3 to 82645 m3 in 2003 respectively (IRADE 2008). The major source of raw material in the south India still continues to be the natural area (Table 3.1.9).

Table 3.1.9. Source of raw material in South India	
Kerala	a. Natural forest b. Kerala State Bamboo Corporation (KSBC) depot c. Home garden
Tamil Nadu	a. Natural areas (Forest and river banks) b. Private depot (Import from neighbouring states and private plantations)
Karnataka	a. All Karnataka Meda Association (AKMA) b. Department of Forest c. Private Depot
Andhra Pradesh	a. Natural areas (Forest and River banks) b. Burood Co-operative Industrial society c. Department of Forest
Goa	a. Home garden b. Private plantations
Primary data estimates	

The supply chain of bamboo within each state is different and often species specific (Appendix 3.1). In Andhra Pradesh the key actors of the supply chain are the forest depots, the Burood Bamboo Industrial Co-operative Society and the natural areas. In Goa the supply chain includes the home gardens, private plantations and imports. The bamboo supply chain of Kerala is different for each species. Prominent components of this supply chain are private merchants and KSBC. In Tamil Nadu, the supply chain highlights natural areas, home gardens and imports. A quick perusal indicates the dominance of the informal sector in the Bamboo supply chain.

3.2. Utilization and product diversity

The major sectors which utilize bamboo/reed include, household, traditional, industrial (pulp and paper), and export sectors (Table 3.2.1). Household sector uses both bamboo and reed for a variety of purposes, such as, poles, tents, houses, scaffolding, agricultural implements, among others and often for walls of houses and thatching. Pulp and paper industry uses both bamboo and reed, for the production of paper and rayon. The traditional sector predominantly uses bamboo, engages in wicker activities, such as, weaving mats, baskets, winnows, handicrafts, among others, but, today they largely use reeds. In Kerala, bamboo is use exported to other states where it is used in the farms, as supports, scaffolding, wicker activities. Excepting the state of Goa all others have been utilizing bamboo largely in pulping (Table 3.2.2).

Table 3.2.1. Sector-wise utilization of bamboo in South India

Kerala	Tamil Nadu	Karnataka	Andhra Pradesh	Goa
Traditional sector	Traditional sector	Traditional sector	Tradition al sector	Handicraft industry
Handicraft industry	Handicraft industry	Handicraft industry	Handicra ft industry	Construction sector
Paper & pulp industry	Paper & pulp industry	Paper & pulp industry	Paper & pulp industry	Agriculture sector
Bamboo ply industry	Constructio n sector	Constructio n sector	Construct i-on sector	
Construction sector	Agriculture sector	Agriculture sector		
Agriculture sector		Sericulture		

Table 3.2.2. Utilization of bamboo in South India (Quantity in MT)

State	Pulping	Other uses
Kerala	60000	25000
Tamil Nadu	10000	0
Karnatak a	40000	30000
Andhra Pradesh	210000	60000
Goa	0	10000
Source: Adkoli, 2010		

Different products besides household based items are made out of bamboo in the different States of south India largely seasonal in nature and based on demand (Table 3.2.3). Largely they are involved in the production of domestic, commercial, value added, premium, intermediary, interior décor, furniture items. Baskets are probably the oldest major bamboo product. Baskets of various sizes and shapes have been used in agricultural households for different farm and off-farm activities from time immemorial. Bamboo based production is a household based rural enterprise dependent on regional and seasonal factors which determines the demand. Seasonal factors determining demand include (a). harvest season (tomato, mango, pepper, paddy, corn, coffee, among others), (b). festivals and celebrations(Gowry and Ganessa festivals) and (c). marriage season. The regional factors include (a). tourism zone/ route, (b). industrial zone (bambooply industry; agarbathy, cashew processing, among others), (c). fisheries (Fishing harbors), (d). agriculture (pepper, paddy, coffee, corn, tapioca, etc.), (e). sericulture, and (f). trade/export (fruits and vegetables, betel leaf, flower, among others). The functional relation is expressed as:

D = f (S + R + P)
where, D = demand of the product, S = season, R = region and P = price of the product
P = f (D + R + Q)
where, P= price of the product, D= demand of the product, R= cost of raw-material, Q= quality of the product

Table 3.2.3. Most moving items, season and availability (south India)

Sl No.	Items	Season	Available in
Kerala			
1.	Rice basket	Marriage season	Kannur, Kozhikode, Thrissur, Palakkad, Kottayam, Thiruvananthapuram
2.	Paan basket	All season	Thrissur
3.	Fish basket	No season	Kottayam, Alappuzha, Ernakulam, Kollam
4.	Mat	All season	Central and southern districts
5.	Winnow	Harvesting season	Palakkad
6.	Vatty	All season	Thiruvananthapuram
Tamil Nadu			
1.	Tomato basket	All season	Coimbatore, Dindigul, Erode, Salem
2.	Poultry basket	All season	Madurai, Thiruvannamalai
3.	Round basket	All season	Madurai, Vellore
4.	Winnow	Festival season	Dharmapuri, Erode, Thiruchirappilly
5.	Mango basket	December - May	Dharmapuri
6.	Tree guard	June - October	Coimbatore, Cuddalore
Karnataka			
1.	Winnow	Gouri and Ganesa festival	All Karnataka
2.	Rice basket	Marriage season	All Karnataka
3.	Pan basket	All season	All Karnataka
4.	Rotty basket	All season	Northern region of Karnataka
5.	Presentation basket	Marriage season	All Karnataka
6.	Pooja set	Festival season	All Karnataka
7.	Cocoon rearing tray	All season	Rural Bangalore, Mandya
Andhra Pradesh			
1.	Basket	All season	All state
2.	Winnow	Festival season	All state
3.	Mat	All season	All state
4.	Hand fan	Summer	All state
5.	Pooja set	Festival season	All state
6.	Temporary Platform	All season	All state
Goa			
1.	Marriage set	Marriage season	Ponda, Valpoi
2.	Large basket	Harvesting season	Pernam, Valpoi, Ponda
3.	Fancy basket	All months	Bicholim
Primary data estimates			

Price of these products varies from place to place and also within a place. Price of the product mainly depends on the demand of the product, availability and cost of raw-material and finally size and quality of the product. The demand for traditional bamboo products can be classified into household demand and commercial demand. In the coastal and rural areas of Kerala, products made of bamboo have been used due to its quality in retaining the freshness of products and aesthetic value. Bamboo baskets have been traditionally used for carrying vegetables, fruits, fish, among others. Similarly, in many parts of Thrissur, Palakkad and Malappuram Districts, mango and betel leaf baskets are popular. Mangoes and betel leaves are exported from Kerala to other parts of the country in such special baskets. Conventional mats used for spreading and drying of paddy, pepper, coffee, among others, are mostly produced in agricultural households. Commercial mat mainly moves out for industrial purpose and as special mats used as an intermediate material for the manufacture of bambooply. Major bamboo products identified from Kerala depicts price variations from place to place according to cost of raw material and market demand (Appendix 3.2).

In Tamil Nadu bamboo production is seasonal and based on demand. Tomato, mango, poultry are the key moving products (Appendix 3.3). Traditional people in different areas use different treating methods to increase the durability of the bamboo articles (Plate 1).

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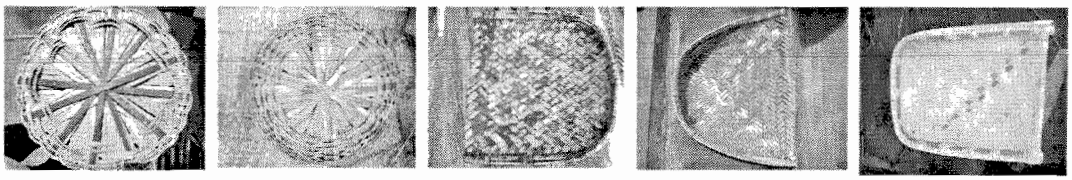
Plate 1. Treatment methods in Tamil Nadu.



Used Steel ribbon | Used plastic ribbon | Treated by paste of tamarind seed | Treated by paste of turmeric and paper | Treated by paste of fenugreek and paper

In Karnataka, interestingly, green bamboo is available in Bamboo bazaar along with bamboo products. Bamboo products available in markets can be categorised into those for food and grains, puja, and harvest season (Appendix 3.4). In Andhra Pradesh the demand for bamboo articles varies from rural to urban (Appendix 3.5). Winnow (*Chata*), Basket (*Gampa*) and Mat (*Thadukkal*) are the most moving items in rural areas. Chata is a

necessary article to all pooja and festivals. During each pooja time the people buy a new Chata. *Goathadukal* is a most moving item in urban areas. Its used to make temporary platforms at construction sites. Peak season of market demand in Andhra Pradesh is January to April and July to September especially monsoon period is off season of this traditional sector. Most moving bamboo products in Goa are a traditional marriage basket (*Arano*), large basket and fancy basket (Appendix 3.6). The peak market season is September to April. Price variations of the various similar products in the different states depict an imperfect market situation with price discrimination.

3.3. Inter- sector linkages

Traditional product diversity in Kerala links this traditional sector with many other sectors of the economy (Figure 3.3.1 & 3.3.2). The seasonal nature of the other sectors also has an influence on the marketing opportunities of the weavers.

Figure 3.3.1. Inter-sector linkages of bamboo

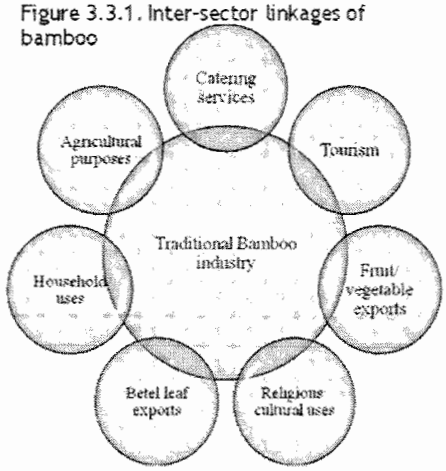
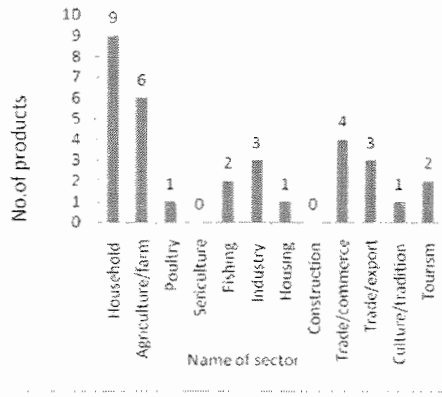


Figure 3.3.2. Inter-sector linkage of traditional bamboo products (Kerala)



It is this fluctuating nature which has led to the decreasing motivation of the workers in pursuing their traditional occupations. Traditional mat, winnow, sift and baskets, among others, are directly linked to the traditional households, the demand for which is seasonal. As far as agriculture and farm is concerned bamboo mats are used to dry coffee, turmeric, cardamom, ginger, among others. Traditional fishing trap, and fish box are also made of bamboo. Bamboo mat is a byproduct of bambooply, i.e., industrial by product. KSBC collects bamboo mat in large quantities from central and southern districts of Kerala. In trade and export too bamboo baskets are used to export crab, fish, mango and betel leaf.

Coming to the housing sector bamboo curtain is one of the highly demanded items in Kerala. The traditional bamboo sector is linked to the tourism, agriculture, household, catering, vegetable/fruit exporters, household, and cultural/religious sectors. Market survey highlighted the key bamboo markets and their linkages in the State (Table 3.3.1).

Table 3.3.1. Bamboo markets and their major linkages (Kerala)

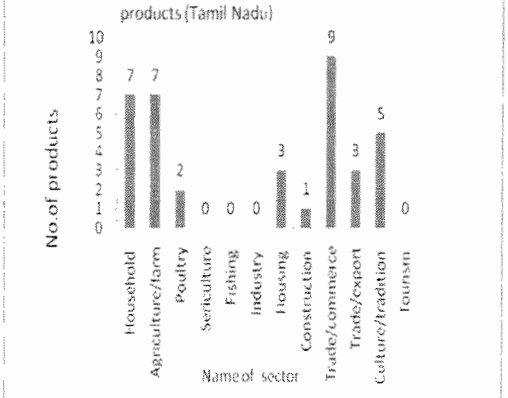
District	Place	Major linkages
Thrissur	Thrissur, Chalakkudy, Irinjalakuda, Chavakkad, Kodungalloor, Kunnamkulam, Mathilakam	Catering services, Mango baskets, Agriculture
Palakkad	Palakkad, Koduvayur, Nemmara	Catering services, Agriculture
Malappuram	Thirur, Pan bazaar, Valanchery	Betel industry, Catering services
Kozhikode	Palayam market	Catering services
Kasargod	Kasargod	Agriculture
Ernakulam	Ernakulam	Catering services

Source: Primary data estimates

Bamboo as a raw material in Kerala plays an important role in trade linkages with Tamil Nadu. Tamil Nadu imports bamboo, reed and outer layer of reed from Kerala as raw material. Mango exporters of Kerala buy mango basket from Tamil Nadu in order to export mango to various parts of the country.

In Tamil Nadu the inter sector linkages of the traditional bamboo products is the highest with trade and commerce followed by agriculture, household, culture and others (Figure 3.3.3). The culture and festivals of the people of Tamil Nadu are closely linked to bamboo articles. Small winnows are unavoidable in poojas and festival (*Sumangali pooja), Zeerkoodai* and *Tiruvabharanapetty* for presentation on wedding occasions. Different types of baskets and archanathattu among others are used for religious purpose. The trade and commerce sector of Tamil Nadu widely depends on bamboo baskets especially tomato and mango packing and exporting. Different types of baskets and winnows are used in agriculture sector. Namackal and surroundings demand more chicken exporting baskets. The housing sector focuses on mats, windows, curtain, among others. Bamboo made round baskets are important article in the sale of vegetables, fruits and flowers. Flowers, decorating basket and stick are also related to the trade and

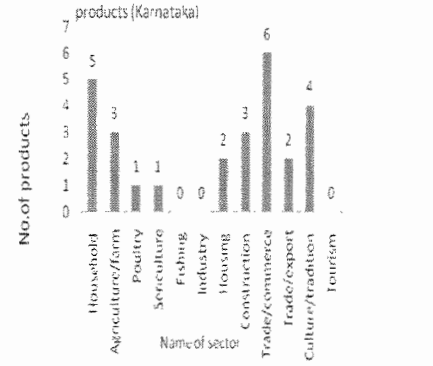
Figure 3.3.3.Inter-sector linkage of traditional bamboo products (Tamil Nadu)



commerce of the state. To a large extend here in Tamil Nadu the traditional baskets are still in use.

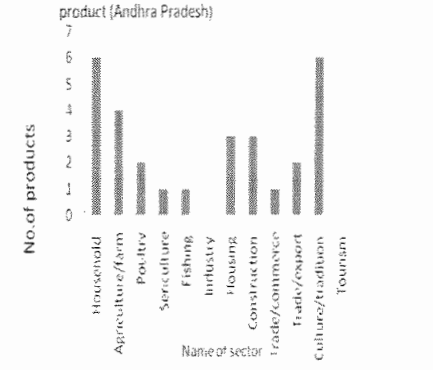
In Karnataka, trade and export (22.22 %) are the key sector linked with this traditional sector with baskets used for packing and exporting fruits and vegetables outside the state and elsewhere (Figure 3.3.4). The traditional household sector trades in traditional household articles such as, basket, winnow, infant baby cage, cooked rice filter, among others. Large baskets are used in agricultural farms during harvest season of harvested fruits, vegetables and food. Mats, window, among others, are used for constructing houses and temporary sales outlets. In the construction sector ladder, stool, and temporary platforms, among others, is made of bamboo._Furthermore, linked to culture and tradition, bamboo made small winnow is an important item for any pooja and festival in Karnataka. Sericulture an important vocation in Karnataka is directly linked to this traditional sector. The sector is solely dependent on bamboo made cocoon rearing tray and baskets, besides the agarbathi making is another important cottage industry here.

Figure 3.3.4. Inter-sector linkage of traditional bamboo products (Karnataka)



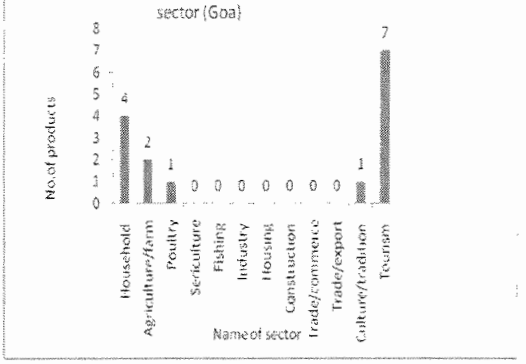
In Andhra Pradesh, the rate of sectoral linkage highlights culture/tradition and household sectors (Figure 3.3.5). Pooja articles especially for Ganga pooja and Durga pooja, articles related to traditional wedding ceremony. The traditional household articles are basket, winnow, and cooked rice sieve among others. Large baskets are use in agricultural farms to take harvested fruits, vegetables and food grains. *Gummi* is a storage product made of bamboo to store and protect paddy especially in houses of farmers and agricultural workers. The construction sector makes use of ladder, stool, and temporary platforms, among others, all made of bamboo. In trade and export bamboo baskets for packing and export fruits , vegetables and poultry rearing basket are widely used. The fishing sector too uses traditional fishing instruments and bamboo basket, it

Figure 3.3.5. Inter-sector linkage of traditional bamboo product (Andhra Pradesh)



retains the freshness of the product transported within. Andhra Pradesh too like Karnataka makes use of sericulture cocoon rearing tray and its accessories made of bamboo. In a nutshell, Bamboo Industry in Andhra Pradesh is mainly limited to paper mills for pulpwood. However, as a cottage industry, it flourishes well in Burood Societies, sericulture, vegetable gardens, agarbathi industry, among others. There is a need to establish more industries with various possibilities that bamboo offer in building construction, plywood, food and medicine, among others, as these products are eco-friendly. In Goa, tourism is the key sector that has trade linkages with this traditional primary sector followed by household and agriculture (Figure 3.3.6). In farming and agriculture large baskets and mats made of bamboo are widely used. In culture and tradition a set of three bamboo articles namely *Arano* (wedding set) is an inevitable item in the ceremony of a traditional wedding celebration in Goa.

Figure 3.3.6. Inter-sector linkage of traditional bamboo sector (Goa)



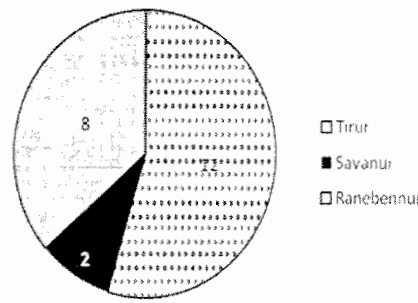
Sectoral linkage: Traditional bamboo basket and betel leaf trade

The economics of traditional bamboo basket and betel leaf trade in south India highlights strong trade linkages. Major betel leaf export centres in south India are Tirur in Kerala, Ranebennur, and Savanur in Karnataka. The best quality of betel leaf in India is produced at Tirur in Malapuram district of Kerala. Tirur is home to approximately 2,000 farmers who depend on betel leaf cultivation for their livelihood. The village exports the largest quantity of betel leaves from India to Pakistan. Approximately 1000-1200 baskets of betel leaves are dispatched per day from Tirur Pan Bazaar (*Vettilangadi*), to Pakistan via Mumbai or Delhi (Map 3.3.1). Traders send the leaves twice a week by train to Delhi and Mumbai from where they are flown to Pakistan. Karachi and Lahore are the biggest import markets of the Indian betel leaves. Major domestic markets for south Indian betel leaf are North Indian cities. Tirur usually exports up to 40 tonnes of betel leaf every month in the peak season between January and June. Delhi and Mumbai are the major junctions in the international trade route of betel leaf in India.

Map 3.3.1. South Indian betel leaf trade route

The study highlights 22 betel leaf exporters in south India (Figure 3.3.7). Baskets made of bamboo are the only available source for the transportation of betel leaf in its fresh fine form. Bamboo basket facilitate up to 10 days transit of betel leaf in normal condition. Almost all traditional bamboo articles are replaced by substitutes in the recent years, and as of today there is no substitute innovated for pan basket due to its natural qualities. The strong demand for pan basket and its advantages highlights the relevance of the bamboo basket in its trade.

Figure 3.3.7. Betel leaf exporters in South India



The inter-sector linkages of traditional bamboo products indicates its links with a large number of primary secondary and tertiary sectors of the economy (Figure 3.3.8) highlighting its immense potential in generating revenue for the state, income and

employment to large sections of socio politically and economically under-privileged communities.

Some traditional bamboo products have linkage with more than one sector, for example mat from Kerala linked with agriculture and farm works, household utilities, houseboat making (tourism) and bambooply (industry). The rate of linkage in the south Indian states of Kerala, Karnataka, Tamil Nadu, Andhra Pradesh and Goa (Table 3.3.2) reflects links largely with household, agriculture/ farm, trade /commerce and tourism sector. While Tamil Nadu and Karnataka indicate high linkages with trade/commerce, Andhra Pradesh with household and culture/tradition, Kerala with household, Goa depicts strong linkages with the tourism sector.

Figure 3.3.8.Inter-sector linkages of traditional bamboo sector

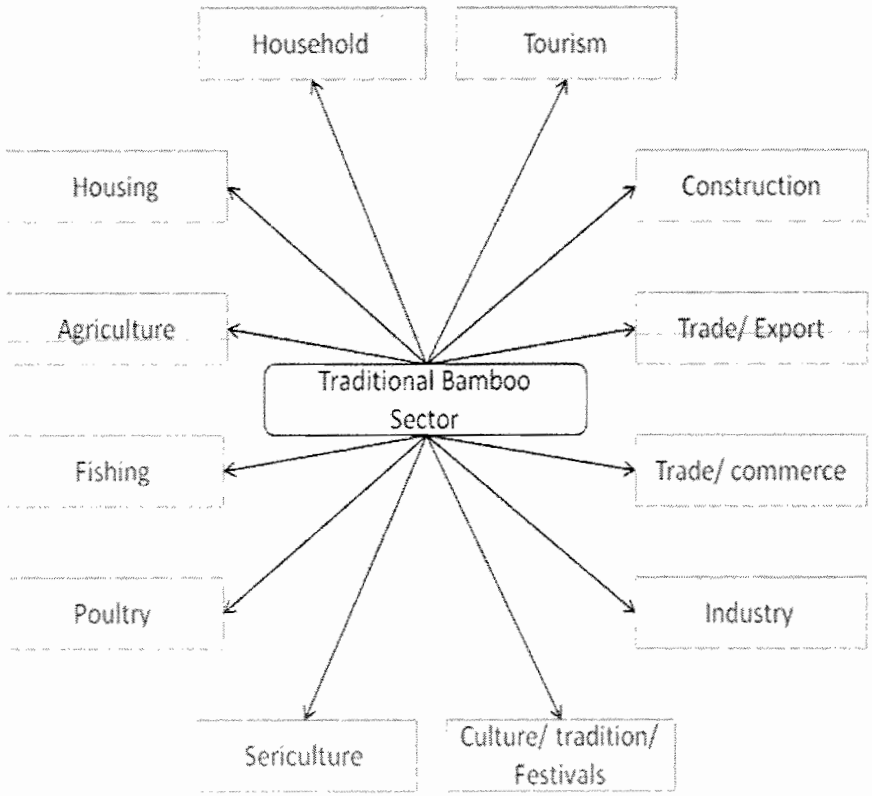


Table 3.3.2. Inter-sector linkages of traditional bamboo sector in South India

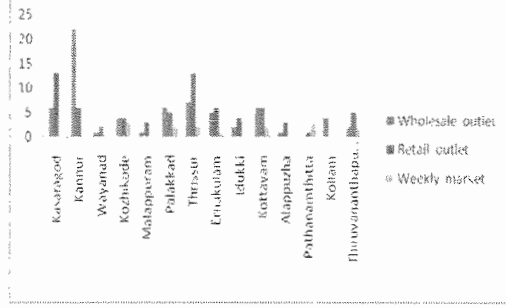
Sl No.	Sectors	Rate of linkage				
		Kerala	Tamil Nadu	Karnataka	Andhra Pradesh	Goa
1.	Household	28.12	18.92	18.52	20.69	26.67
2.	Agriculture/farm	18.75	18.92	11.11	13.79	13.33
3.	Poultry	3.12	5.41	3.70	6.90	6.67
4.	Sericulture	0.00	0.00	3.70	3.45	0.00
5.	Fishing	6.25	0.00	0.00	3.45	0.00
6.	Industry	9.37	0.00	0.00	0.00	0.00
7.	Housing	3.12	8.11	7.41	10.34	0.00
8.	Construction	0.00	2.70	11.11	10.34	0.00
9.	Trade/commerce	12.50	24.32	22.22	3.45	0.00
10.	Trade/export	9.37	8.11	7.41	6.90	0.00
11.	Culture/tradition	3.12	13.51	14.81	20.69	6.67
12.	Tourism	6.25	0.00	0.00	0.00	46.67
	Total	100.00	100.00	100.00	100.00	100.00

Source: primary estimates, 2011

3.4. Economics of bamboo

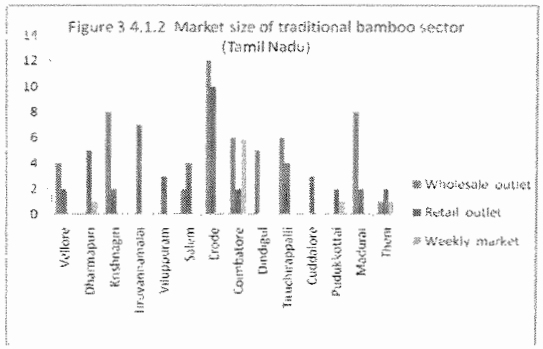
3.4. 1. Market size: In Kerala, there are different methods of sales adopted among the marginalized communities, such as, door to door sales, to wholesaler, retailer, through the market-man and also direct sales at market place on market days. The existence of middlemen is a detrimental factor especially for commercial baskets. Each area is under the control of a set of agents, they provide raw material and collect the final products, who also keep the weavers under their financial advances. The study revealed 67 wholesale outlets, 71 retail outlets and 15 active weekly markets spread throughout Kerala (Figure 3.4.1.1).

Figure 3.4.1.1. Market size of traditional bamboo sector (Kerala)



Marketing methods in Tamil Nadu are sales at work place or own outlet, door to door sale, participating weekly market, sale to wholesalers, collection agents and local merchants.

The market size in Tamil Nadu highlighted 52 wholesale outlets, 48 retail outlets and nine active weekly markets (Figure 3.4.1.2).



Balleri in Karnataka, has the highest number of private depots (Table 3.4.1.1). Marketing takes place by way of sales at work place; most of these work places are in bamboo bazaars, exclusive only for bamboo and bamboo products. Participating in weekly market, sale to vendors both wholesalers and retailers are common. Generally, the place where the sale of bamboo products takes placeis known as Bamboo Bazaar /Burood Street (Burood Galli). All these bazaars are concentrated in urban areas. The bazaar is not only for products, it is also famous for bamboo trade and here the traditional bamboo dependents are the traders and producers themselves.

Table 3.4.1.1. Size of private bamboo depots in Karnataka

Place	Number of Private depots
Shimoga	18
Harihar	15
Bijapur	4
Balleri	40

The main marketing practices of traditional bamboo products in Andhra Pradesh are through the conduct of door to door sales and via agents. In urban areas the MBDs sell their products at their own work place or sales outlet. In Andhra Pradesh,12 retail outlets at Mazomjahi market in Hyderabad, eight wholesale and two retail outlets at Bheemaram in Warangal district and 12 wholesale and six retail outlets at Gudiwada in Krishna district were noted. In Adilabad, Khammam and Prakasam district no sales outlet was identified during the survey period.

The MBDs in Goa adopt different marketing routes, viz., door to door sales, through wholesale and retail outlets, sales at workplace, sales at market place, and sales through *Aparant* emporiums. Weekly markets identified in Goa are Mapsa (Friday), Bicholim (Wednesday), Ponda (Wednesday and Saturday) and Sakling (Monday). The handicraft emporiums set up by GHRSSIDC (Goa Handicrafts, Rural and Small Scale Industries Development Corporation) namely "Aparant" promote the artisans of terracotta, brassware,shell craft, wood craft, cane and bamboo, azulejos, among others. 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. State wise market size indicates Kerala with maximum number of markets followed by Karnataka and least in Goa (Table 3.4.1.2). The figures of the following table are identified in the primary study. MBD household weaving units are excluded from the sales outlet. In Goa public sector emporiums facilitate to marketing of traditional bamboo articles made by MBDs.

Table 3.4.1.2. State wise size of traditional bamboo market*

State	Retail outlets	Wholesale outlets	Weekly market	Total
Kerala	48	52	9	109
Tamil Nadu	40	15	7	62
Karnataka	32	40	2	74
Andhra Pradesh	30	12	2	44
Goa	4	0	4	8

[1]Wholesale outlet: exclusive sales outlet for bamboo products or bulk sales @ wholesale price

[2]Retail outlet: bamboo product sales with other products or small sales unit.

[3]Weekly market: a market places for buying and sale all kind of items such as vegetables, grocery, household utilities, among others. The number of participants will vary in each market day.

Primary data estimates, 2011
(*Identified)

3.4.2. Marketing channels

Bamboo market in south India is highly imperfect. Markets vary in terms of number of sellers, volume of trade and mode of market. There are different methods of sales adopted among the traditional weavers, such as door to door sales, to the wholesaler, retailer, Collection agent, market man and also direct sales at work place, own outlet and market place on market days (Plate 2).

In Kerala, besides the formal channel via the KSBC, the informal channel is dominated by the presence of collection agent and market man. The *market man* is the intermediary between the primary producer and end-user. He does not belong to the bamboo dependent community, bears no financial investment and is not responsible to any possible loss. But he has an unwritten right to make trade of any articles in this market. Another intermediary of this sector is the *collection agent* who can be categorized

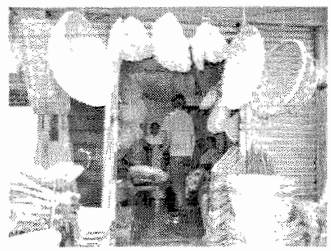
according to how they are involved in the marketing process, i.e., (i) collection of bamboo products from MBD households and conduct of door to door sale by foot, (ii) raw material distribution and conduct wholesale/ retail, and (iii) undertake wholesales and export to other districts and states.

Plate 2. Different marketing methods of MBD

Door to door sale

Sales at work place

Sale at weekly market



Permanent sales outlet

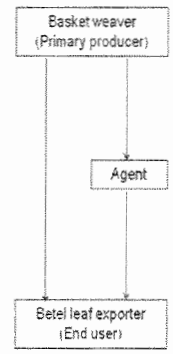
The study has identified 12 marketing channels in Tamil Nadu with the primary producer, collection agent, wholesaler, retailer and local merchant, among others. Similar to Kerala, the presence of an informal sector is enormous with collection agents and local merchants dominating the scene. The primary producer routes his product through the local merchants, the collection agent, the wholesaler, retailer, or directly to the private weaving centre and end-user through the weekly markets. They are thus vulnerable to exploitation.

In Karnataka, eight key marketing channels in traditional bamboo sector were identified. The major market participants include the primary producer, agents, wholesaler and retailer. Five major marketing channels were identified in the traditional bamboo sector of the state of Andhra Pradesh. The number of stakeholders and channels in marketing process is comparatively less in Andhra Pradesh. The identified stakeholders are primary producers, agents and retailers. In Goa, the study identified 10 marketing channels. The

key market participants are the primary producer, agent, retailer, wholesaler, GHRSSIDC and emporiums. The study has identified a dominant unauthorized market with a large number of marketing channels (Appendix 3.8) which in itself reflects the growing informal sector and its consequences on the livelihood security of the dependent populace.

Pan bamboo basket is a product with no substitute. The pan bamboo basket trade is confined to the informal sector with two dominant marketing channels (Figure 3.4.2.1). The number of market players in the marketing channel is relatively small when compared to other bamboo products. Although the betel leaf market has a wide social base it contributes very little to the economic security of the primary stakeholder, indicating a highly exploitative nature.

Figure 3.4.2.1 Marketing channels of bamboo betel basket



3.4.3. Price differences

In Kerala, the market price of different species clearly depicts price differences for the same size of bamboo (Table 3.4.3.1), with *Dendroclamus gigantius* fetching the maximum market price, i.e, Rs.100/- for 10 ft size. In spite of having a clearly chalked out area and collection procedure the raw material is almost inaccessible for majority of the MBDs in Kerala, who are scattered all over the State and are largely far away from the Depots and often have to bear the burden of transport cost too.

The cost raw material at different places in Tamil Nadu clearly depicts high price variations which lead to exploitation of the Marginalized groups. For instance, 12 Ft medium

Table 3.4.3.1. Bamboo species and average market price (Kerala)

	Species	Vernacular Name	Size	Market Price
1	Bamboosa bambos	Mula	10 ft	60.00
2	Dendrocalamus strictus	Kallammula	10 ft	80.00
3	Bambusa giganteus	Aanamula	10 ft	100.00
4	Ochlandra travancorica	Eetta, Eera, Earakalli Kar-eetta, Oda	12 ft	10.00
6	Bamboosa multiplex	Pulloda		-

Source: Primary data estimates, 2011

bamboo price varies from Rs.25/- in Madurai and Salem to Rs.100/- in Erode and Tiruchirapalli districts of Tamil Nadu.

In Karnataka, too the price variations have highlighted exploitation of the MBDs (Table 3.4.3.2). For instance, average bamboo of 20 Ft length varies in price within the State, i.e., Rs.100/- in Shimoga and Rs.80/- in Harihar.

The Karnataka Forest Department supplies bamboo at a subsidized rate for the primary stakeholders, i.e., the traditional worker (Table 3.4.3.3).

Table 3.4.3.2. Price of bamboo (Karnataka)

Place	Length of bamboo (Ft)	Bamboo price		
		Narrow	Average	Normal
Mysore	18	-	-	180
Mysore	12-15	-	-	150
Shivamoga	20	-	100	-
Shivamog	12-15	15	-	-
Shivamog	10	-	50	-
Harihar	20	50	80	-
Ranibennur	18	-	60	-
Sevanur	12	-	50	-
Bagalkot	10-14	-	170	200
Bijapur	10	-	70	-
Gulberga	18	60	-	-
Balleri	12	35	-	100

Source: Primary data, 2011

Government of Andhra Pradesh supplies bamboos to the Burood community through Forest Department Depots at subsidized prices (about 50% of the market rate) (Reddy, 2010) (Table 3.4.3.4). The government price of bamboo (2011) has illustrated an increase over 2009 prices. Common bamboo found in Goa is priced at Rs.25/-.

Table 3.4.3.3. Bamboo price difference in Karnataka

Bamboo type	Length	Market price	Subsidized price
Big bamboo	18Ft	25.00	23.00
Big bamboo	12Ft-18Ft	20.00	18.50
Small bamboo	18Ft	13.00	11.70
Small bamboo	12Ft-18Ft	12.00	10.70

Source: Karnataka Forest Department, 2011

Table 3.4.3.4. Bamboo price in Andhra Pradesh

Class	Diameter (cm)	Rate of Buroods	Auction Rate
Special Class	15 to 18	17.55	45.00
First class	12 to 15	12.15	30.00
Second class	9 to 12	7.65	15.00
Third class	Up to 9	3.20	7.00

Source: Official Records of AP Forest Department, 2011

As has been noted there exists price differences between states (Table 3.4.3.5) and within the state too. For instance, in Kerala the average market price differs between the different species of bamboo. For 10 ft of *Bambusa bamboos*, *Dendrocalamus strictus*, and *Bambusa giganteus* the average market price is Rs.60/-, Rs. 80/- and Rs.100/- respectively. The bamboo price in Andhra Pradesh for special class, first class and second of bamboo the auction rate is Rs.45/, Rs. 30/- and Rs. 15/- respectively and there are subsidized rates for the Burood community at Rs.17.55/-, Rs. 12.15/- and Rs. 7.65/- respectively (AP Forest Department, 2011).

Table 3.4.3.5. Average price of bamboo in South India

State	Item	Government Price	Average Market Price	Subsidized Price
Kerala	Bamboo	-	80.00	-
	Reed	10.00	15.00	3.15
Tamil Nadu	Bamboo	-	110.00	-
	Reed	-	25.00	-
Karnataka	Bamboo	20.00	83.00	18.50
Andhra Pradesh	Bamboo	30.00	45.00	12.15
Goa	Bamboo	-	25.00	-

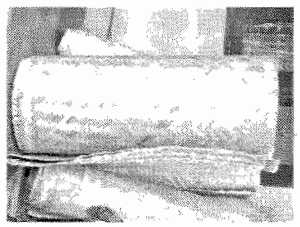
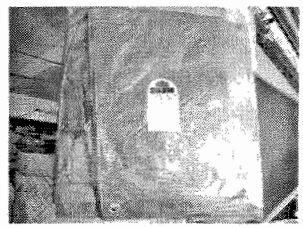
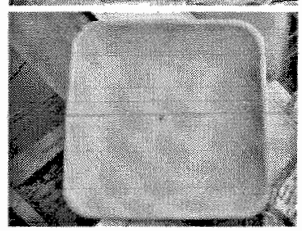
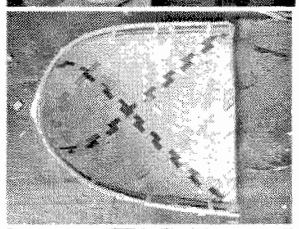
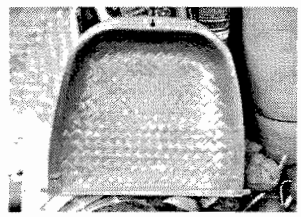
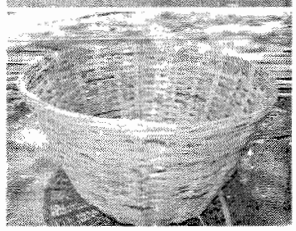
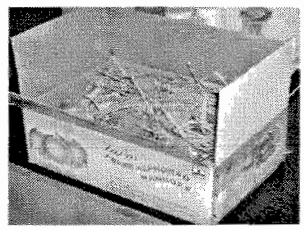
3.4.4. Traditional products and substitutes

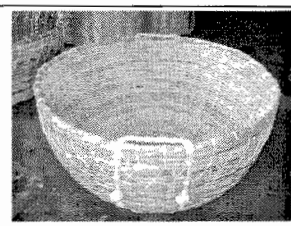
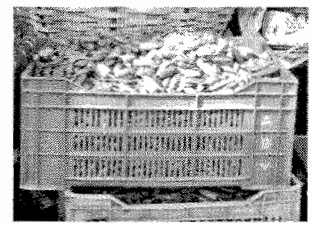
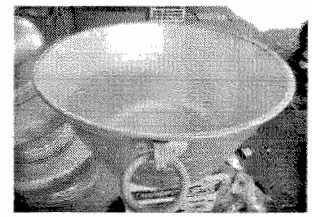
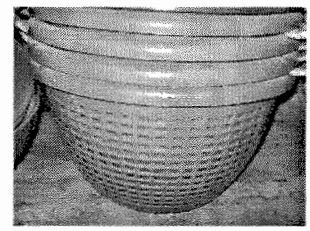
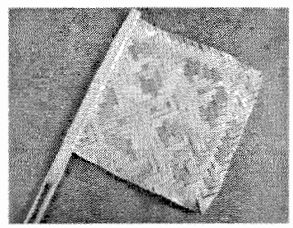
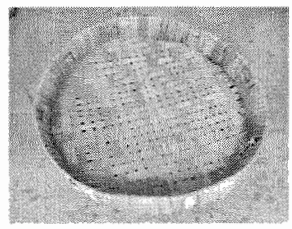
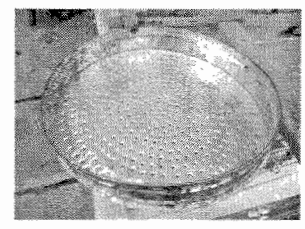
Substitution Impact

The introduction of substitutes, such as, plastics and synthetic fibres have pulled down the market demand for bamboo products tremendously in south India (Plate 3). Fishermen, farmers, households and other end users have moved on to the substitutes as they are more sturdy and durable. For instance, the intervention of the plastic box has widely swept out bamboo baskets from fishing harbours and cashew processing industries in Kerala; aluminum made rice basket for catering service and paper boxes in packaging of fruits (eg. mango) and other exports are other examples in Kerala, Karnataka, Andhra

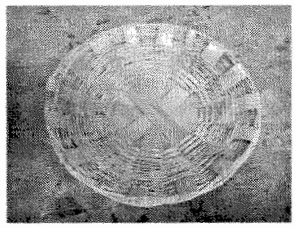
Pradesh and Tamil Nadu. And finally plastic substituted domestic items too, thereby capturing the market to a large extent.

Plate 3. Comparison of traditional bamboo products and its substitutes available in South India

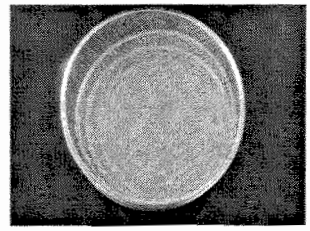
No	Name & Place	Item	Market Price	Substitute	Market Price
1	**Mat** (Kerala)		120.00		175.00
2	**Sift** (Kerala)		40.00		80.00
3	**Winnow** (Kerala, Tamil Nadu)		60.00		40.00
4	**Mango basket** (Kerala, Tamil Nadu, Andhra, Karnataka)		15.00		25.00
5	Tomato basket (Karnataka, Tamil Nadu)		60.00		275.00

6	Fish basket (Kerala, Tamil Nadu, Karnataka, Andhra		80.00		140.00
7	Sales basket (Kerala)		40.00		220.00
8	Rice basket (Kerala)		120.00		700.00
9	Basket		60.00		120.00
10	Hand fan (Karnataka, Andhra Pradesh)		10.00		10.00
11	Filter (Andhra Pradesh)		30.00		40.00

12 Rice filter (Tamil Nadu, Andhra Pradesh)



5.00



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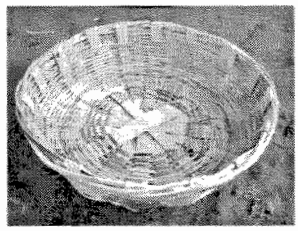
13 Tray (Tamil Nadu, Karnataka)



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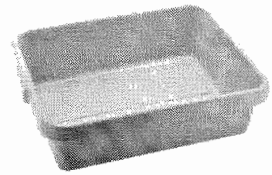


40.00

Market imperfections and consumer surplus

As has already been explained earlier the products made by the MBDs are yet to reach the larger markets and attract national as well global attention. The market features of these products highlight: (a) seasonal demand, (b) availability of large number of substitutes, (c) small number of buyers & large number of producers, (d) competitive market with buyers dominance, (e) direct marketing with no advertisement, (f) high market price volatility among the sellers and markets,(g) poor bargaining power, (h) lower price elasticity of demand, and (i) high transaction cost.

Table 3.4.4.1. Relative price of bamboo products and their substitutes

Product	Bamboo		Plastic		Relative price
	Price (in Rs.)	Duration (in years)	Price (in Rs.)	Duration (in years)	
sift	35	1	65	2	70
Basket	35	0.5	40	2	140
Primary data estimates					

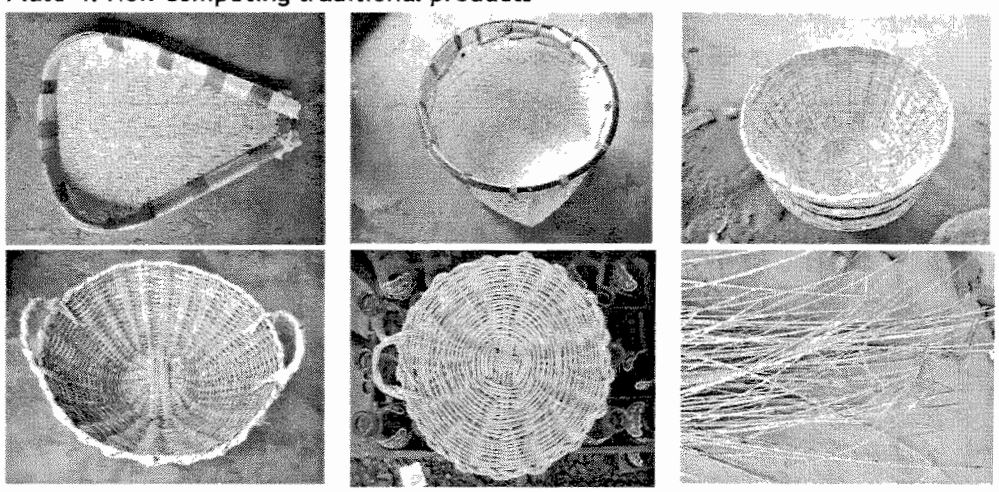
Although bamboo is a natural, strong fibre, having aesthetic looks and the products are environment-friendly the production rate is low and the cost of manufacturing is high. The prevalence and competition with these substitutes poses a grave threat to the age old livelihood source of the MBDs. The utility of bamboo and plastic product for the similar purposes is the same but there exists price difference (Table 3.4.4.1). Market price and durability of a single unit of plastic product is higher than that of a single unit of bamboo product. However, the relative price reveals that the total economic cost over bamboo product is higher than that of plastic product for the same utility. The price elasticity of bamboo basket is equal to that of plastic basket (Table 3.4.4.2) and the price elasticity of bamboo sift is higher than that of plastic sift. People prefer plastic to bamboo products because the consumer surplus of plastic product is higher than that of bamboo.

Table 3.4.4.2. Price elasticity of bamboo/plastic products

Products	Consumer Surplus	Price Elasticity
Bamboo basket	4.7	2.35
Plastic basket	5.7	2.35
Bamboo sift	3.3	2.95
Plastic sift	10	2.53
Primary data estimates		

There are products made of palm leaf and forest weeds, which are often difficult to differentiate from bamboo products. They are the non-competing traditional products (Plate 4). The MBDs are compelled to shift from bamboo to its substitutes mainly due to the shortage of bamboo.

Plate 4. Non-competing traditional products



3.4.5. Economics of exploitation

The trade volume of traditional bamboo products in south India could not be estimated due to want of sufficient information. Here an attempt is made to highlight the economics and market potential of these eco-friendly products and the exploitation of the primary stakeholder through a few case studies. It is very interesting that the trade volume of a single product in a market day in Kerala during a peak season is around Rs. 60,000/ (*primary information from Kothamangalam Saturday market- Ernakulum - Kerala*). For instance, the market margin in case of a bamboo mat (5*3 size) through the formal channel indicates besides the KSBC the maximum margin is appropriated by the collection agent and in the case of Mat (6x12') it is the market man (Table 3.4.5.1). In this entire chain the primary producer, i.e., the MBDs gain nothing. Furthermore, price discrimination is evident in the minimum and maximum sales price for the different bamboo products at the hands of different market participants (Table 3.4.5.2).

Table 3.4.5.1. Market margin of bamboo mat in Kerala

Markets participants	Mat (5x3')			Mat (6x12')		
	Sale price	Margin	Margin (%)	Sale price	Margin	Margin (%)
Primary producer	16.50	0.00	0.00	79.20	0.00	0.00
Bamboo corporation	40.00	23.50	29.37	225.00	145.80	36.40
Collection agent	55.00	15.00	18.75	250.00	25.00	6.20
Market man	60.00	5.00	6.25	300.00	50.00	12.50
Wholesaler	65.00	5.00	6.25	350.00	50.00	12.50
Retailer	80.00	15.00	18.75	400.00	50.00	12.50
End value	80.00	63.50	79.37	400.00	320.00	80.10

Primary estimates- Kerala, 2011

Table 3.4.5.2. Price discrimination (Kerala)

Items	Sales price by primary producer (in Rs./)								Market price (in Rs./)	
	End-user		Agents		Local market		Wholesale market		Min Price	Max price
	Min	Max	Min	Max	Min	Max	Min	Max		
Small basket	25	35	15	20	20	30	20	25	25	35
Medium basket	50	60	35	40	40	50	30	40	60	80
Large basket	120	150	45	55	60	70	80	100	130	150
Vallam (local basket)	70	80	40	50	70	80	70	80	80	120
Extra large basket	200	275	100	120	100	120	100	120	250	300
Sift	70	80	30	40	60	70	40	60	80	100
Winnow	50	80	25	40	70	80	40	50	80	100
Mat (3x4)	60	80	44	39	40	45	35	45	60	80
Mat (6x4)	120	140	60	80	60	80	60	80	120	150
Primary data estimates 2011										

Trade linkages with Tamil Nadu depicts exploitation as far as the dependents are concerned (Table 3.4.5.3). For instance, the price of the finished mat (5x3') in Kerala is priced at Rs.35/- and the same product which once reaches Thiruvanikoil-Trichi in Tamil Nadu is priced Rs.350/-, as is also the case with other items. This clearly depicts the role of intermediaries in the marketing chain. The price differences are also vivid. At the same time Tamil migrants concentrated in Palakkad (Kerala) sell their tomato basket at Coimbatore in Tamil Nadu.

Table 3.4.5.3. Price differences in trade linkages with Tamil Nadu

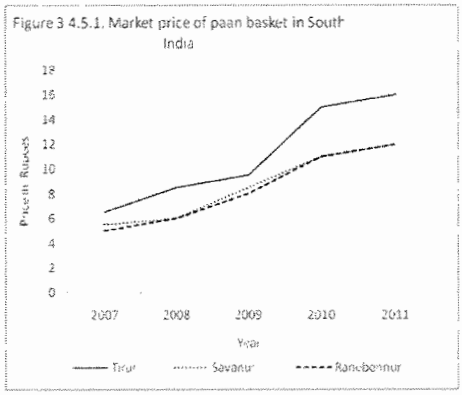
Item	From	Price	To	Price
Outer layer reed (100 Nos)	Kothamangalam (Ernakulam- Kerala)	5.00	Sathyamangalam (Erode- Tamil Nadu)	12.00
Bamboo (10-12 Ft)	Thrissur, Palakkad (Kerala)	70.00	Coimbatore, Sathyamangalam(Erode) Madurai (Tamil Nadu)	100.00
Reed (12Ft)	Angamali (Ernakulam-Kerala)	15.00	Salem, Erode (Tamil Nadu)	25.00
Mat (5x3)	Angamali (Ernakulam-Kerala)	35.00	Thiruvanikoil (Trichi- Tamil Nadu)	350.00
Mango basket	Thrissur (Kerala)	30.00	Tamil Nadu	45.00
Primary data estimates				

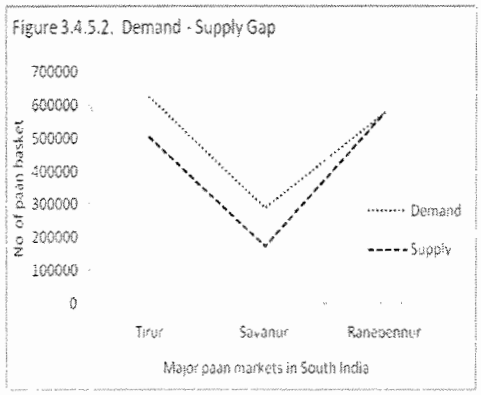
The market for pan baskets depicts a highly informal nature of the sector. The wholesale price of pan bamboo basket too depicts vivid differences in the two states (Table 3.4.5.4). The market price of a pan basket is Rs. 16 and Rs.12 in Kerala and Karnataka respectively, where 65 per cent of the margin accrues to the intermediaries in Kerala. This margin includes price of raw material, transportation cost, loading and unloading charges.

Table 3.4.5.4. Wholesale price of betel leaf / bamboo basket in Kerala & Karnataka

State	No. of leaves per basket	Sales price
Kerala	100 leaf (fine)	45
	7. Kg (1550-1575 leaf)	700
Karnataka	7. Kg (1550-1575 leaf)	250-300
Primary data, 2011		

There is a steady increase in price of pan basket indicating a perfectly inelastic price elasticity of demand (Figure 3.4.5.1). The exporters face serious shortage of bamboo made pan baskets. The total demand for bamboo pan basket from betel leaf trade sector is estimated at around 1488000. With the supply around 12, 51,000 baskets there exists a demand supply gap of 2, 37,000 baskets (Figure 3.4.5.2). Declining number of traditional weavers in this traditional industry, low remuneration, low economic potential, shortage and high price of raw material are the major causatives of the existing supply demand gap. With no proper pricing mechanism in place, the betel leaf trade signifies the dominance of the market forces and the growing informal sector.





Price differences in the different states are also noticed among identical products (Table 3.4.5.5). For instance, basket is priced highest in Goa at Rs.100/- and lowest in Karnataka at Rs.40/-; generally winnow, mat too are priced high in Goa probably because of the source of sales being the emporiums.

Table 3.4.5.5. Local name and average price (Rs.)of three identical products in South India					
	Kerala	Tamil Nadu	Karnataka	Andhra Pradesh	Goa
Basket	*Kutta*	*Koodai*	*Makkari/Bhutty*	*Gampa*	*Bhutty*
	60	60	40	50	100
Winnow	*Muram*	*Mura*	*Mara/Soop*	*Chata*	*Soop*
	60	60	40	40	80
Mat	*Panambu*	*Pai*	*Chattai*	*Thadukkal*	*Chottai*
	120	200	100	140	200

3.4.6. Livelihood potential of bamboo

The MBDs produce traditional products using traditional tools often handmade (Plate 5) which when compared to modern tools can be more labour and time consuming. One of the most tangible links between the traditional bamboo sector and the MBDs is reflected in the positive economic impact by way of employment opportunities and income generation. To highlight the economic potential case studies from across the south Indian states are given.

Pan Basket Manufacturing Industry in South India

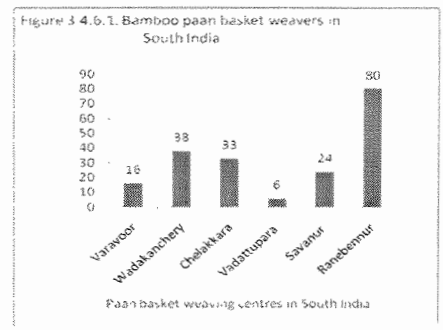
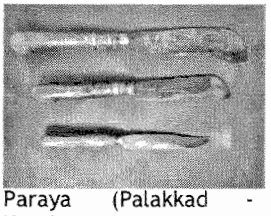
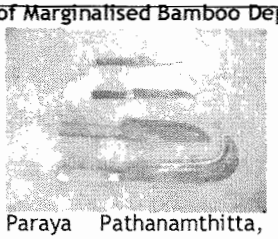


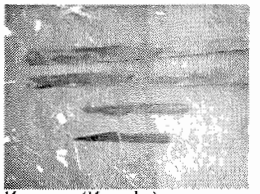
Figure 3.4.6.1. Bamboo paan basket weavers in South India

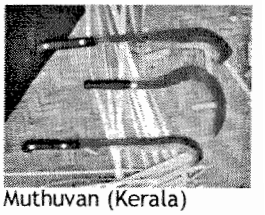
The pan basket manufacturing supports the livelihood of the traditional basket weavers in south India, specif ically in Kerala and Karnataka. This one industry supports the livelihoods of the Parayas/sambavas (Kerala) and the Medas (Karnataka). Approximately, 197 traditional weavers concentrate in the manufacturing of pan basket round the year to meet the demand from betel leaf exporting sector of South India (Figure 3.4.6.1). The work participation rates of Paraya and Meda in pan basket manufacture are 41.47 and 47.69 respectively. The major pockets of the pan basket weavers in Kerala are Chelakkara, Wadakanchery, Varavoor in Thrissur district and Vadattupara in Ernakulam district.

Plate 5. Traditional tools of Marginalised Bamboo Dependents


Paraya (Palakkad - Kerala)


Paraya Pathanamthitta, Kerala)


Kavara (Kerala)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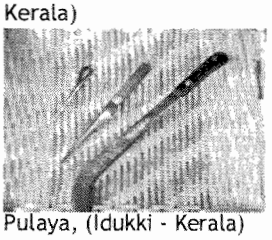
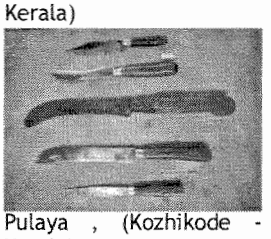

Pulaya, (Idukki - Kerala)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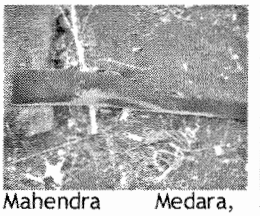
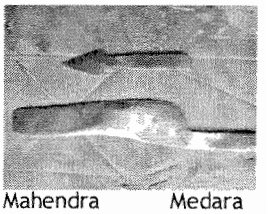
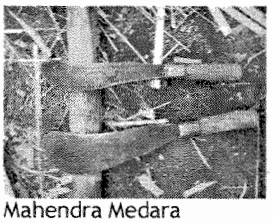
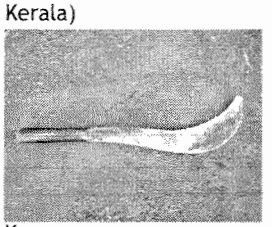
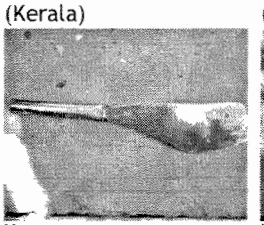

Mahendra Medara, (Kerala)


Mahendra Medara (Tamil Nadu)


Mahendra Medara (Thiruvannamalai - Tamil Nadu)


Kuravar (Dharmapuri - Tamil Nadu)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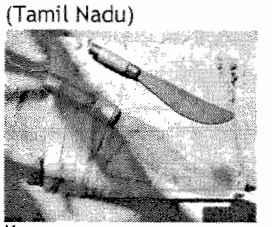
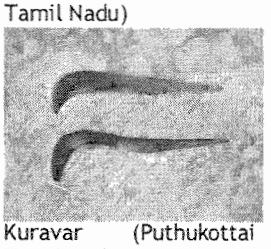
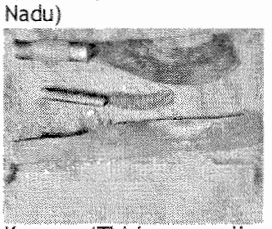
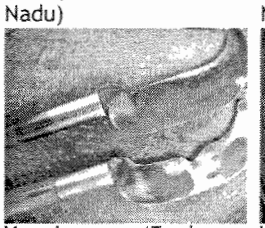
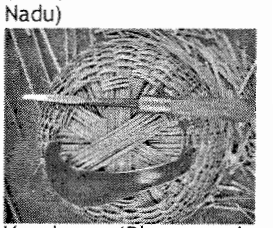
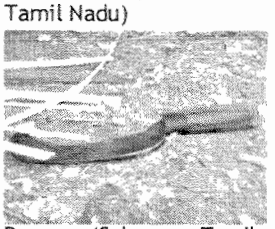

Kuravar (Villupuram - Tamil Nadu)

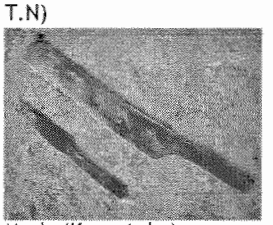

Kuravar (Puthukottai Tamil Nadu)

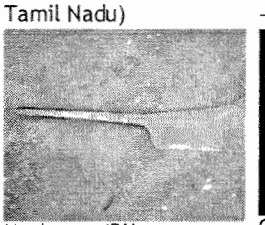

Kuravar (Thirivannamali - T.N)


Vanniyar, (Erode - Tamil Nadu)

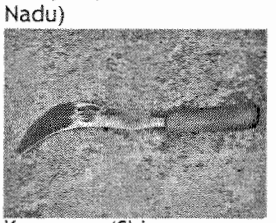

Vanniyar , (Dharmapuri - T.N

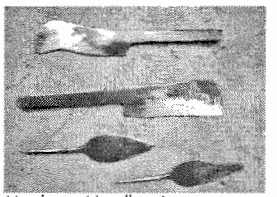

Paraya (Salem - Tamil Nadu)

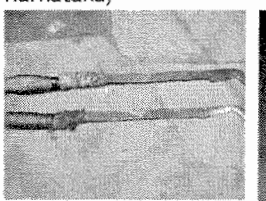

Meda (Karnataka)

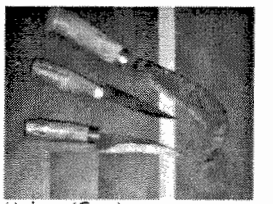

Meda (Bijapur - Karnataka)


Cocoon tray making tools (Karnataka)


Korama (Shivamoga - Karnataka)


Medara (Andhra)


Yerukala (Visakhapatnam- AP) Kuravar (Kopal - Karnataka)


Mahar (Goa)

Primary data estimates

In Kerala, the traditional community is geographically isolated from the major trade center and in Karnataka they are advantageously positioned near the pan bazaar. In Kerala, pan baskets are collected from the weavers and distributed among the exporters by agents or middlemen. The agents thus play a dominant role in the betel leaf trade.

The weavers from Kerala represent the old generation as the younger generation do not find this activity economically remunerative and hence lack an interest in this productive activity. The intervention of the middleman causes a decline in the income to the weavers. Reed is the raw material used by Parayas whereas the Medas use bamboo. One of the most tangible links between the traditional bamboo basket industry and betel leaf trade is through the employment opportunities generated in the rural economy. The manufacturing of pan basket sustains their livelihood. The weaving unit represents the household, co-operative society and private firms (Table 3.4.6.1). Total employment generated by the sector is approximately 70,920 mandays with an annual potential of nearly 82,667 man days. To meet the demand for pan basket the industry requires approximately 230 weavers which is indicative of the existing scarcity of traditional basket weavers and the low economic potential of this productive activity.

Table 3.4.6.1. Size and structure of pan basket manufacturing industry in south India

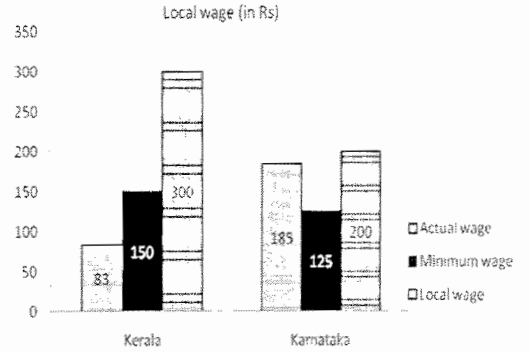
State	Name of Village	Nature of weaving unit	No. of weaving unit	No. of weavers
Kerala	Varavoor	Household	8	16
	Wadakanchery	Co-operative society	1	38
	Chelakkara	Co-operative society	2	33
	Vadattupara	Private firm	1	6
Karnataka	Savanur	Household	12	24
	Ranebennur	Household	40	80
Total			**64**	**197**
Primary data, 2011				

Productivity and Income from Pan Baskets: The average productivity of a basket weaver in Kerala is 15 baskets as against 20 in Karnataka after 10-12 hours of work (Table 3.4.6.2). The per capita daily income earned from basket weaving is less than the local

Table 3.4.6.2.Productivity and income in Bamboo made pan basket in Kerala and Karnataka				
Place	Required raw material/ day/ head	Average productivity /day	Local price of basket	Income/ day (Revenue - Cost of raw material)
Varavoor	7 reed	15 basket	5.50	82.50
Wadakanchery	7 reed	15 basket	5.50	82.50
Chelakkara	7 reed	15 basket	5.50	82.50
Vadattupara	5 reed	15 basket	6.50	97.50
Savanur	1 bamboo	20 basket	12.00	185.00
Ranebennur	1 bamboo	20 basket	12.00	185.00
Primary data, 2011				

wage and minimum wage in Kerala and Karnataka (Figure 3.4.6.2) fixed by Government of India under the Mahatma Gandhi National Rural Employment Guarantee Scheme (MNREGS). The total income generated from the manufacture of bamboo made pan basket in south India is estimated around Rs. 9907700 per year with a per capita income of Rs. 31,050 (Kerala) and Rs. 64,800 (Karnataka).

Figure 3.4.6.2. Actual wage, Minimum wage under MNREGS and Local wage (in Rs)



The opportunity cost of the Kavara community in the Palakkad district (Kerala) is greater than the earned benefit and the community is underpaid even during the peak period of sales due to the high cost of production and low price (Table 3.4.6.3).

Table 3.4.6.3. Opportunity cost of Kavaras (Kerala)			
Production stages	Earned benefit	Required labour days	Foregone benefit (in Rs.)
Collection	2-3 poles (30-35 slices)	5.5	275
Processing	390-396 slivers	12	600
Production	40 small baskets	4	200
Marketing	40 small baskets	1	50
Total	Rs. 736	22.5	1125
Source: Anitha. *et.al*, 2008.			

The economic potential of two bamboo products (Table 3.4.6.4) highlights economics of exploitation and invisible loss incurred on the part of the primary producer at minimum wage and local wage rates. The actual remuneration gained by the producer viz. the price of the product minus the raw material cost is Rs.21.50 /- for sift while its market price is Rs. 80/-. High profit margin of 62.5 per cent and 50 per cent has been recorded for sift and basket respectively.

Table 3.4.6.4. Economics of exploitation

Economic parameters	Product 1 (Sift)	Product 2 (Basket)
Cost of raw-materials used	Rs. 8.50	Rs. 17.00
Price earned by the producer	Rs. 30.00	Rs. 35.00
Actual remuneration gained by the producer (Price of product- Cost of raw materials used)	Rs. 21.50	Rs. 18.00
Market price of the product	Rs. 80.00	Rs. 70.00
Profit margin to the intermediaries	62.5%	50%
Rate of exploitation	2.32	1.94
Opportunity cost of the producer (at Minimum wage and Local wage)	Rs. 50.00 (MW) Rs. 83.33 (LW)	Rs. 30.00 (MW) Rs. 50.00 (LW)
Invisible loss on production activity (at Minimum wage and Local wage)	Rs. 28.50 (MW) Rs. 61.83 (LW)	Rs. 12.00 (MW) Rs. 32.00 (LW)
Minimum wage as per MNREGP in Kerala is Rs.150; Local Wage is Rs. 250		
Primary data estimates		

Similarly, in Tamil Nadu the production of presentation basket indicates a loss of Rs.30/- (Table 3.4.6.5) reflecting low economic potential of bamboo based production for the dependent population.

Table 3.4.6.5. Economics of exploitation (Tamil Nadu)

Item	Required bamboo	Cost of bamboo	Required labour	Wage	Total cost	Sales price	Profit/ loss
Presentation basket	¼	50.00	4.00 hrs	50.00	100.00	70.00	-30.00
Tomato basket	1	50.00	1 ¼ hrs	10.00	60.00	70.00	+10.00
Primary data estimates							

Employment generated in raw material collection under KSBC in 2009-2010 indicates 14, 56,496 (Table 3.4.6.6). According to the Census of India (2001) the total number of

Bamboo based community households in Kerala are 59015. The registered traditional bamboo weavers under Bamboo Corporation are 7610 (KSBC, 2010). The total registered bamboo mat weavers are 9478, in which 600 women working in 11 CMMWC of Bamboo Corporation (KSBC, 2010). The other workforce related to rural bamboo sector is reed cutters and most of them are tribal male. 1247 people working in different forest ranges of Kerala as reed cutters (KSBC, 2010).

Table 3.4.6.6. Employment and income generated in raw material collection under KSBC (2009-2010)

Forest range	No of Cutters	Average working days/ year	Total employment generated	Amount of wage received by per head/ year	Amount of income distributed/ year
Adimaly	278	278	77284	97300	27049400
Angamuzhi	259	200	51800	70000	18130000
Chalakudy	109	150	16350	52500	5722500
Idamalayar	140	60	8400	18000	2520000
Kalikavu	30	120	3600	36000	1080000
Pooyamkutty	411	300	123300	105000	43155000
Thaliparambu	20	60	1200	18000	360000
Total	1247	1168	1456496	396800	98016900
Source: KSBC, 2010					

Total employment generated in reed cutting by Bamboo Corporation is 1456496 in 2010 (KSBC, 2010). The total registered SSI units based on bamboo under bamboo Corporation are 180. Apart from this there are co-operative societies, self help groups, and micro enterprise in both traditional and non-traditional sectors. The number of labourers varies from 4 to 20 in every unit. The lack of adequate information on the marginalized communities clearly indicates the low economic impact of bamboo based activities. Income generation of the KSBC dependent records a total of Rs. 98016900/- disbursed but unfortunately this has left out larger sections of the socio-politically backward bamboo dependent communities in the state. Though bamboo has a great potential to generate income and employment, the remuneration of the marginalized weavers in Kerala is very small. Their relative income is very small and opportunity cost is high. The range of earnings as depicted in Table 3.4.6.7 indicates the difference and highlights their vulnerability.

Table 3.4.6.7. Income potential of a bamboo dependent (Kerala)	
Bamboo dependents	Range of earnings/ month
Forest dependent MBD	1200-2400
KSBC dependent MBD	1500-2100
Middleman dependent MBD	1800-2700
MBD in private enterprises	1200-1800
MBD in cooperative society	900-1200
Registered mat weaver	1800-2700
Mechanized mat weaver	2400-3600
Primary estimates, 2011	

The Bamboo Corporation was able to set free majority of the workers from the clutches of middlemen and traders. However, most of the workers are still socially and economically backward. Ironically, though the KSBC was set up to protect traditional weavers from exploitation, it now concentrates mainly on the production of Bambooply, bamboo tile and bamboo flattened boards with advanced technology. But it is very interesting that the reed cutters earn comparatively a good remuneration. Reed cutters from Pooyamkutty earned up to Rs. 105000 (Bamboo Corporation) per head annually. The dominant income source of this tribal group is reed cutting than NTFP collection or cultivation.

The KSBC has set up Community Weaving Centers with machineries for primary processing is establishing work sheds in their campus, raw material is provided by the Corporation and wages are provided based on the production capacity.

The average remuneration of a traditional weaver is low and much lower than the remuneration of other sectors. Local wages and minimum wage fixed by Government of India under Mahatma Gandhi National Rural Employment Guarantee Scheme (MNREGS) is greater than the remuneration from bamboo wage in south India (Table 3.4.6.8). The opportunity cost of traditional bamboo dependents is estimated based on the amount of time required for the production a single unit of product and daily wage prevailing in the local economy or minimum wage fixed by MNREGS in each state. Here it is very clear; the opportunity cost is greater than the earned benefit as far as the MBDs are concerned.

Table 3.4.6.8. Opportunity cost of MBDs in South India				
Wage	Kerala	Tamil Nadu	Karnataka	Andhra Pradesh
Bamboo wage	41	42	50	39
Minimum wage (MNREGS)	150	119	125	138
Local wage	300-400	200-250	200-250	250-300
Source: primary estimates, MNREGS wage rate 2011				

Chundamannil 1998, highlighted, the conflict of resource sharing has its own course of implications. The divergence of interest between the industrial and traditional sector indeed has been so conspicuous that extraction by one has seriously affected the availability to the other. In this conflict three constraints are intertwined: (a) the modern pulp and paper units, (b) the traditional users and (c) the Government, which allocates the resources to the two sectors. Both the industrial and the traditional sectors have a valid claim and genuine objections. While the modern sector has been assured sufficient raw material by the Government on the basis of a long term agreement, the traditional sector similarly has a claim, which the government recognizes as the allotment policy. In addition, the competition between two sectors is intensive where the economic power of each determines the order of primacy.

4. POLICY INITIATIVES AND INSTITUTIONAL SUPPORT

4.1. Legal Framework

The National laws and policies regulating forest tenure/regulations apply to bamboo as well for the same falls within the forest tenure arrangements. The control of forest administration over a period of time has had detrimental effect on the cultivation of bamboos and canes by the farmers and other socio politically and economically backward communities. Bamboo considered as a weed in forestry practice in the early twentieth century was neglected in forest management. In the Indian Forest Act of 1927 and most State Forest Acts, bamboos and canes (rattan) were included as "*trees*", hence was incorporated in the definition of '*forest produce*' thereby stipulating forest regulations even if in private lands. Although social forestry including farm forestry, got a boost under the revised National Forest Policy (NFP) of 1988 and National Development Plans, the control exercised by the forest authority on felling and transport of many useful trees, bamboos and canes has had an adverse impact on the farmer's acceptance to grow the same for deriving economic benefits.

The NFP of 1952 was revised in 1988, envisages that forest based industries raw material requirement must be met outside natural areas and preferably by establishing a direct linkage between factory and the individuals who can grow the raw material by supporting the individuals with inputs including credit, constant technical advice and finally harvesting and transport services. No forest based enterprise except at the village or cottage level should be permitted in future unless it has been cleared after a careful scrutiny with regard to the assured availability of raw material. Farmers, particularly small and marginal farmers will be encouraged to grow on marginal/degraded lands available with them, wood species required for industries. The practice of supply of forest produce to industry at concessional prices should cease. Imports and farm forestry were to supply of raw material to forest based industries. No incentives or policy interventions were made to encourage tree and bamboo cultivation on private estates and farms. Although farm forestry and social forestry were included in the eleventh schedule by amendments to the Constitution of India in 1999 no statutory changes to suit these amendments have been made. Bamboos and other forest produce are still under the statutory control of the Forest Department. These controls have become obstacles to the healthy growth of farm forestry in India, even though technological advances have been

made to achieve improved productivity. It is noteworthy that of the 21 states where Bamboo is found substantially, 19 follow the definitional pattern of IFA, the only exceptions are Andhra Pradesh and Sikkim and of the 21 states, 10 have specific laws on private forests (Malavika, 2009). While the IFA on which most of the state laws are modeled defines felled Bamboo as timber the most recent legislation Scheduled Tribes and Other Traditional Forest Dwellers Act (2006) classifies Bamboo as NTFP.

The National Bamboo Mission under the aegis of the Ministry of Food and Agriculture in 2006 stated the principal objectives of the Mission as : (a) use bamboo development as an instrument of poverty alleviation and employment generation, particularly in the rural sector; (b) diversify, modernize and expand bamboo based industries through the application of modem technology and financial support; and (c) use bamboo as a means to achieve ecological security through plantation of quality species needed by the industry and the handicrafts sector. Two National Missions, namely, the National Mission on Bamboo Application (NMBA) and National Bamboos Mission (NBM), are now in place in the country as a result of a report of an expert Committee (1998) created by the Ministry of Environment and Forest in Delhi on bamboos. The National Bamboo Mission has a target of additional bamboo plantations of 80,000 hectares each, in forests and non-forest areas during the eleventh five year plan. The different South Indian states follow different set of rules for bamboo.

Box 4.1. National Bamboo Mission -Objectives

- To promote holistic growth of the bamboo sector through area based regionally differentiated strategies;
- To increase the coverage of area under bamboo both in forest and non-forest areas;
- with appropriate varieties to enhance yields;
- To promote marketing of bamboo based handicrafts.
- To establish convergence and synergy among stake-holders for development of bamboo.
- To promote, develop and disseminate technologies through a seamless brand of traditional wisdom and modern scientific knowledge.
- To generate employment opportunities for skilled and unskilled persons, especially unemployed youths.

Kerala: The Forest Policy of Kerala also supports the principle of the National Forest Policy 1988. The State Government recognizes the need to popularize cultivation of bamboo and bamboo based handicrafts and SSIs across the State to utilize the abundant bamboo resources available in the State. The Forest Policy of Kerala also recognizes the need to plant bamboo along the river banks with people's participation to stabilize them, and also the need to encourage bamboo and reed based industries and to supply bamboos and reeds to the traditional bamboo workers at concessional rates. The Government of Kerala accordingly issued orders during 2007 to supply bamboo and reeds to the traditional bamboo works and to the SC/ST Communities at ¼ of the seigniorage rate. Despite all this there is no mechanism for regulating the remunerative prices for bamboos and no network

of bamboos collection centre's to purchase them from the individuals/farmers. There is also no mechanism to issue soft loans to the enterprenuing bamboo cultivators on a commercial scale. There are also other legal impediments in the form of the Forest (Conservation) Act, 1980, The Plantation Labour Act, Kerala Land Reforms Act (1963), Kerala Forest Act (1961) & Kerala Forest Produce Transit Rules, Forest Conservation Act (1980), Kerala Land Utilization Order(1967), The Kerala Forest Produce (Fixation of Selling Price Act) (1978), The Kerala Forest (Preservation, Re-production, Disposal of trees and Timber belonging to Government but grown on lands in the occupation of private persons) Rules (1975) that affect the cultivation, sale and transport of Bamboos in the state. The relevance and objectivity of the above needs to be reviewed in the present day context and needs to be suitably modified or amended to encourage bamboo cultivation in the State and its supply made available to the far flung MBDs.

In this background the draft Kerala Bamboo Policy aims at promotion of bamboo sector development as a part of rural development linked with forestry and agro forestry to enhance employment opportunities. The Policy further focuses on sustainable development of bamboo sector with the *active participation of stakeholders and improvement of the people dependent on bamboo.* The Kerala Bureau of Industrial Promotion is the nodal agency of the State Bamboo Mission. However, the Kerala Promotion of Tree Growth on Non Forest Areas Act, 2005 (as amended in 2007) and the Essential Commodities Order G.O.(MS) No.179/81/Forest(1) are the proactive steps taken by the Government. No permission for felling or transport of bamboos on lands grown on non forest areas except in certain notified sensitive areas is required in Kerala and there is no restriction on the export of bamboo outside the State.

Tamil Nadu: There is no specific bamboo policy for the state. Cultivation, felling and transit of bamboo and bamboo based finished products is completely free from all restrictions and regulations of the Forest Department. The natural bamboo growing area under forest department is very few and scattered and there are no bamboo depots under Forest Department. Imported bamboos are available from private depots. Tamil Nadu Horticultural Development Agency (TANHODA) is the nodal agency of State Bamboo Mission. This mission tries to increase the area and productivity of bamboo in Tamil Nadu. Government of Tamil Nadu has spent Rs.2.44 crore in 2010-2011 to meet the challenges of bamboo flowering and to improve management of bamboo forests (TN Forest dept, 2011-

12). Furthermore, Rs.4.24 crore is proposed to be spent under the Integrated Forest Protection Scheme in 2011-2012 through the State Bamboo Mission.

Karnataka: Karnataka Bamboo Development Agency is the nodal office of state bamboo mission. A division bench of Karnataka High Court has ruled (Order dated 29-10-2006) that bamboos grown on private lands become "agricultural produce" (Adkoli, 2010). Forest Department distributes bamboo to public at standard rate and at a subsidized rate to Meda community through community associations. Bamboo is available in private depots imported from Maharashtra and Goa. Though the procedure to import is very simple, the importer and the vehicle must keep valid documents of the source of bamboo. Approximately bamboo growing area in forests of Karnataka is 274000 hectares. The state government gives financial assistance to traditional community artisans in order to buy bamboo. The government also provides sanction to the association of Medas to cut bamboo directly from forest at a minimal price fixed during the period.

Andhra Pradesh: Bamboo Development Agency is the nodal office of state bamboo mission in Andhra Pradesh. Bamboo is fully regulated as a Non Timber Forest Product within the state. The state government fixes the price of bamboo. There is no restriction for cultivation of bamboo in private, institutional or community land in Andhra. Government of Andhra Pradesh has termed trees and bamboos grown on farm lands as "agriculture produce". Felling and Transportation of bamboo within or outside the state requires a transit permit issued from the concerned Divisional Forest Officer (DFO). At the same time there is an exemption to Guntur and Nellore districts only. Sales and transit of finished bamboo products has no restriction. For bamboo in the forests falling in CFM (Community Forest Management) areas, communities have been provided 100% ownership rights, and extraction and management of bamboo is to be done as per micro-plans formulated by the Forest Department, which form part of the related Working Plan of the Forests. These communities can dispose of the bamboo through auction/sale. For bamboo in the forests and falling outside CFM areas, the Forest Department has ownership rights; extraction and management of bamboo is done as per prescriptions of the approved Working Plan.

Government of Andhra ordered to Establish Finance Corporation namely 'Andhra Pradesh Medara Finance Corporation' under Backward Community Welfare Department in Industries & Commerce Department for the exclusive benefit of Medara community. The

corporation shall plan, promote and implement specific programmes for the benefit of the Medra community for their all round development through the involvement of local District Industries Centres (DIC's) in all districts of Andhra Pradesh. In the state of Andhra Pradesh, there is a systematic effort made for the development and transfer of technology to bamboo dependents. The Forest Department has established Community Common Facility Centres namely growth centres and demonstration centres at different places with adequate infrastructure and training facilities, although the benefits are yet to reach each underprivileged section of the society.

Goa: There is no specific bamboo policy and institutional initiatives in the state of Goa. Major bamboo source is home gardens. Handicraft Development Corporation of the state supports artisans to market their products.

4.2. INSTITUTIONS ARRANGEMENTS

Following the policy framework a comparison of the institutional arrangements is highly essential to understand the given scenario. There are a number of supporting agencies, institutions and schemes to support cottage, micro and small handicraft industries in south India (Table 4.1).

The various institutional arrangements put in place offer training, cluster development, financial assistance, marketing and welfare packages for artisans under different schemes. Handicraft Development Corporation in each state established their emporiums in each state, viz., namely Kairali in Kerala, Poompuhar in Tamil Nadu, Cauvery in Karnataka, Lepakshi in Andhra Pradesh, and Aparant in Goa. The Micro, Small and Medium Enterprises Development Act 2006 stands for facilitating the promotion & development and enhancing the competitiveness of these enterprises. There are 98 district offices for Khadi and Village Industries Commission, 13 Handicraft Development Commissioner Offices, five state Handicraft Development Corporations, 75 handicraft emporiums in south India.

Although, Tamil Nadu has the largest number of supporting agencies, Kerala is probably one of the states which has a large number of institutions put in place from time to time in favour of the traditional bamboo dependents for their well being. The KSBC was established in 1971 to support and uplift the bamboo weaving and reed cutter community as well as other traditional workers depending on bamboo resources, to free the weavers from exploitation and to help them market their products. The District wise KSBC RDCs

depict that the number of depots are very few and hence it is not in a position to cater to the raw material needs of the traditional dependent community who are spread out in the far flung areas of the rural economy and are often inaccessible and are having to purchase the raw material off the private depots or individuals at higher prices. The total marginalized households in Kerala as per 2001 census are approximately 59015. Of the total 15,199 are registered with the KSBC and interesting only 7,147 are active weavers.

Under the Societies Act 1969, Government of Kerala, the Bamboo Workers Co-operatives Societies were formed for the Harijans who are traditionally dependent on bamboo.

Table 4.1. Supporting Agencies, Institutions and Associations in South India

No.	Supporting Agencies/ Institutions/ Associations	Kerala	Tamil Nadu	Karnataka	Andhra Pradesh	Goa	Total
1.	State Bamboo Mission	1	1	1	1	1	**5**
2.	State Bamboo Corporation	1	-	-	-	-	**1**
3.	Non- Governmental Organizations	5	-	-	3	-	**8**
4.	Bamboo workers co-operatives societies	9	-	-	-	-	**9**
5.	Bamboo workers consortiums	3	-	-	-	-	**3**
6.	Bamboo Workers Welfare Fund Board	1	-	-	-	-	1
7.	Khadi and Village Industries Commission (KVIC) district office	14	32	27	23	2	**98**
8.	Khadi and Village Industries Commission (KVIC) departmental bhavan	1	-	1	-	1	**3**
9.	Handicraft Development Commissioner	2	3	3	4	1	**13**
10.	State Handicraft Development Corporation	1	1	1	1	1	**5**
11.	District Industries Centres (DIC)	14	32	27	23	2	**98**
12.	Handicraft Emporiums	19	20	12	13	11	**75**
13.	Community Associations	3	1	1	1	-	**6**
14.	Trade Unions	3	-	-	-	-	**3**
15.	Others	1	-	-	-	-	1
	Total	**78**	**90**	**73**	**69**	**19**	**329**

Source: Primary data estimates, 2011

In order to eliminate intermediaries, the cooperative societies encourage thrift, entrepreneurship among members, and promotion of self-reliance among others. In 1982-83, 5000 workers were registered throughout under approximately 40 Co-operative societies. During 1982- 83, there were about 40 co-operative societies engaged in the bamboo based activities. The members of the societies belonged to mostly scheduled castes that were traditionally dependent on reed mat and basket production (Nair and Muraleedharan, 1983). Due to a variety of reasons, the number of societies has now dwindled to 15 of which only very few function on a regular basis.The current scenario is highly discouraging as (a) most of the societies are not functioning or sick, (b) failed to ensure minimum wage and primary facilities, (c) failed to eliminate intermediaries, (d) no direct access to the raw material; indicating a failure of its very existence. There are projections regarding the number of workers who really depend on bamboo based activities for their livelihood. For instance, in Kerala, it was reported that there were about 300,000 workers in the bamboo sector during 1982-83 (Nair and Muraleedharan, 1983). According to State Planning Board (2005), bamboo industry provides direct employment to 1, 00,000 workers. The Directorate of Industries and Commerce in the State has estimated that bamboo and cane sector provided employment to 87,000 artisans during 2004-05 of which bamboo sector accounted for the major share. Total number of bamboo workers registered in Panchayats in Kerala constituted 40,000. During 2002, according to National Council of Applied economic Research- NCAER (2002), the bamboo and cane handicraft sector provided employment to only 1,356. Thus, there is no consensus on the exact number of bamboo workers in Kerala

The Kerala State Bamboo Workers Welfare Fund Board (*Kerala Eetta, Kattuvally, Thaza Thozhilay Kshemanidhi Board*) was constituted by the Government of Kerala since 1998 to act in favor of the traditional weavers. The total population of bamboo dependent community in the state as in 2010 is 2, 89,173 of which only 2.08 per cent are registered with the bamboo workers welfare fund. The district-wise enrolment too depict a very discouraging scenario.

Andhra Pradesh Burood Society was formed for the socio politically and economically weaker sections, who depend upon bamboos exclusively for their livelihood. On the order of Government of Andhra Pradesh, Forest Department supply 2000 bamboo per annum to each Burood family at concessional rate through Burood's Bamboo Industrial Co-operative

Societies registered under district Industries Centres subject to availability. Government of Andhra Pradesh supplies Bamboos to these societies through Government timber depots at subsidized rates (which are approximately 50% of market value) (Reddy, 2010).

In Karnataka, the Agroforestrtry Farmers Association is very active in enabling farmers to augment their income for rural prosperity. If control of the forest regulations is relaxed for Bamboos and all important timber trees grown on farmlands, the state will be able to send excess grown produce to other states within ten years (Adkoli, 2010). The All Karnataka Meda Association (Meda sanga) is a very organized system in Karnataka. However, according to their people, the association and its activities are not active in southern Karnataka. Belgaum, Hubli, Bellari Darward, Davanagere and Chithraduraga are their strong pockets.There are 27 districts in Karnataka, in each district there is an 11 member committee and two of them are nominated to state committee. The representatives are elected for five year term. The motivation behind the association was to construct a platform to bargain benefits and to protect their people. The Association looks into various aspects of the community, such as, take up issues at Government level with regard to bamboo sufficiency and unlawful regulations of forest check posts and officials. They got assistance from SSI department for Community Weaving Centre. They have one mechanized weaving centre with a capital overhead of 25 Lakhs in Hubli and another one with a 6 lakhs capital overhead in Mysore with 100 per cent subsidy under central government schemes. The Association directly collects bamboo from forest with permission, and then distributes the same among their members.

Multiple stakeholder groups were indentified in the different State based on extensive field studies and available secondary information /data indicate multiple stakeholder groups have been largely noted in Kerala and Andhra Pradesh wherein bamboo sector is more pronounced and is functioning with a large dependent population (Table 4.2). With the State Bamboo Missions functioning in each state resource enhancement is being attended to whereas the target of reaching the grassroots is still far flung. The table clearly highlights the existence of both formal and the informal sectors exposing the MBDs to exploitation and vulnerability.

Table 4.2. Multiple Stakeholders of bamboo sector in South India

Kerala	Tamil Nadu	Karnataka	Andhra Pradesh	Goa
1. State Bamboo Mission 2. Forest Department 3. Kerala State Bamboo Corporation 4. Khadhi and Village Industries Corporation 5. Handicraft Industrial Commissioner 6. District Industries Centres 7. NGOs 8. Community Associations 9. Trade Unions 10. Co-operative societies 11. SC co-operative societies 12. Private entrepreneurs 13. Mechanized Mat Weaving Centre 14. Self Help Groups (SHGs) 15. Handicraft Emporiums 16. Merchants of bamboo products 17. Welfare Fund Board 18. Merchants of bamboo products	1. State Bamboo Mission 2. Forest Department 3. Private Depots 4. Khadhi and Village Industries Corporation 5. Handicraft Industrial Commissioner 6. District Industries Centres 7. NGOs 8. Private entrepreneurs 9. Merchants of bamboo products	1. State Bamboo Mission 2. Forest Department 3. Private Depots 4. Khadhi and Village Industries Corporation 5. Handicraft Industrial Commissioner 6. District Industries Centres 7. NGOs 8. All Karnataka Meda Association (Meda sanga) 9. Private entrepreneurs 10. Handicraft Emporiums 11. Merchants of bamboo products	1. State Bamboo Mission 2. Forest Department 3. Khadhi and Village Industries Corporation 4. Handicraft Industrial Commissioner 5. District Industries Centres 6. NGOs 7. Andhra Pradesh Medara Sangam 8. Bamboo Industrial Co-operative Societies 9. Handicraft Emporiums 10. Private entrepreneurs	1. State Bamboo Mission 2. Forest Department 3. Khadhi and Village Industries Corporation 4. Handicraft Industrial Commissioner 5. District Industries Centres 6. NGOs 7. Private entrepreneurs 8. Handicraft Emporiums 9. Bamboo merchants

Primary data estimates

In India, ownership and management rights not clearly defined. Policy, institutional indicator analysis matrix (Table 4.3) highlights diverse ownership, management,

institutional and organizational arrangements from state to state in south India. In south India some industrial units are still dependent on the state for the supply of raw materials as are rural artisans. The ownership and management rights are not clearly defined. Institutions, such as, the NBM, NMBA, CBTC, State Bamboo Mission Offices, among others, have been put in place to function in a mission mode focused on the distribution of bamboo to local and industrial units. Bamboo management is largely with the State Forest Departments. Institutions started at the state level over a period of time depict institutional inefficiency, attitudinal inactivity, non-accountability and an overall lethargy. This alone is responsible for the growing informal sector where market (supply and demand) chains and trade linkages are ambiguous and unaccounted for, consequently adversely impacting the dependent communities. Institutional arrangements are largely centralized, incomplete, rigid, non- responsive to local needs and inter-sector linkages and are profit driven for industrial units (for example, paper and pulp). As has been envisaged in the National Policy and state level policies bamboo as a social common capital supposedly to play a critical role in the poverty alleviation has failed to benefit a large population of the dependent population due to above said institutional inefficiencies.

Table 4.3. Policy and Institutional /organizational indicators analysis in south India

Indicators	Kerala	Karnataka	Andhra Pradesh	Tamil Nadu	Goa
Policy	State policy Follows the principles of National policy	State policy	State policy	National policy	State policy
Bamboo defined	Tree	Agriculture produce	Non timber Forest Product	Tree	Forest produce
Ownership and Management Rights including distribution	Restricted to Forest Department Distribution by the Kerala State Bamboo corporation to the traditional artisans at subsidized rates Industrial units (Paper & Pulp) still dependent on state for	Restricted to Forest Department Distribution through the All Karnataka Meda Association to the traditional communities at subsidized rates	Restricted to Forest Department In Community Forest Management (CFM) Areas communities have 100 per cent ownership rights and extraction and management of bamboo is done as per micro plans formulated by the Forest Department. Community can dispose the bamboo through auction/sale. Distribution through Burood Bamboo Industrial Co-operative	Restriction on extraction from forest No public sale	No public sale

	supply of raw materials so are rural artisans.		Societies to the traditional communities at subsidized rates Industrial units (Paper & Pulp) still dependent on state for supply of raw materials so are rural artisans. Bamboo cultivation encouraged as part of Farm forestry, agro-forestry and home garden		
Restrictions on raising bamboo plantations or cultivation in private, institutional and community lands / exports	No restriction Bamboo export restricted	No restriction	No restriction	No restriction	No restriction
State Bamboo Mission Office	Kerala Bureau of Industrial Promotion	Karnataka Bamboo Development Agency	Andhra Pradesh Bamboo Development Agency	Tamil Nadu Horticulture Development Agency	Goa Forest Department
Organizational Arrangements for Bamboo Management-Administrative structure	State Forest Department	State Forest Department	State Forest Department	State Forest Department	Goa Forest Department
Bamboo related Institutional Arrangements	State Bamboo Mission, KSBC, Co-operative Societies, Bamboo Welfare borad, NGOs, consortiums, KVIC, HDC, Community associations, etc.' Focused on distribution of bamboo to local and industrial units.	State Bamboo Mission,AKMA, Co-operative Societies, NGOs, consortiums, KVIC, HDC, Community associations, etc.' Focused on distribution of bamboo to local and industrial units.	State Bamboo Mission, BBIC, Co-operative Societies, NGOs, consortiums, KVIC, HDC, Community associations, etc.' Focused on distribution of bamboo to local and indusial units.	State Bamboo Mission, KVIC, HDC, DIC,Emporiums, Community Associations Focused on distribution of bamboo to local and industrial units.	State Bamboo Mission,Corporation, NGOs, Co-operative societies, Consortiums, KVICs, HDC,DICs,Emporiums, Associations Focused on the sale of products
	Social and economic inefficiency, rigid, non-responsive to local needs and inter sector linkages.				

Local level governance	little bargaining power Institutions designed at the state level. Institutional attitudinal inactivity and non accountability
Market Research and product diversification	Limited basic data on traditional products, industrial use limited to Pulp, inter sector linkages, market information Limited access to world market Dominant informal sector
In Bamboo-dominant areas Bamboo has played a critical role in poverty eradication.	Bamboo mainly used for benefit for industry (esp. pulp mills) and subsistence at village levels. Bamboo to play a critical role in poverty eradication but through the dominant informal sector which lacks a organizational structure Market (supply and demand) chains and trade linkages are ambiguous and unaccounted for in the informal sector, consequently adversely impacting the dependent communities.
Social development including socio political and economic empowerment programmes	Limited basic data on the bamboo dependents/MBDs, their spread and their status. Very weak social development focus. Lack of socio political and economic empowerment programmes.

Strength Weakness Opportunities and Threats: State wise differences further render hindrances for a said pattern of social development/social protection and security. The SWOT analysis (Table 4.4) reveals that although the MBDs have innate traditional skills and indigenous knowledge they are caught in a diminishing circular flow of development. In spite of the immense opportunities and strengths, their inherent weaknesses and apparent threats do not permit adequate development of this sector. The strategy should be primarily focused on social development along with long term market development process. Product-education and market development are essential to enhance the image of bamboo products as well as bring a change in the mind set of the urban end-users. The household based rural enterprise with almost no value addition, poor bargaining power, low product diversification, small scale production, catering only to the local markets calls for immediate governmental intervention to enhance and strengthen their social and livelihood security.

Table 4.4 . **SWOT matrix**

	POSITIVE FACTORS	NEGATIVE FACTORS
	Strength	**Weakness**
INTERNAL FACTORS	▪ Indigenous knowledge ▪ Traditional skills and affinity to bamboo ▪ Environment friendly product ▪ Product diversity ▪ Inter-sectoral linkage	▪ Socio economic and political backwardness ▪ Lack of infrastructure ▪ low economic potenial ▪ high opportunity cost ▪ Local and seasonal demand ▪ Lack of value addition ▪ Lack of mechanization ▪ Seasonal local demand ▪ Weak market linkages ▪ Lack of entrepreneurship ▪ Rampant illiteracy ▪ Poor bargaining power ▪ Low product diversification
	Opportunities	**Threats**
EXTERNAL FACTORS	▪ Employment opportunities ▪ Resuce rural poverty ▪ Enhanced livelihood potential ▪ Supporting agencies, institutions and schemes ▪ Global acceptance of eco friendly concept ▪ Consumer attraction to nontraditional bamboo articles ▪ Technological advancement	▪ Informal market structure and practices ▪ Exploitation by intermediaries ▪ Scarcity and high cost of rawmaterial ▪ Intervention of substitutes ▪ Changes in consumer behavior ▪ Inefficacy of the supporting system

5. DISCUSSIONS & CONCLUSIONS

5.1. Discussions

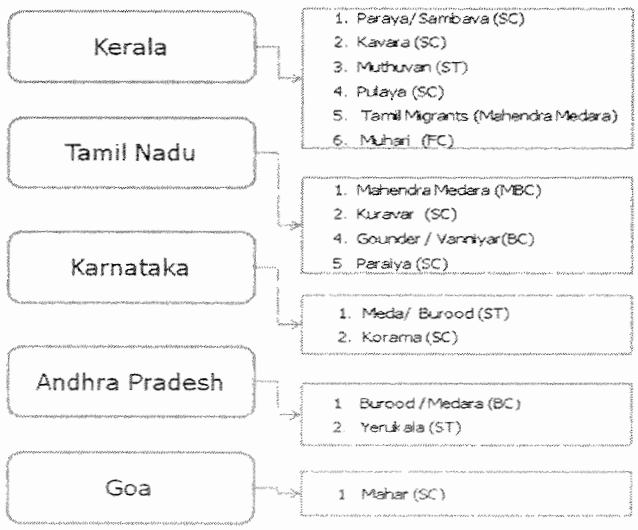
Social common capital: Bamboo is a social common capital (SCC) essential to the growth, development and welfare of society. In this context, bamboo is identified as a potential resource for poverty and unemployment alleviation programmes in many countries including India. Bamboo is important as a tool for development because it is not only a "poor man's timber", but also a raw material in an increasing number of high-value consumer goods and building materials at different levels of economy. It is a subsistence crop and a source of income. It is a versatile raw material for a wide range of small and medium-scale enterprises, and so serves as a basis for employment and income generation. In this perspective bamboo is a SCC for sustainable social and economic development, characterized by the conservation of natural and cultural endowments.

Box 5.1. MBD-defined

Marginalized bamboo dependents are those producing bamboo products for their day to day subsistence and for meeting the local seasonal demand for traditional bamboo products. The sector is endowed with only traditional skills and working knowledge. Production here is a function of labour and bamboo. With the role of capital in the production function near to zero, poor marketing linkages and high cost of production they are outside the mainstream of bamboo productive sector (Anitha et. al, 2008).

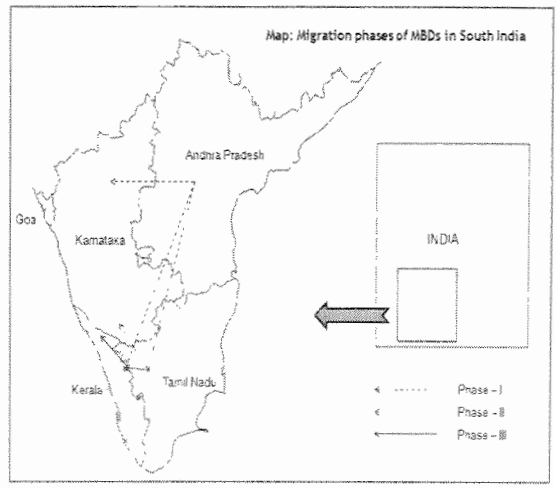
The bamboo dependents: For generations, the socio-politically and economically backward have transformed bamboo into a variety of products with functional and ornamental uses. A major feature of the bamboo economy of south India is the continuity of utilization of family labour at various stages of the bamboo extraction and consumption. This is mainly because the bamboo enterprises are basically cottage level. The marginalized bamboo dependents (MBDs) (Box 5.1) in the South Indian states of Kerala, Tamil Nadu, Karnataka,

Figure 5.1. Marginalized Bamboo Dependent communities in south India



Andhra Pradesh and Goa (Figure 5.1) portray a homogenous community belonging to the Scheduled Caste, Scheduled Tribes, Backward Caste, and most Backward Caste. The study depicts, Kerala has the highest number of MBD population (267549) followed by Tamil Nadu (249494), Andhra Pradesh (41340) and Karnataka (37371) while Goa has a relatively low population (13570). As has been discussed in the foregone chapters traditional artisans in most of the South Indian states working in this sector are purely traditional and marginalized from the mainstream. The MBDs community is the socio-politically and economically weaker sections of the society involved in the unorganized bamboo-based productive activities with a very small per cent having had post metric education and fairly large per cent with an illiterate head of the family. There is an increased burden on the productive population, as is the case in Kerala followed by other states. A few MBDs in Karnataka, who take up weaving in their spare time supplement their income from seasonal agriculture, as also in Kerala, where this has become a supplementary source of income. 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 concept of *development induced migration* (Fernandes, 2012) is applicable in the case of the MBDs too. The MBDs have undergone a migration phase and most of the communities are today scattered in different regions of south India and remain marginalized from the mainstream of social and economic development (Map 5.1). The MBDs of Andhra Pradesh for instance, have migrated from Mahindra hills to several parts of south India during various periods (*information from FGDs and stakeholder interactions*). Now the community is known by different names, but there is a similarity in the tools they use and the proficiency in using Telugu especially among the aged people. The motivation for moving from their original place was based on raw-material availability and market demand. The Mahendra Medara communities of Tamil Nadu due to



scarcity of raw material were forced to migrate from rural villages to urban areas and subsequently to bamboo abundant areas neighboring states during 1970s. The urban migrants found their livelihood in cotton textile industries and working as casual labours in construction sites and rest of them still continue their traditional livelihood. Iyer (1981) mentions the Kavara community as a Tulu caste, found in the Chittur taluk of the Cochin state who were engaged in wicker works of all kinds. The Kavara community although are more settled today have moved from place to place in order to access raw material and also in search of finding a better market for their products. The inter-state migrants in Kerala seek their livelihood at Adimali in Idukki, district, Kanjikode in Palakkad districts of Kerala and Shimoga of Karnataka. Traditional weavers move to optional livelihood as the economic potential from bamboo based production is low and are most often exposed to exploitation because of the existence of intermediaries/middle men. Their earning is less than minimum wage fixed by Government of India under National Rural Employment Guarantee Scheme and their opportunity cost is very high.

Formal and informal bamboo sector: The bamboo-based traditional sector is today functionally categorised into formal and informal segments of the society. 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. The supply chain in south India too reflects the presence of a strong informal and private sector.

As is expected the importance of market forces will increase as they take advantage of the emerging opportunities for trade in bamboo products. There are a large number of operators in the informal sector which is much larger than the formal sector and there is a need to consider its development as a distinct scenario. Lack of availability of quality raw materials, appropriate government policy and price fluctuation are the common constraints identified by the sector. Growth of the informal sector is attributed to the comparatively low infrastructure cost, access to raw material, simple manufacturing

process and lack of standardization of quality of the products. The existence of a formal and informal sector makes the information base of the unorganized bamboo sector weak and inconsistent, and full of gaps. Analysis of the status of bamboo in sustaining livelihoods in south India indicates that it will form an important component of sustainable forest management and forestry development in south India. At this stage, an outlook analysis for the status of bamboo and its contribution to the GDP is highly complicated for the above said reasons.

Market failures: Productivity-enhancing technologies for bamboo are already available, but these are not accessible for the rural poor and the primary producers cannot gain access to favorable markets. To improve this situation, the market potential of bamboo products should be analyzed, including vital market information about the demand for and supply of raw materials and finished products. The sector needs to be strengthened by appropriate support policies, efficient management strategy, pricing policy, market research and analysis in order to ensure conservation as well as optimal utilization of the resource supporting a sustainable livelihood. Furthermore, innovative market mechanisms need be worked out that offer efficient and low cost approach for their sustainable use and conservation, i.e., branding Certification and standard codes. The private sectors and the local people should be encouraged to seek opportunities tapping into growing markets for bamboo products, taking part in managing the bamboo resources. Due to demand pressures and ineffectiveness of existing marketing arrangements, the livelihood returns to communities are also impacted.

Lack of a structural market is the weakest link in the bamboo based productive chain. The traditional handicraft producers have only direct links through personal contact making their products circulate only in the local market. 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 covers 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 market features of the bamboo products made by the MBDs are not so encouraging and this calls

for strategic initiatives for their improvement. The intervention of substitutes captures the existing market. The potential of inter-sectoral linkage is not fully taped.

Indigenous Knowledge, modern preservative techniques and impacts: There is a loss of indigenous knowledge among the MBDs due to rapid changes in the way of life. Very purposeful target oriented setup is need to be put in place, such as, a new consumer centered institutional framework is necessary to address the long-term issues of the craftsmen, who have a scarcity of capital and lack a free flow of knowledge (Ranjan, 1996); a people centered organizational setup to address the social and livelihood priorities of the MBDs (Anitha, 2008, 2012). Proper documentation of the cultural and indigenous knowledge associated with the occupation as well as giving appropriate feedback and encouragement by implementing proper policies for patenting of the intellectual properties is necessary in preserving the bamboo culture. The MBDs also attribute cultural and religious significance to the products they produce. For instance, in Goa, certain castes use of small fruit baskets, purses and other items made of bamboo at the marriage ceremonies considering it auspicious. Similarly, in Karnataka use of new bamboo winnows smeared with turmeric for poojas and other religious rituals; in Kerala, the Muthuvan tribal community use new bamboo carpets in the rituals performed prior to the Sabarimala pilgrimage.

The type of pesticides/ chemicals used for preserving/ processing bamboo products and its impact on health indicates the susceptibility of the MBDs to its ill-affects and long term health hazards (Table 5.1). The commonly used chemicals are Dichloro-Diphenyl-Trichloroethane (DDT), Saidol 2D (Methyl Parathion), Borax (Sodium tetraborate decahydrate), and copper sulphate. The worst scenario is the ignorance and negligence of the community in using the same which is detrimental to their health. The major areas of constraints that hinder the growth of this traditional sector are categorized as occupational, socio-cultural, economic and political problems (Table 5.2). In addition to these are certain specific economic problems such as operation of the industry and its competition for the raw materials, market driven changes, among others, which pose problems to traditional sector and ultimately the livelihood of the bamboo dependents. 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 while, institutional support for resource development is inadequate.

Paradigm shift in policy to participation: There is a shift in policy in utilization of bamboo from subsistence to commercial, 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, its socio-cultural and political dimensions.

Table 5.1. Preservation techniques used by MBDs and its possible impacts

Chemical used	Description	Products treated	Properties and effects on health
Saidol 2D (Methyl Parathion)	A potent insecticide and acaricide	Winnows, fruit and rice baskets	➢ Highly toxic to non-target organisms, including humans. ➢ Disrupts the nervous system, absorbed via skin, mucous membranes, and orally. ➢ Exposure can result in headaches, poor vision, vomiting, abdominal pain, severe diarrhea, unconsciousness, tremor, dyspnea, and finally lung-edema as well as respiratory arrest ➢ Its use is banned or restricted in many countries, and there are proposals to ban it from all use ➢ Paralysis is noticed after recovery from acute intoxication. ➢ It is classified as a UNEP Persistent Organic Pollutant and WHO Toxicity Class, "Extremely Hazardous". Parathion is very toxic to bees, fish, birds, and other forms of wildlife.
DDT (Dichloro-Diphenyl-Trichloroethane)	• Persistent organic pollutant • Extremely hydrophobic and strongly absorbed by soils.	Carpets (for drying pepper)	➢ Toxic to a wide range of animals in addition to insects, aquatic life and animal life ➢ Potential mechanisms of DDT on humans are genotoxicity, and endocrine disruption ➢ A number of studies from the US, Canada, and Sweden have found that the prevalence of Diabetes in a population increases with serum DDT or DDE ➢ Causes developmental and reproductive toxicity

			➢ DDT exposure is a risk factor for premature birth, early pregnancy loss, a type of miscarriage and low birth weight
Borax (Sodium tetraborate decahydrate)	• A component of many detergents, cosmetics and enamel glazes. • Fire retardant, as an anti-fungal compound for fiberglass, as an insecticide, as a flux in metallurgy, a texturing agent in cooking • Not acutely toxic	Handicraft products	▸ Simple exposure can cause respiratory and skin irritation. ▸ Ingestion may cause gastrointestinal distress including nausea, abdominal pain, persistent vomiting, and diarrhoea. ▸ Effects on the vascular system and brain include headaches and lethargy, but are less frequent. "
Primary data estimates, FGDs, CPP,1986.			

Table 5.2. Major constraints faced by MBDs weavers in south India
(occupational, socio-cultural, economic and political problems)

MAIN AREAS	CONSTRAINTS
Occupational	Raw material acquisition Stringent forest laws High price per culm/ bundle Seasonal availability of culms Production Traditional tools and implements Lack of mechanization making the process time-consuming Labour intensive techniques Lack of scientific methods of treatment/ preservation Products Mostly traditional products (winnows, baskets) Low quality No product diversification 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 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)

Socio-cultural	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
Economic	Assets Many of them lack agricultural land and other economic assets Low income from the trade Less savings, more indebtedness
Political	Lower percentage of representatives/ leaders/ political activists Gender differences in political participation (lesser number of women)
Primary data estimates	

Acknowledged as "poor man's timber", bamboo entails certain rights or privilege of access, either free or at concessional rates, to meet their needs. The forest policies implemented in each of the states is different and the post-independent period saw an expansion of forest-based industries (Shankar *et. al*, 2004). In Andhra Pradesh and Karnataka people in and around forest enjoy the privilege of free use of bamboo for fencing, agricultural requirements, hutment and other bonafide uses. Bamboo policy of Tamil Nadu is not effective and supportive of the MBDs. Raw materials are getting scarce and distances involved in transportation are increasing, thus raising the total cost of production. [7]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.

For instance, the MBDs of Kongad in Kerala faces serious problem of shortage of raw material. 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.

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. Though India has undergone significant forest policy reforms, including a shift towards encouraging private sector participation in forestry, real changes on the ground are yet to unfold. 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.

Key learning's of Agarbathi stick production under VSS in Andhra Pradesh

- Bamboo identified as a potential resource for sustainable livelihood generation for the rural poor, especially tribal people;
- Adoption of user-friendly and improvised tools and machines for livelihood generation.
- Insight or awareness among the project team that user-friendly technology upgrading is essential for improved production;
- Bamboo resource regeneration process in progress through plantations and nurseries;
- Awareness creation among the poor that value addition to bamboo can bring increased income;
- Acceptance by the villagers of bamboo as a useful forest resource;
- VSS as an effective institutional vehicle for forest conservation and management;
- Partnership mode of working between Forest Department and VSS; and
- Capacity building as an essential component for bringing about changes.

Good example is the Agarbathi stick production under the VSS in Andhra Pradesh.

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 ensuring its accessibility to the MBDs. A social base required for social protection based on rights can be created only through the involvement of the civil society and of the communities that are excluded from the benefits of progress (Fernandes, 2008; Descochirs, John, 1997; Ferenandes et al. 2012). Encouragement to private investors by tax incentives and policy on land holding can help in the National Afforestation program (Adkoli,2012; Trivedi,2010).

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. In this particular case *community reserve equivalent* , i.e., identify a barren area or wasteland within their panchayaths or the smallest area of administrative unit and encourage farm forestry where the community protects, manages and monitors with adequate incentives and adequate share of investments on the part of the State Mission Directorates / Boards to encourage massive cultivation of bamboo for which there is vast scope outside the forest areas to be brought under the control of the community which utilizes the raw material in terms of *integrated farming systems*.

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.

Adkoli (2010), Trivedi Babu (2010) highlights Amendments Proposed: a) Harvested produce of bamboos and trees grown on farms or private lands should be removed from the definition of 'forest produce' under subsection 4 a of section 2 of the Indian and state forest acts and transferred to subsection 4 b" in these Acts. b) There should be total freedom to bamboo and tree growers on private lands to fell and transport the produce, even under the state acts for tree preservation. c) Growing of trees and bamboos should enjoy the same exemption on ceiling on holdings under the State Land Reforms Acts like growing Tea, Coffee, Cardamom, Cocoa and such plantation crops. These changes will help in healthy and fast growth of bamboos and economic trees on all private fallow lands, on the boundaries and bunds of private holdings, roadsides, canal banks, below high tension power lines, bunds of tanks and rims of water reservoirs, along either side of railway lines etc. Besides, tax incentives for tree cultivation should be given to investors. Regional Workshop, 2010, highlighted on the point that NBM should promote large scale cultivation of Bamboo in private lands and homesteads as part of integrated farming linked to clusters and to consider bamboo as any other plantation crop and exempt the same from the provisions of Land Reforms Act.

The National attempt has been to integrated development of bamboo sector in a mission mode for quality resource enhancement on one hand and on the other support system for the sector and sustainable livelihoods for the traditional dependents. In spite of these earnest efforts of the Government from time to time the percolation of the benefits to the primary stakeholder in some of the States is very slow and they continue to remain marginalized. Major reasons identified are: (a) lack of social development encompassing social protection and security (a) social and geographical spread of the MBDs, (b) socio political and economic backwardness of the MBDs, (c) lack of an organized setup, (d) constraints in easy accessibility and procurement of raw material, (e) lack of marketing avenues for the traditional products, and (f) Supportive policy

Property Rights and institutional arrangements: Bamboo's been considered a subsidizing industry in many of the legal enactments over the years causing distress to the dependent communities. Examples from south India illustrate the importance of clear property rights

and tenure arrangements regarding forest access and rights to live and harvest resources. Clear rights will help in sustainable management and utilization of the resource, for instance, the Andhra Pradesh government initiative through their VSSs and the Burood co-operative societies; unsustainable extraction and failure of the institutional arrangement where government support is poor, for instance, in Kerala, the defunct Co-operative Societies, Bamboo Workers Welfare Board, among others which have all failed to achieve their set missions and goals. With the establishment of institutions such as KSBC, the Cooperative Societies and Bamboo Workers Welfare Fund Board, the situation has changed a little bit although these institutions attempt to provide a fair deal to the traditional bamboo dependents; they have not been able to fulfill their expectations due to certain inherent weakness and constraints. Ineffectiveness of policy implementation, lack of subsequent monitoring and follow-ups has resulted in resource depletion and vulnerability of the socio-politically underprivileged sections of the society. These weaknesses have all further weakened the system and furthered the marginalization process of the dependent communities with the more powerful communities claiming the benefits of mechanization and value based production. The institutional and organizational arrangements put in place from time to time (Box 4.2) to support the cause of the primary stakeholders to maintain a sustainable livelihood indicates the inherent weaknesses of each system, such as lack of community associations and the lack of proper monitoring and follow up mechanism to ensure its sustained effective survival. Furthermore, it has failed to link its specific objectives in line with the exiting policy setup.

Bamboo and FRA, 2006: The recently passed Forest Rights Act (2006) in India indicates steps in the right direction but its implications on different stakeholders are still under scrutiny (Anitha et.al, 2012) and it is all the more essential to note here that for this to be successful discussions and involvement of the communities is important. Mendha Lekha in Maharastras Gadchiroli district was one of the two villages in the country to win community rights over their forests in December 2009 under the Forest Rights Act of 2006. The Act gives tribal and forest peoples the right to gather and sell minor forest produce (MFP), including bamboo, in the market. Odisha has made a leap in having bamboo being lifted from controls of State's administration under the Community Rights of the Forest Rights Act 2006 (Down to Earth, 2012). The issuance of the CFR in south India (Table 5.3) has been very slow and in Tamil Nadu and Kerala it is yet to actually take off. Orientation of the affected on Tribal Right Act in relation to NTFP harvesting including bamboo and tenure rights is the need of the hour. Appropriate policy measures need to be put in place for bringing about synergistic opportunities between the optimal utilization/ conservation

of the resource and sustainable livelihoods. None of the plans made or new strategies suggested would be effective without having enabling policies in place. Overlap between statutory and customary laws is most limiting. Therefore, it is recommended that before any rules are changed or created, active participation of stakeholders be sought.

Table 5.3 Bamboo and Community Forest Rights 2006 in south India.

BAMBOO RESOURCE & CFR*	KARNATAKA	ANDHRA PRADESH	TAMIL NADU	KERALA
CFR Claims	2,917	6,714	NA	55
CFR recognized	53	2,106	NA	None recoganised , at different stages of acceptance.
Current status	More than 800 villages have applied for CFR in on eyear		In Kanyakumari and Tirunelveli communities apply for CFR en mass. In Gudalur and Nilgiris, 50 villages declare adjoining forests as Community forests.	Large number of settlements in Palakkad & Wayanad districts pledge to demarcate traditional forest boundary and to exercise community Rights

Source: Down to Earth, 2012, Ministry of Tribal Affairs *(http://forestrights.nic.in/TRClaim.jsp*, 2011-12, Anitha and Rajeev, 2012.

Socio-Cultural and Political Dimensions of bamboo: Large number of studies, have all highlighted how socio-political constraints restrict the marginalized communities from achieving optimal returns from various "participatory" arrangements. Consequently due to unequal power relations and elite capture, benefits from market arrangements never trickle down to the primary stakeholders and they continue to be marginalized (Sills et al 2011). Price gaps between what is received by them compared to what is received at the retail end are evidence to this as has been explained under price discrimination here in this report. Recent studies (Sills et al. 2011) suggest a "middle ground" where importance on (i) the centrality of culture; (ii) role of local and regional markets; (iii) value of diversity in itself and (iv) greater inclusiveness in resource management is stressed.

Social protection and social security: Providing social security to the marginalized bamboo dependents is a formidable challenge. Sustainable development of the concerned

must primarily be focused upon providing *social protection* and *social security* following two key global focus: (I) Millennium **Development Goals** (2003) that too stress on environment, conditions of socio-politically and economically backward sections of the communities, health and education. and (II) **SAARC Social Charter** (2004), that is the guiding force in the formulation of policies aimed mostly at poverty alleviation enhancing income levels and providing better health facilities With this in focus the MBDs living conditions need to be focused upon by strengthening the mutually inclusive societal welfare parameters, (i.e individual resources, social environment, social amenities).

MILLENNIUM DEVELOPMENT GOALS (2003)

1. ENVIRONMENT
2. SOCIO-POLITICALLY AND ECONOMICALLY CONDITIONS OF BACKWARD SECTIONS OF THE COMMUNITIES
3. HEALTH
4. EDUCATION

Millennium Development Goals (2003)

SAARC DEVELOPMENT GOALS UNDER 4 MAIN SECTORS

1. LIVELIHOOD
2. HEALTH
3. EDUCATION
4. ENVIRONMENT

SAARC Social Charter (2004)

Social Development, Social Protection, and Social Security are all intertwined to reduce the gap between the haves and have-nots. Social protection is required to implement social policies to reach the beneficiaries. Social security will ensure human rights and all round development of citizens of a nation. A comprehensive mix of Social Protection instrument backed with Social Security will help to improve living standards of the poor and marginalized population through effective distribution of Social Programmes, a key element for tackling poverty and vulnerability. For example, there are millions of farmers in China who grow bamboo as a component in integrated farming systems. In the context of MBDs in south India, there are a large number of issues, such as, is the erosion of traditional knowledge and skills in the younger folk of these communities as they are getting involved in lucrative non-traditional activities. The movement of bamboo from the cottage industries status 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 .

Major issues of the MBDs in south India

- Lack of social protection an d security
- vulnerability of traditional weavers
- scarcity of quality raw-materials
- migration of weavers
- impractical bamboo policy
- exploitation of intermediaries
- threats from substitutes
- marginalization
- non-available welfare fund programme
- traditional bamboo craftsmen are not only old but they are mostly uneducated
- weak social development programmes

This warrants a strong social economic security measures, economic and political support through effective legislation. For without social protection, inclusive economic and social development stays a delusion.

Bamboo sector outlook: India is duty bound, being a signatory to the 'Copenhagen accord' in 2009, to arrest climate change through massive tree cultivation for which there is a vast scope outside forests and by extensive use of bamboos. Bamboos form the best species under farm forestry in terms of easy establishment, fast rate of growth, absorption of greenhouse gases and quick economic returns to help in prosperity to farmers and the bamboo dependents. It has been repeatedly emphasized that bamboos play a large role not only in maintaining the environmental stability but also for meeting the several economic and socio-cultural objectives put forth by the increasing population. Bamboo sector has inter-linkages with many other sectors and is subject to government policies and regulations implemented from time to time.

The growing economic considerations resulted in the neglect of social and environmental considerations. Concern over meeting environment services has resulted in more natural forests being set aside as PA, which is categorically following the National Forest Policy 1988. The contribution of the primary sector (agriculture, fishery and forestry) to the NSDP indicates a continuous decline in the State (Jayaraman & Anitha, 2008, 2010). The dominance of a growing informal sector means that the official statistics on production, consumption and trade tends to be incomplete. There are several factors impacting the bamboo sector in south India. The key driving forces are demographic, social, economic, political, institutional changes, especially the decentralisation of administration, the increasing emphasis on transparency in the affairs of the public and private sectors, as well as the predominant role played by the society in protecting the environment. Natural resources will be fundamentally influenced by international developments such as integration of the economy, investment flow, technological changes and changes in trade pattern. For example, the medium and large units have established a bigger presence and are eyeing at product diversification and geographical expansion, not only within the country but even globally.

A key feature of south India's economic transition is the growth of the informal sector in both rural and urban areas. Poor performance of the formal economy has increased the dependency on informal sectors like collection and trade of fuel wood, timber; NTFP's

including bamboos, among others. Some of the possible outcomes for bamboos are indicated in Table 5.4.

Table 5.4. Possible outcomes for bamboo

KEY INDICATORS	FUTURE SCENARIO
Forest cover with bamboo	Afforestation programmes at more than the current rates on a mission mode.
Area under SFM	Effective expansion of area under SFM.
Bamboo plantations	Emphasis on fast growing species.
Bamboo outside forests	Increase in tree planting schemes, Expansion of tree planting in private lands in response to growing local demand. Peoples management of the resource under CFR
Bamboo	Rapid depletion of several species due to increased demand, Domestication efforts of commercially important species linked to clusters, management by the cluster
Environmental service	Maintaining the environmental stability Effective watershed management, Conservation of Biodiversity.
Market mechanism	Innovative market interventions branding, certification
Policy	Effective regulation and management of the resource with participation, successful discussion and involvement of bamboo dependents and communities under the Forest Rights Act,2006.
Poverty alleviation & vulnerability	Key role in meeting basic needs of MBDs, largely through the growing informal sector. Social Protection all inclusive of economic and social development of the MBDs

5.2. CONCLUSIONS

The study on role of bamboo in sustainable livelihood conducted for the south Indian states of Kerala, Tamil Nadu, Karnataka, Andhra Pradesh and Goa led to the following conclusions/indications. 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.

1 The MBD community in south India is the socio-politically and economically weaker section of the society involved in the unorganized bamboo-based productive activities. There is no consensus on the exact number of marginalized traditional bamboo dependents in south India.

2 The development indicators highlight a backward economy, with community ratio highest in Kerala, preponderance of females over males in Kerala and Andhra Pradesh, Work Participation Rate depicting approximately 75 per cent participating in social labour, 33-34 per cent dependency ratio, high children rate in Karnataka, and Andhra Pradesh, post metric rate and female headed households highest in Tamil Nadu and livelihood index highest indicates highest bamboo dependency ratio and household dependency ratio in Andhra Pradesh that also registers the least senior dependency ratio.

3 Economic status indicates backwardness with poor tenurial and economic security. The contribution of bamboo to average monthly total household income is higher in Andhra Pradesh followed by Tamil Nadu and least in Kerala. Financial liabilities were noted only among the MBDs in Kerala indicating poor institutional and government support. The traditional bamboo based industry, which was an important source of employment to MBDs, is now in a declining stage. They have been involved in development-induced-migration over a period of time, largely due to irregular and inadequate supply of raw materials and lack of adequate marketing facilities.

4 The economic and livelihood potential of bamboo highlights economics of exploitation and invisible loss incurred on the part of the primary producer at the minimum wage and local wage rates, with the rate of exploitation more than one. The opportunity cost is greater than the earned benefit as far as the MBDs are concerned. The average remuneration of a traditional weaver is low and much lower than the remuneration of other sectors. Local wages and minimum wage fixed by Government of India under Mahatma Gandhi National Rural Employment Guarantee Scheme is greater than the remuneration from bamboo wage in south India.

5 The major constraints faced by the traditional artisans in south India are occupational, socio-cultural, economic , financial and political problems in nature. The occupational constraints relate to raw material acquisition, production, products, marketing, formal training, cooperatives societies/ initiatives. Socio-cultural areas

indicate social problems and their socio-cultural status. Economic problems relate to assets, low income-low investment and low impact activity and the political constraint is to do with the low percentage or representatives and low political will.

6 Lack of a structural market is the weakest link in the bamboo based productive chain reflecting price discrimination and market failures. One of the major concerns facing the sector is the growing informal sector where market chains (demand and supply) or trade linkages are ambiguous and unaccounted for. This further makes the information base of the unorganized bamboo sector weak and inconsistent, and full of gaps. There is a need to seriously consider linkages between the two sectors.

7 The inter-sector linkages of the traditional bamboo products indicates its link with a large number of primary, secondary and tertiary sectors of the economy highlighting its immense potential in generating income and employment for the socio-politically and economically weaker sections of the society. This should be studied and institutional arrangements should enable more responsive inter-sector linkages with the bamboo sector.

8 Institutional and organizational indicator analysis matrix highlights diverse ownership, management, institutional and organizational arrangements from state to state in south India. In south India some industrial units are still dependent on the state for the supply of raw materials as are rural artisans. The ownership and management rights are not clearly defined. Institutions, such as, the NBM, NMBA, CBTC, State Bamboo Mission Offices, among others, have been put in place to function in a mission mode focused on the distribution of bamboo to local and industrial units. Bamboo management is largely with the State Forest Departments. Institutions started at the state level over a period of time depict institutional inefficiency and are largely responsible for the growing informal sector.

9 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. This paradigm shift calls for critical evaluation for sustainability in resource base, agricultural production, inter sector linkages and its contribution to the National and State Domestic Product, institutional efficacy,

sustainable e community development, distribution of social programmes focusing on socio political and economic empowerment, and environmental conservation.

10 The situation in traditional bamboo sector can be depicted as a combination of three core scenarios, private sector dominance, market force dominance and growing informal sector. The role of government in producing wood 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.

11 Facilitate integrated interactive dialogue among the various institutions especially Government Departments (State Forest Departments, Agriculture/Horticulture, State Missions Boards, Scheduled Caste/Scheduled Tribe Department, Village industries Department, micro medium enterprises, Tourism Department, and other related departments).

12 Raw material shortage and inaccessibility and to bridge the gap between supply and demand integrated farming systems by the primary stakeholder empowering them, similar to the china scenario must be compulsorily taken up. There is huge scope for rising of Bamboo plantations in non- forest areas as well as in farmers lands through farm forestry, agro forestry and social forestry.

13 Strategies and Action Plan for sustainable livelihood and social protection should essentially be pro-poor based on focusing on economic, non-economic and policy reforms. A Sustainable Bamboo Based Livelihood Development model need to be put in place that primarily focuses on the livelihood improvement of the traditional marginalised bamboo artisans (Action Plan).

14 The potential of bamboo as an economic resource capable for generating employment for rural poor and skilled and semi-skilled in plantation and in semi industrial and industrial ventures should be fully exploited. Lot of Research and Extension activities have to be taken up and the results should go down to the field level to popularize the cultivation and utilization of Bamboos.

15 Productivity-enhancing technologies for bamboo are already available, but these are not accessible for the rural poor and the primary producers cannot gain access to

favorable markets. Furthermore, innovative market mechanisms that offer efficient and low cost approach for their sustainable use and conservation, i.e., branding Certification and standard codes need to be formalized.

16 Analysis of the status of Bamboo in south India indicates that bamboo will form an important component of sustainable forest management and forestry development. With increasing demand for certified "green" products, the bamboo sector needs to be strengthened by appropriate support policies, efficient stock management strategy, pricing policy, research from the market and trade perspective and analysis in order to ensure conservation as well as sustainable utilization of the resource.

17 Increasing peoples' awareness on the importance of natural resources and keeping consumers informed on real value of these resources, perhaps through chain of custody arrangements through participatory management through effective policy implementation is the best option.

6. STRATEGIES AND ACTION PLAN

STRATEGIES for the development of bamboo the social common capital in the South Indian states of Kerala, Karnataka, Tamil Nadu, Andhra Pradesh, and Goa.

Social development : 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.

Socio-political and economic empowerment programmes :To attain sustainable community development very focused special trainings and socio-political and economic empowerment programmes on value addition techniques, entrepreneur skills, managerial skills, personality development and general awareness on related topics is the need of the hour.

Bamboo cluster development: at State/district level linked to Common Facility Centres.

Mechanized community weaving centre/ Common Facility Centre: This centre will be very close to the habitat of traditional bamboo dependents. This will work as a resource center for raw material, raw material treatment and raw material processing. The centre facilitates working hall, storage place and basic amenities. The centre will be equipped with machineries to processing and manufacturing of bamboo items. This centre will be a place for different kind of trainings.

Raw material source: Establish more **government depots** nearer to the clusters to facilitate easy access to raw material at subsidized rates.

Large scale cultivation: Need to promote **large scale cultivation** of suitable bamboo species in private lands, waste lands (part of cluster development programs) based on primary stakeholder traditional knowledge base. Encourage cultivation of suitable species for handicraft production by **large holders**. Promote cultivation of industrially useful bamboo species in public, private and waste lands in order to reduce the scarcity of raw materials.

Finance corporations: To overcome the financial crisis establish separate **finance corporation** for the MBDs similar to the Andhra Pradesh Government. The 'Medara (Burood) Finance Corporation' of AP government supports the communities' financial crisis and welfare.

*Market Information System (MIS):*The Market Information System can generate information on various dimensions of the market, such as market demand, trends and fluctuations. Constitute a Market Information System in all states/district level to predict market fluctuations and market trends. Promote Collective Marketing Mechanism like (MFP society of Kerala) 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?

Continued

STRATEGIES for the development of bamboo as a social common capital in the South Indian states of Kerala, Karnataka, Tamil Nadu, Andhra Pradesh, and Goa.

Value addition	: Value addition of bamboo items will helps to increase the competency of the product in the market. Through value addition we can improve the attraction and durability of the product.
Research and development	: Participatory process projects with bamboo marketplace Social Capital may be formulated to transfer capacities, research knowledge and appropriate technology to achieve poverty reduction and environment development. Focus on sustainable livelihoods and people, product education, value addition and mechanization, growing informal sector, substitutes and problem of bamboo flowering.
Linking with tourism	: Improving the link of traditional industry with the tourism sector will help to widen the market size of traditional bamboo handicraft industry. The facilities for tourists inside the tourism zones can be made eco-friendly with the use of bamboo and its products. Eco-shops with bamboo made souvenir, handicraft items, utility articles, bamboo food articles, etc. will also help them earn their sustenance livelihood.
Green Tax	: Promote easily disposable and degradable bamboo products to support eco-friendly campaign and impose a green tax on non eco-friendly products to reduce the consumption of such article and to support the traditional communities.

2. TOWARDS ACTION PLAN

A. IMPOSING AN ENVIRONMENTAL TAX

Green Tax is a tax proposed to impose on the environmentally hazardous products for reducing their unnecessary consumption and encouraging the use of environment-friendly products. One of the benefits offered by the bamboo sector is its environment-friendly product but the market forces do not take into consideration this benefit in fixing the price (Anitha et al. 2008, 2010). Plastic and plastic products occupy importance in the day-to-day life of the people and these products pose great threats to the sustainability of the environment. As all plastic products do not have perfect substitutes, there is need to encourage the substitution of environmentally hazardous products with eco-friendly substitutes like bamboo - a reverse scenario. In order to encourage the substitution the governmental intervention may impose a tax on the plastic product equivalent to the total consumer surplus gained by these consumers. The relative difference in the market scenario (Table 6.1) from the point of view of the consumer's, social angle and policy initiative of the bamboo and hazardous product highlights the high environment cost on the part of the latter. In order to encourage the substitution the governmental intervention may impose a tax on the hazardous product equivalent to the total consumer surplus gained by these consumers (Anitha, *et al* 2008).

Table 6.1. Relative difference in the market scenario of Bamboo & Plastic Products

Bamboo	Plastic
Consumer's point of view	
High market price	Low market price
Low consumer preference	Higher consumer preference
Low consumer surplus	Higher consumer surplus
Low demand	High demand
Social Point of view	
No environmental cost	High environmental cost
Policy initiative	
Improving the quality of the product	Imposing Green Tax

Source: Anitha,et al 2008, 2010

A general fund can be created for the development of this sector by way of the tax (Green Tax) on environmentally hazardous products which can be substituted by bamboo

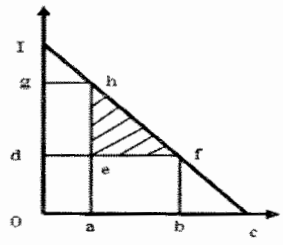
products. By using the fund the self-help groups should be encouraged to cultivate bamboo along riverbanks, government lands and other wastelands. A portion of the fund can be set aside exclusively for the MBD development.

Fig 6.2 A Method for Fixing Green Tax

Two product in the Market

- Plastic product (P), Bamboo product (B)
  (Polluting) (Non polluting)
- U (P) = U (B) U= Utility
- P (P) < P (B) P= Price
- E (P)> E (B) E= Environmental problen

P (B) - P (P) = Cost of clean Atmosphere [g a]



Green Tax = 0.5 { [P (B) - P (P)] [Q(P) - Q(B)] }

0.5 [gd * ab] = Δ efh

Green Tax = (Cost of clean atmosphere) * (Market difference in sales volume of polluting and Non polluting products.

B. <u>SUSTAINABLE BAMBOO BASED LIVELIHOOD DEVELOPMENT MODEL</u> Sustainable bamboo based livelihood development model primarily focuses on the livelihood improvement of the traditional marginalised bamboo artisans. The model is constructed based on the South Indian experience. We hope the model will be a definitive solution for the existing problems in the traditional bamboo sector of South India.

Salient features: The sustainable bamboo based livelihood development model suggests (Figure 6.3) a new system. It has four components, viz., Community, Village, District and State, besides a Social Audit and Assessment Wing. It is a community centered, decentralised and a participatory development model. Salient features of the model are the following.

Objectives of the model

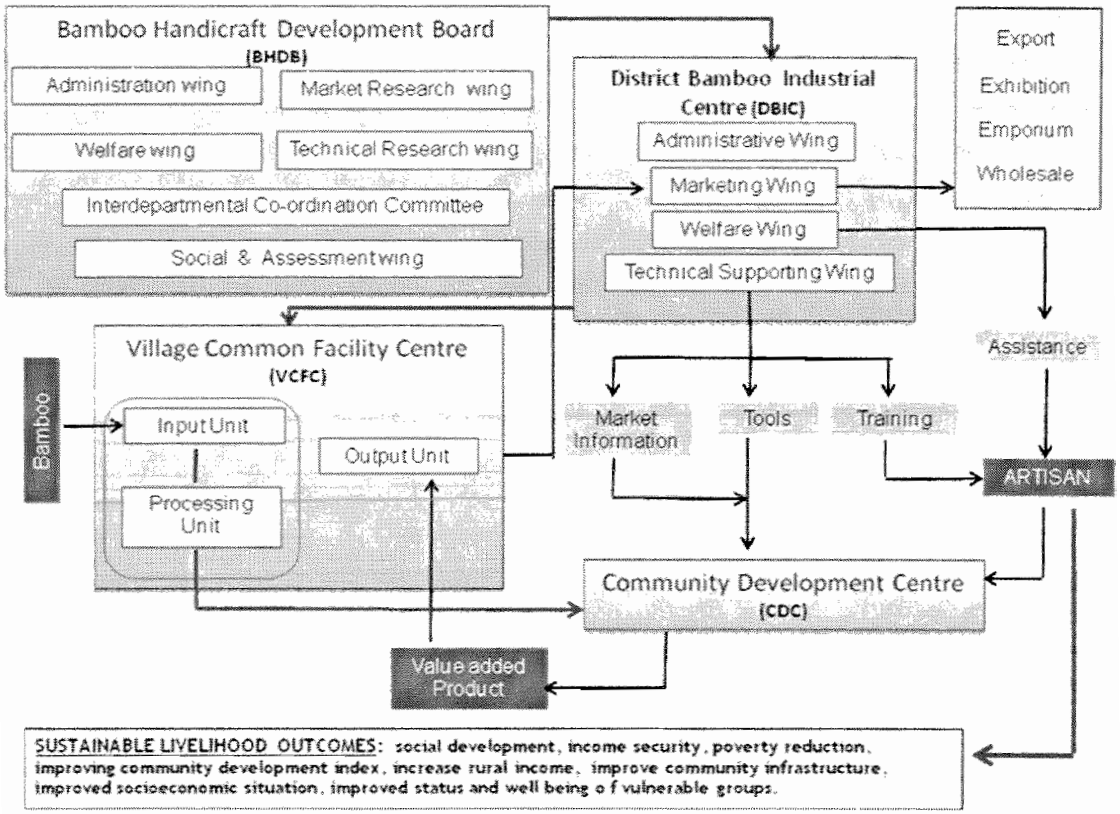
1. Social protection/security
2. Socio-political and economic upliftment
3. Sustainable development of bamboo industry (micro, medium small scale) and quality enhancement
4. Resolve the existing problems
5. Innovation market interventions
6. Rectify and correct policies limitations
7. Research and Development

- Recognising and registering the individual craftsman in each Village/Panchayath
- State level interdepartmental coordination of concerned related departments

- Review and strengthen existing institutional arrangements at the State level
- Provide training on technological innovations and product designs
- Ensuring sufficient raw material at minimum price within the reach of artisans
- Promote integrated farming system
- Market Information System linked to the cluster
- Product diversification and value added traditional, fancy, utility and premium outputs
- Innovative market interventions by means of Product standardisation and product education
- An organised marketing channel to prevent price spread and check role of middle men.
- Collective, organised and formal marketing mechanism
- Sate specific pricing policy to prevent price fluctuations
- Monopolistic market approach
- Product diversification according to regional and seasonal demand
- Catering full potential of inter-sectoral linkages

Such a model will, ensure livelihood security of artisans, minimum wage, welfare of the artisans, provide appropriate solution for legal bottlenecks of the sector, proper monitoring and follow-ups and the sustainable development of the socio-politically backward communities

FIGURE 6.3. STRUCTURE OF SUSTAINABLE BAMBOO BASED LIVELIHOOD DEVELOPMENT MODEL



Components of the model

- Bamboo Handicraft Development Board (BHDB)

Structure: BHDB is the state level apex body constituted by the state government. It has five different wings for smooth and efficient functioning of the system. They are the: *administrative, technical research, market research, welfare* and an *interdepartmental co-ordination committee*. The interdepartmental co-ordination committee is more important one, mainly because of several institutional arrangements and schemes for the upliftment of traditional artisans and handicraft sector. In order to overcome the institutional inefficacy of the system, a State Level coordination of the representatives of various Ministries (Forest, Agriculture and horticulture, Schedule Caste and Scheduled Tribe, Science and Technology) and other line departments, namely, State Bamboo Mission/ State Bamboo Development Agency, Handicraft Development Commissioner (HDC), Khadi and Village Industries Commission (KVIC), State Handicraft Development Corporation, Artisans Welfare Fund Board, Department of SC & ST, Department of Forest, Department of Cottage and Small Scale industries is necessary. The forward and backward linkages can be done through different partners at the community level, public (government) and private entrepreneurial level. The initial cost of establishment should be borne by the state government through the National Mission on Bamboo Applications of the State Bamboo Mission. The Bamboo Handicraft Development Board (BHDB) will then generate its own income. The state government can find out additional revenue by imposing a Green Tax on environmentally hazardous products. This revenue will be utilised for the efficient monitoring and follow up of the BHDB and welfare activities of bamboo artisans.

Functions

- Coordinating State, District, Village and community bodies of the system.
- Promoting interdepartmental coordination and co-operation.
- Participatory process projects with bamboo marketplace Social Capital may be formulated to transfer capacities, research knowledge and appropriate technology to achieve poverty reduction and environment development.
- Socioeconomic research focusing on the current indices of development
- Technological research: develop bamboo treatment and preservation techniques, development of bamboo tools & machineries and sharing of technical know-how.

- Product designing: designing of new products according to regional, seasonal and international demand and sharing of product designs.
- Market research: estimate seasonal, regional and international demand, pricing of bamboo and sharing of market information.
- Organise district, state and national level exhibitions.
- Promote export of bamboo handicrafts.
- Planning and execution of artisan's welfare schemes.
- Promoting bamboo cultivation in non-forest areas as a community initiative with sole responsibility to protect and engage in sustainable scientific harvesting techniques.

ii. **District Bamboo Industrial Centre (DBIC)**

Structure: DBIC will be a district level body of Bamboo Handicraft Development Board (BHDB) with four wings, namely an Administrative, Marketing, Welfare, and Technical Support wing.

Functions

- Enrolment of artisans and issuance of a one-time single Identity Cards (avoiding separate registrations to Handicraft Development Commissioner and Artisans Welfare Fund Board, Khadi and Village Industries Commission, and District Industrial Centres).
- Establish and monitor cluster linked Village Common Facility Centres (VCFC) and Community Development Centres (CDC).
- Conduct Research and Development Programmes from time to time
- Conduct training programmes on product designing and application of tools and machineries.
- Sharing of market Information received from BHDB.
- Conduct multi level training programmes and seminars on various topics like entrepreneur skills, personality development, and community development for social upliftment of artisans.
- Monitor and maintain standards and measures of the products produced by the artisan.
- Collection of bamboo items from Village Common Facility Centres (VCFC).
- Marketing of bamboo items through DBIPC outlets (wholesale and retail)
- Organise district level exhibitions.
- Receive artisan's contribution to the welfare fund.

- Implementation of welfare schemes.
- Distribution of loans, scholarships and pension for social and economic security.
- Ensure sustained and sufficient raw material supply by linking the the organisational and institutional arrangements to the government, private individuals/depots and homegardens at reasonable standardised price.
- Function as a link between State apex body and Village bodies.

III. Village Common Facility Centre (VCFC):

Structure: The Village Common Facility Centre (VCEC) is a village level body of Bamboo Handicraft Development Board (BHDB). The VCFC will an Input unit, Facility unit and Output unit.

Functions

- Promote integrated farming among the clusters
- Purchase of bamboo from Forest Department and private sector at subsidised rates.
- Facilitate advanced bamboo treatment plant, Facilitate low-cost/high cost basic machineries from cutting to manufacturing standard products.
- Sale of treated bamboo at minimal price to Community Development Centres
- Collect bamboo handicrafts of CDC and individuals.

IV. Community Development Centre (CDC)

The CDC is a community level bamboo handicraft manufacturing unit constituted under Co-operative Societies Act 1969. Maximum number of members is limited to twenty. The initial working capital of CDC is participatory shares and local, state and central government schemes. The CDC must organise the basic infrastructure facility, working hall, storage place, basic machineries, toilet, and drinking water, among others. Further development and technological up gradation of CDC could be attained through special developmental grants on the basis of performance of the CDC. Administration and management of the CDC is owned by the members of the CDC. The community must elect a president, secretary and treasurer from among them for a period of one year. Accounts must be in the name of president, secretary and treasurer (by designation). The community should make a corpus fund for further development of the CDC and financial assistance to the members.

V. Social Audit and Assessment Wing: People in authority, local governance, research/scientific community and the primary stakeholder are members here. This

wing envisages proper audit mechanism that will conduct monitoring on a regular basis and regulate the activities. There should also be an in-built mechanism for Social Impact Assessment of the activities as a mandatory requirement.

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ANNEXURE

APPENDIX 1.1. Study area coverage

State	Area coverage for primary data generation
Kerala	Peroorkada, Bharathannur, Nedumangad, Palode, Kallambalam, Idinjar, Vithura, Kallar, Mahagani, chellimukku, ooruttambalam, kattakada, Chayakulam (MSSS), Veliyannur (SEWA), Madathara, Elavupalam, Kunnathur, 7th mile, Nediyavila, Oruvazhi, Edakkad, Pattazhy, Sasthamkottai, Karunagappally Nattakam, Karichal, Kalarkod, Muthukulam, Aroor, Ambalapuzha east, Kakkazham, Vandanam, Thamarakulam, Karuvatta, karthikapilly, Harippad, Kurathiyad (Mavelikkara) Thiruvalla, Moolakkayam, Mukkuttuthara, MBD clusters are Koruthodu, Muttappilly, Edakkadathil, Orumbanmuzhy, Moolakayam Parakkode (Adoor), Ezhamkulam, Kodumon, Mudiayakunnil, paruthikode, Kottamugal , Konni, Ranni, Pampavalley, Thulapally, Kozhanchery, Aranmula, Kannankod colony near Adoor. Adimali, Mamalakandam, Chillithodu, Chelakkara, Pazhayannur, wadakanchery, Nayarangadi, Kuttichira, Perambra, Chalakkudy west, Parappuram, pariyaram, Vellikulangara (chalakkudy), Allor Canal bridge,Chalakudy-Iiringalakuda rute, VR Puram Chalakkudy Mala rute, Kuzhikkattussery Mala- Iringalakuda rute, Koranjoor, mallad route, Chavakkad, Manathala , Chavakkad Kanjikode , Koduvayoor, Wadakkanchery, Kollamkode (Alathur), Thavalam (Attapadi), Nenmara , Vakkathara , Valiyapadam (Malampuzha), Ezhakkad (Kongade), Koonathara, 9th mile (Kalladikode), Edathara (Parali) Thiroor Karammoola, Mukkam Panamaram Irritty, Koottupuzha, 32th mile, Bankalam
Tamil Nadu	Flower market and Lake road- Coimbatore, Mettupalaym, Pollachi, Udumalpettu.,Sathyamangalam, Anthiyoor, Pallipatty, Thathaneri, Virupachi,Puthoor, Dindigal, Thiruvanikoil, Thenur, Chengam, Pennagram, Annur, Sellapalyam, Karamada, Kunnathoor, Yellapalyam, Villupuram, Pannuruthy, Thiruvannamalai, Palakode, Marandahally, South market, P. Nattamangalam, Pennagram, Anthiyoor, Thannirpanthal
Karnataka	Belgaum, Gulbarga, Tawargeri, Savanur, Ranibenur, Bellary, Chitradurga, Harihar, KHB Colony, Shivamoga, Mandya, KHB colony, Kallahally, Madur, Kushal Nagar, Hunsoor, Mysore City, Gopala, Devanahalli
Andhra Pradesh	Mancherial, Hyderabad(Mazomjahi Market), Karimnagar, Khammam, Anjanapuram, Thallada,Gudiwada, Cumbum, Papenenipally, Hyderabad, Srikakulam, Vishakhapatnam, Vizianagaram, Warangal, Bheemaram, Jangalapally, Parkal
Goa	Bicholim, Valpoi, Thanem

Appendix 1.2

REPORT OF THE REGIONAL WORKSHOP ON *"BAMBOO INDUSTRY IN SOUTH INDIA: STRUCTURE, FUNCTION AND PEOPLE"*.

Report of the Regional Workshop on "bamboo industry in south India: structure, function and people".

The Regional Workshop on **"bamboo industry in south India: structure, function and people" held at the** Kerala Forest Research Institute, Peechi, Thrissur, Kerala, on June 23-25, 2010 is sponsored by National Bamboo Mission (NBM), Ministry of Agriculture and Cooperation, Government of India and Kerala State Council for Science, Technology and Environment (KSCSTE), Government of Kerala. This workshop focused on issues in a broader perspective related with the structure and functions of bamboo industry and the socioeconomic and livelihood conditions of bamboo dependent communities in South India. The Regional Workshop covered the key focal areas of:

(a) Structure and functioning of the bamboo industry,

(b) Technological development, product design, production and marketing,

(c) Bamboo cluster development,

(d) Economic and livelihood potential of bamboo,

(e) Indigenous knowledge / Intellectual Property Rights and

(f) Policy needs of the bamboo industry.

Majority of the participants were from the south Indian states and they constituted almost all stakeholders of bamboo sector i.e., the traditional artisan, researchers, scientists, non-governmental organizations, industrialist and government officials and policy makers. The list of participants is provided in Annexure Appendix 1.3.

The Regional Workshop on "bamboo industry in south India: structure, function and people" started with an invocation by way of a flute recital by Shri.TA Sivadas. The inaugural session started with the Welcome Address by Dr. K.V. Sankaran, Director, KFRI. The Presidential Address was by Shri. Trivedi Babu IFS, Addl. PCCF (Working Plan and Research), Kerala Forest Department. The Inaugural Address was made by Shri C.P.John who expressed his views on the underutilization of bamboo and promoting bamboo. Dr. S.Chand Bhasa, IFS, Retd. PCCF and Former Director, KFRI felicitated the Workshop. Dr. V. Anitha, Convener, Regional Workshop, detailed about the Workshop and its expectations. Lastly, the vote of

thanks was proposed by Dr. K.K. Seethalakshmi, Coordinator, Bamboo Technical Support Group, South Zone.

The Keynote Address was delivered by Prof. B. Sivaramakrishnan ,IPIRTI Board Member, Ministry of Environment and Forests, Govt. of India, Taskforce Member, Industry Syndicate, Govt. of India, Chairman, Bamboo-CFC and Sri Sankara Group of Institutions, Trichy, Tamil Nadu on '*Opportunities in Bamboo Sector: Cultivation, Processing, Handicrafts, Formation of Bamboo Cluster and Schemes available in various ministries*'. In his Keynote address, importance of bamboo cultivation, bamboo processing, and bamboo handicrafts was highlighted. He stressed the need for establishing bamboo cluster at KFRI by obtaining the necessary financial assistance from the Ministry of Micro, Small Medium Enterprises. He also appealed the entrepreneurs to make use of the schemes available with National Bamboo Mission for cultivation and National Mission on Bamboo Applications for processing industry and handicrafts.

SESSION - I: STRUCTURE AND FUNCTIONING OF BAMBOO INDUSTRY

Session - I was conducted by the Chair Shri. N.S. Adkoli, IFS (Retd.) *Director, Bamboo Society of India, Malleswaram, Bangalore,* Co- Chair Dr. Muktesh Kumar, Head, Department of Botany, Forest Ecology and Biodiversity Conservation Programme Division, KFRI and Rapporteur Dr. T.K. Dhamodaran, Scientist, Wood Science and Technology Department, Forest Utilization Division, KFRI.

Five papers were presented in the session out of seven. The first presentation was by Shri. **C.P. John**, President, Centre for Cane and Bamboo, Kerala. He gave a review of the Bamboo Sector in Kerala with emphasis on the various manufacturing sectors and its role in the Kerala economy. As per the sectoral distribution (GSDP, Kerala) a considerable reduction from 56 to 14.47 per cent is calculated during the period from 1960 - 61 and 2008 - 09 respectively because of the increase in the secondary and tertiary sectors. It was suggested that bamboo has to be put under the manufacturing sector as the manufacturing sector is very weak. Though there are lots of weaknesses in the manufacturing sector, for bamboos, there is great opportunity. The preference for bamboo in industrial production is only 6%. Under micro enterprises in urban areas, there are 2460 units for the manufacture of 114 items. Only very little importance is given for bamboos as per the entrepreneurial

choice. The bamboos are very much underutilized. He emphasized the need for the bamboo application under four F categories (fabric, food, furniture and furnishings). Within a couple of years UAE would discard the use of plastics and bamboos may take up its place making bamboo more useful. While concluding, he stressed the need to improve the quality of the handicrafts; wickery expertise is to be enhanced. Import of intermediary products from other states such as Tripura for product development. Inclusion of wickery crafts in schools curriculum, bamboo-wood technology in engineering colleges, reduction of import duty for machineries. Formation of Commodity Board for developing strategies for the development of bamboo sector in Kerala State.

The second presentation by Shri. N.V.Trivedi Babu, IFS, Addl. PCCF (Working Plan and Research), Government of Kerala highlighted the Impediments for cultivation of bamboo in the private sector in Kerala and talked on the legal impediments. He thrusted on the need for large scale cultivation of tree species in private lands and homesteads in order to achieve the national objective of extending the forest cover. He indicated that bamboo is one of the ideal species for agroforestry and It is estimated that 1.5 Lakh MT of bamboo is available for extraction from the forests of Kerala. Bamboo is one of the preferred species for planting in the degraded forests. While speaking on the policies affecting bamboo cultivation, he suggested that a forests based industry should raise the raw material needed for meeting its requirement. Small and marginal farmers should be encouraged to grow trees on marginal or degraded lands available with them. The State Government recognized the need to popularize the cultivation of bamboos and bamboo based handicrafts, setting up small scale industries to utilize the abundance resources available, to plant bamboo along the river bank with people's participations and to supply bamboo and reed to the traditional workers at a concessional rate. He suggested the popularization of a suitable species which is easier for extraction in place of common thorny bamboo. There should be sufficient planting stocks developed through tissue culture or appropriate vegetative methods for large scale planting. There should a regulatory mechanism for remunerative prices for bamboos.

The next presentation by Dr. P.K. Muraleedharan, Coordinator, Forestry and Human Dimension Programme Division, Kerala Forest Research Institute, highlighted the details on the organized and the unorganized handicrafts sector, the need for the availability of good quality raw materials and the importance of mechanization and the preservative treatments. He informed that the production of bamboo curtains is most remunerative

when compared to other bamboo products by way of economic returns for the artisan. Setting up of the common facility centre (CFCs) and training of artisans for producing good quality handicrafts material suitable for national and international markets are essential. Though a draft bamboo policy for developing bamboo sector for Kerala state has been prepared, it is still pending with the Government for approval and implementation.

The fourth presentation by Shri. Sanjeev S. Karpe, Managing Director, Native KONBAC Bamboo Products, Kudal, Sindhudurg, Maharashtra was a detailed account of the achievements of KONBAC a social enterprise. It was interesting to note that they have developed jigs and mould for producing high quality products. Capacity building of locals overcoming caste barriers was achieved. Separate modules have been developed for men and women for the manufacturing units. They have collaborative projects with International Universities and other International organizations such as INBAR,CIBART etc. There is difficulty in getting the funding and the only option to achieve the goal is to form a company were artisans are also the owners of the company with share holdings.

Lastly, Shri. Shiv S. Panse' from the Bamboo and Cane Development Institute, Agartala, Tripura made a presentation on the point that for developing any value added products marketing is a big challenge. The quality of the products is reduced mainly due to unskilled workforce and lack of technical knowhow. There is lack of proper specification for bamboo products across the country and there is no uniformity in product dimensions. There is loss of shelf life due to fungal and insect damage. The working capital is restricted to the native areas only. There is scarcity of good quality raw material. Sensitization of species specific products instead of product specific species is lacking. There is no market information system (MIS) available. There is lack of knowledge of global acceptance. Designing must be compatible with technical adaptability. A bamboo bazaar should be introduced where a minimum support price can be fixed. The global market changes need to be studied.

SESSION-II: TECHNOLOGICAL DEVELOPMENT, PRODUCT DESIGN, PRODUCTION AND MARKETING

Session-II on was chaired by Shri Rajinder Kumar Mehta and Co-chaired by Dr Mammen Chundamannil, Head, Department of Forest Economics, Forestry and Human Dimension Programme Division, KFRI and Rapporteur Dr. E.M.Muralidharan, Head, Department of

Biotechnology, Sustainable Forest Management Programme Division, KFRI. The session included five papers in all.

Mr. M.R. Anil Kumar, former Managing Director of the Kerala State Bamboo Corporation Ltd, spoke about the activities of the Corporation in using bamboo for employment generation and poverty reduction in the community of the traditional bamboo workers in Kerala by supplying raw material and providing centralized facilities for mechanized primary processing for weaving bamboo mats. He also described the innovative products that the corporation has been developing for the market from bamboo like the Bamboo dust particle board, flattened bamboo board and the pre-engineered bamboo board that could find wide acceptability.

Dr. Sujatha from the IPIRITI, Bangalore, briefed on the Bamboo-emerging innovative production for a sustainable future, was about the new generation products based on bamboo mat, bamboo strips, the moulded skin board door and the bamboo based building systems which showed good potential in the domestic market.

Mr. Anith Kumar, College of Forestry, Sirsi, was on the "Need for scientific studies and standardization of environment friendly traditional treatment techniques to make bamboo products more durable" and on the traditional knowledge in bamboo preservation techniques in the rural communities of South India and stressed on the need to scientifically study the techniques for standardization and adoption by the industry.

Ms. Jyotsna Rajpal, elaborated from experience, about the various methods of treatment of bamboo against biodegradation and about the wide range of products that could be developed for total utilization of the bamboo culms and on the available marketing avenues.

Mr. TA Sivadas, a flute enthusiast and manufacturer of repute, explained with help of a video presentation about the methods he adopts to select the best bamboo from the forests of Kerala, the treatments and processing and testing that goes behind creating a high quality flute preferred by the well known musicians in South India.

SESSION- III: BAMBOO CLUSTER DEVELOPMENT

Session - III on 'Bamboo cluster development' was conducted by Chair Shri. S.V. Kumar IFS,Addl. PCCF (FDA and CFM), Hyderabad, Andhra Pradesh , Co- Chair Dr. George Mathew, Programme Coordinator, Forest Health Division, KFRI and Rapporteur Dr. K.V. Bhat, Scientist, Research Management and Evaluation Unit, KFRI.

Among the five papers included for the session only three papers were presented. The first presentation was by Mr. R.K. Mehta on 'Integrated mega cluster approach for the manufacture of new age bamboo value added products with captive and associate bamboo plantations'. The speaker outlined the need for bamboo clusters with a new focus for enabling developments in bamboo sector. He suggested establishment of bamboo clusters to process and manufacture a wide range of products having high market potential from 3 to 4 selected species of bamboo grown in the nearby localities. He also gave an overview of diverse high-quality value added products possible from bamboo and their marketability. The potential of such products was indicated as much profitable.

The second paper was by Shankar S. Tamhan on the 'Need for bamboo cluster development for mass self employment'. The speaker presented the sustainable functioning of bamboo clusters based on his experience in Maharastra. He emphasized that employment and livelihood opportunities of the lowest income groups in rural areas should be aimed at for cluster development and the benefits should reach them. The NGO is a facilitator non-profit organization. The cluster composed of self help groups should be provided with opportunities for training, machines and a common facility centre. Use of modern processing technology, value addition and creating adequate marketing facilities can make the clusters self-sustainable. A transparency observed by the NGO in distribution of income among the SHGs will also be beneficial in terms of success.

The last presentation was by Mr.C. Surendranath, Kalpetta Bamboo Cluster on 'Evolution of the cluster effect'. The speaker highlighted the activities of URAVU- an NGO functioning in Wayanad district of Kerala. URAVU was established in the seventies with the goal of livelihood improvement of tribal population of Wyanad. At present, the clusters functioning under the organization have become a success story in terms of sustainability and livelihood improvement of weaker sections. The speaker also acknowledged the help received from various organizations in bamboo processing, design development and training. The achievements and challenges were also discussed along with a review of the Governmental development programmes that were supportive to the activities of the organization.

SESSION- IV: ECONOMIC AND LIVELIHOOD POTENTIAL OF BAMBOO

Session - IV was conducted by Chair Smt. Jyotsna Rajpal, Erosway pvt Ltd., Maharastra, Co-Chair Dr. Thomas P. Thomas, Head, Department of Soil Science, Sustainable Forest Management Programme Division, KFRI and Rapporteur Dr. M.P. Sujatha , Scientist, Department of Soil Science, Sustainable Forest Management Programme Division, KFRI.

Four papers were presented in the session. The first paper on " Bamboo for livelihoods" was presented by S.V. Kumar, IFS, Addl. PCCF (FDA and CFM) , Hyderabad. He gave a general picture on forests and bamboo areas in A.P, revenue to the vana samrakshana samithi and government from bamboo, cultivation and conservation practices of bamboo followed in A.P, utilization aspects of bamboo for pulp, agarbathi stick, mat, furniture etc. After the presentation the house raised a major concern on the use of bamboo for agarbathi sticks.

The second paper on "economic impact and livelihood potential of bamboo based technologies developed at IPIRTI was presented by Ms. Sujatha, D. She detailed bamboo use pattern in various States, industrial processing of bamboo through different types of machines, employment generation, indirect benefits in self employments, socioeconomic implications of bamboo based corporate industries, value added products etc. During the discussion part the house suggested to recommend the use of bamboo furniture in schools and government offices and to introduce subsidy for enhanced marketing of these furniture.

The third paper on "Economic and livelihood potential of bamboo authored by V. Ponnuswamy was presented. He described the importance of bamboo as a vegetable owing to its low fat and high fibre content. He pinpointed the content of selenium as the miracle life element in bamboo. He also detailed the role of bamboo as medicine, agent in reducing global warming, water purification etc. He stressed the need of consumer oriented technology in bamboo. The house took part in the discussion on the export of bamboo processed shoots and the problem encountered in India on export subsidy.

Lastly Mrs. Thressiamma, K.V from Chaithanya Welfare Society from Mundakkayam, Kottayam in Kerala presented a paper on "The role of rural women in bamboo industry and the problems faced by them". She detailed the history of society she belonged to and highlighted the support of State and National mission for its development. She mainly

stressed the need of training on modern technologies, awareness programme and the supply of raw materials from Government without any legal problems. The house felt that the involvement of N.G.Os in this sector is crucial since the present structure is bureaucratic.

SESSION-V: POLICY NEEDS OF THE BAMBOO INDUSTRY

Session - IV was conducted by Chair Shri. Sanjeev S. Karpe, Managing Director, Native KONBAC Bamboo Products, Kudal, Maharashtra ; Co- Chair, Dr. K.K. Seethalakshmi, Programme Coordinator, Sustainable Forest Management Programme Division, KFRI; and Rapporteur Dr. M. Sivaram, Scientist, Forest Statistics Department, Forest Management Information System Programme Division, KFRI.

Among the Nine papers included for the session eight papers were presented. The first paper was presented by - Shri. N.S.Adkoli IFS (Retd.) on Policy Needs for bamboo development . the author elaborated on the various forest policies implemented in the country, pointed out that the Forest Policy 1988 did not adequately addresses the forest produce required by the people and suggested reducing the import of forest produces and save foreign exchange and promote internal resources. He highlighted that Forest Development Corporations could not meet the industrial requirements. He suggested amending Land Ceiling Act to promote planting of forest species including Bamboo. He voiced his concern over the Governments low concern over promotion of bamboo Departments. The author emphasized further that majority of the forest produce required by the people are met by the sources outside forests. Therefore, farm forestry, agro-forestry and social forestry should be brought under Panchayat Raj System with minimum/no control by the Forest Department. Climate change and Carbon sequestration programmes should promote agro-forestry activities. Fund allocated for compensatory afforestation programmes should allocate money for agro- forestry activities.

The second paper was by Shri. Rajan Neralwar on '*Need for National and State wise bamboo policy for development*. He observed the following: statistical data on bamboo workers/ bamboo production are not available common bamboo policy is required at state and national level; amendment required stopping indiscriminate felling of bamboo from natural forests.

Mr. Samson briefed on the schemes of Khadi and Village industries, and explained various programmes; facilities and technical assistance provided by the Khadi and Village Industries Commission and also distributed a booklet brought out by the Khadi and Village Industries Commission.

Next was a combined presentation by Mrs K. Sarojam and K.H. Hussain on information Resources on Bamboo. Mrs. K. Sarojam explained the activities of Bamboo Information Centre established at KFRI under IDRC project and Mr. K.H. Hussain demonstrated i) Bamboo Bibliography and ii) Bamboo Digital Library developed by the KFRI Library.
Mr. Y.K.Halpet of the Akhil Karnataka Meda Girijan Kalyan Sangha -Hubli, mentioned that there is a shortage of bamboo and no marketing strategies developed.He suggested growing commercially valuable bamboo species and exploring international market and demanded more subsidies for bamboo growers and relaxation of cutting and felling rules and stop the intervention of forest department.

Mr. Parameswaran a young entrepreneur began his presentation by narrating major uses of bamboo for flooring, panelling, charcoal production on the topic Bamboo: Scope and boundaries. He opined that there is lot of scope for marketing and suggested showcasing uses of bamboo and emphasized the need for training. He suggested opening-up bamboo bazaars/open markets and that government should consider a Single Window System to facilitate entrepreneurs.
Mr. K.J.Yenpreddiwar presented his experiences in building a low cost bamboo based house. He narrated the strength of the bamboo and compared its strength with that iron while making beams, pillars and roof. He further circulated photographs taken at various stages of house construction.

Mr. P. Bhasi elaborated on the Bamboo Industry in Kerala: Problems and Prospects. He described the profile of the bamboo workers currently involved. One group is the traditional bamboo workers belonging to certain communities and the others for whom this is an alternate source. He highlighted the non-availability of bamboo for traditional workers and mentioned that State Bamboo Corporation is increasing the prices of bamboo very often which affects the livelihood of the traditional bamboo workers. He further observed that bamboo industries don't get attention unlike other industries and traditional bamboo workers are not cared.

The deliberations highlighted the problem of cracking and splitting of bamboo used for furniture was raised and solutions were offered by the participants. The participants also made the recommendation to the policy makers to reschedule the support given by NMBA to the industry which helped the development in NE and to make financial support available again to the develop industry in rest of India. The need for making data and specifications available for the industry was also discussed

The **PANEL SESSION** was Chaired by **Dr. S. Chand Basha IFS**, PCCF (Retd.) and Former Director of KFRI and the Members of the Panel included **Dr. K.V. Sankaran,** Director, KFRI; Shri. **N.S. Adkoli IFS** (Retd.)' Director, Bamboo Society of India, Bangalore; **Shri. S.V. Kumar IFS, Addl.** PCCF (FDA and CFM), Hyderabad; **Dr. S.K. Nath,** Joint. Director, Indian Plywood industries Research and Training Institute, Bangalore; **Shri. Sanjeev S. Karpe** , Managing Director, KONBAC Bamboo Products, Maharashtra; **Dr. P.K. Muraleedharan,** Programme Coordinator, Forestry and Human Dimension Programme Division, KFRI; and **Dr. S. Sankar** ,Head, Sociology Department, Forestry and Human Dimension Programme Division, KFRI. The deliberations held came out with the following recommendations.

RECOMMENDATIONS OF THE WORKSHOP

1. Formation of Commodity Board for developing strategies for the development of bamboo sector in all states.
2. NBM should promote large scale cultivation of Bamboo in private lands and homesteads.
3. Similar to plantation crops Bamboo and other trees also should be exempted from the provisions of Land Reforms Act.
4. Forest produce as defined under the section 2 of the Indian Forest Act, 1927 as well as other state Acts should be amended to remove trees, bamboo and cane grown on private lands.
5. State Bamboo Mission should facilitate the availability and supply of certified quality planting materials and treated and preserved seeds.
6. Minimum support price for the bamboos species wise cultivated in the private lands and homesteads should be assured and organize bamboo bazaar.
7. Formulate and implement a Bamboo development policy at each state and national level.

8. Bamboo cultivation, harvest, storage, preservative technique, processing and marketing should be free from all taxes and instead should have incentives for development of the bamboo sector.
9. NBM should estimate the productivity of different species of bamboo in different agro climatic zone and work out the economics of the cultivation.
10. NBM should facilitate and fund creation of Common Facility Centres for different bamboo products in all states.
11. Setup state level training institutions for product design, development and marketing with support of national and international expertise.
12. Develop Bamboo clusters for mass self employment and high value added products.
13. Bamboo industry to be made a sunrise industry with proper incentives.
14. Government should purchase quality bamboo products to the extent of 50% of the product requirement in all government establishments.
15. Setup a nodal agency at state level to collect, store and disseminate data relating to all aspects of bamboo sector with coordination at the national level.
16. NMBA should promote advanced courses in the bamboo sector.
17. To start with setup a Bamboo Museum at the Kerala Forest Research Institute.

Appendix 1.3: List of Participants of the Regional Workshop on '***Bamboo industry in south India: structure, function and people***'.

Sl No.	Name of Participants	Designation and Address
1.	Adkoli N.S. IFS (Retd)	**Chairman** Treelands Development Services (p) Ltd, Vanavikas, Bangalore PH: 093419 - 22499 adkoli@vsnl.com
2.	Anilkumar M.R	**Executive Engineer** (Agriculture) Kalarcode, Sanathanapuram.P.O Alappuzha - 688 003 , Mob: 9847968183 bambooanil@gmail.com
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10.	Gulabrao Dagduji Khedekar	Retd Principal Ahilya Ward No I, Chikhli Dt, Beddara - 443 201, Maharashtra

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11.	Halepet Y.K.	**President** All Karnataka Meda association Keteshwar Colony, near Bankers Colony, Heggeri, Hubli-24, Dharwad (Dist), Mob: 09880857255
12.	Halepet Y.K. (c/o)	Secretary of Mr. Halpet Y.K.
13.	Janagoudar B.S.(Dr.)	**Dean** (Forestry) College of Forestry, Sirsi, Uttara Kannada (Dt), Karnataka - 581 401 Mob: 09448495318 bjanagoudar56@gmail.com
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15.	John C.P.	**President** Center for Cane and Bamboo
16.	Jyotsna Rajpal	**Director** 17, Neta J, Soc , Katol Roas, Bemind Nagpal Engg Nagpur - 440 013 PH: 0712 3252184 Erosway2000@yahoo.co.in
17.	Kumar S.V.(IFS)	**Addl.PCCF** (Forest Development Agency) O/o Prl.Chief Conservator of Forests, Saifabad, Aranya Bhavan,Hyderabad, Andhra Pradesh PH: 09440810008 Apcc_fda_apfd@ap.gov.in
18.	Madhu Narayanan	**PhD Candidate** Department of Anthropology University of Kannur, Thalassery campus, Palayad, 670661 , PH: 9947786609 madhunar@gmail.com
19.	(Dr) Mammen Chundamannil	**Scientist** Kerala Forest Research Institute Peechi, Kerala, India
20.	Maria Dominic Savio M.	IFGTB Coimbatore
21.	(Dr) Mohammed Kunhi K.V.	**Scientist** KFRI, Peechi 09447126861 kunhikvm@gmail.com

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32.	Ramesh S. Rathod	**Assistant Professor** Department of Silviculture and Forestry, College of Forestry,

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42.	Sivadas T.A.	**Flute Artist & Flute Maker** Thekkepuram, Kunnamkulam , Thrissur - 680 503 PH: 9847855913 sivadasta@yahoo.com
43.	**Sivaramakrishnan. B (Prof.)** (VVIP)	**IPIRTI Board member, Ministry of E & F, Govt. of India** Taskforce Member,Industry Syndicate, Govt. of India Chairman, Bamboo-CFC & Sri Sankara Group of Institutions,Trichy.siva_sankarain@yahoo.co.in

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46.	Sujatha. D (Dr)	**Scientist -'D'** Indian Plywood Industries Research & Training Institute, P.B No: 2273, HMT Yeswall Link Road, Bangalore - 560 077 PH: 080 28394231/32 dsujatha@ipirti.gov.in
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50.	Thresiamma.K.V (c/o)	NGO,Kerala
51.	Tiju C. Thomas.	**Senior Research Fellow** KFRI, Peechi. 9745010123 tijucthomas@gmail.com
52.	**Trivedi Babu (IFS)**	**Add. PCCF**, Addl. PCCF (Working Plan and Research) Kerala Forest Department, Thiruvananthapuram
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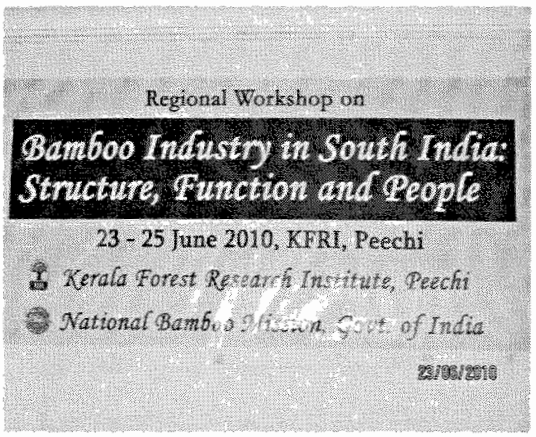
54.	Kerala Forest Research Institute Bamboo Team	


Regional Workshop on
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Structure, Function and People
23 - 25 June 2010, KFRI, Peechi
Kerala Forest Research Institute, Peechi
National Bamboo Mission, Govt. of India
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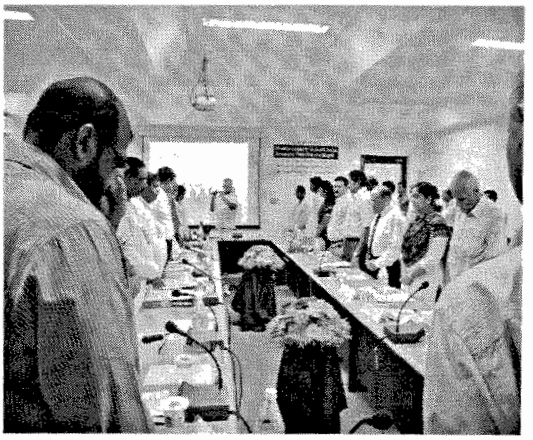

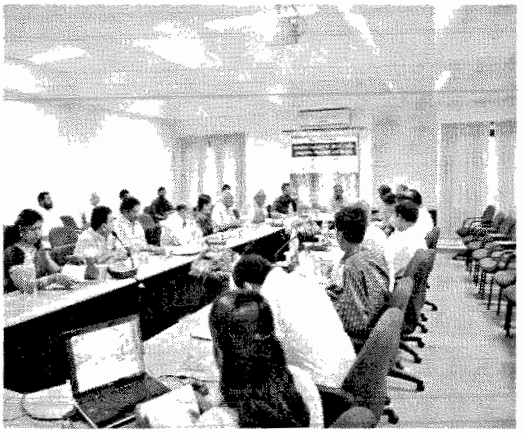

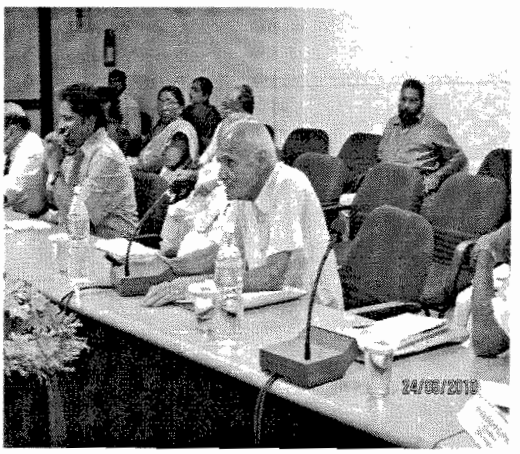
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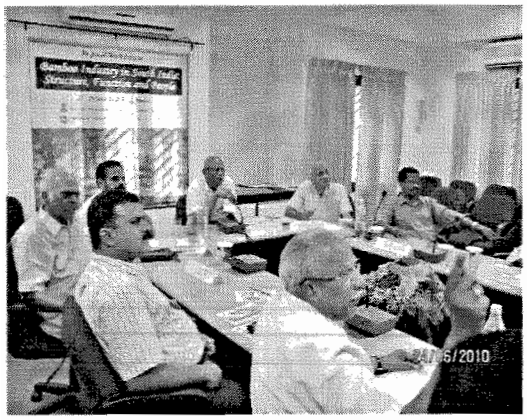
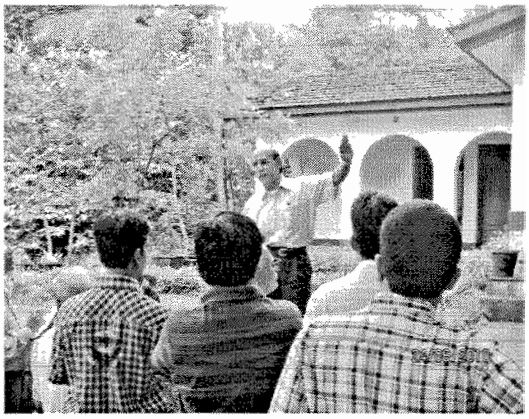
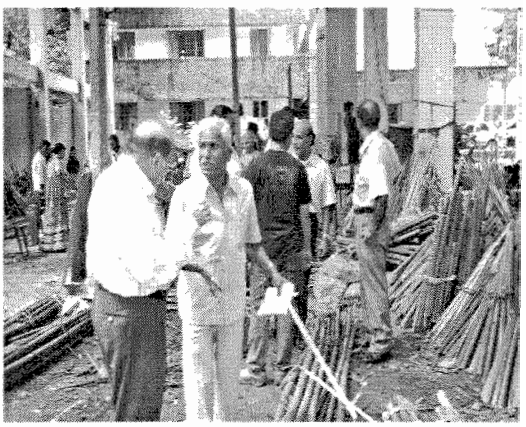

Bamboo Industry in South India





Appendix 3.1.

The Bamboo Supply Chain of South India

Appendix 3.2. the Bamboo supply chain of south India	
States	Channels
Kerala	Forest → Artisan Forest → Merchant → Private depot → Artisan Home garden → Artisan Home garden → Merchant → Private depot → Artisan
	Forest → Bamboo corporation → Artisan Forest → Bamboo corporation → Agent → Artisan Forest → Bamboo corporation → Co-operative society → Artisan
	Forest → Artisan
Tamil Nadu	Kerala Forest → Merchant → Private depot → Artisan Kerala Home garden → Merchant → Private depot → Artisan Bamboo plantation → Private depot → Artisan
	Forest → Artisan River banks and natural areas → Artisan
	Kerala Forest → Kerala Bamboo Corporation → Agent → Artisan
	River banks and natural areas → Artisan
Karnataka	Natural forest → Artisan
	Home garden → Artisan
	Private plantation → Artisan
	Private plantation → Private depot → Artisan
	Import → Private depot → Artisan
	Natural forest → Forest depot → Meda Sanga → Artisan
	Natural forest → Forest depot → Private depot → Artisan
Andhra Pradesh	Natural forest → Artisan
	Natural forest → Artisan
	Natural forest → forest depot → Burood Bamboo Industrial Co-operative Society → Artisan
	Natural forest → forest depot → Private Depot → Artisan
Goa	Home gardens → Artisans
	Private plantations → Artisan
	Private plantations → Bamboo merchant → Artisan
	Import → Bamboo merchant → Artisan

Appendix 3.2 Traditional bamboo products of **Kerala**

Item no.	Item	Local name	Price (Min-Max)	Uses	Sectoral linkage
KL/1	Small basket	*Chriyakutta*	15-25	Household use	Household
KL/2	Medium basket	*Edatharamkutta*	40-60	Household use	Household
KL/3	Large basket	*Valiyakutta*	60-120	Farm use	Agriculture / farm
KL/4	Extra large basket	*Vallam/ Chanthakutta*	80-150	Farm use (Tapioca preservation) Market use Use in cashew processing industry	Agriculture / farm Trade/ Commerce Industry
KL/5	Square basket	*Vatty*	40-60	Household use	Household
KL/6	Corner basket	*Korukutta*	80-175	To handle food grains grain, cultural article	Household
KL/7	Sift	*Vattamuram/ Thaduppa/ Chathuramuram*	25-150	Household use	Household
KL/8	Winnow	*Kombumuram/ Muram/ Kundumuram*	25-80	To farm use Household use	Agriculture / farm Household
KL/9	Beedi winnow	*Beedi muram*	30-40	To make *beedi*	Industry
KL/10	Rice basket	*Chorukutta*	80-140	To filter cooked rice in bulk quantity	Culture/ tradition
KL/11	Fish basket	*Meenkutta*	30-120	To handle fish in fishing harbour	Trade/ commerce
KL/12	Coconut basket	*Thengakutta*	180-220	To collect coconut from the farm	Agriculture / farm
KL/13	Sales basket	*Thattukutta*	30-40	To sale vegetables, fruits	Trade/ commerce
KL/14	Poultry basket	*Kozhikooda*	35-350	To poultry rearing	Poultry
KL/15	Paan basket	*Vettilakutta*	15-20	To export betel leaf	Trade/ export
KL/16	Mango basket	*Mangakutta*	20-60	To export mango	Trade/ export
KL/17	Flower basket	*Pookutta*	15-25	Flower decoration	Trade/ commerce
KL/18	Cooked rice filter	*Kayilkutta*	15-25	To dry cooked rice in kitchen	Household
KL/19	Fish box	*Meenkooda*	25-55	To keep fish especially dry fish	Household Fishing
KL/20	Latex box	*Ottupal kooda*	30	To take dry rubber latex from rubber tree	Agriculture/ farm
KL/21	Fish trap	*Kuruthy*	380-450	Traditional fishing instrument	Fishing
KL/22	Curtain (Sq Ft)	*Curtain*	15-60	To make shade in windows	Housing
KL/23	Mat (6x4)	*Panambu*	120-150	To dry paddy, pepper, ginger, coffee, turmeric, Houseboat making, Bamboo ply making	Household Agriculture/ farm Tourism Industry
KL/24	Mirror mat	*Kannadipaya*	750-1500	Luxury mat	Tourism
KL/25	Crab basket	*Njandu kooda*	60	To export crab	Trade/ export

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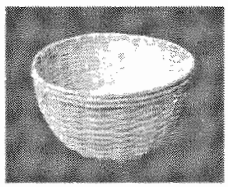
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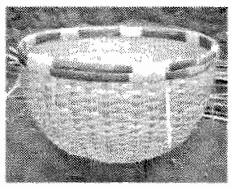
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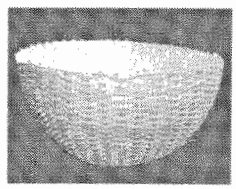
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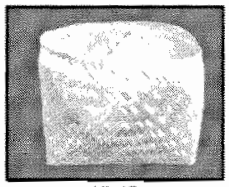
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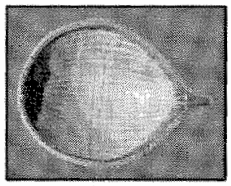
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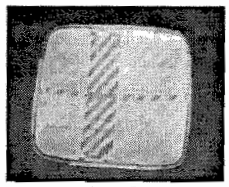
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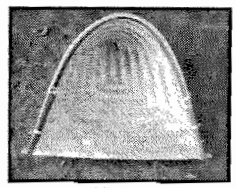
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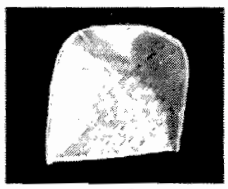
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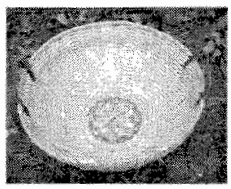
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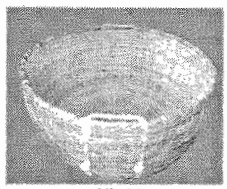
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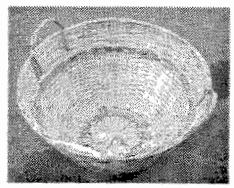
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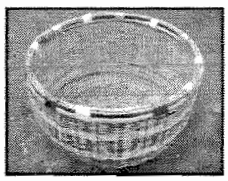
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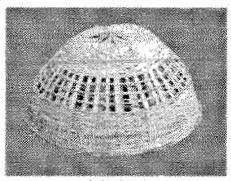
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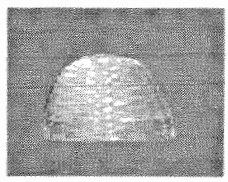
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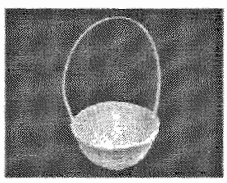
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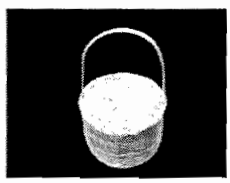
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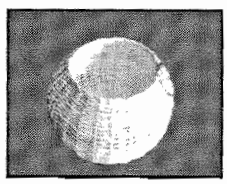
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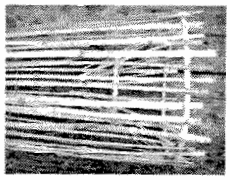
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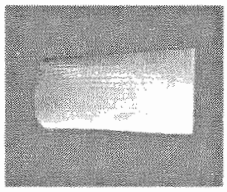
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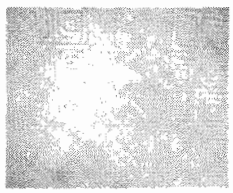
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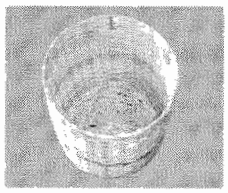
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Appendix 3.3 Traditional bamboo products of **Tamil Nadu**

Item no.	Item	Local name	Price (Min-Max)	Uses	Sectoral linkage
TN/1	Winnower 1	*Mura*	25	Household utility	Household
TN/2	Hand fan	*Visari*	15	Hand fan	Household
TN/3	Rice thattu	*Choruthattu*	5	To filter cooked rice	Household
TN/4	Small round basket	*Chinnathattu/ Archanathattu*	20-30	To take pooja items to temple	Culture/ tradition
TN/5	Medium round basket	*Thattu*	50-60	To display vegetables, fruits, etc.	Trade / commerce
TN/6	Large round basket	*Periyathattu*	75-150	To display and sale vegetables, fruits, etc.	Trade / commerce
TN/7	Round basket (medium)	*Thattu*	50-60	To display vegetables, fruits, etc.	Household
TN/8	Round basket (large)	*Periyathattu*	75-150	To display and sale vegetables, fruits, etc.	Household
TN/9	Sales basket	*Vyaparakoodai*	60	To sale fruits, vegetables, etc. on road side	Trade / commerce
TN/10	Sales basket	*Santhakoodai*	50-60	To handle and display items in market	Household
TN/11	Kitchen basket	*Pathrakoodai*	75-100	To keep kitchen wears	Household
TN/12	Rice basket	*Arissikoodai*	50-60	To distribute cooked rice during party	Household
TN/13	Coconut basket	*Thengakoodai*	100	To carry coconut from farm	farm
TN/14	Banana Basket	*Vazhakkathattu*	150	To display banana (Puthukottai)	Trade / commerce
TN/15	Mango basket	*Mangakoodai*	60-80	To packing and export mango	Trade / commerce
TN/16	Fish basket	*meenkoodai*	85	To carry fish	Agriculture
TN/17	Coconut basket	*Thengakoodai*	100	To carry coconut	Trade / commerce
TN/18	Basket	*Koodai*	60	(Dindigal veraity)	Trade/ export
TN/19	Vegetable basket	*Kaikarikoodai*		To vary vegetables	Trade/ export
TN/20	Tomato basket	*Thakkalikoodai*		To packing and export mango	Trade/ export Poultry
TN/21	Large basket	*Jattu/ Periyakoodai*	300-700	To harvest tomato and other from garden, to keep *Nurukku and Appalam*	Poultry
TN/22	Fruit basket	*Palakoodai*	10	To decorate and display fruits	Trade / commerce
TN/23	Flower basket	*Pookoodai*	50	To harvest flower (Jasmine)	Agriculture/ farm
TN/24	Flower decorating basket	*Pookoodai*	20	Flower decorating basket	Culture/ tradition
TN/25	Poultry basket	*Kolipanjaram*	70-150	To poultry	
TN/26	Poultry basket 2	*Kolipanjaram*	70-150	To poultry	
TN/27	Chicken basket	*Kolikoodai*	200	To export Chicken	Culture/ tradition

TN/28	Mud basket		60	To handle mud	Culture/ tradition
TN/29	Filtering basket	*Aviyalkoodai*	150	To filter boiled paddy	Household
TN/30		*Appalakoodai*	300	To distribute Appalam during meals	Household
TN/31	Presentation basket 1	*Zeerkoodai*	100	To present gifts during marriage ceremony	Culture/ tradition
TN/32	Presentation basket 2	*Zeerkoodai*	150	To present gifts during marriage ceremony	Household
TN/33	Presentation basket 3	*Zeerkoodai*	300	To present gifts during marriage ceremony	Agriculture/ farm
TN/34	Bamboo toilet box	*Thiruabharanapetty*	100	To present sari and toiletries during marriage	Housing Trade/ commerce Agriculture/ farm
TN/35		*Gopalpetty*	100		Housing
TN/36	Square basket	*Polemoodi*	200	Use to bring pooja article to temple	Housing
TN/37	Mat		200	To cover huts and temporary stalls	Construction
TN/38	Curtain (sq Ft)	*Thatti*	20-70		Household
TN/39	Fence		350	To make boundary	Others
TN/40	Ladder		300-400	Used in construction site	Trade/ commerce
TN/41	Kennel		2000	To keep dog	Others
TN/42	Gate		250		
TN/43	Tree guard	*Zedikoodai*	50-120	To protects tree saplings	
TN/44	Stick (40)	*Kutchi*	15	To flower decoration	
TN/45	Stick	*Balekettu*	100	Parcel packing	
TN/46	Broom	*Koodmaru*	70	To clean public places	
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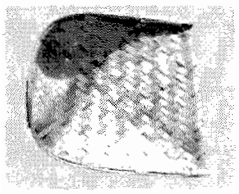
Tamil Nadu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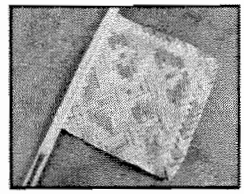
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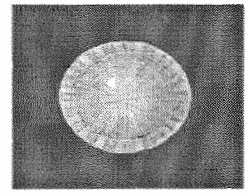
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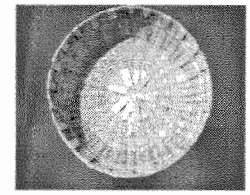
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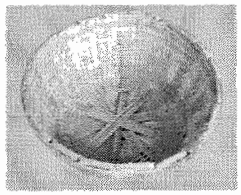
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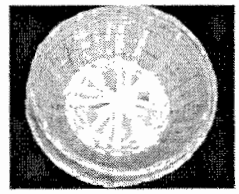
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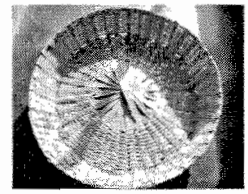
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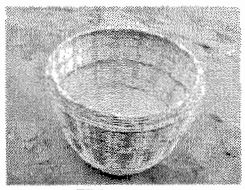
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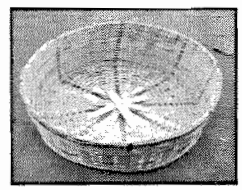
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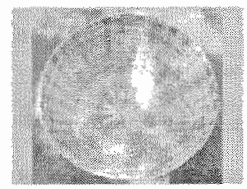
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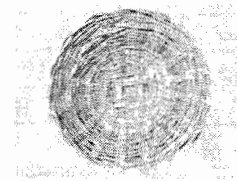
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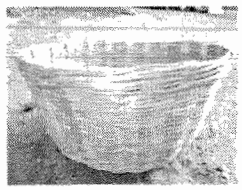
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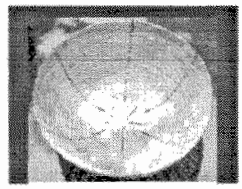
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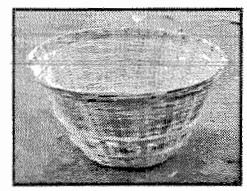
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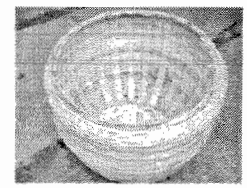
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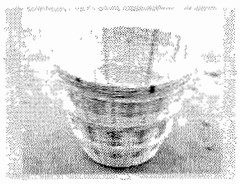
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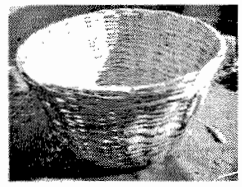
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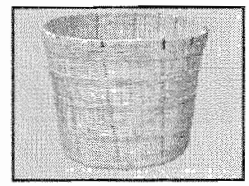
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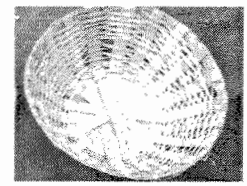
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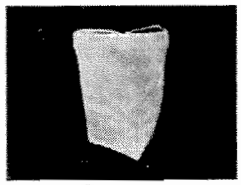
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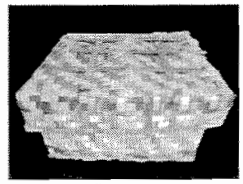
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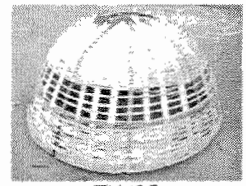
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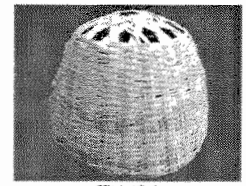
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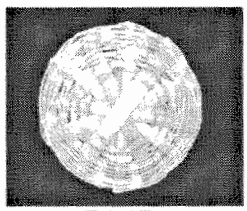
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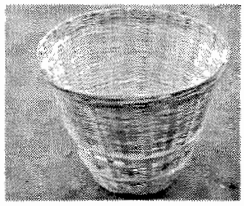
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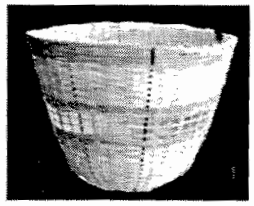
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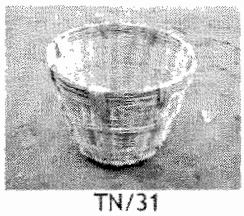
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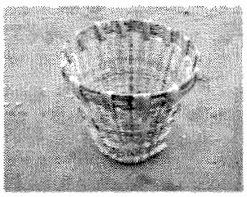
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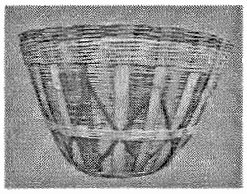
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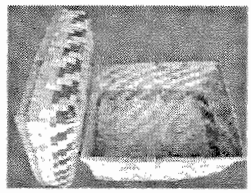
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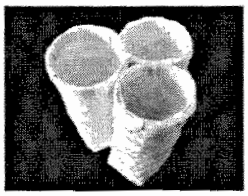
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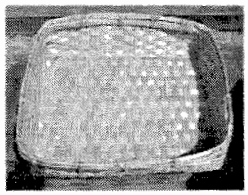
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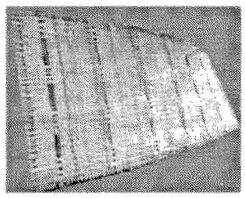
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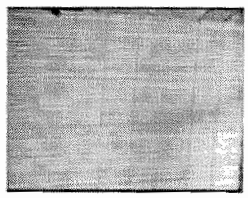
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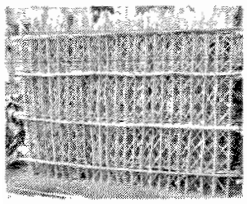
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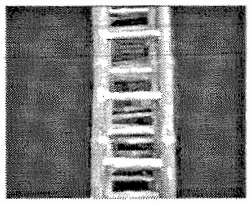
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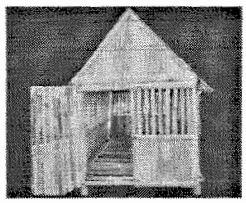
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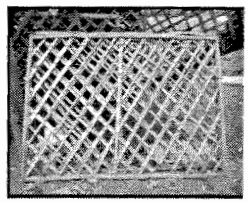
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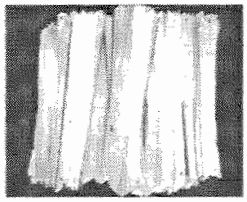
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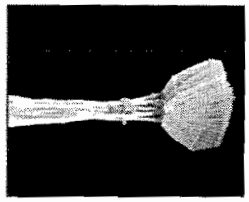
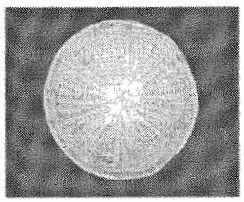

TN/46

Appendix 3.4 Traditional bamboo products of **Karnataka**

Item no.	Item	Local name	Price (Min-Max)	Use	Sectoral linkage
KA/1.	Basket	*Bakri / belly*	40-60	Household use	Household
KA/2.	Rotty basket	*Rotty bhutty*	30	To take chapatti/ rotty	Trade/ commerce
KA/3.	Mud basket	*Makkari*	80-100	To handle mud and waste	Agriculture/ farm
KA/4.	Rice basket	*Rice bhutty*	100-120	To take cooked rice in bulk quantity	Trade/ commerce
KA/5.	Extra large basket	*Jella/ jelli*	130-150	To take food grains from farm	Agriculture/ farm
KA/6.	Pooja winnow	*Mara*	20	To conduct pooja	Culture/ tradition
KA/7.	Pan basket	*Paan bhutty*	12	To export betel leaf	Trade/ export
KA/8.	Pooja basket	*Pooja bhutty*	60	To take pooja articles	Culture/ tradition
KA/9.	Pooja set(4 items)	*Patlekki*	60-80	Gowry and Ganessa festivals	Culture/ tradition
KA/10.	Winnow	*Soop/ mara*	40-60	Household use	Household
KA/11.	Small round basket	*Chibli*	20-30	To sale flowers	Trade/ commerce
KA/12.	Medium round basket	*Chibli*	60-70	To sale flowers, fruits	Trade/ commerce
KA/13.	Large round basket	*Chibli*	120-150	To sale fruits	Trade/ commerce
KA/14.	Poultry basket	*Panchara/ Murkhee jella*	40-130	poultry rearing	Poultry
KA/15.	Vegetable basket		30	To pack and sale vegetables	Trade/ export
KA/16.		*Oodh bhuty*	25	To make smoke of Oodh	Household
KA/17.	Flower basket		20	To take flowers to temple	Culture/ tradition
KA/18.	Baby cage	*Thottile*	70-100	To keep infant baby	Household
KA/19.	Filter	*Chalan*	80	To filter rice powder	Household
KA/20.	Mat (6x10 Ft)	*Chattai*	180-200	To make stall	Trade/ commerce
KA/21.	Window (6x4)		200	To make window	Housing
KA/22.	Curtain (Ft)		20	To make shade to home	Housing
KA/23.	Sand filter		300	To filter sand	Construction
KA/24.	Plat form		90	Using in construction sight	Construction
KA/25.	Ladder (Sq Ft)	*Seedi*	25	Using in construction sight	Construction
KA/26.	Cocoon tray	*Chandrike*	400-600	Cocoon rearing	Sericulture
KA/27.	Tree guard		80	To protect tree saplings	Agriculture/ farm

primary data, 2011

Karnataka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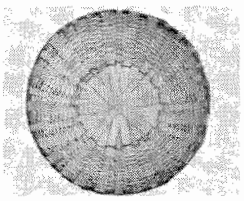
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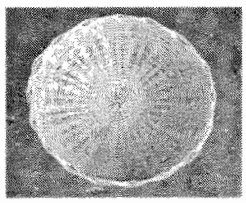
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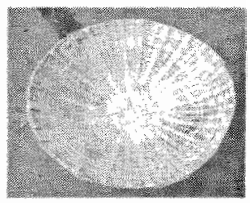
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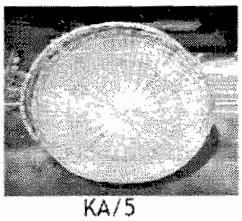
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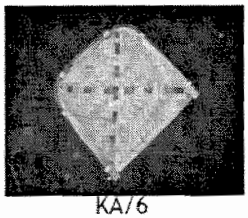
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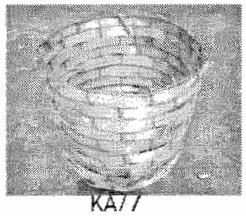
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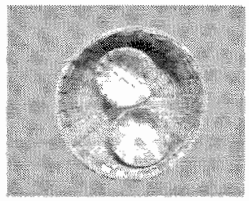
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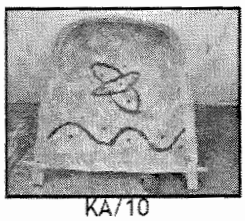
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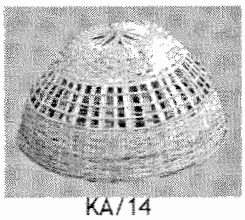
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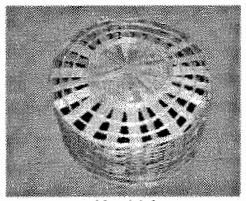
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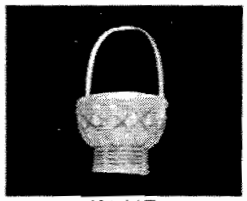
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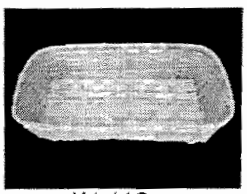
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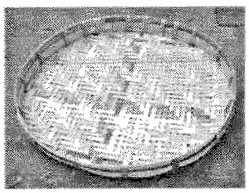
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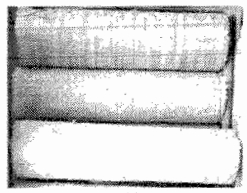
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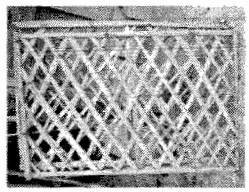
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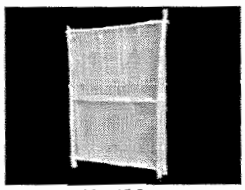
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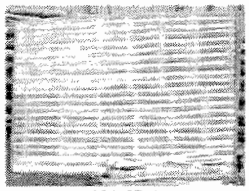
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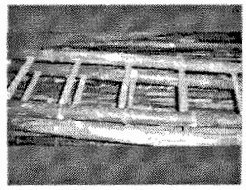
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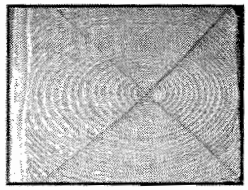
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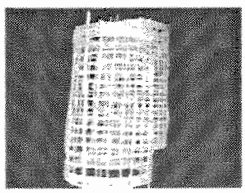
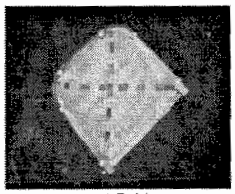

KA/27

Appendix 3.5 Traditional bamboo products of **Andhra Pradesh**

Item no.	Item	Local name	Price (Min-Max)	Use	Sectoral linakage
AP/1	Winnow	*Chata*	15-50	Household use and pooja purpose	Household Culture/ tradition
AP/2	Basket	*Gampa*	50-100 according to size	Household use and trade practices	Household
AP/3	Large basket	*Jella*	120	to carry vegetables from farm	Agriculture/ farm
AP/4	Fruit basket		50-100	Fruit decorating basket	Trade/ export
AP/5	Mat (6x4)	*Thadukal*	140	To make temporary stalls	Trade/ commerce Housing
AP/6	Large mat (12x6)	*Chikkadi thadukkal*	500	To make huts	Housing
AP/7	Fence (sqFt)	*Jali thadukal*	5	Fence of ground wall and houses	Housing
AP/8	Temporary platform(8ft)	*Goa thadukal*	100-150	Using in construction sites as temporary platform	Construction
AP/9	Ladder 10ft)	*Nichene*	200-250	Using in construction sites	Construction
AP/10	Stool		200-400	Using in construction sites	Construction
AP/11	Pooja set 1	*Palavelli, Monde and Gampa*	10	Ganga pooja and Durga pooja (familiar in Warangal district)	Culture/ tradition
AP/12	Pooja set 2	*Utty, Bhutty and Monde*	10	Ganga pooja and Durga pooja. (familiar in Warangal district)	Culture/ tradition
AP/13	Pooja set 3	*Monde and Gampa*	10	Ganga pooja and Durga pooja (familiar in Khammam district)	Culture/ tradition
AP/14	Saree box	*Saripalli*	35	To present sari and toiletries during marriage	Culture/ tradition
AP/15	Small plate	*Sible*	5-15	Using for Badgama festival to make model of Gouri, to make temporary balance and to dry the cooked rice	Culture/ tradition
AP/16	Filter	*Jallad*	30	To filter rice powder	Household
AP/17	Hand fan	*Viznakarala*	5-10	Hand fan	Household
AP/18	Hand stick	*Chethikara*	6-10	Hand stick	Household
AP/19	Tree guard	*Chettilapothi*	20	Tree guard	Agriculture/ farm
AP/20	Poultry basket	*Kodi gampa*	100-150	Poultry rearing	Poultry
AP/21	Chicken basket	*Kodi gampa*	90-300	To export chicken	Trade/ export Poultry
AP/22	Carrier of bullock cart	*Ponuka*	200-250	Carrier of bullock cart	Agriculture/ farm

AP/23	Thottil	*Uyyal totty*	120	basket for keeping infant baby	Household
AP/24	Foot valve guard	*Gyari*	30	To protect foot-valve from mud during water pumping	Agriculture/ farm
AP/25	Fish basket	*Chappal gampa*	40	To keep fish during fishing	Fishing
AP/26	*Chandrike flower*	*Chandrike flower*	100	To make cocoon rearing tray	Sericulture
primary data, 2011					

Andhra Pradesh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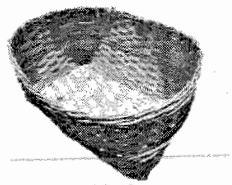
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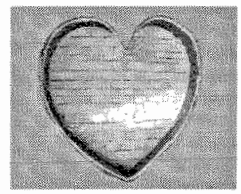
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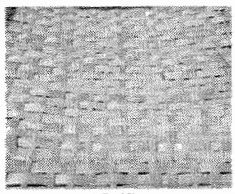
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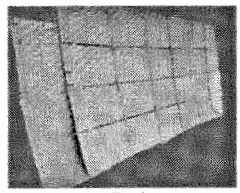
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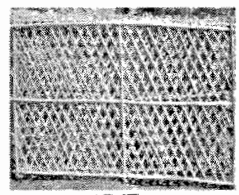
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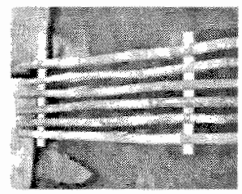
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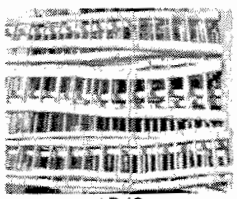
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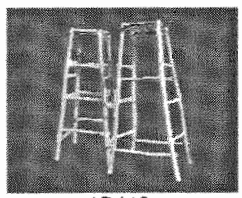
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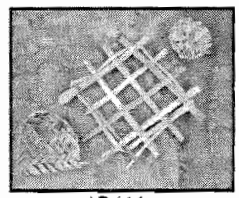
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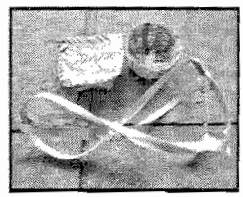
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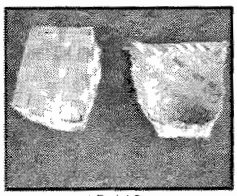
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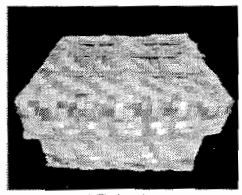
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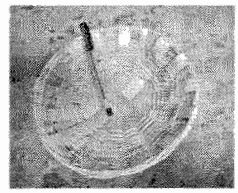
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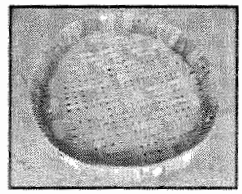
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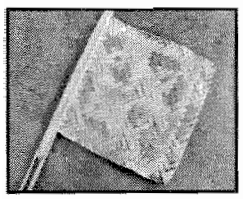

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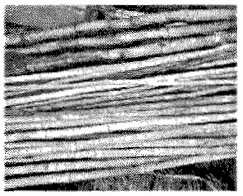

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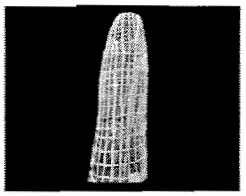

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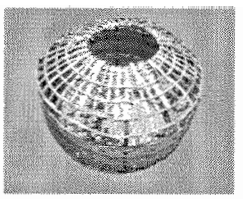

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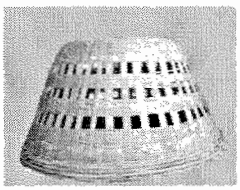

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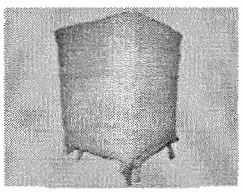

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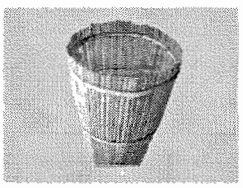
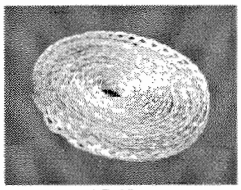


AP/24

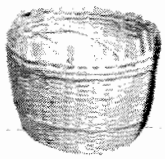
AP/25



AP/26

Appendix 3.6 Traditional bamboo products of **Goa**					
Item no.	**Item**	**Local name**	**Price (Min-Max)**	**Uses**	**Sectoral linkage**
GA/1.	Large basket	*Voje*	150 - 250	Harvesting of fruits vegetables	Agriculture/farm
GA/2.	Medium basket	*Bhutty*	100	Household use	Household
GA/3.	Small basket	*Bhutty*	50	Household use	Household
GA/4.	Poultry basket	*Pinthra*	150	Poultry rearing	Poultry
GA/5.	Marriage set	*Arano*	300 - 500	Traditional marriage function article	Culture/ tradition
GA/6.	Winnow	*Soop*	70 - 100	Household use	Household
GA/7.	Mat (6x3)	*Chottai*	200	To dry food grains and to cover huts	Agriculture/ farm Household
GA/8.	Boat basket		15-30	Fancy article	Tourism
GA/9.	Plain basket		10-30	Fancy article	Tourism
GA/10.	4 corner basket		35	Fancy article	Tourism
GA/11.	Stand basket		15	Fancy article	Tourism
GA/12.	Round cap basket		10	Fancy article	Tourism
GA/13.		*Chooda bhutty*	10	Fancy article	Tourism
GA/14.	Flower basket		30	Fancy article	Tourism
primary data, 2009					

Goa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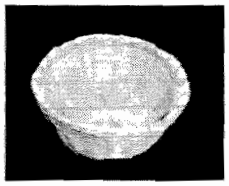
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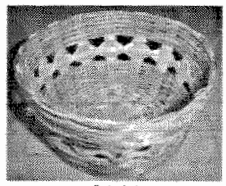
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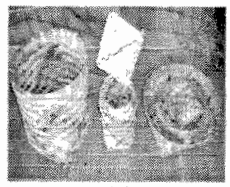
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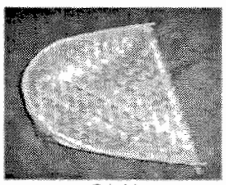
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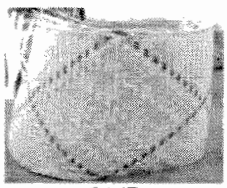
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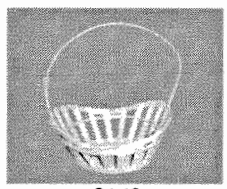
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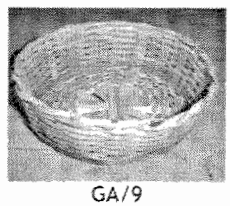
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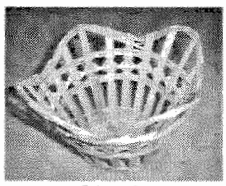
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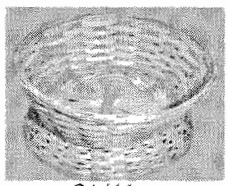
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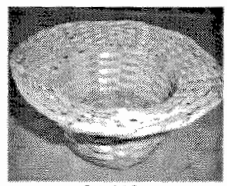
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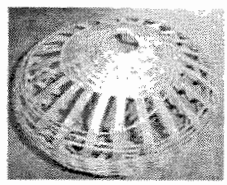
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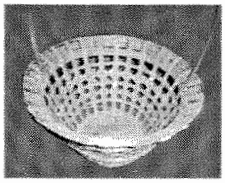
GA/14

Appendix 3.7 Marketing channels in south India.