

# AGARBATHI: A BAMBOO-BASED INDUSTRY IN INDIA

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## FOREWORD

**B**amboo provides the base for a broad range of rural and semi-urban cottage industries that provide livelihood for the rural poor, particularly home-based workers in the unorganized sector. Such industries generate highly marketable products ranging from chopsticks in several South-East Asian countries, to incense sticks in South Asia, especially in India. Bamboo-based post-harvest production and processing operations are a source of remunerative employment to poor women and other disadvantaged members of the rural society. They also lend support to domestic economy as well as the export sector of developing countries.

By providing off-farm income generation options, these bamboo-based livelihood systems frequently absorb surplus agricultural workers – mainly the rural poor who do not have regular on-farm employment. The production of agarbathi (incense sticks) spreads across rural and semi-urban households. In India, the industry is estimated to provide income to 0.5 million people, most of whom are contract or sub-contract labourers employed by small-scale processing enterprises. Although not stable throughout the year, the daily income of an agarbathi worker often exceeds the minimum daily wage earned by an agricultural worker.

A large number of opportunities and constraints are associated with this bamboo-based industry, which is profitable and promises to remain so in the future. Several of these are yet to be adequately addressed by the development community. Considering this, INBAR commissioned Professor H.G. Hanumappa to carry out a field work and report on these issues. This report provides the basis for an operational strategy for this bamboo-led industry. It also indicates a number of areas where INBAR's experience and expertise in development-led research on bamboo - together with timely intervention by government agencies, non-government organizations, industry associations and the private sector – can make a difference for the industry.

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## INTRODUCTION

**A** garbathis (incense sticks) form part and parcel of the traditional Hindu practice of offering prayers in temples and other places of worship. In modern days, perfumed sticks are also used in houses and in other public places as air-freshners and/or mosquito repellents. The demand for agarbathi is increasing both in the domestic and export markets because of the improvement in quality and increase in the types of products. India is the largest producer of agarbathis in the world.

The origin of agarbathi-making as a cottage industry can be traced to Thanjavur region of Tamil Nadu from where it spread to the neighbouring state of Karnataka, which currently is the largest producer in India, and to a lesser extent to Andhra Pradesh, Gujarat and Bihar. Besides providing employment to unskilled women and children, in recent years, agarbathi has increasingly become a significant foreign exchange earner for the country. Under the liberal economic policies of the Government, the agarbathi industry has potential to expand its global market.

Although this study is based on information collected from secondary sources, field verifications have been carried out to substantiate the information available in literature. Bangalore was the main site for the study, and random contacts were established with agarbathi manufacturers, intermediaries, primary and secondary processors, traders and consumers elsewhere.

The study highlights the major characteristics, potentials and constraints of this bamboo-based industry in South India. For the benefit of the government policy makers and industry, the policy and socio-economic issues prevailing in this sector are also reviewed and areas for suitable interventions identified.

## OVERVIEW

Industrial development in India has occurred mostly to meet increasing urban consumer needs and to support the growth of the vital agricultural sector. The traditional home based enterprises have also been simultaneously experiencing steady growth, primarily because of the influence of market forces and also because of multiplier effects. Cottage industries have slowly changed to rural cottage or semi-urban micro-enterprises with limited assistance from government. Agarbathi making is one such industry. It has responded well to increased demand for its products both in rural and urban areas, mainly because of the continued availability of cheap labour force dominated by women and children. At the same time, greater advertising costs and quality improvement have pushed up the prices.

Agarbathi industry is gradually developing a wider base. Of the total domestic sales of Rs 7.1 billion (approx. US\$198 million) in 1989/90, South India accounted for 35%, West 30%, North 18% and East 17%. Almost two-thirds of consumption took place in rural areas (61.23%). The poor (low-income group) purchases about 46% of the value of the agarbathi compared with the higher income customers who buy 54%. However, categorizing purchases into five income classes shows an inverse relationship between income and the purchase of agarbathi. Existence of negative income and price elasticity may be in play. The factors influencing purchasing decisions are: the quality, brand name preference and cost.

Rising demand for the products and earning of hard currency has led the agarbathi industry to orient itself increasingly towards exports. Total exports have increased by 266%, from Rs 1.5 billion (approx, US\$42 million) in 1989-90 to Rs 4 billion (approx. US\$112 million) in 1993-94, More than 800 registered and 3000 unregistered units currently exist in the country and only up to 10% of these, mostly in Karnataka, are engaged in export trade.



Fig. I: A young woman engaged in rolling agarbathi

### **CHARACTERISTICS OF THE INDUSTRY**

The agarbathi industry in India operates in the informal sector. The enterprises are located both in rural and urban areas. The labour force engaged is largely unorganized, although some workers, especially those working for large establishments and particularly in Bangalore, receive some of the social security benefits enjoyed by their counterparts in organized private undertakings. Manufacturing is done on a piece-meal basis, with individual families being contracted to assemble' agarbathi sticks being the most common mode (Chart 1).

### **RAW MATERIALS AND SOURCES**

The major raw materials used in the agarbathi industry are bamboo, wood charcoal and processed perfumes. These are collected through contract labour system, which is widespread in the unorganized sector and leads to wide differences in wages because of the differences in minimum wage that exist among different states. Moreover, since families are contracted and agarbathi workers in these families are mostly women, some child labour input occurs, mainly to assist the family business (Figures 2, 4 & 13).



Fig. 2: School girls assisting the family in agarbathi rolling during their leisure time

Essentially, agarbathi requires the stick, a paste based on jigat powder (an adhesive-like substance made from powdered bark of the *Maclilus makarantha* tree), charcoal powder, and a series of natural products, in various combinations, to provide the fragrance (Figures 3 & 4).



Fig. 3: Weighing of jigat powder for preparation of paste

Bamboo is the preferred species for making sticks, but timber from several other species are used as substitute. In 1989-90, the preparation of the sticks alone involved about 30 million workdays. "Rolling" the sticks to glue on the incense paste and incorporate charcoal powder (the end-product of rolling is "non-masala" sticks) also employs a large labour force. The raw materials - sticks, paste and charcoal - are provided by entrepreneurs and the rolling is done largely at homes. Rolled sticks are purchased in units of 1000 (Figures 5 & 6).



Fig. 4: Jigar and charcoal powder are mixed for preparing the thick paste for rolling agarbathi sticks



Fig. 5: Air and sun drying of agarbathis



Fig. 6: Dried agarbathis (masala) ready for blending with perfumes

Addition of the incense, to make “masala” agarbathis, is usually done in factories owned by micro-enterprises (Figure 7 & 8). The ratio of labour is approximately 80% home-based to 20% factory-based. Home-based labourers are linked to factories through local business units,



Fig. 7: Mixing of perfumes



Fig. 8: Testing of mixed perfumes



Fig. 9: Preparation for rolling paper tubes for packing the agarbathis



Fig. 10: Distribution of rolled paper tubes

Finished agarbathis are packed in paper or cardboard tubes. Usually paper from printing presses or cardboard is supplied to labourers under tie-up arrangements to produce the requisite packaging (Figures 9-12).

Previously, bamboo required for making the sticks was available from the Western Ghats. Currently, most of it comes from North-East India. *Macclilus makarantha*, the source for Jigat is rapidly decreasing in South India (where main manufacturing sites of agarbathis are located) and is increasingly being obtained from the northern states such as Uttar Pradesh. Charcoa is largely from *Prosopis juliflora*, which mostly comes from Tamil Nadu.

The cost of these basic ingredients and the labour to produce the raw agarbathis accounts for only 10% of the cost of finished agarbathis. Three times that cost represents the perfumery ingredients of which two-thirds are imported. The various blending and individual ingredients are generally treated as "trade secrets".

Table 1 estimates the current and future demand for raw materials. This has to be viewed against the current and potential shortages of bamboo, which is one of the main raw material components of agarbathi (INBAR 1994).



Fig. 12: Final product with different brand names

Table 1. Current and future demand for the major raw materials of agarbathi industry in India

Item	Present Requirement (tonnes/year)	Requirement in year 2000 (tonnes/year)
Jigat <sup>1</sup>	8,000	11,700
Bamboo	8,500	12,405
Charcoal <sup>2</sup>	5,000	6,885
Spentwood	1,870	2,805
Whitechips	575	862
Halmaddi	615	922
Aromatic resins	2,100	3,150
Aromatic roots	3,331	4,996
Aromatic leaves	4,810	7,215
Aromatic buds & flowers	1,611	2,417
Aromatic wood	4,405	6,607
Aromatic fruits, nuts & seeds	220	330
Animal & marine products	150	225
Natural oils	30	45
Balsam	12	18
Loban (gum benzoin)	5,000	7,000
Other items	400	600

Source: AIAMA 1992.

Notes:

1. Trees such as *Mesua makamtha* which are the major source of 'jigat' have become rare in South India and therefore are being supplemented by supplies from other parts of the country.

2. *Prosopis juliflora*, a good source for charcoal, is available from non-agarbathi producing states such as Uttar Pradesh and Rajasthan. However, shipping costs from the North to the South would add to costs and create uncertainty of supply.

**Table 2. Purchase of agarbathi in India by different income groups**

<b>Annual Income Group (In Rs.)</b>	<b>Sticks purchased Number (in million)</b>	<b>%of total sales</b>	<b>Value of purchase in million Rs</b>	<b>%of total sales</b>
up to 12,000	69,188	47	3,264	46
12,001 - 25,000	45,635	31	2,200	31
25,001- 40,000	22,081	15	1,064	15
40,001 - 56,000	5,888	5	355	5
Above 56,000	4,416	3	213	3
Total	1,47,208	100	7,097	100

Source: NCAER 1990

**Table 3. Agarbathi sales by geographic regions and rural/urban sectors (figures in parenthesis indicate percentage of nationwidesales)**

<b>Region</b>	<b>Rural (%)</b>	<b>Urban (%)</b>	<b>Total (%)</b>
North	64 (19)	36 (17)	100 (18.3)
South	61 (35)	39 (35)	100 (34.7)
East	64 (18)	36 (16)	100 (17.6)
West	58 (28)	42 (32)	100 (29.5)
All India	61 (100)	39 (100)	100 (100.0)

Source: NCAER 1990

### **PRODUCTION AND CONSUMPTION PATTERNS**

A market survey by the National Council of Applied Economic Research (NCAER) put the total quantity of agarbathi produced in the country at 147 billion sticks, valued at around Rs. 7 billion (US\$196 million) (NCAER 1990). The distribution of the consumption is skewed in favour of the lower income group, which earns less than Rs 25,000 (US\$700) per year but consumes a little over two-thirds of the production. The highest income group, with above Rs, 56,000 (US\$1,570) of annual income, purchases only 3% of the production (Table 2).

The consumption is also highly concentrated in rural areas (61% of the total consumption). The trend is similar throughout the country with southern and eastern regions reporting 64% consumption each in their rural areas (Table 3).

## **COST STRUCTURE**

There are two stages involved in the production of agarbathi. One stage involves the production of non-perfumed (non-masala) agarbathi, and the second entails the production of perfumed (masala) agarbathi. The costs of production can also be disaggregated by these two stages as labour costs are significantly different in these two stages,

Non-perfumed agarbathis are generally produced at home through the family contract system and takes up to 80% of the total labour required; its share in the total production cost, however, is about 10% in preparing raw agarbathis (Table 4). The addition of perfumes is carried out in factories and takes about 20% of the total workdays required for the production and, along with packaging, accounts for, about 60% of the production cost. Another 20% of the cost is incurred in marketing (Table 4).

**Table 4. Cost of production, packaging and marketing of agarbathi**

Item *	Percentage of the total
Raw agarbathi	10
Perfumes	30
Packaging	30
Marketing	20
other	10

\*Note † Includes materials and labour.

Packaging is one major variable. Both the input costs and the value of the output differ from season to season and from place to place. This is because the materials are mostly purchased as residues from other industries.

## **EMPLOYMENT SPECTRUM**

Agarbathi manufacturing is classified as a small-scale industry. Although there are bureaucratic hurdles that investors have to go through - such, as the procedures for getting licenses and tax benefits - the low capital requirement and simple technology that characterize this industry make it easy to establish units in rural or semi-urban areas. It is a highly labour-intensive industry and is estimated to be directly engaging about 500,000 people, mostly women and children (Figure 13).

There are also cultural and ethnic factors associated with the employment structure of the industry. Families from the poor and minority communities from Tamil Nadu and neighbouring states are found to be predominantly engaged by the industry.

The packaging and processing are particularly suitable to women and unemployed in both rural and urban areas since these provide opportunities for labourers seeking self-employment and piece-meal work. While adult labourers earn Rs 70.100/day, children earn Rs 30 to 50/day depending on the time spent and their efficiency.

Over the years, the employment characteristics of the industry have changed. Also the agarbathi industry is gradually becoming a national industry. In Bangalore, considered the agarbathi capital of India, more entrepreneurs from Andhra Pradesh and North India have set up agarbathi businesses than the local people. Workers are also increasingly coming from the adjoining states to replace the traditional labour from Tamil Nadu and Karnataka. Traditional labourers - Muslim women - are gradually shifting to the more lucrative garment industries,

There is no requirement for electrical power in the industry which considerably reduces work-related hazards and dependency on



Fig. 13: Some children engaged in rolling non-masala sticks



erratic power supplies. The industry, in fact, is better known as the 'pavement industry' since most of the non-masala agarbathi sticks are processed on pavements and roads in front of homes (Figure 14).

Fig. 14: Women rolling agarbathi on the pavement outside their homes

## **MAJOR PROBLEMS FACED BY THE INDUSTRY**

**D**emand for agarbathi sticks is continuously increasing both in domestic and export sectors. With the gradual abolition of license and permit systems under the new economic liberalization policy of the state and central governments, the future prospect for growth and diversification of the industry looks bright. According to a rough estimate, the US market alone is worth \$200 million.

The problems and constraints faced by the industry are related to the following:

1. Raw materials
2. Institutional and policy aspects
3. Advertising and marketing costs
4. Scale of operation

### **RAW MATERIALS**

Raw materials are getting scarce and distances involved in transportation are increasing, thus raising the total cost of production. Currently, bamboo comes mostly from North-East India and as a result, the wholesale and retail prices of bamboo culms are rising. Similarly jigat and charcoal are becoming scantier, and hence costlier, as traditional and local sources are fast drying up.

### **INSTITUTIONAL AND POLICY ASPECTS**

#### **Policy issues**

Taxes on manufacturing establishments are arbitrary, and small manufacturers are frequently harassed and penalized by the authorities. Taxation is done on an ad hoc basis: not only is there a sales tax on the finished product, but most of the raw materials are also taxed. The burden of taxation is more telling in the case of perfumes which are imported.

The absence of acceptable industrial rules also causes problems. For example, except for Karnataka, no other state has brought agarbathi manufacturing under the purview of the Factories Act.

#### **Labour shortage**

Shortage of labour, specifically shortage of workers with experience in the industry, is hampering further development of the agarbathi industry towards improved quality and export growth. Karnataka is a case in point. Large-scale emergence of the garment sector in major urban areas such as Bangalore has created a major shift of the traditional labour force to the garment industry, forcing the agarbathi industry to operate with inexperienced workers. This has led to

some manufacturers shifting their operations to neighbouring states such as Andhra Pradesh and Tamil Nadu.

### **Child labour**

The issue of child labour in the industry needs to be firmly addressed. A large number of children work full- or part-time in the industry to supplement their family's income. International opinion and norms strongly discourage international trade in products manufactured using child labour. At present, statistics are not available as to the part-time input by children versus any exploitative situation which may exist in the industry.

### **Credit constraints**

Agarbathi making units, although categorized under the Small Industry Act, do not easily qualify for subsidized or regular bank loans owing to various reasons. One of the commonest reasons is the laxity of bank officials which causes considerable delay in sanctioning loans to set up a small enterprise. Another reason is the difficulty that small manufacturers face in furnishing a collateral that would satisfy the bank officials.

### **ADVERTISING AND MARKETING COSTS**

Agarbathi producers are getting lower returns on their investment owing to their complete dependence on middlemen and wholesalers for marketing. Often 60-70% of the total cost can be due to transportation, marketing and advertising, and retailers are completely at the mercy of agents and wholesalers. Continuously increasing transport costs are especially cutting into profit margins. Means of controlling such costs are lacking because of the nonexistence of cooperatives or an effective association of the agarbathi manufacturers.

### **SCALE OF OPERATION**

The scale of operation can be a major problem to small-scale manufacturers. Larger manufacturers with better access to credit and raw materials, as well as better rapport with tax officials, easily beat the smaller units in competition. The larger units are also partially mechanized, creating better saleable products. Additionally, they sell their products through nation wide networks of distributors, thus reducing the cost of marketing and transportation. As a result, small producers are either producing low-quality products or are closing down their operations altogether. Some units that survive are doing so by catering to the 'niche' markets.

## **CONCLUSION AND RECOMMENDATIONS**

### **IMPROVEMENT IN RAW MATERIALS SUPPLY**

First and foremost there is a need to augment the supply of basic raw materials as demand is fast outpacing supplies, and this is going to worsen in the future. There is no reason at all why bamboo cannot be cultivated locally as a homestead crop, as a part of wasteland development or as a private initiative of the manufacturers through a community of small farmers. The same is true for jigat and charcoal. In the next five years, the increase in demand for raw material supplies will be about 40% for bamboo, 50% for a jigat and 25% for charcoal.

Innovative schemes of social forestry (Rajendran and Hanumappa 1992), particularly for aromatic plants, are also feasible to meet the expected needs. Appropriate policies and a technology transfer mechanism are needed to promote bamboo cultivation as a part of the farming systems practised by general farmers.

Both measures could well reduce the costs of production, However, this will address only about 5% of the basic stick costs and may be 10% of the aroma costs, Nonetheless, a targeted input reduction sustainable into the future is advantageous. The establishment of these alternatives could well come as development interventions from the government, saving major outlay to small manufacturers who lack the collateral for loans, Additionally, large-scale manufacturers should be mandated to organize the raw materials from private farms,

### **POLICY ENVIRONMENT**

#### **Simplified taxation**

Sales tax on agarbathi products needs to be reassessed. The current rate of 8% (in Karnataka the rate was 10% until recently) should be brought down since it is still fairly high. The taxes on raw materials such as bamboo, charcoal, jigat and aromas - which range between 25-90% should also be revised downwards,

#### **Delicensing**

Although the liberal economic policies being adopted by the government are doing away with the inherent bottleneck of obtaining licenses for small rural and cottage industries, the agarbathi industry is still facing long delays in obtaining government permission to start a production unit (average time taken is 3-4 months). Small units with a specified capacity should be freed from licensing formalities.

#### **Development of basic infrastructure**

Government should ensure essential infrastructural facilities to small-scale industries. One example which can be cited is the provision of workshop sheds to facilitate drying of sticks, especially during rainy seasons. Also, tax concessions could help in transportation.

## **MARKETING**

In India, agarbathi, despite recent increases in exports, is still an industry that caters predominantly to the domestic market. However, because of its 'green' label, non-polluting method of processing and, above all, the use of indigenous technology, the incense sticks can be promoted to gain international markets. The current international incense sticks market is valued at US\$1 billion per annum. Gaining an increased share of this fairly large market is possible for the Indian agarbathi industry if proper production and export strategies are adopted. Trade promotion agencies of the government could help the industry in this regard. Also, a systematic market survey by the agarbathi industry would help identify consumer tastes and preferences.

As with all small businesses, entrepreneurs and trading agencies need to be exposed to modern business management methods and philosophies. For example, most of the packaging carried out by the small enterprises is of poor quality and this puts them at a disadvantage right at the start of marketing.

## **RESEARCH AND DEVELOPMENT SUPPORT**

The agarbathi industry is one of the few private sector industries that lacks R & D support. Since this sector has a high potential to increase income and employment of poor and disadvantaged people, public institutions and non-governmental organizations should take up strategic/applied research to address the quality, range of products and other problems faced by the agarbathi sector,

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## APPENDIX: MICRO INSIGHTS (TWO CASE STUDIES)

### AGARBATHI PROCESSING : A FAMILY BUSINESS

F. Arun Kumar (names are fictitious) is a 16-year-old boy, who has passed X Standard and intends to study further. He lives with his parents and sister. His family migrated to Magadi Road in Bangalore. His father works in a private printing press.

Kumar, along with his sister and mother, is engaged in tube making since 1990. Card board, paper and gum are supplied to them by an intermediary who, in turn, purchases the tubes made. Kumar, along with other family members, sorts the papers, prepares gum and makes tubes.

His house is located in a congested by-lane and hence, the tubes are spread on the road for drying. Depending upon the demand for the tubes, the family organizes its work.

According to Seethalakshmi, Kumar's sister, each worker can earn about Rs. 50 a day. During peak summer months one labourer can prepare up to 2000 tubes per day. The finished tubes are handed over to the agent. Many times, the wages are paid after one month of supplying of tubes. However, during local festivals, advance payments are taken from the agents. Later, these are adjusted in the wages.

Kumar says that if contacts are developed with agarbathi manufacturers, tubes can be supplied directly to them. Such an arrangement would fetch a better price than what is paid through tie-up arrangements with intermediaries.

## AGARBATHI MANUFACTURING: A MICRO-ENTERPRISE

R. Nagaraj, 50 years old, is a Tamil migrant engaged in agarbathi making at New Basaveswaranagar in Bangalore. His forefathers were agriculturists in a drought-prone district of Tamil Nadu. Nagaraj migrated to Bangalore some 25 years ago.

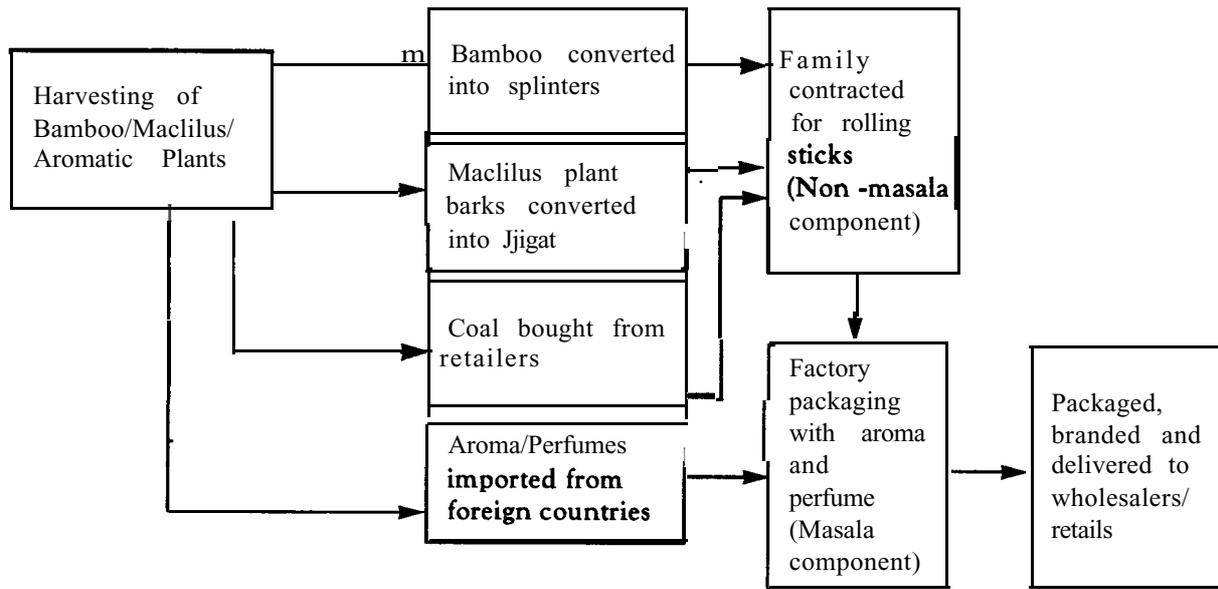
Nagaraj, besides manufacturing agarbathis at home, supplies raw materials like charcoal powder, splinters and jigat to the local agarbathi rollers. In turn, he collects the rolled agarbathis and pays Rs 7-10 per 1000 sticks. He has small warehouses for storing raw materials and non-masala agarbathis. After processing the agarbathis, he bundles and sells them to the local agarbathi dealers.

His two daughters, Latha (17 years) and Kanakavalli (11 years), are school dropouts and help him in manufacturing agarbathi sticks and supplying raw materials. Sometimes, these girls deal with the accounts of the firm. Nagaraj's workers include migrant Tamils and locals.

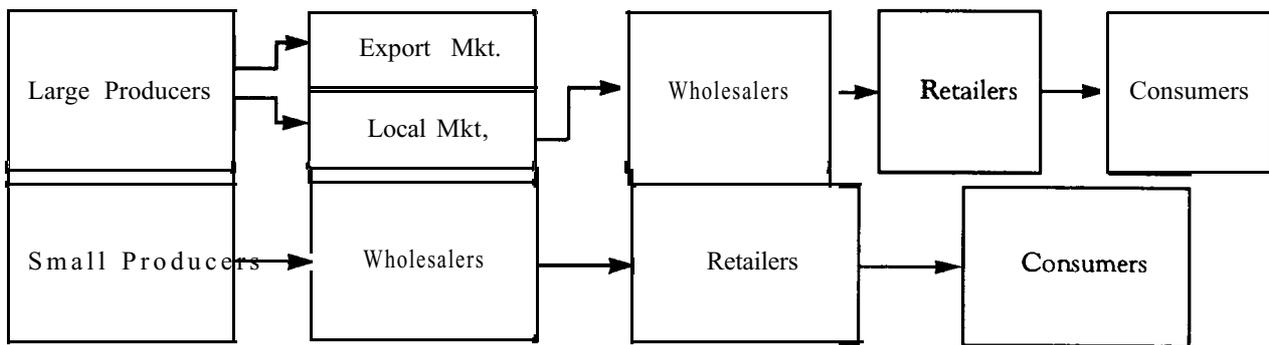
During festivals, Nagaraj provides some gifts like clothes and utensils (as incentive) to the local agarbathi rollers. According to him, such incentives strengthen the workers' confidence.

**Chart 1. PRODUCT AND MARKETING CHAIN OF AGARBATHI STICKS IN SOUTH INDIA**

A. PRODUCTION CHAIN



B. MARKETING CHAIN



*Contributed by Dr. Madhav Karki INBAR Secretariat*

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