

**Institutions and Bamboo Production to Consumption System  
(A Comparative Study of China and India)  
Part II: India**

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## 1.0 Introduction

In the Indian forestry sector, bamboo, which is referred as minor forest produce in classical forestry, is the most important sub-sector. Bamboo, being a source of raw material to many industries such as pulp and paper, rayon, and fibreboard industry, has been critical in the forest-based industrial development in India. Bamboo is also essential ingredient of the subsistence economy of bamboo-dependent sectors of population, tribal and forest dwellers, bamboo craftsman and artisans, and local rural people. India is just next to China in terms of the importance of bamboo, and 7.36 million hectares of the forest area (13.6% of the forest area of 54m hectares) contains bamboo (Singhal and Gangopadhyay 1999). In addition, 1.75m hectares of bamboo area is outside the natural forest area. The state of Madhya Pradesh has the highest bamboo bearing forest area of 2.2 m hectares and the highest bamboo area outside forests of 0.2 m hectares. More than two-thirds bamboo-bearing forest area is located in the four states of Madhya Pradesh, Orissa, Maharashtra, and Andhra Pradesh. But major portion of the growing stock is in the seven northeastern states. The states having major growing stocks of bamboo are Assam - 16%, Manipur and Mizoram 14% each, Madhya Pradesh and Arunachal Pradesh 12% each (Adkoli 1999).

Bamboo forests of India are dominated by species of bamboo that are clump-forming, and these species account for 67.3% of the total growing stock. The two dominant species are Dendrocalamus strictus and Bambusa bambos, and these account for 45% and 13% of the growing stock. The main species of non-clump forming bamboo is Melocanna bambusoides, and account for 20% of the growing stock, but mainly in northeastern states. The total growing stock in forest areas is 80.42 million tonnes, and average growing stock works out to be 10 tonnes per hectare. The annual harvest from the recorded sources is about 4.5 million tonnes which is about 6% of the growing stock. But there are unrecorded removals that are about half of the quantity of removals by recorded sources (Adkoli 1999). The yield of bamboo per hectare varies between 0.2 and 4.0 ton with an average of 0.33 ton per hectare (Singhal and Gangopadhyay 1999). Bamboo and fibre workers are the third largest group of artisans (Singhal and Gangopadhyay 1999). On the basis of current production of bamboo in the country, Adkoli (1996) estimated 432 million workdays and Rs 13 billion in wages from bamboo on annual basis.

India is different from other bamboo-producing Asian countries because bulk of bamboo consumption is not by artisans but by industries who use bamboo for paper and rayon, scaffolding,

and bamboo boards. The continuous increase in the installed capacity of industrial units for paper and board, and increased demand from urban constructions for scaffolding had put an enormous pressure on bamboo forests, and sufferers have been the local people whose survival depends on these forests. For example, basket weavers of Kampanaickapalayam village in Tamil Nadu used to get enough bamboo supply from near by forests, either by direct harvesting or bought at nominal rate, till early 1970s. In 1980s, the Seshasayee Paper Mill was established near the village, which almost cutoff the raw material supply to these artisans, and the consequent illegal collection and sale of bamboo pushed the prices five times per head load and lowered artisans earnings although the prices of their product rose. Similarly, in Ratnagiri district of Maharashtra, the number of artisans fell drastically, after diversion of bamboo supply to industries, and after ten years, any person engaged in bamboo crafts was rarely seen. The same is the story in all areas located close to the bamboo forests.

Forests, in India, being in the state list of subjects for long time, and now in the concurrent list for the last two decades, different states have diverse provisions for the use of bamboo, which is mainly the allocation to industries and local artisans and other people. However, the main elements of these policies are similar. In the last two decades, there has been a drastic change in forest policy and the orientation of forest management in India. The 1988 forest policy of India emphasized the peoples' participation in forest management and a shift from support to industries to the right of weaker sections. In the light of these changes in national policy, it is important to study the existing institutions of bamboo production to consumption system; changes, if any, in these institutions as a follow up to the change in national policy, and the interactions between the other forestry institutions that emerged as a follow up of change in national forest policy and institutions of bamboo PCS. In addition to the study of these institutions, it is also important to study the effectiveness of the existing institutions of bamboo PCS.

China, another country where bamboo is the major sub-sector of forestry sector, has undergone many stages of reforms, including the bamboo sector, in the last two decades. The results of these reforms have been outstanding. Hence, a comparative study of the institutions in India and China will provide useful inputs to the designers of institutions in India.

In view of these developments, this study, which is a part of major study was taken with following objectives:

- (i) To study the existing state institutional arrangements related to bamboo in the light of recent changes in forestry institutions in India;
- (ii) To examine the impact of bamboo PCS and bamboo institutions at micro-level (village level) in two states of India, and
- (iii) To compare the institutional arrangements in India and China.

## **2.0 Methodology**

First, the 1988 forest policy and 1990 directions of the Government of India with regard to forest management are critically examined and major changes are identified. Second, the government orders issued by different states for joint forest management are examined in the context of bamboo forests. Third, the government orders of the states of Madhya Pradesh, Maharashtra, Gujarat, and Orissa regarding the allotment of bamboo to bamboo-based workers and local people, and forest industries are examined. The provisions of these government orders are analyzed in the light of the directions given by the Government of India as a follow up of the 1988 Forest Policy.

Madhya Pradesh and Maharashtra were selected as the two states to examine the role of bamboo and bamboo institutions at micro-level (village economies). In both the states, four villages were selected to collect the micro-level data. The main criterion of the selection of villages was the dominance of bamboo user groups, and four villages were selected so that diverse user-groups could be covered. A detailed household survey was done in all these selected villages. The survey has two parts. The first part included the general questions on demographics (population, gender distribution, age distribution, cattle population), physical and economic assets (type of house, agriculture land, sources of irrigation, electricity etc.), source of income (agriculture, labor, bamboo, non-timber forest products), participation in community activities etc. The second part included the questions on details of income from different sources. For example, in the case of bamboo subsection, there were questions on sources of supply of bamboo, price paid for bamboo, different products that were made from bamboo, their quantities, and their prices.

This data on income were used to find out the total income and the composition of the income of each household. Based on the total income and its composition, the role of bamboo in the subsistence life of different groups of each village is analyzed.

To have an understanding of the rate of return from bamboo-based activities by local people, time studies for the two bamboo products - tokri (basket) and chhittas (another type of basket) - were conducted. Similarly, to find out the returns at different levels of marketing channels, marketing systems of bamboo products produced at village level were studied. Other bamboo related local institutions, if any, such as credit, marketing, and extension support by the forest department or any other government or non-government organizations were also studied to have a full view of bamboo institutions. In addition, some special cases such as bamboo management through peoples involvement, a local training centre for local bamboo workers, and impact of a model village on bamboo workers were also studied, and are reported.

Finally, based on the first part of this project report, institutions and bamboo production to to consumption system in China, institutional arrangements of bamboo in India and China are compared.

In this report, in the next section, recent changes in forestry institutions and institutional arrangements related to bamboo are discussed. In Section 4, role of bamboo in village-level economies is discussed. In Section 5, time studies of two bamboo products are presented. In Section 6, marketing systems of bamboo products are discussed. In Section 7, a comparative situation of bamboo allotment to industrial units and local user groups is highlighted. In Section 8, other institutional arrangements related to bamboo are discussed. In Section 9, some conclusions, related to India component, are drawn. Finally, in Section 10, a comparative study of India and China is presented.

### **3. Recent Changes in Forestry Institutions and Institutional Arrangements Related to Bamboo**

The 1988 Forest Policy of India, the second forest policy of independent India, is a clear departure from its first forest policy of 1952. Three main issues, which are related to this project, are the rights

of the local forest-dependent people, involvement of the people in forest management, and supply of raw material to forest industries. The 1988 Forest Policy has very clear directions on these three issues.

The policy recognizes that the life of tribals and other poor people living within and near forests revolves around forests, and, hence, the rights and concessions enjoyed by them should be fully protected. The domestic requirements of these groups of fuelwood, fodder, minor forest produce, and construction timber should be the first charge on forest produce. These and substitute materials should be made available through conveniently located depots at reasonable prices.

In addition, these holders of customary rights and concessions in forest areas should be motivated to identify themselves with the protection and development of forests from which they derive benefits. The rights and concessions from forests should primarily be the bonafide use of the communities living within and around forest areas, specifically the tribals.

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

In the 1988 Forest policy, the emphasis was on the motivation of people, holders of customary rights and concessions, to associate themselves with the protection and development of forests. The Government of India, in its order of June 1 1990 as a follow up of the 1988 forest policy, emphasized that the areas to be selected for the program should be free from the claims (including existing rights, privileges, concessions) of any person who is not a beneficiary under the scheme. In this order no where it was mentioned that only degraded forestland should be selected for the involvement of village communities, however, the subject of the order was the involvement of village communities and voluntary agencies for regeneration of degraded forestlands. As a follow up of the GOI order, more than 20 states have issued the government orders about involvement of village communities in forest management. However, these state governments took the stand that



the involvement of village communities is limited only to the degraded forests. As a consequence, the government orders of seventeen states have explicitly limited the provisions of joint forest management to degraded forestlands. There are three exceptions - Punjab, Nagaland, and Uttar Pradesh. In the state of Punjab, all government, private, and community forests are included, in Nagaland, non-government land that can be put to forestry/virgin forests and government lands are included. In the case of Uttar Pradesh, only village forests that are not governed by U.P. Panchyat Forest Rules 1976 are included. Hence, the state government orders, in general, have not followed the spirit of the 1988 Forest Policy of involving the forest dependent people in forest management, but the focus has become on using the local people for the protection and rehabilitation of degraded forests.

Forests are classified degraded on the basis of canopy cover. Since most of the species of bamboo are clump-forming, and only few culms are harvested from a bamboo clump at a time. Normally, forests containing bamboo does not fall under the category of degraded forests even when the condition of bamboo clumps may be bad due to past mismanagement of these forests. Hence, due to the limitation of JFM to degraded forestlands, bamboo areas have almost been excluded from the involvement of local communities in forest management. Therefore, the provisions of the 1988 Forest Policy have not been extended, in general, to bamboo forests.

Other provision of these JFM state government orders related to bamboo is the distribution of benefits to the community members. Even though, these provisions have wide variation across the states. But, one of the common features is the distribution of non-timber forest products, normally free of cost or in some states at very nominal prices. But, most of the state government orders, except Madhya Pradesh and Rajasthan, are not clear on the issue of inclusion of bamboo in the category of non-timber forest products. The JFM Government Order (GO) of Madhya Pradesh, issued in 1991 and amended in 1998, clearly mentions that community members will be entitled for all non-nationalized non-timber forest products including bamboo free of cost, collection rights for nationalized NTFPs, and 30% income from fuelwood obtained from main fellings. Similarly, the G.O. of Rajasthan, issued in 1991, is explicit that community members are entitled of all NTFPs except bamboo free of cost. In other states, forest managers, normally, follow their conservative approach, and exclude bamboo from NTFPs for the purpose of joint forest management. Hence, the spirit of the National Forest Policy of 1988 regarding the first

right of local people on forest products, specifically bamboo, is not being followed in forest areas which have been brought under joint forest management.

In addition to these broader institutions of the forest sector, the state government institutional arrangements regarding the distribution of bamboo to different user groups are also important for the analysis of bamboo sector. Hence, we analyze these institutions for the four states - Madhya Pradesh, Maharashtra, Gujarat, and Orissa - of India. The state government orders regarding the distribution of bamboo fall in two categories: (i) distribution to small-scale consumers - local people, bamboo artisans, right holders, and (ii) distribution to large-scale consumers - bamboo based industrial units. The state government orders for these two categories are discussed separately.

### **3.1 Distribution to Small-scale Consumers:**

The state of Madhya Pradesh has very elaborate institutional arrangements for this category of bamboo consumers. The state government, by their order dated 16 September 1985, has classified these consumers in five groups: (i) nistari (right holders), (ii) basods, (iii) pan bareja (betel vine growers), (iv) fruit growers, building contractors, incense stick makers, and manufacturers of frames bidi (rural cigarette) storing etc., and (v) other consumers, and has fixed the quantity of bamboo that should be given to each category of these consumers at the rates prescribed by the state government..

The forest department has established number of depots throughout the state with each depot having its fixed jurisdiction - villages attached to the depot. There are three types of depots – Nistar depot, Basod Depot, and Consumers depot. A consumer who uses more than 500 bamboo culms of 3.70metre length per year, has to register with the forest department by paying the fixed registration fee. In 1998, these fees were Rs.200 for businessman, Rs.150 for building contractors, Rs.5 for basod, pan-bareja and others.

Every nistari (right holder) rural household is entitled for up to 250 bamboo/year from the depot at the rate of Rs.0.25 + actual expenditure on harvesting and transportation + forest development charge. Basods are traditional craftsman of bamboo who earn their livelihood by making articles such as baskets, mat, containers, and hand fans etc and selling those articles in the local market.

A registered basod family is entitled to get 1500 bamboo per year from the depots. The rates are Rs 0.60/bamboo for the first 500 bamboos and Rs.0.75/bamboo for additional 1000 bamboos. These rates are for bamboos from depots located within 40 km of forests, and for depots farther than 40 kms, additional transportation cost is added. Pan Bareja (Betel Vine Growers) requires shade and support to the vine, and bamboo is used for this purpose. Every Pan Bareja family is entitled a maximum of 1000 bamboos at the rate of Rs1.50/bamboo+ extraction and transportation cost + taxes. But, bamboos are made available to Pan Bareja families only when the demands of nistari people and basod families are met. Fruit growers, building contractors, incense stick makers, and manufacturers of frames for bidi (rural cigarette) storing etc are entitled for industrial bamboo up to maximum of 5 notional tons/year of length varying from 1m to 2m, on producing the certificate from Block Development Officer or Assistant Director Industries. In 1994, the price of industrial bamboo was Rs 1115/notional ton. Other villagers who do not fall in these categories may purchase bamboo from forest depots. Each family is entitled up to a maximum of 50 bamboo per year. Prices of bamboo for these other consumers vary according to the size of bamboo. In 1994-95, these prices were Rs.7.70 for 4.6 m, Rs.9.65 for 5.5m, Rs.11.70 for 6.5m, and Rs.13.75 for 7.3m bamboo. The state government fixes only the base-price for different categories of consumers, and the actual rates depend upon the associated costs such as transportation costs. Hence, the actual prices are fixed by the Conservator of Forests (CF) of the concerned forest area.

In Gujarat, Kotwalias/ Bansfodias are the two communities who depend on bamboo working for their livelihood. The entitlement of different categories of these two groups for bamboo were fixed by the government order of 1988. In subsequent years only prices are revised. According to 1988 order, each family of Kotwalias and Bansfodias, living inside the forest area, is entitled for 800 bamboos at the rate of Rs66 per 100 bamboos (inclusive of cutting charges).

Every family of Kotwalias and Bansfodias, living outside the forest area, who traditionally survive solely on bamboo works for generations and who are members of registered industrial co-operative societies or societies registered under the Society Act, are entitled for 125 bamboos per year at the rate of Rs 81 per 100 bamboos (inclusive of cutting charges). However, the supply to the families living outside forests will be subject to the following conditions.

First, bamboos are to be given to the registered co-operative societies or to the societies registered under the Co-operative Act who will then distribute them to the members who traditionally survive on bamboo work. Second, bamboos are to be given as per the availability of bamboos with the forest department. Third, in the case of shortage of availability of bamboos with the forest department, the department will distribute bamboos as per the following priority order: the co-operative societies of the district where the bamboos are available, the co-operative societies of the neighboring district where the bamboos are available, and the co-operative societies of other districts. Fourth, if the Kotwalias or Bansfodias are prepared to work as laborers at the time of cutting of bamboos, then they will have to cut bamboos under the supervision of the forest department. Fifth, since it is difficult to meet the demand of all the societies, the following norms will be followed: 200 bamboo per member for those who live within 25 KM of the forest area, 100 bamboo per member for those living within 25 to 50 KM from the forest area, and 50 bamboos per member for those living outside the 50 KM range.

In Orissa, as per the government order of 1990, the domestic requirement of fuelwood, timber and bamboos should be the first charge on forest produce. Supply of fuelwood to industrial units will however, be considered only in case of surplus of fuelwood. The Orissa Forest Corporation (OFC) will establish at least one bamboo depot in each bamboo coupe in the nistar (cess paying) areas. Each tenant will be supplied 50 bamboos per annum, from these depots, on first come first serve basis subject to availability. Salia bamboo will be sold to the tenants at the rate of Rs.1.50 per piece for bigger (long) & thicker size and Rs.1/ per piece for thinner size bamboos, and these rates are inclusive of the royalty applicable to the district.

In April 1991, the government of Orissa extended these provisions to the protected (Khesra) forests. According to the order of 1991, permits for removal of bamboos, maximum 50 bamboos per annum per tenant, may be issued in favor of Nistar Cess paying tenants on first come first serve basis subject to availability from Khesra forests in Ex-state areas which are not worked under any Working Plan or Working Scheme through the Orissa Forest Development Corporation, consequent on nationalization of bamboos. This government order also clarified, that in the case of conflicts between the villagers constituting the village level protection committee and the villagers within 10 Kms belt, the first charge of the produce of the forests protected by the protection committees regarding enjoyment of usufructs would be of the

villagers constituting such committee. Only when there is surplus after meeting the genuine domestic needs of the villagers constituting the forest protection committee, the same may be given by issue of permit to the villagers within 10 km belt.

In Maharashtra, Nistar rights for bamboo are limited only to Chandrapur area. As per the government order of 1997, every Burud (bamboo-dependent tribe) family is entitled for 1500 bamboos, at a price not to exceed half of the market price), per year. But, in the field, we found that the common practice was to give 30 bamboos per month per family, hence restricting to only 360 bamboo/year. In last few years, these commitments are not being fully met due to fall in production of bamboo in nistar areas. In other areas, buruds buy bamboo from local agents, who buy in bulk from the forest department auctions and sell it in 1-2 pieces to buruds.

Hence, all the four states recognize the need of making bamboo available to bamboo-dependent user groups, but only the state of Madhya Pradesh and Gujarat have elaborate provisions for different user groups. The state of Madhya Pradesh distinguishes between user groups based on their occupation such as basod, pan bareja etc., while the state of Gujarat distinguishes only on the basis of the distance of habitations of user groups from forests. In the case of Gujarat, prices are the same for all user groups, and only quantity entitlements vary according to the distance. In the case of Madhya Pradesh, prices and quantities both vary across the user groups. There seems to be some rational for higher prices for higher income group users such as pan bareja compared to basod. But prices also increase with the quantity which is against the normal economic pricing mechanism in open market (quantity discounts). Higher prices for larger quantity may be rational from bamboo conservation perspective, but they are irrational from the bamboo dependence perspective. Because, a bamboo-worker, who do not has any other productive asset, and is totally dependent on bamboo products will require large quantities of bamboo. But, as per the present provisions, he will have to pay higher prices as compared to the bamboo-workers, who have other assets, and require only small quantities of bamboo to supplement their income from other source.

In all these four states, these arrangements have been in operation even before the Forest Policy of 1988, and in none of the states the requirements of different local user groups have been met (discussed more in Section 4) to a significant extent. In fact, over the years, the proportion of

demand of local user groups fulfilled by the supply of bamboo has been decreasing. No state government has changed its provisions of supply of bamboo to local user groups after 1988 Forest Policy. Hence, no attempt has been made to implement the provision of forest policy that the domestic requirements of local groups should be the first charge on forest produce.

### **3.2 Distribution to Large-scale Consumers (Industrial Units)**

In Madhya Pradesh, the forest department has been supplying bamboo to two paper mills - Nepa Paper Mills, Nepa Nager situated in Hoshangabad district and Orient Paper Mill, Amalai, Shedul district under long-term supply agreements. The Nepa Paper Mill produces 80,000 metric tonnes of paper from 1.2 lakh tonnes of industrial bamboo. The Nepa paper Mill was supplied bamboo on the basis of annual agreements up to year 1984. In 1985, the government of Madhya Pradesh entered into a twelve years agreement with Nepa Paper Mill for supply of bamboo. This agreement has many provisions regarding schedule of bamboo supply, price of bamboo, interest rates, penalties, payment schedules, and management, felling, and transportation of bamboo. However, the main provisions, in the context of this project, are quantity of bamboo to be supplied and pricing mechanisms. The government agreed to supply approximately one lakh (0.1 million) sale units of bamboo (equivalent of 2400 RM), and directed the mill to use the supplied bamboo only for the purpose of manufacturing newsprint, paper, and allied products at the paper mill of the company. The initial price, in 1985, was fixed at Rs 510/ sale unit for the first year. This price included the expenses incurred by the Forest Department in making supplies at the depots. The pricing mechanism for subsequent years included that the price shall be revised at the end of every four years from the date of commencement of the agreement, and the price thus revised shall be final and binding on the company. For each of the subsequent years in a block of four years, the price payable by the purchaser shall be fixed at eight percent above the price fixed for preceding year. In addition the company will pay sales tax and any penalty due to default of the company, and 18% interest on delayed payments. The agreement ended in 1997.

The Orient paper mill, in the beginning, had a fifty years agreement that expired in 1973, and the government of Madhya Pradesh signed a new twelve years agreement with the Orinet Paper Mill. The agreement was extended on the similar grounds for another period of twelve years ending in 1997. According to this agreement, the state will supply approximately about one lakh metric tonnes of bamboo to the company. But, the total quantity supplied will not exceed 70% of

raw material requirement of the company, and the company will use 30% of other material for its production process. The price of bamboo included three components. First, the price of standing bamboo at the rate of Rs 55 for notional tonnes, comprising of 2400 running meters. In the case of supply of only lops and tops from bamboo cut for commercial use, the running length per notional tonne will be determined on the basis of field experiments. Second, the actual cost incurred in respect of cutting, billeting, bundling, removal to the extraction paths, stacking, maintenance and construction of extraction paths, roads, etc. Third, actual cost of transportation of these bamboos stacked along the extraction paths to the specified depots or railheads. The actual expenditure in the second and third item includes full supervision and establishment charges and all other expenditures incurred in this connection by the forest department. The pricing mechanism included the revision of the base price of Rs 55 per notional tonne at the end of every four years, and the process of revision of the base price. The revision process included an increase of 25% over the rate of bamboo fixed for the previous slab of four years or a rate equivalent to the price of bamboo worked out from sale price of a standard tonne of paper on the basis of the weighted average according to the company's product-mix, whichever is higher for the period under review. The company will also pay a compound interest at the rate of 12% per annum for the first year and 18% per annum for more than one year if payments are not made at the due date. The company will also pay sales tax.

In addition, to these provisions of quantity and prices, this agreement also has the provision that the company will also supply against orders in writing for use of the State Government up to 8% of its total production of all grades of printing and writing paper in a year. The price to be paid for paper supplied shall be the Civil Selling price ruling at the time of placement of orders.

The government of Madhya Pradesh took a policy decision in 1994 that no new agreements will be signed with any industrial units in pursuance of the provision of the 1988 Forest Policy. Hence, the government of Madhya Pradesh did not sign any new agreement with these two paper mills on the expiry of their agreements in 1997. Now, these paper mills have to compete in open auctions of bamboo with other competitors in the market. In the following years, the forest department of Madhya Pradesh has been following the open auction system for the sale of bamboo. The opening of bamboo market attracted some outside buyers from the states of Andhra Pradesh and Karnataka to Madhya Pradesh. But, in late nineties (1998 to the end of century),

many paper mills faced financial crunch. Hence, the forest department has not been able to sale bamboo from their depots, and large stocks of bamboo have been lying in forest depots.

In Maharashtra, industrial bamboo has been supplied to Ms Ballarpur Industries Limited (BILT) under agreements signed in 1947 and 1968. Now, they have annual agreements, and annual revision of agreements is done under Maharashtra Supply of Forest Produce by Government (Revision of Agreements) Act 1982. In annual revisions, normally, only the quantity and prices are fixed for the current year while other provisions remain the same. In the determination of annual price three factors are considered. First, the sale price in the open and negotiated sales of such forest produce within the state during a period of 12 months preceding six months prior to the date of commencement of the supply year. If enough sale data is not available in six months period, sale data for 24 months is considered. In the calculation of average sale price on the basis of these sale data, weightage is given to the quantities involved in the sales. Second, the general trend in the price of the forest produce since the dates of sales referred above is considered. Third, if no sale data is available within the state, open and negotiated sales effected in one or more of the states adjoining the state of Maharashtra are considered. Last ten years data of bamboo prices fixed by the state indicates that normally there has been an annual increase of 10%. In addition to this base price, BILT also pays 10% Forest Development Tax. The bamboo price for 1997-98 and 1998-1999 were Rs 708.62 and Rs 779.48/metric tonne, respectively

In the state of Gujarat and Orissa, there is no impact of 1988 Forest Policy on supply of bamboo to forest industries. In Gujarat, industrial bamboo is allotted to the Central Paper Mill at the rate fixed by the state government. Harvesting operations are done by the mill, and mill gives a pre-fixed amount of full bamboos to the forest department which sales these bamboos to local bamboo user groups and registered cooperative societies (as discussed earlier). In the state of Orissa, the forest department appointed Orissa Forest Development Corporation (OFDC) as an agent for bamboo working in 1988. The OFDC has appointed three paper mills - J. K. Corporation, Orient Paper Mill, and Ballarpur Industries Limited - as their labor contractors for bamboo working in different areas of Orisaa since 1993, even against the directions of the Ministry of Environment and Forests, Government of India. In these two states, not only bamboo is allotted to the industries but paper mills being labor contractors in bamboo forests, local workers involved in bamboo harvesting and transportation etc. are also at the mercy of these



paper mills. The paper mills pay the price of bamboo to the OFDC, and the OFDC pays the royalty to the forest department. There has been a strong opposition of this practice at the state level, and a public-interest litigation has been filed in 1995 in the High Court of Orissa against the paper industries working as a labor agent to the OFDC.

Hence, the impact of 1988 Forest policy on supply of bamboo as a raw material to industrial units has varied across the states. In the case of these four states, only Madhya Pradesh has followed the policy directions while all other three states have been continuing their old practices, and Orissa has gone a step-ahead by appointing paper mills as labor agents.

#### **4.0 Bamboo and Village-level Economies**

Betul and Hoshangabad Forest Divisions of Madhya Pradesh and Gondia Forest Division of Maharashtra were selected for village-level studies. The main criterion of selection was the availability of bamboo-dependent populations (villages). In the case of M.P., choice was also guided by the previous study on bamboo production to consumption system in Jabalpur and Mandla district, funded by IDRC. In Madhya Pradesh, the choice of two divisions was imposed due to the non-availability of basods, one of the important category of bamboo users, in Hoshangabad forest division. In addition, in all these three forest divisions, bamboo is one of the major products. In the Betul division, bamboo contributed Rs1.02million, Rs0.89million, and Rs0.82million during the financial years of 1995-96, 1996-97, and 1997-98, respectively, and the contributions of bamboo are higher than the contributions of timber of Rs0.12million, Rs0.84million and Rs0.51million, respectively in these three years. Bamboo contributed 13%, 4%, and 26%, respectively of the total revenue. In the Hoshangabad forest division, bamboo contributed Rs2.49million, Rs1.58million, and Rs1.00million in the financial years of 1995-96, 1996-97, and 1997-98, respectively, while the contributions of timber were Rs0.58million, Rs0.68million, and Rs0.35million, respectively. The bamboo contributions made up 58%, 48%, and 48% of the total revenue in these three years. In the Gondia forest division of Maharashtra, bamboo contributed Rs0.53million, Rs0.38million, and Rs0.41million in years of 1995-96, 1996-97, and 1997-98, respectively.

The main objective of these studies was to evaluate the role of bamboo in the economic life of people, and to analyze the impact of government distribution rules and system on different sections of villages. Four villages, in each state, were selected for these studies. The main criterion of village selection was again the availability of some bamboo-user group. However, each village has some specific criterion also. In the case of Madhya Pradesh, two villages from the Hoshangabad forest division -Sitiyagohna and Udaypura - were selected for the availability of Betel growers, and two villages from Betul Division - Raiyatwadi and Khamalpur -were selected for the dominance of bamboo workers (basods). In the case of Maharashtra, different criteria were: villagers making any items of bamboo (Pandervani), villagers have many occupation including bamboo working as one of them (Bamhni), almost all villagers are bamboo workers (Kohmara toli), and all villagers are traditionally bamboo workers but working in other village as a daily labor due to unavailability of bamboo (Baudhnagar). Details of locations of these villages are given in Table 1.

**Table 1**  
**Details of Administrative Locations of Villages.**

Village	Gram Panchayat	Range	Tehsil	Division	District	State
Sitiyagohna	Gayarikher	Sohagpur	Pipariya	Hoshangabad	Hoshangabad	M.P.
Udaypura	Khaparikhera	Pipariya	Pipariya	Hoshangabad	Hoshangabad	M.P.
Raiyatwadi	Dharakhoh	Betul	Betul	Betul North	Betul	M.P.
Khamalpur	Khamalpur	Betul	Betul	Betul North	Betul	M.P.
Bamhni	Bamhni	Deori	Sadak Aujuni	Gondia	Bhandara	Maha
Kohmara toli	Kohmara	Deori	Sadak Aujuni	Gondia	Bhandara	Maha
Pandervani	Pandervani	Deori	Sadak Aujuni	Gondia	Bhandara	Maha
Baudhanagar	Baudhanagar	Deori	Sadak Aujuni	Gondia	Bhandara	Maha

All the four villages of Madhya Pradesh are small to medium size (number of households vary from twelve to fifty-nine). Hence, data were collected from all households of the four villages. Demographic details of these four villages are given in Table 2.

**Table 2**  
**Demographic Details of Four Villages of Madhya Pradesh**

Village	No. of H.H	Population		Agriculture Land		Caste Structure (H.H)		Livestock	Bamboo Dependent H.H	
		Male	Female	Irrigated.	Non-irrigated	OBC	SC/ST		Total	Partial
Sitiyagohna	54	215	163	88	39	11	43	133		5
Udayapura	25	125	128	183.5	57	22	3	149		10
Raiyatbadi	12	39	38	38.0	17		12	39		5
Khamalpur	59	181	172	59.5	84		59	266	11	38

Villages of Sitiyagohna and Udayapura, both located in Betul Division, are mixed villages of other backward castes and scheduled caste and tribes while two villages from Hoshangabad division are purely scheduled caste/tribe villages. In Sitiyagohna, the main occupations are agriculture and labor, but five households are involved in Betel cultivation, and these households fall in the category of Pan-Bareja, who are entitled for the supply of bamboo from Forest Depots at the rate fixed by the government of Madhya Pradesh. In Udayapura, about one-third of households (nine out of 25) are Betel cultivators, and one household is bamboo worker who receives part of his income from bamboo-item (tokri). Hence, in these two villages, the bamboo dependence is mainly for bamboo as a support for Betel crop. In Raiyatwadi, forty percent households (five out of 12) depend mainly on bamboo, but they supplement their bamboo income by labor wages. In Khamalpur, eleven (19%) households depend totally on bamboo while 38 (64%) households receive major share of their income from bamboo but they supplement it from labor wages as well as other non-timber forest products. The main occupation of bamboo-dependent households in these two villages, of Hoshangabad division, is bamboo-tokri (bamboo basket) making. These bamboo workers and Pan-Bajeras are entitled for bamboo supply from the Forest Depots. But, in year 1998-99, no household received any bamboo from the Forest Depot. Details of sources of bamboo supply to these villages are given in Table 3. All bamboo-dependent households in the two villages of Hoshangabad district received bamboo from illicit felling while a single bamboo worker household in Udayapura bought bamboo from local dealer. Due to non-availability of bamboo, Betel cultivators, in the two villages of Betul Division, used alternate sources of wood. Hence, in 1998-99, the Betel cultivators in these two villages were not dependent on bamboo.

**Table 3**  
**Supply Sources of Bamboo in Four Villages of Madhya Pradesh**

Village	Total Bamboo Consumption	Sources of Bamboo Supply			Main Bamboo Product
		Forest Depot	Other Sellers	Illicit	
Sitiyagohna	0	0	0	0	
Udaypura	200	0	200	0	
Raiyatwadi	1,125	0	0	1,125	Tokri (Basket)
Khamalpur	11,975	0	0	11,975	Tokri (Basket)

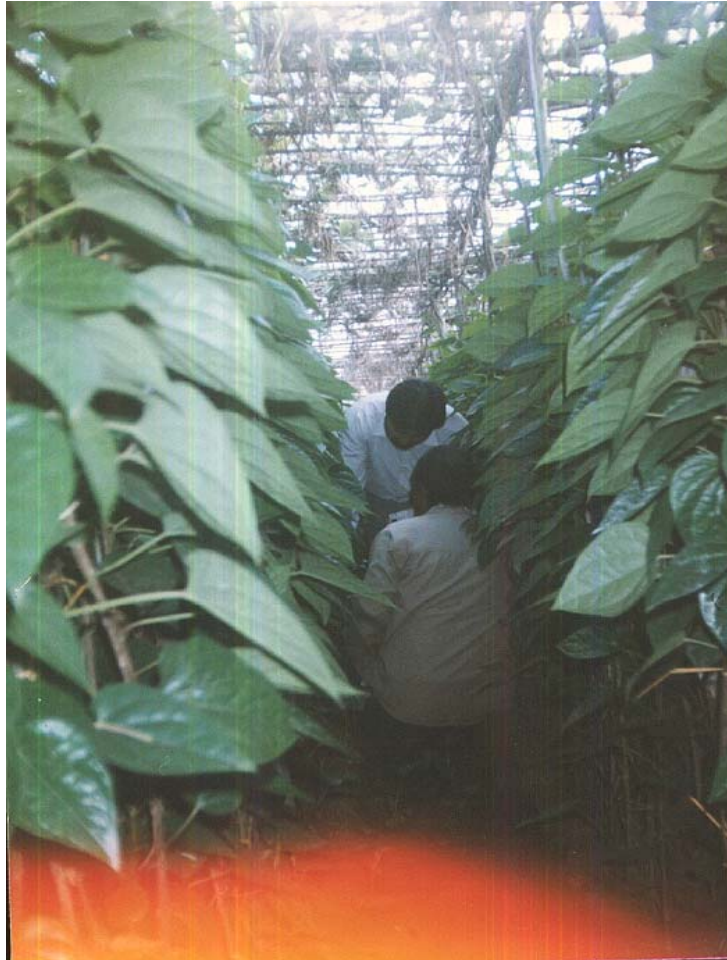
The composition of aggregate income in these four villages of Madhya Pradesh is given in Table 4. Udaypura has the highest per capita and per household income among these four villages, and Raiyatbadi has the lowest. The difference between these two villages in per capita income is of about Rs4,000 and in per household income is of about Rs44,000. The main reason for very high income in Udaypura is very high income of five households who grow Betel and practice agriculture, whose per household income is of Rs.200,600, and per capita income is of Rs. 11,940. In addition, four households, who are totally dependent on Betel cultivation, have Rs26,250 per household income, and Rs3,088 per capita income. In these two villages, Betel cultivation contributes 33% and 22% of the total income, and there is almost no contribution from bamboo except marginally contribution to one household of Sitiagohna. In Khamalpur village bamboo contributes 49% of the total income while in Raitabadi village the contribution of bamboo is 28%.

**Table 4**  
**Income Composition of Four Villages of Madhya Pradesh**

Village	Total Income (Rs)	Income Per H.H (Rs)	Per Capita Income (Rs)	Percentage Contribution				
				Bamboo	Betel	Agriculture	Labor	Others
Sitiyagohna	928,000	17,846	2,455	0	22	9	46	23
Udaypura	1,293,400	51,736	5,112	0	33	60	5	2
Raiyatbadi	90,400	7,533	1,174	28	0	10	34	29
Khamalpur	561,600	9,519	1,591	49	0	9	22	20

Next, we analyze the household income of different groups of households who either depend exclusively on one source of income such as bamboo, agriculture, and labor etc, or on a combination of activities, such as bamboo and agriculture, bamboo and labor etc. The details of this analysis are given in Table 5. In Sitiyagohna, household income of the betel growers

Bakkal (roofing) in Pan Cultivation- use of Bamboo.  
Samnapur Village, Hoshangabad (M.P.)



## Bamboo Used as a Gate and Walls of a Rural House, M.P.



household is the highest (Rs40,800), and is almost the double of the household income who depend on other sources of income (Rs24, 750). But per capita income of the betel households is about three-fourth of the per capita income of the households who depend on other sources of income. In the case of Udaypura, household income as well as per capita income of the households who depend on both - betel cultivation and agriculture - are the highest, and household income is almost eight times and per capita income about three times of incomes of households who depend either solely on betel cultivation or on agriculture. In Kahamalpur, bamboo-based households are in better condition as compared to the households based on agriculture, labor, and other sources of income. Only six households, who depend on different combinations of income sources (other than bamboo), have higher per capita income than the households who are either totally depend on bamboo or combination of bamboo with other source. However, in Raiyatbadi, bamboo-dependent households have second highest household income (Rs9,080), second to households who depend only on other sources of income, but their per capita income is only Rs1,195. However, even on per capita basis, these households are better off than the households totally based on either agriculture or labor.

The number of households in four villages of Maharashtra varies from 134 to 261, and population varies from 468 to 1353. The details of these villages are given in Table 6. However, these villages being big, data related to this project were collected only from 50 to 70 households from every village. These households were selected randomly. The demographic details of these selected households are given in Table 7.

These four villages are also dominated by scheduled castes and scheduled tribes, and only in two villages -Bamhani and Kohmara toli - there are few households of other backward castes. In Kohmara toli, 41 households (80%) depend totally on bamboo and four households (8%) depend partially on bamboo. In Budhanagar, forty households (58%) depend totally on bamboo while nine (13%) depend partially on bamboo. In Pandervani, 49 out of 51 households depend on bamboo either totally or partially. The bamboo dependence is lowest in Bamhani, only nine households depend fully while eight depend partially on bamboo. However, these bamboo-dependent people face many problems in getting bamboo.

Bamboo is not available in open market, so bamboo workers are dependent on Depot of Forest Department for the supply of bamboo. Forest depot is closed after month of June and again opens in the month of October. Even during this period depot provides bamboo only from Feb.- March to May-June as per availability of bamboo. However bamboo workers have good marketing season during the time of Deepawali (October to November) and marriage season. Hence the system of bamboo contractors has evolved over the period. Some village level contractors provide money to illicit cutters of bamboo and buy bamboo from them. These bamboo contractors sell bamboo to producers. Some bamboo workers, due to non-availability of cash income, take bamboo from these contractors on credit, and in this process, these bamboo workers are bound to sell their bamboo products to the contractors. In this situation, producers get low benefit in this work.



**Table 5**  
**Details of Household Income of Four Villages of Madhya Pradesh**

Village		Bamb	Betel	Agri	Lab	Others	Bam, lab, & Others	Betel & Agri	Misc
Khamalpur	H.H	11		2	1	1	38		6
	Pop.	48		17	6	2	239		30
	Income	93,000		23,000	800	1,200	373,000		70,600
	In/HH	8,455		11,500	800	1,200	9,816		11,767
	In/Capita	1,938		1,353	133	600	1,561		2,353
Udaypura	H.H		4	2	6	1	1	5	6
	Pop.		34	14	51	6	8	84	55
	Income		105,000	52,000	37,000	20,000	7,000	1003,000	78,900
	In/HH		26,250	26,000	6,166	20,000	7,000	200,600	13,150
	In/Capita		3,088	3,714	725	3,333	875	11,940	1,435
Raiyatbadi	H.H			2	1	1	5		3
	Pop.			15	7	2	38		9
	Income			7,000	3,000	12,000	45,400		23,000
	In/HH			3,500	3,000	12,000	9,080		7,667
	In/Capita			467	410	6,000	1,195		2,556
Sitiyagohna	H.H		5	9	24	8			6
	Pop.		65	60	162	44			47
	Income		204,000	56,000	353,000	198,000			117,000
	In/HH		40,800	6,222	14,708	24,750			19,500
	In/Capita		3,138	933	2,179	4,500			2,489

**Table 6: Details of Four Villages of Maharashtra**

Village	Total Household	Scheduled caste	Scheduled tribe	Total population
Budhanagar	261	492	128	949
Bamhani	134	288	67	468
Kohmara toli	322	645	305	1353
Pandervani	156	266	115	697

**Table 7**  
**Demographic Details of Four Villages of Maharashtra**

Village	No. of H.H	Population		Agriculture Land		Caste Structure (H.H)		Livestock	Bamboo Dependent H.H	
		Male	Female	Irrigated.	Non-irrigated	OBC	SC/ST		Total	Partial
Pandervani	51	113	109	32.15	16.00		51	101	26	23
Bamhani	69	182	148	43.65	18.20	15	54	109	9	8
Budhanagar	68	158	128	11.00	37.5		69	129	40	9
Kohmaratoli	52	107	122	1.5	13.2	7	45	26	41	4

After the month of June, rainy season starts and forest depot remains closed and forest becomes inaccessible for villagers. Therefore, bamboo works becomes totally stopped for four months and they again become dependent on contractors for their livelihood, which is another reason for their exploitation. Forest depot provides dried bamboo, which is not usable for making all products, and even for selected products, dried bamboo must be watered for one or two days. In Bhandara district, bamboo works exist only where bamboo is available in forest, and villagers can harvest bamboo illegally from these forests. If these circumstances are not available, villagers have either changed their occupation or migrated (seasonally or finally) to another village where these circumstances are available. In Baudhnagar village, all bamboo workers are still involved in bamboo works but as labor in other villages viz. *Selda- 15 kms, Kohlari-16 kms, Kushikhera- 8 kms, Masulkhera - 20 kms, Mangethari- 25 kms* away from the village. The dominance of local contractors and illicit felling in bamboo supply to bamboo workers is clear from the figures given in Table 8 about sources of bamboo in these four villages.

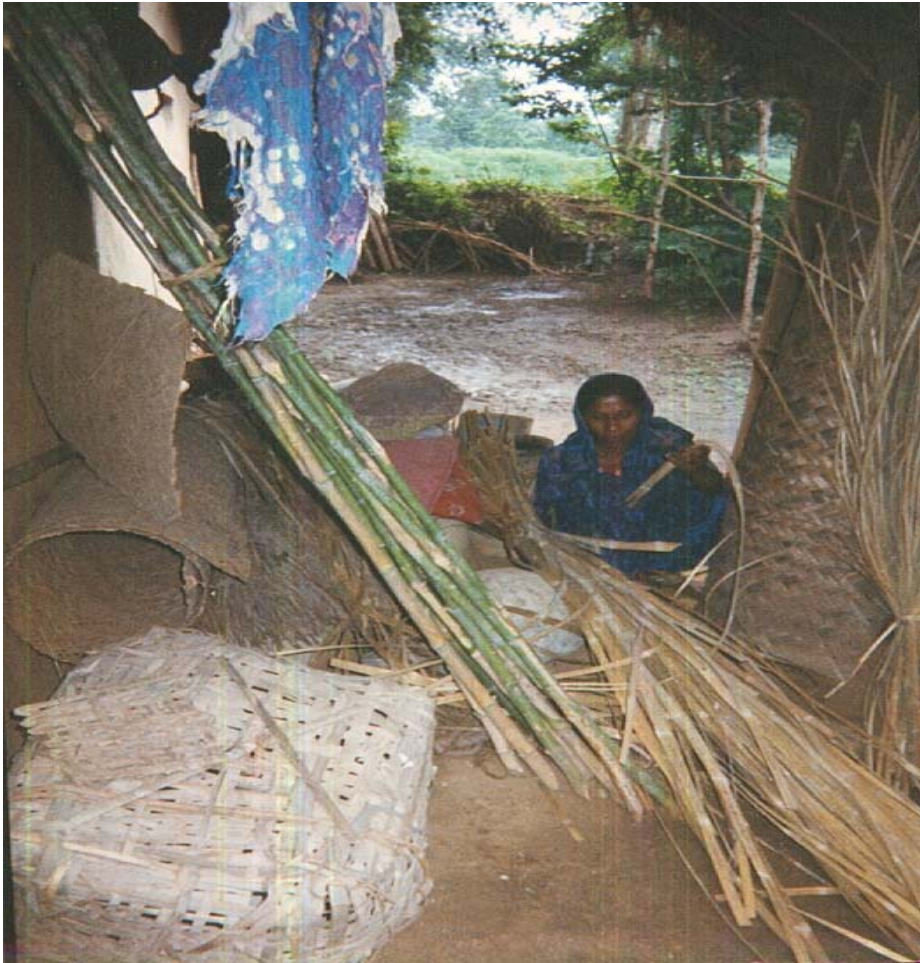
In addition, there is no requirement of transit pass for bamboo products. This is also benefiting contractors compared to bamboo workers. Because, during the time of requirement of transit pass, it was issued only to bamboo workers, and contractors were unable to transport bamboo products independently. Hence, bamboo workers were getting a better share.

**Table 8**  
**Supply Sources of Bamboo in Four Villages of Maharashtra**

Village	Total Bamboo Consumption	Sources of Bamboo Supply			Main Bamboo Product
		Forest Depot	Other Sellers	Illicit	
Budhanagar	0	0	0	0	
Bamhani	7,820	0	7,820	0	Chatai (Mat)
Kohmara toli	27,072	622	26,450	0	Chatai (Mat), Daliya, and Tokri (Baskets)
Pandervani	16,465	230	0	16,235	Chatai (Mat)

In these four villages of Maharashtra, per capita income variation among villages is very small (Rs 600) as compared to variation in four villages of Madhya Pradesh (Rs 3900). Similarly variation in household income is also of Rs 2,600 as against the variation of Rs. 44,200 in M.P.

## Involvement of Women in Bamboo Working (Maharashtra)



## Use of Bamboo in a Mori (raincoat), Maharashtra



The major portion of income comes from bamboo in Pandervani and Kohmara toli. In the case of Budhanagar, labor contributes 81%, but all these people work as bamboo workers in other villages. Hence, this income share is bamboo dependent. Hence, only in Bamhani, the contribution of bamboo is small (19%). Agriculture is a marginal activity in all four villages.

**Table 9**  
**Income Composition of Four Villages of Maharashtra**

Village	Total Income (Rs)	Income Per H.H (Rs)	Per Capita Income (Rs)	Percentage Contribution			
				Bamboo	Agriculture	Labor	Others
Pandervani	628,950	12,332	2,833	48	4	41	7
Bamhani	818,760	11,866	2,481	19	5	51	25
Budhanagar	660050	9,707	2,308	0	8	81	11
Kohmara toli	635,700	12,225	2,752	74	1	12	13

The details of household income of different groups of households who either depend exclusively on one source of income such as bamboo, agriculture, and labor etc, or on a combination of activities, such as bamboo and agriculture, bamboo and labor etc. are given in Table 10. In Pandervani, per capita income of the households which are totally dependent on bamboo is lowest while per capita income of the households which depend on bamboo and other sources of income is highest. In general, households, which have alternate means of supplementing their income from bamboo, are better of than the households who are totally dependent on bamboo. In Bamhani, the households who depend on bamboo and labor have the highest per capita income. But the per capita income of the households who depend either totally on bamboo or on bamboo and other sources of income is about half of the per capita income of households who depend on bamboo and labor. In Budhanagar, households who depend partially on bamboo are better of than the households who depend exclusively on other sources of income such as agriculture, labor, or others. In this village, the per capita income is highest for the households which depend on bamboo and other sources of income. In Kohmara toli, the households who depend on bamboo totally or partially are worse off than other households. Across the four villages, the per capita income of the households who depend totally on bamboo varies between Rs1708 and Rs2,272, and the per capita income of these households is less than the average per capita income of the village. Hence, they belong to poorest section of the village. But, the per capita income of the households who supplement their bamboo income by some other source varies from Rs1,777 to Rs.5000, and normally the per capita income of these

households is either higher than the average per capita income of the village or very close to the average per capita income. Hence, these households are either in the middle class or the top class of the village.

**Table 10**  
**Details of Household Income of Four Villages of Maharashtra**

Village		Bamb.	Bamb & Agri.	Bamb & Labor	Bamb & Others	Agri.	Labor	Other	Misc
Pandervari	H.H	26	5	15	3	1			
	Pop.	111	17	74	14	4			
	Income	189,600	56,250	312,000	58,600	10,000			
	In/HH	7,292	11,250	20,800	19,533	10,000			
	In/Capita	1,708	3,309	4,216	4,186	2,500			
Bamhani	H.H	9		5	3	5	28	8	11
	Pop.	47		24	18	13	135	36	57
	Income	78,000		97,000	32,000	22,300	294,700	108,600	186,160
	In/HH	8,688		19,400	10,666	4,460	10,525	13,575	16,923
	In/Capita	1,865		4,041	1,777	1,715	2,183	3,017	3,265
Budhanagar	H.H		7	40	2	8	6	5	
	Pop.		30	160	14	36	25	21	
	Income		87,650	411,500	70,000	22,000	57,300	11,600	
	In/HH		12,520	10,288	35,000	2,750	9,550	2,320	
	In/Capita		2,944	2,572	5,000	675	2,292	552	
Kohmaratoli	H.H	41		4			2	2	3
	Pop.	195		9			9	9	9
	Income	443,000		50,000			24,500	73,000	45,200
	In/HH	26,310		12,500			12,250	36,500	15,067
	In/Capita	2,272		2,722			2,722	8,687	5,022

Hence, the study of these eight villages indicate that bamboo is very critical input for survival of more than half of the households, and about one-third households are totally dependent on bamboo. However, the households who totally depend on bamboo are in the lower strata of the income. The main activity of totally bamboo-dependent households is the production of bamboo items such as tokri (basket), supa (grain winnow), dholi (paddy store), chalani (straw remover), chap (roof of bullock cart), cock - box, pan tokli (betel basket), phulara (flower pot), binni (hand fan), pitare (cubical), and mora (umbrella). Probably, these households are in poor strata because of insufficient and inefficient institutional arrangements that lead to low returns on labor used for making bamboo products.

## 5.0 Time-studies of the Production of Bamboo Products

In order to find out the returns on labor to bamboo workers, time studies of the total production processes (from collection of raw material (bamboo) to the sale of manufactured items) of two bamboo products (tokri and chhittas) were conducted in two different villages. Results of these studies are given next.

**5.1 A Tokri Manufacturer in Khamalpur Village of Betul District:** A bamboo worker, in Khamalpur village, goes to the forest once every week to collect bamboo, makes tokris from collected bamboo in next four days, and goes to the market to sale tokris and buy household things on the sixth day. Hence, he works on weekly basis. His weekly schedule is given next.

**First Day: Bamboo Collection (9 person hours)**

- 9.00 AM to 11.00 AM - Travel time (Home to forest).
- 11.00 AM to 4.00 PM - Cutting and dressing of bamboo inside the forest (Total 12 pieces of bamboo are carried to the house), and lunch.
- 4.00 PM to 6.00 PM - Travel time (Forest to home).

**Second & Third Day: Bamboo Drying.**

**Fourth Day: Bamboo Splitting (8 person hours)**

- 8.00 AM to 9.00 AM - Watering of dried pieces of bamboo.
- 9.00 AM to 1.00 PM - Splitting of the 12 pieces of bamboo
- 3-4.00 PM to 6-7.00 PM - Splitting of the 12 pieces of bamboo

**Fifth Day: Tokri Making (8 person hours)**

- 8.00 AM to 1.00 PM - Tokri making
- 3-4.00 PM to 6-7.00 PM - Tokri making

**Sixth Day: Marketing (12 person hours, sale of tokris and purchase of household items)**

- 7-8 AM - Start travelling to Betul market by bus
- 7-8 PM - Reaches home.

**Seventh Day:**

- Bada din - Weekly enjoyment day, nearly all villagers use country liquor

Hence, the total time spent on manufacturing of 12 large tokri or 24 small tokri (from collection of bamboo to sale of products) is about **37** person hours. Out of this time, on an average two



## Bundles of Bamboo Collected from Forest, M.P





Bamboo Splits for making Bamboo Products (Maharashtra)



hours are spent for purchase of household items. Therefore, total time spent on bamboo working (tokri making) is **35** hours. Big tokris are sold at the price of Rs 10-12 per tokri, and Rs 25 are spent on bus fair from village to Betul and back. Hence, return on labor is:

$$\text{Return on Labor (ROL)} = \frac{\text{Price of the product (Rs124) – cost of inputs (Rs25)}}{\text{Total time spent (35 hours)}}$$

$$= \text{Rs.22.85 per person day (One person day = 8 person hours)}$$

(When cost of bamboo is zero because villagers use bamboo of state forest area illegally)

**5.2 Daily Program of Chhittas Manufacturer in Tikari village of Betul District:** Miss Laxmi, a fourteen-year-old girl of Tikari village in Betul district started bamboo work just after death of her father. She is also a student of class 8<sup>th</sup> grade. She purchases bamboo @ Rs.5.00 each from bamboo sellers who cut the bamboo in forest area and sell in the village early in the morning. She uses 3 bamboos daily and manufacture 6 Chhittas with the help of her mother. She gets up early in the morning and work **three hours** (6-9 AM), then she goes to school and come back at 4 o'clock in evening. She continues her bamboo work and manufacture 6 Chhittas till 8 or 9 PM (**4 hours**). Her mother helps her in this work time to time (nearly **1 hour**). Thereafter, her mother sells all Chhitta in Betul market which takes nearly **4 hours**).

Total time spent on manufacturing and marketing = 12 person hours  
 Money spent on purchasing of bamboo = Rs15  
 Chhitta manufactured in this duration = 6  
 Price of the product (@ Rs.5 per Chhitta) = Rs30

$$\text{Return on Labor (ROL)} = \frac{\text{Price of the product (Rs30) – cost of bamboo (Rs15)}}{\text{Total time spent (12 hours)}}$$

$$= \text{Rs.10 per person day (One person day = 8 person hours)}$$

Laxmi prepares 5 Chitta (Basket) in a day before and after her school time. She is a student of 8<sup>th</sup> class.  
(M.P)



In addition, one household, in Udaypura village, Hoshangabad district, M.P, made many bamboo items such as token (bowl shaped item), supa (winnowing item), daliya (Basket), and bijna (fan) etc. The head of the household was interviewed for bamboo requirement, time spent, and prices received for each item. On the basis of this information, ROL is calculated for each item. Details of each item are given in Table 11.

Return on labor (ROL) of bamboo working varies from Rs.10 to 40. But the ROL of 40 is limited to only one item i.e., bijna (fan), and the next highest return is of Rs28 on duphi. However, the most common items are different types of baskets. These baskets are used for different purposes, and hence there is higher demand for baskets. ROL on different types of baskets vary from Rs10 to Rs 22 which is about one-third to two-third of government minimum wages of Rs.35 in these areas. Hence, bamboo workers are not able to earn minimum wages, and in part it is the main reason for their poor status among village communities.

**Table 11**  
**Details of Household Bamboo Items Production in village Udaypura, M.P**

<b>Item</b>	<b>Price (Rs)</b>	<b>Time spent (Hrs.)</b>	<b>Bamboo Requirement (Number)</b>	<b>ROL (per day of 8 hrs)</b>
Tokni	3-5	1	0.25	22.00
Bowa	8-10	3	0.5	17.00
Daliya	25-30	12	1	15.00
Bijna	2-4	0.5	0.1	40.00
Supa	10-20	8	0.5	12.50
Duphi	4-5	1	0.2	28.00

*Cost of bamboo: Rs5/bamboo*

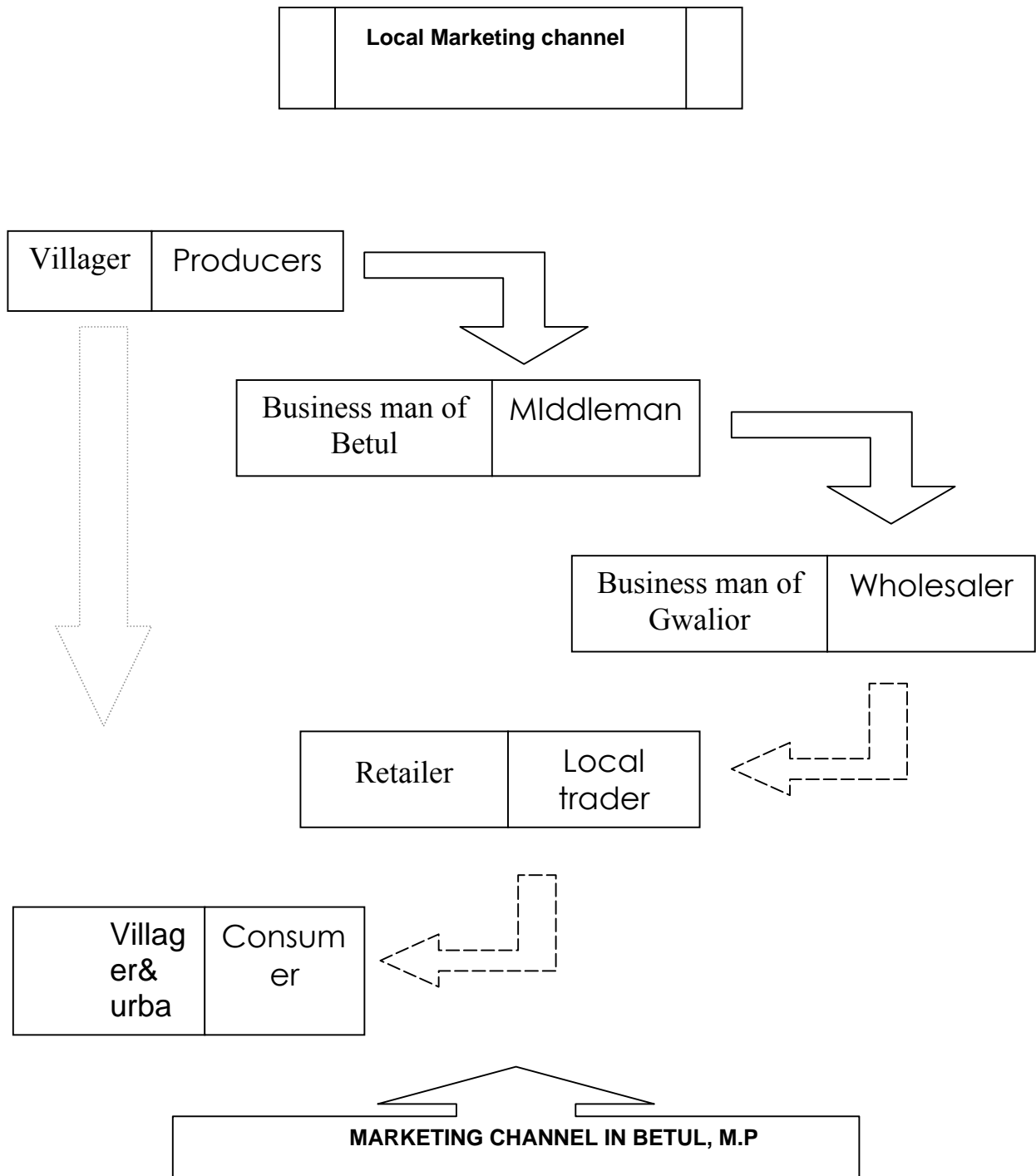
## 6.0 Marketing Systems for Bamboo Products

The marketing of bamboo items is the most neglected part in the bamboo production to consumption system in India. There is no support to the local producers of bamboo items for facilitating bamboo marketing either from government or from any non-government organization (NGO). Nor there are any community organizations involved in marketing of bamboo products. Hence, the local produces have to depend mainly on the local traders. In the case of Madhya Pradesh, marketing of bamboo items is limited to the local market while in Maharashtra, there is market for some bamboo items in Bhandara and Nagpur cities in addition to the local market. The details of marketing channels in Betul district of Madhya Pradesh and Bhandara district of Maharashtra are shown in Figures 1, 2, and 3.

It is evident from these figures that local middlemen play an important role in trading of bamboo products in both the states, and in both cases - local market and city market. Hence, to understand the financial returns to different agents in a marketing channel, a detailed analysis of returns to different agents was conducted in Betul district of Madhya Pradesh, and it is given in Figure 4. The details in this figure clearly indicate dis-advantageous position of bamboo-product producers. A local producer sells bamboo chhitta at Rs5.00 while a consumer buys it at Rs25.00. Hence, the agents between producer and consumer get Rs.20/piece while producer gets only Rs5.00/piece and he contributes the maximum inputs in terms of labor and raw material. The middleman gets the maximum return, he adds Rs15/piece in his sale price, while other agents - wholesaler and retailer add Rs5/piece each. In terms of return on labor, middleman gets Rs5,600 per day while producer gets only Rs19/day. If we assume the wage rate of middleman of Rs.100/day, he gets the profit of more than Rs9/piece. Similarly, warehousing cost to the wholesaler and marketing cost to the retailer are approximately 10% of the cost of product to them. Hence, the wholesaler makes a profit of Rs3.50/piece, and the retailer of Rs.3.00/piece. Therefore, every one in the marketing channel makes very high profits while the producer does not get even the return of his labor at prevailing wage rates in the area.

Stock of Basket Ready for Transportation to Gwalior from a Market in Betul (M.P.)





**Figure 1**

**A. Local Marketing Channel**

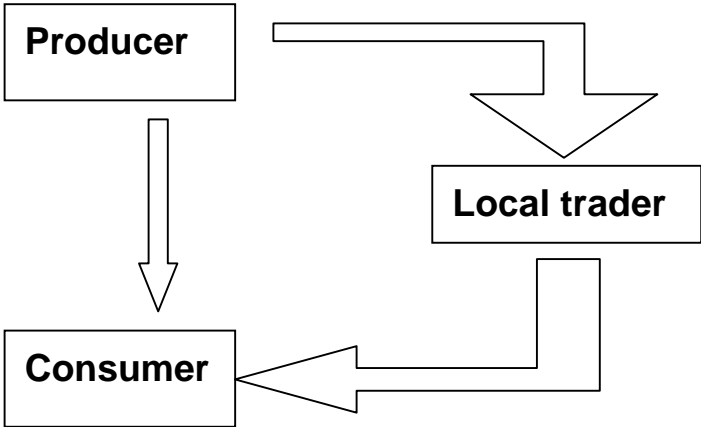


Figure 2



**B. An Extended Marketing Channel**

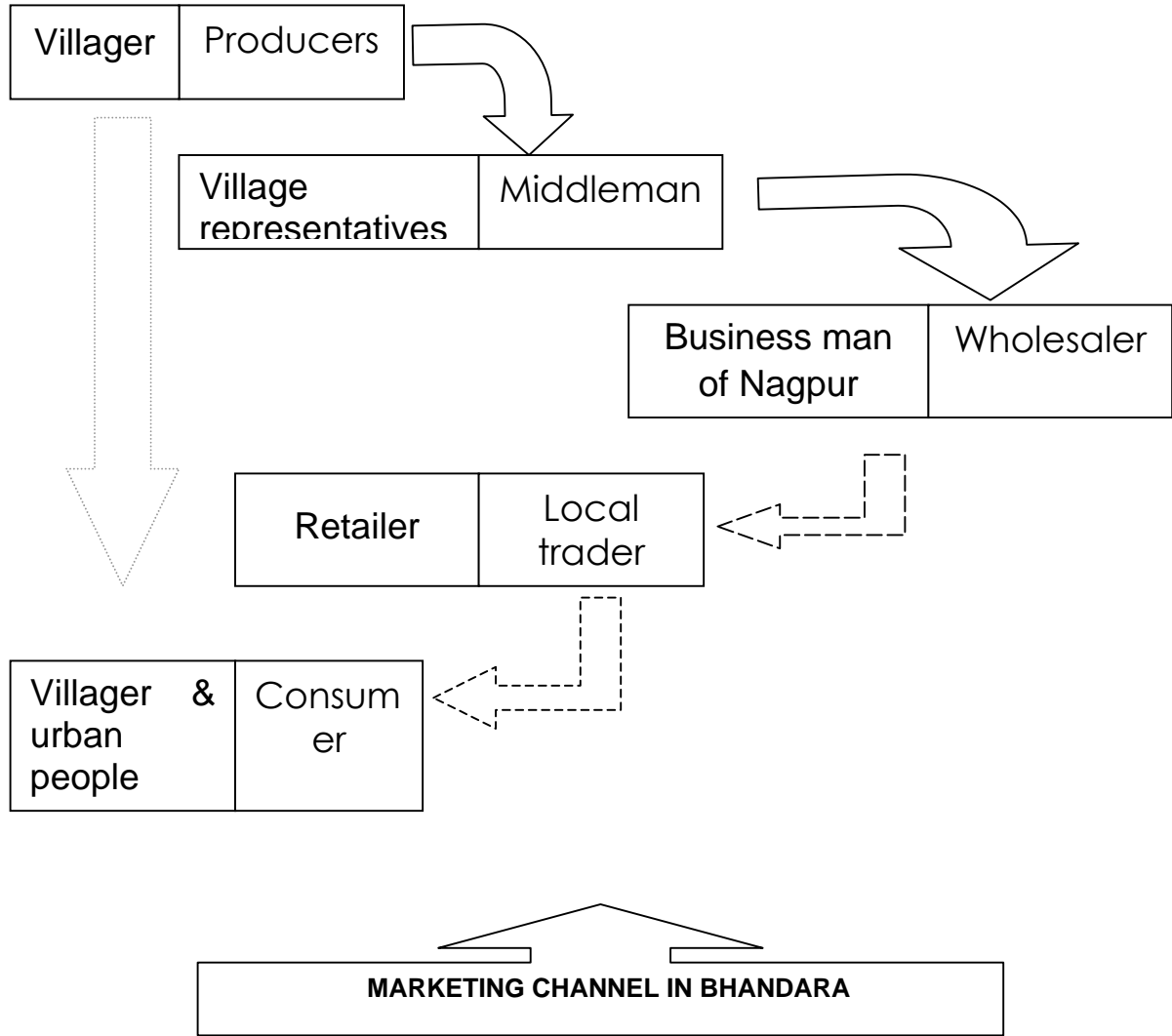
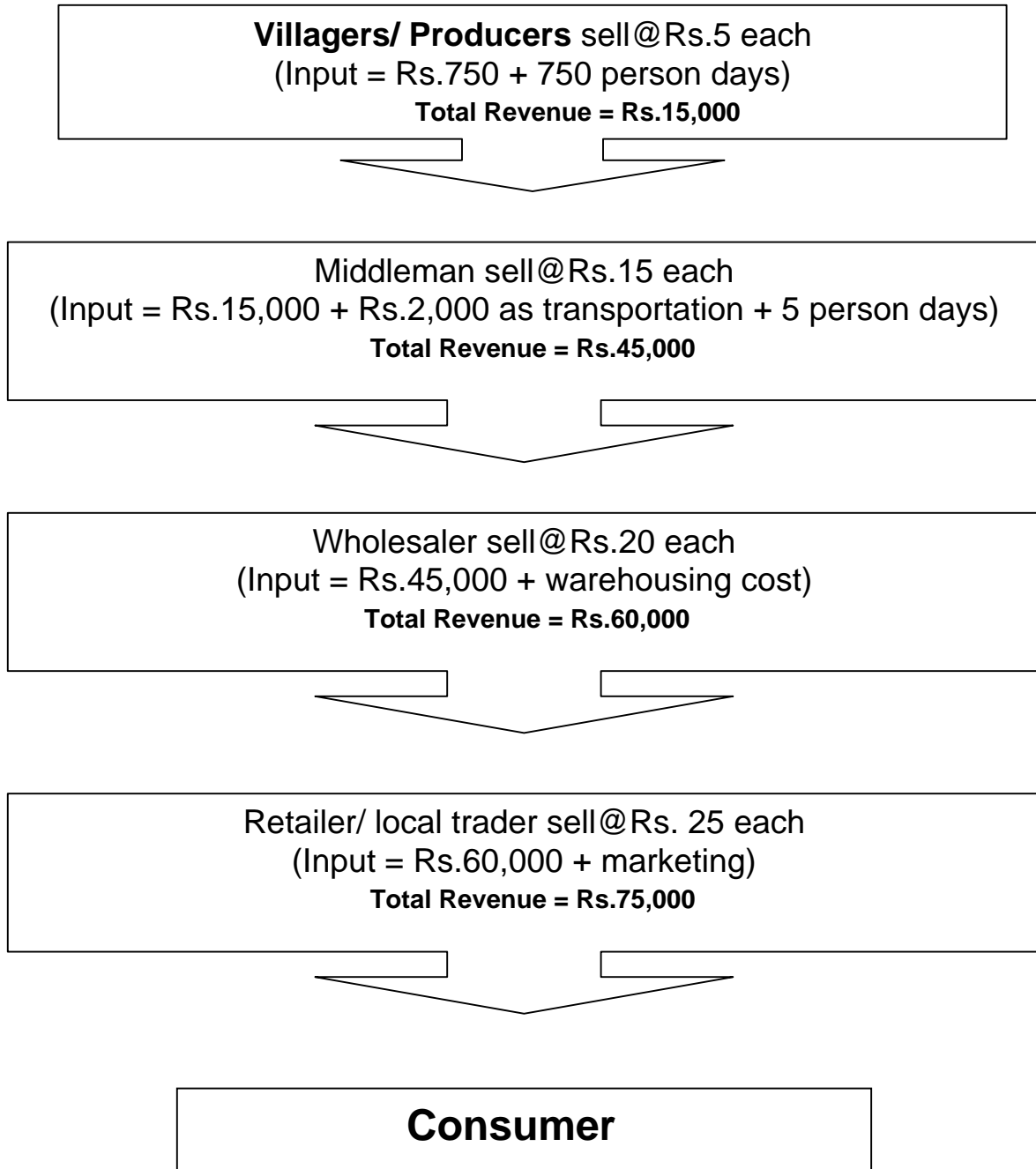


Figure 3

**Total number of Chhitta = 3000**



1.

Figure 4

## **7. A Comparative Analysis of Bamboo Distribution to Industrial Units and Local User Groups**

Industrial units, specifically paper mills, and traditional bamboo consumers which include bamboo dependent people like basod of M.P. and buruds of Maharashtra, and other local people who use bamboo for house construction etc. are three different categories of bamboo users. In the light of 1988 Forest Policy, traditional bamboo users and local people should have the first right over bamboo and the right of industrial units should be secondary. We examined the trend of bamboo distribution among different user groups over the period to find out any shift, if there is one, in favor of traditional bamboo consumers or local groups after 1988 Forest Policy. Details of bamboo distribution among three groups in Maharashtra are given in Table 12. Distribution data clearly indicates that traditional consumers get only a marginal portion (2 to 4%) of total bamboo production while industrial units get more than 90% of the total production, and these figures have not changed after 1988 Forest Policy. In fact, the total bamboo production increased from 128,238 metric ton in 1987-88 to 209,627 metric ton in 1997-98, but quantity given to traditional consumers decreased from 5,906 to 4,685 metric ton during this period. The bamboo distribution trends over a 12 years period are shown in Figure 5. This figure shows that the mean level of distribution to industrial units has shifted from around 125,000 to 200,000 metric tons while mean level of distribution to traditional consumers has gone down.

The trends of bamboo prices per metric ton for different user groups, in Maharashtra, are given in Figure 6. These trends have many interesting features. Prices for industrial units have always been lower than the prices for traditional consumers and sale from forest depots. Second, prices for traditional consumers have always increased except 1993 and 1998 (a slight decrease in these two years). Third, since 1994, annual increase in prices for industrial units has limited to 10%, but in some years prices for traditional bamboo workers have increased by more than 30%. Fourth, even during the years when market prices (prices of bamboo sale from depot) dropped drastically (1991 and 1997), prices for traditional consumers increased. Hence, these price trends indicate that the government has not been very careful in deciding bamboo prices for the welfare of traditional consumers. Neither the government of Maharashtra has changed its priorities of bamboo allotment in the favor of local people.

In the case of Madhya Pradesh, year-wise details of bamboo distribution to different user groups were not available. Hence, a similar analysis as of Maharashtra could not be conducted. An aggregate data for industrial and commercial bamboo (which includes bamboo to traditional consumers and other local users) for six years is given in Table 13. Again, we could not find the data for 1988 or 1987, hence, specific conclusions about pre-1988 policy and post-1988 policy could not drawn. But, during last three years industrial production has been less than the production in first three years while commercial production has been almost the same in last three years as in the first three years. But, as mentioned earlier that there has been lot of unsold bamboo in forest depot, during last years, after the forest department decided not to allot bamboo to industrial units. But, at the same time, in our sample villages, local people did not get bamboo from forests, and they used illegal harvesting. It shows that the Forest Department did not use the stocks in Forest Depots to meet the requirements of traditional bamboo users.

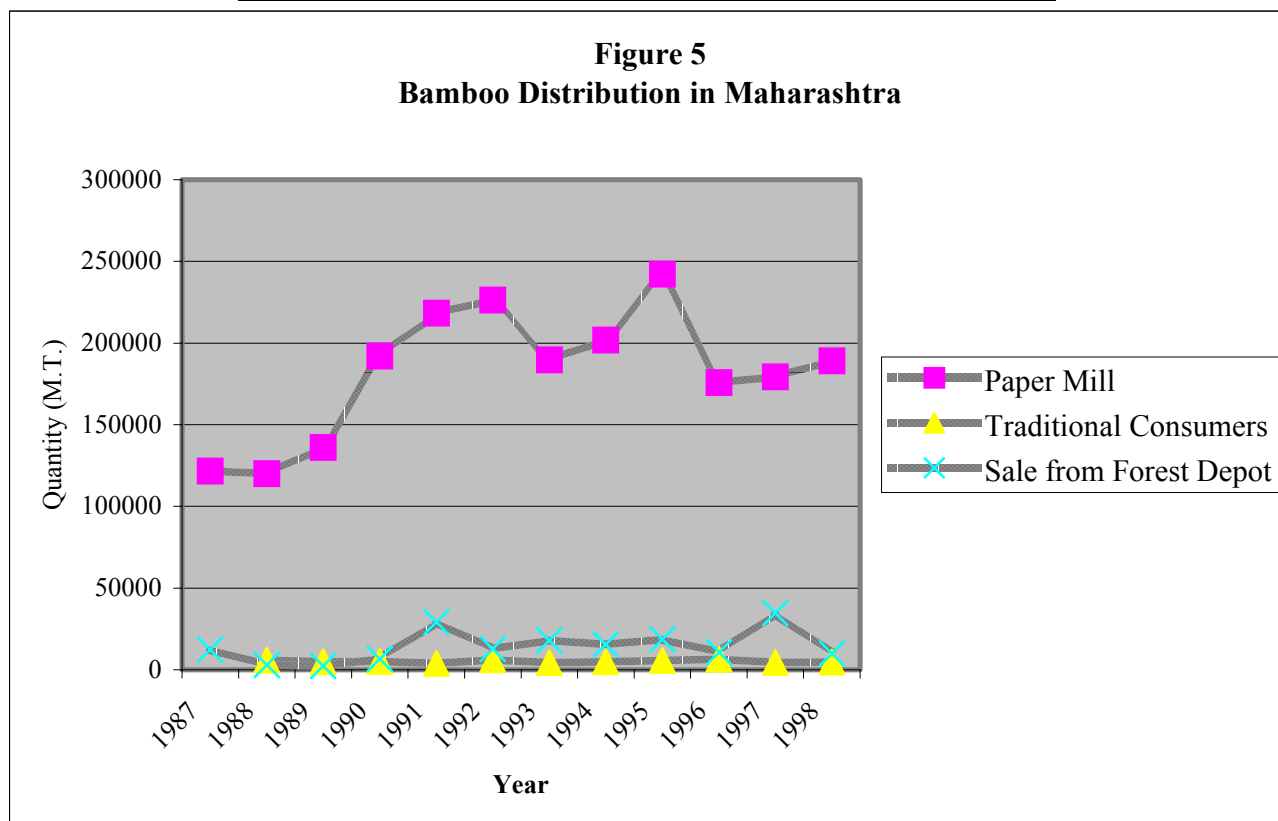
**Figure 12**  
**Distribution of Bamboo among Different User Groups in Maharashtra**

Year	Total Production (M.T)	Paper Mills		Traditional bamboo Consumers		Sale from Forest Depot	
		Quantity (M.T)	Value (Rs.)	Quantity (M.T)	Value (Rs.)	Quantity (M.T)	Value (Rs)
1986-87	134,924	121,649	24,329,742			12,395	7,451
1987-88	128,238	120,099	26,412,697	5,906	3,448,865	2,933	1,942
1988-89	143,448	136,183	35,956,223	4,980	4,821,051	2,431	1,980
1989-90	203,954	192,023	51,270,120	5,159	4,952,496	6,634	20,783
1990-91	252,279	218,427	63,999,087	3,902	4,853,600	29,230	24,589
1991-92	245,247	226,402	90,560,800	6,057	8,359,178	12,674	17,856
1992-93	212,552	189,747	83,488,834	4,269	4,559,562	18,002	28,353
1993-94	222,709	201,972	97,754,556	4,914	6,977,522	15,421	26,662
1994-95	267,088	242,190	128,941,850	5,674	11,075,608	18,690	42,979
1995-96	193,356	175,757	102,930,178	6,487	13,751,978	10,727	49,159
1996-97	219,335	179,276	115,489,580	4,524	11,400,719	34,749	43,089
1997-98	209,627	189,107	134,004,649	4,685	11,074,187	10,002	33,213

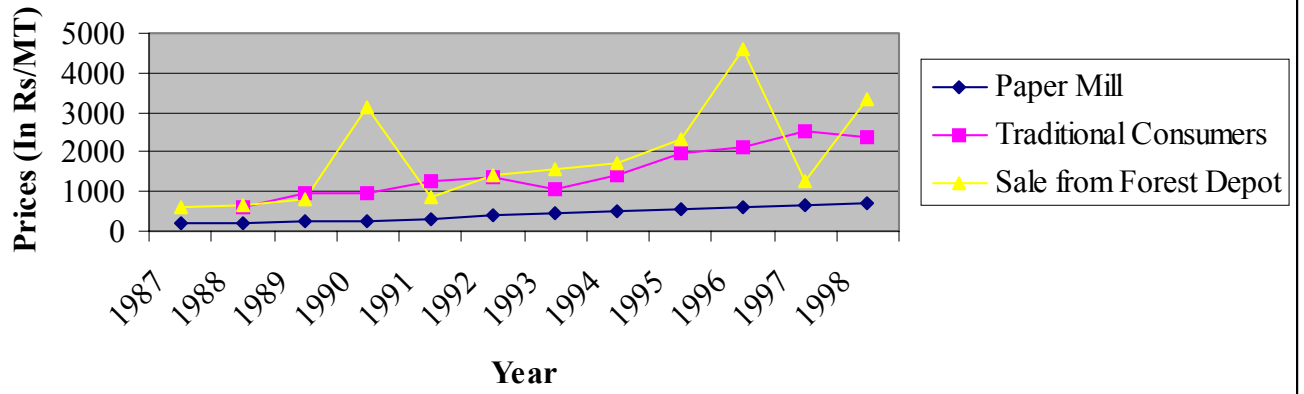
Note: Quantity of bamboo in M.T is notional for all categories of users. In the case of paper mill, it is decided in the field on the basis of samples while in the case of traditional consumers and sale from forest depot, four hundred long bamboos are treated as one metric ton.

**Table 13**  
**Production of Bamboo in Madhya Pradesh**

Year	Industrial Bamboo (Sale units)	Commercial Bamboo (Notional ton)
1992-93	152,278	93,064
1993-94	140,770	88,887
1994-95	176,617	107,527
1995-96	125,991	92,824
1996-97	134,611	103,074
1997-98	130,905	92,604



**Figure 6**  
**Bamboo Prices in Maharashtra**



## 8.0 Comparative Situation in Maharashtra and Madhya Pradesh

A comparative situation of bamboo workers - their castes, organizations, allotment of bamboo to them, collection of bamboo, products made by them, marketing of products etc. - is given in Table 12. The table clearly indicates a great diversity in terms of government provisions for the allotment of bamboo to bamboo user groups, prices fixed for different groups, license requirement for bamboo works, transit permit requirement, and availability of bamboo to meet the requirements of local user groups. The two states have also followed different approaches with respect to allotment of bamboo to industrial units.

**Table 12**  
**Comparative Position of Bamboo User in Maharashtra and Madhya Pradesh**

Item	Maharashtra	Madhya Pradesh
Bamboo workers	Bamboo workers belong to Burad caste and bamboo working is their paternal work. However other many castes like Mahar, Kunbi, Teli, Gond etc. from Tribes, SC, OBC categories are also involved in bamboo works	Bamboo workers belong to Baiga, and Basorh caste. They are involved in bamboo working as their paternal works. However, Gond and Korku are also involved in bamboo works but they are neither making nor socially allowed manufacturing all items of bamboo e.g. Supa. All the four caste belongs to tribes.
Organizations of bamboo workers	During the period of 1985-1990, Bamboo working was organized through Bamboo/ Burad Kamgar Societies in all such type of villages. Societies used to provide bamboo from forest (collaboration with forest department) and used to supply all products to market.	There were no organizations in the past.

Collection of bamboo.	Bamboo workers collect bamboo within the periphery of 15 to 20 kms of the village.	They collect bamboo within 5-10 kms away from the village.
Distribution of bamboo (Nistar rights) and prices Of bamboo	There is no categorization of local bamboo users. Nistar rights are the same for all type of families, and nistar rate of bamboo is based on quality of bamboo only. Sales tax (7%) and Forest Development tax (10%) are also charged	Local bamboo users are categorized in five groups, and different groups have different quantity entitlements and different prices. Similarly, taxes also varies across user groups.
Bamboo products	Prepares costly & ornamental show pieces e.g. night lamp, pen, sofa, chairs, tables, charkha, T.V. case etc.	Not seen in the district of Betul, Bhopal Hoshangabad, it may be preparing at Balaghat district of Madhya Pradesh.
.Residence of bamboo workers	All bamboo workers are residing in the village.	Traditional bamboo workers mainly Basorh are residing at market place.
License for bamboo works	License for bamboo works is not necessary	License for bamboo works is necessary for all bamboo producers.
Transit for bamboo products	Transit pass system is not necessary for transportation of Bamboo products.	Transit pass system is necessary for transportation of Bamboo products.
Marketing of bamboo products	<ul style="list-style-type: none"> <li>i. Products purchased by local trader as well as wholesaler from the village;</li> <li>i. Products sold by producers in local market</li> </ul>	<ul style="list-style-type: none"> <li>i. Products purchased by local trader from village;</li> <li>ii. Producers sell products to consumers within the village;</li> <li>iii. Products sold by villagers in local market.</li> </ul>
Supply of bamboo to local people	Depot of Forest Department is able to provide 20-25 % of total bamboo used by bamboo workers.	Depot of Forest Department is able to provide only less than 5 % of total bamboo used by bamboo workers.
Bamboo plantation	Forest department promotes plantation on forestland only.	Forest Department is promoting bamboo plantation on private and revenue land also
Bamboo allotment to industrial units	Forest department continues the long-term agreements of bamboo supply to industrial units.	Forest department has stopped the long-term agreement of bamboo supply to industrial units.



## 9.0 Conclusions

The bamboo sub-sector sector is definitely a critical sub-sector of forestry sector in India. But, recent institutional changes in the forestry sector have failed to realize the importance of bamboo sub-sector. The Government of India has not made any attempt to develop a macro (national-level) bamboo sub-sector policy in the line of the Forest Policy of 1988. The 1990 GO by Government of India order on Joint Forest Management has also no specific provisions or directions for bamboo forests. As a consequence, almost all the state governments have not included any specific directions about bamboo forests in their resolution on JFM. However, some local experiments by forest officers, such as in Bhadravati area of Karnataka, of involving local people in the management of bamboo forests have shown encouraging results. Hence, there is a need to design specific institutional arrangements for the management of bamboo forests in collaboration with local people.

Second, almost all the states recognize the need of bamboo supply to traditional bamboo consumers. Some states, like M.P. and Gujarat, have detailed government institutions for the supply of bamboo to these groups. Other states, like Orissa and Maharashtra, also have government orders for bamboo supply to the traditional consumers. But, it seems that bamboo prices, fixed by the state, for these consumers are higher than the price of bamboo to industrial units. In addition, these consumers hardly get enough quantities of bamboo (even the amount equal to the quantity fixed by the state governments), and they resort to illegal harvesting of bamboo. Hence, the institutional arrangements related to bamboo supply to the traditional bamboo consumers are not effective, and are unable to achieve the desired results. In addition, no modifications have been made in these institutions with respect to new emphasis, in 1988 Forest Policy, on the first right of local people on forest produce. Hence, there is need to have a fresh look on these institutional arrangements to make them effective and compatible with the 1988 Forest Policy.

Third, three states out of four have not followed the intentions of the 1988 Forest Policy regarding bamboo allotment to industrial units, and these states are continuing the old practices of providing the raw material to forest-based industries at the cost of local forest-dependent communities. In fact, in Maharashtra, bamboo supply to industrial units has

increased while to the traditional consumer groups has decreased in last twelve years (after 1988 Policy). Hence, there is an urgent need to modify the state-level institutional arrangements about bamboo supply to industrial units.

Fourth, there is total lack of institutional arrangements related to processing, mechanization of processing, training of local bamboo workers, marketing of bamboo products, credit for establishing local bamboo enterprises, promotion of new designs and development of attractive and specialty bamboo products. Hence, new institutional arrangements need to be developed and encouraged to convert bamboo-based local productive activities from their subsistence nature to commercial nature.

Fifth, demands of local bamboo workers such as supply of green bamboos all through twelve months, training facilities of bamboo workers, support to bamboo workers in developing new products and marketing of bamboo products, and supply of bamboo at reduced rates should be considered, and institutional arrangements should be developed accordingly.

## 10.0 A Comparative Study of India and China

On the basis of these two studies - recent forestry reforms in China and their impact on the local economy and the study of forestry and bamboo institutions and role of bamboo in village-level economies in India - bamboo related institutional arrangements and other associated aspects, in these two countries are compared. The outcome of this comparative study can be used as inputs for future policy interventions in the bamboo sector of these two countries as well as of other countries.

**1. Bamboo Land Ownership and Management:** In China, prior to 1979 reforms, all bamboo lands were either collectively owned or state-owned, and these lands were also managed either collectively or by state agencies. After 1979 reforms, the ownership status still remains the same (collectively owned or state owned), but management rights have been transferred to individual households, and the main focus of management rights has been on equity consistent economic efficiency. In India, bamboo lands under natural forests are state-owned at least for about one and half century. But, agricultural lands are privately owned. Hence, small-scale bamboo plantations on private lands (agriculture lands) are owned by individuals. The state has all management rights on state-owned natural bamboo forests. In some states, the state allocates harvesting rights to industrial units for a given period on a fixed forest area. But, individual households have no management rights on state-owned forestlands. Generally, bamboo forestlands have not been brought under the Joint Forest Management program, and, hence, even after 1988 Forest Policy, there is no sharing of management rights between the state and local communities on bamboo forestlands. However, in India, many households, in given villages, have right on forest produce such as bamboo, but the state takes the responsibility to supply the forest produce to these households, and this mechanism is highly inadequate and inefficient. In the case of private bamboo plantations, private owners have all management rights.

**2. Organizational Arrangements for Bamboo Management:** The multi-layer government hierarchy of China mainly consists of six administrative layers: central, provincial, prefecture, county, township, and village. The structure of each region at each level is a copy of the central structure. For example, the county government controls the enterprises affiliated to it, such as the finance bureau, agriculture bureau, forest bureau etc., and it also oversees the township governments within its' jurisdiction, a role similar to the central government who oversees

provincial governments. Similarly, a township government controls its own enterprises in addition to overseeing its' villages. This organisational structure is known as the multi-layer multi-regional form (M-form) organisation. In this form of the government, the organisational structure of different specialised agencies, such as the forestry bureau, also follows the same pattern. Hence, forestry bureau exists at the six levels. However, their policy formulations and decision making are highly decentralised. Foresters at the township level are paid by the township government and they are directly responsible to the township government and not to the head of the county forestry bureau. County-level forestry bureau only helps the township forestry bureaus by providing technical and extension support, and only marginal funds flow from the top to the bottom. Hence, normally the people who work in the township bureau are local people, which reduces the societal gap between forestry experts and local farmers. In addition to this organisational form of government, an overlapping communist party structure and common elements of representation in the party and government have also been specific features of China for long time. However, after the de-collectivisation of the economy, the state party apparatus decayed in the countryside and increasing tensions appeared in cadre-peasant relations. This phenomenon forced the central government to introduce democracy at the grass root levels. Thus, members of village councils are now elected by village residents instead of being nominated by top-officials of the Communist party. The democratic process has further strengthened the interactions between the local people and forestry experts, and the accountability of the local forestry experts to the local people.

The government hierarchy of India also consists of five administrative layers: central, state, district, development block, and panchyat, but, administrative structure in India is U-form. Three lower levels are pseudo-levels of administrative structure. These structures are at the mercy of the state government, and these levels have been suspended in the past for very long periods in many states. In addition, there is no independent structure at these levels. For example, there are hardly any independent enterprise directly affiliated to the district or block levels. The main role of these three levels of governments is just to oversee the developmental activities in their respective areas. As a result, the organisational structure of different specialised agencies, such as the forestry department, also follows the same pattern. Hence, an independent forest department exists only at the state level. There are district-level offices of the forest department. But, these offices are directly responsible to the state forest department, and only indirectly responsible to the district-level government only for the funds received from the

district-level. There is no block-level or panchayat-level layer in the forest department, but sub-ordinate layers in the forest department are known as ranges and beats. But, one range covers more than one development block and similarly one beat covers more than one panchayat, or it may be vice-versa also. Hence, there is no one-to-one correspondence in the layers of the government and layers of the forest department. In addition, all the employees of the forest department are employed, and, hence paid, by the state government, and not by the lower-levels of the government. Hence, these lower-level governments have no effective control over these employees. In addition, due to central recruitment of forestry employees at different levels, beat-level or range-level employees of the forest department are not from the areas, and it increases the social-gap between local people and forest officials. Even though, India is a democratic country since its independence, but there is hardly any accountability of forest officials to the lower-levels of the governance.

**3. Bamboo Related Institutional Arrangements:** In China, institutional arrangements related to bamboo cover almost every aspect such as land-allocation for bamboo production, management of bamboo land, extension activities for promotion of bamboo cultivation, promotion of bamboo-based industrial units, training of bamboo workers, creation of infrastructure for marketing of bamboo products, and export promotion of bamboo products. These institutional arrangements vary from county to county and township to township. In India, the bamboo related institutions focus on distribution of bamboo to local people and to industrial units. There are no well-established institution arrangements for establishment of bamboo-based local enterprises, promotion of bamboo products, marketing of bamboo products, training of bamboo workers or any other aspect of bamboo. There are only few scattered and localised attempts by some non-government organisations.

**4. Design of Institutions and Institutional Changes:** In the M-form organisational structure, lower-level governments have little bargaining power vis-à-vis their superiors but have substantial autonomy in developing their own regions by their own innovative skills and local resources. The limited bargaining power and autonomy together weaken bureaucratic controls and organisational inertia, which is common in the unitary form (U-form) of organisations, and focuses organisational energy towards experimenting and developing the systems best suited to the local socio-economic environment. Hence, in China, the county governments, township governments, and even village governments experiment, and use the results of experiments to change the existing institutional arrangements to better meet the new situations. As reported, in China study, institutional arrangements for bamboo land allocation,

industrial enterprises for bamboo, bamboo and bamboo products marketing, encouragement for exports of bamboo products etc. have been continuously changed at the level of county governments and township governments. However, in India, due to its U-form structure, institutions related to bamboo are mainly designed at the state-level. As discussed before, state government design the institutions related to bamboo allocation to small-scale and large-scale users, and these institutions are almost uniform across the state. The lower-level governments have no authority either to design or to change the existing institutions. Hence, the local-level inputs are never circulated back to the process of institutional design. The process of institutional change being limited to the state-level, it takes much longer time as compared to institutional changes at local-level in China. In addition, many other factors, such as attitudinal inertia of forest officials, multi-stages in the change process, self-interests of many officers, non-accountability for inappropriate institutions etc. further delays the process of institutional change in India.

**5. Design and Development of New Bamboo Products and Market Research:** In India, the local bamboo artisans continue to make the age-old traditional products such as bamboo baskets or umbrella for local use, and hence are unable to get high-returns or even the returns for their labor. There are no inputs either from the government or from private enterprises to develop new fancy products, and to develop the products as per the demand from wider national and international markets. Some local NGOs, who are trying to make some new products, are also unable to provide increased returns to local workers. In China, private enterprises have put an increased emphasis on market research of bamboo products and design and development of new bamboo products to cater the demand of these markets. As an outcome, many high-valued bamboo products such as bamboo clothes, bamboo briefcases, and many high-priced decorative items have been designed and developed. These private enterprises have also given a priority to the training of local workers to produce these new products. These efforts have increased the returns to enterprises as well as local workers. In addition to these small consumer items, China has also developed new industrial items such as bamboo flooring, and there is big market potential for these products in Europe and North America. Indian enterprises have limited themselves mainly to pulp, and there is hardly an effort for product diversification.

**6. Bamboo and Beneficiary Groups:** In India, bamboo is mainly used for the benefit of industrial organizations mainly pulp mills, and at the village-level, its use is limited only for subsistence purposes. But, it has neither been used nor has been intended to use for eradication of

poverty or for increasing the income-levels of bamboo-dependent people beyond subsistence levels. In China, in bamboo-dominant areas, bamboo has played a critical role in substantially increasing the income-levels of people who were poor prior to 1979-reforms. In China, the use of bamboo is not limited to the lower-strata of the society, but many people are in the rich class of the society due to bamboo contributions.

**7. Bamboo and Bamboo-based Industrial Units (Supply of raw material):** In China, prior to industrial reforms, which happened in 1987 in Linan county, all bamboo-based industrial units were owned and managed by the state, and bamboo was bought by the state cooperatives from the individual households. Hence, in a way, there was assured raw-material supply to the bamboo-based units. But, now, bamboo-based units are under diverse ownership and management arrangements, and all units compete for bamboo (raw material) in an open competitive market. State has no role in the supply of raw material to these units. In India, even though, the 1988 Forest Policy emphasized that the industrial units should arrange their own raw material, but in many states they still have the assured raw material supply from the state. Hence, there is a lack of competition in factor inputs among these bamboo-based industrial units.

In conclusion, In India, institutional arrangements of bamboo sub-sector can be characterized as partial, centralized, almost uniform across the county, full of rigidities, non-sensitive to local conditions, non-sensitive to other sub-sectors of the forest sector, and oriented towards the profit maximization of industrial units and subsistence living of rural poor. In China, the common characteristics are complete, decentralized, diverse across the situations, flexible, sensitive to local conditions, sensitive to other sub-sectors, and aimed at equity-consistent economic efficiency.

Hence, institutional arrangements of bamboo in China can provide many insights for other countries. However, these arrangements may not be appropriate and optimal in toto to the social, economic, political, and cultural conditions in other countries, but the lessons learned from institutional experiments and their outcomes can be used to improve the efficiency of bamboo institutions in other countries. The two specific factors - mode of governance and land ownership - which are different in China from other countries, should be kept in view in using the experiences from China.

In the last decade, India has also done large-scale and diverse experiments in forest management, specifically in designing and developing joint forest management systems (which, unfortunately, has not been extended to bamboo forests). The experiences and outcomes of institutional reforms in the forest sector of India and China can complement each other, and both countries as well as other countries can take advantage of these outcomes



## **Appendix1**

### **Bamboo Management through Joint Forest Management in Karnataka State**

In Karnataka, thousands of medars (traditional basket makers) depend on forests. Bhadravati division has 16,000 ha of state forests. In these forests, five species of bamboo are found, but Dendrocalamus strictus (also known as medar bamboo) is dominant. There are 240 medar families with 981 members who depend solely on the forest for their livelihoods. These people belong to the schedule caste and live on the fringe boundaries of the forest. The management history of this division was that bamboo land was worked departmentally via tender contracts. Green bamboo was extracted and shipped to departmental depots through November to May. Medar families purchased bamboo from these depots at a fixed maximum of 50 culms per family per month, and were not allowed to enter the forests to supplement this supply. This regulation was characterised by an inconsistent flow of bamboo that created unstable employment conditions, resulting in illicit harvesting of bamboo by medars, and leading to punishment and fines by forest officials on these bamboo-dependent families.

The government of Karnataka issued a government order on Joint Forest Management and Planning (JFPM) in 1993, but it included only degraded forests with a canopy density of less than 25%. The bamboo forests are well stocked having canopy density of more than 50%. Hence these forest areas could not be brought under Village Forest Committees constituted under JFPM.

Hence, the local forest officers decided to extend the spirit of JFPM to the bamboo forests in a modified form. It was decided to form "Bamboo User's Societies (*Medar sanghas*)", in which the sharing of produce is not provided but the interests of stakeholders are protected, and stakeholders are involved in the protection and management of forest. The Forest Department was involved in the formation of the societies through consultations and training of extension staff. After consideration of the needs of each medar colony and availability of bamboo in the vicinity, compartments of bamboo forests were allotted to each medar sanghas. The agreement between the medars and the Forest Department was that the medars could enter the allotted forest compartments twice a week -Tuesday and Friday. They were free to cut bamboos of their choice and as much as they needed, but extraction will be done as per silvicultural principles under the supervision of the Forest Guard. The head of society will collect the royalty of Rs.3 per bamboo

and remit the amount to the department. The medars are free to make articles of their choice and sell them wherever they want, and no offence will be booked against them.

The arrangement is working well. The two main successful results of the implementation of JFPM were the noticeable decline in poaching offences by medars (32 incidences in 1995 down to 6 incidences in 1996), and the increase in income generation. During a three month period between August to October of 1995, 17, 235 bamboos were extracted by medars at a cost of Rs. 51,765, but earnings from this bamboo was approximately Rs. 280,538, showing a profit of Rs. 228,773.

(Source: Shaikh, M. H. A. (1996). Participatory Management of bamboo Forests. In the Proceedings of National Seminar on Bamboo held on 28<sup>th</sup> and 29<sup>th</sup> November 1996. Bamboo Society of India, Bangalore, India.)

## **Appendix 2**

### **Bamboo Handicrafts Training Centre, Mansar, Maharashtra**

In 1990, a great bamboo artisan, Mr. Ravi Valke, started a local organization - Village Enterprise Development for Handicraft Artisan (VEDHA) for imparting training to local people. The present Executive Director, VEDHA, emphasized a greater focus on design and engineering aspects of bamboo products to improve the economics conditions of bamboo workers. The VEDHA established a Bamboo Handicrafts Training Centre (BHTC) in Mansar in 1991. This centre was registered as a vocational training centre in 1997. Since then, it has organized many training programs for bamboo workers in different states. Normally, these training programs are sponsored by different government agencies such as forest departments, NABARD and AFC. The main objective of BHTC is to generate employment to local bamboo workers on sustainable basis. The centre takes the local worker as a trainee for one year and pays Rs 15/day to its trainees. After training period, they are treated as unskilled workers for a period of two years, and during this period, they are paid Rs.30/days. After third year, these workers are treated as skilled workers, and paid on an average Rs.60/day. Local wage rates in the area are Rs40/day. Hence, trainees and unskilled workers are paid wages less than local wages but they have assured job. All the workers at the centre live in close proximity of the centre, and they come every day from their home. Workers work for eight hours. About fifty workers are involved in centres activities directly while about forty workers are involved indirectly.

The centre buys its bamboo from Assam and Kokan and Kolahapur areas of Maharashtra, and not from local area. One of the reasons of buying bamboo from outside is the bamboo quality preferred by the centre. The centre focuses on speciality such as lampshade, office material, paperweight, photo frame, tea coaster, and filing covers etc. The centre also supplies furniture but only on demand. The centre produces only quality products, but of different qualities. For example, lampshades produced by the centre in the past varied in prices from Rs300 to Rs.7.500. The monthly production of the centre is of the order of Rs.100,000.

The centre has used different marketing strategies over the time. In the beginning, they used to visit the big consumers and make demonstrations, and also participated in exhibitions. In

the second round, they started dealerships in Pune, Bombay, Hyderabad, and some cities in Madhya Pradesh. Next, some private parties started contacted them and placing the orders. These parties export their products. Recently, the centre approached the government departments for their product, and the centre has received few orders from government departments specifically for furniture.

### A Lampshade Made Out of Bamboo by Local Bamboo Artisan



## Appendix 3

### Bamboo Workers in a Model Village of Kohlitola, Maharashtra

Kohlitola, like other villages of Maharashtra, also welcomes with two statues one of Lord Budha and other of Dr. Bhimrao Ambedkar at the entrance of the village. The village Kohlitola was previously a part of village Chhurchhari, and was named as Kohlitola in 1989. The new village was identified as Adarsha Kohlitola Gram Panchayat in 1995 and the village is now known as Adarsha Kohlitola. The entire process, of making a Adarsh (model) village, could be achieved due to hard work of its Sarpanch, Mr. Jeevan Lal Lanje, in 1993. The Sarpanch was re-elected in the election of Sept. 1995.

The process of model village started with four commitments by villagers: **1. Nashabandi** (non-alcoholism); **2.Nashbandi** (family planning operation); **3.Charai bandi** (no grazing); and **4.Kurar bandi** (no illicit felling) in 1993. These commitments have been implemented successfully over the years. On identification of the village as model village and implementation of these four commitments, the government of Maharashtra has supported many programs in the village. These programs can be grouped in to three categories: construction works, welfare activities, and constructive programs.

Numerous construction activities have been taken up since 1993, and Jawahar Rojgar Yojna (a central govt. scheme) has been the main funding source for these construction works. Some of these works have been construction of four community wells and three community ponds in 1993, village road in 1994; Kanji (a shelter for livestock) house, village drainage system, intra-village road, and roads from village to agricultural fields in 1995; school building and building for anganwadi (women and child welfare) in 1996; village entrance gates in 1997; individual houses for 35 families in the year of 1996-97, and community temple in 1998 and 1999. Similarly, many welfare activities such as sanitation program, electrification, educational & cultural programs, livestock drinking water, awareness programs (Yuvotsav, Durgotsav, Ganeshotsav, etc.), vaccination against contagious diseases, community shop under public distribution scheme, and prohibition of illicit activities and business are in place.

## An Entrance Gate to the Model Village of Kohlitola, Maharashtra



In addition, four constructive programs, all related to forestry, joint forest management, social forestry program on communal land, plantation on private land, and nursery establishment are also being implemented in the village. Gram Panchayat collects different types of taxes from beneficiaries of these programs, and 90 % of all taxes remains with the Gram Panchayat for financing of further and ongoing activities, and only 10 % goes to the state government. Local people give the credit of this successful venture of model village to the present Sarpanch Mr. Jeevan Lal Lanje, and he is now known as **Anna Hajare of Vidarbha**<sup>1</sup>.

However, the creation of a model village had an adverse impact on bamboo-workers of the village. Before 1993, initiation of the idea of model village, nearly 30 percent of the families were engaged in bamboo works either in collection of bamboo from forest or in

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<sup>1</sup> Mr. Anna Hajare is famous for social worker in Maharashtra and in India also. However, Kohlitola is situated in the Vidarbha (a socio-historical area of Maharashtra). Mr. Anna Hajare gave the above four dialogues Nashabandi, Nashbandi, Charaibandi & Kurarbandi.

manufacturing bamboo items. These families were illegally harvesting bamboo from forest. Now, as an outcome of model village, illegal harvesting is totally banned. As a result, bamboo is not available for manufacturing of bamboo items. So both types of bamboo-dependent families are now totally dependent on outside labor. In addition, there are no sustainable income generation programs for these poor families under Adarsha Gram Panchayat activities. According to these families, model village activities are very useful for bourgeois but not beneficial for deprived or weaker sections. Hence, bamboo workers are sufferers from the program of ideal village.

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