Issues and Challenges in Management & Trade of Bamboo in Orissa

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ISSUES AND CHALLENGES IN MANAGEMENT & TRADE OF BAMBOO IN ORISSA



RCDC Centre for Forestry and Governance Bhubaneswar



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		Page	
	Preface		
Chapter- 1	Introduction	1	
-	1.1 Availability and spread in India and Orissa		
	1.2 Climate		
	1.3 Morphology		
	1.4 Silviculture		
Chapter- 2	Bamboo operations and related policies	7	
	2.1 National Policy Framework		
	2.2 Policy regime in different states		
	2.3 Policy and managament regimes in Orissa		
Chapter- 3	Production and trade	36	
-	3.1 Production		
	i. Pre-nationalization		
	ii. Post-nationalization operation by OFDC		
	iii. Bamboo working by RMP		
	3.2 Sale of bamboo		
	i. Retail trade of long bamboo		
	ii. Sale unit and tonnage		
	iii. Bamboo requirement		
	iv. Commerce and economics		
Chapter- 4	Bamboo and its various uses	42	
Chapter- 5	Issues and concerns	53	
Chapter- 6	Suggestions and recommendations	64	
	Annexures	70	

LIST OF MAPS AND TABLES

- Bamboo distribution in Orissa
- Production of Bamboo over the years (Chhattisgarh)
- Revenue from bamboo : Annual Progress report 1937-38
- Reimbursement for RMPs per Sale Unit of bamboo from 1993- 1998
- Sale value of bamboo hiked by the Empowered Committe from 1993-94 to 1999- 00
- Wage rate of bamboo from 1992 to 2004
- The rising trend of working cost of bamboo from 1993- 94 to 1998- 99
- Allotment of bamboo to different paper mills
- Rights and concessions for bamboo in Angul sub- division and Talcher exstate
- Post nationalisation production of bamboo by OFDC (1988- 89 to 1992-93)
- Production of bamboo under RMP system (1993- 94 to 1999- 00)
- Sale value, sale price and revenue generated from bamboo (1988- 89 to 2004-05)
- Bamboo requirement (1991, 1996, 2001, 2006)
- Consumption of bamboo as housing material in Orissa
- Paper demand and raw material shortfall (2000-01, 2005-06, 2010-11)
- Details of the paper mills (location, production capacity, year of establishment, present status)
- Average food value of bamboo shoot
- Comparision during of bamboo operation during RMP system and when under OFDC
- Bamboo procurement by BILT in the year 2003- 04
- Raw material composition for the month of July 2004 by (BILT, Sewa)
- Bamboo operations and the volume of trade, employment and revenue in Orissa.
- Distribution of Bamboos in India

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Preface

During colonial times, forests were perceived as a source of raw material for industry and revenue for the State. The perception of bamboo as such was just an extension of this line of thinking. Known as the poor man's timber, bamboo continued to cater to commercial needs, especially of the paper industries, even in independent India. From time to time, people who made the policies changed and so did the policies. But the perceptions guiding the formulation of these policies remained largely unchanged. As a result, the dominant mode of its consumption continued to be industrial and external. Moreover, the status of bamboo as a forest resource was deliberately kept ambiguous in an effort to make it convenient for commercial and industrial consumers to exploit the resource as per their needs and convenience, infringing on the livelihood rights of the local people in the process.

At a time when the international community is extolling the virtues of bamboo as an invaluable resource having the potential to wipe out rural poverty, the Government of Orissa, so far, has not been able to balance industrial needs with the needs of the local people and the imperatives of conservation. Though for ages the bamboo selling strategy of the State Forest Department has focused only on the bulk consumers, i.e., paper and pulp industries, its subsequent inability to develop a smart and proactive procurement and trade arrangement has forced these major consumers to go in for a technological shift as regards bamboo as a raw material and to finally back out from purchasing bamboo from the state, resulting in a complete halt in bamboo operations during 2000-04. The state lost revenue but the artisans and cutters lost all that they had – life and livelihood.

It has been proved beyond any shade of doubt that nationalization and all other procurement and trade arrangements have failed miserably in generating revenue for the State, securing the livelihood of artisans and cutters, and conserving large tracts of bamboo forests. Surprisingly, the State has exhibited no sense of urgency to deal with the problem upfront, especially to come out with an alternative policy framework that would ensure revenue for the state and yet give the millions of forest dwellers a much-needed source of livelihood. The urgent need of the hour, therefore, is effective management of the huge bamboo resources in the state, both in terms of quality and quantity, putting in place a sensitive, risk-taking and proactive forest bureacracy.

Apart from serving as a timely wake up call, the idea behind preparing such a document, is to bring the debate on bamboo out of the exclusive preserve of forestry intellectuals and put it in the common man's domain. It is a humble endeavour to bring some pertinent issues and management options into the debate. This, we believe, is important since large sections of the population are not even aware of the gravity of the problem. How many people, for instance, know that the shoe shine boys in Bolangir district are, in fact, sons of bamboo artisans suffering due to the irresponsible policies of the State Government. Who is bothered if bamboo is not harvested, who is bothered if the artisans and cutters are suffering? When bamboo is not harvested, when kendu leaf or sal seed is not collected, neither the government nor the traders lose anything; it is the poor half-fed forest dwellers who lose everything - food, family and future. The question, therefore, is how long can this continue? How long would the State continue to protect the interests of the rich against the poor? How many books, articles and monographs like this would have to be written, read and forgotten before their plight improves?

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Introduction

CHAPTER

Bamboo belongs to the grass family Poaceae (Gramineae). There are 1250 known species of bamboo in the world with 1500 possible uses. It is unquestionably the most important plant family, providing the majority of food for humans and their domesticated animals. The grasses are relatively recent additions to the earth's flora, having evolved only 30 to 40 million years ago, long after the demise of the dinosaurs.

East Asia and South America are considered to be the centres of diversity of Bamboos. Bamboos cover more than 18 million hectares of land, of which 75 percent is in Asia. 2.5 billion people worldwide use bamboo and 1 billion people live in bamboo houses. Bamboo grows three times as fast and can be harvested four times as often as Eucalyptus.

1.1. Availability and spread in India

India accounts for more than 50 percent of the total bamboo reserves in the world. There are about 128 species of bamboo in India, both indigenous and exotic, belonging to 23 genera. Bamboo occupies 8.9 million ha of forest area in India, which accounts for a little more than one eighth of the of total forest area of the country. Only three species occupy about 80% of the total bamboo growing area in India. *They are; Dendrocalamaus strictus* (Salia), which grows in dry deciduous forests, occupies 4.005 million hectares constituting 45% of total bamboo growing area of the country. *Melocanna bambusoides*, which grows in the North-East, occupies 1.78 million hectares constituting 20% of the total bamboo forests, while *Bambusa bambos* (daba) that grows in moist deciduous forests occupies 1.15 million hectares, accounting for 13% of the total area under bamboo. More than 50 per cent of the bamboo species occur in Eastern India. The other areas, which have a significant presence in the bamboo map of India, are the Andamans, Bastar region and the Western Ghats. The 9 million hectares or so of bamboo forests in the country annually produce 4.5 million tonnes of bamboo, which translates into an average of 0.5 tonnes of bamboo from every hectare of bamboo forest¹.

Bamboo in Orissa

Though found in almost all parts of Orissa in all types of land including commons and revenue, bamboo is found more in the forests of central and southern Orissa. Even

coastal Orissa had relatively fair availability of bamboo till the cyclone of 1999 and flowering, wiped them out. In the dry decidous areas of the State, major species are *Tectona* grandis and Bamboo (mainly Salia species). In the moist deciduous forests of Orissa, Sal is the predominant species followed by Bamboo. Thus, the three most dominant species of plants occupying



the forests of Orissa are Sal, Teak and Bamboo. There are 374.77 sq.km. of pure bamboo forests and 17794.61 sq. km of mixed bamboo forests in the state².

The genera *Bambusa* and *Dendrocalamus* are primarily found under tropical conditions. Dry bamboo brakes (mainly *Dendrocalamus strictus* or salia bamboo) are predominant in the dry deciduous forests of Angul, Athamallik, Baliguda, Ghumusur North, Kalahandi, Rayagada, Bamra, Bonai, Rairhakhol, and Sundargarh divisions. Whereas, *Bambusa bambos* that flourishes best in moist deciduous forests is found in Dhenkanal,

¹ Vatsala, Bamboos in India, 2003, National Institute of Science Communication and Information Resources, New Delhi, pp 3

² Swain B.K The Bamboos of Orissa, 2005, Forest Department Government of Orissa, 2005, pp 2

Nayagarh and many other divisions. Only four of the 27 erstwhile forest divisions in the state - Keonjhar, Karanjia, Baripada and Mayurbhanj - lack bamboo series.

Dendrocalamus strictus (Salia) accounts for 80% of the total naturally found bamboo forests in Orissa. The rest of the naturally occurring bamboo forests is home to species of Bambusa bambos (Daba), Bambusa arundinacae (Kanta baunsa) and Cephalostaychyum pergracile (Bolangi). Bambusa nutans (Sundarkani), Bambusa vulgaris and Bambusa tulda are the widely cultivated species of bamboo in Orissa, while Bambusa balcoa, Dendrocalamus gigantius and Dendrocalamus longispathus are the species introduced in the state.

1.2. Climate

Bamboo grows from sea level in the tropics to 4000 metres above sea level in the temperate region. Geographically, the occurrence of bamboo is largely governed by factors like rainfall, temperature, altitude and soil. A temperature range of 8-36 degree Celsius, minimum annual rainfall of 1000 mm and high atmospheric humidity are conducive for the growth and spread of bamboo. Moist valleys, sheltered depressions, stream banks and lower hill slopes are good sites for the growth of bamboo³. Occasionally, they are also found on hilltops. Generally, bamboo forms the understorey in tropical, sub-tropical and temperate forests.

1.3. Morphology

Often described as the fastest growing grass, bamboo matures in about 3-4 years. However, the plant acquires its full height within just 3-4 months of sprouting. During their optimal growth period, bamboos grow at a rate of one metre in 24 hours.

The basal portion of the bamboo culm containing very short internodes, which grows almost horizontally and remains level with the soil surface or a little below it, is known as rhizome. Rhizomes can be sympodial or monopodial according to their pattern of growth. Sympodial rhizomes are short, solid and thick producing new rhizomes from lateral buds. Monopodial rhizomes are long; slender and hollow that grow horizontally giving rise to culms from lateral buds.

3

³ Vatsala, Bamboos in India, 2003, National Institute of Science Communication and Information Resources, New Delhi, pp 9

The buds produced by rhizomes enlarge for months together and sprout to produce tender conical shoots. Rain in the months of May, June and July help sprouting. After sprouting, the shoots elongate rapidly in about 12-16 weeks to attain the full height without branching. Right from the shoot stage, the lower part of the nodes remain covered with culm-sheaths, internodes with powder and hair-like growths. The culmsheaths are modified leaves, which protect the tender shoots and culms. Hair and powder are powerful irritants and serve as protective mechanisms. With the onset of branching, these features disappear.

1.3.1. Flowering of bamboo

Bamboo flowers once in its life cycle. In the process, the whole clump that flowers, dies. On the basis of flowering cycles, bamboo can be classified into three categories. The

first category flowers annually. The examples of this category of bamboo are *Ochlandra*, *rheedei*, *Bambusa atra* etc. The second category includes species that flower gregariously in cycles of 7-120 years depending on physiological cycles and seed origins. A majority of Indian bamboo species falls under this group. Finally, there are gregariously flowering species that also show sporadic flowering characteristics. *Dendrocalamus strictus* and *Bambusa bambos*, which serve as the major source of long fibre raw material for the pulp and paper

4



industry in India, fall under this category. After growing from rhizomes and generating a number of culms for a period of 50-80 years, nearly all the clumps of *Dendrocalamus strictus* and *Bambusa bambos* lose many culms as they produce wind-pollinated flowers, set free large quantities of seeds and die synchronously. Bamboo normally flowers from November to March and the germination is completed in June.

"Gregarious flowering" is often associated with famines. Flowering produces large quantities of seeds on which rodents, mainly rats, thrive and multiply rapidly. Soon after, seed regeneration starts and the rats shift to the crop fields for food. This chain is

a potential cause for famine 'Flowering of bamboo is a botanical enigma. The exact factors responsible for it are still not known. Bamboo flowers only once and dies after flowering to regenerate from seeds. Although no scientific study is available, there are reports that document the historical occurrence of bamboo flowering and famine in North-East India particularly in Mizoram. As per records, flowering of Muli bamboo (Melocana baccifera) led to famines in 1862, 1881, 1911-12 and 1959. The 1959 famine claimed between 10,000 and 15,000 lives in Mizoram, Tripura, Manipur and Barak Valley of Assam. Based on this, the projections have been made that the next flowering cycle is expected to occur during 2004-2007.

The forest management has laid out various prescriptions⁵ in the working plans and silviculture manuals to deal with the flowering of bamboo.

1.4. Silviculture

As a rich source of bamboo forests in eastern India, Orissa recognizes the value of the forest produce and supports the management of bamboo forests with the devising of various policies and rules from time to time. The government broadly views bamboo as a commercial product to be exploited for revenue earning. No wonder the focus has always been on big consumers. The major objective of bamboo forest management, as mentioned in the Working Plans operational in the state, is managing the bamboo forests on a scientific basis with a view to obtain maximum sustained yield to meet the

*Characteristics comparison of types of flowering in salla bamboo					
Sporadic flowering	Gregarious flowering				
Scattered nature of flowering, only a few clumps are affected. Only a few culms flower in a clump.	Flowering occurs almost in the entire area.				
The culm may or may not die after flowering.	It involves almost all or some proportion of clumps.				
The clump does not die.	All the culms of a clump die after flowering.				
Usually, it takes place almost every alternate year.	Flowering is followed by the death of the clump. It follows a cycle of long interval of 20 to 65 years. Progresses like an epidemic and engulfs the area in 2-4 years.				

. . .

(Bamboo, ICFRE, Dehradun)

⁵The Working Plan recommendations on flowering are:

- If sporadic flowering of bamboo clumps is observed, such clumps will be clear felled once the seeds have fallen.
- In case gregarious flowering of bamboo clumps is observed, the clumps will be clear felled and extracted early before the shedding of ripened seeds so that bamboo may not die or deteriorate or become prone to fire damage. Disposal of such bamboo should be expeditiously arranged.

needs of the industry. The Government of India has approved bamboo operation in the remaining 24 forest divisions also which do not have working plans but where the working schemes for four years have been submitted. The Working Plans and schemes emphasize upon improving the quality of bamboo by application of suitable silvicultural practices.

Keeping in view the findings of a number of researches that identify low productivity of bamboo forests with no or minimal tending operations, the Working Plans and schemes favour regular weeding, cleaning of the clumps from climbers and twiners, soil filling and other measures.

The prescribed silvicultural system emphasizes "culm selection-cum-clumpimprovement" combined with simultaneous cleaning and silvicultural operation for Salia bamboo and "clump-improvement" combined with simultaneous cleaning and cultural operations for Daba bamboo. A felling cycle of 4 years is adopted both for Salia and Daba bamboo, while the yield is regulated entirely by area. The coupes of each felling are worked out by rotation.

A definite sequence of felling in bamboo coupe is essential. The coupe should be divided into four sections running along the contours. The sections from the uphill side should be worked on first. The first section should be completed in all respects before work commences on the second section and so on.

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<u>Bamboo Opera</u>tions and Policies

CHAPTER

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2.1. National Policy Framework

Policies over the years have played a pivotal role in production, consumption and trade of bamboo. It has remained a commercially important forest produce even during the British-India provincial administration. Though categorised as non-timber forest produce under Indian Forest Act of 1927, bamboo was legally clubbed with trees as per Section 2¹ of Indian Forest Act. Accordingly, all movement of bamboo and its products for trade started to be regulated under the transit rules framed under the Act. However, now with a view to promote agro-forestry and trade, many species are being grown outside forest area and many states are in the process of liberalising the transit restrictions on these products.

Bamboo continued to be percieved as an industrial produce even after independence. Though local users had very minimal presence in the policy pronouncements, it was for the first time in 1988, they got a deal that they always wanted. The National Forest Policy of 1988 emphasized peoples' participation in forest management and a shift from exclusive support to industries to protection of the rights of the weaker sections. The policy made clear directions on; the rights of the local forest-dependent people, involvement of the people in forest management, and supply of raw material to forest-based industries. The policy recognized that the life of the forest dwellers, especially tribals, revolves around forests, and hence, the rights and concessions enjoyed by them should be fully protected. The domestic requirements of fuelwood, fodder, minor forest produces and

¹ The sub-section 7 of the section 2 of Indian Forest Act 1927 says, ' tree includes palms, bamboos, stumps, brush- wood and canes.

construction timber should be the first charge on forests. These essentials should be made available through conveniently located depots at reasonable prices. In addition, these holders of customary rights and concessions in forest areas should be motivated to identify themselves with the protection and development of forests from which they derive benefits. The rights and concessions from forests should primarily be the bonafide use of the communities living within and around forest areas, specifically the tribals.

On the industrial raw material end, policy stated that the practice of supply of forest produce to industry at concessional rates should cease. A forest-based industry should raise the raw material needed for meeting its own requirements. It should, preferably, be done by establishment of direct relationship between factory and the individuals who can grow the material by supporting the individuals with inputs including credit, constant technical service, and finally harvesting and transport services.

A closer look about the implementation of the 1988 policy reveals that in none of the states the requirements of different local user groups have been met to a significant extent. In fact, over the years, the proportion of demand of local user groups fulfilled by the supply of bamboo has been decreasing. No state government has changed its provisions of supply of bamboo to local user groups after 1988 National Forest Policy. Hence, no attempt has been made to implement the provisions of the policy that the domestic requirements of local groups should be the first charge on forest. With short term maturity and higher economic returns from bamboo and rattan², the policy could have gone a long way in reviving community participation in forest protection and management.

2.2. Policy regime in different states 2.2.1. Chhattisgarh

8

Chhatisgarh has enormous potential in bamboo out of which only 25 percent is harnessed. As of now, Working Plan for 32 forest divisions in Chhatisgarh have been approved, where bamboo operations are being carried out. There are numerous schemes under which bamboo plantations are being carried out. The major species available in

Source : http://en.wikipedia.org/wiki/Rattan

²Rattan:They are also superficially similar to bamboo, but distinct in that the stems are solid, rather than hollow, and also in their need for some sort of support; while bamboo can grow on its own, rattan cannot. Many rattans are also spiny, the spines acting as hooks to aid climbing over other plants, and also to deter herbivores.

LOCAL RIGHTS ON BAMBOO THROUGHOUT THE COUNTRY

In all parts of the country, the local communities are generally given certain rights or privilege of access to these resources, either free or at concessional rates, to meet their bonafide needs. These customary and traditional rights and their regulation in some of the states, are given below:

Madhya Pradesh: The villagers are supplied up to 250 pieces of bamboo per family per year at a subsidised rate of Rs.0.25 per bamboo from the nistar depots. These depots are located in the middle of cluster of villages. Bansods, the artisan community earning their livelihood through manufacture of bamboo articles, get up to 1,500 pieces of bamboo per family per year at concessional rates of Rs.0.60 per piece for the first 500 pieces and Rs.0.75 per piece for subsequent pieces.

Maharashtra: Bamboo is supplied at concessional rates to the agriculturist and basket and mat makers, either from the forest coupe under working or from the departmental depots after extraction.

Orissa: Depending on availability, each rural family is supplied 250 bamboos and each bansod family 1,500 bamboos per year. The allotment is done by the state forest department on a certificate from the Head Man of the village. At the time of flood or cyclones, 50 bamboos are provided to each affected family.

West Bengal: Forest Protection Committees, established under the Joint Forest Management, which help the forest department in protection and rejuvenation of the forests are given 25% of the net sales proceeds of the usufructs.

Himachal Pradesh: The local population has the right to meet their bonafide requirements from the bamboo bearing forest compartment. For those residents whose requirements can not be met from these compartments conveniently, bamboo supply is made from forests other than the closed ones.

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.

Uttar Pradesh: Bamboo is made available to the villagers for their domestic and agricultural demands provided they have been enjoying this privilege for long and their livelihood depends on it. The supply is made at reasonable rates, but not less than the schedule rates fixed by the forest department.

Tripura: As per rules framed in 1952, the population engaged in shifting cultivation (about 20,000) was entitled to bamboo collection free of cost for construction of their huts and other uses. In addition, bonafide householders and cultivators from the villages adjoining reserved forests were also entitled to free permit to the extent of 250 pieces of bamboo per family per year. Royalty for making bamboo baskets, mats, etc. has been discontinued since 1990 as a concession to the bamboo craftsmen.

the state are Bambusa arundinacea, Dendrocalamus strictus, Bambusa vulgaris and Bambusa nutans.

The produce being nationalized, the State Forest Department is directly involved in bamboo operation through seasonal labour.

PRODUCTION OVER THE YEARS							
Year	Commercial (in notional ton)	Industrial (in notional ton)					
2000-01	23,431	46,715					
2001-02	25,522	51,509					
2003-04	27,256	54,666					
2003-04	26,834	45,561					
2004-05	29,000	46,000					

(Source: Office of the PCCF, Raipur, Chhattisgarh)

Ever since Chhattisgarh became an independent State, the production figures of both commercial and industrial bamboo has remained consistent. The paper mills at Amlai in Sahdol, BILT in Jeypore and others buy industrial bamboo from Chhattisgarh.

As most other NTFPs, bamboo is also sold by auctions. The major part of coommercial bamboo is consumed by the orchards in and around Nagpur in Maharashtra inhabited by the artisans (bansods), Panreja families of Chhattisgarh. The Chhattisgarh Forest Department, therefore, claims that the most important aspect of people's rights over the resources is guaranteed by the policies initiated by the state. The state has 5325 registered bansod families who are supplied with royalty free bamboo. The state government has also allotted special depots for these supplies. There are 334 depots across the state located in the bansod-inhabited areas to aid the supply. A bansod family is entitled to 1500 commercial long bamboo per year. Presently, they are paying Rs. 5 per piece. In the year 2003-04, the government had stocked 26,76,623 numbers of long bamboo for them, of which 21,27,940 number of bamboos have been already issued against their dues.

On the other hand, the Panreja families are entitled to 1000 number of long bamboos per year, which they source from the same depots. These nistaris get bamboo at subsidised rates. In fact 99 percent commercial bamboo goes to nistaris. In comparison in Orissa, the government is fighting shy with coming out with a state-wide list of registered users and establish depots to supply them with bamboo as provided under various rules.

2.2.2. Andhra Pradesh

Bamboo is estimated to be found over an area of 9,883 sq.kms throughout the State. It is distributed extensively in the districts of Adilabad, Khammam, Mahabubnagar, East



Godavari, West Godavari, Visakhapatnam and Kurnool. Small patches of bamboo forests are also found in Srikakulam, Warangal, Prakasham and Chittoor districts. The dominant species are *Dendrocalamus strictus*, *Bambusa bambos* and *Dendrocalamus hamiltonii*.

Under a World Bank aided forestry project, 70,536 hectares were treated for improving bamboo stocking. This included soil moisture conservation works, mounding at the base of clumps and enrichment planting. An important feature was the involvement of people through Vana Samrakshana Samitis (VSS); 110 VSSs were involved in bamboo stock improvement activities. The Forest Department has since initiated steps for extraction over an area of 6030 hectares, the benefits from which would be shared by Vana Samrakshana Samitis.

The growing stock of bamboo in the State is 3.8 million tonnes. About 2 lakh metric tonnes are removed annually, of which around 1 lakh tonnes are supplied to the three paper mills in the State. 1 lakh tonnes are made available to domestic sectors and Burood societies.

Burood societies comprising of *medharas* (professional bamboo workers) are consumers of bamboo for making baskets, mats and other articles. As a welfare measure bamboo is supplied to local artisans (through Burood societies) at concessional rates fixed by the Government each year. There are around 300 burood societies, with a membership of about 12,000 *medharas*.

There is no restriction on raising bamboo plantations or cultivating bamboo in private, institutional or community land. There is no restriction as well in felling or extraction of bamboo by the agency owning bamboo resources on these lands, except if it falls under scheduled areas of the State. In such cases felling permission from the District Collector is mandatory.

Transportation of bamboo within or outside the State requires a transit permit to be issued by the concerned Divisional Forest Officer. The transit permit and the felling permission, as the case may be, is issued after enquiry and confirmation of the land ownership by the Revenue Department and after assessment of the yield of plantation/ crop by the Forest Department. Issuance of such permits may take from a week to a month depending on documents produced and the quantity of bamboo to be assessed. For bamboo in the forests falling in CFM³ (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. In case the Forest Department incurs any costs in extraction, transportation and depot charges, these costs would be reimbursed to the Forest Department from the auction/sale earning.

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. Extracted bamboo in these cases is brought to depots and disposed off through auction, after supplying part of bamboo to identified bamboo artisans (buroods) to meet their needs which is done at pre-determined rates of royalty.

For bamboo originating inside forest areas, transit permits are issued based on auction/ sale records and payment of required dues for the same.

2.2.3. Tripura

Tripura is called the 'home' and 'abode' of bamboo. The importance of the resource in the State's predominantly agrarian economy is well recognised. The wonder plant is intimately interwoven in the socio-cultural fabric of its people contributing immensely to the local economy of the State. Bamboo finds many uses, and is a major source of income and employment as well. It is estimated that 2.46 lakh families in the State are engaged in bamboo related vocations.

The area in the State under bamboo forests is 2397 sq. km. Though considerable bamboo exists under farm sector and on homesteads, no authentic data exists about its extent. In the farm and homestead segments, around 80% of bamboo utilised in the State comprises of 3 species: Muli (*Melocanna baccifera*), Bari (*Bambusa polymorpha*) and Barak (*Bambusa balcooa*).

Local tribals and the rural poor are allowed to extract bamboo from the forests without payment of any royalty for their own and bonafide use as well as for selling in local markets for their livelihood.

³CFM in Andhra Pradesh is the counterpart of JFM in Orissa. It is a World Bank aided Forestry Support Project based on a participatory approach. Whereas CFM in Orissa is a self- initiated forest protection movement not part of any Government support programme.

Traders who purchase the bamboo from local market and transport it to consumption centres and towns, are required to pay royalty, obtain a transit pass and must have a trade license, issued annually. Cultivation and extraction of bamboo from private holdings is not restricted but transportation of bamboo, requires a transit pass from the Forest Department; the exempted species are Bambusa balcooa, Bambusa vulgaris and Thryostachys oliveri.

2.2.4. Sikkim

Bamboo is one of the most important forest resources in Sikkim. Its wide range of uses and its great versatility qualifies it to be a multiple use alternative to timber, food to the rural poor and tribal in particular. The main genera found in the State are *Arundinaria, Bambusa, Cephalostachyum, Dendrocalamus, Phyllostachys* etc.

Bamboo is usually found in the moist valleys, sheltered depressions, along the streams and the lower hill slope of the Sal forests, moist deciduous forests, wet temperature forests and sub-alpine coniferous forests of the State. In the forests areas, *Arundinaria* species are found in substantial areas as undergrowth in the middle hill, temperate and sub-alpine zones. *Dendrocalamus hamiltonii* occurs over extensive areas as undergrowth in lower hills forests. Substantial bamboo stocks are also available in contiguous agricultural land areas. Large size bamboo is found along the streams, sal belts, Gorucharan and Khasmal forests and in the homestead gardens. The cultivation of bamboo in rural areas is restricted to margins of water courses in the agriculture sector, corner or borders of dry farming lands of field bunds and homesteads.

Promoting cultivation of bamboo in private, non-forest and agricultural areas would be facilitated if the regulations on cutting, transport and use of bamboos under the forest laws are relaxed. The export of bamboos would provide better return and market to the farmers. In this respect vide circular NO. 12/F/FEWD dated 4.4.2001, the royalty imposed on villagers for bamboo for their bonafide use has been withdrawn and had been made free, but for commercial / industrial use purposes supplied by the villagers the existing rate of royalty continue. To promote the bamboo cultivation on private lands as well as on forestlands through the JEMCs and EDC's, the State Government had decided the following in respect of development, marketing and export of bamboos. Effective from 1st April 2004 the State Government has modified the access and regulatory regime as follows:

- For bonafide use by villagers from private holding, it would be free of royalty and for commercial sale / Industrial use, the existing rate of royalty would continue. Those villagers / persons who are the members of Joint Forest Management Committees / Eco- Development Committees and have actively been involved in bamboos from their private holdings on sale.
- 2. For bamboos extracted from the forest areas, the existing rate of royalty would continue.
- 3. All transit permits for bamboo within state shall be issued by the Divisional Forest Officer (Territorial) concerned after the verification report from the concerned Range and Panchayats as per the (i) & (ii) above.

The export of bamboo and bamboo products outside the state shall be permitted on the existing rate of royalty and the export license and permit would be issued by the office of the Conservator of Forests (Territorial). The license fee charged shall be the rate of royalty of bamboo as per the quantity of license required by the licensee per year.

2.3. Policy regime in Orissa

As per the Government order of 1990, the domestic requirement of fuelwood, timber and bamboo was given preference over industrial use. Supply of fuelwood to industrial units would, however, be considered only in case of surplus of fuelwood. The Orissa Forest Development Corporation (OFDC) would establish at least one bamboo depot in each bamboo coupe in the *nistar* (cess paying) areas⁴. Each tenant would be supplied 50 bamboos per annum, from these depots, on first come first serve basis subject to availability. Salia bamboo would be sold to the tenants at the rate of Rs.1.50 per piece for bigger (long) & thicker size and Rs.1/ per piece for thinner size bamboos, and these rates are inclusive of the royalty applicable to the district.

In April 1991, the Government of Orissa extended these provisions to the protected (Khesra) forests. According to the order of 1991, permits for removal of bamboos (maximum 50 bamboos per annum per tenant) may be issued in favor of nistar cess paying tenants on first come first serve basis subject to availability from Khesra forests

⁴ Nistar: Under the existing land revenue system, the rayats in some districts of the state pay an amount as forest cess or tax, known as Nistar, along with land rent and in lieu thereof, get forest material like bamboo, firewood, small timber for agricultural implements, fencing of fields and house building purposes, for their own bonafide uses.

in Ex-state areas which are not worked under any Working Plan or Working Scheme through the Orissa Forest Development Corporation, consequent on nationalization of bamboos. This government order also clarified, that in the case of conflicts between the villagers constituting the village level protection committee and the villagers within 10 kms belt, the first charge of the produce of the forests protected by the protection committees regarding enjoyment of usufructs would be of the villagers constituting such committee. Only when there is surplus after meeting the genuine domestic needs of the villagers constituting the forest protection committee, the same may be given by issue of permit to the villagers within 10 km belt.

In the state of Orissa, the forest department appointed Orissa Forest Development Corporation (OFDC) as an agent for bamboo working in 1988. The OFDC has appointed three paper mills – J. K. Corporation, Orient Paper Mill, and Ballarpur Industries Limited – as their labor contractors for bamboo working in different areas of Orissa since 1993, even against the directions of the Ministry of Environment and Forests, Government of India. In the State, not only bamboo is allotted to the industries but paper mills being labour contractors in bamboo forests, local workers involved in bamboo harvesting and transportation etc. are also at the mercy of these paper mills. The paper mills pay the price of bamboo to the OFDC, and the OFDC pays the royalty to the forest department. There has been a strong opposition of this practice at the state level, and a public-interest litigation has been filed in 1995 in the High Court of Orissa against the paper industries working as a labour agent to OFDC.

The policy regime in Orissa has been analysed below in different phases.

2.3.1. The early years

Scientific forest administration (as done by the provincial administration) was extended over Orissa for the first time in 1883-84 when Orissa was a part of the Lower Province of Bengal. During that time only one division was constituted in the state in the name of 'Orissa Division'. Vide the Indian Forest Act, 1882 certain forest blocks in Angul were declared as Reserve Forests. As the supply of forest produces exceeded the demands, exploitation of forests remained confined to removal of dead timber or improvement felling. Since the time the British-India administration started controlling forests, bamboo was listed under minor forest produce and its working was guided by rules mentioned in the Working Plans. After the bifurcation of the Orissa Forest Division into Angul and Puri Divisions in 1891-92, bamboo extraction became the principal feature of forest exploitation in the Angul Division. In the initial years, there was no great demand for the harvest. Sale was carried out by outright auction. Later on, permit system was introduced to meet the needs of bamboo artisans, farmers and other local users. By the year 1936, sale by permits was confined mostly to sale of culms under one year of age as required by bamboo basket weavers. But in Angul and Parlakhemundi Divisions, it was found difficult to sell bamboo coupes by outright auction affecting the process of sale by permits to other users.

Forest administration records reveal that long-term leases of bamboo forests had also been awarded to paper and pulp industries in the year 1936-37. Most of the bamboo in reserve forests of Angul division was under a long-term lease to Messrs Heilgers and Company, for paper and pulp manufacture. The Company was also working on certain protected forests for which it was proposed in the same year to give them a permanent lease.

Negotiations for the grant of a long-term lease to Orient Paper Mills based at Brajarajnagar (Year of Operation: 1939) of certain bamboo forests in Sambalpur and Barpahar divisions were almost completed in 1937-38. Departmental working of bamboo forests was also carried out, but in miniscule proportions. However, a significant rise in departmental working was registered in the year 1937-38 over the previous year, as it was preferred to working by the contractors in the Berhampur range of Chhatrapur division. The decision followed reports of ruined bamboo clumps owing to lack of control over contractors' work in the past.

2.3.2. Bamboo working and revenue

The out turn by departmental working in those years was limited to 1 or 2 percent of the total out turn, which shows the extent of leases, auctions and permits. Most of the revenue realized from bamboo resources was generated from the purchasers. Apart

	1936-37		1937-38			
Departmen- tal working (percentage of total out turn)	Revenue realised from departmental out turn	Revenue realised from purchaser (non - departmental working)	Departmental working (percentage of total out turn)	Revenue realised from departmental out turn	Revenue realised from purchaser (non -departmental working)	
0.45	Rs.1,264.00	Rs. 41,911.00	1.25	Rs. 982.00	Rs. 43,284.00	

Source: Annual Progress Report-1937-38

from the aim of generating revenue, bamboo forests were regularly worked in those periods to ensure the health of forests.

In 1937-38 alone, selective felling of bamboo was done in around 766 square miles. Invasion by Bambusa arundinacae clumps over the sal forests of Puri division was rampant. It was proposed in the same year to clear fell bamboo clumps to help sal regeneration. Clear felling of the same species was also done in Angul division to make space for teak plantation. Almost every year, there were cleaning, thinning and felling operations in the bamboo forests to aid regeneration and afforestation.

2.3.3. Exclusive lease of bamboo to Paper Mills

As time progressed, it became the approved policy of the Government to lease out on long term basis the bamboo coupes to the paper industry with a view to ensure sustained supply of bamboo to the mills for the manufacture of paper. The policy also simultaneously sought to ensure systematic and scientific working of bamboo forests by the paper mills, which calls for large scale investments for construction of roads to access the bamboo forests, employment of skilled personnel and use of modern tools and equipments. Accordingly, almost all the bamboo coupes were leased out to various paper mills. Long-term leases were handed out to paper mills for the first time in 1956. Four paper mills (JKPM, OPM, TPM (now BILT- Choudwar), and BILT- SEWA) entered into long-term lease agreements with the Forest Department. Since then, paper mills enjoyed a prolonged free run of bamboo operations till 1988-89 when the OFDC took over. But even during the five years when it was managed by OFDC, the paper mills played a prominent role as labour contractors.

The dominant thinking of the time was that the domestic needs of the local populace have to be met from leasehold areas, where there is such demand. The agreements signed with paper mills made it obligatory for them to meet local demands by maintaining forest depots and stocking green long bamboo, mostly required by the people, and supply them at the rates fixed by the Divisional Forest Officer. This was a determining factor in the award of bamboo series to paper mills. The JK Corp Ltd was given most of the bamboo series in Southern Orissa on lease for bamboo felling and extraction. The lease agreement with the company continued, with renewal every 10/12 years, from 1962 to 1988, the year bamboo was nationalized.

2.3.4. Nationalization and after

The Orissa Forest Produce (Control of Trade) Act, 1981 (OFPCTA-1981) was passed to provide for control and regulation of trade in certain produces by creation of state monopoly. The main objective of the Act was to prevent smuggling and to provide for state monopoly in the specified forest produce (the produces, specified in the Act, include bamboo of all species). The creation of state monopoly in the trade of certain produces was essentially aimed at making sure that state trading agencies like TDCC and OFDC survive and grow.

Sub-section (3) of the Act reads, "It (The Act) shall come into force in such area and time in relation to such forest produce as may be specified by the state government from time to time". On 21st September, 1988, vide notifications 21691 and 21695/FF&AH, the state government specified that the OFPCTA-1981 should come into force in the areas covered by government forests in the state of Orissa in relation to bamboo of all species on the 1st day of October 1988. Except the felling series of Jeypore Forest Division of Koraput District, all the areas covered by government forests in the state of Orissa were constituted into one unit of extraction and trade in bamboo of all species.

On 22nd of September, 1988, vide notification 21727/FF&AH, bamboo was nationalized⁵. Nationalization made the state government the sole authority to appoint agents for the purchase or trade of bamboo. Further, no person other than the state government, an officer of the state government authorized in writing on its behalf or an agent in respect of the unit in which the produce is grown or found, was eligible anymore to purchase or transport bamboo in the said area. The state government constituted an 'Empowered Committee'⁶ on 28th September 1988, which was given the powers of the state government to dispose of the collected bamboo of all species in the areas covered by government forests. The Committee was empowered to fix the sale value of bamboo crop year-wise and also to fix working cost and royalty.

- Terminate the long term leases of Bamboo to Paper Mills so as to eliminate the disadvantages such as over exploitation in accessible areas and under- exploitation in inaccessible pockets through nonadherence to silvicultural rules
- To avoid locking up of resources for longer periods at low rates of royalty
- ⁶ 'Empowered Committee'

An Empowered Committee on bamboo was constituted by the state government on 28th September 1988, a month before the produce was nationalized. The Committee, chaired by the Principal Secretary-cum-Addl. Chief Secretary, had the Secretaries of Finance, Industries, Forest, and Fisheries and A.H. Departments, the Chairman, OFDC Limited and Pr.C.C.F., Orissa as members. The MD, OFDC Limited was made the Convener-Secretary of the Committee. The powers of the state government to dispose of the collected bamboo of all species in the areas covered by government forests were delegated to the Committee. *(contd.)*

18

⁵ Objective of nationalization (FF & AH Department Notification No. 21693, dt. 21.9.88)

After the nationalization of bamboo, OFDC was handed over bamboo operations in the crop year 1988-89. It sold industrial bamboo to paper mills at its depots at the price fixed by the Empowered Committee. In time, OFDC entered into agreements with various paper mills for annual allotment of the produce along with its price. A system was developed on the basis of which the Corporation offered depot-wise allotment for lifting by paper mills. Payment to the Corporation was made by the paper mills in installments. The arrangement continued till the 1992-93 crop year when production started falling and quality began deteriorating.

In the year 1993, the State Government with a view to increase the production of bamboo in the forest areas and to get a better royalty, approved the proposal to engage Paper Industries as labour contractors under the Orissa Forest Development Cooperation. The Orissa Forest Produce (Control of Trade) Act, 1981 and the Rules framed there under provided that bamboo in all government forests will be traded by an agency appointed by the government. But the Raw Material Procurer (RMP) system introduced in 1993 was inconsistent with the provisions of the Act and the Rules. The government sought to have the best of both the worlds by using the Act and the Rules to monopolise the trade without the botheration of having a regular workforce for bamboo working. Hence, the paper mills were engaged as labour contractors who, after depositing the stocks in the OFDC depots in their capacity as labour contractors, returned as paper mills to buy the same stocks. The coupe delivery, permits etc were all issued to OFDC, but it was the paper mills as RMPs who did all the work.

For working the bamboo stocks, the RMPs were reimbursed at rates fixed by OFDC. These costs turned out to be more or less equal to the working costs included in the sale value as fixed by the Empowered Committee. Most of the times, the working costs used to be adjusted during transactions between OFDC and the paper mills.

(contd.)

- To determine the ex-depot delivery price of industrial bamboo to paper mills in the state.
- To determine the modalities of the sale of commercial bamboo.
- To decide all other terms and conditions of sale of industrial and commercial bamboo. In the event of default
 by the paper mills in the state in lifting stocks allocated in their favour within a pre-determined time
 schedule, the committee shall also have powers to direct sale of the united stock of industrial bamboo by
 tender/auction.

Apportioning of the quantum of industrial bamboo to be produced by the paper mills of the state.

Crop Year	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99
Reimbursement/ S.U (in Rs)	500	500	520	597	622	622

(Source: Orient Paper Mills, Brajarajnagar, Orissa)

The paper mills were all for the RMP system. But it failed to achieve the objectives for which it was set up in the first place. In an attempt to salvage the situation, the Empowered Committee hiked the sale value of bamboo annually.

Year	93-94	94-95	95-96	96-97	97-98	98-99	99-00	Average increase
Sale Value	1160.00	1183.00	1272.00	1389.00	1468.00	1497.00	1650.00	70.00
Increase%		2%	7.5%	9.2%	5,7%	2%	10.2%	6.5%

(Source: JK Corp. Ltd, Rayagada, Orissa)

The allotment of bamboo stocks to paper mills, as decided⁷ by the Empowered Committee, was frequently contested. Regular hike in minimum wages made the working costlier. During the period from 1992 to 2004, the minimum wage rate increased six times recording a 100% rise in about 11 years. This inevitably resulted in increase in the working cost and the sale value of bamboo.

Date of revision	14/12/92	15/8/96	11/9/98	1/5/99	1/1/2002	1/1/2004
Minimum wage rate	Rs.25/ day	Rs.30/ day	Rs.32.50/ day	Rs.40/ day	Rs.50/ day	Rs.52.50/ day
Percentage increase	-	20%	8.3%	23%	25%	5%

(Source: JK Corp. Ltd & OFDC Ltd.)

There were operational issues like issuance of work orders, delivery of coupes, transport permits, co-operation of OFDC staff. The Corporation also had to bear the additional burden of absorbing, first on a temporary basis and then as permanent staff, the sacked employees of paper mills. These factors made the working costs very high and accounted

2

⁷ Installed capacity + Average in the last 4 years = Total value of production

Total value x 2.5 =Requirement of total bamboo in S.U.

Provisional allotment = Total requirement x 0.316

for a poor out turn of bamboo during the period the RMP system was in operation.

Crop year	93-94	94-95	95-96	96-97	97-98	98-99	Avg. increase per year
Working cost (Rs/S.U)	1191.00	1301.00	1418.00	1509.00	1608.00	1756.00	113.2
Percentage increase		9.2%	9.03%	6.3%	6.5%	9.2%	8.05%

The rising trend of working costs can be seen from the Table below.

(Source: JK Corp. Ltd, Rayagada)

At a time when the Indian paper and pulp industry was facing competition from international manufacturers, the continuous and steep rise in working costs of bamboo forced it to petition the Government of Orissa, the Empowered Committee and OFDC on many occasions to reduce the royalty as well as sale value. But far from acceding to the industry's request, the sale value was actually continuously hiked during that period. The Salia bamboo costs became prohibitive as the landed cost (cost at the time the raw material lands in the factory) reached almost Rs.2958/ADMT (Air Dry Metric Ton) as against hardwood from Orissa at Rs.1976/ADMT. Understandably, the paper mills opted for locally available hardwood and gradually decreased their dependence on bamboo. Rather than analysing the reasons, the government imposed penalties for non-achievement of production and transport targets. Towards the end of the 1999-2000 crop year, the RMPs backed out⁸.

Even as the RMPs started realizing the operational difficulties, they suffered another setback in the form of a directive from the government that wanted them to provide commercial long bamboo to artisans and general users at rates fixed by various rules. Expectedly, the paper mills refused. International competition, the exorbitant cost of raw materials, high working costs and the sliding profit scale forced them to abandon the contract.

After the RMPs backed out from the process, bamboo working almost stopped. Huge quantities of bamboo remained unsold in the coups owing to lack of buyers.

⁸ Views of the JK Paper Mills on increasing working cost of bamboo.

Lost battle.....

Kailash Mallick, a resident of Ambakana village in Ganjam district of Orissa, used to eke out a decent living by cutting bamboo, till the state government stopped bamboo operations in 2000. Today he works as a mason, a trade he is hardly familiar with, and earns a meagre amount, which is not enough even to feed his family. He cannot even think of consulting a doctor for a swollen eye he got after an injury while working on a road project. "The only work I ever knew was bamboo cutting. After it was stopped, it has been very difficult for me to make ends meet," says Kailash, with an unmistakable tinge of helplessness in his voice.

Kailash was, at least, lucky enough to find an alternative employment, however inadequate it may be. But there are hundreds of others who have been rendered completely jobless, while several hundred more have become migrant labourers and are at the mercy of rapacious employers. Still others have taken to 'podu' or shifting cultivation after clearing the once precious, but now worthless bamboo forests.

The closure of bamboo cutting was necessitated after the paper mills in the state refused to lift 68,000 tonnes of bamboo from the depots of the Orissa Forest Development Corporation (OFDC) in the 2000-2001 collection season as stated by the State government. The unsold bamboo was valued at nearly 10 crores.

The paper mills, however, have an altogether different story to tell. For one thing, they say the unsold stock of bamboo was rotten and not fit for production of paper. For another, one sale unit of bamboo, which, as per OFDC calculation, is the equivalent of a tonne – actually weighs only 0.6 tonne.

According to those in the know, the actual reason for the refusal of the paper mills to lift their quota of bamboo is the advances in paper making technology. Following the rapid strides paper technology has made in the last few years, bamboo has lost its status as the sole raw material for making paper. It has lost its place to low grade wood, which is a much cheaper option for the paper mills. Whereas the government has fixed the rate of bamboo at Rs 1,650 per tonne, *akasia (Acacia auriculaeformis)* or *chakunda (Cassia siamea)* wood is available at Rs 750-1000 per tonne, while *jhaun (Casuarina equisetifolia)* is available at Rs 1,400 per tonne. By using hard wood, the paper mills are able to save on transportation cost too, as bamboo is much lighter than wood.

The worst sufferers due to the closure of bamboo operations have been the people dependent on bamboo for their daily livelihood, as unlike the state and the industry, they have no other alternative except migrating and resorting to practices like shifting cultivation. Most of the workers those who have no other skill than that of bamboo operation either lost their livelihood totally or were able to earn meager amount through unskilled labour. Workers engaged in cutting, dragging and carrying them to truckable points used to get wages of Rs 321.45 per tonne of bamboo. Besides, the labourers used to get Rs. 14.70 and Rs 101 per tonne of bamboo for bundling of bamboo in the main depot and making motorable roads inside the forests, respectively. Taking the average annual production of two lakh tonnes of bamboo, the remuneration received by those employed in the bamboo trade worked out to a whopping Rs.86.2 million annually.

It is not the workers who are the only ones affected by the closure of bamboo operations. The state itself was a big loser in terms of revenue. The government had fixed a rate of Rs 647/- as royalty for a ton of bamboo in 1999-2000, the last year when bamboo cutting was done. At this rate, the revenue lost annually since then works out to a whopping Rs 130 million. But, in the last three years, the royalty earned by the state was between 51.1 to 85.2 million as the amount of bamboo collected was less. In a state going through its worst ever financial crisis, this is no mean loss of revenue.

The situation continued till the year 2003-04 when a fresh arrangement was made with two paper mills of the state i.e. JK Papers Ltd and Ballarpur Industries Ltd (Sewa) as RMPs for sale of the unsold stocks in the year 2004-05. As per the arrangement, the target for production and fixation of the royalty was decided by the Empowerment Committee of the State government. The selling price for bamboo for 4 years i.e. 2004- 05, 2005-06, 2007-08 and 2008-09 would be Rs. 1500/ - per MT, out of which Rs. 750/- would be towards royalty to government, silvicultural costs and OFDC commission as per the decision of the government communicated in their letter no. 19689/F&E dt. 30.12.04. The minimum target fixed for the year 2004-05 was 42,600 MT for JK paper Ltd and 32,400 MT for M/S Bilt (Sewa).

As per the decision of the Empowered Committe, December 2004, the RMPs were given incentive at the following rates for additional quantities of production beyond 75,000 M.T.

In Search of alternative......

In Khamanakhol panchayat of Kandhamal district of Orissa alone, 578 acres of exclusive bamboo forests have been cleared. About 457 families, which earlier earned a livelihood in bamboo operations, are now completely dependent on shifting cultivation. "There was no shifting cultivation in our area, as long as bamboo operations continued. We feel verv bad about having to destroy the bamboo forests, which sustained us for so long. But, is there a way out?" says Japa Kanr, a resident of Porubhatta village ruefully.

Samien Jagannath, OFDC manager in Sorada subdivision, speaks for many when he says, "The alternative jobs available to those formerly engaged in the bamboo trade in the form of development programmes are a drop in the ocean. They get barely eight days of work in a month, whereas earlier, they were employed for at least eight months a year. Everybody has a right to livelihood and there is no reason to deny it to the bamboo workers. Bamboo operations should resume immediately."

The incentive structure is; between 75000-100000 MT, the rebate is Rs 20.00 per MT, a rebate of Rs. 30/- between 100000-125000 MT, Rs. 40/- between 125000-150000 MT, and beyond 150000, a rebate of Rs 50.00 per MT.

The approved decisions of 2004-05 of the Empowered Committee continued with only modifications in the breakup of differential rate of royalty, in structure of silvicultural changes and commission of OFDC for 2005-2006 and beyond⁹.

The RMPs were given an incentive for higher production in the form of decreased royalty rates. The production of the RMPs had no effect on the royalty to the government but it considerably reduced the commission to OFDC and the silivicutural changes. Higher the performance of the RMPs, lower is the commission rate for OFDC. But a balanced approach would have been, in the event of high production, instead of charging only to OFDC and cutting down on the expenditure on silviculture, Government should proportionately part a portion of royalty due to it.

The potential target of production for 2005-06 crop has been kept at 1,52,200 MT with minimum production target of 1,10,000 MT of I.B. and 11.5 lakh pieces of green bamboo (C.B.). Surprisingly, in both the Empowered Committee reports of 2004-05 no measure has been mentioned for lower production by the RMPs. Intestingly, the RMP is due for an incentive by procuring 75,000 MT, whereas the minimum production target is 1,10,000 MT. Therefore, the rebate rates needs to changed correspondingly as per the minimum production slab every year.

A recent government order No. 9-17/2005- RO (HQ) dated 19^{th} September 2005 by the Ministry of Forest & Environment, Government of India and a subsequent order no. 10F (TR)-26/2005 dated 20^{\text{th}} September 2005 by the Government of Orissa,

Production Slab	Qualifying	Rate of	Break-up with		
(in MT)	quantity	royalty etc.		Silvicultural	OFDC
	(in MT)		Royally to Govi.	charges	Commission
Up to 75000	Min 75000	750	500	70	180
75001-100000	81250	715	500	60	155
100000-125000	106250	680	500	60	120
125001-150000	131250	650	500	60	90

Source: Report of Empowered Committe Meeting, Govt. of Orissa, 12th August, 2005.

Forest and Environment Department state that bamboo operations will start again in the 11 forest divisions which have approved working plans and also in those among the rest 24 divisions, which have submitted working schemes for four years. The only rider for the second category was that regular working plans have to be prepared for all the concerned 24 forest divisions within the period of validity of these working schemes i.e. 2007-2008. In effect, bamboo operations are to resume throughout the state as per the approved working plans or approved working schemes.

2.3.5. Post-nationalization allotment of bamboo to bulk consumers

During the RMP period, the paper mills, as a convention, were allotted bamboo coupes nearer to their production units. Usually, a proportional allotment policy based on economy of distance from depots to mills was followed. The EC fixed the allotments from time to time. In the initial years after nationalization, the volume of allotment was based upon the installed capacity of the paper mills and the availability of bamboo as mentioned earlier. It was not an equitable system as some paper mills never operated at their installed capacity levels. They used the system to create stock for the next season. In sharp contrast, paper mills like Orient Paper Mills, Brajarajnagar, which regularly met its installed capacity production levels, faced continuous shortage of raw materials.

In the face of complaints, the EC now made the utilization capacity of the paper mills and the availability of bamboo the two yardsticks for allotment of bamboo stocks. Even this system did not seem to work. When the conventional ratio of bamboo and hardwood in the raw material composition of the paper mills was almost fixed at 60:40, some paper mills complained that their mills consumed more bamboo than was allotted to them as per their utilization capacity. To remove this anomaly, the EC had to fix an equitable norm for allotment. It decided that bamboo would be allotted at the rate of 2.5 S.U. per tonne of paper production. To make things more transparent, the EC also decided later that the same system will be followed keeping in view the actual production figures of last year as reported by the Commissioner, Central Excise and Customs.

Notwithstanding all these procedures adopted for an equitable distribution of raw materials, the paper mills still had complaints. The allotment came down by the year and so did the supply. Most of the years, the production of bamboo never touched the estimated targets. An observation of the allotment and supply status of bamboo coupes and bamboo stocks to different paper mills will provide a valuable insight into the state of affairs that was so discouraging for the paper mills.

Year	OPM,	JK Corporation,	BILT,	BILT, SEWA
	Brajarajnagar	Rayagada	Choudwar	Jeypore
1988-89	1,10,000	-	-	-
89-90	1,21,000	112000	-	-
90-91	1,10,000	100000	-	-
91-92	1,04,000	96000	30000	-
92-93	1,04,000	96000	30000	10000
93-94	75665	103000	32935	24430
94-95	52000	110500	41028	25531
95-96	54280.5	90290	27173	34930
96-97	71463	96525	32407	30000
97-98	44096	87037	23368	29951
98-99	-	67152.6	8336	22267
99-00	-	62769	9900	27826

Allotment to different paper mills

Volume Allotted(In S.U)

(Source: OFDC Ltd)

Initially, bamboo was allotted only to OPM and JK paper mills. In the year 1992-93 BILT, Choudwar and BILT, SEWA joined the process. The allotment to these four units continued till the year 1997-98. Initially, the highest quantum of bamboo was allotted to OPM. But after one year, JK Corporation replaced it at the top of the table where it has remained ever since. The allotment to OPM stopped in the year 1998-99. In the six years the four mills operated together, the share of BILT, SEWA in the allotment rose continuously at the expense of the other three, registering a 200% rise in the process.

2.3.6. Supply of bamboo to various sectors

The National Forest Policy provides that the customary rights and concessions enjoyed by the tribals and forest dwellers should be fully protected, their domestic requirements of fuelwood, fodder, minor forest produces and construction timber (bamboo) should be provided to them on a priority basis depending on the carrying capacity of forests. Since the earliest years of forest administration, the rights and interests of the local inhabitants, bamboo artisans, tenants and other beneficiaries, as denoted in various government literature, had been well protected. For instance, the Report of the Forest Inquiry Committee, 1959 laid out the division-wise existing modes of supply of bamboo
to the user groups. The rights and concessions as available to various groups in relation to bamboo in Angul Division during 1959 were as follows.

ANGUL	ANGUL SUB-DIVISION				
Forest type	Rights and concessions				
'A' class Reserve Forests	Salia bamboo at concessional rate from tenants bamboo coupes. Professional basket makers at concessional rates from tenants bamboo coupes. Rate for tenants Rs.5.00 and Rs.4.00 per 100 Daba and 100 Salia bamboo respectively.				
'B' class Reserve Forests or D.P.Fs	Tenants are allowed at concessional rates from coupes. Professional basket makers are treated as tenants for getting their bamboo require- ments from D.P.Fs, coupes.				
Khesra or Unreserves or U.D.P.Fs	Free to all				
TALCH	IER EX-STATE				
In 'A' class Reserve Forests	At full royalty both for personal use and trade.				
In 'B' class Reserve Forests or D.P.Fs	At full royalty both for personal use and trade.				

(Source: The Forest Enquiry Committee, 1959)

It is difficult to ascertain whether such concessions were actually extended to the locals or they drew what they needed on their own. Revenue receipts on these accounts over the years do not indicate the exact number of beneficiaries. It is, therefore, logical to presume that supply was not made despite bamboo remaining plentifully available. As the policy for bamboo trade adopted by the state was paper industry-centric, the maximum stock went to them neglecting the needs of the people. From 1980-1988, i.e., prior to nationalization of bamboo, paper mills, possessing leases of almost all the bamboo series in the state, did not cut and supply long bamboos to the public. Similarly, the needs of artisans and tenants, co-operative societies and units engaged in bamboo product manufacturing remained unfulfilled.

(i) Supply to fringe dwellers and local inhabitants

Permits were issued to the public for their bonafide use as per Schedule of Rate (1977). The Schedule of Rate (for Forest Produce in Orissa) Rules, 1977 provided for payment to be made by the inhabitants of towns and villages in the vicinity of protected forests to take trees, timber or other forest produce for their own use and for trade. According to Rule 7, "No permit shall be issued for removal of timber, charcoal, firewood and Bamboos for trade purposes." Rule 8 provides that "A permit shall be issued to the inhabitants of towns and villages in the vicinity of protected forests for removal of timber, bamboos, firewood and charcoal for their own use, and of other forest produce for trade purposes on payment at the rates as mentioned in Schedule-II of these rules."

In most of the forest divisions of the state, this system of distribution has been done away with. The public prefers to avail the items mentioned in the rules either from the markets or by stealing them from the forests in the vicinity in the absence of any guarantee of supply by the department.

(ii) Supply to tenants¹⁰

Since most of the landholders are farmers, they use bamboo virtually throughout the year for constructing agricultural equipments, storage structures etc. In the past, tenants got their requirements of bamboo from all classes of forests. They usually had the right to take bamboo free of cost from Khesra and Undemarcated Protected Forests (UDPF) except in a few areas like Kalahandi, Patna and Nilgiri, where they had to pay for them.

In the 'B' class Reserves, removal of bamboo was allowed on payment of royalty either at full or concessional rates. The policy of the government sought to strike a balance between the needs of the tenants and the requirements of the industry. But inevitably, the needs of the paper industry took precedence over the tenants' requirements. After the nationalization of bamboo in 1988, the state government, through a circular, instructed the government agency, OFDC to open depots and supply bamboo to tenants at a concessional rate fixed by the government.

Excerpts of Letter No.10488 dt.11.5.90 of Govt. of Orissa, F.F. & A.H. Department "In the Nistar paying areas, in each bamboo coupe, at least one depot should be opened by the Orissa Forest Corporation (OFC) where from Salia bamboo will be sold to the

¹⁰The non working of bamboo in the last 4 years in most of the divisions has left the OFDC depots, meant for the purpose of supply to tenants defunct.



tenants at the rate of Rs.1.50 per piece for thinner size bamboos. This rate is inclusive of the royalty applicable to the district. Each tenant will be supplied 50 bamboos per annum 'on first come first serve' basis subject to availability. The loss on account of this concessional sale will be recouped by a corresponding increase in the rate of bamboos in the non-ex-coupe depots... This (order) supersedes all the previous orders/ instructions to the extent indicated above."

(iii) Supply to fire affected persons

Village fires are not uncommon in rural India. On many occasions, whole villages are reduced to a heap of ashes as inflammable materials like timber, bamboo, thatch and the like are always used for house construction. Every fire incident is inevitably followed by fresh house construction activity requiring a steady supply of bamboo, among other things. In a letter (No.4549-R.), dated the 17th of June 1947 of the Secretary, Revenue Department, the government allowed some concessions and supplied the affected with the required construction material from the forests. In granting free timber and bamboos to the fire-afflicted people, the Revenue Department is first required to inquire about the eligibility of the individual to the free grant. In 1979, the Rules for fire relief were framed.

Extracts of O.F.D. Code, 1979 Rules for fire Relief

In case of fire accidents, forest materials; namely bamboo and timber; will be supplied by the Orissa Forest Corporation and Similipahar Forest Development Corporation at the scale prescribed under Orissa Forest Department Code at the cost inclusive of transportation charge, on requisition from the Tahasildar as per prevailing rules. The following are the instructions to be followed while making supply of forest materials in case of fire affected persons. The relevant extracts of the revised instructions for sanction of relief in case of distress on account of fire are also quoted below:

Fire relief instructions, 1972

¹¹Government Order No.71057-IIF-1/72-R., dated the 2nd December,1972, para-3 says, "Relief to the fire affected persons shall be given in the form of both cash grant up to a maximum limit of Rs.100 and free grant of building materials where available in the scale given in the footnote"

The Rules turned out to be a frustrating ordeal for the affected. Often, there were inordinate delays due to causes such as enquiry, exigency of the situation, nonavailability of the material within a reasonable distance, reluctance of the alottee to take whatever is available, delay in approaching the forest department and - to some extent - the non-availability of forest staff.

Most of the times, the lack of co-ordination between the line departments proved a big hurdle in the working of the system. However, with JFM and self-initiated forest protection arrangements operating in large parts of the state, bamboo for relief purposes is easily available these days.

(iv) Supply to artisans

To take care of the raw material demand of the artisans, the state government came out with the Supply of Bamboos to Artisans, including Co-operative Societies, Rules-1980. The rules have mechanisms to facilitate the grant of licences to artisans to procure bamboo from protected forests every working season.

Material to be supplied	Description of huts			
	One roomed hut	Two roomed hut		
Bamboos	One Cart-load	Two cart-loads		
Poles	One Cart load	One and half cart load		
Rafters and branch wood	One cart load	Two cart loads		

¹²The Supply of Bamboos to Artisans Including Co-operative Societies (Orissa) Rules, 1980 was devised to meet the bamboo demands of the large population of artisans in the state. In exercise of the powers conferred by Section 36 of Orissa Forest Act, 1972, the state government made certain rules to control and regulate the granting of licences to bamboo artisans including co-operative societies (all the members of which earn their livelihood by making articles of bamboo for sale to general public) to fell and remove bamboo from 'Protected Forests' located within the vicinity of the place where they are ordinarily resident, for purposes of trade.

Status in the field

Till 1988, Sambalpur, Boudh, Ghumsur North, Ghumsur South and many other forest divisions issued licenses to artisans. However, after the nationalization of bamboo, the issuing of licenses and consequent supply of bamboos to artisans was abruptly stopped though a number of rules either existed or had already been framed to facilitate the supply. The reasons for this are still not clear.

¹²The Rules provided that:

- 1) All the members of a family or society desirous of obtaining bamboo from Protected Forests for manufacture and trade of bamboo products shall be required to register themselves in the Forest Range Office within whose jurisdiction they are ordinarily resident.
- 2) The application for registration shall include an identity certificate issued by the local body.
- 3) Subject to availability of bamboo in the Protected Forests, a licensee may be granted permit during the working season (1st Oct. to 30th Jun. of every year) for up to 540 Salia bamboo (with not more than 60 bamboos in a single working month and not more than 20 bamboos at a time).
- 4) The bamboos to be cut and removed under such permit that shall not be less than two-years old.
- 5) The concerned Forester or any Forest Officer superior to him having jurisdiction over the area can issue such permits on realization of the value and presentation of the license by the licensee.
- 6) While cutting bamboos, the cutting rules prescribed for the Reserve Forests as in the Working Plan shall be applicable for the purposes of this rule.
- 7) The state government fixed two different rates for two different categories of forest divisions, as mentioned in the table below:

Divisions with 43 paise per pole	Divisions with 64 paise per pole
Phulbani, Deogarh, Bonai, Rairakhole, Bamra, Sambalpur, Kalahandi, Khariar	Angul, Athagarh, Baripada, Baliguda, Bolangir, Dhenkanal, Ghumsur (North), Ghumsur (South), Jeypore, Keonjhar, Karanjia, Nowrangpur, Nayagarh, Puri, Parlakhemundi, Rayagada, Sundargarh

(i) After the OFPCTA-1981 came into force in relation to bamboo on 1st October 1988, (read nationalization of bamboo), all contracts for the purchase, sale, gathering or collection of the produce grown or found in the said areas and all grants of *profit-a-pendre* including the right to enter upon the land, fell, cut and remove bamboo from the said area, stood rescinded whether such forest produce was grown or found on land owned by private persons or owned by the state government or in government forests. However, it was also mentioned in the same Act that withdrawal of such contracts and grants shall not affect the customary rights, if any, of the local tribals to gather and collect the specified forest produce.

But, none of the tribal artisans of Nuapada, Nayagarh, Boudh, Bargarh, Keonjhar, Mayurbhanj and other districts were officially allowed, post-nationalization, to procure bamboo from government forests. They did so illegally, on their own. It's hardly surprising that the artisans in these parts did not know about their customary rights or Rules to ensure supply of raw materials to them.

(ii) According to the Director of Handicraft & Cottage Industries, Orissa on 2nd August 2003, there are about 30,000 artisans in the state. As per the Supply Rules, if 540 pieces of bamboo are supplied to each artisan, then the total demand per annum would stand at 1.62 crores of bamboo poles. And even at the rate of 50 paise per piece fixed earlier, revenue amounting to Rs. 81 lakh (540 x 30,000 x 0.50) could be generated annually by the state.

But the Forest Department has always maintained that this number¹³ of bamboo is just not available in the 'Protected Forests', making it impossible to meet the objects of the Supply Rules.

- (iii) Under Rule-7 of the Supply Rules, it is said that the state government/Forest Department may open separate depots and supply bamboo to licensees at separate rates. However, no such depots have been opened nor have any rates been prescribed.
- (iv) Though OFDC has its own depots, these depots have not been opened under Rule-7. Hence, there is no provision of supply to licensees from these depots. Also, most of the bamboo coupes worked by OFDC are situated in reserve forests, so the licensees are not entitled to such harvests.
- (v) Under Section 12 of Orissa Forest Produce (Control of Trade) Act, 1981, the state government may, in public interest, direct the sale by auction, tenders or otherwise of bamboo purchased or collected by the state government, by its

¹³ On the contrary, both field and headquarters level personnel of the Forest Department admitted 'on record' that there is enough bamboo in the Protected Forests to suffice the demands of the artisans (licensees).

officers or agents. There is also a provision for the state to issue instructions to OFDC to supply bamboo to licensees/ artisans/ any other person. What prevents the supply of adequate quantities of bamboo to artisans despite all these provisions is beyond comprehension.

- (vi) From the 1st day of October 1988, all the areas covered by government forests in the state, except the felling series of Jeypore Forest Division of Koraput District, were constituted into one unit of extraction of trade in bamboo of all species by the government. Consequently, the Jeypore Forest Division remained the only place where the Supply of Bamboo Rules could be applied.
- (vii) As per the Rules, the cutting rules of Working Plans of the respective divisions have to be adhered to while removing bamboo. In the face of the non-revision of Working Plans in 12 divisions abundant in bamboo resources, harvesting by anybody is prohibited.
- (viii) The Rules¹⁴ also say culms less than two years old are not to be removed, contradicting the very spirit behind the devising of the Supply Rules.

The present status of the various supply rules points to the fact that certain inherent bottlenecks as well as lack of transparency in operation have conspired to deny the people the rights and concessions guaranteed by a set of rules. The observation of the Forest Enquiry Committee in 1959, "...the unification of rights and concessions and the unification of practices have led to irritation and annoyance of the people in the locality..." still seems to be relevant. The Report also noted, "For the proper development of the paper industry in the state, leases for bamboo extraction have been given to the paper mills. This has necessitated restricting permissive right of extraction of bamboos by the local inhabitants...it is alleged that this has occasioned a discontent in the people having to go long distances to procure bamboo." Nearly half a century later, the discontent is far from over. If anything, it has become much more widespread as the people's share of this essential produce has progressively shrunk.

2.4. National Bamboo Mission

The National Bamboo Mission, focusing on rural industrialization, employment generation and tourism, was launched by the President Dr A.P.J Abdul Kalam and Prime Minister Atal Bihari Vajpayee at the VII World Bamboo Congress held in New

¹⁴ The artisans and co-operative society representatives throughout the State claimed that only 1-2 year old bamboo culms are suitable for their craft, rubbishing all claims of the Rules being useful to them.

Delhi from 24th February to 4th March 2004. The developments followed the recognition by the Congress that India is a significant source for bamboo products and technology. The fact that the domestic bamboo economy as of now is worth Rs. 2043 crore and the market potential worth Rs. 4463 crore was the driving force behind the Mission.

The Ministry of Agriculture has been



appointed as the nodal agency for implementing the 'Bamboo Mission', which will also focus on developing the potential of the bamboo sector. The MoA will also be coordinating the role of various Ministries under whom several micro-missions would be launched for taking the benefits to a large cross-section of people, primarily in the rural and distant areas. The fact that encouraging artisans is the best way to boost the rural economy and give the 'Mission' the necessary momentum hardly needs reiteration. But nothing on the ground indicates any change in the plight of the artisans or their cooperatives since the launching of the Mission.

The Mission¹⁵ document envisages coverage of 2 million ha under bamboo during the 10th Plan involving an investment of Rs. 26080 million out of which Rs 20000 million is earmarked for raising new bamboo plantations Rs. 2080 million towards technology development, Rs.2750 million for handicrafts development and Rs.1250 million for trade and market development. It also calls for the integration different Ministries/ Departments for the holistic development of the sector. The Report further envisions an integrated programme to expand plantations of bamboo species. A part of the cost of the project is to be met from the Plan allocation for various Ministries by dovetailing ongoing Plan programmes. The scientific management of the bamboo species with the involvement of JFM committees, local initiatives and entrepreneurship for making available this raw material to the industries and assisting the latter to access and apply modern technology for producing globally competitive new generation bamboo products

¹⁵ In Orissa, many departments, institutes, industries have applied for fund for developing enterprise, tissue culture, scientific management of bamboo but till now no institute or department has got any fund under the mission. Ply- boo industries, Berhampur has been promised Rs. 7 million from the Mission for setting up of a manufacturing unit for producing bamboo mat boards.

is also envisaged in the report. The other salient features of the Mission include Technology Development and Transfer for Planting, Technology intervention on process and products including standards and codes, Handicraft development, including training, Trade and Market Development for bamboo products and Technology development for building material.

The economic and social benefits from these activities have been worked out as creation of 8.6 million jobs in the Tenth Plan, building up of 2 million ha bamboo resource and market opportunities worth Rs. 6500 crore with an investment of Rs. 2600 crore, enabling 5 million families of artisans and farmers to cross the poverty line.

With unemployment climbing new heights across the country, it's hard to believe that the bamboo artisans still carry on their traditional occupation unaided. As of now, there are 30 lakh unemployed youth in Orissa¹⁶. Bamboo craft, which sustains a lakh of population, still holds out the promise of keeping in check the burgeoning list of the unemployed. Moreover, it will be inadvisable to think of providing any alternative employment opportunities for these self-employed artisans at a time when the global and national trade in bamboo and bamboo products is growing annually at the rate of



15-20%. Expansion of handicraft, cottage and the tiny sector will create 3 million new jobs in India. Plastics and steel can never replace bamboo articles. Plastic is not environment friendly and steel is non-renewable. Therefore, bamboo products do have a clear advantage.



¹⁶ Courtesy: Orissa Bekari Birodhi Abhiyaan.

Production and Trade

CHAPTER

3.1. Production

Production, like policies, of bamboo has never been consistent in the past. Involvement of different organizations in bamboo operation at different points of time, coupled with changes in the system and policy, has resulted in wide fluctuations in bamboo production.

3.1.1. Pre nationalisation

The pre-nationalization period was a golden period for bamboo operation. The average annual production of bamboo was at its peak in those years. The possible reason for this could be the fact that the total production operation was managed by the paper mills during this period. Bamboo production by the paper mills in the pre-nationalized years from 1977-78 to 1984-85 has been estimated at an average of 3, 06, 774 sale unit.

3.1.2. Post-nationalization operation by OFDC

Immediately after the OFDC took over, the production of bamboo



started dwindling. A sharp decline in production was registered in the postnationalization period and an estimated average of 2,33,863 S.U of industrial bamboo was produced by OFDC in the period from 1988-89 to 1992-93 - 24 percent less than the production in the pre-nationalization period.

The post-nationalization production of bamboo by OFDC is:

Sl.No.	Crop year	Out Turn of Industrial Bamboo	Average of 5 years
1.	1988-89	2,48,807.0 S.U	
2.	1989-90	2,31,949.0 S.U	
3.	1990-91	2,13,987.0 S.U	2,33,863 S.U.
4.	1991-92	2,33,122.0 S.U	
5.	1992-93	2,41,451.2 S.U	

(Source: Orissa Forest Development Corporation Limited)

3.1.3. Bamboo working by RMP

In the crop year 1993-94, all the 4 paper mills agreed to work as Raw Material Procurers (RMPs). They were appointed as RMPs to work bamboo coupes under OFDC The combined operations of the paper mills under the supervision of OFDC also could not restore the earlier production levels. The production figures under the RMP system are as follows:

Sl.No.	Year	Out Turn of Industrial Bamboo	Average of 7 years
1.	1993-94	2,38,357.31 S.U	
2.	1994-95	2,37,343.00 S.U	
3.	1995-96	2,17,802.00 S.U	
4.	1996-97	2,45,734.00 S.U	1,98,567.25 S.U.
5.	1997-98	2,06,182.00 S.U	
6.	1998-99	1,34,454.45 S.U	
7.	1999-00	1,10,098.00 S.U.	

(Source: OFDC Limited)

The RMPs managed to keep the operational level almost at par with the OFDC till 1997-1998, after which production started sliding down. The production of bamboo declined more than 35 percent in the year 1998-99. It also witnessed a further decline of around 20 percent in the next production year i.e. 1999-2000. The rapid fall could be attributed to the growing tendency of the paper mills to shift from bamboo to hardwood as raw material for pulp industries in an effort to reduce its over-dependence on bamboo.

3.2. Sale of Bamboo

The market for bamboo products is quite big in Orissa itself. The farm sector, storage and construction sector, and households are the major transit points for trade of bamboo products. No marketing arrangements have been developed by the government. the markets have grown on their own. Though sale of commercial bamboo fluctuated every year in the post-nationalization period, sale of industrial bamboo remained almost constant in the period from1988-89 to 1996-97. In the year 1997-1998, the quantum of sale of industrial bamboo reduced by nearly 20% over the previous year, which further reduced to almost half in



the year 1998-99 and 1999-00 because of the backing out of the RMPs. Since then, there has hardly been any sale of bamboo. In these years, the sale proceeds hit rock bottom.

In the post-nationalization period, there was a constant rise in the price of both industrial as well as commercial bamboo. Every year, the sale price registered an increase over the previous year. This increasing trend in the sale price of industrial bamboo witnessed a decline in the year 2002-03 owing to lack of interested buyers and deteriorating quality of the stock. Revenue generated from the sales also declined drastically after the year 2000. A detailed picture of the sale value, sale price and revenue generated from the bamboo for the period from 1988-89 to 2004-05 is depicted in the following matrix.

Voar	Sale value		Sale	Revenue	
Tear	I.B. (S.U.)	C.B. (nos.)	I.B.(Rs/ S.U.)	C.B.(Rs./piece)	(Crores)
1988-89	233068.74	3124082			23.23
1989-90	230692.49	1988279			14.65
1990 - 91	208807.39	1536875		2.50- 7.50	16.73
1991-92	229579.39	1311437	985	2.25- 7.65	22.33
1992 - 93	234006.91	1079308	1038	3.15- 9.00	26.65
1993 - 94	232017.60	84450	1160	1.50- 10.75	23.68
1994-95	227918.40	628953	1183	1.50- 11.30	22.73
1995 - 96	206657.60	875122	1272	1.50- 11.20	24.19
1996-97	238093.38	1513750	1389	3.05- 12.60	30.36
1997- 98	185708.82	983723	1468	6.10- 10.25	31.46

1998-99	99990.38	5834274292	1497	5.75-15.45	26.07
	(dabba)				
1999- 00	95252	97848638448	1650	5.8- 17.20	18.78
	(dabba)				
2000-01	7436.08		1650	5.40- 16.50	14.26
2001- 02	-	-	-	-	5.47
2002-03	210.62	NA	1317	NA	1.94
2003-04	15311.95	NA	1455	NA	0.39
2004-05	60910	NA	1500	NA	2.25

* One Crore = 10 million

Source: Orissa Forest Development Corporation ltd, Bhubaneswar.

3.2.1. Retail trade of long bamboo

There are quite a large number of users of bamboo besides the paper mills in the state. In the cities and their suburbs, there are a good number of farmers, tent house contractors, thatched house dwellers and of course small time artisans, who create a huge demand for bamboo throughout the year. Assessing the demand and supply volumes of this sector in the whole state has not been feasible given the constraints of time and resources.



There are around 25 big retail counters in the capital, which directly procure long bamboo from the private growers of Mayurbhanj and Keonjhar districts of Orissa and Midnapore district of West Bengal. These areas have also been the major source of raw material for the paper mills in the state at times when there is no government supply. Each retail sale counter in the capital transports, on an average, 4 trips of bamboo into the city a month. Thus, around hundred trips (each trip carries around 700-800 bamboos) of bamboo, accounting for more than 1,00,000 long bamboos, enter the capital and its suburbs every month.

The retailers say they buy a trip of bamboo from the growers at a price of Rs.16,000 and spend Rs.15,000 on taxes, transports, bribes etc en route till the produce reaches the counters. At the end of the sale, which takes a month, they net Rs.40, 000 (each piece being sold at Rs.50 or more), earning a profit of around Rs.10,000.

3.2.2. Sale unit and tonnage

For the purpose of sale of bamboo to paper mills, the sale unit fixed by OFDC sale unit consists of 2,400 running metres of *salia* bamboo made up of 50 bundles, where each bundle consists of 21 pieces of bamboo with each piece being 2.3 metre long. Similarly, 960 running metres of *daba* bamboo made up by 60 bundles, each bundle carrying 7 pieces of bamboo and each piece being 2.3 metre long, make a sale unit.

While the paper mills are concerned with the Air Dry Metric Tonnage (ADMT) of the raw materials for their factories, the government has failed to come up with a credible unit system inconveniencing bulk buyers in the process. As per the thumb rule calculation adopted by OFDC, 2400 running metres of *salia* bamboo or 625 running metres of *daba* bamboo makes a notional ton. It would thus follow that 2400 running metres of *salia* bamboo will be equal to 625 running metres of *daba* bamboo.

Until the early seventies, royalty on bamboo leased out to paper mills was not uniform and varied from division to division and from locality to locality. Royalty was charged on units consisting of 350 to 400 long pieces of bamboo, which presumably added up to a tonne. But paper mills disputed it. Thereafter, the government provisionally fixed 9000 running feet of *salia* bamboo as the sale unit.

In 1978, the Government of Orissa decided that 7,475 running feet of *salia* bamboo makes a ton, which was not agreed to by the paper mills and also not supported by scientific findings. To avoid all these controversies, fresh lease agreements were signed

retrospectively with effect from 1977 (where 1977-1980 was the unexpired period of the previous lease i.e. 1968-1980). As per the new agreement, royalty was charged for every 100 running metres of bamboo taken as a unit. The rate of royalty was fixed for a period of four years, after which it was changed. A 20 paise rebate was also granted on the produce procured by paper mills from the forests situated beyond 400 km from the factory point.

With OFDC taking over the bamboo operations in 1988, it fixed that one sale unit consists of 2400 running metres of *salia* bamboo. But bulk buyers continue to dispute this figure. To them, the girth of the bamboo does not meet their tonnage requirements.

Year	By 1991	By 1996	By 2001	By 2006
Bamboo for domestic use (in S.U.)	2,08,142	2,29,465	2,48,842	273653
Bamboo for paper pulp (in S.U.)	2,60,000	2,60,000	2,60,000	260000
Total requirement (in S.U.)	4,68,142	4,89,465	5,08,842	533653

3.3. Bamboo requirement

41

Taking the present trend of bamboo consumption in the domestic sector, it is estimated that in the year 2006, the production level will shoot upto 273653 S.U. If the bamboo consumption by the paper and pulp industries remains constant as it did in the earlier years, the total requirement of bamboo in the year 2006 will register a growth of nearly one percent per annum and will be 533653 S.U. Though the requirement of bamboo is increasing steadily, the production of both industrial and commercial bamboo is declining year after year.

In the year 1999, it was estimated that the total production potential of bamboo in the state stood at 2.2 lakh MT. Excluding the protected areas (sanctuaries and national parks), the total production potential was 1.8 lakh MT. In spite of such high production potentials, it has been difficult for the state to meet the rising bamboo requirement of the people and the paper industry.

The huge gap between demand and availability is posed to widen further in the absence of any measures undertaken by the state to reduce it. As the owner of all species of bamboo in the state, it is the duty of the government to that the demands of the people, especially the poor, are fulfilled.

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⁽Status Report-2000 on Orissa Forest & 2006 fig are based on calculations)

Bamboo and its Uses

CHAPTER

The low cost of bamboo and its significant strength makes it useful for a variety of uses. The strength of a culm depends mainly upon the species it belongs to and the climate in which it grows. Besides, moisture content of culm also decides its strength. To preserve the strength of bamboo, the culms need to be seasoned. Unseasoned bamboo is highly susceptible to insects and fungal attack, decay and mechanical degradation. Seasoning is particularly effective against infestations and mechanical degradation. Seasoning is done by air-drying the split halves of bamboo culms under a shade or in a kiln.

The strength of the culms, their straightness and lightness combined with hardness, range in size, hollowness, long fibre and easy working qualities make bamboo usable in a variety of ways. *Karadi* or the tender shoots are eaten as pickles or curry while the dried and sturdy culm is used as *lathi*. There are no less than 1500 documented uses of bamboo. It plays a huge role in rural livelihood security and rural industry. This green gold is sufficiently cheap and plentiful to meet the vast needs of human populace from the "child's cradle to the dead man's bier". That is why it is widely known as the "*poor man's timber*".

4.1. Bamboo as a social artifact

Since time immemorial, bamboo products have been extensively used in rural households in the form of *bhogai*, *tukli*, *kulei*, *koola*, *dala*, *pedi*, *binchana* etc. Bamboo-made artifacts, containers etc. are indispensable in some Hindu ceremonies. Bamboo products are essential requirements in marriage ceremonies of many tribes and castes in Orissa. The population of the neighbouring state of Jharkhand and Bihar also need bamboo products during many of their rituals. Bamboo has remained part and parcel of the cultural practices in the region. Moreover, it has also aided livelihood practices like agriculture. The agricultural sector still remains the largest



consumer of bamboo products. Right from sowing to stocking of grains, bamboo articles find wide usage. Baskets, containers, ploughs, planks, winnowers and a wide range of other articles are used in agricultural operations.

In rural households, it is used in construction of houses and fences. It even serves as a food item in many parts of the country. Bamboo items can be seen in urban homes as decoration pieces, as furniture or handicrafts and is an essential feature in any celebration that requires a structure – be it marriage or religious festivities.

In western Orissa, it is a tradition for the bride's side to provide a large number of bamboo containers¹ to be used in the rituals during the marriage ceremony

If all the 30 districts of Orissa are thoroughly surveyed and all the contributing members (including children, who seldom go to school or do any other work) of family are included, the numbers directly engaged in producing bamboo articles would exceed the one-lakh figure, whereas the figure quoted by the Director of Handicraft & Cottage Industries, Orissa on 2nd August 2003 was only 30,000.

A list of the items used in an average marriage is provided below.							
Items Bhogai Tukli Kulei Koola Baranidala Pedi Binchana							
Number 68 14 1 1 2 1 2							

(Source: Traders at the Daily Market, Rourkela)

Besides all these, the bride is also required to take many other items made of bamboo to her in-laws' house. In coastal Orissa too, certain bamboo products are essential ingredients at the beginning and the end of marriage ceremonies.

Primary surveys by RCDC in 12 districts of Orissa revealed that the number of artisans² is 25,413. By all accounts, the number of bamboo artisans in the state is thrice the figure cited in official statistics. With its immense potential for employment generation, it is an industry in itself and can scarcely be neglected or abandoned just because raw material is in short supply or there is competition from synthetics.

4.2. Housing

Bamboo has wide usage as a building material. It is being rediscovered as a value added composite for affordable house construction to accommodate the rapidly growing population. Bamboo is used as the main house construction material in earthquake prone areas. It is employed in different ways as a building material for roof structure in form of purlins, rafters, reapers, as reinforcement in foundations, flooring, doors/ windows, walling, ceiling, water storage tanks, man-hole covers and even for roads in slushy areas. (*Punhani and Pruthi, 1991*).

Classification	No. of census	No. of census	No. of census	Total no. of
	houses with	houses with	houses with	structures
	roof having	floor having	wall having	
	thatch, bamboo	wood,	grass, thatch	
	and grass as	bambooas	and bamboo as	
	predominant	predominant	predominant	
	material	material	material	
Urban	2,78,194	35,953	5,41,69	3,68,316
Rural	45,18,921	72, 064	5,91,559	51,82,544
Total	47,97,115	1,08,017	6,45,728	55,50,860

The versatility of the use of bamboo is well reflected on housing.

(Census of India 2001)

Bamboo as housing material in Orissa

It is clear from the table that bamboo is used as the principal construction material in more than 5.5 million of house structures in Orissa. Also, these structures are repaired virtually each year creating a consistent need for bamboo. If it is assumed that 4 long poles are consumed by a structure on an average, the total consumption of bamboo per annum comes to approximately 22 million culms for house building only. In addition, exigencies like floods, cyclones and fire push up the demand further. The demand is met from backyard plantations in coastal districts and forests in the landlocked districts.

²As per the forest manual of the state of Orissa, an **artisan** is 'a person who earns his livelihood by making baskets, koolas, tatties, a variety of containers and other articles made of bamboo for sale to general public'

4.3. Paper and pulp industries

Paper finds wide usage in a progressive society being an essential medium for storing and sharing of information. The principal raw materials for the manufacture of paper are forest produces rich in fibre and cellulose. Bamboo, hardwood and some agricultural residues constitute the bulk of the raw material demand of the paper and pulp industries.

Even in this age of electronic pages, the consumption level of paper indicates the extent

of development of a society. The per capita consumption of paper in China is 28.3 kg, in the U.K. it is 214.8 kg and in the U.S.A the figure is 347.2 kg. Comparing the development index of these nations, it can be concluded that consumption of paper is definitely an indicator of



development. In India, the per-capita consumption level is a paltry 3.8 kg, way below the world average of 52.6 kg per head.

But over the years, the paper industries have failed to meet even this meagre demand. The total demand for paper and board in India was estimated to be 4.95 million tonnes in 2000-01. But the 380 odd paper industries in the country, having an optimum capacity production of 6.2 million tonnes per annum, could produce only 3.25 million tonnes, creating a shortfall of 1.69 million tonnes³. This speaks a lot about the extent of policy support to the industry.

Projections establish that the demand for paper will grow rapidly at the rate of 5.6 percent per annum and will touch 8.55 million tonnes in the year 2010-11. If the paper industry continues to fare the way it has done so far, India will be forced to import the bulk of its paper requirement in the future. Already, the country is importing the bulk

³Information collected from JK Paper Mills, Rayagada, 2004-05.

of its newsprint demand from abroad. Given the richness of India's forest resources, importing paper would be an anachronism.

Year	2000-01	2005-06	2010-11
Paper demand (in lakh ton)	49.50	67.00*	85.50*
Raw material shortfall (in lakh ton)	49.00	71.00*	102.00*

* Projection based on current trends.

(Source: JK Corporation, Rayagada)

As the projections suggest, the inadequacy of raw material supply will be responsible for the failure of paper industries to meet the paper requirement of the country. It is easy to foresee that the shortfall in raw material will rise proportionately with the increase in demand. This would be a scathing indictment of the forest department mandarins, busy unfolding grandiose schemes of plantation.

Paper Industries in the state

The rich bamboo forests of the state have been a big attraction for paper industries for long. The first company to draw its raw material for paper and pulp manufacturing from Orissa was Messrs Heilgers way back in 1937. The Orient Paper Mills became operational in 1939 and the department finalized long-term leases of bamboo forests in its favour. Since then, many paper mills have been established, closed and revived. To enable the paper mills to access raw materials without any inconvenience, they were permitted to operate in areas nearer to dense bamboo forest patches. Four mills held prominence in the state's industrial scenario. The details of the four are given below.

Sl. No.	Name Location		Production capacity(in MT)	Year of establishment	Present status
1.	JK	Rayagada,	1,10,000	1962	Operational
	Paper Mills	Southern Orissa			
2.	Orient	Brajarajnagar,	75,000	1939	Closed
	Paper Mills	Western Orissa			
3.	TPM (Now BILT)	Choudwar,	20,000	1939	Closed
		Coastal Orissa			
4.	BILT (SEWA)	Jeypore,	50,000	1981	Operational
		Southern Orissa			
	Total capacity 2,55,000 (Source: Paper Mills,		Mills, 2004)		

BILT (Unit: SEWA)

Established in 1981, the SEWA mills in Jeypore used bamboo-based technology brought from Switzerland. After it came under the control of Ballarpur Industries Limited (BILT) in 1991, wood-based technology was used. Starting its production from 1993, it procured around 30,000 MT of bamboo annually from the Malkanagiri Forest Division regularly till the 1999-2000 production year, when the Working Plan of the division expired. During these 7 years, BILT operated as a Raw Material Procurer (RMP) with the OFDC.

JK Paper Limited

JK Paper Limited, a member of JK Organisation has two units – JK Paper mills located at Jaykaypur, Rayagada in Orissa and Central Pulp Mills (CPM) located at Fort Songadh, Surat in Gujarat. JK Paper Mills was established in the year 1962 and has a current capacity of 1.10 lakh tonnes per annum of pulp and paper, while CPM has a capacity of 50,000 tonnes.

4.4. Alternative Use

In Orissa, the association of bamboo with paper industry has been so strong that the other uses of bamboo –with the possible exception of handicrafts – have hardly been explored. But with the paper industries having switched over from bamboo to softwood as the raw material in pulp, the state appears to have abandoned all efforts to regenerate this wonderful gift of the Nature. Two paper industries have entered into an agreement with the government in 2004 to lift the unsold stock. But this is hardly a long-term exercise aimed at boosting production. The need of the hour is exploring the possibilities of alternative uses of bamboo. The potential of this versatile material has remained largely unexploited because there has not been adequate research into it.

Bamboo can be put to several uses in Orissa. These include:

 Agarbatti or incense sticks: In Orissa, Khadi and Village Industries Board finances to 15 cooperative societies in 12 districts for making *agarbatti* sticks. In the year 2003- 04, these societies made a profit of Rs. 4,07,062⁴. In Tripura, around 2.5lakh numbers of bamboos are used for making Aggarbatti sticks. The potential for the growth of the industry is huge.

⁴ Source: Office of the Khadi and Village Industries Board, Bhubaneswar.

 Bamboo mat board: It is the first bamboo-based panel to be produced commercially. One of the major uses of mat boards is in building interiors and construction. Because of its aesthetic appearance, the board finds ready acceptance as paneling material in place of decorative plywood or other pre-laminated panel materials. Boards, being phenol bonded, are much more durable than commercial panel materials. It has the potential to replace thin plywood. It has been estimated that if bamboo mat board replaces



wood veneers to the extent of one-fourth the volume of plywood production, about 400,000m³ of wood can be saved annually. This, in turn, will save 45,000 hectares of natural forests from eco-destruction.

A lone bamboo mat board and allied products industry, i.e ply-boo industries, is presently working in Mahuda, Berhampur, Orissa. The effort was initiated by an NGO, Gram Vikas 15 years ago. It was working effectively till 1999, when it collapsed due to the Super Cyclone. It was more of a socio-economic development venture with the profit motive taking a backseat. The present management took over the unit in the year 2002 and operated it in a profit-oriented manner. In this 2-year period, the turnover of the unit has registered a remarkable increase showing the growing demand of the product in the market. The present management has even expressed its inability to cope with the future demand. The industry is trying to capture new markets but production is limited at present. (*Annexure VI*)

• Bamboo match sticks: The match industry has been dependent on a few wood species for making match splints that are now in short supply. Development of matchsticks from bamboo acquires special significance due to the fact that bamboo, apart from being available in natural forests, can also be grown on a very short rotation cycle of 2–3 years in various parts of the country. Bamboo has several intrinsic characteristics that have prohibited its use in making matchsticks, including poor penetration of wax that is required to produce good incandescence

and burning quality. To evolve suitable processes and parameters for making quality match splints from two widely occurring species of bamboo – namely *Bambusa bambos* and *Dendrocalamus strictus* – extensive experiments were conducted at IPIRTI under a project funded by the International Network on Bamboo and Rattan. At present, the match industry is using 2 mm-thick wooden splints for manufacturing matchsticks. However, bamboo match splints of 1.5 mm squared were found to pass the test of strength prescribed in the relevant Bureau of Indian Standards specification for match splints. Limited trials, especially on waxing and head fixing, were carried out in a factory at Sivakasi in Tamil Nadu and the results were found to be very encouraging.

- Furniture: Traditionally, bamboo has been a widely used material for furniture making. It is a good substitute for wood. Furniture makers have commercialized the use of bamboo because of the scarcity and high price of wood.
- As a wood substitute: Since timber can no more be made available from natural forests due to environmental considerations, there is an urgent need to find suitable substitutes for wood. Since bamboo can be grown in any part of the country in a short rotation of 3-4 years, it is emerging as the front runner among possible substitutes for wood. The potential for bamboo has been known for long and a lot of research projects have been undertaken by various research institutes for converting low-cost bamboo into valuable wood substitutes. Technology is now available for commercial manufacture of products, which can be converted into wood substitutes.

· Edible shoot industry: In Orissa, the new sprouts of bamboo culms (karadis) are

procured from forests by local people to prepare pickles and and other food items. During rainy season, villagers convert the young shoots the of bamboo into small pieces like noodles, dry it and store for rest of the year. The dried and powdered shoots are called *hendua*. *Hendua* is a special delicacy especially in the western Orissa. It is added to a number of dishes prepared from vegetables and fish to have special flavour.



Available resources of bamboo and bamboo shoots are yet to be commercially

utilised to the extent possible in Orissa. Bamboo is mainly consumed at present by the paper and pulp industries and handicrafts etc. Keeping in view the existing resources and its utilisation, there is a great scope for commercial utilisation of bamboo in the food processing sector.

0	0
Moisture	88.80 %
Protein	3.90 %
Fat	0.50%
Minerals	1.10%
Carbohydrates	5.70%
Calorific value	43.00 Kcal.

The average food value⁵ of bamboo shoot is given below:

With its high moisture content, bamboo shoot can be processed into the following products:

- a) Canned Bamboo shoots:
 - i) In brine
 - ii) In curried vegetable
 - iii) In syrups
- b) Bamboo shoot candies
- c) Bamboo shoot chutney
- d) Bamboo shoot sweet pickles
- e) Fermented bamboo shoots
- f) Bamboo shoot powder

There is a good demand for bamboo shoot products (orient food) in both the local and the export markets, especially in countries like Japan, Singapore, China, Thailand, Hongkong and U.K. etc. It is one of the prospective areas for investment.

 Bamboo charcoal briquettes: Bamboo generates a lot of waste when processed for silvers, incense sticks, toothpicks, matchsticks etc. This waste can be effectively converted into charcoal and activated carbon. Bamboo charcoal is low in sulphur and is as good as any other coal. It is three times as porous as wood and hence is a much more effective fuel and odour remover than carbonized wood. Bamboo

⁵ Source: investinmanipur.nic.in/agro_food.htm

charcoal has great potential as it contains large amounts of minerals such as iron, manganese and potassium. The charcoal from bamboo has a higher calorific value than wood charcoal and is used by goldsmiths. It produces more than 7000kcal/kg, more than wood and half that of raw petroleum. After boiling and cleaning thoroughly in running water, bamboo is sun dried and can be used as deodorizer, water purifier, food preservative, dehumidifier and carbonized bamboo fibers.

- Application in tourism industry: Bamboo can be used to build resorts for eco tourism as it is a sustainable construction material and an alternative for wood. The state government has already taken an initiative to construct tourism sheds in the sanctuaries using bamboo as a major raw material.
- Bamboo power: Assam plans to set up pioneering environment- friendly power stations that run on bamboo to help meet the region's energy needs. This will be first of its kind where bamboo and bamboo wastes will be used to generate electricity. Such initiatives can be taken up in Orissa where gasification of bamboo for generation of electricity would help in solving the energy crisis.
- Bamboo in structural use: Because of its natural properties like renewability, easy workability and flexibility, bamboo is accepted as a versatile construction material. About one third of all bamboo in India is utilized for construction purposes like columns, beams, roofs, purlins and trusses. The various structural uses in bamboo are:
 - *Bamboo-grid reinforcement* Bamboo-grid reinforcement of the road base is used in case of village/small-town roads to make the roads very durable (It is used along with natural or synthetic fabric to prevent the entry of water from below and the sides)
 - *Foundations:* Bamboo is used in foundations, floors, partition walls, doors, windows, ceilings, roofs, ladders, cooperage and joinery. Its massive stems form posts, columns, trusses, rafters and purlins, while the usually thick-walled culms of larger diameter and closer nodes are employed in foundations
 - Scaffoldings- Bamboo scaffoldings are popular for use in high-rise buildings. Dendrocalamus srictus are commonly used as scaffolding material.
 - *Rafter- purlin-* Purlins are important components of the roofing system, which act like beams, support and roof grid and transfer the roof load to the trusses below. Long, straight culms of comparatively smaller diameter having thick walls are selected as purlins.
 - *Roof-grid* It is made by bamboo reeds or half or quarter-split bamboo culms. The individual pieces are first fixed over the purlins 25 cm apart like the

rafters running from edge to edge. Similar structures are wired over these perpendicularly with similar spacing to constitute a grid system to contain the roof covering materials.

- Bamboo in disaster management: Bamboo is suitable for housing in earthquakeprone areas. It is an essential structural material in earthquake architecture. Its strength and flexibility make it a viable material for building shelters that offer protection against hurricanes and earthquakes. They are resilient and light. They do not collapse easily as they have the capacity to absorb large deflections. Construction of bamboo-framed houses is recommended in regions of frequent earthquakes because they have excellent wind resistance strength.
- Bamboo reinforcement in concrete: The advantages of using bamboo as a reinforcing

material in concrete are its high tensile strength and its low cost. Bamboo is suitable for reinforcement in concrete for small span for structures and ancillary uses in building construction after due precautions. A process has been developed in the Forest Research Institute.

52



Dehradun to use bamboo in the construction of roof slabs, beams, electric posts, etc.

Betel vines: Bamboo is used for supporting crops like betel vines. Betel vine cultivators cultivate betel vines in specially made bamboo mat enclosures provided with interspersed long bamboo stakes for supporting the betel vine. The members of betel vines in the coastal area is fairly huge due to high demand from domestic as well as from countries like Pakistan, Bangladesh and Middle East, the demand for bamboo, therefore, is accordingly quite high.

Issues and Concerns

5

CHAPTER

Since colonial times, policy making in the bamboo sector has never been consistent. It has always recieved a step- motherly treatment both with regard to its physical status and use by the paper industries and bamboo artisans. With the growing demand in the urban and semi- urban areas, an inconsistent policy regime has made things even more difficult for the traditional users, i.e., paper mills and the artisans. Inadequate supply of raw materials have pushed those users to different means - for one it is probably a change of technology but for the other, a fundemental shift in the livelihood option. Needless to say that it is a complete failure on the part of the policy makers to carry out a timely assessment of the demand and supply to frame ways to balance the contesting demands of commerce, revenue and livelihood. Some pertinent operational irregularities are discussed below;

5.1. Operational issues and associated irregularities

 The Orissa Timber and Other Forest Produce Transit Rules, 1980 requires a Transit Permit to be issued free of cost by the DFO or the ACF for all forest produce in transit by land, rail or water. However, as per the Rules, no permit is required for the transit of some particular species like *Bambusa nutans* (Sundarkani), *Bambusa vulgaris* (Badi-baunsa) and *Bambusa tulda* (Bolangi-baunsa). With all the channels of government supply of bamboo to the public having virtually dried up, the exemption of such species is absolutely indispensable. These species form the bulk of the private supply, but they have not been able to meet the needs completely. Hence, Daba (*Bambosa bambos*) species is also often passed off as exempted commodity, which it is not. Here too, it is the officials at the forest department gates who allow this illegal practice – for a price.

- 2. None of the private growers issues vouchers or money receipt slips. The transporters arrange for the waybills, which help them in wrong assessment of taxes favouring them. Sales tax is levied at the rate of 12% of the sale price, other incidental costs, transport etc. But in the absence of a uniform or proper pricing mechanism and the unavailability of proper documents, it is left to the officials to assess the tax. In the process, the transporters and the officials connive to help each other. Similar is the case with entry tax when bamboo is brought in from the private growers of West Bengal.
- 3. The limits imposed by the Regional Transport and Highway authorities on the length of the item transported also allow the officials to earn a fast buck. Items transported in six-wheelers should be 18 ft. or less in length, but the end uses of long bamboo require it to be around 30-35 ft. Therefore, the retailers try their best to bring in bamboo in sizes that are in demand.
- 4. As the produce is not marked at the points of taxing or other checks, buyers have to undergo multiple, irritating checks and pay taxes several times on their way to the site of the end use.

All these factors have caused hike in the cost of bamboo. Often, it has become unaffordable for the end users. While the paper mills get a Sale Unit of Salia bamboo at their mill gates at the rate of Rs.2000, which comes to 83 paise per metre of bamboo, the other users availing bamboo from the retail counters get it at a cost of approximately Rs.5.00 a metre (30 ft long bamboo @ Rs.50).

5.2. Plight of Bamboo cutters

There are more than 60,000 bamboo cutters¹ across Orissa (courtesy: Bamboo Cutters' Association, Orissa), most of whom are struggling hard to eke out a living as bamboo operations in the state have been stalled since 2000. The resumption of operations in 9

¹ Bamboo cutters still hopeful

With an assured employment of 90 days at the most from October till August each production year, the bamboo cutters of Telengapadar were once better off than they are today. They do not have a secured livelihood any longer. Situated barely 15 kilometres away from Muniguda (Rayagada district), the revenue village houses 118 families, most of them landless. Around 45 –50 households directly depend on bamboo cutting for a large part of their earning, with Mohua and Sal seed procurement and sale augmenting their incomes. *(more...)*

Sl.No.	RMP ('94–'99)	OFDC Ltd ('88-93' &'03-0 4')
1.	Timely payment of wages	Payment of wages never timely
2.	More subsidiary operations like con-	No subsidiary operations
	struction ang maintenance of roads, rest	
	sheds, camps etc.	
3.	There was regular supply of food	No such facilities provided
	grains under food for work programme	
4.	Regular medical camps were being	No such activities undertaken
	organized	
5.	Strict instructions to adhere to cutting	No such instructions, also all the
	rules and regular silvicultural opera-	easily reachable clumps are worked
	tions were done	
6.	Awareness and training programmes	Nothing of the sort done
	conducted	

(Source: Conversation with the bamboo cutters of Gajalabadi)

divisions in 2003-04 has not been able to salvage their plight. On account of the 12th December 1996 ruling of the Supreme Court (banning all types of felling beyond the scope of the Working Plans without the approval of the central government), all types of felling were stalled in the divisions with expired Working Plans.

Bamboo cutting is not a very old and traditional occupation for the landless tribals and other scheduled castes. It is only in the last two generations or so that it has become the largest source of income for them. The abrupt end to bamboo operations has affected the livelihood of thousands of people with no alternative source on income.

Sorada Range of Ghumsur South division in Ganjam district of Orissa probably has the highest concentration of bamboo cutters. Yet, the cutters have no idea about the

^{...}Bamboo operations have been supporting their families for the last 40 years or so. But today, they are a distressed lot due to the non-operation of the coupes. 1996-97 was the last year of bamboo operations from the coupes in the neighbourhood Gadiakholla Reserve Forest. Unfortunately, the forest department overlooks the VSS at Telengapadar at their doorsteps and goes citywards in search of labour to carry out silvicultural operations, which take place at regular intervals.

Previously, OFDC and the paper mills did seek the services of the cutters of Telengapadar for bamboo harvesting and logging operations in neighbouring Ganjam and Gajapati districts. But now, the cutters have laid their axes to rest and adopted other means to stay alive. Some have started working as farm labourers, while others have moved out of the village as migrant labourers. Still others have started brewing country liquor. None of these vocations makes use of the potential and skills of the cutters. Though the working has resumed since 2005, their fates still hang in balance.



demand met by bamboo operations carried out by them. They do protest the stoppage of bamboo operations. But their only concern is their daily wages. It is not just the cutters, who face hardships. Persons engaged in subsidiary operations also face the same crisis. Whether it is an agency or a paper mill that works the bamboo coupes, appoints Supervisors and the Daily Rated Mates (DRMs) to arrange labourers and oversee bamboo cutting, the labourers as well as those engaged in subsidiary activities find themselves at the receiving end.

Working as they have been year after year on the bamboo coupes, the bamboo cutters have a good understanding of their gains and losses working under different systems.

5.3. Flowering

There were a number of reports about the flowering of bamboo in many divisions of Orissa during the period 2001-2003. But the forest administration chose to wait and keep a watch on the situation. Except some sporadic silvicultural operation, no other intervention was done. Though the state government declared such flowering as sporadic, experts viewed that such cases should have been termed as gregarious.

56

There were instances when a particular bamboo forest patch spread over more than one Division was affected by flowering. But reports by the individual Divisional Offices succeeded in fragmenting the affected patch; hence the intensity of the affectation.

Also, the regular communiqués between the Government of India and the state forest department over the years on the health of bamboo forests and flowering has not yielded any meaningful result. According to the Conservator of Forests, Working Plans Circle, Orissa, Cuttack (excerpts of a letter to the Secretary, FF&AH Department, Government of Orissa on 6/12/90): "In selected forest, the age of clump varies and accordingly varies the intensity of gregarious/sporadic flowering. The delay in flowering in poor sites is due to the effect of site quality, which is related with the growth, and storage of starch, sugar and other substances in the clump, which help flowering. In a well-managed forest, intensity of flowering is less in comparison to an un-worked forest consisting congested clumps. Intensity of flowering is more in area having more biotic interference in the form of grazing and fire in comparison to protected area."

The insights into the threat and causes of flowering of bamboo culms are no doubt unexceptionable. But there are several questions that come to mind. Have the bamboo forests of Orissa been regularly worked after the observations? What immediate steps were taken by the forest administration to ensure the continuation of bamboo operations when the Working Plans lapsed? What happened to the health of bamboo forests during the four years when there was no operation?

The response to flowering has to be swift for its manifestations are not only restricted to forests but also spill over to other economic activities. The phenomenon is often associated with famines. Flowering produces large quantities of seeds on which rodents thrive. Soon after, seed regeneration starts and the rats shift to the fields for food. This chain is a potential cause for famine.

5.4. Bamboo and wildlife

Half of the world's bamboo species are in danger of extinction, a United Nations report published recently has revealed. The report warns that unless steps are taken immediately to protect the endangered bamboo species, the dependant animal species could also be wiped out. The report, which appeared in *Nature* magazine, blames deforestation activities for the displacement of bamboo from its native habitat. A major reason behind the threat is the distinctive cycle of gregarious flowering and withering of bamboo. If a forest is cleared at the time of gregarious flowering, bamboo will not grow back. As a result, many species of animals like lemurs, pandas, gorillas and elephants might have to face an even greater struggle for survival. Orissa has a particular reason to take this warning seriously since the state has a good presence of wild animals. The wild elephants in Orissa regularly make headlines with their rampaging and destructive behaviour. For example, huge bamboo forest in Katidhara, Taleipadar and Athamallik forest division has been denuded over a period of time. This has resulted in destroying the elephant corridor covering from Satkoshia to Khalasuni sanctuary. While a disrupted corridor of movement has been trotted out by the Forest Department as a possible reason for such wild conduct of the big cattle, the ever-decreasing fodder base no doubt contributes to this phenomenon. Therefore, it is important that while allowing a large scale working of bamboo forests for commercial gains, every care must be taken not to disrupt the natural corridors as well as to ensure and constantly enhance the fodder base of the wild animals.

Various reports prepared by forest officials blame biotic interference for the flowering phenomenon. But it is not clear whether the large scale working of bamboo forests by the paper mills – or, for that matter, by OFDC – could also be identified as biotic interference.

5.5. Bamboo and VSS

About 9550 Joint Forest Management Committees (JFMCs) and another 10,000 community initiated protection committees operate in Orissa. However, these committees

A Case of betrayal.....

Paik Sahi is a village under Tangi Range of Khurda Forest Division. Villagers were protecting a patch of the nearby Patia Reserve Forest from 1989. In 1996, a VSS was formed in the village under JFM programme. Villagers were promised 50 percent of the harvest of the major forest produces like timber and bamboo. In 1997, Forest Department identified the bamboo forest under the jurisdiction of Paik sahi VSS for harvest and handed it over to OFDC for operations. The final produce was meant Chouduar based paper manufacturer, BILT. Villagers came to know about the FD decision when the harvest started. They strongly opposed the unilateral move of FD. Villagers stated that FD neither consulted them before taking the decision for harvest nor kept the promise of sharing the harvest. The strong opposition led to an open house discussion between the villagers and the FD officials. Finally the decision to harvest had to be rescinded.

do not have any community assets or a common resource base that could fetch them cash every year. The various NTFPs found in these managed areas are collected and sold individually. Timber remains the only common asset, but requires large gestation periods to mature.

Bamboo, widely found in these managed areas, could fetch immediate returns. Owing to its property of large production potentials, bamboo remains a common property of a committee. Regarding benefit sharing², the CFM Government Order No. 13, 12. 02. 2002 of the Andhra Pradesh says that VSS are entitled to 100 percent of the incremental volume of timber and bamboo harvested from the forest (in accordance with the agreed microplan or annual plan), as measured from a baseline of VSS formation (or in absence of a baseline as estimated and agreed by a majority of VSS members). However, the Forest Department of Orissa has no such clear-cut arrangements to allow the VSSs to harvest and sale bamboo. Being a nationalized item, bamboo becoming an asset for the VSS is quite difficult. However, many VSSs have been allowed by the department to procure bamboo from the protected areas as an interim harvest. Moreover, bamboo removal from the clumps is an essential silvicultural operation that aids the growth of the clump. It is very important that community is allowed to have something in return for their efforts in managing and protecting forests.

5.6. Raw material base: shift from bamboo to hardwood

In the aftermath of the National Forest Policy, 1988 and the irregularity in the availability of the required volume of bamboo during the post-nationalisation period, the Paper Mills in the state opted to take up plantation activities from 1990 onwards with the twin objectives of developing and establishing pulpwood plantations for future raw material requirement and to procure hardwood and bamboo to satisfy their requirement on a sustained basis. JK Paper went ahead with induction of new technology in its plants so as to favour more wood-based raw material utilization. The other operating paper unit i.e. SEWA experimented successfully an increased use of wood as opposed to bamboo.

To achieve its capacity production level of 75,000 MT of paper, SEWA requires 2 lakh MT of raw material. Bamboo can easily contribute 25-40 % of the total raw material demand of SEWA. But the constraints in the availability of bamboo has forced the mill to restrict the use of bamboo below 25% of its total raw material requirement.

²Bamboo in VSSs of Andhra Pradesh (Harvest, Marketing and Benefit Sharing), July, 2003 Centre for People's Forestry, Secunderabad

	Bamboo	procurem	ent by BILT	in the year	r 2003-04	
	Seller					
Source state	Government		Private Growers		Total volume	
	Species	Volume (in MT)	Species	Volume (in MT)	procured (in MI)	
Orissa	Salia	10,000	7000		17000	
Chhatisgarh	Salia	20,000			20,000	
Assam			Daba,	5000	5000	
			Sundarakani			
Andhra			Salia	2,000	2,000	
Pradesh						
Total		30,000	14,000		44,000	

⁽Source: BILT, Jeypore)

The raw material composition (species and volume wise) for SEWA unit on July 31, 2004, which of course was uniform throughout the month, is as given below.

]	Raw Mater	rial composit	tion for th	e month of July (SEV	VA unit)	
Species	Bamboo	Eucalyptus	Casurina	(Acacia, Subabul, Chakunda, Juliflora)*	Mango	Total
Ratio	34%	15%	10%	25%	16%	100%

(Source: BILT, Jeypore)

*Any shortage in this category to be made up with Eucalyptus.

The raw material – hard wood and bamboo - requirement at JK Paper Mills is being procured from Orissa, Andhra Pradesh, Chhattisgarh, Tamil Nadu, Karnataka, Assam etc. By the year 2003, JK Paper Ltd had raised hardwood plantations in more than 31,024 ha of area in Andhra Pradesh, Orissa and Chhattisgarh. Besides, it has also distributed 1,432 lakh of hardwood saplings to farmers across these states. In another 4 years, it is set to reap the benefits of these captive plantations. It is a moot point how the government will earn revenue and provide for the livelihood needs of the people when the paper industries become self-dependent with their own captive plantations.

5.7. Financial impact of non-working of bamboo in Orissa

In Orissa, an average of 0.2 million sale units of industrial bamboo is produced annually. Due to non-operation in the last 4 years (except for some series that were worked in 2003-04 crop year,) there have been heavy financial losses.

BAMBOO OPERATIONS AND THE VOLUME OF TRADE, EMPLOYMENT AND REVENUE IN ORISSA

Industrial Bamboo production (avg.) per annum in the star S.U.Total value of bamboo trade up to depot.	te: 0.2 million
(At a price of Rs.1317.00/ S.U. as fixed by	
theEmpowered Committee):	Rs. 260 million/Annum
Establishment expenses, overhead expenses	
and other expenses from depot to mills:	Rs.140 million/Annum
Total Value of Trade:	Rs. 400 million/Annum
Total Value of Trade:Revenue as Royalty at a price of Rs.350.00/S.U.:	Rs. 400 million/Annum Rs. 70 million/Annum
Total Value of Trade:Revenue as Royalty at a price of Rs.350.00/S.U.:Sales Tax @ 4%(0.4 X 1317 X 2 Lakh):	Rs. 400 million/Annum Rs. 70 million/Annum Rs.10million/Annum
Total Value of Trade: Revenue as Royalty at a price of Rs.350.00/S.U.: Sales Tax @ 4%(0.4 X 1317 X 2 Lakh): Silvicultural expenses paid to PCCF @ Rs.35/S.U.	Rs. 400 million/Annum Rs. 70 million/Annum Rs. 10 million/Annum Rs. 7 million/Annum
Total Value of Trade: Revenue as Royalty at a price of Rs.350.00/S.U.: Sales Tax @ 4%(0.4 X 1317 X 2 Lakh): Silvicultural expenses paid to PCCF @ Rs.35/S.U. Wages paid to bamboo cutters/workers:	Rs. 400 million/Annum Rs. 70 million/Annum Rs. 10 million/Annum Rs. 7 million/Annum Rs. 105 million/Annum

(Source: JK Corp. Ltd)

The non- working of bamboo caused collossal loss to each and everybody associated with it. The State Government lost to the tune of Rs. 350 million under heads of royalty, tax, silvicultural expenses etc. The workers lost about 8 million person days or more and the loss to the bamboo artisans was terribly high to be actually estimated. Roughly, the loss was to the tune of Rs.160 crores (1600 million) in the last 4 years. The Audit Report of the Auditor General of Orissa for the financial year ended 31 March, 2003, has maintained, "Although the responsibility of extracting and trading in bamboo was entirely entrusted to the OFDC, no agreement was made with the agent either due to the unwillingness of the agent despite having valid Working Plans for 12 divisions or due to expiry of Working Plans for 11 divisions during the crop years 2000-01 and 2001-02." This was the reason no bamboo operation was carried out in any of these forest divisions with sizeable bamboo potential during those 2 years. "This resulted in loss of bamboo production of 4,31,741 sale units valued at Rs.28.06 crore in the shape of royalty payable by the agent" the report added.

Putting the PCCF of Orissa under the scanner, the report³ claimed, "The PCCF did not ensure the working of bamboo operation by the agent nor did he take any alternative steps for 'departmental working' for augmenting government revenue." The report also raises concern that even after the PCCF was apprised of the situation, he did not initiate any remedial measure to prevent further loss of revenue. It also held the OFDC responsible for the loss of revenue due to non-payment of royalty dues to the PCCF. The total amount due on OFDC towards royalty on bamboo since 1988-89 is Rs.96.2 million. The office of the PCCF claims to have reminded OFDC about it time and again.

5.8. Loss to forests

Departmental working of coupes used to be the practice in certain ex-state areas before 1949. However, departmental working was given up in favour of working of coupes through contractors. From 1988 to 1992, bamboo coupes were worked by a government agency after which the responsibility was entrusted to RMPs. It has been alleged both by the government and the public at large that the working of coupes by contractors/ private parties/RMPs is responsible for illicit felling in and around the area leased out to them. The O.F.D.C./Paper Mills attempted to achieve estimated production levels as per the Working Plan even when bamboo forests were fast reducing in quality and area.

Similarly, in the absence of any legal framework for supply of bamboo to the public, the health of bamboo forests deteriorated consistently. Having multiple uses, it continued to be cut in large numbers. Though it was not cut from the coupes of OFDC and Paper Mills, it continued to be harvested in other coups resulting in excessive and unsustainable removal.

5.9. Bamboo and Working Plan

There has been a continuous debate over whether or not the leasing out or working of bamboo forests comply with the provisions of the Forest (Conservation) Act, 1980. It has been alleged that prior to nationalization of bamboo, the working of bamboo lease holdings by the paper industries left many areas devoid of bamboo, a clear violation of the FCA. However, the forest administration maintains that FCA is not violated in the process as bamboo working is permitted as per the instructions laid out in the concerned operational Working Plans, which are framed taking into consideration the provisions of FCA and are approved by the Government of India.

³ The Audit Report of the Auditor General of Orissa for the financial year ended 31 March, 2003,
Moreover, bamboo working is not just a harvesting process. The Working Plan prescribes a range of other regeneration activities along with harvests that have to be ensured. When a clump is worked, the older bamboos are removed to allow natural regeneration. Soil filling of the clumps and gap plantation is also carried out. Furthermore, the agency that works the bamboo series and the forest department ensure protection of the clumps from human and animal exploitation.

Between 2000-2004, bamboo operation in the state could not be pursued because many divisions did not have valid Working Plans⁴. In 2005, the Government of India, Ministry of Environment and Forests passed orders to start bamboo operations in all the 35 forest divisions of the state having bamboo Working Plans or Working Schemes. But the decision is fraught with risks since it could lead to a glut in the market, making disposal of such a huge stock very difficult. The need for proper market assessment prior to approval for bamboo operations can hardly be overstated.



⁴ In the year 2004- 05, after the fresh arrangement was made with JK paper mills and M/S BILT, (Sewa) as RMPs for the sale of unsold stocks, bamboo operations started in 31 divisions and 91,202 M.T. of bamboo was lifted as against the target of 75000 M.T.

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6 CHAPTER

Suggestions and Recommendations

Bamboo is available largely as a forest resource but its use from forests is decreasing while there is increased growing in homesteads and private plantations by communities. Bamboo is familiar and traditionally used by most people especially the poor, tribal and other communities. Without the involvement of the communities, the development of the sector will not take off because bamboo is botanically an annual tree-like crop with agricultural characteristics, manual harvesting needs, local transportation, primary processing all of which cannot be done without the central involvement of communities. Diverse bamboo-based industries including pulp and paper and the technological advancements made in India and other countries, if applied to Orissa can result in bridging the gaps in development that exist, and this could be done in a way that builds local knowledge, skills and ability so that the benefits could be sustainable.

There is hardly any doubt that the increasing use of bamboo can become the engine of rural development because of its unique properties as a material that enables the rural poor to not only grow but also process the bamboo, and participate in a symbiotically direct manner, in the building of houses, in industrial activities, and the production of value-added products that meet demands of mainstream consumer products and markets. Institutional markets of the government should be made available to spur and secure the growth of bamboo sector while looking at wider domestic and export markets. The objectives can be achieved through communitydriven and community-centered focused programmes implemented locally by non-governmental organizations and community-based organizations in collaboration with specialized technical and development financing agencies with enabling support, facilitation and financial support provided by government and international and bilateral agencies.

However, one crucial aspect of bamboo development in Orissa is an immediate change of attitude and perspectives of policy makers towards bamboo as a resource for commerce, revenue and livelihood. Past is replete with examples of inconsistent, irresponsible and whimsical policy making destroying all opportunities emerging out of bamboo. The the present shows no signs of certainity and consistency, though there is still hope that the approach may change in future.

The recommendations¹ for the bamboo sector development is as follows:

6.1. General Policy Prescriptions

Some of the policy issues that need to be addressed if a bamboo-based economy is to be promoted include:

- 1. Orissa should have a bamboo policy like other states to pronounce its commitment to the sector.
- 2. Bamboo should be taken out of nationalised forest produce declared under Orissa Forest Produce Control of Trade Act 1981 and needs to be denationalised
- 3. An Orissa Bamboo Development Board (OBDB) should be formed as an apex, autonomous and empowered body under the Societies Act of 1860 headed by a professional CEO. The board members should constitute of representative departments like rural development, forest, watershed, industries, tribal affairs, social welfare, agriculture, public works, financial institutions, small scale industries and technical institutions like IPIRTI, TIFAC and CIBART, and others can be coopted as and when necessary.
- 4. At the village level, a specialized federating non-governmental body called the Orissa Bamboo Development Centre (ORIBAMBOO) be formed to professionally implement the bamboo activities. This body will be managed by staff appointed on contractual basis and is tasked with developing a technical and community extension, training and enterprise development system into villages where bamboo is relevant through local NGOs and CBOs who have built up rapport with the communities especially SHG groups over time.
- 5. Separate specialised and small technical centres in the non-governmental sector managed by the Orissa Bamboo Development Centre to facilitate coordination

¹ The recommendations are compilations of our discussions with policy makers including forest officials, forestry professionals, activists, NGOs and interest groups and our observations in field.

with field needs, or NGOs/private sector should be set up immediately: (a) Bamboo Propagation Centre (for generation of superior mother stock and introduction of superior bamboo species), (b) Bamboo Product Design Centre, (c) Bamboo Housing and Construction Centre and similar specialized largely self-sustaining technical support bodies in the non-governmental sector should be set up with 50% budgetary support from government.

- 6. Revoking/ modifying transport permit system in the state so that bamboo can be easily accessed and cultivated.
- 7. Enforcement of silvicultural operations as prescribed, bamboo-cutting rules, and training provided to the participating labour or JFM/CFM in this regard.
- 8. Benefit sharing of bamboo produce in JFMs should be streamlined. Since bamboo is a nationalized produce, benefit sharing from bamboo do not accrue to the communities and so they have no economic interest in protecting and sustainably harvesting bamboo forests. The communities (CFM/JFM) should be entitled to get 100 percent yield of bamboo from forest managed by them during harvest, as in case of Andhra Pradesh instead of 50 percent as is envisaged in our state.
- 9. Revision of bamboo cutting rules should be carried out at war footing. Actual rules allow only mature bamboo cutting after 4 years, while craftsmen require green bamboo of 2-3 years. A sustainable solution lies in a zoning system with rotational harvesting of green bamboos every fourth year. Necessary rules needs to be made for providing space for shoot cutting which is prohibited in the bamboo cutting rules.
- 10. Favourable legal framework to be designed to encourage bamboo plantetion. For instance, bamboo is not yet the preferred plantation species given the economics, the grazing of shoots by grazing animals and the competition by other species, but incentives and a proactive policy could change that in the near future.
- 11. The supply of bamboo to artisans rules of 1980 needs to be modified. It should cover all types of forests not only protected forest as envisaged in the rule. Along with the registration, lesser value for bamboo etc needs to be worked out after discussing with the communities and cooperative s engaged in such trade.
- 12. Transit permits will be required only for *Dendrocalamus strictus* and *Bambusa bambos*, which are largely found in the forest. The existing system of TPs for bamboo from government forests and no transport permit for village bamboos to continue. In addition, the knowledge of the court decision that once bamboo is converted to a product like bamboo mat, these are not subject to transport permits needs to be widely made known to the community and all stakeholders.

- 13. Bamboo based tourism should be promoted in the State. The tourism department is building lodges for eco-tourism and bamboo is a sustainable construction material and an alternative for wood.
- 14. Integrating bamboo plantation and infrastructure into watershed development, wasteland development and disaster preparedness programmes
- 15. The State Government should consider the exemption of royalty and relaxation of working cost in order to reduce the present market price of long bamboo sold to the artisans, which is found to be dearer than the iron ore for ensuring a reasonable profit margin in their hands to sustain themselves.
- 16 Integrating bamboo-based livelihood options into poverty alleviation programmes and programmes that target the SC/ST population
- 17. Bamboo harvesting, storage and transport should be made non-exclusive so long as sustainability of the resource is ensured and not handled only by the OFDC which may also participate in the process as another player.
- 18. The revenue collection policy for bamboo such as royalty should be changed from a resource-centred revenue collection system. The total collections should be made available directly to the Orissa Bamboo Development Board for use as seed money for supporting development activities in addition to other funds, and not for its staff costs or overheads.

6.2. Resource management and use/production, research

- Survey and demarcation of bamboo areas in reserve forests and community lands should be made using Global Positioning System and a Geographic Information System database should be prepared with the help of the forest department and CFM/JFMs. Homestead and private plantation bamboo also should be inventoried.
- 2. Bamboo from forest should be supplied by the JFMs on a sustainable basis based on a micro-working plan. The bamboo resource should be monitored by the forest protecting community both JFM and CFM and they should be authorized to directly issue transit permits.
- 3. In case the Government is going for cultivation of bamboo in the VSS areas under different schemes and programmes, adequate benefit sharing mechanisms need to be set in place to avoid conflict during harvesting. The is to remind once again that Orissa does not have a proper benefit sharing mechanism with forest protecting communities so far as bamboo harvesting is concerned.
- 4 The growing of desirable bamboos for artisans uses and other enterprises/ industries on homesteads and private or community common property lands will

be actively encouraged. Emphasis on bamboo plantation in wasteland/community land/backyard/blanks in forest areas.

- 5. Improved planting materials should be raised consisting of desirable species and superior clones where possible, different clones to reduce the possible impact of simultaneous flowering.
- 6. Supporting and subsidizing bamboo industries with value addition for the local community like bamboo mat board and corrugated bamboo roof sheets, matchsticks and incense sticks.
- 7. Promoting the use of bamboo and bamboo products in government infrastructure development and housing programmes.
- 8. To tap the edible shoot market, bamboo shoot harvesting on a sustainable basis should be incorporated into the bamboo cutting rules, which will be applicable only to bamboo on forestland. Harvest may also be done in shorter time frames relevant to usage, so long as the resource regeneration and overall stocking is not compromised.
- 9. The possibility of extending crop insurance to bamboo should be explored since this will also help secure the extended bank finance while providing a safety net to the community.
- 10. Evaluations will be undertaken of closed plywood mills and the conversion of these to bamboo processing units will be enabled if feasible and linkages established with community supply groups.
- 11. Case studies, R&D and technology development and adaptation projects would be taken up on a need basis. The projects should be designed ORIBAMBOO, competent NGOs, other agencies including private sector and approved by OBDB.

6.3. Trade and Markets

- 1. Industrialized handicraft units with groups of artisans as the focal point should be set up. This will enable the production of high quality in large volumes required by value-added demanding markets including export markets. Sale of artesian products will be facilitated though the development of outlets as independent private enterprises.
- 2. The industrial use of bamboo should be actively encouraged, facilitated, and secured through a guaranteeing of the government institutional market such as the IAY housing scheme, operation blackboard, sanitation, tourism and other government purchases of bamboo products should be ensured. Industrial units based on market opportunity analysis and fulfillment of community needs like roofing sheets, mat boards, shuttering plywood, etc should be set up.

- 3. Small-scale units such as matchsticks and agarbatti sticks and pencils should be set up. The possibility of new bamboo products like activated charcoals, bamboo powder as fodder, etc. should be explored further with respect to different bamboo species.
- 4. Domestic and export markets by linking with existing DC (handicrafts), INBAR global marketing project linkages, and private sector and other initiatives should be tapped. CII, FICCI and other bodies should also be involved in planning and implementing strategies in this regard. As the sector develops, it is recommended that an Orissa Bamboo Chamber of Commerce be set up to facilitate the interface of business with government and other agencies.
- 5. For financing bamboo-based development, financial support should be accessed from existing government programmes like watershed development, SGSY, handicrafts development, RLTAP, WORLP, OTELP, etc., and donor-aided projects like the Western Orissa Livelihood Project and the Revised Long Term Action Plan for the KBK region. Finances can also be accessed from development banks like NABARD. Financing will have to be secured especially for the non-KBK bamboo districts since these do not have comparable existing funding opportunities that can be leveraged.
- 6. Financing to the community should be given in a manner that reduces the direct risk to the BPL community who are most vulnerable, and the financial risk covered through hypothetication mechanism of the plantings, and enterprises, or through venture financing means of equity rather than debt.
- 7. The OBDB with NABARD or similar financing institutions should also guarantee the buy-back of the produce at a pre-determined price with the freedom being given to the community planter to sell the produce to another buyer should there be a higher price opportunity.
- 8. The buy-back arrangements should be linked where possible to processing enterprises and industries set up by private entrepreneurs and also by community investment in manufacturing units as is being done in Tripura where 100% equity of the factory will be made over to the community in return for payment in the form of bamboo or in cash.

Annexure-i

Outting rules for Salia bamboo

Being the most important commercial species, the working of Salia bamboo is specially guided by prescriptions in the Working Plans. A new set of cutting rules, approved by the Government of India, was adopted in 1990. Generally, the rules are uniformly applicable to all treatment types.

A felling cycle of 3-4 years is generally adopted and prescribed in the Working Plans for harvesting bamboo from forests. In the process, sufficient number of old culms and all 1-2 year old culms are left aside. Under intensive cultivation, the best management practice is to harvest culms more than 3 or 4 years old. Above all, annual felling is extremely beneficial from the point of production and easy extraction. The bamboo forests are segregated into coupes, which are worked out by rotation in a four-year felling cycle.

Karadi (culm up to one year of age) and the bamboo culm over one year but under two year of age will not be cut under any circumstances. Culms older than one years and older than 2 years but less than 3 years of age are to be retained in the clump. Their number should not be less than that of karadies. A minimum limit of culms (2-3 years old) has been prescribed to be retained in a clump. For clump quality-I, the number is 20, for clump quality-II 15 and for clump quality-III the number of culms to be retained should be 10. Retention is advocated to ensure a sustained yield year after year.

In particular, rhizomes will not be dug. It is extremely important that the height of cut should be 15 cm to 45 cm from the ground level. In no case should the cut be below the first prominent node from the ground. The cut shall be made with a sharp instrument to ensure that the stump remains intact without splitting. Lops and tops of bamboo will be simultaneously cleared to avoid fire hazard. And they shall be piled or placed at a distance of at least one metre from worked clumps. It is essential to remove climbers from all clumps.

Bamboo strips should never be used for tying bamboo bundles. Also, no felling should be permitted from 1st July to 30th September each year. All felling and transport of bamboo in the sanctuaries shall be completed by the end of April positively. In case of gregarious flowering in sanctuaries, the working period could be extended up to end of June.

(Source: The status of Bamboo & Rattan in India J.K. Rawat & D.C. Khanduri)

Social Demography of Bamboo Artisans

Of the many districts with large population of bamboo artisans, Boudh has pride of place for its rich history of bamboo handicrafts. The bamboo products from Boudh have a very good market in Bhubaneswar, Nayagarh, Cuttack and Berhampur. Around 2000 artisans residing in more than 25 villages of the district are engaged in the business. But they find it very hard to make a living out of it as they no longer have access to green bamboo. They face myriad problems in saving their traditional occupation.

Most of these artisans settled in Boudh district five generations back. Having migrated from Dasapalla and other adjoining areas of the middle Mahanadi basin, these artisans generally hail from the *Betera* and *Mahara* community. In some remote villages of Boudh adjoining deep forests, there are tribes like *Kondh* who also are expert bamboo artisans. Like most other artisans of Orissa, the *Beteras* and *Maharas* belong to the backward sections and have low social esteem. Some of these communities also belong to the so-called untouchables. For generations, they have remained landless. It is their skill in bending bamboo strips that has fuelled their hearths.

Caste and status of bamboo artisans of Boudh

Caste/Community	Status
Mahara	Scheduled Caste
Betera	Not Categorised
Kondh	and other tribes Scheduled Tribe

(Source: RCDC field study, 2004-05)

Three hundred and sixty-six families of *Betera* community living in Boudh are yet to be scheduled, whereas the people engaged in the same profession and having the same socio-economic status elsewhere have been scheduled. The *Mahara* caste in the same district and in Sambalpur, the *Dom* caste in other parts of the state, and the people of *Patikar* caste of Angul and Dhenkanal belong to the Scheduled Castes category. On enquiry with the Revenue Circle Office, Baunsuni Circle in Boudh district, it was found that the *patta* (Record of Rights of land) of the artisans mention their caste to be *Betera*, which is not included in the Scheduled Castes list issued by the state. What has kept hope alive for the artisans of Boudh is a high demand for bamboo-based products both within and outside the district. The large number of artisans manages to collect green bamboo culms even though they have to pay a heavy price for them and produce items out of them.

Annexure-iii



Sl. No.	District	Working members	Caste/ Community	Status	Source
1.	Boudh	2000	Betera	Unscheduled	Maa Mangala Beta Baunsa Samabaya Samiti limited, Boudh.
2.	Sambalpur	5000	Mahara & Turi	Scheduled Caste	Gaurahari Kar, Ex- President, Turi Patikaar Mahasan-gha, Sambalpur
3.	Nuapada	2160	Paharia/ Kamar	Unscheduled Abhiyan	Sajaag and Sahabhagi Vikash
4.	Kalahandi	600	Paharia/ Kamar brethren	Unscheduled (Their Abhiyanin Chattisgarh and MP have been recognis -ed as a sched -uled tribe)	Sajaag and Sahabhagi Vikash
5.	Bolangir	Not available	Mahara, Turi and 150 Paharia households	Paharia- Unscheduled	Sajaag and Sahabhagi Vikash Abhiyan
6.	Bargarh	Not available	Mahara, Turi and Paharia	Paharia- Unscheduled	Sajaag and Sahabhagi Vikash Abhiyan

7.	Nayagarh	2400	Hadi, Dom	Scheduled Caste	Jungle Surakhya Mahasangha, Nayagarh
8.	Koraput and other coastal districts	Not available	Dom, Telegu and Kondhs	Scheduled	RCDC
9.	Keonjhar	2863	Dom	Scheduled Caste	RCDC
10.	Mayurbhan	j 5366	Turi, Dhanwar	Scheduled Caste	RCDC
11.	Sundargarh	3302	Turi, Dhanwar and Ganda	Scheduled Caste & Tribe	RCDC
12.	Ganjam (Ghumsur South Forest Division)	1722 Dom	Mediri,	Scheduled	Report on Bamboo artisans of Ghumsur (South) Division, Ganjam, by Prem Kumar Jha, I.F.S & Uma Nanduri I.F.S (Wastelands News, Aug-Oct 2002.
Tot	tal	25,413			

♦

Source: Study caried out by RCDC in 2003-04 through out Orissa.

The economics of bamboo weaving and selling of bamboo products is very much dependent on the prices of the raw material. The influences, losses and gains in the business were established by close interactions with artisan families of Bapuji Nagar colony in Boudh NAC and Patrapalli village of Baunsuni Gram Panchayat in Boudh.

Situated in Boudh NAC, Bapuji Nagar houses 41 families of artisans of *Betera* caste. All the families are members of the registered co-operative *'Maa Mangala Beta Baunsa Hastashilpa Samabaya Samiti Limited'*, the only one in the entire district. It was registered on 17th September 1999. However, difficulties in procurement of bamboo stocks render them jobless for the greater part of the year. Sometimes, they set out with their bullock carts for the Reserve Forests (more than 100 kms to and fro) in Kantamal Range in Boudh Forest Division to procure bamboo at a fine of Rs. 3 per piece. Overheads raise the costs to Rs.20 a piece.

Artisans mostly trek long distances carrying their products to the local *haats* of Palsaguda, Dahia, Boudh, Birmaharajpur, Manamunda and Baunsuni. Both men and women carry their products to the markets. Another trading system also operates in Boudh wherein the artisans themselves visit the villages, where the demand lies, and stay there to deliver the orders. Usually, a single artisan family moves to a village. The goods are either sold or

IIOuu	Toutets by men.						
Sl. No.	Product	No of bamboo culms used	Number of man- days involved	Selling price (SP) in Rs.	*Price of a (SP/no. of		
			(From procurement		mandays)		
			to marketing		in Rs.		
1.	Taati	15	6	300	50.00		
	(15x5)sqft.						
2.	Doli	15	6	300	50.00		
3.	Nudura	20	8	500	62.50		
4.	Bojha	1	1/2	20	40.00		

Products by men:

(Source: Field study, conversation with the artisans of Patrapalli, Baunsuni, Boudh, 2005)

*Excluding the price of bamboo, which many a time costs about Rs.10-20 a piece, if not collected illegally from the forests.

exchanged for kind. But most of the times, the artisans are left with a meager sum in their hands at the end of the day. It is only when artisans manage to access green bamboo illegally and free of cost that they get some return.

Usually men travel long distances and procure bamboo from the forests. They get it stripped in the forest itself and carry them back in bundles. Then the bundles are thrown into water for seasoning. It takes at least 2-8 days for the strips to get ready for weaving.

After days of hard work and investment in other forms, baskets and other utilities are readied for the markets. Taking into consideration the cost of bamboo, the cost of transportation wherever applicable), colours and dyes used, the rate of a person-day of work, on an average, comes to Rs. 40. In the absence of other livelihood options, artisans are fighting a hard battle to perpetuate their traditional occupation even though the supply of bamboo is on a continuous downslide.

Sl. No.	Product	No of bamboo culms used	Number of Woman days involved (From procurement to marketing	Selling price (SP) in Rs.	*Price of a Woman(SP/ no. of Woman- days) in Rs.
1.	Bhogai	1⁄4	1/2	16	32.00
2.	Changudi	1⁄4	$1/_{2}$	10	20.00
3.	Koola	1/2	1/2	16	32.50
4.	Baunsia	1/2	1/2	15	30.33

Products by women

(Source: RCDC field study, Conversation with artisans of Patrapalli.Boudh, 2005)

* Excluding the price of bamboo, which many a time costs about Rs.10-20 a piece, if not collected illegally from the forests.

Women also work shoulder to shoulder with men in the trade. Sometimes, women too move to the forests and collect bamboo. They also go through all the routines that men do. They even visit the weekly markets to sell their produce.

Women manage to get back Rs.20-25 per day of hard work they invest to weave articles from bamboo. In the absence of any assistance from any government or non-governmental agencies, the artisans find it very difficult to keep their business afloat. Youths' Council for Development Alternatives, a Baunsuni-based non-governmental organization had, in 2000, made financial assistance available to the *Betera* artisans of Patrapalli. However, none of the artisans has been able to repay the loans yet.

Annexure-v

Sost-nationalization (1988-2004) production of Bamboo by OFDC (with RMPs or alone)

Year	Production (in S.U.)		Sale	
	I.B.	C.B.	I.B. (S.U.)	C.B. (nos.)
1988- 89	248807	8926	233068.74	3124082
1989-90	231949	5680	230692.49	1988279
1990- 91	213987	5644	208807.39	1536875
1991- 92	233122	4385	229579.39	1311437
1992-93	241451	3235	234006.91	1079308
1993- 94	238857	2512	232017.60	84450
1994-95	238110	1902	227918.40	628953
1995-96	215269	2534	206657.60	875122
1996- 97	241301	4545	238093.38	1513750
1997- 98	205053	2820	185708.82	983723
1998- 99	117959	1728	99990.38	5834274292
				(dabba)
1999- 00	109127	3348	95252.00	7848638448
				(dabba)
2000- 01	7436.08	37	7436.08	
2001- 02	No working	-	-	-
2002- 03	26123	125.24	210.62	
2003-04	15166	297.34	15311.95	
2004-05	33057.028	45854	60910.00	
		(in pcs)		

(Source: OFDC Ltd)

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76

Intervention initiative for alternative use A case of Ply –Boo Industries, Mahuda

Fifteen years ago, a bamboo- based industry was set up in Mahuda, a place around 8 kilometers away from the district headquarters of Ganjam district, Berhampur, probably the first of its kind in the country.

The production chain process of bamboo mat products passes through a series of stakeholders. Villagers collect and weavers prepare the mat boards. These mat boards reach the industry through middlemen, where it is finally transferred into final products.

Production Chain



Almost all the final products are designed for domestic use. It ranges from small household articles like pen stands, newspaper holders, mobile stands, letter holders, key ring holders to furniture like tables, computer stands, TV stands, shoe racks, sofa sets, table lamps, tea poys etc. The products are foldable and hence are easy to handle and occupy less space when not in use.

The products have ample market opportunity both inside and outside the country. As per a rough estimate, nearly 60 to 70 percent of the total products are sold in exhibitions held in Hyderabad, Lucknow, Delhi, Ahmedabad, Jaipur etc. Dealers from Bangalore, Delhi, Pondicherry etc have a regular marketing tie up with the unit and purchase 20 percent of the products bimonthly. There are also incidences of direct consignments from all over India.Apart from the external demand, the products have a good local market in Berhampur, Bolangir, Malkangiri, Parlakhemundi etc.

The turnover was Rs. 2 lakh in the initial year 2003, which increased 9 fold and reached Rs. 18 lakh in the year 2004. The management expects the turnover this year, i.e. 2005, might increase nearly 3.5 times and reach Rs. 60 lakhs.

Technology used

Mat Ply board/ Bamboo Mat Board (BMB)

BMB is essentially a layered composite comprising several layers of woven mats having excellent internal bond. It is resistant to fire, decay, insects and termite attack and has better mechanical properties compared to waterproof plywood. 0.6-0.8 mm thick silvers are used for weaving bamboo into mats. The products vary from two to five layers. Common BMBs are made of thick coarse mats. Thin boards are mainly used as packaging and covering material. The splitting and weaving operations can be done in rural households without complicated equipment.

Bamboo Mat Veneer Composite (BMVC)

In BMVC, wood veneers are placed in between the layers of bamboo mats. The properties of BMVC depend upon the mechanical properties of the wood veneers that are placed in between the bamboo mat layers. Investigations have shown that the strength of a panel made by plantation timber is substantially enhanced when made in combination with bamboo mats.

Value added product (By- products)

BMB and BMVC are converted into innovative household utilities, furniture, construction items like door shutters etc. and marketed at state and national level.

Product specification

Mat boards are prepared taking the market demand into consideration. Normally, the size of the board is 6 feet long and 4 feet wide. The thickness varies from 2 millimeters to 12 millimeters. The rate of the board starts from Rs. 18 for 2 mm thickness to Rs. 65 for 12 mm thickness. Though comparatively costlier than other commercial ply available in the market, the products are durable, water resistant and termite resistant. It is evident from the growing demand of the product that there are a good number of satisfied customers who do not sacrifice quality for price.

The producer, however cited erratic availability of raw material as one of the crucial issues that has created difficulty for the industry to keep pace with the growing market demand. Besides, harassment of raw material procurers, artisans, non-cooperation by the Forest Department, ambiguous policy framework and ignorance of the collector are some of the major bottlenecks. Inspite of the abundant exploitable bamboo resources in the state, the unit is currently purchasing a lion's share of its raw material from other states like Assam and Tripura, he pointed out. Though there is a heavy demand for mat boards having 8 feet length and 4 feet breadth, the unit is having machinery to produce 6 feet X 4 feet size. So, the size of goods produced does not always suit the market demand. Owing to lack of weaving and drying machines, the activities are done manually. Drying takes a lot of time and space in the rainy season. Presently, fund is a major constraint for upgradation and automation of the unit.

Future plan

In order to expand the present business, a proposal has been submitted to National Bamboo Mission for support. The said proposal has been approved and support in the form of machinery will be received in the near future.

Last but not the least, there is a future plan for developing an organized market network in different parts of the country, which will cater to the needs of the customers with immediate effect.



78

Samboo cutters ask state to impose heavy entry tax on bamboo and hardwood

Since 2000, owing to non-revision and suspension of Working Plans, bamboo working has been stalled. In the meantime, paper industries in the state, the bulk consumers of the produce have shifted their raw material base from bamboo to hardwood. Also they have identified neighbouring states and private growers to source their vastly reduced bamboo requirements. In such a situation, more than 65,000 bamboo workers of the state are awaiting jobs for their hands. **Dandapani Mohanty,** one of the founder members of Bamboo Cutters Mazdoor Union (BCMU), President of Ryot Kuli Sangram Manch speaks to RCDC about the strategy that BCMU is going to adopt to break the deadlock. Excerpts...

RCDC: Have you estimated the losses – the adverse economic impact, loss of livelihood, health of forests etc. – after the working of bamboo was stopped in 2000?

Dandapani Mohanty: More than 6 lakh tonnes of bamboo remains in the clumps affecting the health of bamboo forests. Around 65,000 bamboo workers, who earned their livelihood working in 325 bamboo forests in the state, are now facing deprivation. There are no alternative employment opportunities for them. In the period 2000-03, the overall economic loss of the state was to the tune of Rs.150 crores. That includes Rs.43.50 crores in terms of royalty, Rs.4 crores as sales tax and Rs.24 crore towards wages of labourers as direct losses and much more in terms of indirect losses.

A majority of the cutters are now dependent on timber theft and sale. Timber is in danger. Throughout southern Orissa, the bamboo cutters are heavily into timber trade. Clump congestion has made bamboo forests more susceptible to fire besides creating hurdles for wildlife movement.

RCDC: Everything went well until 1999-2000 crop year. So, what are the factors that led to the sudden non-working (of bamboo coupes)?

Dandapani Mohanty: The simultaneous expiry of the Working Plans in many bamboo divisions and the subsequent suspension of the same in the rest of the divisions were the reasons for the closure of bamboo working in the state. The unavailability of bamboo forced the paper mills to shift to wood for a major part of their raw material requirement. They also opened channels with other states and private growers for their minimal bamboo requirements.

RCDC: Do you see any ploy of the Forest Department in not resuming bamboo working by not revising the Working Plans in time?

Dandapani Mohanty: This (non-revision of Working Plans) is not deliberate. It is rather an outcome of the inefficiency and incapacity of the forest bureaucracy. It has failed to revise the Working Plans in time. As a result, the situation has gone beyond control. Even if the state gets ready to cut and sell bamboo, the industry may not revert to buying bamboo from OFDC for they are anyway getting the raw materials at cheaper prices.

RCDC: In the face of non-lifting of bamboo by paper mills, could encouraging bamboo craft and bamboo shoot consumption be a solution?

Dandapani Mohanty: I consider Karadi (bamboo shoot) extraction to be nothing short of foeticide. Moreover, the artisans' demand is not substantial. At best, 20% of the bamboo produce of the state can suffice the artisans needs.

RCDC: Does BCMU have any model in mind to secure the livelihood of these people as well as resurrect the trade in bamboo?

Dandapani Mohanty: People's rights over bamboo forests should be extended. They should be given the right to manage and sell bamboo in their region and pay royalty to the government. The bamboo operations should be linked with food security schemes like Food for Work programmes. The state government must impose a higher entry tax on bamboo and hardwood meant for paper mills operating in Orissa. There should be agreements with the paper industry compelling them to utilize bamboo from Orissa only. Otherwise, there is no point in having paper industries in the state.

RCDC: What strategy is the Union planning to achieve the model?

Dandapani Mohanty: Since 1978, when the BCMU was born, the movement has come a long way. It organised protests against the injustice done to the workers. In 1978, JK Paper (ltd) was working the bamboo coupes in southern Orissa, but the labourers were not given a fair deal. The bamboo cutters in Chakapada (Phulbani Division) demanded 60 paise per bundle

against 50 paise, which the company was paying. They gheraoed the company's representative after which the rates were increased to 55 paise the same day. This event laid the foundation for the Union.

Today also, we use the same weapon, the weapon of protest. In the last couple of years, we have staged *dharnas* in the state capital and in front of paper mills. Every time, the state responds with promises that never get fulfilled.

RCDC: The cutters are the backbone of the bamboo economy of the state. They are present in overwhelming numbers. How far has the state been successful in providing them social security?

Dandapani Mohanty: The state has always neglected them. It took us eight long years to get the Union registered. Even now, also there is no change in the perception. On the contrary, injustice and exploitation at the policy level have forced the poor cutters and tribals in some southern pockets of the state to join armed struggle.

Neither the profit making paper industries nor the Corporation (OFDC) has ever protected the interests of the workers. Even today, the cutters remain labourers in the unorganized sector. They are not given the facilities of Provident Funds, ESI or bonus. Nor do they have access to social security schemes. If this is not injustice, then what it is?



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82

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- Char (Buchnania lanjan)
- Patalgaruda (Rawulfia serpentina)
- Mahula (Madhuca indica)
- Jafra (Bixa orelina)
- Dhataki (Woodfordia fruticosa)
- Pippali (*Piper longum*)
- Bela (Aegle marmoles)
- Ghee Kuanri (*Aloe vera*)
- Baigaba (Jatropha curcus)
- Mahu (Honey)
- Baibidanga (Emblia ribes)
- PasanaBhedi (Coleus forskholi)
- Brukshya Jata Taila Bija (Tree born Oilseeds)





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