

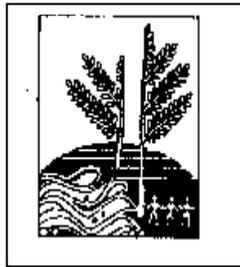
Bamboo in Orissa: Trade and Livelihood Perspective

(with a supplement on Cane)

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Note from the author

The study on the trade and livelihood perspective of bamboo in Orissa began in April 2004 with an objective to understand the implications of non-working of bamboo forests in Orissa since 2001-02. During the study however, many other aspects of bamboo-based livelihood were discovered/re-discovered, which facilitated a comprehensive analysis of the situation in the state. We hope that this report will be useful for policy makers, policy analysts, officials of the Forest Department and Orissa Forest Development Corporation, paper mills, non-govt organisations working on this issue, and all other stake-holders. Since discussion on bamboo is often associated with cane/rattan in the international circles, a supplement on cane has also been attached to this report. The author takes this opportunity to express his gratitude to all those who have helped during this study, and shared valuable information. We also welcome constructive suggestions and comments for further improvement of this report.

Bikash Rath

Executive Summary

Bamboo has versatile applications among which use for paper production and house-building is important. At production- as well as house-hold processing level, innumerable people belonging to the poor and marginalized sections of the society depend on it for their livelihood either as cutters or artisans. Unfortunately, the policy of the local Government, which has been controlling the production and trade of bamboo as a nationalised product, has been full of many disparities ultimately affecting these poor people. Of late, the Government is making an effort to bring the advantage of the growing demand of bamboo in various sectors, but the concerned scheme seems to be in vein.

Lease of bamboo forests for industrial purpose has received priority since pre-independence times as this ensures disposal of large lots of production(bamboo) at a time, thereby ensuring massive cash returns. On the other hand, domestic consumption is comparatively irregular, and the cash return from this source also follows the same trend. Still, as a welfare state the Government is never supposed to ignore the needs of the tenants. However, there have been several mismatches observed in this matter. In fact, local communities should have the first right on the sustainable use of local natural resources; and when some body else(state agency or paper industry) tries to supersede them, the situation may get complicated. Harvesting of bamboo by paper mills in community-protected forests has thus become problematic.

Bamboo-based traditional cottage industries are very old in the state, but they are not quite promising in several places owing to various factors like availability of substitutes (plastic materials, etc.). Government schemes are helping the bamboo artisans acquire new skills so as to meet the challenges in the demand sector, but local and regular marketing of these new products is difficult. Hence, the schemes are often not supposed to be very successful on a long run.

Production of forest bamboo has dwindled in the state particularly after nationalisation in 1988. Unsustainable exploitation of bamboo forests is said to be the major reason behind it. However, after 1999 a different situation emerged when paper mills refused to purchase bamboo from the Government on the plea that the price was not viable, and at the same time harvesting operations had to be suspended owing to the expiry of Working Plans, as per the Supreme Court order. Bamboo requires regular harvesting as per silvicultural principles, and non-harvesting for few continuous years results in unhealthy bamboo clumps which have a risk of facilitating forest fire. Non-harvesting for more than 3 years badly affected the production and quality of forest bamboo in the state, and the cutters who earned their bread from this source were also forced to suffer severely. Finally, harvesting work was resumed in 2005.

Flowering of bamboo has been a matter of concern not only for foresters, but for the rural people since many centuries as it is believed to be associated with misfortunes and calamities of various kinds. Flowered culms become virtually useless if not utilised within given time period, but even 'useless' culms can yield useful charcoal.

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A Supplement on Cane

Bamboos are the tallest grasses of the world. They are also among world's fastest growing species. The stems are known as culms, and the bush to which the culms are confined in a unit, is known as 'clump'(buda or madhi in Oriya). The culms can grow @7.5 cm per day (CSIR 1988, *The Wealth of India*, Vol.2, p.11). Flowering is seen usually once in a life-time, and after flowering, the bamboos gradually die having reached an over-matured stage(except in few cases).

The strength of culms increases from about 6 months and reaches the maximum in 3-4 years. Tensile- and crushing strength, as well as hardness is more in the outer layer of culms than in the inner layers. Fungal and insect attacks deteriorate the strength.

Varieties:

Out of approx. 1250 species of bamboo found in the world, about 130 are found in India(Mohanty T.L. 2004, *Sundarakani Baunsha Chasha*, The Sambad, 21-8-04). In Orissa, the number of bamboo species is however limited to 6 or 7 among which only 3 or 4 are common.

Dendrocalamus strictus (salia or salimbo) and *Bambusa arundinacea/bambos* (kanta, daba or balia) are found wild as well as cultivated in Orissa. *B.nutans*(sundarkani), *B.vulgaris*(badi baunsha or golden bamboo) and *B.tulda*(delingi, balangi or *Cephalostachyun pergracile*)) are less common in the state but are mostly encountered in the village areas. The introduced species are *Bambusa balcoa*, *B.gigantius* and *B.longispathus*(Mohanty D. 2003, *Policy and Operational issues in Bamboo Sector in Orissa*, paper presented in a workshop at Bhubaneswar in April 2004).

Salia is otherwise known the Male Bamboo, and is hardiest of all Indian bamboos. It can grow almost on all types of soil provided the latter is well-drained. On dry, poor quality soil the culms are solid whereas on fertile and moist soils they are rather hollow. The height varies from 20 ft. to 50 ft.; and diametre, from 1 to 3 inches(CSIR 2003 reprint, *The Wealth of India*, Vol.III, p.33). This species is also known as the Hill Bamboo since it is often found on hill slopes.

Daba, otherwise known as the Female Bamboo, rather prefers moist and rich soil(hence, it is more abundant on stream banks or *nalla* sides); but as an exception it has been found in abundance on hills along the Khurdha-Barbara belt. Culms may be 20 to 30 metre in length, and 15-17 cm in diametre(CSIR 1988, *The Wealth of India*, Vol.2, p.33). Thorns make the clump virtually impenetrable.

Sundarkani is much preferred by growers because it has longest and wider culms. It may be noted that *B. nutans* is scarcely distinguishable from *B.tulda* (Saxena H. and Brahman. M. 1996, *The Flora of Orissa*, Vol.IV, p.2267).

The artisans of Belabani(Nayagarh district) distinguish the following varieties of bamboo with regard to their professional need:

Name of the variety	Character	Remarks
<i>salia</i>	Comparatively soft to work; less prone to insect-attack if properly dried	Best for artistic work
<i>kanta</i>	Very tough to work with; has thorns	Not used ¹
<i>sundarkani</i>	Comparatively thicker than <i>salia</i> ; more prone to insect-attack	A commonly preferred substitute for <i>salia</i>
<i>aulangi</i>	Nodes are virtually absent; very tough to work.	Not used
<i>balangi</i>	Nodes are virtually absent	Not preferred since the strips are comparatively less flexible and hence break often during extraction. Still <i>balangi</i> can be used for <i>jhudi</i> making though the product will be less durable.
<i>phula</i>	Flowering culms	Not preferred due to their weaknesses

Artisans usually require long culms of green bamboo whereas construction works and betel farmers need long culms of mature bamboo. Paper industries use short pieces so as to make chips for pulp making. Bamboo used for paper making is known as industrial bamboo (IB) whereas that (long bamboo) used for basketry, fencing, or construction purposes is called commercial bamboo (CB). Stump bamboo usually comes under the IB category, and is nothing but the stumps left after the upper portions have been cut and removed. Cutting of such stumps is necessary to ensure healthy growth in the clump, and sized at a length of 3 ft. 9 inches each, these are also bundled in the same way as normal *salia* bamboo and sent to paper mills though at a lesser price (*per comm.*, Prahlad Nayak).

Some people distinguish two different parts of a culm as *agara* and *baunsha*, the former being the upper half and the latter, the lower half.

Use:

The use/application of bamboo belongs to two major categories: industrial and non-industrial. While the industrial use has been an important source of revenue for the state ex-chequer since several decades, the non-industrial use has an intimate relationship with the local people who depend on this resource for food, medicine, house-building materials and also, raw material for making bamboo-ware.

¹ However, in Khandapara area of Nayagarh district the artisans reportedly use thorny bamboo particularly to make products that are to be exposed to water regularly (like, baskets used for washing rice/paddy, etc.) because products made from *salia* or *sundarkani* would be less durable in such cases (*per comm.*, Abhimanyu Pradhan). On the other hand, artisans of Iramaru (Bajrakot) hamlet produce fish-containers from *daba* since *salia* is hardly available in their area.

Young bamboo shoots are known as *karadi* or *karida* . They have considerable food- and nutritional value. Studies have indicated the presence of Vitamins B and C, phosphorus, calcium, iron, glucose and carbohydrates, etc. in the young shoots. The protein content was found to be 1.3 to 2.3 grams in 100 grams of young shoots(Shanmughavel, P. 2004; *Cultivation potential of culinary bamboos in Southern India*, Natural Products Radiance, July-August, p.238).

Local people say that *salia* shoots are more preferable than *daba* shoots because the latter do not turn sour easily, and also taste bitter. *B. polymerpha* is said to be one of the best in world in production of delicious shoots(Karmakar K., and Haque M., *Bamboo and Rural Employment*, Yojana, July 2004,p.20).

Bamboo seeds, locally known as *baunsa dhana* or bamboo paddy are collected by the poor people as an inferior substitute of rice, to cook and consume like over-boiled rice(*jaau*) or make cakes from the flour. It is said that seeds of *daba* are comparatively thicker than those of *salia* (*per comm.*, villagers of Debhui). Chemical analysis of the seeds of *Bambusa arundinacea* has found crude protein 13.68%, true protein 12.77%, starch 72.91%, ash 1.74%, Calcium 86.88 mg/100 grams, phosphorous 162.9 mg/100 grams, and moisture 7.98%. The starch- as well as protein content were found comparable with that of the rice variety IR8 (Mitra & Nayak, 1972 quoted in Seethalakshi, K. and Muktesh Kumar, M. 1998, *Bamboos of India*, p.44).

Seeds of *daba* are more preferred than those of *salia*. In fact, villagers of Khajuria(Cuttack district) recognise only *daba* seeds as '*baunsha dhana*'(bamboo paddy), and call seeds of *salia* as *gadagadia*.

Therapeutic applications

Stem and leaves of *B. arundinacia* are said to be cooling, laxative; and useful in burning sensations, diseases of blood, biliousness, leucoderma, wounds, piles, gonorrhoea and fever. Leaves are emmenagogue and good as an eye wash. The root is tonic, and is applied to bleeding gums & joint pains. Seeds are useful in urinary discharges, and are aphrodisiac & alexiteric (Kirtikar, K. and Basu, B. 1995 reprint, *Indian Medicinal Plants*, Vol.IV,pp.2725-26).

On the other hand, the genus *dendrocalamus* is supposed to be therapeutically inert, and leaves are given to animals during parturition (Kirtikar and Basu, *op.cit.*,pp.2728-29).

Bansalochana, a deposit of organic silica found inside bamboo sometimes, has many uses in Ayurveda. Probably this is what is known as *baunsa jhuna* or *baunsa luna* in some localities and some people use it in the treatment of earache (*per comm.*, Laxman Behera).

Hendua processed in Mahua seed oil is said to make the oil effective when massaged for the treatment of cold, both in case of humans and cattle. Fried hendua when taken with old jaggery is said to cure gastric trouble of cattle (*per comm.*, villagers of Kodbahal).

Sushruta, the great surgeon of ancient India, used bamboo to make surgical instruments. Traditional methods of vasectomy operations in cattle also used bamboo-made instruments till one or two decades ago(*per comm.*, Dr. Chaturbhuj Bhuyan).Traditional bone-setters still use(external) bamboo for providing support to the affected parts.

As a building material, bamboo is known as 'poor man's timber'. Even the rich would prefer it in earthquake-prone areas since bamboo houses can sustain the impact of earthquakes. Besides being consumed directly in construction works, bamboo also serves as an essential secondary material in various kinds of constructions because huge ladder-type structures are made using bamboo for the construction of building as well as for white-washing, etc..

Sewerage workers also use long strips of bamboo for clearing jammed underground drains. And some villages of Puri district have been making rockets out of bamboo(and gun powder) for display of fireworks during festive occasions like *shitalasathi* and *champakadwadashi*.

Industrial use of bamboo is chiefly as the raw material for paper industry. Although the Chinese are said to have used bamboo in paper making 2000 years ago, the revolutionary development of industrial processing bamboo for producing paper dates back to the latter half of 19th century when demand for paper was rising and paper-makers of England were in search of new raw materials. In 1860, Thomas Routledge introduced a grass *Lygeum sparta* for this purpose, but there was some problem with its commercial supply. So he

diverted his attention to bamboo and published two papers on the possibility of paper making from bamboo in 1875 and 1879. This was followed by some more research and in 1908 the Govt of India/Burma sent 8 to 9 tons of bamboo to paper & pulp technologist Mr.R.W.Sindall (England) for practical experimental purposes. This bamboo was converted into paper and this paved the way for large scale utilisation of bamboo as a major raw material in the paper industry (Bhargava, M. 1946; *Bamboo for Pulp & Paper Manufacture*, Forest Research Institute, Dehradun; pp.1,2).

However, it took a considerable time for bamboo to gain importance in the paper industry. After World War I, Indian paper mills got a better scope of marketing their products for sometime, but competition with European paper gradually proved quite costlier for them. During this period of struggle they were badly in need of a favourable policy environment as well as some technical revolution that could save them from the crisis. The Government therefore established a pilot bamboo pulping unit in 1919 which became operational in 1924. The mills realised the potential of bamboo in their business, but since the process of bamboo pulping developed very slowly, they had to suffer for some more time. The Indian Paper Pulp Company was the first mill to develop this process to a considerable extent (Calcutta Paper Traders Association 2002-03, www.papertradekolkata.com/paperorigin.htm).

When bamboo established itself in the industry, its scarcity became a matter of concern for those states which depended on other states for the supply of bamboo. To solve this problem states like West Bengal tried plantations of Eucalyptus and other species of hard wood, but bamboo was still preferable because it produces the long fibred pulp required for manufacturing quality paper, which *these* hard wood substitutes were unable to do (Calcutta Paper Traders Association 2002-03, *op.cit.*).

In 1998, JK Paper Ltd. adopted, for the first time in India, the RDH(Rapid Displacement Heating) technology which claimed to solve the short-fibre problem of hardwood. Brought from Germany, this technology was expected to enable the paper industry to use 100% hardwood as the raw material, thus completely eliminating, in principle atleast, the scope of using bamboo. On the other hand, developments world-over were gradually reducing the importance of long-fibrous production of paper since increasing use of computers helped preservation of huge data in the electronic form as a result of which preservation of data on durable papers was no more thought essential. Since demand for durable papers got reduced substantially, hence emphasis of long-fibrous raw material was also reduced(*discussion with S. Jagdev*).

Bamboo mats have been processed to produce roofing sheets like the asbestos ones; however being subjected to heat and pressure they develop cracks causing leakage of water when used for roofing. Gram Vikash, an NGO, is claimed to have first established an unit for this purpose(see box under the title ‘PlyBoo: Value addition through reprocessing’) in India. Currently other organisations are working on this and leak-proof coating have been tried on such sheets to solve the problem.

Fine bamboo sticks are used as a stitching material in leaf-plates. They are also used in making incense sticks.

Gasification is a process in which biomass like bamboo are heated at a very high temperature in presence of a gasification agent like air so that the energy present in the biomass can be converted into methane like gases, which in turn can be used in gas turbines to produce electricity. Basing on this technology, bamboo-based power plants are being set up in Tripura and Manipur as bamboo has certain advantages over other biomasses, like low ash content(*The Economic Times*, 9-3-04, p.3).

Among the lesser known uses, preparation of active charcoal from bamboo is scientifically preferred. And recently, an Assam villager got the National Innovation Award by manufacturing low cost artificial teeth from some special underground parts of bamboo.

Substitutes:

The common substitutes of industrial bamboo are waste paper, sabai grass, hay and sugarcane waste. The fibre of banana tree is known to produce paper that is 300 times stronger than normal paper(*Down to Earth*, Dec.31, 2004; p.50). Each of these substitutes is viable under a certain set of conditions applicable for itself, like the quality & price of the paper to be produced, available technology, etc.. The machines are also designed according to the raw material to be used, particularly in the pulp-making stage.

Hardwood requires debarking before use, whereas bamboos do not require that. Hence, growers of hardwood species have to supply their materials after debarking at their end.

History of the development of bamboo-based livelihood:

Bamboo-weaving(like basketry) is known since millennia. Cutting of industrial bamboo began only in the 20th century.

Some recent developments serve as examples of the various processes that could have led to the development of the profession that is based on bamboo-weaving. For instance, the Matia community of Saharpada(Mayurbhanj) which used to depend on wage labour as human earth workers(hence the name 'matia', *mati* meaning earth or soil) learnt the art of making *mati jhudi* used by them to dump earth and then gradually abandoned their former profession as they found this new business comparatively easier and more profitable (*per comm.*).

Making *bidi peti* is a 20th century development since bidi industries in and around Sambalpur facilitated its production. Artisans of Bhatara village are said to have first started making it. Ornamental gate-ways of bamboo have been recently introduced in Orissa by some artisans who originally came from Andhra. Also introduced recently are the non-traditional crafts for which training has been imparted to the local artisans by experts from West Bengal.

Artisans of Sianbahal village near Sundargarh have created a history by innovating craft making from bamboo rhizomes. In 1997(?)Pratap Nayak of this village saw an eagle crafted on bamboo during a training programme organised by DRDA. This eagle had been made by somebody from other state. Nayak wanted to make a similar eagle himself, but

decided to try bamboo rhizomes which are otherwise left unused by the people. The underground part of bamboo has the advantage of a slightly rugged surface similar to that found on the skin of many wild animals, hence it can give a natural look and feel of the back of some wild fauna if properly crafted. Further, its use saves the usable parts of bamboo thereby reducing the cost of production and resource available. Nayak succeeded in his effort which inspired his fellow artisans like Dhaneswar. Dhaneswar saw the film 'Jurassic Park' and crafted a dinosaur using bamboo rhizomes. Gradually the knowledge passed on to their brethren in Khuntgaon village(*per comm.*).

Govt policy on bamboo:

In ancient defense strategy, bamboo had a well-recognised role as bamboo thickets used to act as natural barriers for the intruders. The thickets gave strong resistance even to the axe and hence some kings are supposed to have encouraged plantations of bamboo along their state boundaries (Vasundhara 2000 draft, *Aspects of Garjat Forestry*, 48).

Bambusa bambos(kanta baunsha) was enlisted as a reserved species in the Athmallik State, a very exceptional policy decision of its kind(Vasundhara 2000, *op.cit.*,p. 55).

The Indian Forest Act, 1927 has recognised bamboo and cane under the category of trees(section 2/7). This has been interpreted to consider bamboo as equivalent to timber. It is this legal obstruction, which is supposed to a major factor behind unfavourable bamboo policies of the govt.. This has also led to a great confusion resulting in the conclusion by some that bamboo is neither a timber nor an NTFP. However, the Hon'ble Supreme Court has clarified in February 2002 that the ban on cutting of timber trees would not be applicable for bamboo and cane since these species actually belong to the grass family.

Science dismisses law

Timber is produced by trees which are essentially dicotyledons, whereas bamboo, which belongs to the family of grasses, is a monocotyledon(*per comm.*, Dr. Jim Chamberlain and Pravat Sutar). Hence, science does not recognise bamboo as timber/tree.

Being a grass, bamboo is supposed to be a non-timber item. However, given its ecological & commercial importance, as well as capacity to build up forests of its own unlike other NTFPs, foresters have often advocated to treat it on the same footing as timber trees.

Bamboo has been a major leased out item in the past. The long-term leases were mostly on behalf of the paper mills. However, for the tenants and other non-industrial bamboo users, provisions were there to supply them the required quantity(often specified by an upper limit) of bamboo either at specified rates, or 'free of cost' in lieu of an annual forest cess otherwise known as 'nistar'. Departmental working was introduced in some cases either to save the forests from the unscientific and unsustainable exploitation of the contractors/lease-holders, or for ensuring supply to the tenants/artisans.

Working of bamboo forests were required to be as per the prescriptions in the Working Plans. For some time, there used to be a difference in the method of working of *salia* and *daba* forests. While *salia* forests were worked under 3 to 4 year felling cycles, *daba* forests were usually worked on selection basis. However, in view of the impracticability of carrying out selection fellings properly, the Forest Department proposed to introduce clear felling of *daba* forests under a 10-year felling cycle (Govt of Orissa 1939, *Annual Progress Report on Forest Administration in the Province of Orissa: 1937-38*, p.14).

As observed by the Forest Enquiry Committee, sustenance of paper mills was recognised by the government as a matter of national interest, but at the same time it was not to be acknowledged at the cost of the local interest (of tenants)². Hence, although long term leases were granted to the paper mills, the lease-holders were legally bound to supply the genuine requirements of the tenants from their leased areas against payment of felling and supervision charges(to be fixed by the government) (Govt of Orissa 1959, *Report of the Forest Enquiry Committee*, p.30).

M/S. Orient Paper Mill (Brajarajnagar), the first paper mill of Orissa; and M/S. Bird & Heilgers & Co. were among the few major lease-holders of bamboo in the state since the pre-independence period. In late 1950s, long- term leases had been allowed to five paper mills. However, the lease-holders, along with the tenants, were often found to unscientifically exploit the resource; and hence the Forest Enquiry Committee recommended for ensuring working of all bamboo forests on coupe system, and also for the imposition of effective control on the removal of bamboo (Govt of Orissa 1959, *op.cit.*, pp.30-31).

Provision for tenants in general

Since pre-independence period, removal of bamboo from the Protected Forests was allowed in lieu of payment at the schedule of rates. This system was particularly useful when the tenants required a quantity beyond what was allowed to them 'free of cost' in lieu of an annual forest cess. These rates varied from time to time and also from area to area. The Schedule of Rate of Forest Produce Rules,1977 specified the following rates for bamboo in different forest divisions of Orissa:

Species	Forest Divisions(old)	Rate in rupees per 100 pieces
Salia	Ghumsur North and South,Balliguda,Puri,Nayagarh, Parlakhemundi,Angul,Dhenkanal,Athgarh,Keonjhar,Baripada, Karanjia,Jeypore,Navarangpur,Rayagada,Bolangir, Sundargarh	6.45

² In 1943-44, the Nuakheta RF of Angul Division, formerly under lease, was excluded from the lease-holders' area for meeting tenant's demands (Govt of Orissa undated, *Annual Progress Report on Forest Administration in the Province of Orissa: 1943-44*, p.13).

	Phulbani, Deogarh, Bonai, Rairakhol, Bamra, Sambalpur, Kalahandi and Khariar	4.30
Daba	Ghumsur North and South, Balliguda, Puri, Nayagarh, Parlakhemundi, Angul, Dhenkanal, Athgarh, Keonjhar, Baripada, Karanjia, Jeypore, Navarangpur, Rayagada, Bolangir, Sundargarh	8.60
	Phulbani, Deogarh, Bonai, Rairakhol, Bamra, Sambalpur, Kalahandi and Khariar	6.45

(based on Ray, P.K. 2003, *Law of Forests in Orissa*, pp.807-08).

The above table indicates that parts of undivided Sundargarh, Sambalpur, Phulbani and Kalahandi districts had subsidised rates for both the species. The basis of this disparity in rates is not clear though abundance/scarcity of the resources may be a factor.

During the pre-nationalization period, the paper mills did not cut and supply long bamboo for tenants use; and the Forest Department used to issue permits to the tenants for their bonafide use as per the schedule of rate (Pathak A.K. 2004, *Bamboo Operations: Field Realities*, paper presented at a workshop organised at Bhubaneswar in April 2004).

However, OFDC did not always follow the above schedule since in view of the increasing cost of production the 'old' schedule did not appear to be commercially acceptable. Hence, OFDC fixed different rates (like, Rs.3.50 to 6.50 per piece) so that the bamboo could be sold at least on 'no loss, no profit' basis.

As per Fire Relief Instructions on 1972, free grant of bamboo (where available) for the fire-affected persons would be one cart-load (100 *salia* or 25 *daba* bamboos) for one-roomed hut and two cart loads for two-roomed hut (Pathak A.K. 2004, *op.cit.*).

Provision for artisans

During British period, the sale of *salia* bamboos on permits, in respect of culms under one year's age, was confined to the basket-makers (Govt of Orissa 1940, *Annual Progress Report on Forest Administration in the Province of Orissa: 1938-39*, p.13). In Angul Division, they were allowed to take bamboo from tenant's coupes at concessional rates. In Pal-lahra (ex-)state, the basket-maker Juangs were not charged any fee for their exploitation of bamboo from A-class Reserve Forests as per the Forest Enquiry Report (Govt of Orissa 1959, *op.cit.*, pp.112,125), but noted anthropologist V.Elwin found these poor artisans actually paying eight annas (equivalent to individual's income from basketry in 16 days) *in lieu* of this permission (Elwin 2002 reprint, *The Tribal World of Verrier Elwin*, p.173).

In 1980 the Govt of Orissa promulgated specific rules to safeguard the interest of the bamboo artisans. These rules, otherwise known as *The Supply of Bamboos to Artisans including Co-operative Societies (Orissa) Rules, 1980* have the following salient features:

- Societies or members of the family of bamboo artisans desirous of obtaining bamboos from Protected Forests for their profession should register themselves in the territorial Forest Range office of their area. The local Sarpanch/Ward member has to certify that the person is an artisan.
- Subject to the availability in the PFs, maximum 540 pieces of *salia* bamboos, each not less than two years old, can be allowed to a registered artisan/society, on permit basis, during a working season(October to June).
- Maximum 20 pieces can be allowed at a time to the permit-holder.
- Bamboo should be cut according to the prescribed rules.

Transit

Rule 5 of the Orissa Timber and other Forest Produce Transit Rules,1980 suggests that valid permit is necessary for the transit of bamboo unless it bears departmental hammer marks. This is also clear from Rule 8 of the Schedule of Rate of Forest Produce Rules,1977. However, since the Orissa Forest Act,1972 did not clearly include bamboo in the list of forest produces, and also there was no difference between bamboos brought from forests and those brought from non-forest areas(like private lands), illicit removal of bamboo from the forests was difficult to be challenged legally, the advantage of which went to the unauthorised cutters. In one such case of offence challenged in the court in 1998, the verdict said that bamboo brought from forest was a forest produce, and that the government should make rules to regulate its transit even if it belonged not to the government (Ray,P.K. 2003, *Law of Forests in Orissa*,pp.647-48).

In 1991-92, a sub-rule (J) was inserted under Rule 5(1) of Orissa Timber and other Forest Produce Rules,1980 which said that transit permit would not be necessary only for three species of bamboo, viz., *B.nutans*, *B.vulgaris* and *B.tulda* (vide schedule III). This means that permit is necessary for the two important forest species, viz., *salia* and *daba*; and not for those planted/cultivated on private lands.

Nationalisation and its implications

In 1988 the government nationalised bamboo with a view of revenue maximisation and ensuring scientific exploitation. Accordingly, Orissa Forest Development Corporation, a Govt of Orissa undertaking, became the sole agent for exploitation and sale of bamboo. OFDC was now supposed to employ cutters to cut bamboo from the forests as per the prescribed plan/rules, and the paper mills and the tenants/artisans now had to purchase bamboo from OFDC depots. An Empowered Committee on Bamboo; with the Chief Secretary as its chairperson, and Secretaries of Forest, Finance, and Industry Departments alongwith the Principal Chief Conservator of Forest(PCCF) and the Managing Director(MD), OFDC as its members; was constituted to take decisions regarding the harvesting and marketing of forest bamboo in the state.

The financial benefit of nationalisation was remarkable. While bamboo contributed to the forest revenue 7.9%, 5.8% and 4.4% in 1985-86, 1986-87 and 1987-88 respectively; in 1988-89 the contribution rose to 9.1% and then to 14.7%(highest) in 1995-96(Saxena N.C. 2003 ?, *Government Policy for NTFPs in Orissa*, p.5).

Since nationalisation of the product repealed the scope of any specific privilege of the artisans, they were no longer allowed to get permits for cutting bamboo for their use. However, as clarified by the Principal Chief Conservator of Forests in 1989, the artisans can purchase bamboo from the OFDC depot at the rate fixed/regulated in/by *the Supply of Bamboos to Artisans including Co-operative Societies (Orissa) Rules, 1980* (Pathak A.K., *op.cit.*). Rule 5 of the said Rules specifies the value of salia bamboo as 43 paise per piece, i.e., Rs.43/- per 100. The advantage of this post-nationalisation provision is that earlier the artisans had to pay the same price even though they themselves put their labour for cutting and removal of the bamboo from forest whereas now they do not need to invest their labour in cutting and removal of bamboo in the forest and OFDC would supply their raw material at no additional cost. However, the disadvantage is that what OFDC supplies is often the mature bamboo whereas the artisans require green bamboo for their work; hence the OFDC supply can hardly be of their use³. Also, there is no guarantee that the nearest OFDC depot will be able to fulfil their annual requirement even as per the limit(540 pieces) fixed in the 1980 Rules, because supply to Paper Mills was the Corporation's priority.

In May 1990 the government issued another letter to the effect that in the nistar-paying areas, at least one bamboo depot was to be opened in each bamboo coupe so as to sale salia long bamboo(thin) to the tenants @Rs.1.50 per piece, and that each tenant would be supplied 50 bamboos per annum on 'first come, first serve' basis 'subject to availability'. The loss on account of this concession was to be recouped by a corresponding increase in the rate of bamboos in the non-ex-coupe depots (Pathak A.K., *op.cit.*).

Violation of policy decisions:

As per the Forest Conservation Act,1980 forests can not be leased out to private parties without the permission of the Govt of India. The Govt of Orissa violated this provision by giving leases to the paper mills without the prior approval of the GoI (Saxena N.C. 2003 ?, *Government Policy for NTFPs in Orissa*, p.14).

Earlier, the paper mills, as lessees, used their own resources(manpower, etc.) to exploit the bamboo forests as per their need. After nationalisation, they lost the power to utilise the bamboo forests in their own way. By 1992-93, the shortfall in average annual production during the post-nationalisation period was about 1.5 lakh SUs as compared to the average annual production during the pre-nationalisation period, and the mills, while expressing their concern over this trend of decreasing production level and deteriorating quality under OFDC's tenure, requested the govt to review the policy(Sharda A.K., *Bamboo in Orissa: A Resource Forgotten*, paper presented at a workshop organised at Bhubaneswar in April

³ An officer(name withheld) clarified that the bamboo harvested by OFDC could be used by the artisans when supplied fresh, but because of various operational constraints sometimes it takes a lot of time to take the harvest to the depots which deteriorates the quality.

2004. See also the box '*The Naxal effect*'). As a follow up to that, in 1993 OFDC 'appointed' several paper mills first as 'labour contractors' and then as 'raw material procurers'(RMPs). This enabled them to control the harvesting operations as per their own need. However, the system itself was controversial. In late 1960s, the system of appointing 'labour contractors' had been abolished in India since it led to large-scale corruption and practices harmful to the interest of the state/nation. Through OFDC's initiative, the same system was revived again in violation of a nation-wide policy decision of 1960s(Saxena, *op.cit.*, p.14) on the plea of state interest. In his letter # 22812/F&E dated 8-10-03, the Joint Secretary to the Govt(Forest and Environment Deptt.) intimated the Managing Director,OFDC that 'the State Government, with a view to increase the production of bamboo in forest areas and to get a better royalty' had approved the proposal for appointment of labour contractors under OFDC on the basis of following terms and conditions:

- The labour contractors would work for 12 years.
- The system would be reviewed in every two years.
- All the bamboo produced by them would have to be lifted by them.
- The silvicultural responsibility would lie with OFDC (Source: Forest Department files).

The PCCF informed all the Conservator of Forests(territorial) on 5th November 1993 that M/S. Ballarpur Industries Ltd., Straw Products Ltd., and Orient Paper Mill had been appointed as labour contractors, and that the coupes be delivered to OFDC so that they could either work directly or through labour contractors. Then the Joint Secretary to the Govt(Forest and Environment Deptt.) wrote to the MD, OFDC that M/S. Ballarpur Industries Ltd. had been appointed as labour contractor for the forest divisions of Nayagarh, Rairakhol, Athamallik, Athagarh and Boudh; and that the 'terms and conditions for the engagement of labour contractor for these areas may be finalised in consultation with them (vide his memo # 25766, dated 20-11-93). This indicates the extent to which a lobby successfully worked behind the decision of appointing paper mills as labour contractors. This labour contractor system was replaced by the RMP system in 1994. It may be mentioned here that the lobby that worked in the interest of paper mills was uniform in its approach, but the vested interests were not uniform as a result of which some got more benefit and some got less, leading finally to a litigation in the Orissa High Court. The HC directed to the govt in 1994 for equitable distribution of bamboo and bamboo growing areas on the basis of installed capacity of the individual paper mills(Source: Forest Department files).

Replacement of the labour contractor system: factors responsible

Various explanations are available to explain the replacement of labour contractor(LC) system by the RMP one. These do not agree with each other, but seem to do better when taken simultaneously, as under:

- The paper mills found the term derogatory as they were actually not contractors, but industrial consumers of bamboo(*per comm...*, A.K.Sharda, JK Paper). Hence, the term Raw Material Procurer was found suitable. Otherwise, the responsibilities were same in both the cases, and the LCs/RMPs were responsible for the cutters.
- There was no provision to ensure that the 'contractors' would not violate the minimum daily wage(mdw) policy of the govt although mdw had been fixed. The contractors were at liberty to pay whatever wage to the cutters the advantage of which certainly benefited them causing exploitation of the cutters. Hence, some of the OFDC staff, who earlier belonged to JK forest employees union, raised objection against it(*per comm...*, Ramachandra Bakshipatra).
- The labour contractor system was first implemented on experimental basis with signs of failure. For instance, in Rairakhol Divn.(OFDC) only one sub-division was allotted to the concerned labour contractor; but the company did not develop the forest road adequately, making the roads unsuitable for the transit of heavily loaded trucks. It was soon evident that the system would not be able to achieve more than one-fourth of the target, and hence OFDC had to adopt some viable alternative (*per comm...*, Prahlad Nayak).

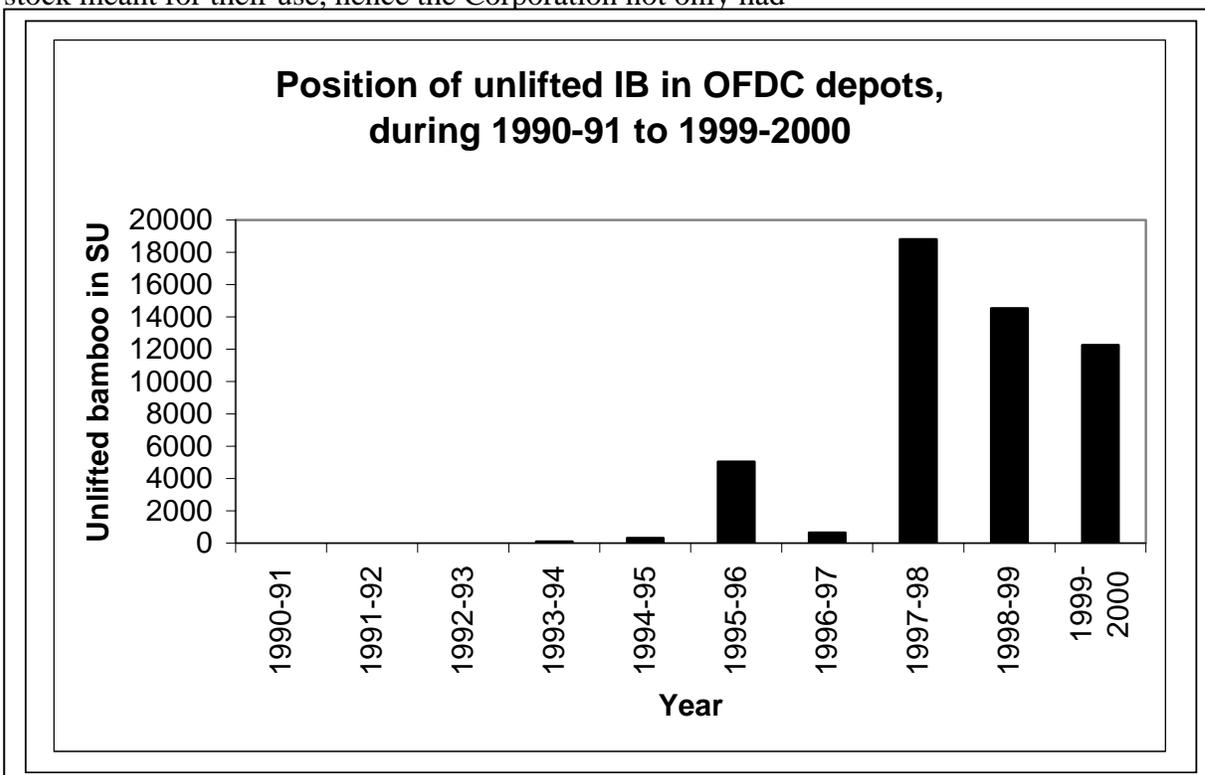
However, study of the agenda notes prepared for the 19th meeting of the Emp. Committee revealed that the paper mills did refrain themselves from executing the agreement with the govt particularly because they wanted the term 'labour contractor' to be replaced by 'raw material procurer', and also a hike in the working cost, that was to be paid to them by the govt, to Rs.500/SU.

However, OFDC was merely an instrument of the politicians in power who were reportedly under the influence of the paper mill owners. All the decisions were actually taken by the Empowered Committee which was not always obliged to consider OFDC's interest. Hence, as some responsible officers of the Corporation confessed in private, the RMPs were allowed to flourish at the cost of OFDC's genuine interests. For instance, they (OFDC officers) allege that the share which the Corporation was allowed in the price to be realised on the sale of IB, was much less than what it actually deserved; and that the mills used OFDC's stockyards without any hiring charges. However, Prasanna Behera, leader of Tikarpada Baunshakatali Shramika Sangathana, says that for the cutters of Satkoshia area(Angul Divn.) both the systems(LC and RMP) had no practical differences.

Some earnest officers of the Corporation think that the govt could have easily forced the mills to take the bamboo produced inside the state, on priority basis. They argue that in

principle the mills are bound to take bamboo from Orissa as they themselves had committed to that while establishing their units in this state. The officers also opine that we must learn from Chhattisgarh which once stopped import of timber from other states till its stock got exhausted⁴, and that our govt should ban entry of bamboo from other states till our own stock gets exhausted.

Political decisions have in a way forced OFDC suffer huge financial losses. The nationalisation mahua flower in early '90s is said to have broken the backbone of OFDC's financial strength. Soon after nationalisation the Corporation authorities had to face the non-committal attitude of the paper mills which intentionally avoided lifting of some of the stock meant for their use, hence the Corporation not only had



to create interim depots to accommodate the surplus bamboo, but had to reduce its production in view of that. The authorities found the paper mills so unreliable that they even advised the govt for all India tender so that the paper mills of the state would lose ground for their blackmailing power. However, this recommendation was implemented only in 2002-03 when it was too late.

Policy change in 2000

In 2000 the government decided to bring all the concerned operations(except those in the Kalahandi Divn) under the direct control of OFDC. However, it was too late by then. The paper mills were not satisfied with the production and price of bamboo in the state and had therefore started making arrangement for other viable alternatives. Hence, atleast some of

⁴ The huge stock was reportedly created after the Forest Department was forced to cut down a large number of trees affected by borers(?).

them(like M/S. J.K.Paper) were no more critically dependant on the Orissa bamboo. With the change in policy in 2000 they appeared to be not in a mood to depend on OFDC (based on Saxena, *op.cit.*, p.15).

During 2000-01, the bamboo coupes in the Kalahandi Forest Division were worked out by the M/S. Ballarpur Industries Ltd.(BILT). In other areas, there was no harvesting by the RMPs.

The suspension of bamboo cutting operations

While non-lifting of bamboo by the paper mills was creating a problem for OFDC, expiry of the Working Plans turned out to be another major issue for the Forest Department. The Hon'ble Supreme Court had issued a directive that bamboo working would not be allowed in the absence of an approved Working Plan. By the end of 1990s the Working Plans of most of the concerned Forest Divisions were on the verge of expiry. After the moratorium imposed by the apex court on the felling of green timber, many in the Forest Department saw no use of preparing new Working Plans simple because such Plans were meant more for timber than for bamboo. Further, a new version of preparing WPs had been introduced which required intensive, costly, and time-consuming field work so as to incorporate various scientific details; and the Forest Department lacked adequate financial- and staff strength etc. to take up this challenge. Hence, bamboo working had to be suspended in most of the concerned Forest Divisions of the state after 1999. The Department failed several times to submit the required WPs to the Chief Conservator of Forests(better known as Central CCF) appointed by the Central Govt, for his approval. The Central CCF however, on request by the Department, allowed one-year extension to few Plans as a result of which OFDC could resume cutting operations in the concerned Divisions during 2003-04.

'Since the Forest Department's negligence in submitting working plans to the Central Government was the major reason behind the non-working of coupes, a public interest litigation was filed in the Supreme Court praying for an intervention of the Hon'ble Court in this matter. The Hon'ble Court then asked the state government in May 2002 to file an affidavit in this regard which the latter failed to submit, whereas in the neighbouring state of Andhra Pradesh the government could resume cutting operations through such kind of affidavit(*The Pragatibadi*,4-9-03⁵)' that justified that bamboo working in their state would not be violate the decision of the court(*per comm.*, R. Bakshipatra). Interestingly, what the state government was required to do was to have valid working plans only, and there was no need to submit the same for approval of the Central CCF since bamboo was not timber/tree in the strict sense, and permission of the latter was required only in case of timber/tree felling from forest lands. Hence, waiting for the approval of the Central CCF was just a waste of time. In fact, few states like Tamilnadu did not care for the permission of Central CCF once they had valid working plans.

⁵ Details of this public interest litigation however could not be available from any source although another newspaper report in the *Sambad*(9-7-04) has also referred to it.

Few Divisions like Athagarh had their WPs valid for these years, but OFDC could not take the full advantage of that owing to various reasons. The Paper Mills had started using cheaper alternatives as a result of which bamboo had lost its former importance for them and as such they were no more prepared to procure it from OFDC at the then existing rates. Hence, the Corporation had a piling stock and was not eager to add to it before the same was exhausted..

Suspension of bamboo working in Protected Areas:

The Wildlife Protection Act does not allow commercial exploitation of forest produce from National Parks. In Orissa, the presence of bamboo is negligible in the proposed Shimilipal National Park; but is not insignificant(in terms of local requirement) in the Bhitarkanika National Park where bamboo occurs(used to occur?) on the drier lands such as the Bhitarkanika Proposed Reserve Forest. Non-harvesting of bamboo from the Bhitarkanika National Park is said to have caused a natural damage to the resources, as alleged by the local people (*per comm.*). As regards sanctuaries, except in Chilika, Kuldiha, Hadagarh, Shimilipal and Bhitarkanika, almost all other sanctuaries contain good bamboo forests. The authorities had been disfavoured bamboo cutting operations inside these sanctuaries for more than a decade showing reason that it would affect wildlife, particularly the elephants who use bamboo as their staple food. To quote the Chief Wildlife Warden from his letter to the PCCF on 30th March 1990:

“xxx the whole idea to restrict bamboo working is to reduce stress to wildlife in summer. But this year there was intermittent rain in February and March’90. So the stress period may be shortened. We may recommend for 30 days extension from 1.4.90.”

In their meeting on 22-9-97, the Emp. Committee observed that given the repeated insistence of the Ministry of Forest & Environment to exclude the wild life sanctuaries from the working of bamboo coupes, 'it was decided to stop working of Sunabeda wildlife sanctuary as a beginning from the current year' and that in case of any shortfall in production due to this decision, the reserve pool(production of OFDC and the surplus production of BILT) would be utilised(*Minutes of the meeting of the Emp. Committee on bamboo held on 22-9-97, p.3*).

In a meeting held on the working of bamboo coupes in the sanctuaries, on 20-12-1997, the CCF(WL) said that OFDC had set its camps near the perennial streams of Satkoshia sanctuary which had threatened the wildlife there. Hence, it was decided to not allow bamboo working in Satkoshia for that year. Working in the Sunabeda sanctuary had been stopped due to the decision of the Empowered Committee. It was resolved in the said meeting that bamboo working in other sanctuaries might be allowed (vide the corresponding proceedings).

The Hon'ble Supreme Court directed in February 2000 to stop commercial exploitation of forest produces from the sanctuaries and National Parks, and the Wildlife Protection (Amendment) Act, 2002 has a provision to this effect. As a result, bamboo forests inside the sanctuaries can not be worked. Those residing inside the sanctuaries have thus lost a

major means of their livelihood. In fact, these people are doubly victimised because on one hand bamboo cutting operations have been stopped and on the other hand collection and trade of NTFPs is also not allowed. Since most of them are landless or marginal landholders, the only option left for them is to work as wage labourers, but in those areas such opportunities are not frequent and at the same time the local rates of wages are not adequate. Hence, either they manage somehow in a half-starving condition; or migrate to other areas in search of job; or else work for the timber mafias.

Joint Forest Management

As per the JFM resolution(1993), villagers protecting degraded forests under this scheme are entitled for 50% of the final/major harvest(the rest being disposed to the Forest Department), but this norm has been specified for timber only and nothing has been said for bamboo although in many cases the same principle has been adopted for bamboo. However, if the harvesting is of a small extent and meant for removal of few culms, then the Forest Department usually does not claim any share in the harvest and the village committee is at liberty to decide the price of such culms. Hence, it is the price and the maximum number of pieces allowed at a time (or annually), which may vary from village to village.

An example of the impact of the crisis of 2000-04 is found in the Harekrushnapur village situated near Dhenkanal. During the super cyclone of 1999 the bamboo bushes of the area under the villagers' protection were badly affected, hence the villagers applied to the DFO (Divisional Forest Officer) for permission for cutting this bamboo which was granted. As per the arrangement of JFM, 50% of the harvest was to be handed over to the Forest Department and rest was to be utilised by the villagers. The villagers wanted to sell their share to a person of their area who then employed labourers to cut the bamboo from the forest. After the harvesting was over, the said purchaser found it difficult to transport his material as the Forest Department refused to issue permit. The Department itself did not show any interest in lifting its own share because of the unfavourable situation of 2000. A standstill situation was thus created causing deterioration in the quality of the bamboo lying unlifted for months. Finally the purchaser lifted some material and paid Rs.2000/- to the villagers against that and the villagers themselves used the remaining material. Had the permit been issued and lifting could have taken place in time, then the earning for the villagers could have been much higher from this source.

The Harekrushnapur forest protection committee has fixed the price of bamboo at Rs.5/piece(irrespective of the length and thickness). Both the members as well as outsiders can purchase bamboo at this rate for their own use(*per comm.*). In Kodbahal village(Sundargarh district) however the villagers have not fixed any such price themselves because they believe that it is the responsibility of the Forest Department, and that whosoever wants to take bamboo from the forest should have to apply to the Forest Department. They have fixed penalty for bamboo smugglers at Rs.25.piece, but say that the Forest Department would get 50% share of this money(*per comm.*). Many such examples can be found in the state to show that there is practically no uniform system in this regard in the JFM villages although theoretically some uniform rules do exist.

While the concerned authorities at Forest Department headquarters at Bhubaneswar have not been able to clarify the stand of the govt regarding bamboo cutting operations in JFM areas, it has been reported from Athagarh Forest Division that at Khajuria under Narsinghpur East Range a system was adopted according to which the bamboo harvested by the VSS members was auctioned, and both the expenses as well as the income were shared by the Forest Department and the VSS committee at 50:50 ratio (*per comm...*, Kishore Kumar Parida).

The Khajuria model

Maa Bauti Vana Samrakshan Samiti(VSS) was formed in Khajuria in 1994, but villagers had themselves started protecting the local forest by 1991 after they found the same heavily degraded under the pressure of several villages. The area under their protection now is part(252.5 acres) of the Debhuin RF and 47.5 acres of the Madara khesra forest. Bamboo clumps, mostly of *salia*, are concentrated almost in the RF part.

In 1998, gregarious flowering was observed in the bamboo forest; so necessity was felt for the felling of the affected clumps(7821 *salia* and 8534 *daba*). This was followed by uprooting of several clumps(223 *salia* and 558 *daba*) in the 1999 super-cyclone. The villagers wanted the Forest Department to facilitate the harvesting and marketing of these clumps/culms during 2000-01, but the latter first approached OFDC with a proposal for harvesting and got a negative response as the Corporation said flowered culms would not be economical. The villagers were getting impatient, particularly after some traders approached them to purchase the bamboo. Hence, in a resolution adopted on 28-4-01, the 'villagers' decided that since Forest Department was difficult to be motivated, private traders would be allowed to harvest and purchase the bamboo on their own in lieu of a payment @Rs.2000/truckload, to the VSS. There was no quantitative specification for a truckload. Moreover, certain other decisions were quite controversial (like, sharing of some expenses by the VSS). After our interaction with the villagers, it was quite clear that the resolution was adopted without proper consultation with the whole village, and few individuals designed the whole thing, being unclear about the market price of bamboo(long). There were four traders who were to purchase the bamboo, and they paid Rs.4000 towards advance. However, there was some conflict among them after which they did not turn up in time; hence the help of Forest Department was again felt necessary. The local DFO then approached the PCCF who in turn allowed, in 2003, to work out and auction the bamboo. The VSS agreed to share both the expenses and profit on 50:50 basis with the Department, and it was also agreed upon that villagers of Khajuria would be employed as cutters on priority basis, since it was feared that other people might resort to inadequate cutting practices. In the meantime, traders who had paid advance got their money refunded from the villagers. Finally, a part of the available stock in the forest was harvested in 2003 and total 36100 culms were disposed through public auction while 287772 culms still remained for harvesting. most of the cutters belonged to Khajuria and only few came from outside. They were paid @Re.1 to 3 per culm towards cutting, dragging and stacking charges, on the basis of the distance of the clumps(like, highest was paid for clumps on hills). Labour charges for transporting the bamboo from the harvesting site to the 'depot' was additional, i.e., about Rs.7/culm. Total cost of production thus came to be Rs.12 to 14 per culm, and accumulated to an amount of Rs.1,40,000/- in the whole business against the sale price of Rs.3,63,360/-(this money being at the disposal of the Forest Department). Of the net profit of Rs.2,23,360/-, VSS was to get 50% as it had equally shared the expenditure. Interaction with the villagers as well as the Forest Department revealed that the labourers as well as the VSS committee were but partially paid, and the Department was taking steps to clear the dues. While the villagers were unhappy with the lack of promptness on the part of the Department, the local forest officials also had some limitations as official consultation with the higher authorities takes time to yield. Still, the Khajuria case can work as a model for bamboo-rich JFM areas in the absence of better examples.

.Officials of Athagarh Forest Divn. are confident enough to say that bamboo coupes in RFs can not be worked out directly by OFDC/RMP if the area is under the protection of some VSS. However, their counterparts in Khandapara Range Office under Nayagarh Forest Divn. have no such idea since they say that there is no official circular or instruction pertaining to this. Due to lack of clarification from the authorities, these officials of Khandapara found themselves in a dilemma over the issue of proposed bamboo harvesting in Koduanpalli and Loharkhani VSS areas.

Changing times: Koduanpalli

Koduanpalli is a village in the Kiajhar GP of Nayagarh district. There are about 48 HHs among which 20 belong to the tribals(*kandha*) and almost the same to the *harijans*(*pana*), the rest being occupied by the *teli* community. Agriculture and wage labour are the main sources of income. The villagers have been protecting on their own the nearby hill forest which is a part of the Barakhola RF. The forest under their protection has extensive resource of *salia*. Before they started forest protection, the bamboo had been commercially harvested from this area by the lessee, and some of the villagers worked as cutters; but after the protection they refused to allow for commercial harvesting by OFDC or any other agency appointed by the govt.. OFDC officials approached them first in 1997(?), and then again after the super-cyclone of 1999; but failed. However, the villagers later realised that mere restriction on commercial harvesting would not be able to save the bamboo forests because flowering and several other factors can damage/destroy the clumps. In fact, they not only saw many clumps dying naturally, but also the damage caused by a forest fire last year.

The local forester took advantage of the changing psychology, and persuaded the villagers to join the JFM programme. He personally assured them several benefits if they agreed to form a VSS and allow bamboo harvesting. Finally, the villagers formed the Nilamadhab Vana Samrakshyan Samiti in 2004. The forest under their protection has been currently demarcated as a coupe, and they are waiting to see the cutting operations begin, so that they would get some employment and other benefits. However, the local forest officials did not give any clear picture of the benefits the VSS deserves, and said that even 50% share in the profit could not be assured unless until the higher authority took a decision on the sharing ratio.

As per the rule imposed by the village committee, the villagers are entitled to get 15 pieces of long bamboo free in a year, per household. For extra pieces, a payment was to be made @Re.1/piece. For applicants from other villages, there was no free quota but a payment @Re.1/culm was charged. After the formation of VSS, outsiders are now to pay Rs.5/culm. Earlier, penalty for smuggling was Rs.51/- if the accused belonged to the village itself, and in case of outsiders complaint was registered with the police/Forest Department. Now the forester has asked them to impose a penalty of Rs.1000/- even on the co-villager culprit. Similarly, a membership fee @Re.1/annum used to be collected per hearth(household/HH) which has been abolished after the formation of VSS (*per comm.*).

Loharkhani is another VSS area of Nayagarh Forest Divn. where bamboo is available, but due to unsustainable harvesting by some lessee followed by uncontrolled felling by the local people reduced the bamboo forest to almost a shoot-crop. There are about 20 HHs in the village, all belonging to the *kandha* tribe and very poor. OFDC people came for harvesting in this area sometime back, but the villagers resisted on the plea that commercial exploitation would destroy whatever little hope they had from the clumps under their protection; so the operation was stopped (*per comm.*).

However, case studies in Puri(Khurdha) Forest Divn. indicated a comparatively clear stand of the local authorities(forest) in this matter. For instance, Paikasahi village has been rendering protection to the nearest forest patch of Jalanjali before mid-1990s. This Jalanjali forest is a part of Patia RF, and has a good potential of thorny bamboo. The villagers' protection was independent of the Forest Department, which(FD) therefore did not recognise the contribution officially. The local Range Officer informally clarified that the villagers' protection might have helped in the regeneration of the timber trees, but it had no contribution so far the bamboo forest was concerned. It may be noted here that there is sufficient resource of tenant's bamboo(sundarkani) in the village, hence the villagers had almost no need to depend on the bamboo forest(Jalanjali). Still, about 10 years ago(?) when OFDC staff came to work the bamboo coupe demarcated there, the villagers resisted saying that the unsustainable commercial harvesting by the Corporation would cause great damage to the protected patch. The resistance was so strong that OFDC had to yield to their pressure and go back. Since there was no case of gregarious flowering over these years, and also the villagers had a very effective fire protection arrangement; no case of any significant damage to bamboo due to non-working was observed; and hence the villagers never felt any need to hurry up for allowing harvesting of the same. Very recently, the Forest Department has succeeded in persuading the villagers to form a VSS, but the local DFO did not agree to permit registration of the protected patch in the name of this VSS simply because that is a potential area of bamboo where a coupe is likely to be demarcated, and since the villagers have no documentary evidence to support their claim that they have rendered protection to this patch since long, hence they would not be allowed to take advantage of the commercial potential of the proposed coupe. The Forest Department has recognised the protection effort only from the date of formation of VSS, but the villagers are not happy with this and their stand(as on 8-01-05) is that they would allow commercial bamboo working in the concerned patch only if they get their share(50%).

On the other hand, the Department which has well recognised the protection of Dhani-panchamouza, has taken a stand on the bamboo-rich protected patch of Dhani RF that in case of final harvesting the villagers would get 50% share; and that this patch would be excluded from the normal demarcation of coupes. It may be noted here that five villages('panchamouza') of the Dhani area got united to protect and manage the highly degraded forest patch of their area and succeeded in an impressive regeneration of the forest(including bamboo) during last two decades. The dominant species of bamboo there is thorny bamboo. In 2002 they were allowed by the Department to harvest 36000 culms out of which only 1200 were harvested, and the Department got 600 culms as its share. The culms at their disposal were auctioned @Rs.9.50/culm, whereas the cost of production/operation was much higher. The cutters were paid @Rs.6/culm, and for transportation to the 'depot' labourers were employed on daily wage basis @Rs.60/day/person, each labourers being capable of transporting about 50 culms for the maximum distance. The Department refused to share the cost of operation, but at the same time insisted on the triangular method of harvesting which proved to be very costlier since thorny bamboo is very difficult to harvest. Moreover, the Department also wanted its share in the harvest. Realising the heavy loss in the operation, the VSS committee decided not to harvest the rest 34800 culms. In 2004 they again applied for harvesting bamboo, but requested the Department not to insist on the triangular method. There are reports that the

Department has proposed them to hand over the operation to OFDC and to get 50% share in the royalty to be realised. The VSS committee is yet to take a decision on the same(as on 8-01-05). The Department is hesitant in recognising the claim of the Committee over more than 500 hectares of the protect patch since as per rules each VSS can exercise its power within maximum 200 hectares. Some forest officials have informally suggested that let the five villages do their protection work independent of each other so that there would be five VSSs instead of one, and @200 hectares per VSS, they would be able to assert their claim on the whole patch; but the villagers are not ready to sacrifice their unity.

Post-suspension scenario

Regular felling by OFDC had earlier affected the resource of bamboo in the state because mere OFDC's 'control' was not sufficient to ensure sustainable harvesting. After that, since bamboo has a shorter life span, suspension of cutting operations reportedly resulted in the natural destruction of many bushes since the mature ones were not felled in time. At the same time, regeneration was affected. Besides, unauthorised and unsustainable felling was continuing; and elephants were also a damaging factor for the resource in some places. As a result, when the operation was resumed in the Narsinghpur-Hindol area, the cutters found it difficult to work for OFDC because now they had to put much more labour in the forest than in 1990s whereas they were still being paid at the old rates. Ten years ago, what they could harvest (5 bundles of daba) in one hour, per cutter, has now been reduced by 80%(i.e., one bundle) in the same forest (*per comm...*, Sarat Rana). This means that in the area of their working their daily labour would not fetch them atleast what they earned in 1999 unless the wage rates are revised proportionately. Since OFDC is not ready to make a compensatory increase in the wages, working as cutters no more interests many unless they are left with no options.

Years of uncertainty regarding the resumption of cutting operations had forced many cutters to migrate to other areas, either temporarily or permanently, in search of some alternative as a result of which their number has been reduced more or less by 50% in many areas.

Some cutters are least interested in joining the operation because their earlier wages are pending with OFDC as we were told at Debhuin near Hindol. At Purunakot, the Kolhas told that only one of their colleagues had some money(which is quite significant, i.e. about Rs.1500/-) due to the employing authority⁶.

Betrayal to the tenants

Although the government tried to assert its commitment to not overlook the interest of the tenants for corporate interest, in practice things happened otherwise. The paper mills exercised maximum control over the best bamboo forests of the state and did not care to fulfill the needs of tenants. Moreover, the bamboo they exploited cost them significantly

⁶ They were not sure if OFDC was directly responsible for this, because misappropriations can occur at the supervisor level, etc..

less than what the tenants were required to pay simply because the rate was subsidised for the former.⁷

The Emp. Committee observed in their meeting on 6.10.1988 that out of the expected production of 3.5 lakh MT of forest bamboo in the state, 2.8 lakh MT would be kept for paper mills, 0.50 lakh MT for nistar-payers and artisans, and 0.20 lakh MT as commercial bamboo. In the subsequent period, no special quota was fixed for nistar-payers and artisans, and only two categories of production viz. IB and CB were recognised.

Although the paper mills were usually required to harvest required quantities of commercial bamboo to meet the local needs, Saxena found in 1995 that they did not follow this instruction on the plea that the poor people did not turn up to purchase this bamboo from them(Saxena, *op.cit.*, p.15). It is not surprising to find that those who tried to ensure maximum production for their own use, were not sincere in giving the tenants their share in the bamboo forests under their operation. Further, it has been learnt from a confidential source that there was a secret instruction from OFDC headquarter which discouraged the paper mills in harvesting long bamboo since from commercial point of view OFDC found it unprofitable. In fact, working cost for commercial bamboo was calculated to be significantly higher than that of industrial bamboo (like, Rs.420/MT for CB against Rs.310/MT of IB, for salia species, in 1988-89). The Emp. Committee had allowed the Corporation to include working cost in the price of CB, and hence OFDC was no more legally bound to follow the schedule of rates. On the other hand, people of forest-fringe villages, who had easy access to forest bamboo, found it more affordable to bring their requirement from the local forests(of course, without permission) than paying to OFDC. Still, the Corporation did supply some bamboo to the tenants at various places at subsidised rates, and even purchased bamboo from the neighbouring state and sent to the districts affected by super cyclone in 1999 against a transportation charge only.

In 2002, the government allowed various relaxations so that the paper mills or other big customers/traders would be interested to purchase stocks available with OFDC, but did not make any consideration for the artisans. Those living near bamboo forests have some opportunity to somehow cope with the situation; but for those having no chance for an access to bamboo forests, depots of OFDC or private traders are the only source of getting bamboo; and in the latter case non-availability of and/or higher price of bamboo at the Corporation depot is natural to lead to resentment particularly because OFDC is a govt concern.

Contradictory decisions

While the state was taking steps to tackle with the situation of non-disposal of bamboo, the government decided in 2003 to impose 1% Forest Development Tax on the bamboo

⁷ For instance, for cutting one SU(approx. 50 bundles) of IB the labour charges would be Rs.250 @Rs.5/bundle. With the same money, cutting of 250 pieces of long bamboo would be possible if the cutting +charge is kept at the lowest possible rate, i.e., Re.1/piece. 250 pieces of CB is equivalent to 0.71 SU; hence the production would be almost 30% less in this case despite the same investment.

purchased from OFDC. Similarly, long-term lease agreements, a major demand of paper mills, were not signed although the RMP system continued for several years⁸.

Revival of the cutting operations

The plight of bamboo cutters had been discussed in the state legislative assembly and the government always tried to emphasise that it was due to the restriction of the Central Government that the operations could not be started.

In December 2003, the then forest minister of Orissa said in the legislative assembly that although tenders had been invited for bamboo working in forest divisions having valid working plans, operations could not be resumed as the Central Government asked for certain clarifications. He further assured the house that the required clarifications had been submitted, and hence operations would be resumed (*The Samaj*,19-12-03, p.9).

In 2004, several new developments coincided each other facilitating revival of the bamboo cutting operations. On 5th February that year, the govt requested Mr.Vinod Kumar,IFS, then Director(Operations), OFDC to prepare a scheme for working out bamboo overlapping circles of the forest divisions where working plans had expired. Accordingly Mr. Kumar prepared a consolidated Working Scheme for the concerned forest divisions and submitted the same on 30th April'04. This scheme was valid for 2004-05 to 2007-08 so that bamboo coupes can be worked out on the basis of a 4-year cycle.

On 28-7-04 the state government requested the Central CCF, Ministry of Env. & Forest, Govt of India to approve this working scheme. Although the Ministry was not satisfied with the said document, still on 27th August it allowed bamboo working on condition of the following:

- The approval would be valid upto 30th April'05.
- Adequate measures should be taken to ensure conservation and sustainable exploitation of bamboo clumps.
- The approval would be extended for another year provided the state government furnished baseline data on treatment types(A,B,C) and quality classes(I,II,III)⁹ that was lacking in the working scheme and was vital for consideration for approval of the scheme.

⁸ The GM, JK Crops(Bhubaneswar office) wrote to the MD, OFDC on 16-9-1997 to implement the long-term lease agreement for 12 years as was originally mentioned in the govt order of 8.10.1993.

⁹ Type A and B have well-stocked clumps, but whereas in 'A' the clumps are healthy, in 'B' they are partially damaged (burnt, etc.) or degraded. Accordingly, it is decided whether commercial operations can be allowed, and if so, then to what extent. For instance, type C implies to clumps in such a condition that commercial exploitation is not allowed therein. As regards quality classes, class III contains culms below 6 metre in height as against those between 6 to 9 m. in class II and 9 m or above in class I. Minimum number of culms to be retained in three different quality classes of clumps are fixed in the Working Plans(Singh B., *Revised Working Plan for the RFs and DPFs of Angul Forest Divn.:1990-91 to 1999-2000*, pp.546-47).

The state government failed to furnish data on treatment types, etc. in due time, and requested for more time; hence the approval was extended upto 30th June'05.

On 20th September 2004, the PCCF issued a letter to the concerned forest officers under him to prepare for working of bamboo coupes in various forest divisions of the state excluding sanctuaries/National Parks. The areas for cutting operations were identified as follows:

Forest/Wildlife Divisions where operations were to be carried out as per the respective Working Plans	Forest/Wildlife Divisions where operations were to be carried out as per the Consolidated Working Scheme
Athamallik Bamra WL Bonai Deogarh Ghumsur North & South Kalahandi North & South Rourkela(part transferred from Bonai Divn.)	Angul Athagarh Balliguda Bargarh Berhampur Bolangir(East & West) Boudh Dhenkanal Ghumsur South(part transferred from Parlakhemundi Divn) Jeypore Khariar Khurdha Koraput Malkangiri Nayagarh Parlakhemundi Phulbani Rairakhol Rayagada Rourkela(part transferred from Sundargarh Divn.) Sambalpur(North & South) Sundargarh

Continuation of the RMP system was a matter of concern since many years. Many govt officials were not in favour of continuing this system further, and the PCCF even officially recommended in July 2002 that this should be discontinued and that OFDC should be entrusted with full responsibility in bamboo working. On the other hand, BILT had also expressed interest to work directly under the Forest Department (like the system in AP), and not as an RMP under OFDC. However, considering the interest all the stakeholders(including cutters), and given the fact that OFDC could hardly afford the huge investment necessary for bamboo-working; the Empowered Committee on bamboo recommended for appointment of M/S. J.K. Paper and M/S. Ballarpur Industries Ltd. as RMPs under OFDC 'on firm and written agreement basis'. J.K.Paper was allotted 16 forest

divisions with a target of 112900 MT IB and 610750 pieces of CB, while BILT was allotted 15 divisions with a target of 81900 MT IB and 754250 pieces of CB. The total target fixed was therefore 194800 MT IB and 1365000 pieces of CB. The sale price for IB was fixed at Rs.1700/MT, and past disputes were proposed to be resolved through an arbitration (*vide proceedings of the meeting of the Emp. Committee held on 30.9.04*).

However, the paper mills were still hesitating to accept the decision of the Committee, particularly due to the proposed price of IB. On 7th October their representatives met the Chief Minister followed by an important meeting that took place on 11th October. In this meeting of 11-10-04, the RMPs were told that although the govt had intended for a long term agreement with them, this was not possible at present as the Govt of India had approved the working scheme for one year only. On the other hand, the demand (by the RMPs) that they should be allowed to purchase not in terms of SUs but MTs, had been okayed.

Since price was a major factor of resentment for the RMPs, a core group was constituted for further negotiation with the RMPs. The Group met on 28th October. The RMPs finally agreed to pay Rs.1500/MT, but on the basis of their own assessment of the potential of the allotted areas they said that they could harvest max. 73750 MTs of IB particularly because the time available for the operations was not sufficient enough¹⁰. The Empowered Committee then decided that the RMPs would have to harvest minimum 75000 MT of IB, and that if they achieved above this then they would be eligible to get incentive (rebate) at the following rate:

75000 to 100000 MT: Rs.20/MT

100000 to 125000 MT: Rs.30/MT

125000 to 150000 MT: Rs.40/MT

Above 150000 MT: Rs.50 /MT (*vide proceedings of the meeting of the Emp. Committee held on 6.11.04*).

Although the total sale price per ton was mutually agreed to be fixed at Rs.1500/ton, there was some disagreement regarding the break up. The status as on 6th Nov. '04 was that a break-up in the form of Rs.850 towards operational cost, and Rs.650 towards govt payables had been already considered; but the uncertainty still prevailed which led to a delay in finalising the agreement by another two months. Finally, on 6th January '05 both parties agreed on a break up of Rs.750 towards operational cost and an equal amount towards govt payables, the total being Rs.1500/ton. As per this agreement, the target (of IB) fixed for BILT is 32400 MT in 15 divisions as against 42600 MT for JKP in rest 16 divisions (*The Samaj*, 15-1-05). The RMPs were required to harvest CB @5% of this target fixed, for which they would be entitled to get Rs.5/piece (CB) as reimbursement of their operational cost (for CB).

As per the latest arrangement, the rebate would be calculated on the net payables (royalty, etc.) as under:

¹⁰ It may be recalled here that the operations should have been started ideally by 1st October.

75000- 1 lakh MT: Rs.715/MT (i.e.,Rs.35 on Rs.750/ton)

1 lakh to 1.25 lakh MT: Rs.680/MT

1.25 lakh to 1.5 lakh MT: Rs.650/MT

The RMPs are required to first send the bundles to OFDC's depot where these would be weighed and assessed. Within 90 days of production of the bamboo, the RMPs are to lift their stock from OFDC's depot. If however they lift the same after the expiry of this 90-day period, then land rent @Re.1/MT/month would be charged on them which would increase to Rs.5/MT if they do not arrange for lifting within next 90 days. If they still fail to lift the stock, then the bamboo would be declared as the property of the govt..

The naxal effect

In the very year of nationalisation, OFDC faced a major dilemma in the naxalite-affected areas of the southern districts. In Malkangiri, where some of the best bamboo coupes exist(ed), the naxalites demanded Rs.5000 per truck to allow it for transporting the bamboo and since this was not possible for the Corporation, a period of uncertainty continued for about an year since OFDC could not dare challenging the naxalites. Finally, the authorities had to yield to this demand, which helped them for lifting and transporting about 12 truckloads¹¹.

In January 1993, OFDC informed the govt that production in Malkangiri area would not be more than 10000 SU due to the naxalite problem, and that supply of 80000 SU of IB to BILT as per the BIFR award would not be possible due to this reason. In the meantime(March '93) both Straw Products and BILT represented to the govt to take up harvesting work in this area. Since bamboo was a nationalised item, it was then decided to find a solution of the problem through the appointment of 'labour contractors' under OFDC.

Demanding ransom was not the only activity of the naxalites. They were not happy with the wage rates fixed for the bamboo cutters. In one case they once asked a sub-divisional manager appointed by OFDC in the Chittrakonda area (Malkangiri) to bring the bamboo bundle from the hill on his own shoulder so that he could feel what a tough job it was. The officer got frightened and left the place, after which no body came to replace him in fear of facing the naxalites. Hence, bamboo operations had to be stopped in that area for some time(*per comm...*, J.K.Parida).

This way bamboo working was affected in the naxalite-prone areas. The activities of naxalites was increasing and since these people tried to show that they were fighting for giving justice to the poor tribals, the govt found it difficult to mobilise the support of the local people against them. In September 2004, after the naxalites demonstrated their strength in the form of a rally known as 'jan garjan samabesha' at Bhubaneswar, the govt announced several steps for the development of livelihood conditions in the concerned tribal districts and one of these steps included revival of the bamboo cutting operations.

RMPs like BILT handled the situation by establishing a working relationship with the naxals, i.e., they tried to ensure that the bamboo cutters were not exploited. Being private companies they exercised much more flexibility in this matter, than OFDC, which helped them sustain their operations in such areas.

¹¹ Source confidential

State bamboo mission

The National Mission on Bamboo was announced in March 2004 with an objective of promoting bamboo cultivation, processing and trade in the country so as to give facilitate rural industrialisation, employment generation and tourism (Patra R. 2004, *Plight of Bamboo Artisans in Orissa*, paper circulated at a workshop in April 2004). The Mission has prepared an action plan to this effect which will also help mitigate environmental degradation. Under this plan, an additional 6 million hectares area have been proposed to be brought under bamboo plantation during the 10th and 11th year plan; and through integrated bamboo development programme 8.5 million people are expected to get employment and 5.01 families to escape poverty on a sustainable basis(Karmakar K., and Haque M., *Bamboo and Rural Employment*, Yojana, July 2004,p.21).

Working on the same line, the state govt has submitted to the Planning Commission a proposal for investing Rs.100 crores, for developing bamboo in the state, particularly to give a boost to its production (*The Samaj*, 5-12-03). The Secretary(Forest & Environment Deptt.) also announced in a workshop organised by RCDC in April 2004, that the govt was pursuing a separate bamboo policy.

The govt has also announced that it would focus on four districts(Ganjam,Sambalpur, Balasore and Koraput) for the development of 'bari-bamboo'(i.e., backyard cultivation of bamboo like sundarkani) used by artisans(*The Statesman*, Orissa page,21-7-04).

Cutting:

Bamboo cutting operations are tedious as the culms are hollow (and tough when mature). The difficulty increases when the prescribed cutting rules are followed because the cutters are to be careful and attentive so as to implement the prescriptions.

Cutting is prohibited from July to September. For salia forests, coupes are worked on rotational basis in a 4-year felling cycle. Clumps containing 10 or lesser number of culms are to be avoided for cutting, and in those selected for felling, all culms are to be cut except the following:

- Culms under 13 months old.
- Six whole upright green culms evenly distributed over the clump.
- Flowering culms (till the seed ripens) (Pathak A.K., *op.cit.*).

For daba clumps, the silvicultural norms for harvesting have changed over time. For instance, lessees like TP Mills used to adopt the principle according to which in each three clumps, one was clear felled. The current norm is different, i.e., one-third of each clump is to be felled¹². Both methods tried to ensure sustainability by limiting the harvesting to about 33%, but the latter one is said to be faulty as harvesting one-third from each clump

¹² Each clump is divided into three segments, and the middle segment, which is in the form of a triangle, is to be felled at the first working. However, stumps lower than 50 cm, or having two or lesser internodes, are not to be cut. This method is however for congested clumps, and in case of open clumps culms more than 3 years

would expose the inner parts of the same to elephants and smugglers, etc., thereby facilitating the damage/theft(*discussion with Dilip Pradhan*) although silvicultural prescriptions are there to take precautions against the same.

Young shoots(*karadi*) are not supposed to be cut. The cutters select the appropriate culms on the basis of their experience and perceptions. Culms of different ages have one or more distinguishing feature on them(like, presence/absence of nodal sheaths, difference in colour and also in the height to which ash-like patches are naturally found on them) which helps for their selection.

The silvicultural rules also prescribe that after cutting, all debris should be removed from the clump, and the latter is to be left cleaned. Precautions should be taken so as to avoid any damage to rhizomes or rootstock; and exposed rhizomes should be covered with soil wherever possible(Singh B.P., *Revised Working Plan for the RFs and DPFs of Angul Forest Divn.:1990-91 to 1999-2000*,pp.551).

During summer, the cutters usually prefer to work from 6 am to 10 am; and during winter, from 8 am to 2 pm.. This is because with a burning sun over their head they find it difficult to continue working. However, since they are paid on the basis of their harvest, many of them try to work till afternoon so as to harvest (and earn) more.

Coupes in a hilly terrain are normally divided into three compartments and the most difficult one is worked out first; i.e., cutting in the hill tops starts first and is over by March since during summer working in that area would be very difficult. October to December is considered to be the best time for the operation.

An expert cutter can normally harvest 6 to 8 bundles of *daba* bamboo in 4 to 6 hours as against 4 to 5 bundles of *salia* during the same time. This is simply because a standard bundle of industrial bamboo contains culms each about 2.3 metres(approx. 7 ft. 6 inches) in length, and the number of pieces is only 7 in case of *daba*¹³ as against 21 in case of *salia*. Hence, cutting a bundle of *salia* means cutting 200% more culms than *daba*. On the other hand, the cutters are more comfortable with *salia* than *daba* because the latter contains thorns and is tougher for cutting.

Salia being a hilly species, its harvesting operations are normally confined to hill areas. On high hills, a cutter can harvest max. 5 to 6 bundles of *salia* per day as against 12 to 14 bundles of the same in the lower slopes. Hence, the average rate of harvest per cutter per day is taken to be 8 bundles. Operations in the Dasapalla area in 2005 reportedly had a yield varying from 10 to 15 bundles per day per cutter, and to include dragging hours on the day of cutting, the average production was reduced to 12 bundles as against 15 bundles without dragging (source: Mr. S.D.Sinha, BILT).

old are to be harvested on culm-selection basis provided the number of culms left uniformly distributed in a clump should not be less than 10 (Singh B.P., *Revised Working Plan for the RFs and DPFs of Angul Forest Divn.:1990-91 to 1999-2000*; pp.550-551).

¹³ Earlier, a *daba* bundle would contain 6 pieces, each 6 ft. 8 inches long. OFDC probably wanted to adopt a uniform standard(length) for both *daba* and *salia*.

Dragging and stacking is often not done immediately after cutting. The cutters start these works after they cut sufficient quantity of bamboo.

Cutters' wages are paid on the basis of the rates fixed by the Labour Commissioner. The wages should not be lesser than the prescribed ones, and several factors including ground realities may force the employer to pay a higher rate. For instance, in naxalite areas the employers would like to pay the best possible price so that the naxals are not annoyed.

Annexure-3 gives the wage rates prescribed by the Labour Commissioner. As one would find therein, there is no rate fixed for daba. In fact, there is no mention of the species(salia or daba). Further, there is no recommendation for long bamboo.

Following are some of the latest rates of wages(average) for salia:

1. Industrial bamboo:

For cutting a bundle(salia IB): Rs.4.50 to 5(this includes charges for dragging and stacking at the nearest roadside)

Taking the bundle to the loading site: Rs.1.50 to 2(or more) depending on the distance

Taking the average production and transportation capacity of a cutter as 8 bundles per man-day(8 hours), his income per man-day is ±Rs.50.

2. Long bamboo:

For cutting a piece: Rs.2(average) (*discussion with* villagers of Pokharigochha)

In 2005, the rates of payment in the Dasapalla area reportedly varied from Rs.5 to Rs.7.50 per bundle of salia, and Rs.1.50 to Rs.2 per culm of long bamboo. As the months got hotter, the payment increased(say,Rs.5 in January became Rs.6.50 in March) since the employer was in a hurry to achieve his target within the short period of time.

In addition to the above, the cutters get some additional income for rebinding the bundles at the depot @Re.0.50 per bundle and also for loading the trucks @Rs.1.25/bundle. For loading long bamboo the payment may be @Rs.1.50 per piece since handling long bamboo pieces is difficult.

Cutting charges for long bamboo is often fixed in terms of 100 pieces. Piece-meal rates are also fixed for loading both IB and CB in the trucks.

Cutting in private lands may fetch higher wages. For instance, cutting thorny clumps provides a lot of scope for the cutters to demand a significantly higher price(Rs.7 or more per piece).

The cutters sometimes risk their life while working in the forests. In some cases, there is a threat of elephant attack. Besides, in some culms/clumps dangerous snakes like *boda* (viper) and *chiti* (krait) are encountered. Hence, any negligence or absent-mindedness can be fatal.

In some cases the cutters camp inside the forests when they are far away from their home. Group work gives them strength and confidence to face the challenges and it is for this reason that some of them take their families with them.

Processing:

Bamboo is processed differently for different kinds of use. Green/mature bamboo poles are either directly used or are split longitudinally for house-building purposes. Thorns are removed with the help of an axe or similar instrument before any such use. However, untreated thorny bamboo is directly used for fencing purpose.

Sometimes bamboo of 0.5 to 1.5 inches diameter are required not only for house-building purposes, but also for other specific reasons, like for use as a walking stick, or as a protecting weapon. For such kind of specific use, the bamboo needs to be straight, solid, strong, and free from thorns, etc.. Ideal pieces of this kind are hardly available, particularly if searched in thorny bamboo culms. Hence, some additional processing is required for whatever available material. For instance, pieces that are not straight are subjected to heat treatment (baking on open fire, particularly after applying a coating of oil).

Green culms are sometimes immersed in ponds or other water bodies for few days. This helps in increasing their durability because some water-soluble substances, which facilitate insect attack, are leached out in this process (Roonwal *et al* 1966 quoted in Seethalakshi K. & Muktesh Kumar M. 1998, *Bamboos of India*, p.65).

Weaving is the most intricate part of non-industrial bamboo processing. On the basis of the strength of the bamboo cane, it can be divided into three classes, as under:

1. Coarse: This requires more muscle power as the strips used are thicker and wider than those used in the other two. Large bamboo mat-like structures, which are even used as a substitute of bricks¹⁴ in making mud houses, are a product of this kind of weaving. Also belong to this class are the *rodara* (large basket-like constructions used for transporting various materials from one place to another and the *huge jar-like structure* used for storing paddy. The *jhudi* used by labourers for removing soil, stone and other such things at construction sites is also a product of this kind of weaving.
2. Medium: In this case, the products are of comparatively smaller size (unlike *rodara*) and thin strips are used in them. A wide range of products belong to this class which include *paan-jhudi* to *kula*.

¹⁴ Mud is applied on both sides of this mat (vertically fixed) to construct the wall.

3. Fine: This kind of weaving essentially uses bamboo strips that are usually less than 0.5 cm in width. *Jalia*(fish traps), stylish caps, etc. belong to this class. Most of the products of this class are decorative in nature.

Weaving can be simple or compound. In 'simple' weaving only one layer(network) is created whereas in 'compound' weaving two or more layers are created. Most of the bamboo-ware belongs to the 'simple' type whereas few like the *bhati-tukuri* are the product of 'compound' weaving.

Some like Mr. Pradeep Mohapatra of National Rural Development Council, Sonepur believe that in the strict sense of the term, producers of baskets, doli, jhudi, etc. can not be called 'artisans' since their work is not artistic. Artistic work, according to them, has a finer sense of creativity often accompanied by appropriate choice/use of colour combinations. However, it is also true that the artistic touch is not totally absent in the traditional bamboo-wares of Orissa; rather it seems to have remained underdeveloped due to want of scope in many cases. Otherwise, bamboo artisans sometimes apply colour(now, often synthetic) to their products(particularly, small baskets); and sometimes they just use the greenish uppermost layer of bamboo alongwith the creamish lower layer in a pattern that itself gives a feel of colour combination.

Green bamboo(*salia* and *sundarkani*) is mainly used by the artisans because extraction of strips is comparatively easier and the strips are also flexible unlike those of the mature bamboo which can be used only for few 'coarse' works (like *odara* making). Products made of green bamboo look fresh and attractive with a creamy colour and at the same time are less durable than those made of mature bamboo, implying to the fact that the customer will have to purchase a new one after some time, hence ensuring sustainability of the trade in terms of demand. Products made of mature bamboo look dull though they are more durable.

Different kinds of bamboo-ware are made in Orissa as in the following table:

A. Traditional products:

1) Mati-jhudi

a. Gania(Dasapalla): For three jhudis:

Cost of raw material(bamboo) : Rs.30

Labour: One day (say Rs.50)

Selling price: Rs.90 @Rs.30/piece

Net profit: Rs.10(to include labour charges)/Rs.60(to exclude labour)

b. Belabani(Nayagarh): For 50 pieces,

Cost of raw material: Nil

Labour: Total 8 days approx. (two and half days for bringing the bamboo from local forest¹⁵ + 1.5 days for extracting thin strips + 4 days for weaving)

Selling price: Rs.500 to 600 @Rs.10 to 12 per piece (*per comm.*, villagers of Belabani)

c. Saharpada(Mayurbhanj): For 10 pieces,

Cost of raw material(bamboo) : Rs.55

Labour: Three man-days

Selling price: Rs.12/piece

2) *Odara* (4 *hata*¹⁶ long)

a. Gania(Dasapalla): For one piece:

Cost of raw material: Rs.100

Labour: Two days (say Rs.100)

Selling price: Rs.250 to 300 per piece

b. Bainshia(Joranda): For one piece(standard size),

Cost of raw material: Rs.100

Labour: Three days (say Rs. 150)

Selling price: Rs.250 to 300 per piece

3) *Kula*(winnow)

a. Bandhkhaman(near Gurundia): For 4 pieces,

Cost of raw material: Rs.50

Labour: 4 days (say Rs. 200)

Selling price: Rs.10 to 15 per piece during off-season and Rs.50(max.) per piece during the peak season (*per comm.*, Pendo Lakra)

4) *Jhampi*(hat)

a. Bainshia(Joranda):

For 10 pieces of *chulia jhampi* (a coarsely woven cap that is used during agricultural work):

¹⁵ Actually, two persons help each other to cut and bring max. 50 pieces of bamboo in a day. The calculation given in the above is for a single artisan.

¹⁶ *Hata*(literally meaning hand) is a measure of length using the hand and approx. equal to 1.25 feet.

Cost of raw material: Rs.100
Labour: Four days (say Rs. 200)
Selling price: Rs.250 @Rs.25 per piece

For 15 pieces of *topi jhampi*(finely woven and colourful cap not meant for hard work):

Cost of raw material: Rs.100
Labour: Eight days (say Rs.400)
Selling price: Rs.300 to 400 @Rs.30 to 40 per piece (*per comm.*, villagers of Bainshia)

Bamboo broom¹⁷ is rather an exceptional product, since broom -making from bamboo is rather uncommon. At Saharpada(near Karanjia, Mayurbhanj) such brooms are made, and the cost analysis is as under:

For 10 to 12 brooms:

Cost of the raw material: Rs.20
Labour: Three man-days
Selling price: Rs.3(average) per piece (*per comm.* Gita Matia, Kedar Matia and Markanda Matia)

Talabojha is a value added form of ordinary bamboo basket. For this purpose strips extracted from Tala(*Borassus flabellifer*) bahunga('branch') are coated on the basket through secondary weaving. These stripes are more flexible than bamboo stripes and besides giving a glaze to the basket they also add strength to it by which the durability increases significantly.

In Khairipanga(Baramba) and Bokada(Narsinghpur) about 100 HHs belonging to the Chamar(SC) caste practice this profession. They have basically marginal farmers and gradually giving up this profession due to decreasing scope in marketing.

They themselves do not make the bamboo basket but purchase it from others @Rs.5 to 6 per piece. Their labour is confined to extraction and processing of stripes from Tala bahunga and then coating it on the basket. It takes about 5 days' full time engagement for a person to complete the whole job from 10 baskets. 20 bahungas produce the stripes required for one basket and a family can produce about 40 such baskets in a month. The basket is sold @Rs.25 to 30 per piece and this way the business runs on almost 'no loss no profit basis' if labour charges are considered as per govt rates (*per comm.*, Duryodhan Behera and Biranchi Behera, Khairipanga).

¹⁷ Made of bamboo sticks extracted from bamboo.

B. Non-traditional products:

1. Ladies handbag (Lachhipur, Sonapur):

Per piece, raw material: Rs.15(inclusive of adhesive)

Labour: 2 mandays

Sale price: Rs.50(local) to Rs.100(state-level exhibitions)

2. Hanging lamp(Lachhipur):

Per piece, raw material: Rs.25(electrical accessories extra)

Labour: 3-4 mandays

Sale price: Rs.150(local) to Rs.200(state-level exhibitions)

3. Lantern(Lachhipur):

Per piece, raw material: Rs.35(inclusive of electrical accessories)

Labour: 2 mandays

Sale price: Rs.150(local) to Rs.200(state-level exhibitions)

4. Hairclip(Lachhipur):

Per piece, total cost of production: Rs.5

Sale price: Rs.15(local) (Source: National Rural Development Council, Sonapur)

5. Eagle(Sianbahal, Sundargarh):

Per piece, raw material: Rs.50(inclusive of adhesive, etc.)

Labour: 2 mandays

Sale price: Rs.200(state-level exhibitions) (Source: Pratap Nayak and others)

One can see in these cases that cost of raw material is significantly less than that of labour. Fine and delicate canes are extracted from small quantity of bamboo.

Delicate work often causes considerable wastage of the raw material(bamboo cane) due to damage during weaving or extraction. If the price of a hairclip is three times of the production cost, then that is due to this factor i.e., the sale price compensates the loss due to damage.

Colour can be applied, but often the transparent Touchwood(polyurethin coating) is applied which imparts a glaze and increases durability.

6. Furnitures:

Bamboo furnitures were introduced by an NGO Aparajita under their project for supporting artisans of super-cyclone-affected areas. Villagers of Sahada in Jagatsinghpur district, and Tikhiri in Kendrapara district have been imparted training on using bamboo for making

sofa, table, easy chair, etc.. Seasoned and chemically treated bamboo culms are used for this purpose, and wood is put inside the hollow parts of culms where there is a need for upholstery work. Culms are exposed to seasoning and chemical treatment for about 15 days, which increases their durability, and also reduces the risk of insect attack although it also increases the raw material price by about 100%.

Cost analysis of some of such furnitures are given below:

a) Sofa set:

Raw material: Rs.3000

Seasoning/processing: Rs.500

Wage: Rs.3000 (about 18 mandays are required)

Transportation (to exhibitions, etc.): Rs.500

Sale price(max.): Rs.8500(without cushion)

b) Easy chair:

Raw material: 300

Wage: Rs.500(3 mandays required)

Sale price(max.): Rs.1100 (Source: Project Aparajita, Bhubaneswar)

Artisans of Sianbahal use bamboo rhizomes. Initially they used to clear the small roots found on the rhizomes, and then sundry before use. Later they learnt in the training workshop organised at Kolkata that if the dried rhizome could be boiled in boric acid solution, then risk of insect attack would be minimised. Now they are implementing this process (*per comm.*).

Ply-Boo: Value addition through reprocessing

'Gram Vikash' is a well-known NGO of Ganjam district with its headquarters at Mahuda near Berhampur. About 25 years ago its chief functionary took steps to introduce a technology that produced composite boards from bamboo, like plywood. He got the idea from his experience in China though the technology is actually said to have developed at Dehradun long back without proper implementation. The processing is not a very complex one. Locally made bamboo mats are chemically treated to develop resistance against borer attack and water, etc. and then two or more such mats are subjected to pressure under hydraulic hot press. The machines used are those used in the plywood industry.

Gram Vikash established this industrial unit at Mahuda, but after some time it became sick as the production was not commercially viable. Then M.K.Mohapatra, already associated with the organisation, proposed to run the unit independently on lease basis. He changed his strategy and not only produced bamboo boards containing plyboards inbetween two mats(hence the term ply-boo), but also started making use of the boards at the unit itself for furniture making, etc.. Bamboo mat was initially supplied by local artisans of Ganjam and neighbouring districts, but due to lack of consistency in the supply he now purchases the same from Assam, that too almost at the same cost.

The size of each bamboo/ply-boo composite board is 6ft.X 4 ft. and it is available in several thicknesses. Claimed to be much more durable than water-resistant plyboards, it is also comparatively difficult for the carpenters to work with because of the toughness and structure of bamboo mats. The price is almost 16% higher(Rs.35/square feet) than that of water-resistant plyboard. Still Mohapatra says that the product has takers not only in the Berhampur market but also outside Orissa(like Bangalore). However, commercial viability is still a problem due to a number of reasons; but Mohapatra is confident and he has even worked as consultants to set up similar units in north-eastern states (*per comm.*).

Decorative gateways are made at Bhubaneswar by migrant artisans of Andhra. Against a raw material cost of Rs.100 and labour of two-mandays, two gateways can be made and sold @Rs.200 to 400 each depending on the pattern adopted. Such items are in demand during festive occasions like Durgapuja(*The Sambad*, 16-9-04, p.9).

Sticks for agarbatti industry

A survey by the Khadi & Village Industries Commission(KVIC) reveals that the average consumption of incense sticks in Orissa is @10 tons/day, i.e., about 3600 tons annually. Of this, only 23% is produced in the state and the rest comes from other states. For manufacturing 1 kg agarbatti, about 250 gram sticks are required. Taking the average production of agarbatti in Orissa as 828 tons, the quantity of sticks required would be more than 200 tons. However, the production of sticks in the state is quite negligible and hence agarbatti manufacturers depend basically on supplies from north-eastern states. Such supplies are not regular through out the year since seasonal factors and several other things affect the production and transportation. Hence, there is a huge scope for the production and marketing of sticks in Orissa.

Mechanised production is quite viable. The machine costs around 1.2 lakhs, and the rate of production is 10 kg/hour. Fresh-cut bamboo is to be sundried for two days followed by soaking in water for a day, after which it is to be sundried again but lightly and then, the nodes are to be rejected by cutting. The cut-pieces of culms are further processed in different stages in the machine to finally produce sticks of desired specification.

Average price of the stick is Rs.16 to 18 per kg. In one man-day, production worth Rs.1280(say) could be achieved. Against this, cost of the raw material, wage of two persons, and expenditure against the machine would be quite lower. To ignore the node-parts rejected, wastage on production per kg of bamboo is 10 to 15%. The KVIC gives some subsidy on the purchase of the machine in deserving cases, so self-help groups can take up this activity. Availability of bamboo from local sources at low price would be an advantage(based on discussion with Sri R.C.Nayak, lecturer, Multidisciplinary Training Centre, KVIC, Bhubaneswar).

Food processing

Young shoots of bamboo are cut into tiny pieces and then soaked in *haldi* water for 3-4 hours after which the stuff is cooked alongwith other ingredients to make delicious curries. While *karadi* as a food item is used fresh, *hendua* is meant for storage for a long period. Shoots washed with water and then their tiny cut pieces treated with salt are fermented for 2-3 days after which they are sun-dried and stored for future use (Rath G.C. 2002, Baunsha Karadi Kan Khadya Upajogi?, *The Prajatantra*, 2nd March). Alternatively, pieces meant for *hendua* can either be hard dried(under sun), or preserved with a mixture of salt and lemon juice; and in this case fermentation is not allowed. *Kardi* does not need any preservative; bottle tight-packed with fresh *kardi* is turned upside down for some time so that the water/shoot-juice comes out, and this ensures preservation of the *kardi* stuff. It is to be noted here that the shape and size of pieces of *kardi* and *hedua* are quite different(source: Puspanjali Satpathy).

Potentiality:

Almost 80% of the state's bamboo belongs to *D.strictus* as against 10% of *B.bamboos* and 10% other species. Orissa has 9% of the country's total bamboo forest area and 7% of the country's total growing stock of bamboo. About 1374.77 sq. km. and 17794.61 sq. km. area in the state contain pure bamboo forests and mixed(with tree crops) bamboo forests respectively(Mohanty D., *op.cit.*). The average annual production potential has been estimated to be more than 2.5 lakh MT from these forests.

Potentiality of bamboo is almost nil or negligible in the undivided Forest Divisions of Baripada, Karanjia, Keonjhar and Nabarangpur (*per comm.*, Narendra Sethi, Conservator of Forests, Working Plan Circle). Best quality bamboo is abundant in Bhanjanagar, Bhawnipatana and Ramgiri regions (*per comm.*, Prafulla Mishra, OFDC).

Since the paper mills were not legally bound to take up silvicultural operations during/after harvesting, the bamboo forests were harvested often unsustainably which negatively

affected their regeneration and hence potentiality. Some observers believe a 50% reduction in the production capacity just because of this reason, in ten years (Human & Patnaik 2001 quoted in Saxena, *op.cit.*, pp.13-14).

Many parts of the state contained bamboo bushes on private or common lands of village areas, which were good enough to meet the local demand. Some of these resources have been lost due to waterlogging by either flood(as in Kakatpur area) or irrigation(as in Mahakalpada area, vide *The Samay*, 25-3-03,p.8), or some disease(as in the Nimapada sub-division vide *The Samay*,31-3-03, p.7), or unsustainable use. Unsystematic exploitation of bamboo shoots is also a factor in some areas. Further, gregarious flowering has also been destructive in some cases.

Bamboo shoots normally appear in the periphery of the clumps. If however, they or the young culms are unsustainably harvested, then the clump tends to divert the shoot-generating power in a different direction i.e., shoots try to appear from within the clump where there is but little space for their healthy growth. This way the normal healthy process of regeneration is badly affected.

Lack of proper assessment of the potentiality of forest bamboo has created confusion in various spheres. Average of 12 years actual production was a basis for estimating the potentiality of bamboo in various forest divisions, and the following table illustrates division-wise potentiality accordingly. However, assessment on the basis of physical sampling was recommended several times. An example of the confusion created due to improper assessment was that the potentiality of undivided Jeypore Forest Divn. including Malkangiri area was estimated to be 80000 MT, and BILT which was the RMP for this area, was charged for under-harnessing this potential as it achieved a much lower production. The General Manager, BILT therefore wrote to the Managing Director, OFDC on 9-10-96 that the allegation of under-production was baseless since the estimated potentiality was unrealistic. He even offered that his company was ready to take up a detail potential survey in this area on its own. Since assessment on the basis of physical sampling could not be done in this area, the authorities decided to expect the out-turn on the basis of the average of OFDC's figure and the estimation given by the Conservator of Forest(Koraput). The production in this area was 34771 SU during 1996-97, and the target fixed for the next year was 35000 SU(*Agenda notes for the meeting of the Emp. Committee for the 1997-98 crop*). Rangadhar Mishra, a forest officer, who conducted a survey in the Malkangiri area on physical sampling basis; confirmed the potentiality at approx.35000¹⁸ MT. He took a pioneering role in harnessing this potential by developing roads, etc., which helped to tap the potential of earlier untapped patches, and this in turn increased the production more or less by 50%(*per comm.*).

The assessment as furnished in the following table shows a total potentiality of 220944 SU, but OFDC estimated in 2002 that potentiality of Athagarh, Athamallik, Baliguda, Bamra, Deogarh, Dhenkanal, Kalahandi, Nayagarh and Rairakhol Divisions would be about 30000 SU against the earlier(as in the following table) estimation of 75850 SU. Further,

¹⁸ Now supposed to be reduced to 25000 MT.

wildlife(WL) sanctuaries are to be excluded. This way the total potentiality would be much less, i.e., about 1.6 lakh SU.

<u>Forest Division</u>	<u>Potentiality in SU</u>
Angul	3800
Athagarh	6566
Athamallik	2109
Badrama WL	6837
Baliguda	14026
Bamra	4659
Bolangir	4639
Bonai	8306
Boudh	7936
Deogarh	4462
Dhenkanal	1713
Ghumsur North	9598
Ghumsur South	10323
Jeypore/Malkangiri	15499
Kalahandi	27315
Khariar	2532
Nayagarh	11169
Parlakhemundi	17035
Phulbani	15482
Puri	3187
Rairakhola	3831
Rayagada	16685
Sambalpur	13081
Satkoshia WL	7712
Sunabeda WL	191
<u>Sundargarh</u>	<u>2251</u>
Total	220944

Source: (Sharda A.K., *op.cit.*)

Potentiality of individual coupes may vary significantly. For instance, in the Baisipalli area(Nayagarh) one coupe yielded about one lakh bundles of IB(and 43000 pieces of CB) whereas another one yielded only 18000 bundles, in the same year(*per comm.*, Madanmohan Barik).

Demand:

In 1988-89, the demand for industrial bamboo was estimated at about 4.3 lakh tons when all the four units were in operation in the state. The individual requirements were as under:

<i>Paper mill</i>	<i>Requirement in ton</i>
Straw Products Ltd.(JK Paper)	117600
Orient Paper Mill	182400
TP Mills(Chowdwar)	48000
SEWA (Jeypore)	80000

(Source:OFDC)

Estimation by OFDC in 1997-98 suggested the requirement of raw materials in the four units as under:

<i>Paper mill</i>	<i>Requirement in ton</i>
Straw Products Ltd.(JK Paper)	117600
Orient Paper Mill	182400
BILT(Chowdwar)	54950
BILT(SEWA)	58136

(Source: Agenda notes for the meeting of the Emp. Committee for 1997-98 crop)

The estimation furnished in the above table was actually based on the principle that per ton of paper produced, 2.8 MT of raw material would be required. Accordingly, the requirement was estimated on the basis of the paper production in individual mills during 1996-97. For instance, JK Crop produced 75984 tons of paper in 1996-97, hence @2.8 times of this figure, its raw material requirement was estimated to be 212755 MT. It may be noted here that during early '90s, the adopted proportion of raw material to paper was 2.5:1(vide *Proceedings of the Emp. Committee meeting on 25.10.94*).

However, practically there were several variations to the above estimations. If bamboo is taken as such, then the proportion of raw material to paper would be 3.67:1. This is for naturally dry bamboo(salia) having about 20% moisture. This bamboo is machine-dried in the paper mills to turn into what is known as 'bone-dry'(BD) bamboo; and in the case of BD bamboo the proportion changes to 2.2:1.

Paper mills used wood since long, but the ratio of bamboo and wood was about 90:10. Production in Orissa was not sufficient to meet the requirement of the mills. For instance, for the 1997-98 crop, 2.53 lakh MT of bamboo was proposed to be distributed to the four paper mills against an estimated raw material requirement of 4.665 MT. The practice during mid-'90s was that the allocation to individual mills was limited practically to about 50% of their raw material requirement. This kind of shortage over the years, as well as the price of bamboo forced paper mills to adopt commercially viable technology so that dependency on bamboo could be reduced to minimum. During '90s the consumption ratio of bamboo and hardwood changed to 50:50 in some paper mills, and by 2003, it changed to 20:80 in cases like JK Paper. This company had a requirement of 117600 MT of bamboo and 50400 MT of hardwood in 1989, which increased to 127400 MT and 54600 MT

respectively, in 1990; i.e., the ratio of bamboo and hardwood was 70:30. By 2004, this ratio was reversed. Similarly, the mill at Chowdwar did not have latest technology to maximise hardwood consumption; still it modified some machines like the chipper and crusher to accommodate hardwood, and even succeeded in using chakunda (*Cassia tora*) timber, finally reducing its requirement of bamboo to about 20000 tons.

Both Orient Paper Mill and Titagarh Paper Mill(Chowdwar) had very old model machines because of which the cost of production increased substantially with increase in raw material prices and labour wages, etc.. Chowdwar mill is said to be having one of the highest labour costs(about Rs.5000/ton of paper) in Asia. The OP Mill management planned for modernisation of the unit and wanted to reduce the excess manpower through compulsory retirement, which led to resentment on the part of workers. Situation worsened when the management tried to divert bamboo to their second unit in the neighbouring state of MP, and the workers opposed this move. Finally, the mill was closed in 1996-97(*per comm.*, R. Bakshipatra). The TP Mill, which started its production by 1960, was closed first in 1989 basically due to the unprofitable operation¹⁹. The Board for Industrial Finance and Rehabilitation(BIFR) considered the case of the latter and recommended for a concession @Rs.100/MT on the raw material price(i.e., bamboo sold by OFDC). Ballarpur Industries(BILT)²⁰ took over this factory in 1991 and started production in 1992; but finding the production cost unaffordable the mill was closed in 2002-03.

After the closure of BILT(Chowdwar) and OP Mill, the demand of industrial bamboo drastically came down in the state. The situation is however under control to some extent as the two running mills('Emami' being not considered) have substantially increased their production capacity(and hence the raw material requirement).The current demand of two running mills is as under:

<i>Paper mill</i>	<i>Total raw material demand</i>	<i>Demand of bamboo</i>
JK Paper	4.5 lakh ton	135000 tons(at wood-bamboo ratio of 70:30)
SEWA	2.25 lakh ton	90000 tons (at wood-bamboo ratio of 60:40)
Total demand of bamboo		2.25 lakh tons(± 5 to 10% variation to be allowed)

This indicates that the potentiality currently available in the state can be well utilised by the existing paper industries. In terms of practical achievement, the demand of the paper mills can be either under-fulfilled, or fulfilled at the cost of those who depend on the long bamboo produced from forest.

¹⁹ The non-operational mill was handed over to the Thaper Group(BILT) in 1991. The latter continued running the mill for about 10 years and then asked permission for a luck-out, to which the govt did not yield. However, the company implemented its decision for closing the mill. Recently, it has announced that the old mill would be gradually converted to a modern pulp & paper plant(*The Samaj*, 21-1-05; *The Sambad*, 21-1-05).

²⁰ This company has also purchased another sick paper mill(SEWA), originally established in 1984, at Jeypore.

In practice, it has been found that getting sufficient hardwood is still a problem for the two running mills. Under such circumstances, the paper mills are actually ready to increase their consumption of bamboo if the price is acceptable for them.

The Empowered Committee observed in 1995 that the annual consumption of commercial bamboo in the state was around 1732 SUs as against a likely production of 259900 SUs. However, this seems to be far from reality.

Betel farmers need large quantities of long bamboo. For instance, in Kakatpur region the annual demand(sale) is about 50 lakh pieces whereas in Chandanpur area it is around 10 lakh pieces, per annum. If total requirement in betel farming is assumed to be 100 lakh pieces of *salia*, then calculated at average 12 ton per 4000 pieces, the total demand comes to be around 30000 tons per annum.

The following table gives an idea of the increasing in demand(in MT) of bamboo in the state between 1991 and 2001:

<i>Demand by utilization pattern</i>	<i>1991</i>	<i>1996</i>	<i>2001</i>
Domestic use	2.08142	2.29465	2.48842
Paper pulp	2.60000	2.60000	2.60000
Total	4.68142	4.89465	5.08842

(Source: Govt of Orissa: Forest Department, *Orissa Forest 1999*, p.33)

Total demand of bamboo in the state has been currently estimated at 10 lakh tons(*The Samay*,2-12-03).This should include demand by paper mills, artisans, general tenants, tent houses and construction sector.

Production:

After nationalisation, production of industrial bamboo was usually expressed in the sale units(SU). One SU is approx. equal to 2400 running metres in terms of length, about 50 bundles in terms of the industrial pieces of *salia*(each bundle= 21 pieces x 2.3 metres), and one notional MT in terms of weight²¹. One SU of *daba* is equivalent to 2.5 SUs of *salia* (*per comm.*, Prafulla Mishra, OFDC). Yielding to the repeated demand on the part of paper mills, the govt has agreed to fix the price of IB on MT basis instead of the SU one, since 2004-05 crop year.

In 1988-89, the following quantities of forest bamboo were produced by OFDC:

²¹ The average weight of one truck load is however taken as 0.8 MT which may be greater or lower than that in specific cases depending on the quality of bamboo and other factors.

<i>Grade</i>	<i>Species</i>	<i>Quantity in SU</i>
Industrial	salia	230828.31
	daba	6974.12
Commercial	salia	10141.481
	daba	777.328

The total production that year was 248721.239 SU which was less by 13398.588 SU of the target fixed(source: OFDC).

Calculation of MT in terms of bundles or number of pieces is not possible because depending on the quality and thickness of bamboo, the weight may vary. For instance, some best quality bamboo produced from Narsinghpur area weighed 1 MT at 17 bundles while ordinary quality may require 25 bundles for that. Heavier bamboo contains good % of cellulose, hence is preferred for paper production. It has been learnt from a reliable source that some paper mills used to have structures that would measure the bamboo bundles in terms of volume. This encouraged the cutters bring thicker bamboo pieces since that would quickly fill the target than the thinner pieces. Thicker pieces are heavier and this way the mills ensured procurement of the best quality bamboo. It may be recalled here that *daba* bamboo is thicker and heavier than *salia*. Also, thickness is an outcome of the maturity; hence even among *salia*, this criterion ensures harvesting of mature culms.

Long(commercial) bamboo was not measured in terms of SUs, but in terms of pieces although some times the numbers were converted into SU by the formula $SU = \text{Numbers} \div 350^{22}$. It often accounted for less than 2% of the total bamboo production (departmental) in the state.

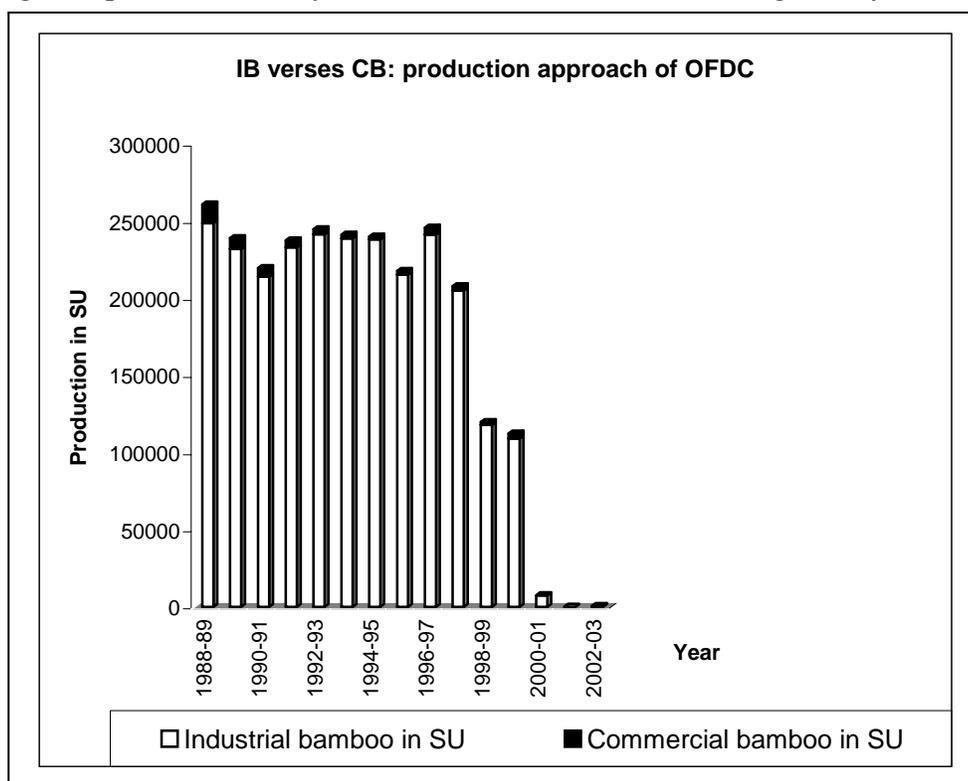
Ideally, the production should have increased after nationalization since OFDC started working in those inaccessible areas(like hill tops) which the paper mills used to avoid normally; but owing to the fact that silvicultural norms were respected by OFDC, a net decrease in production was noticed²³.

²² For instance, the production of CB in 2002-03 was 43839. In terms of SU, this would be 125.25.

²³ A retired SDM of OFDC confessed that although they were supposed to follow the cutting rules, in actual practice they saw that this would decrease the production; and hence, they did not stress on strict implementation of these rules. On the other hand, some supervisors having worked for TP Mill categorically dismissed the allegation that the lease-holders did not care for silvicultural norms. They said that since sustainability of the bamboo forest was in the long term interest of the lessee(during the pre-nationalisation period), hence silvicultural norms were duly respected. Rather, they were of the view that since OFDC lacked this kind of interest, the bamboo forests were worked unsustainably under the OFDC tenure. What seems to be the actual fact is that under the RMP system, the unsustainable operations increased substantially since there was no long term agreement with the paper mills(RMPs), and hence they tried to maximise their production in whatever way possible.

Production figures in SU/MT are not available before 1984-85 when a production of 304843 SU was recorded. The average annual production between 1984-85 and 1986-87 was 273937.6 SU. Figure are not available for 1987-88, but during 1988-89 the production was 260955 SU followed by 239002 SU in the next year(based on Govt of Orissa: Forest Department, *A Decade of Forestry in Orissa:1981-90*, Table 3.3.1). In 1992-93, a production of 241451.2 SUs was recorded which came down to 238357.31 SUs in the next year i.e., after the labour contractor system was adopted.

Between 1994-95 and 1997-98 the average annual production was 226765.25 SUs(based on Govt of Orissa: Forest Department, *Orissa Forest 1999*,p.28). This suggests a declining trend though the production always remained above 2 lakh SUs during these years.



Ban on bamboo working inside National Parks and sanctuaries is also a factor behind the decline in production figures. For instance, in Kalahandi district there used to be total 31 coupes out of which 4 have been excluded from working as these are situated inside the Karlapat sanctuary(*Anupam Bharat*, 26-9-03, p.4).

The target of production used to be about 2.5 lakh SUs/annum during 1993-98 which came down to 1.5 lakh SUs till 1999-2000 for reasons explained earlier.

The production in 2000-01 was only 7436 SUs of IB as worked out by BILT. There was no working in the next year. For 2002-03 the target was fixed at 36484 SUs of IB and 892 SUs of CB, but achievement was only 335.86 SUs as working was allowed too late. For 2003-04, the target verses achievement was as under:

<i>Bamboo</i>	<i>IB</i>	<i>CB</i>
Target	24800 SU	1750 SU
Achievement	15798 SU ²⁴ (63.7%)	297 SU(16.97%)

(vide proceedings of the meeting of the Emp. Committee held on 6.11.04)

In 2005(2004-05), the RMPs managed somehow to more or less achieve their target in most places; but their production(vide annexure-7) could have been significantly higher had their operations could begin much earlier. In fact, they could not work in some areas, as their manpower was not sufficient to handle so many areas simultaneously within this short period. For instance, in Nayagarh Division the potentiality of Khandapara region could not be utilized. Besides, the RMPs reportedly experienced a very tough time while starting the operations, and some of their bitter experiences regarding the policy of the government and the approach of the Forest Department might affect their decision on continuing their work as RMPs in the coming years.

With the decision of the Govt of India to give a major boost to the production and utilisation of bamboo in the country, the government of Orissa has reportedly submitted a plan for a 100-crore project so that by ensuring better production and trade of bamboo, the state could earn about Rs.2000 crores annually from this source as against Rs.26000 crores for the whole country(*The Samaj*, 5-12-03, p.3).

Some experts believe that the production of bamboo falls every fourth year. Accordingly, 1990-91 was projected to be a fall year and the production that year was expected to be not more than 2.05 lakh SU. However, the recorded production that year turned out to be 2.13 lakh SU of IB, plus 5644.21 SU of CB.

Cultivation and plantation:

Cultivation of bamboo is not a new thing in Orissa. Even some silvicultural practices did exist in this regard because in his book 'Hindustan' published in 1820, Hamilton described how people of Hindol and Talcher (ex-)states used to grow longer culms of bamboo by tying the strongest shoots to stakes driven into ground, so that the shoots could grow straight (Vasundhara 2000, *op.cit.*, p.49).

Rural people of the state have small scale or scattered plantations in their private lands; but large scale cultivation under private initiative is not known. In Khunta-Udala area, which supplies considerable quantity of tenants' bamboo, bamboo is not cultivated on agricultural lands; but was rather grown primarily for fencing purposes along the boundaries or in the backyard for own use. In the recent past however, various organisations have started facilitating this kind of large scale cultivation particularly by private parties and communities. For instance, Orissa State Farmers Development Co-operative Ltd. announced a training programme for this purpose, in 2003(*The Dharitri*,22-9-03).

²⁴ The revised figure is 15623.52 SU.

The Nayagarh Jilla Jungala Surakshya Mahasangha(district level federation of forest protecting committees) distributed bamboo propagules to some villagers in the district. For instance, in Pokhara near Mahipur about 200 plants of salia were distributed for plantation in about 3 acres of village common land. However, such initiatives of the Mahasangha has not been very successful in meeting the objective particularly due to lack of sincerity on the part of concerned villagers (*per comm...*, Sri Kailash Ch. Sahu).

11-year old plantation of salia with spacing 5 metre x 5 metre has been found to be more profitable than rubber and cashew (Wagh & Rajput 1991, quoted in Seethalakshi and Muktesh Kumar 1998, p.136). In Orissa, large-scale plantations of salia are however unknown from private areas and whatever exists is normally owned by the Forest Department.

Commercial cultivation of sundarkani is common in the state, particularly in the coastal areas, though not found on a large scale. Planted with a spacing of 5 metres x 5 metres, an acre of sundarkani plantation is estimated to generate a net income of Rs.20000/annum after the 5th year, and Rs.40000 after the 10th year. The plantation will last for about 30 years (Mohanty T.L., *op.cit.*).

Successful private cultivation: a case study

In Khandapara area of Nayagarh district, there are 5 cultivators of bamboo and the total area under bamboo cultivation is about 15 acres. Abhimanyu Pradhan happens to be the leading cultivator of bamboo in the area having about 4 acres under this cultivation (about 200 clumps). Agriculture is his main source of income and bamboo fetches him around Rs.12000/- per year out of a total income of about Rs.30000. The net income from bamboo is more or less Rs.6000 since he spends almost an equal amount for using chemical fertilizers, etc.. Since last 12 years he is in this business, and is able to supply 3 truckloads of long bamboo (out of total 7 truckloads from Khandapara area) to betel farmers and tent houses. Salia is the dominant species and he prefers it as the bamboo is known for its strength. However, he has also planted sundarkani and daba because sundarkani is preferred in various circles, and daba is difficult to be stolen by thieves.

The average sale price of salia, sundarkani and daba culms is Rs.7, Rs.45-50 and Rs.40 per piece(long bamboo). Felling is done every year in a selective manner and only mature culms are sold. Young shoots are provided extra support so that they do not get deformed, and grow straight.

Tent house people take few pieces and hence arrange on their own for the cutting of the culms, whereas betel farm suppliers pay in advance the cutting charges @Rs.50/person/day. Two persons can cut 100 to 150 culms of salia in a day, but only 20 to 25 pieces of daba during the same time as the thorns create problem (*per comm.*).

The Forest Department has created both pure and mixed bamboo plantations. Currently two schemes are being implemented, viz., FDA(Forest Development Agency) and RLTA(Revised Long Term Action Plan for KBK Districts). About 421.5 hectare pure

bamboo plantation was created under the FDA scheme during 2003-04. Similarly, under RLTA the area of such plantations was 1000 hectare and 855 hectare during 2003-04 and 2004-05 respectively(*per comm.*, Deputy Conservator of Forest, Social Forestry & Afforestation)..

Such plantations have been planned even for areas having little or no bamboo forests(natural), but technically there are certain limitations which the silviculturists have to consider. Pure bamboo forests are usually open forests and they do not normally allow other plant species to grow with them. Hence, unless the area is to be exclusively selected for pure bamboo plantation, precautions should be taken so that bamboo does not take over all other species in the mixed plantations. In mixed plantations, bamboo is to be maintained as an undergrowth and this is possible if bamboo is planted in the 2nd or 3rd year of the plantation (*per comm.*, DCF, Social Forestry & Afforestation).

Normally the species planted is *salia*. Either seedlings are used or propagules prepared from rhizomes.

Significance in the livelihood of the poor:

While around 55 lakh people in the state reportedly depend partially on bamboo for their livelihood(Mohanty D. 2004, *op.cit.*), some like bamboo cutters and artisans chiefly depend on this resource in one way or another whose total number may be between 1 lakh to 2 lakh, and in terms of family members, around 4 to 6 lakhs. Following is an account of the significance of bamboo in the livelihood of these people:

1. Cutters:

‘The exact number of bamboo cutters have never been assessed, thanks to govt apathy’, says Dandapani Mohanty, a leader of bamboo-cutters union. He however presents his own assessment on the basis of the fact that there were 325 bamboo coupes in Orissa and in each coupe worked 200 to 300 labourers which included mostly cutters, and hence taken the average number to be 200 labourers per coupe, the total figure would be 65000(*per comm.*). However, this estimation is unreliable since all the coupes are not worked simultaneously; rather in the 4-year felling cycle about 25% of the coupes are worked in a year. Further, Mohanty's figure also includes secondary labourers(like those engaged in road work, etc.) though he says that many of the secondary labourers also worked as cutters (because, infrastructure development like road work ideally precedes harvesting operations).

Ramachandra Bakshipatra, another union leader, finds it safe to put the figure(of cutters) at maximum 45000. According to him, about 26000 cutters are expected to work under JK Paper as per the present distribution of forest divisions(including those allotted earlier to Orient Paper Mills)

As evident from the following table, the statistics available (particularly in the newspapers) in this regard appear to be controversial because the table shows the number of cutters would exceed 1 lakh(atleast).

<i>Area/region/district</i>	<i>Approx. no. of cutters</i>	<i>Source of information</i>
Rayagada district	40000	<i>The Pragatibadi</i> , 5-07-01
Kalahandi district	10000	<i>The New Indian Express</i> , 30-4-02
Chitrakonda-Kalimela (Malkangiri district)	30000	<i>The Sambad</i> , 23-3-02
Sorada (Gajalbadi) ²⁵	18000	<i>The Sambad</i> , 26-12-01
Boud district ²⁶	2000	<i>The Samaj</i> , 26-3-02
Barbara RF ²⁷	450 families	<i>The Samaj</i> , 13-12-03
Nayagarh district	1200 +	<i>The Pragatibadi</i> , 5-4-02
Cuttack district (Narsinghpur-Baramba area)	400 +	Sri Rabindra Rout, OFDC, Dhenkanal
Dhenkanal district	100	-do-
Athamallik area	2000	Sri Prasanna Ku. Behera ²⁸
Hindol area	2000	-do-
Satkoshia area(Angul)	5000	-do-
Kuchinda and Bamra	150	Sri Salagram Pradhan, OFDC, Jharsuguda
Barapahad area (Hirakud sanctuary)	1200-1500	Sri Suresh Behera and Sri Duryodhan Pradhan, OFDC, Sambalpur
Rairakhhol Divn ²⁹ .	1500	Sri Prahlad Nayak, OFDC, Rairakhhol
Sambalpur Divn.	2000	-do-
Puri Divn.	1000-1200	-do-
Phulbani Divn.	2000	-do-
Bonai Divn.	2000	-do-
Sundargarh Divn.	2000	-do-

²⁵ Sorada is in Ganjam district, but as a region it covers parts of Gajapati and Kandhamal(undivided) districts also being situated in the boarder. However, another report published in *The Pragatibadi* on 3-9-01 mentioned the number of cutters in these three districts to be 10000.

²⁶ Formerly a part of undivided Boud-Kandhamal district

²⁷ the region includes parts of Khurda, Nayagarh and Ganjam districts being situated in the boarder area.

²⁸ Sri Behera claims that the first bamboo cutters' union was formed in the state in Satakoshia area, in 1990, and was known as Tikarpada Baunshakatali Sharamika Sangathana.

²⁹ OFDC Divisions

Prahlad Nayak, an experienced employee of OFDC who once worked for Titagarh Paper Mills, believes that the actual number of cutters in the state was within 25000 to 30000(*per comm.*), 10 to 15% of which would that of the casual cutters who do not regularly depend on bamboo cutting. Interestingly enough, the Empowered Committee on bamboo also said that revival of bamboo cutting operations would benefit around 20000 cutters in the state(*vide proceedings of the meeting held on 11-10-04*).

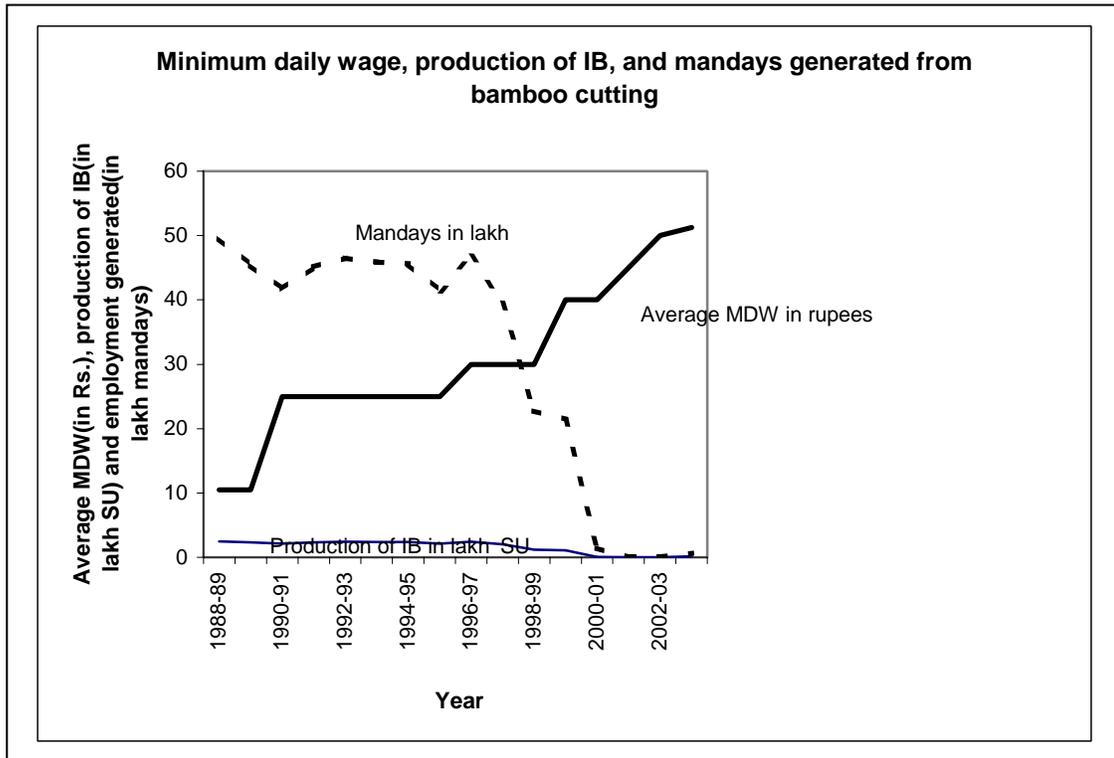
To ignore 20 to 25% exaggerations in the estimated numbers, the above table suggests that the maximum concentration of the cutters lies in the southern districts. Next comes Kalahandi district of western Orissa followed by the coastal districts beyond Ganjam.

In 2005, about 300 cutters were employed by BILT in the Dasapalla area for harvesting around 4000 tons of IB and 11000 pieces of long bamboo within a period of less than 6 months(source:Mr.S.D.Sinha).

In 1978, cutters were paid Re.0.30 per bundles of salia(*per comm.*, Dandapani Mohanty) which increased by more than 10 times by 2000. Minimum daily wage was a determining factor in the fixation of cutters' wage although in actual cases there was no guarantee that supervisors working for private lessees would stick to that.

In 1989-90, the expenditure on cutting, bundling and stacking was Rs.105/SU of industrial bamboo. The production of IB that year being 231949.53 SU, the total expenditure on this head was Rs. 24354700.65. At that time, the average minimum daily wage being Rs.10.50, this much expenditure would mean 23.19 lakh mandays. Following chart indicates the trend of employment generated from bamboo cutting as against that of the change of minimum daily wages and production of IB over the years³⁰:

³⁰ Mandays calculation varies for the same year on the basis of the factors used. For instance, in 1989-90 total working cost was Rs.325, and accordingly mandays generated would be about 71 lakhs. Rs.105/SU implied mandays generated basically in the first stage of harvesting i.e., cutting, dragging and stacking by the cutters. Other cost of production involves rebundling at depots, loading in trucks, etc., which generate additional mandays.



(vide annexure-2)

The operations in 2005 reportedly generated about 7.9 lakh mandays(vide annexure-7).

Protected Areas

Suspension of bamboo cutting operations in the Protected Areas like sanctuaries left the dependent cutters of the area in lurch. Exact number of such cutters is difficult to assess, but sources say that in Ushakothi area(Badarama sanctuary) their number was about 800-1000(*per comm...*, Prahlad Nayak); in Satkoshia about 5000, in Barapahad(Hirakud) about 1200-1500, and so on. Considering the potentiality of Badarama- , Sunabeda- and Satkoshia sanctuaries at 14740 SUs(as per the estimation of Forest Department), mandays that could have been generated in these areas would be around 210571.4, calculated on the basis of working cost @Rs.750/ton and current minimum daily wage Rs.52.50, 1 SU being considered equivalent to 1 ton.

Suspension of operations in sanctuaries could not have had its complete impact on the livelihood of the dependent cutters had the latter found scope for working(as cutters) in other areas. Unfortunately, the suspension in non-PAs owing to lack of Working Plans almost coincided with this; hence the scope was almost lost. And the repercussions were severe in many ways. While some of the cutters worked now as petty timber smugglers(<http://www.ndtv.com/morenews/showmorestory.asp?slug=SC+order+hits+bamboo-cutters'+livelihood&id=38187>, viewed on 14-9-04), many others migrated to

other areas in search of some other work, and the rest either starved at home or managed somehow.

Naxalite areas

The untapped potentiality of Malkangiri area is said to be around 80000 SUs. To follow the procedure used above, this would mean 1142857.1 mandays. However, given the controversy over this assessment it would be safe for now to consider 25% of this projected figure.

According to Bakshipatra, the number of cutters in the Malkangiri belt was around 3000-4000, and in the Gudari belt around 10000(*per comm.*). That means about 14000 cutters lost their job so far their own area is concerned. While this assessment is yet to be confirmed, the unemployment thus generated is claimed to have severely aggravated the naxalite situation.

Ideally speaking, cutting operations provide employment to the cutters for seven months i.e., from October to June. However, the operation may be over within a lesser period and the opportunity reduces accordingly.

On an average, the cutters depended on bamboo cutting operations for six to eight months, for their livelihood. After June, when the operations were over, they could work as agricultural labourers for next few months; but bamboo cutting earned them about 60 to 70% of their total annual income. Hence, bamboo cutting was their chief profession. For people living near the stockyards or godowns, work is often available even after the operation is over because jobs like re-bundling and truck-loading are available there and the cutters' family takes its advantage.

This profession had double advantage for them, i.e., cash income and income in kind. The income in kind was actually a subsidized food supply under the World Food Programme in the following manner(per working day or food day per person):

Rice-2 kg
Dal-200 grams
Cooking oil-200 grams

One food day means the cutter is eligible to get a supply of one food unit. Total cost(subsidized) of food units in a working week/month is accordingly deducted from the cutter's wage.

Contribution of World Food Programme

Since 1986 (and upto 2004), Rs.26,14,13882.82 had been spent under World Food Programme, in Orissa. The Programme provides food for forest labourers engaged in plantation work, silvicultural operations, bamboo cutting, etc., and is implemented through a special wing of the Orissa Forest Department. The Programme is run basically on the basis of supply as well as funding from overseas, and the state govt only pays for the transportation of the food materials.

In late '80s, when OFDC (then OFC) decided to implement WFP in bamboo working, it expected a lot from this programme as stated in the following:

"The amount to be spent for implementation of WFP in bamboo working by OFC would be xxxx Rs.48 lakhs. As against this expenditure by distribution of xxxx 30,00,000 food units, OFC will generate xxxx Rs.90,00,000 /- towards WFP welfare fund which will remain with OFC for utilisation in labour welfare works. This amount will be a great asset for OFC Ltd. for developing labour welfare oriented infrastructure at the beginning of the bamboo working operation. Besides, implementation of WFP will attract the labourers, and will ensure good outturn of bamboo. xxx"

In 1988-89, bamboo cutters had to contribute Rs.3/working-day/person in lieu of the food supplied to them under this programme. This money used to be deducted from their wage, and sent to the headquarters where the authorities decided, as per the proposal received from DFOs or NGOs, on distributing the same for the welfare of tribals in different tribal districts of the state.

Rice used to come from US or Australia; pulse (often the yellow split peas) from Denmark; and refined vegetable oil from US or France. Recently, rice has been arranged from Indian sources; but the purchasing power is in the hands of the country office. However, confusion still remains regarding the quality of these food materials supplied from western countries.

Recently, the cost of food unit has been revised. Accordingly, it now consists of 2.5 kg rice and 200 gram pulse only; and the cost is Rs.9/unit. However, the implementing districts may vary from year to year, and for 2005 only six districts (Korapur, Nabarangpur, Rayagada, Malkangiri, Kandhamal and Kalahandi) were selected under this programme. Accordingly, for bamboo working in other districts the WFP scheme would not be implemented (source: WFP office, Bhubaneswar).

Taking the average harvesting rate per day as 8 bundles, in a month a cutter should get a cash income of Rs. 960 (sundays excluded) @Rs.5/bundle. Bringing the bamboo from the hills to the plains below earns them some additional income like Rs.2/bundle.

During departmental felling, labourers (cutters) are paid on daily wage basis.

Non-resident cutters

Bamboo cutting operation requires skilled and efficient labourers. The job is a tough one and hence not everybody is expected to take up this challenge, unless the situation compels for that. It is for this reason that cutters used to be invited by OFDC to work in distant coupe-areas in some cases. Their travel expenses were partially reimbursed, and the payment in kind through the World Food Programme helped them arrange their food in

those areas. Bonai and Athmallik have been quite well known among the OFDC people where these migrant cutters could be booked. Prahlad Nayak believes that about 2000 cutters used to migrate from the Bonai area.

A contradictory situation was observed in the Pokharigochha area(Nayagarh dist.) when the operations were started in January 2005. The local people being very poor, it was to be normally expected that most of them would be interested to join the cutting operations. However, the concerned RMP had to invite about 70 cutters from the neighbouring state when it found a shortage of local cutters. What actually happened was that some of the villagers being still busy in their agricultural work, and some having migrated to other areas during the period of suspended operations; a shortfall was noticed in the number of local cutters(*per comm.*, Birat Jani). Since the operation was started quite late hence the RMP could hardly afford managing with whatever local strength of the cutters.

Suspension of bamboo harvesting severely affected the livelihood of the poor in many areas. For instance, in Gajalbadi area the local people lost employment for about 9 lakh mandays, which in turn had a devastating impact on the local small business, as the shop-owners' fate was closely associated with the income of the bamboo labourers. Financial misery even affected the cultural life because people did not have enough money to afford the famous *danda nacha* (a traditional dance festival) of their area(RCDC, *op.cit.*, p.7).

2. Artisans (bamboo-weavers):

A survey in 2001-02 by the Directorate of Handicrafts and Cottage Industries(DHCI), Orissa has put the number bamboo & cane artisans in the state at 27332 (for details, see annexure-4). However, this estimate is controversial as it is not in consistency with some other estimates. For instance, the following table shows the number of bamboo artisans under the jurisdiction of Nayagarh Forest Divn. as 2400 which is more or less supported by the independent estimation given by the Nayagarh Jungle Surakshya Mahasangh(see annexure-6). However, the DHCI survey puts the number of bamboo/cane artisans in Nayagarh district at 64 only. The inconsistency may be due to a census in the strict sense of the term 'artisan' because, as mentioned earlier, mere basketry does not necessary mean artistic work.

<i>Forest Division</i>	<i>No. of bamboo artisans</i>	<i>Caste/community</i>
Boudh	2000	Betara
Sambalpur	5000	Mahara & Turi
Khariar and Sunabeda WL	2160	Paharia/kamar
Kalahandi (South)	600	Paharia/kamar
Bolangir (east & west)	About 150 HHs of Paharia and unknown number of other caste people	Mahara, Turi and Paharia
Nayagarh	2400	Hadi and Dom
Keonjhar (territorial and wildlife)	2863	Dom
Total	15023	

[quoted from various sources, in the paper entitled *Plight of Bamboo Artisans in Orissa* and circulated by Ramakanta Patra of RCDC in the state-level workshop on nationalised NTFPs, organised in April 2004. The above figure(total) excludes the number of artisans in 23 districts, but at the same time includes children who are full time workers in this trade.]

Assessing the exact number of bamboo artisans is very difficult. At Bainsia village(Dhenkanal district) the artisan villagers put the estimate for their district at 10000 HHs though it would be safe to limit this figure between 2000 to 3000 (in fact, in the DHCI survey this number is 3124). In Jagatsinghpur district, the estimate, as given by artisans of Sahada village on the basis of village-wise statistics, comes to be around 350 HHs though in the DHCI survey this number is much higher i.e., 1552.

Most of the bamboo-ware/craft is related to the demand during agricultural season, hence the production is influenced a lot by the extent of agricultural practices in an area. It is for this reason that % of artisans concentrated in the coastal districts and their neighbourhood seem to be significantly higher than in the hilly and forested areas of western, northern and southern Orissa. For instance, the DHCI survey indicates that the concentration in 11 coastal districts alone (Balasore, Bhadrak, Cuttack, Jagatsinghpur, Jajpur, Kendrapara, Dhenkanal, Ganjam,Puri, Khurdha and Nayagarh) is 46.19%.In fact, many of the artisan families have migrated to western Orissa under different circumstances and are now known there under other names(caste) though they clarify that originally they belong to the coastal area, as we could find at Munder near Sambalpur.

The artisans depend on bamboo weaving ideally for the whole year, but practically speaking owing to the major fluctuations in the demand of their products, some families do not expect a consistency in the income from this source though out the year. Difficulty in access to the raw material sources(jungles) during the rainy season makes some of them helpless despite the demand, as seen in the Sariapada village of Dhenkanal district(Source: *Sachitra Vijaya*).

The impact of raw material shortage and loss of market demand of traditional bamboo-craft due to growing popularity of plastic-made items has forced some artisan families switch over to other means of livelihood. For instance, in Sorada area about 500 mediri families have reportedly done this(*The Darshan*, 1-7-04, p.3).

On the other hand, there are instances where the artisans are in great trouble despite having good resources of bamboo. For instance, the Paharias, otherwise known as the Kamars are the poorest community among all the residents of the Sunabeda plateau. They are also the most malnourished ones in the area. Leading a wretched life they depend basically on bamboo basketry, and hence live near bamboo forests(Patnaik N. *et al* 1984, *Life in Sonabera Plateau*, pp.104-05); but now restrictions of the sanctuary(Sunabeda) have caused more distress to them. Entry of the traders into the sanctuary being restricted, and weekly markets having been stopped inside the sanctuary, these poor artisans now hardly have any scope for selling their products. It is highly unfortunate that unlike their brethren in the neighbouring state of Chhattishgarh, they do'nt enjoy here any special privileges regarding their age-old profession of bamboo work(*per comm...*, Soumen Sarangi).

The average HH income per month from this source varies from Rs.500 to 800. It can increase variably under special circumstances like contract for regular supply of particular products, growth in demand and prices during festivals, marriage season and harvesting season, etc.. However, in most cases the traditional bamboo crafts can not ensure income above Rs.1500(say) and hence both the govt agencies as well as some NGOs are trying to train the artisans in value addition techniques so that there can be a substantial increase in the net profit.

The Ministry of Textiles, Govt of India has been organising training programmes for the artisans under its Babasaheb Ambedkar Hastashilpa Vikash Yojna and presently bamboo artisans of Orissa have been benefited by this scheme in the Jagatsinghpur & Kendrapara districts(Sahada and other villages) through an NGO Project Aparajita, and in the Sonepur district(village Lachhipur) through the NGO National Rural Development Council. NABARD has sponsored similar initiatives in the Beheramal village(Sonepur). Project Aparajita, a Delhi-based voluntary organisation associated with the Voluntary Health Association of India started its work in Orissa after the super-cyclone of 1999, to rehabilitate the artisans of the affected areas. It has created 3 self-help groups of male artisans in Sahada village(Jagatsinghpur) and 4 SHGs of females artisans in Tikhiri village(Kendrapara); and has imparted training to them on manufacturing new items from bamboo (like bamboo furnitures). It has also established a chemical treatment plant for seasoning bamboo at Tikhiri. This initiative has increased the monthly income of female artisans of Tikhiri from Rs.1000 to Rs.2500/HH (*per comm.*, Itishri Kanungo, Project Aparajita).

Development Commissioner, Handicrafts also provides support for the development of bamboo craft in the state by organising district- or state level exhibitions. DRDA reimburses the travel expenses etc. of the artisans participating in such exhibitions particularly if they belong to KBK districts, and ORMAS facilitates the marketing. However, getting help from DC, Handicrafts needs a lot of paper work and hence is not easier.

The Forest Department also took some initiatives in Dhenkanal districts to benefit the artisans (*The New Indian Express*, 9.12.04, p.5).

In some cases bamboo artisans are employed on contract- or daily wage basis. For instance, in Koduanpalli village(Nayagarh district) artisans are employed to make a *doli* against a payment of Rs.100 for two mandays, and the employer purchases the required bamboo at Rs.30; the total cost being Rs.130. This way the employer saves Rs.70 on each such *doli* which is otherwise sold by the village artisans at Rs.200/piece(*per comm.*).

Secondary employment

Bamboo cutting operations require development of roads and many other works not directly related to the bamboo itself. These secondary works also generate employment for the local people. An estimate suggests the number of people engaged in such works may be roughly 25% of that of the bamboo cutters (based on *The Prajatantra*, 6-7-01). In specific areas this % may be much higher, like in Nayagarh district the number of secondary labourers is said to be about 700 against the number of cutters as more than 1200(*The Pragatibadi*, 5-4-02, p.1). And the engagement of these secondary labourers more or less coincides with that of the cutters.

During training programmes organised for artisans, master craftsmen are invited from other states since their expertise was not available earlier in Orissa. Now few of the local craftsmen like Pratap Nayak of Sianbahal village(Sundargarh) are being invited to such programmes. Nayak got Rs.4000/- per month(which includes his DA) for working for 4 hours daily in one such programme organised by an NGO of Keonjhar, and Rs.3000/- per month for working for 3 hours in a similar programme organised at Rourkela. The organisers provide the raw materials. Although such opportunities are not available now for the whole year, still it has created a new form of employment for the expert craftspersons.

Employment through plantations

Employment through bamboo plantation schemes is often an irregular in nature both in terms of time and area. Still it has some contribution in the livelihood of the local people.

Bamboo plantation has been used for employment generation through the Employment Assurance Scheme(EAS), a form of *Jawahar Rojgar Yojna*. For example, bamboo was planted on 30 hectares of land under this scheme in the Gajanpahar RF of Hemgir Range(Sundargarh district) in 1996-97. It was funded by District Rural Development Agency.

At present there is no report of any bamboo plantation created through EAS. All the plantations are being created either under FDA or RLTA scheme. The average number mandays generated per hectare of pure bamboo plantation has been calculated to be as under:

52	1 st year
17	2 nd year
13	3 rd year

(Source: Deputy Conservator of Forest, Social Forestry & Afforestation, Office of the PCCF, Bhubaneswar)

Restriction on karadi collection and its impact

Restriction on *kardi* is not a new thing in the history of forest management in Orissa. Even during the pre-independence period, foresters were against the exploitation of young bamboo shoots with the fear that it would hinder the growth and regeneration of bamboo³¹. However, people hardly cared for such restrictions. Even scientists/silviculturists also opine that some of the shoots should be removed from the culms because too many shoots may result in poor growth (Rath 2002, *op.cit.*). However, there is no system adopted by the Forest Department to allow the collection of 'extra' shoots, as a result of which even justified collection can be termed illegal and unsustainable.

In 2003, the Forest Department reportedly distributed a leaflet in the Sambalpur district discouraging people to eat *karadi* on the plea that it would cause arthritis. However, the age-old local traditions do not support this claim, nor do the doctors agree to it (*The Times of India*, 7-9-03, p.4).

In Kodbahal village (Hemgiri block, Sundargarh district) *kardi* and *hedua* used to be among the important items of business. The village earned Rs.10000 to 12000 annually from the *hendua* business. However, after the villagers agreed to protect the local forests under the Joint Forest Management scheme, they restricted the other dependent (on the local forest) villages from collecting *kardi* and themselves observed some restraint in this regard, as a result of which the collection has been reduced by about 60% and the resource of bamboo has gained from it (*per comm.*).

Struggle and protest for livelihood security:

About 10 years ago, bamboo cutters in the Ranaba area of Phulbani district once tied up their senior supervisor to express their anger against his illegally diverting the rice that came for distribution to the cutters under the World Food Programme (*per comm.*, Dandapani Mohanty). In October 2004 the mediris of Berhampur protested in the street against the restriction on free sale of forest bamboo (*salia*) and submitted a memorandum to this effect to the Revenue Division Commissioner demanding for adequate provisions (*The Times of India*, 12-10-04, p.4).

Bamboo cutters have been united under the banner of various labour unions. The Bamboo Forest Employees Union Federation is a state-level organisation to which the JK Paper Forest Employees Union and similar unions of Orient- and SEWA mills are affiliated. The

³¹ It was reported that the 4 quintals of bamboo shoots confiscated by the DFO, Boud in August 2002 implied to the loss of 4000 bamboo culms worth Rs.40000/- (*The Samaj*, 8-8-02, p.6).

Bamboo Cutters' Mazdoor Union and Odisha Jungle Shramika Unnayan Sangathana are the other state-level organisations working for cutters. There is lack of coordination among these state-level federations either because their activities are localised, or the leaders/founders have ideological differences between themselves. Still each of them have contributed in their own way to the struggle of bamboo cutters.

For instance, Dandapani Mohanty, now a leader of Rayat Kuli Sangha that works for the rights of labourers including bamboo cutters in southern Orissa, claims to have taken the initiative in 1976 to demand that bamboo cutters are entitled for bonus. Since the paper mills were not agreeing to this, a case was filed in the Orissa High Court in 1986 to get a legal nod to this demand; but JK mill succeeded in getting a stay order in this matter. The stay order was vacated in late '90s, and the attempt could not be fruitful. The union leaders approached the Labour Secretary to get some support, who in turn took certain steps in the desired direction; but was soon transferred allegedly on that ground for the obvious reason that it was going against the interest of paper mills(*per comm...*, Dandapani Mohanty).

The Tikarpada Baunshakatali Sharamika Sangathana, now affiliated to Odisha Jungle Shramika Unnayan Sangathana, partially succeeded in its struggle when OFDC agreed to give compensation to some deserving cutters(families), and also to reimburse the expenses made by the cutters for purchasing rope and for getting their instruments sharpened (locally known as *tangia pajeni*). It may be mentioned here that providing rope for bundling purpose is the responsibility of OFDC/RMP and sometimes cutters had to purchase rope when the stock got exhausted. Similarly, cutting tools like axe need to be sharpened at least once or twice in a week depending on their use, and the blacksmith charges for that, which the cutters had to pay from their own pocket(*per comm...*, Prasanna Kumar Behera).

However, the most influential and successful labour union seems to be the JK Paper Forest Employees Union. In 1974, JK mill started measuring the harvest in terms of volume as a result of which the cutters got their wages 15 to 17% lower than that calculated on weight/bundle basis. This led to an agitation in 1976 after which the system was withdrawn. In the last arrangement, cutters working for JK were better paid than those working for other mills. Those who were in the group since one year or less, were getting Rs.60 to 65 per day whereas their seniors were getting Rs.70. And that too when cutters under other RMPs were getting Rs.50 to 55 per day(*per comm...*, Ramachandra Bakshipatra). It may be mentioned here that cutters usually work in groups, and equally share their wages which is paid collectively on the basis of bundles produced by the concerned group. This team work helps them earn more than what could have been fetched single-handedly. Senior cutters are more skilled and hence their rate of production is more than the new-comers; hence their earning is also more.

Currently, the Bamboo Forest Employees Union Federation is demanding cutters should be paid minimum Rs.70/day/person, and that they should be provided with cutting implements(like axe), shoes, uniform and most importantly, safe drinking water. Drinking water is a major issue in the filed areas, particularly in remote hilly jungles; and the situation worsens during summer.

All the unions/federations have reacted strongly against the suspension of bamboo cutting operations, and have demanded for revival of such operations in the interest of the cutters and other associated people. The leaders of Rayat Kuli Sangha and Bamboo Cutters' Mazdoor Union threatened in October 2003 that transportation of raw materials to JK Paper would be blocked if the govt did not take steps to revive the cutting operations (*The Statesman*, Orissa page, 13-10-03). The Bamboo Forest Employees Union Federation has gone a step ahead and is in support of the demand of the RMPs that no staff of OFDC would be incorporated in the system(RMP) to be adopted in 2004-05, and that the RMPs would exercise 100% control over the operations(*per comm.*, Ramachandra Bakshipatra).

The artisans have no unions for them, hence their plight is hardly highlighted in the media, or noticed by the concerned authorities. Laxman Nayak, an enthusiastic artisan of Boud who tried to unite his fellow artisans under the banner of Maa Mangala Beta Baunsha Samabaya Samiti, a cooperative society of artisans, struggled hard for getting permission from the Forest Department to take salia bamboo from the forest and spent a lot of money from his own pocket for this purpose. The Forest Department tried to partially solve the problem of these people by imposing a penalty of Rs.3 per piece collected by them from the forest, instead of confiscating the same(*The Samaj*, 9-9-04, p.4).

Even the bamboo-traders struggled for justice. For long bamboo supplied from Khunta-Udala area, the landing price at Bhubaneswar/Cuttack was about Rs.30000, more than 25% of which was spent on bribes demanded by police, forest officials, or some other govt staff. The demand of bribe had no consistency and it varied from person to person(demanding side) and case to case, thus creating a lot of uncertainty and tension. The lacuna on the part of the traders was that the trucks were dangerously overloaded with a portion of the load hanging down from behind and rubbing against the road, and hence were prone to causing some accidents on road. The suppliers of Mayurbhanj district tried to form a union of their own and approached the local police chief for intervention who in turn assured them that his staff would no more be demanding bribe, but at the same time he said that since the trucks were overloaded hence legal case would be filed against the suppliers. Accordingly, some trucks were confiscated which created another problem for the suppliers. Hence they had no option but to go back to the old system of bribing. Although they propose that the govt can save them from this unholy arrangement in a profitable way by legalising the transit through imposition of additional charges in the form of tax/penalty, etc.; but this proposal is yet to be accepted(*per comm.*, Ravi Rout). In fact, the union itself could not take a formal shape due to want of support.

The CFM challenge

Objection on the part of forest-protecting communities has been a matter of concern during bamboo-working since some years. When the operations started in 2005, the Forest Department and the RMPs reportedly took stock of this situation, particularly for areas like the Nayagarh district where several forest-protecting groups have refused to accept any kind of intervention on the part of the Department in their protected forest patches, be it a RF. However, Pokharigochha, about 20 km from Dasapalla in the Nayagarh district turned out to be an interesting case. The residents of this village are very poor tribals, and they have been protecting the nearby hill-forest patch known as *jajna-pahada* which actually belongs to the Pokharigochha RF. The area has a good potential of bamboo, while the villagers themselves were free to exploit this resource for their bonafide requirement, the village committee allowed applicants from other villages to harvest the bamboo @Rs.5 per 20 pieces for their own use. The committee was not in a mood to allow OFDC or Forest Department to start working in this area, but when the RMP(BILT) approached them for some negotiation, they got interested and asked the RMP to pay Re.0.25 per each piece(long) of salia (i.e., Rs.1.25 per bundle since each long piece is converted into three pieces of IB, and seven long pieces are required to make a bundle of 21 pieces) in lieu of the permission. However, the RMP hesitated at this demand after which they have reduced it to Re.1 per bundle. When this author first visited this place on 4th February '05, the RMP was yet to assure them if it would accept this demand; but villagers were hopeful that their demand would be accepted. They were also confident that if the RMP betrays them then they would not allow for transportation of the harvest. Another village of the area has also reportedly allowed the RMP with a similar kind of hope. However, field observations supported the allegation of a district-level activist that it is not the villagers as a whole, but particular individuals had negotiated with the RMP with a vested interest and were trying to project this as the village decision taking advantage of the ignorance of the poor co-villagers. Finally, the outcome was quite disappointing when the RMP managed to remove its harvest from the area on the plea that the village committee did not have any legal right to claim a share. The Forest Department, which had tried long back to bring the village under the JFM scheme, reportedly said that the compartment(forest) which the villagers had been protecting was different than the one where harvesting was done. The villagers had an argument with the RMP over this issue, but without any remarkable success. Ironically, forest protection is basically done by the women of the village whereas the president of the protection committee is a man who is allegedly said to have spoiled the scope of a possible benefit from the RMP. During our second visit on 23rd June'05 while one woman said that the RMP finally gave approx. Rs.500 for the village temple, another lady claimed that the committee actually rejected this offer. This is how the apparent strength of Pokharigocha was reduced to helplessness. Needless to say that same was the fate of the other village. The production of the area is said to be around 20,000 bundles in 2005, which means that the villagers lost an equal amount of cash; thanks to some of their weaknesses and the irresponsible as well as disloyal behaviour of some individuals.

Gender- and caste-based biases:

There are several artisan villages/hamlets (like the *harijan sahi* of Gania near Dasapalla) where women have absolutely no role in bamboo-ware production whereas in some other villages (like Sahada near Kujang) their role and expertise in this profession is equally important. On the other hand, in Saharpada, making bamboo brooms is essentially a women's job while making *mati-jhudi* is a men's job. In Sariapada (Dhenkanal district), both men and women work on bamboo products; but bringing bamboo from forests is considered as a men's job while selling the products is a women's job (Source: *Sachitra Vijaya*).

On enquiry it was found that the factor, which controlled the role of women in bamboo work, is not related to any socio-religious taboo. Rather, the extent to which muscle power is required in the work seems to be the most important reason behind. For instance, in winnow making, the weaving part is done by women; but the thick (about 1") half-rectangular 'arm' (*baha*) which is used to impart strength and support to the whole structure, is tied by the males since this requires more muscle power than concentration and care.

Usually weaving of coarse class requires maximum muscle power as the strips are thicker and often heavier. Hence, women are not supposed to work in this case. On the other hand, they are comfortable with the other two classes.

However, in some artisan villages like Kundhei (Puri district) women express confidence that they could do all the jobs that is supposed to be done by men only. For some women like widows this is a compulsion when there are no able male members in the family to assist.

Interestingly enough, artisan villages/hamlets do not usually work on all the three classes. If a village works on the coarse type of weaving, then the other two types are usually found absent there. Similarly, those resorting to the 'medium' and/or 'fine' type of weaving avoid the coarse one. It is for this reason that most of the artisan villages are either absolutely free from any involvement of the women in this work, or are full of women workers.

Usually most of the bamboo-artisan communities belong to the schedule caste (viz., *pana* or *buna-pana*, *hadi*, *dama*, *kandra*, etc.). In Khunta (Mayurbhanj) they are represented by the mahali people and in Ganjam district, by the mediris. Often the type of weaving differs according to the caste. For instance, the production of *kula* and *baunshia* is usually found to be confined to the *dama* and *hadi* communities (caste) whereas that of *doli*, *taati* and *rodara* is confined to *buna-pana* (literally meaning, the weaver *pana* which distinguishes the group among the *pana* caste depending on bamboo-weaving) community. Items produced by all or most of the communities are rare and *gandua* is an example of that.

Though tribal bamboo weavers are lesser known, they do exist. The Kamar³² of Sunabeda plateau, the Juangs of Keonjhar & Pal-lahra, the Paudi Bhuyans of Bamparda area(Deogarh district) and the Matias of Saharpada(Mayurbhanj) are among them. Basketry of the Juangs, hats prepared by the Paudi Bhuyans and the bamboo brooms of the Matias are their identity.

There is no specific socio-religious factor known to have caused this kind of caste-based biasness. What seems to be the reason is that the expertise is transferred from one generation to the other in any particular community, and each community hardly goes beyond its traditional practice. Many such groups distinguish themselves on the basis of the type of bamboo cane/strip processed and used by them; hence those using *khadi*(stick-like canes used for making certain type of baskets and fish-trap, etc.) often shy away from working on *pati* or *pata*(thinner and wider canes used for making *oodara* and mat, etc.)Hence, the *dama* community is distinguished from the *buna-pana* community with reference to the type of the items produced. It has also been observed that a kind of inferiority/superiority complex does exist among these communities regarding their work and some see the others as 'inferior' in this profession. For instance, the mediris of Ganjam call themselves as Oriya mediris as distinguished from the telegu mediris (bamboo artisans migrated from Andhra and settled in Berhampur town) and both have no socio-cultural bondage. The telegu mediris do not practice professional drum-beating unlike the Oriya(local) ones. Again, the Oriya mediris are harijans like *dama* and *pana*, but they do not maintain any social relationship with the latter.

The tribals are better known as bamboo cutters than as artisans, though non-tribals(who mostly belong to scheduled caste) also work as bamboo-cutters. Usually women are not supposed to go for commercial bamboo cutting since the work is strenuous, but in some areas women and children accompany men in cutting operations so as to assist them in the delivery of the harvest at the depot. And in some exceptional cases, women also work as bamboo-cutters because they have hardly anything to do at home, and without their active participation the men would not be able to take full advantage of the employment opportunity (i.e., since payments are made on the basis of the quantity harvested, women's involvement helps increase the harvest and hence the income). This particularly happens in case of the migrant labourers and women cutters are said to have a significant number in the group migrating temporarily from the Boinda/Athamallik region to work as bamboo cutters.

The quantity harvested by women is usually considerably less than that that by men. To quote Manika Amata, a woman bamboo cutter of Purnakot(Kolha sahi) village near Satkoshia, a woman can cut 4 to 5 bundles a day in comparison to 12 to 13 bundles by man.

³² Unlike in the neighbouring Chhattisgarh state, they are not recognised as a scheduled tribe in Orissa. They enjoy special concessions in Chhattisgarh with regards to bamboo extraction, since they are critically dependent on bamboo weaving and are very poor. The financial and social status is similar in Orissa, but the govt has deprived them of the legal status they deserve.

Project Aparajita, which imparted training on bamboo furniture, has established a unit where machineries are available for cutting bamboo, etc.. This is expected to help those women artisans who otherwise had to depend on male members for such heavy and strenuous work.

In community forestry initiatives, the women of Sinduria-Kodalapalli(Ranpur block of Nayagarh district) twin-villages have set up an example. They have been protecting the nearby forest patch which has rich bamboo resource. In 2004 they once seized bamboo worth about Rs.200, smuggled from this patch by some neighbouring villagers; and penalised them Rs.500 for this offence. These women, who belong to the scheduled caste and schedule tribe, have formed their self-help groups, and the income from bamboo goes to the group-fund(*per comm.*, Arakshita Sahu and Bhagyalaxmi Biswal).

Significance in betel- farming:

Betel(leaf) cultivation is an important source of livelihood in many parts of the coastal districts(like, Puri, Nimapara, Jagatsinghpur, etc.)³³ and the product is not only consumed inside the state but is supplied to other states also (like Maharashtra). Betel cultivation is a part of Orissa's agro-heritage and when the state has a bad reputation of depending on other states for many agro-products, betel is among the very few products which it exports and hence betel farming is a matter of pride for this state.

Betel vines being quite delicate, various kinds of external support is needed not only for their growth but also for their sustenance during storms, heavy rains and also for protection against cattle and thieves. And this protection is mostly ensured through various uses of bamboo.

The first and foremost use of bamboo in betel farms is for external fencing and roofing. For this purpose both the whole culm and the split parts of various sizes are used. The expenditure against this accounts roughly for about 20% of the total expenditure in the Jagatsinghpur district if cost of bamboo- *pakhudi* is to be excluded.

The support required for the betel plant for climbing is known as *pakhudi*. For this purpose, the reed of a plant is used which is 75% less durable than its bamboo counterparts, particularly in areas where white ants are a menace. It is for this reason that unlike the farmers of Nimapara district, farmers of Erasama region in the Jagatsinghpur district prefer using bamboo as *pakhudi*. While a bundle(having approx.640 pieces each of about 7 feet height) reed- *pakhudi* costs about Rs.80 to 100, same number of bamboo-*pakhudi* (6.5 feet high) costs about Rs.400 to the farmers of Nuagaon in the Jagatsinghpur district, and the total share of bamboo in the farming cost increases from 20 % to 50%. Hence, for betel cultivation in one acre of land in many parts of Jagatsinghpur district, the total cost would be approx. Rs. 2 lakhs out of which Rs.1 lakh would be required if bamboo- *pakhudi* is used. In Nimapara district, where reed- *pakhudi* is used and bamboo is required basically for fencing and roofing, expenditure on bamboo would be approx. 33% for one-acre

³³ However, as exceptions betel cultivation is also practiced in some parts of western Orissa, like the Sonepur district.

farming. These bamboo-materials are durable for two years after which they are used as fuel. And all kinds of bamboo can be used for this purpose excepting thorny bamboo.

Expenditure on bamboo varies to some extent according to the farming practices. For instance, in Nimapara and Puri districts the betel farms are situated at a higher level i.e., about 3 to 4 feet above the ground; and the bamboo used is of comparatively greater height than that in the Jagatsinghpur district where farms are on the ground level. Similarly, in Nimapara district bamboo is almost the only raw material used for roofing whereas in Jagatsinghpur district branches of Casuarina etc. are sufficiently used for the same purpose. Purchase prices also differ.

Pakhudi is as thick as the finger. Farmers bring the bamboo culms and employ labourers to make *pakhudis* out of that³⁴. On contract basis, a labourer may charge Rs.12 to 15 for making a *pana*(80 pieces) of *pakhudis* (6.5 to 7 feet high) in parts of Jagatsinghpur district. The time taken may be about 1.5 to 2 hours.

For fencing and roofing purpose, split-bamboo is used in the form of *binchana* and *phalia*. *Binchana* is approx. 9 feet high and thick like a finger. For making 80 pieces of *binchana*, a labourer may take about 3 hours and gets Rs.20. *Phalia* is about 7 ft high and 3 inches wide, and for making 20 such pieces a labourer may take 30 minutes and gets Rs.7 in the Nimapara region.

In Jagatsinghpur district, the *phalia*-like pieces are known as *bata* and the *pakhudi*-makers(labourers) are usually asked to split *bata* into *pakhudi*. For making 80 *pakhudis*, it may take them 45 minutes on an average for which they get Rs.10 plus food.

Before the super-cyclone of 1999 the betel-farmers used to ensure some supply of bamboo from the local sources at low prices. Besides, bamboo used to come from Ganjam and other districts where bamboo-cutting operations were carried out by the Forest Department. After 1999, while most of the local clumps vanished under the cyclonic effect, ban on bamboo-cutting operations severely affected supply from other districts. Acute shortage increased the rates by about 10 times, and the betel-farmers found it extremely difficult to sustain their farms. Thus, farming was reduced by about 50%. In the recent past, things have started improving and betel farming is gradually reviving itself. Most of the raw material (bamboo) now comes from north Orissa in every two weeks and since the farmers are critically dependent on betel cultivation, they try to continue their age-old profession somehow.

Betel business is badly dependent on three types bamboo baskets specially made for this purpose. The varieties are as under:

- *Pata*: Big size baskets used for local transportation of betel. A family can make 10 such baskets in a day.

³⁴ Some just purchase *pakhudis* directly.

- *Bhati-tukuri*: Medium-size double-woven baskets specially made for processing fresh betel leaves in hot chambers so as to ensure a value addition through change in colour(from greenish to whitish) and taste. A family can make 5 such baskets in a day.
- *Parcel -tukuri*: Small-size baskets used for transporting betel leaves to other states. A family can make 20 such baskets in a day.

The basket-makers and the betel-farmers are dependant on each other. When farming was reduced by 50%, production of the above kind of baskets was also reduced by 50% since these are used by the betel merchants. Demand of these baskets is a remarkable indicator of the status of betel-farming.

Nuagaon is a big village near Kujang in the Jagatsinghpur district where most of the people are dependant on betel business. This village requires about 1500 *parcel-tukuris* per week, 3000 *bhati-tukuris* in every three months(because these baskets are durable for 3 months), and 1500 *pata* per month.

A bamboo costing Rs.20 can be processed in various stages to make 10 *parcel-tukuris* in a day, by a family (two adults and children). The product is sold @Rs.5/piece.

The production cost varies in different districts depending on the cost of the raw material and the specifications. For instance, in Sahada village(Jagatsinghpur district) what the artisans purchase @Rs.50-60 per piece supplied locally, costs Rs.80 if it comes from north Orissa.

Similarly, the *pata* prepared in Sahada village is made of bamboo-laths thinner and wider than that used by the artisans of Nimapara district. Difference on raw material cost is said to be the reason behind this. The Nimapara product is 2 or 3 times more durable than the Sahada product.

Marketing:

At national level, the market potential of bamboo has been estimated to be approx. Rs.4463 crore with a projected annual growth rate of 15-20%(Karmakar K., and Haque M., *Bamboo and Rural Employment*, Yojana, July 2004, p.21 The total market opportunity of bamboo in Orissa in various segments (industrial consumption, bamboo-craft, etc.) is said to be around Rs.6000 million (Mohanty D., *op.cit.*). Out of this, the value of IB would be about Rs.56 million in 2005 calculated @Rs.750/ton(working cost upto depot) for the targeted 75000 tons.

The production of forest bamboo in 1999-2000 was 152569 Sale Units(SU) valued at Rs. 2161.24 lakhs (source: Statistical Section, Office of the PCCF).

It was only though the industrial use that large-scale commercial marketing of bamboo could be possible more than half-century ago. Since then IB has assumed the major role in the state bamboo business although loss of bamboo forests and increase in tenant's

requirement have also increased the scope of marketing the CB. Non-harvesting of forest bamboo(IB) led to a loss of about Rs. 400 million/year on the bamboo itself, alongwith a loss of Rs.70 million/year on royalty, Rs.10 million/year on sales tax, Rs.7 million/year on silvicultural expenses, and Rs.105 million/year on labours' wages (Sharda A.K., *op.cit.*).

Organised marketing of forest bamboo started in Orissa on a large scale when the Bird & Heilger Co. established its Forest Organisation at Angul during the British period. This company had the largest forest organisation in the Eastern India, and supplied bamboo to five states. It also owned paper mills one of which was the TP Mill. Straw Products Ltd.(later known as JK Crops and then as JK Paper) established a similar organisation at Rayagada in 1954 followed by the establishment of its paper mill in 1962. These two companies had the legal status of a lessee.

Following is an account of the marketing status of various types of bamboo and bamboo products depending upon their use:

1. Bamboo for tenants use:

In Keonjhar state the rates were Rs.10 and Rs.5 for 1000 pieces of daba and salia respectively during the early decades of 20th century. In Ranpur state, the rates were Rs.1.5 and Rs.3 respectively for 100 pieces of salia and kanta, in 1940s.In Angul Divn, both salia and daba was charged @one anna per 5 pieces(or fraction thereof), in 1942. In Ghumsur North, the rates were 1.5 annas for 10 pieces of salia, in 1938-46 (Vasundhara 2000 mimeo, *Aspects of Garjat Forestry*, pp.104,112,232-33).

After independence, the schedule of rates were revised in 1977 for all the districts of the state. These rates for bamboo however remained unchanged for years despite increase in the production cost(for OFDC) and market prices.

Price of commercial bamboo, supplied by OFDC, varied from Re.0.95 to Rs.3.30 per piece of salia, and from Rs.4.25 to Rs.6 per piece of daba, in 1989(*proceeding of the meeting of the Emp. Committee on 23.1.89*). In Nov. 2003, the price of salia CB was fixed as under:

Price:	Rs.9.80
Orissa Sales Tax(12%):	Rs.1.17
Surcharge(@10% over OST):	<u>Re.0.12</u>
	Rs.11.09
Forest Dev. Tax(1%):	<u>Re.0.11</u>
	Rs.11.20
Income tax(2.5%):	Re.0.28
Additional income tax(2.5%):	<u>Re.0.28</u>
Total:	Rs.11.76

Hence, the sale price of salia CB was fixed at Rs.11.76 or Rs.12 per piece. Similarly, price for daba was fixed at Rs.22.15/piece, plus taxes and surcharge(as in case of salia).

However, during 2004-05 the price of salia has been fixed at Rs.6, Rs.8 and Rs.10 per piece depending on the size.

Cutting long bamboo has often been said to be not viable commercially for OFDC or the RMPs. For instance, in 2005 the RMPs were entitled for reimbursement @Rs.5/piece of long bamboo they were required to cut for tenants' use; but in Dasapalla area their actual cost of production was reportedly Rs.6.50 per piece on an average.

Bamboo from private land is priced on the basis of the size and thickness of the culm. Such prices vary from area to area, but normally the average minimum rate is Rs.10 per piece which may increase to Rs.70 to 100 in case of culms of higher length and thickness. Cutting is normally the customer's responsibility.

Scarcity has caused substantial increase in bamboo prices during the last 10-20 years. For instance, the local people say that sundarkani bamboo was available @Rs.5/piece in the Kundhei(Kakatpur) area before the flood of 1982, but now the price is Rs.60-75 for the same.

Smuggled forest bamboo may be available within the rate of Rs.3 to 15 per piece depending on the distance of forest/source and other expenditures involved(like transportation, if any).

In forests under community protection, the provisions vary from area to area, depending on the availability of bamboo, dependency of the villagers, etc.. For instance, at Gania(Nayaharh) the local people have been allowed, after a restricted period of 3 years, 20 pieces of bamboo per HH @Rs.20 (i.e., @Re.1/piece) and if anybody is found to collect bamboo beyond this limit, then he has to pay Rs.51 as penalty. At Chadheipalli(Nayagarh) there forest protection committee, which supervises protection of about 3000 acres of Ratnamala village forest, has allowed unlimited(but subject to sustainability) quantity of bamboo for the tenants @Re.1/piece belonging to this village, and @Rs.3/piece to outsiders(*per comm.*). In many parts of Ranpur area there is neither any special provision nor restriction for felling of bamboo for local use; but in Sinduria-Kodalapalli area while the protecting villagers can get their requirements free from the forest, outsiders have to take bamboo on payment basis. 60% of the price paid for bamboo by the outsiders is given to the villager who cuts the same for the applicant(because outsiders are not allowed to cut bamboo in the forest), and 40% goes to the village fund(*per comm.*, Arakshita Sahu).

2. Bamboo for artisans' use:

At present, the artisans in most places are getting bamboo at the same price that is being paid by the general tenants, because private traders or bamboo-bush owners do not distinguish between the two while selling their bamboo.

Even in community protection areas, special concession for artisans is hardly found probably because they stand on the same footing as other villagers in terms of membership fees, responsibilities, etc.. At Chadheipalli, for instance, there are about 200 HHs of

bamboo artisans among the total population of 700 HHs; but the rule for bamboo harvesting is same for them like other villagers.

3. Industrial bamboo

In 1988, OFDC sold industrial bamboo at Rs.700/SU of salia. This price was fixed by the Empowered Committee on bamboo, and included Rs.115 as royalty, Rs.30 as OFDC's commission and Rs.310 as working cost, plus other expenses. Price for daba IB was fixed at Rs.1020/SU.

During that year(1988-89), OFDC supplied 11000 SU to OP Mill, 109482 SU to Straw Products, and 3913 SU to Bhadrachalam Paper Board.

In 1989-90, the price increased to Rs.735 for salia, and Rs.1890 for daba, per sale unit. The break-up for salia IB was as under:

Working cost:	
Forest and depot exp.-	Rs.255
Establishment-	Rs.70
Silvicultural expenses:	Rs.20
Reserve fund:	Rs.24
Agent commisiion to OFDC:	Rs.30
<u>Royalty to govt:</u>	<u>Rs.336</u>
Total:	Rs.735

Cost of production of daba IB was normally expected to be 2.5 times that of salia IB, and hence the sale price of daba was often fixed on this basis³⁵.

By late '90s the situation has changed a lot. On one hand the paper mills went through a period of depreciating market prices of paper and on the other hand, some of them adopted advanced technology of using hardwood pulp with bamboo at 80:20 ratio so that the production cost could be reduced to cope with the situation. At that time bamboo purchased from OFDC costed them about Rs.1650 per MT as against Rs. 750 to 1400 for the timber of firewood species like *chakunda* and casuarina etc.. Again transportation cost was about Rs.3000/MT of bamboo as against Rs.2000 for wood. This way the cost of the raw material was significantly less if they used wood in place of bamboo. Further, purchasing bamboo from OFDC involved a complex paper work and several responsibilities(like transit permits) which was not there if they purchased wood from private traders or plantation owners. Hence, the mills avoided the lifting of about 68000 MT of bamboo stacked for their use in OFDC godowns during 1999-2000 (RCDC, *op.cit.*, p.3).

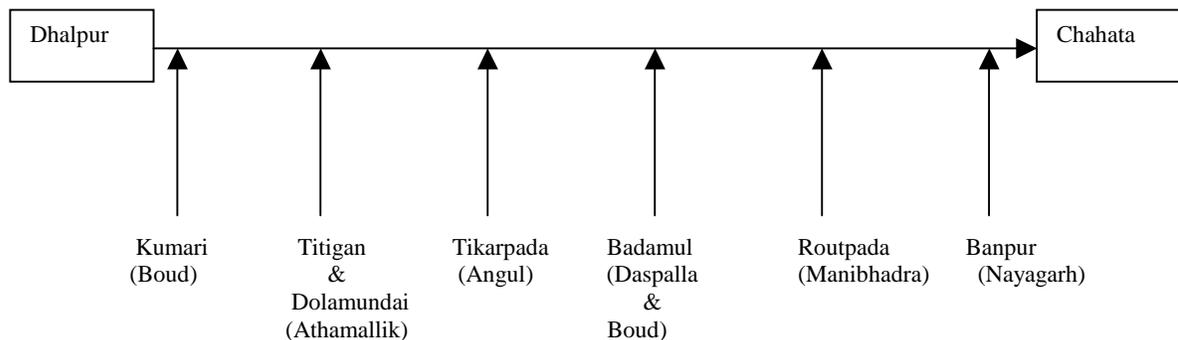
³⁵ Since 1 daba SU is regarded to be equivalent to 2.5 salia SUs, hence the price is normally fixed accordingly. For instance, the Empowered Committee fixed the price for salia @Rs.1272/SU for the year 1995-96, and that for daba @Rs.3180 (1272 X 2.5).

The (bamboo) price and the paper

The projected demand of paper and raw materials thereof, in India, was estimated at 6.7 and 18.8 million tons respectively, whereas the shortfall in actual production of the same was estimated at 2.5 and 7 million tons respectively. The shortfall was also estimated to increase respectively to 3.7 and 10.4 million tons by 2010-2011. Hence, the scope for paper industry as well as the raw material supply is very high. However, like other items paper market has also experienced fluctuations, and the price of paper has decreased several times due to various factors. The resentment of paper mills in Orissa lies in the fact that the price of industrial bamboo in the state increased by 46% during 1994-2000 against a decrease in paper prices by 27% (Sharada A.K., *op.cit.*). On the other hand, the hike in bamboo price was also an outcome of the situation in the state. For instance, the working cost was estimated to increase from Rs. 325/SU in 1989-90, to Rs.610/SU after the govt increased the minimum daily wage from Rs.11 to Rs.25 in 1990-91. It is not that the Emp. Committee on bamboo never took into consideration the fall in paper prices. Rather, in their meeting on 22-9-1997, the Committee carefully considered the then prevailing market situation of paper and accordingly took the decision on increasing the royalty at 5% extra of the 1996-97 rate. Still, establishment cost has been a matter of concern for OFDC particularly after it's chief source of income, i.e. timber, was lost after the ban imposed on timber extraction.

Advantages of river transport

TP mills ensured its raw material supply basically through river transport. The bamboo bundles were turned into rafts in a very systematic way, and then were floated downstream in the Mahanadi river so as to reach the paper mill at Chowdwar. The lower end was Chahata ghaat (nearest to TP Mill) and the upper end, Dhalpur (Phulbani). Following scheme shows the route and collection centres (ghaats) alongwith the forest areas (within bracket) from which bamboo was harvested



The distance between Dhalpur and Chahata was about 120 km. Rafting was confined to the period of November to June, and each depot(ghaat) used to send 7 to 8 rafts in a season(Nov. to June). With 21 pieces in each bundle, 57 bundles made 1 *chhai*; 10 *chhais* made 1 *bhela*(raft); and 12 *bhelas* made 1 *dala*(batch). In every batch, there used to be 29 bundles in the lower layer and 28 bundles in the upper layer in a *chhai* so as to maintain balance. About 12 raftsmen, headed by one *sardar*, controlled the transportation of every batch. It used to take about 8 days for them to cover the 120 km river route.

The cost of river transport was about 75% less than the road transport; hence the company, which had the lease, saved a lot on this head. However, after nationalisation OFDC discontinued this practice.

There were about 700 to 800 families of boatmen who were benefited by the river transportation of bamboo. Besides, at every river depot there were about 30 labourers engaged in bundling work, etc..*(per comm., Bishnucharan Pradhan, Jogesh Ch. Pradhan and Dilip Kumar Pradhan)*.

This river transportation was a very skilled job. The raftmen had to make adjustments in the rafts where the river was narrow, or rocks were encountered. The whole thing has now become a legend. Moreover, dams and barrages across the river route have further reduced the scope of its revival.

Industrial customers of bamboo

Emami paper mill, which is situated near Balasore does not use bamboo, but uses waste paper, sabai grass and hay as its raw material. Hence, only two paper mills viz. SEWA of Jeypore and J.K. of Rayagada remained as the consumers of industrial bamboo in the state, but increased use of hardwood further reduced their requirement of bamboo. Also the paper mills tried to avoid lifting the old stock(bamboo) showing reason that it could not be used in the production of quality paper.

JK paper mills has pioneered in becoming self-reliant in the raw material production. It has sponsored research on hardwood species which succeeded in producing what is known as 'JK super clone'. Such clones have been developed for Casuarina and Eucalyptus and they grow faster than the normal ones produced from seeds. JK mills has entered into agreement with growers of Orissa and Andhra, etc. to buy back their harvest, and has supplied clonal plants to them. The company claims that the net returns from such clonal plantations are significantly higher [like, Rs.71000 per hectare as against Rs.32500 from seed-route plantations, in the first rotation as estimated against a procurement price of Rs.850/MT(wood) at the farm gate in 2002] and this has encouraged growers to use their lands for the supply of raw materials to JK mills at several places of Orissa. In fact, the company succeeded to bring 22458 hectares under this type of plantation in Orissa out of which 19039 hectares were covered under Social Forestry scheme. The area proposed to be added in 2005 was 2085 hectares. Added to this self-confidence is/was the convenience of getting bamboo from other states like Andhra, Chhattisgarh and Assam as the policy in

those states were found to be more customer-friendly. About 30000 MT bamboo is also being supplied annually to the paper mills from the resources available on the private lands of Khunta-Udala area of Mayurbhanj district. It may be noted here that although the company has stressed on propagation of hardwood species, it has a nursery for bamboo; and is ready to provide required quantities of plantlets of bamboo either free-of-cost or at a negligible price, to the interested growers.

Local suppliers of industrial bamboo

Three private traders of Mayurbhanj district, two stationed at Betonoti and the other at Baripada, have been supplying industrial bamboo to the paper mills since many years. Several small depots of Khunta-Udala area supply them this bamboo. The local people of Khunta-Udala area have bamboo clumps in their private lands and sell few culms at the time of need(of cash) at these depots approximately @Rs.80/quintal provided the culm is cut into two or three pieces so that each piece can be of the length between 3 to 6 feet. Some times thorny bamboo is also supplied and the grower takes the responsibility of clearing the thorns. Since only few culms are sold by each grower, he himself manages to bring them to the depot. If however labourers are employed, then the charge is Rs.2 to 3 per piece of long bamboo for cutting (and clearing thorns, if necessary); or if the stock is of considerable quantity, then Rs.30/quintal. On the other hand, if the grower supplies bamboo to the depot without cutting and clearing, then he gets a price of Rs.50/quintal. If he has a large stock, then the depot-owner makes his own arrangement to bring the material from the grower's place.

The big traders of Betonoti and Baripada purchase this bamboo at prices ranging between Rs.90 to 105 per quintal(i.e., Rs.900 to 1050 per MT). Since there is a weight loss of about 10% on the drying of bamboo culms within 7 to 10 days of harvest, this is not overlooked by the traders and the price is fixed accordingly. Transportation is their responsibility and they supply this bamboo to the paper mills at about Rs.1100/MT. To include sales tax plus transportation charges, the landing cost finally comes to about Rs.2500/MT at the paper mill gate.

Last year the mills paid Rs.2200 to 2300 per MT, but this year the price has increased owing to the hike in transportation charges(following the hike in diesel price). Both the mills and the suppliers seem to be satisfied with the current arrangement.

Supply of industrial bamboo is usually a seasonal business more or less confined to the rainy season because the loss of moisture is minimum during that period. More the moisture, greater is the weight; and hence greater is the valuation. During summer the weight loss can be as high as 20% within the few days stocking (*per comm.*, Ravi Rout). Usually, this kind of bamboo contains 40% moisture.

The nearest forest in the Khunta-Udala area is Shimilipal where no bamboo forests are found. Hence, transportation of some daba pieces is not a problem as the Forest Department knows that almost all the bamboo supplied from this area comes from private land and belongs to the unrestricted species. Clearing of thorns and inclusion of the pieces in the pile of unrestricted species helps the traders further.

Since the Govt of Orissa did not develop an alternate market for its huge production of industrial bamboo, lack of demand at paper mills has weakened its position the advantage of which is taken by the mills. Now they declare that if the govt makes a user-friendly policy and reduces bamboo price to the rate affordable by them, then they are ready to purchase industrial bamboo from Orissa. The royalty had been increased to almost Rs.650/SU in 1999-2000 which caused great resentment among the mills. Already they had complained that although the govt claimed that one SU was equal to one MT, actually it came to about 0.8 to 0.6 MT causing financial loss to the purchaser. Under such circumstance further increase in royalty was not a decision to be welcomed naturally.

Red-tapism and negligence of one or more of the concerned authorities is said to be one of the factors that led to the critical situation regarding non-disposal of bamboo. For instance, in Deogarh region OFDC harvested and stacked industrial bamboo worth Rs.2 crores which was supposed to be lifted by Orient Paper Mills. However, the Mill was closed before lifting the same. Some hope was still there as other paper mills had expressed interest to purchase the same, but the standstill situation continued simply because the concerned high level committee delayed in taking a decision regarding the price (*The Prajatantra*, 22-4-02, p.6). Similarly, Ballarpur Industries, which was the procuring agent for bamboo in the Kalahandi district, could only partially lift the stock in 2000-01 as it received the work order very late(*The New Indian Express*, 30-4-02, p.6)³⁶.

In 2001-02, the revenue from bamboo had come down to merely 2.3% of the forest revenue in the state. By September 2002, around 48,000 SUs of bamboo were rotting in the depots of OFDC. As deterioration in quality owing to non-disposal would cost the Corporation dearly, the government decided to reduce the royalty from Rs.650(approx.) to 350 per SU, and also authorised OFDC to auction and sell the stocks at any price (Saxena, *op.cit.*, pp.5,15). In fact, the previous sale price of Rs.1650/SU was decreased to Rs.1150/SU for 2002-03. In 2003, the average sale price through national tender was Rs.1460/MT(notional).

The first national tender was on 16.9.02, but was cancelled due to very low offer. Next one was on 25.10.02 when the offer from Bhadrachalam Paper Board to purchase 7243.59 SU of IB(salia) @Rs.334.42 was accepted. The third one was on 20.1.03 when the offer from the AP Paper Mills to purchase 1562.13 SU @Rs.225.91, and that from BILT to purchase 6867.54 SU @Rs.322.58/SU was accepted.

For 2004-05, the Empowered Committee had recommended for a sale price @Rs.1700/MT as per the following break-up:

³⁶The work orders were originally issued to OFDC which worked only in 16 coupes and surrendered the rest showing reason of late receipt of the work order(*Anupam Bharat*, 26-9-03, p.4).

Cost of extraction	Rs.750
Govt receivables	
Royalty	Rs.600
Silvicultural charges	Rs.100
OFDC's commission	Rs.50
OFDC's establishment cost	Rs.200
Total	Rs.1700/MT

As seen in the above table, Rs.950 was proposed to be paid by the RMPs against receivables on the part of the govt and OFDC. However, the paper mills wanted this rate to be significantly reduced. The Empowered Committee tried to justify its price by comparing the sale prices in the neighbouring states (like, Rs.1700/MT in Chhattisgarh and Rs.2100/MT in MP³⁷). After further negotiation, the RMPs agreed to pay Rs.1500/MT³⁸ as per the following break-up(*vide proceedings of the meeting of the Emp. Committee held on 6th November 2004*):

Cost of extraction	Rs.750
Govt receivables	
Royalty	Rs.500
Silvicultural charges	Rs.75
OFDC's commission plus establishment cost	Rs.175
Total	Rs.1500/MT

The Empowered Committee also decided that if the RMPs achieved beyond their targeted figure, then the rebate they would be getting would be shared by OFDC and the govt at 50:50 ratio; like, for ex., on Rs.20/MT, Rs.10 would be on royalty and Rs.10 on OFDC's commission.

4. Bamboo for betel farming, construction work and tent houses:

Long bamboo is the prime requirement for these purposes and cut-pieces are made thereof, as per need, by the purchaser side. Betel farmers of coastal districts are the major regular customers of this bamboo. Traders who sell it to them used to get their supplies earlier from various depots of OFDC(like Sorada-Gajalbadi area and Dasapalla), but now only three major supply routes are available for them as under:

A. Legal supplies:

- From Andhra Pradesh
- From Khunta-Udala area

B. Illegal supply: From Hindol-Narsinghpur area

³⁷ average sale prices in these two states have been quoted

³⁸ Actually Rs.750/MT only towards govt payables, since the RMPs would arrange on their own for bamboo working and hence would bear the cost of extraction. However, they would have to pay a sale tax @4% on the sale price, i.e., Rs.1500/ton.

Gopal Mohapatra, a businessman of Nayagarh is said to be the pioneer in ensuring supply from Andhra about 20 years ago. The advantages of purchasing bamboo from Andhra are many, like:

- Cheaper price
- Customer-friendly policy of the Andhra Forest Department
- Hardly any need for bribing anybody.

Salia bamboo is procured from Andhra. Each such standard piece costs about Rs.14 here as against Rs.18 to 19 for the same if obtained from OFDC. Hence, the betel farmers can get bamboo at a cheaper price. In fact, procurement from Andhra is said to have helped these farmers significantly particularly after the flood of 1982 which destroyed the local bamboo bushes on one hand, and dependency on OFDC was proving costlier on the other.

The actual procurement price of a bamboo piece comes to less than Rs.2 in Andhra, but added to this are taxes of various kind plus transportation charges. To reduce the cost of transportation per piece, the traders try to load the trucks to the maximum possible limit for which they pay penalty charges (popularly known as ‘dala open; height’; i.e., the volume has crossed the limit on various sides) @Rs.800/truck a part of which is taken by the penalising officials unofficially(i.e., without receipt). Each truck-load may contain 3000 to 5000 thin pieces or 500 very thick pieces of long bamboo weighing about 12 to 13 tonnes.

The bamboo from Khunta-Udala area that costs Rs.30/piece at the local depot is actually procured from the grower @Rs.25/piece. Added to this is the transportation charge @Rs.25/piece plus some other expenses like bribe demanded at check gates, etc.(if any), and hence the sale price at Kundhei(near Kakatpur) comes to about Rs.60/piece. This bamboo is not salia but sundarkani or some other species. Since 1 piece of sundarkani is equivalent to about 5 pieces of salia in terms of length and thickness, hence people do not hesitate to pay a higher price for it.

Unlike industrial bamboo, supply of long bamboo from Khunta-Udala area is a round-the-year business since moisture loss is not a criterion in this case to affect the price and use at the end market. On an average, the rate of supply is about 10 truckloads per day, each containing about 600 to 700 pieces and weighing approx. 12-13 tons. The destinations are Bhubaneswar, Cuttack, Pattamundai, etc., and there are more or less 20 traders of Khunta-Udala area involved in this supply network.

Earlier some traders used to procure bamboo from Andhra and get their permit issued for delivery at Kolkata(West Bengal) so as to evade the sales tax to be charged on it in Orissa in case of a delivery in Orissa. Needless to say, they actually delivered their material in Orissa itself but saved some money showing the permit upto Kolkata. However, they were caught for their fraud after which this malpractice has almost stopped. Now some of these people have resorted to another alternative. They have ensured the supply of smuggled forest bamboo from the Hindol-Narsinghpur area either showing false certificates for tenant’s bamboo, or through some other means, which necessarily involves a good nexus with the local officials of Forest Department. This bamboo costs them less and hence they

are able to sell it at a price 15 to 20% less than that of the Andhra bamboo. The margin of profit is also more in their case because their bamboo is cheaper even at a profit of Rs.3 to 4 per piece whereas traders procuring from Andhra normally expect Re.1 to Rs. 2 per piece of their bamboo which is already costlier and more profit will make it further costlier.

At Kundhei, the rates of bamboo(single and longitudinally split) for use basically in betel farming have been found as under(valid for the supply from Narsinghpur area):

Item	Size(length)	Price in rupees
<i>chhuncha</i> (un-split long bamboo)	15 to 18 feet	1100 to 1300 per 100
<i>phalia</i> (split bamboo about 2 inches in width)	10.5 feet	110 per 20 pieces
<i>binchana</i> (split bamboo about 0.5 inch in width)	13.5 feet	120 per 80 pieces

(per comm.. Shyama Nath)

5. Bamboo-ware and bamboo craft

The traditional system of marketing common bamboo-ware was through the barter system where paddy or rice was exchanged for the baskets and winnows, etc., particularly if the purchaser and the seller belonged to the same village. The system is still prevalent in some areas, but sale against cash payment is also practiced. However, certain items like panajhudi are essentially sold for cash only.

Demand of certain products has increased considerably over time whereas certain other products have suffered a negative impact. For instance, demand of *mati-jhudi*, which is used in earth/construction work, has increased by manifold due to increasing constructions of roads and buildings, etc., and plastic substitutes are yet to challenge the dominance of this bamboo-product. On the other hand, the baskets used for bidi-supply are being replaced by other substitutes due to cost-effectiveness, durability and easy handing nature of the latter. For certain items like *bhati-tukuri*, people just do not prefer plastic substitutes due to a number of reasons.

Bidi-peti and machha-peti are essentially localised products as their market is confined to a particular area. For instance, machha-peti i.e., basket used for packing and transporting fish, has its market confined to the Chilika area and is produced at Bajrakot/Iramaru village(Ranpur block, Nayagarh dist.). A local trader purchases the same from his co-villagers artisans approx. @Rs.30/piece, and supplies to the Chilika market at about Rs.50/piece. Average supply per month is 150 to 200 pieces. The traders says that he has not noticed any significant increase or decrease in the demand and sale of this product(per comm., Bachana Nayak).

Bidi peti: the lost charm?

About 3000 HHs of bamboo artisans of Bhatara, Munder, Mathapali and Talpali etc. were critically dependant on the business of bbidi-peti supply to the bidi factories of Sambalpur/Jharsuguda. Almost all of them are landless, and whereas traditional items could fetch them max. Rs.400 to 500 per HH/month, bidi-peti alone helped them earn Rs.1000 to 1200/month/HH. Hence, they used to concentrate on this item. The demand of bidi-peti was almost constant(about 10000 per week in the two districts, *The Statesman*, Orissa page, 27-4-04) throughout the year, unlike traditional products; and bidi-companies sometimes used to make their own arrangement to procure the containers from them. Bringing bamboo from the local forest and then processing it to make one such container normally takes one man-day and the sale price varied from Rs.20 to 22 per piece depending on the size. However, since about 5 years the bidi-companies have either reduced or stopped their procurement since they say that with the decreasing demand of bidi, paper-containers rather seem to be more affordable than such bamboo-containers. As such, the bidi company that used to procure about 1000 pieces of bidi-peti from the Turipada hamlet of Munder village, per month; has now stopped procurement from this village. Few artisans of the neighbouring hamlet Munder Indira Awas have somehow persuaded another bidi company to take their product as a result of which they are now able to sell about 60 pieces per month though it is only 10% of the number earlier supplied. Persuasion succeeded partly at the cost of a lower price(i.e., Rs.16/piece) though now the company has agreed to pay Rs.20; but this does not mean that there is a demand from the user side.

Almost absolute dependency on bidi-peti left these people in lurch after the demand was lost. They now seek some external help for their livelihood support(*per comm.*, Tulasi Behera, Gulu Behera, and villagers of Munder Turipada).

Sena has now but few takers. This winnow-like product is used for lifting and throwing water often for limited irrigational purposes; but with the growing use of water pumps, it is now difficult for the artisans of Gadagopalpur village to sell it at even Rs.30/piece though the actual price should be more than double. Earlier, in each weekly haat the sale rate of *sen*a was about 10 to 12 pieces per family(artisan); but now there is hardly any sale(*per comm.*, Parvati Mallik and Jalandhar Mallik). The production of this item has therefore decreased to its minimum and a day may come when it could be seen only in museums.

Oodara/nodara is still used in rural areas, but the demand has decreased substantially after tractor was used to bring construction materials like sand, and other items of commerce. At Gania weekly haat, about 80 pieces used to be sold per week three decades ago, but now there is hardly any sale. Doli that was sold @100 pieces per week at that time has now reduced to a sale rate of about 25 pieces per month, say the artisans of Gania. Steel/aluminium drums and other substitutes are now available for storing paddy/rice.

In intra-village business there is almost no scope/role for/of a middleman; but in inter-village business, particularly where the distance between the manufacturer(artisan) and the

end-user is considerable, middlemen do have a scope though in many such cases they do not actually come into the picture due to a number of reasons (like, lack of regular demand, negligible scope of profit-making, etc.).

The business is carried out sometimes at the doorstep of the artisan and sometimes in rural haats and/or permanent shops. However, govt agencies like ORMAS and DRDA etc. have facilitated the marketing of both traditional and non-traditional products through exhibitions and trade fairs. In fact, most of the non-traditional items lack a regular demand in the local markets owing to the absence of their role in the traditional socio-cultural practices, and hence exhibitions and trade fairs are the only hope for their marketing. Such sophisticated and delicate artefacts are usually purchased by the elite people more for decoration purposes. It is for this reason that artisans can hardly depend on such products on a regular basis.

Supply in lot may involve transportation plus other charges(if any). For instance, for a bundle(contains 12 pieces) of *bidi peti* transportation(for about 17 km distance from Munder to Sambalpur)) charge is Rs.10 upto the town; then Rs.3 is paid at the check gate, after which Rs.5 is paid to the rickshaw to reach the bidi factory/godown.

Some products are exported to other states in various ways(i.e., either directly or through petty traders). For example, winnows produced at Nakuda(Damasahi) near Tato(Karanjia) are transported to Badampahar or Rairangpur where women traders coming from Tata, Chainbasa and Mushabani, etc. purchase the same to sell in their own areas. Transportation charge(upto Badampahar/Rairangpur) for a bundle of 60(?) winnows is about Rs.15 on an average and each winnow that costs Rs.8 at Nakuda is sold to the women traders @Rs.8.50 to 9.

The trade and market scenario curiously varies from area to area and from season to season. For instance, artisans of Gadagopalpur(near Astaranga) are not much hopeful about their business unlike their brethrens of Kendrapati(Kakatpur) which is not far away. Remoteness of the village, product diversity and popularity, skill in trading and limitations of local demand are among the factors responsible for situation like this. Seasonality is also a very important factor. The winnow of Nakuda that has an off-season rate of Rs.5/piece during March-April, sells at Rs.8 during Kalipuja(November i.e. harvesting season). Similarly, *tata* which can fetch a price of Rs.30 to 60 per piece in the Astaranga area during marriage season, or festivals like *kumar purnima* or *dwitia osha*, is difficult to sell at Rs.5 during the off season. The loss during off-seasons is compensated to some extent during periods of good demand.

Following table shows the estimated production and sale of bamboo & cane products through registered societies in the state, between 1999-2000 to 2001-02, in lakh rupees:

1999-2000	2000-01	2001-02
12.56(prod.) 15.21(sale)	20.15(prod.) 20.45(sale)	28(prod.) 32.28(sale)

(Source: Govt of Orissa: Directorate of Handicrafts and Cottage Industries, *Handicrafts and Cottage Industries in Orissa:2003*, Table 1.5)

Smuggling

In 2002 a local newspaper published a report regarding the strategy of bamboo smugglers active in the bamboo forests of Dasapalla area. It said that the smugglers purchased very inferior quality bamboo at a low price from the OFDC depots of Kalahandi, Rayagada and Phulbani areas and then used the permits acquired against the same for smuggling and transporting good quality bamboo from the Dasapalla forests(*The Pragatibadi*, 5-4-02, p.1).

However, smuggling of forest bamboo is not a new thing. Tenants and artisans living near bamboo forests have been used to this practice since long. What is comparatively recent is the large-scale organised smuggling for commercial purpose.

Export:

British records reveal that bamboo and bamboo mats were 'exported'(not necessarily to foreign countries) from sea-ports of Gangam district during 1830s(Vasundhara, *op.cit.*). Although there is no report of bamboo being currently exported from Orissa to foreign countries, the national level statistics available with the Directorate of Commercial Intelligence shows that India has been exporting bamboo to not only Asian countries like Bangladesh and Arab countries, but also to European countries, Australia, New Zealand, and South Africa, etc..

Marketing of bamboo shoots

Marketing of kardi and hendua is confined basically western Orissa. Usually it is a seasonal business because kardi is made during rainy season. However, sale of hendua can last for a longer period.

Rural haats are usually the place where people sell karadi and hendua, but petty traders also reportedly purchase at the doorsteps of primary collectors so as to sell the product somewhere else. For instance, women traders of Belpahar area(Jharsuguda district) used to come to villages like Kodbahal(Sundargarh district) once a week to procure this because in their area kardi and hendua are not available in adequate quantities despite having good demand.

Some people like the villagers of Munder(Sambalpur) sell only kardi while some others(like villagers of Kodbahal) sell(used to sell) both. Purchasers of kardi either consume the same directly, or prepare hendua themselves.

The sale prices may vary from area to area and season to season. At Munder *kardi* is sold at Rs.4 to 5 per kg, but the *Times of India* reported in 2003 that its price at Sambalpur was Rs.20 to 30 per kg(dated 7th September 2003, p.4). Scarcity and involvement of petty traders seems to be the factors behind this huge difference in price. In fact, the villagers of Kodbahal say that the price of hendua has almost doubled during last few years to become Rs.25/*tambi*³⁹ now.

Besides western Orissa, *kardi* is also marketed in some other parts of the state like in the Khandapara area of Nayagarh district. Usually four lady primary collectors sell about 25 quintals of kardi per annum, @Rs.5 to 7 per kg(*per comm.*, Abhimanyu Pradhan), in this area; and part of this quantity goes for outside supply.

In southern India, the shoots are packed in 10 kg polystyrene boxes and sold fresh. Trading of bamboo shoots also takes place in many other Asian countries (Shanmughavel 2004, *op.cit.*, p.238).

The Planning Commission has estimated that the Indian bamboo shoot industry can grow at 25% and can increase its market share from Rs.48 million to Rs.3000 milion. Japan, Hong-kong, Singapore and Thailand are some of the major importers of these shoots. Japan pays Rs.70/kg for this product. Fresh- and canned shoots can be exported, and the US Food & Drugs Administration has specified certain standards for the shoots to be imported and the Indian exporters can meet these standards (*The Wastelands News*, February-April 2004, p.12).

Value of bamboo rhizomes:

Some artisans of Sundargarh district use bamboo rhizomes. If they dig it out themselves, then there is hardly any need for a cash payment though sometimes the grower may charge Rs.1.50 to Rs.2 per piece. If however they engage labourers for that, then it increases the cost of the raw material.

Price of bamboo seeds

Seeds of *D. strictus* and other species of bamboo are available for cultivation purposes. While price of the seed of *salia* ranges between Rs.150 to 200 per kg, that of other species may be almost the double.

Gregarious flowering in bamboo provides ample scope for seed collection. Few years ago, the forest officials of Narsinghpur (East) Range planned to make the flowering in the bamboo forest under protection of Maa Brahmanidei VSS of Panchagochhia area

³⁹ a volume measure

advantageous to the protecting villagers, by persuading them to collect the seeds so that the Department could arrange for the disposal of same at Rs.100 to 150 per kg(dry), which would have helped the villagers earn something from this source. About 10 quintal seed was expected to be collected. However, before this could be done the bushes caught fire and the chance was lost(*per comm...*, Kishore Kumar Parida). Otherwise, calculated at a collection rate of 4.5 kg seeds/manday, it could have generated about 2222 mandays.

Flowering in bamboo: a concern over the ages:

In North-Eastern States, about 26 million tons of muli bamboo(*Melocanna baciifera*) are expected to flower over an area of 18000 sq. km. during 2004-07(*Wastelands News*, Feb-April 2004, p.3) causing great concern among the concerned states as gregarious flowering of bamboo would mean mass-death of bamboo clumps over large areas increasing the risk of forest fire. Moreover, people are psychologically scared because such phenomenon has often been associated with calamities like famines, floods and human deaths, thus being perceived as an evil sign. Hence, a Steering Committee on the Management of Prospective Gregarious Flowering of Muli Bamboo was constituted to look after the mitigation of this natural problem(*The New Indian Express*, 18.12.03, p.9).

In 1959 in Mizoram, gregarious flowering of bamboo led to famine causing about 15000 deaths. As the Govt of India did not reacted satisfactorily to this disaster, the resentment among the people is said to have promoted militancy in the state for many years(Christian Science Monitor quoted in Hazari N., *The Samaj*, 15-12-04, p.9).

OFDC harvested total 237508 MT of bamboo during 1991-92 out of which 26488 MT(11.15%) was flowered bamboo(source: OFDC). With flowering, the culms become drier making themselves vulnerable to fire. Destruction of such clumps/forests by catching fire either through natural means or through human intervention has been a matter of great concern for foresters and ecologists/environmentalists.

Flowering leads to the production of seeds, and in gregarious flowering the quantity of seeds produced is huge. It is said that when these seeds fall here and there on the ground, the rodent population is benefited because bamboo seed is their food. This in turn leads to significant increase in their population, and when the seeds are exhausted, they turn towards human habitations in search of food and destroy granaries, etc. which causes shortage of food among the villagers. Moreover, these rodents can make holes in embankments and dams leading to the collapse of the latter, and the resulting disaster. This theory attempts to explain scientifically the reasons behind people's experiences of disasters related to bamboo flowering, but recent studies by two researchers D.Girish and B.Akarsh in the Bhadra Tiger Reserve in Karnataka found otherwise in case of gregarious flowering of *B.arundinasia* . They found that instead of any increase in rodent population, population of certain bird species, which feed on these seeds, increased. Similarly increased was the population of a bug which thrives on bamboo seeds. The researchers found that nature has its own mechanism to regulate the regeneration of bamboo by using these bugs and birds(Gubbi S., *Flowering of Life*, Sanctuary Asia, Feb. 2004,pp.30-31).

While flowered clumps are seen as potential source of fire hazards, some ecologists say that through proper harvesting practices and fire management measures, this problem is to be solved instead of mass clear felling, because dead bamboo serves as a barrier, protecting young shoots(Gubbi, *op.cit.*, p.33).

Paper mills do not prefer flowered culms because the latter's dryness causes problems while processing. The long-fibre structure of green culms is weakened in such culms. However, flowered culms have reportedly been sent to paper mills alongwith the good culms because in large scale harvesting operations such kind of things can hardly be avoided by the mills. It is interesting to note that OFDC had this condition that the paper industries would be bound to accept flowered bamboo in case of gregarious flowering, and that too, without any concession in price.

In fact, experienced persons like Dilip Kumar Pradhan, who worked as Coupe In-charge in Chowdwar paper mill, say that flowered culms retain their strength for two to three years, and hence can be used not only in paper industries but also for construction purposes. According to Yogesh Chandra Pradhan, who worked as Circle In-charge in the same company, flowering is quite beneficial for the lease-holder because silvicultural restrictions are not applicable to such clumps, and these are to be totally clear-felled irrespective of the size and age of the culms therein; so the lease-holder gets an opportunity to increase his production (*per comm.*). And dead and flowered culms have satisfactory performance as a raw material in paper industry, provided they are not damaged by insects (CSIR 2003, *Wealth of India*, Vol.III, p.34).

Even if flowered culms have no takers, or get burnt by fire; the scope of their commercial use is still there in the form of charcoal because bamboo charcoal is very much preferred for several applications, more commonly for use by goldsmiths.

Recommendations:

- A comprehensive policy on bamboo is necessary to address the trade and livelihood issues related to bamboo.
- Stand on the stake of protecting communities on the local bamboo resources in JFM areas should be very clear, and it should be ensured that besides getting maximum share in the harvest(bamboo), the protecting communities should also get the first chance to work as bamboo cutters in their area.
- Since ensuring an alternate market for bamboo is necessary, the government should explore possibilities of taking advantage of the huge potential in the non-industrial sector(like, construction,etc.).
- Establishment cost should be minimized so as to compete with the private suppliers of the state so far the price of industrial- as well as commercial bamboo is concerned. Potential in the betel farming should be properly utilized.
- Single window system should be introduced for effective production and marketing of bamboo. The Andhra system has been quite beneficial not only for the traders of Orissa, but also for the Govt of Andhra Pradesh; and systems like this should be considered for implementation here.

- Dealings with the paper mills should be made transparent and timely, and care should be taken to ensure that whatever benefit the state would be getting from them should not be at the cost of their genuine interest.
 - Silvicultural norms regarding harvesting, particularly of thorny bamboo, should be reconsidered so as to make them suitable to the field conditions that are different in different areas.
 - The Forest Department should explore the possibility of commercial production and marketing of *kardi* on a sustainable basis, since it has good market potential. However, this should not be at the cost of the meager income of the local and poor primary collectors from this source.
 - A supporting mechanism is necessary for the improvement of the livelihood conditions of traditional bamboo artisans who depend primarily on traditional products. Although trainings imparted by master craftspersons have enabled few of them to manufacture new type of products, the local market on which they are basically dependent, runs mostly on traditional products; and hence the emphasis should be on utilizing the potential of such products. Marketing in other states should be facilitated, and bamboo artisans be provided with special concessions on the raw materials.
 - Basic facilities like drinking water, etc. should be ensured for the cutters.
 - The Labour Department should specify the minimum wage for cutting of long bamboo, and also of thorny industrial bamboo.
 - Quality of the food materials supplied to cutters under WFP should be investigated properly at competent laboratories.
 - The Paharia tribe of Sunabeda plateau be provided with adequate alternative sources of bamboo for their livelihood security, and should be given the same status as their brethren in Chhattisgarh.
 - Large scale production of fine bamboo sticks required in the agarbatti industry should be facilitated particularly for self-help groups of women and disabled people. Since the KVIC is ready to provide subsidy on the purchase of machinery, the Government should encourage people further by allowing special concessions vis-à-vis the transit and price of forest bamboo to be used for this purpose.
 - The river transportation system should be seen as a part of our cultural tradition, and it should be revived at least in the form of annual competitions among the rafters, if not on a regular commercial basis.
-

Annexure-1
Production of forest bamboo in Orissa

Year	Industrial bamboo in SU	Commercial bamboo in SU
1988-89	248807.14	12148.24
1989-90	231949.53	7044.54
1990-91	213986.94	5644.21
1991-92	233122.06	4384.54
1992-93	241451.27	3235.32
1993-94	238857.31	2512.01
1994-95	238110.07	1901.71
1995-96	215269.19	2533.86
1996-97	241301.08	4545.21
1997-98	205052.75	2820.44
1998-99	117959.12	1727.81
1999-2000	109047.89	3348.08
2000-01	7436.08	36.52
2001-02	0	0
2002-03	386	125.24

Annexure-2
Average minimum daily wage and mandays generated from bamboo harvesting

Year	Minimum daily wage in rupees	Employment generated in lakh mandays
1988-89	10.5	49.58
1989-90	10.5	45.4
1990-91	25	41.72
1991-92	25	45.12
1992-93	25	46.49
1993-94	25	45.83
1994-95	25	45.6
1995-96	25	41.38
1996-97	30	46.72
1997-98	30	39.47
1998-99	30	22.74
1999-2000	40	21.42
2000-01	40	1.41
2001-02	45	0
2002-03	50	0.026
2003-04	51.25	0.66

(Note: The mdw was fixed at Rs.10, Rs.11, Rs.25, Rs.30, Rs.40, Rs.50 and Rs.52.50 on 23-2-87, 10-2-89, 1-7-90, 15-8-96, 1-5-99, 1-1-02 and 1-1-04 respectively)

(Source: OFDC)

Annexure-3
Cutters' wages as recommended by the Labour Commissioner
 (vide Orissa Gazettee Extraordinary No.118, dtd.22-1-04,
 Labour & Employment Department⁴⁰)

Job details per 100 bundles each having 21 pieces	Wage rate(in Rs.) as in 2003	% of hike (@25%) in Rs.	Proposed rates in Rs.
Piecing, bundling, and stacking near the place of cutting	343.71	85.93	429.65
Dragging:			
1. Radius of 100 metres	69.94	17.49	87.43
2. For additional 50 m	39.56	9.89	49.45
Stacking at road side and at all places except near the place of cutting	10.92	2.73	13.65
Rebundling	19.78	4.95	24.73
Loading	18.24	4.56	22.80
Unloading	13.04	3.26	16.30

⁴⁰ Slightly modified here for reader's convenience without changing the facts and figures

Annexure-4
Number of cane & bamboo artisans in Orissa, and their production
(as per DHCI, Orissa survey in 2001-02)

<i>District</i>	<i>No. of artisans</i>	<i>Production in lakh rupees</i>
Balasore	137	12.96
Bhadrak	453	9.2
Bolangir	302	20.43
Sonepur	147	7.35
Cuttack	438	26.15
Jagatsinghpur	1552	57.32
Jajpur	652	28.15
Kendrapara	2119	46.18
Dhenkanal	3124	126.4
Angul	4194	251.69
Ganjam	584	103.45
Gajapati	41	4.15
Kalahandi	29	3.37
Nuapada	127	5.43
Keonjhar	1178	51.32
Koraput	251	18.8
Nabarangpur	140	3.31
Malkangiri	88	4.5
Rayagada	134	5.36
Mayurbhanj	790	30.19
Kandhamal	717	21.45
Boudh	670	30.45
Puri	2790	242
Khurdha	713	67.94
Nayagarh	64	4.58
Sambalpur	2656	106.99
Bargarh	1676	220.04
Jharsuguda	525	17.74
Deogarh	391	7.78
Sundargarh	650	57.79
Total	27332	1592.47

(Source: Directorate of Handicrafts and Cottage Industries, *Handicrafts and Cottage Industries of Orissa:2003*, Table 1.1)

Annexure-5
No. of societies formed by cane & bamboo artisans of Orissa
(2001-02)

Bhadrak-1; Cuttack-1; Ganjam-1; Kalahandi-1; Boud-2
Puri-1; Khurdha-3; Sundargarh-1

(Source: Directorate of Handicrafts and Cottage Industries, *Handicrafts and Cottage Industries of Orissa:2003*, Table 1.6)

Annexure-6

**Bamboo and cane artisans in the Nayagah district(excluding Ranpur block)
(as per the survey conducted by Nayagarh Jilla Jungle Surakshya Mahasangh)**

<i>Block</i>	<i>Village/hamlet</i>	<i>Approx. number of artisans</i>
Odogan block	Odogan hadisahi	30
	Jamupatana	15
	Kumand	15
	Kural	20
	Nathiapalli	10
	Godipalli harijan sahi	30
	Sakiri	20
	Porapitha/Tulasipur	30
	Panibandh	15
	Saradhapur harijan sahi	15
	Belabani	40
	Sarankul	30
	Manpur	30
	Arada khadala sahi	30
	Tikarpalli	20
	Budhabudhiani	5
	Chadheiapalli	20
	Barasahi	10
	Singaripur	10
	Godipada	30
	Keshapania	20
		Total
Nayagarh block	Nayagarh	100
	Sinduria	30
	Itamati	30
	Rajpatana	20
	Khuntubandh	15
	Nadiali	20
	Kesharapur	10
	Lathipada	30
	Gamharidiha	15
	Sunanati	10
	Baunshiapada	20
	Champatipur	10
	Bada pandusar	10
	Balugan	20
	Bebartapalli	20
	Khadagprasad	10
	Kantabania	10
	Chandibasta	20
	Total	400

Annexure-6(contd.)

Nuagan block		
	Malisahi	15
	Deuli	30
	Dalimbapada	10
	Chahali	5
	Khuntubandha	30
	Petapalli	5
	Ekatal	40
	Nuapalli	10
	Kamalapatana	10
	Mahipur	15
	Dimirijhari	15
	Similisahi	10
	Maichheli	10
	Bantala	15
	Gateri	15
	Jodasahi	10
	Kaithapalli	15
	Ambapada	10
	Senteri	20
	Bahadajhola	10
	Haripur	20
	Ghadeibandh	20
	Siarimal	10
	Sundhijhola	10
	Beruanmari	5
	Guumi	10
	Kalamba	20
	Khalamada	20
	Luuni	10
	Nuagan	20
	Korada	5
	Mahitama	10
	Giginipada	20
	Sorada	10
	Jagannathprasad	10
	Minagadia	10
	Total	510
Gania block		
	Gania	30
	Kalasimili	15
	Karadapada	10
	Gaudatumandi	10
	Chhamundia	10
	Gochhabari	10
	Total	85

Annexure-6(contd.)

Dasapalla block		
	Dasapalla hadisahi	15
	Poibadi	30
	Kusumkan	15
	Tendabadi	5
	Kainma	10
	Kainadiha	15
	Chinapahanra	5
	Kanthipadar	5
	Chadheiapalli	15
	Nuagan	10
	Beherasahi	10
	Bhogabadi	10
	Dasanipada	15
	Banigochha	10
	Takuda	10
	Kulurukumpa	10
	Jamusahi	20
	Pampreda	10
	Takera	10
	Rangamatia	10
	Sariganda	15
	Neliguda	10
	Madhupur	10
	Andharakot	5
	Pathuria	5
	Gobardhanpur	10
	Madhyakhanda	20
	Gholahandi	10
	Total	325
Khandapara + Bhapur blocks		
	Jakela coloni sahi	40
	Kandhapathara	20
	Kusumada	10
	Dholamada	10
	Gochhabari	20
	Khalisahi	10
	Kantilo	20
	Rajikiari	10
	Sidhamula	10
	Baigonia	10
	Jaganathprasad	5
	Bijipur	10
	Total	175

(**Note:** A preliminary assessment by Maa Maninag Jungle Surakshya Parishad of Ranpur suggests that the number of bamboo weavers in the Ranpur block would be not less than 200.)

Annexure-7

Production of bamboo by the RMPs in 2005

1. J.K.Paper Ltd.:

- IB: Salia:2798406 bundles; Daba: 65389 bundles
- CB: Salia 209851 pieces; Daba:38 pieces

Mandays generated: 579060

2. Ballarpur Industries:

- IB: Salia: 1560273 full bundles and 29586 half bundles; Daba: 82225 full bundles
- CB: 45854 pieces

Mandays generated: 211379

(Source: OFDC)

A Supplement on Cane

Cane⁴¹ (*Calamus tenuis*), otherwise known as rattan, was the only raw material which many bamboo artisans used to process in addition to bamboo. Cane products are comparatively much more durable and sophisticated than bamboo products, and are hence costlier and considered as either luxury items (like furniture) or sacred (like the *mana*).

The recorded production of cane in 1999-2000 was 1399 pieces valued at 0.003 lakh rupees (i.e., Rs.3000), as estimated by the Statistical Section of the Office of the PCCF, Orissa. This however does not seem to have included production from private lands.

Cane was not a specified forest produce in the state as per the Forest Produce (Control and Trade) Act, 1981. It was leased out by the Forest Department. In March 2000, the govt placed cane under the category of lease-barred items which can be commercially harvested by govt agencies (like Forest Department, Tribal Development Cooperative Corporation, etc.) only provided that sustainability is ensured. This is probably because of the fact that wild occurrence of cane in the govt forests has become very limited either due to unsustainable exploitation, or the super cyclone of 1999. As per an assessment of 1999, the potentiality of cane in the state was as under:

<i>Forest Division</i>	<i>Potentiality in numbers</i>
Athagarh	76800
Dhenkanal	20000
Balliguda	15000
Ghumsur South	33280
Nayagarh	39680
Puri	62000
Parlakhemundi	800 bundles(?)

(Courtesy: Statistical Section, PCCF's Office)

In isolated areas like the Konark-Balukhand sanctuary, cane is reportedly abundant; but there is a ban on its collection (like other NTFPs and timber) from the Protected Areas, and outside PAs, leases for commercial exploitation are not to be normally allowed in the govt forests.

The above table indicates a potentiality of more or less 3 lakh pieces. In 1989-90, the recorded production of cane was 3024000 (Statistical Branch: PCCF's Office, *Orissa Forests 1993*), i.e., about 10 times of this presumed potentiality. Between 1992-93 and 1994-95, the average annual production was 118847 pieces (*Orissa Forest 1999*, p.32). However, by 1999-2000, it was reduced by more than 99% (as compared to the production of 1989-90).

⁴¹ When used to imply to a species/plant, as here, cane is the source of the raw material. On the other hand, often the term is used to refer to the thin strips extracted from bamboo-, rattan- or other such culms/stems.

A lot of cane used to be available from private wastelands or jungles in the coastal districts (like at Bhedabandh, Belagadia, Balisinga and Jiala in the Kakatpur-Konark region of Puri district). However, these resources have been badly affected due to utilisation of the wastelands for cultivation, plantation (of commercial species of timber trees) or other purposes. The super cyclone of 1999 also damaged some resource.

The impact of increasing scarcity of the raw material and the restriction imposed by the govt has left the cane artisans in lurch. Transit is risky even if brought from private lands, because the forest officials can not be convinced always; and some growers have not agreed to give it in writing that it was collected from their land. Usually cane work is considered superior to bamboo work and a caste known as *betara pana* used to deal in only this⁴². Another reason for avoiding bamboo work by the *betara* community was that bamboo work often needs a rough handling whereas cane work is comparatively delicate, hence the skill of the hand may be affected if a cane-worker concentrates simultaneously on bamboo also. Pana is a scheduled caste community, but the difference between *betara pana* and other pana is that the latter are professional drum-beaters often invited in festive occasions and hence they can depend both on bamboo work and drum-beating, whereas the *betara pana* consider drum-beating a derogatory work. However, acute scarcity has forced some of them to try their hand either on bamboo (as one can find at Belabani near Nayagarh) or some other substitute like *kia*(*Pandanus* spp.) stem(as in Nilakanthapur village near Charishri, Puri district). The *betaras* of Belabani were known as Raj-*betara* i.e., cane(*beta* in local language) workers in the service of the King; but almost all of them have abandoned cane work since long, particularly after availability of the raw material in the local area(like Sulia forest) was drastically reduced which forced them to switch over to bamboo work permanently. In all such areas visited by us, one thing was common that they themselves never tried to conserve and/or propagate the resource. Even at Nilakanthapur, the artisans have probably only one cane clump left in the nearest wasteland, but no body is trying to conserve the same. There is no coordination among the artisans on this issue and everybody just considers that it is his right to exploit the available resource at the time of need irrespective of the threat status of the resource.

Varieties

Artisans of Belabani distinguish the following varieties of cane:

Variety	Characteristic
Katha(kabari) beta	Most preferred and commonly used for cane-work
Gauri(banambara) <i>beta</i> (<i>Calamus latifolius?</i>)	Very difficult to work; not used.
Sauri beta	Not used by artisans; the sticks(lathi) used by policemen can be made from it.
Pani beta(Cuttack cane or <i>C.fasciculatus?</i>)	Found near water bodies(streams); less preferred than kabari beta, but used particularly because the products assume a reddish colour. Less durable.

⁴² Exceptions are said to exist, like in Kakatpur area some dama and bauri caste people are also said to be practicing cane work. Good market demand of the product probably encouraged them in this line.

The artisans of Sahada near Kujang distinguish only two varieties: deshi beta and kataki(Athagarh) beta. Deshi beta is commonly used by them while they say that kataki beta is less preferable owing to its hardness and too many nodes but can be substituted for the former and at the same time, can be use in lathi-making.

Raw material price

The Schedule of Rate for Forest Produce in Orissa Rules,1977 fixed the rate of cane(if taken fro Protected Forests) as Rs.16.80 per 1000 pieces for Puri district(Ray P.K., *op.cit.*,p.835) without any reference to the size, but the current rates(applicable for cane on private lands) vary according to the size as under:

<i>Area and size</i>	<i>Price</i>
Kujang: 80 pieces each 15 to 20 feet in length ⁴³	Rs.120-150
Nimapada: 80 pieces each approx. 30 to 45 feet in length 80 pieces each 225 to 300 feet in length	Rs.300 Rs.600

Some artisans of Nilakanthapur(Nahakasahi) say that they recently purchased cane @Rs.550 to 600 per 80 pieces (25 to 30 feet in length) from the Konark area(about 25 km) for which they had to pay transportation cost Rs.650 for a medium-size truckload. According to them, the price was Rs.50-60 about 30 years ago.

For making furnitures and other heavy items, thicker and stronger canes are required which are purchased by some artisans from Kolkata. These Kolkata canes, which are supposed to be actually coming from the north-east, have two varieties: jati(comparatively lighter) and right-turn(comparatively heavier). Including transportation, etc. the landing cost at Talabasta(Cuttack) comes around Rs.45 and Rs.60 per piece(16 ft. long) of jati and right-turn cane respectively. Right-turn cane is most preferred for making major frames in chairs, sofa, etc. (*per comm.*, Sailabala Moharana).

February to May is the usual period for harvesting of cane(courtesy: TDCC, Bhubaneswar).Culms are normally cut by the purchasers themselves and the growers only assess the size and quantity to finalise the total price. Very long pieces are often cut into two or more pieces to produce standard size.

Processing

Artisans reject thorny bamboo partly for its thorns, but the betaras can not reject the thorny stems of calamus as they have to use it anyhow. Handling green culms is dangerous because of the thorns and they take care to avoid pinching during the thorn-clearing

⁴³ All measures were originally given in terms of *hata*(hand-measure) equal to approx. 1.5 feet. These measures however do not seem to be very accurate so far the assessment of the artisans is concerned.

process with the help of a knife. After thorns are removed, the culms are sundried(for 3-4 days in summer and 10-12 days in winter) first and then seasoned in water for 4-5 hours. The uppermost layer is removed with the help of a sharp knife before final use. After that strips are extracted from the culms. For making frames, bending of culms is required for which such pieces, coated with oil, are exposed to heat treatment over a blue-lamp. Colouring is not frequent and reaction with water imparts a reddish tint to cane. Still, artificial colouring can be done by treating the canes with coloured solutions.

As indicated earlier, cane work takes more time and labour than bamboo work(artistic). If a bamboo jhudi takes 4 hours for production, a beta jhudi of same size would take about 12 hours for the same. The cost of raw material also varies significantly; Rs.10 in case of the former and Rs.80-110 in case of the latter. Hence the bamboo jhudi is sold @Rs.40/piece whereas its beta counterpart is priced at Rs.220.

For a *gauni* priced at Rs.150/piece, the cost of raw material is about Rs.50, and 1.5 mandays are required for its production.

As regards furnitures, a cane sofa set(4 single chairs with double-handle and one tea-poi) which is to be sold at about Rs.2500, requires raw material worth approx. Rs.1600 and labour worth Rs.350(4.5 mandays), besides transportation(to the nearest town) cost of Rs.70 (*per comm.*, Sailabala Moharana and Panchanan Moharana). Cane purchased from Kolkata shares about 75% of the raw material cost, those purchased locally share only about 16% of the same; hence the cost of production could have been reduced significantly had the cane of required quality been available locally.

Beta is more resistant to insect-attack(like white ants) than bamboo and other substitutes provided it is properly sundried and seasoned before use. Culms of 1-year age or more are used, and unlike bamboo dried & seasoned culms can be stored for one year or more without losing their quality and workability.

The durability also depends on whether the upper(external) part(*pithi*) is used or the inner part(*anti*), because as in case of bamboo, products made of the upper part are more durable(flexible) and are hence costlier than those made of the inner part. It may be noted in this context that the production of *pithi* cane is almost 90% less than that of the *anti* part in any culm.

Products of *kia* canes(strips) look similar to beta products(excluding furnitures). In fact, the look is so similar that some artisans sell them as beta products. The clue to their distinction lies in the fact that if immersed in water, beta basket would assume a reddish colour whereas *kia* basket would remain white for sometime and would then turn blackish. Processing *kia* is quite easier than cane and the basket which would take 1.5 to 2 mandays for making in case of *kia*, would take 3 mandays in case of cane. While *kia* is locally collected from wastelands free of cost, cane is often purchased. The sale price thus varies accordingly, like Rs.80-100 in case of former and Rs.220-230 in case of the latter.

Nalia is another substitute for beta, but less durable than the latter and hence cheaper.

Products

Beta is a basket of various sizes (often 2 feet or more in diameter) without angular depressions, and is used for carrying/storing paddy and other items). Gauni and mana are small-size baskets having four angular corners in the lower part, and are used basically for measuring paddy/rice in terms of volume. A standard *gauni* measures about 4.2 kg of paddy in terms of weight as against 0.5 kg in case of a standard *mana* (Nilakanthapur).

Cane furnitures are another range of products meant for the economically well-to-do class. Banpur (Khurdha), Talabasta (Cuttack), Tumudibandha (Kandhamal) and Narla (Kalahandi) are famous for cane furniture (Aparajita and Darbar Sahitya Sansad: 2003, *State Level Workshop on Craft Cluster Development in Orissa: A Background Paper*, p.13). Artisans at some places (like Kendrapati near Kakatpur) know how to make them, but do not engage themselves in this work unless there is an order.

Beta-jhudi is a products specially meant for use inside betel farms. Bamboo jhudis, which are used in earth work, are comparatively bigger and difficult for use inside the betel farms as there is little space there for moving from here and there, and carrying soil in such jhudis within that area is risky as their rough edges can cause wounds in the body. Hence, flexible and convenient cane jhudis are preferred which have smooth surface/edges.

Marketing

As in case of bamboo, marketing of traditional cane products is seasonal and depends on agro-cultural demands. For instance, mana is in high demand during the harvesting season for worship on the occasion of *manabasa gurubara* (a holy Thursday). The products are usually sold in weekly markets, but also in shops and sometimes at the doorstep of the customers.

For the artisans of Puri district, occasions like aonla navami festival at Sakshigopal and kartik purnima festival at Puri provide better scope for marketing of their products. The sale prices may be doubled during such occasions and hence the net profit increases significantly.

In some cases (like the Kujang area), petty traders purchase the items from artisans to sell the same in distant areas. The profit margin for him may be 10% or more.

In Talabasta, cane furnitures are manufactured and sold at important towns of the state like Bhubaneswar. The products are so much in demand that Sailabala Moharana, whose family owns a manufacturing unit, says that although they are able for an annual turnover of Rs.3 to 4 lakhs, it can reach about 6 lakhs had their raw material problem been solved (*per comm.*). Hence, production and marketing of cane products is a round-the-year business for them.

The devastating effect of super cyclone created a scarcity of the resource (raw material) followed by an increase in its price by about 4 times. This in turn caused an increase in the

price of the products also, like the basket earlier sold at Rs.80/piece was now priced at Rs.220.

The products are also bartered for rice or paddy. For ex., in Sahada village a basket worth Rs.70-80 is bartered for 5 gaunis of paddy(i.e., approx.21 kg).

Importance in livelihood

In Nilakanthapur, the artisans earn Rs.4000 to 5000 per family per annum from cane-work which is almost equal to the earning from the other source of income for them, i.e., wage labour. Had the raw material scarcity not been there, and the demand of traditional cane-products had not reduced, they could have earned much more from this source than wage labour. Artisans of Kendrapati, who work both on bamboo and cane, claim that if bamboo products can fetch them Rs.6000 per year, cane products can fetch almost double.

In Talabasta, more than 25 workers depend on full-time cane work round the year. Cane work started in this village when Panchanan Moharana got a training under a govt programme, and imparted his skill to others. It is interesting to note that unlike other areas, Moharana and his fellow-workers belong to the upper caste(other backward caste), and they don't need to work on bamboo since cane work has proved itself to be more than sufficient for them as they are unable to meet the market demand. Each artisan earns about Rs.2500 to 3000 per month, and the factor facilitating the higher income is the manufacturing of heavier and costlier items like furnitures.

Cane artisans also work as non-resident labourers. People who need sufficient quantity of gauni,mana, etc. for use in family marriage or some religious functions, prefer to employ artisans in making these products for them. Such employers either purchase the raw materials, or have cane on their own lands. The artisans charge Rs.100-120 per day per person, and food is provided extra.

The number of artisans depending on cane is not known, but one thing is clear that their distribution is extremely sporadic and the number is quite insignificant as compared to that of bamboo artisans. In Kendrapati, 20 to 25 HHs are bamboo artisans and only 10 to 12 HHs among them also work on cane. In Belabani, only two out of 70 artisan HHs work on this. The number is controlled by availability of the raw material and demand of the product, and the total number of cane artisans in the state seems to be less than 5% of that of the bamboo artisans.

Women are usually found to have an equal share in cane work like their male companions except in raw material collection and works like bending thicker culms for frame-making, which is considered to be a man's job. In Talabasta, they have formed self-help group to market the product.

Cane in community forestry

Badapokharia near Khurdha is a large village having about 400 HHs. Almost 75% of the people are dependent on agriculture. The villagers started protecting the nearby hill forest more than two decades ago when they found that without protection they would lose whatever remaining in the already degraded forest. A distinguished feature of this forest patch is cane which is available there in considerable quantity. The forest does not have the legal status of village forest, hence the villagers hesitate to formally allow commercial harvesting of any item from there. In fact, the villagers themselves are not supposed to harvest anything from this forest. Timber, firewood, bamboo and cane are available for harvesting, but the villagers are not accustomed in taking its advantage. There is no management of the forest, and hence entry is quite difficult for layman. The villagers would rather prefer hiring local tribals for harvesting something for them.

There have been two exceptional cases of allowing commercial harvesting in this forest, by the village committee; and these two are related to cane. About 10 years ago, they auctioned cane in this patch to a party, at Rs.12000, for one-time harvesting. It was the responsibility of the party to arrange for transit, etc. because allowing harvesting in this forest was illegal, the official owner of the forest being the Forest Department. Recently, they auctioned cane berries in a similar way, and got few thousand rupees from the same. All these money is deposited with the village treasury (*kotha*), and spent on village feasts and religious activities (*per comm.*).

Secondary uses

Artisans of Nilakanthapur also use cane for medicinal purpose. After cutting the culm, they separate the uppermost part so that the other part can be used in their professional work. Leaves are removed from this uppermost portion followed by peeling of the bark, after which it is eaten either after boiling, or after pounding and then frying in ghee. This is said to be effective in certain type of rheumatism.

Berries of cane, known as beta-koli, are quite popular among the rural people. The seeds are used in making necklaces for special purpose. In some places of Puri district traders come to villages and purchase the seeds of semi-mature fruits at Rs.1.25 to 2 per a bunch(contains about 100 to 150 seeds).
