

## ***Chapter 6. Markets and end-uses of benzoin: competition from other supplying countries***

The following discussion provides as much information as could be gleaned from field interviews and from published literature. In most cases it was impossible to quantify accurately the amounts of benzoin used in the different segments of the market or in the particular end-uses. Some companies were willing to disclose the approximate quantities of benzoin they use or trade, but since they represent only a few of many such companies it would be misleading to attempt to use them to extrapolate on the volume of usage. Some *typical* usage levels of benzoin as a food additive are found in the literature but without knowing the total consumption of the particular products in question it would, again, be misleading to try and use them to calculate overall benzoin consumption. Even if one did, it would still leave the question as to how much was Siam benzoin and how much was Sumatra benzoin.

One has to resort to trade statistics – for all their deficiencies – to get some quantitative idea of markets and this is done in Chapter 7.

In the source countries, consumption is vastly different in Lao PDR and Indonesia. Use of Siam benzoin in Lao PDR is minimal. A small amount is used for incense purposes in Buddhist temples. In Indonesia, it is not possible to quantify domestic consumption of Sumatra benzoin, but if available production data are to be believed it could be considerable.

### **6.1 Pharmaceuticals**

#### *6.1.1 Pharmacopoeia preparations*

Benzoin has well-established uses in both allopathic and traditional forms of medicine. Several national pharmacopoeias – including the British, Chinese, French, Italian, Japanese, Swiss, Thai and US – describe specifications and tests for benzoin and these are examined in more

detail in Chapter 8. Some specify either Siam or Sumatra types while some include both. The titles of the monographs in the French/Swiss and Italian Pharmacopoeias are *Benjoin du Laos* and *Benzoino del Laos*, respectively.

In the form of a tincture (i.e. a solution in alcohol) benzoin is used as an inhalant with steam for the relief of cough, laryngitis, bronchitis and upper respiratory tract disorders. The British Pharmacopoeia (1993a) specifies the use of Sumatra benzoin in Benzoin Inhalation and Compound Benzoin Tincture (the latter known as Friars' Balsam in the UK). Preparations of the two are shown in Table 6.1.

**Table 6.1 Benzoin inhalation and compound benzoin tincture**

Benzoin Inhalation		Compound benzoin tincture	
Sumatra benzoin	100 g	Sumatra benzoin	100 g
Storax	50 g	Storax	100 g
		Aloes	20 g
Ethanol (96%)	to 1000 ml	Ethanol (90%)	to 1000 ml

The US Pharmacopoeia (1994) also describes a Compound Benzoin Tincture, although it does not specify which type of benzoin is to be used. In addition to the ingredients stipulated in the British version, another natural resin, tolu balsam (derived from trees of the genus *Myroxylon* in Central and South America), is included. The Swiss Pharmacopoeia (1995) describes a simple benzoin tincture using Siam benzoin (*benjoin du Laos*).

Other official and proprietary preparations contain benzoin. These include lotions for the prevention and treatment of cold sores, and a Compound Podophyllum Paint (British Pharmacopoeia, 1993a) which consists of podophyllum resin (derived from the roots of the May apple herb, *Podophyllum peltatum*) and Compound Benzoin Tincture; this is used for the treatment of warts. In most of these, Sumatra benzoin is used. The Italian Pharmacopoeia describes Ondroly-A as a mouthwash for dental disorders; it includes benzoin tincture and menthol in its ingredients.

### 6.1.2 Other medicinal preparations

In Indonesia, benzoin extract (from Sumatra benzoin) is used in Puro1<sup>®</sup>, a well-known antibacterial powder used to freshen and soothe dry skin and ameliorate skin allergies.

In the form of over-the-counter herbal medicines, which are finding increasing use in Western society, benzoin (probably the Sumatra type) is employed in cough and cold remedies and for the topical treatment of itching skin rashes, wounds and ulcers. An ointment containing witch hazel and benzoin is used for treating hemorrhoids. In aromatherapy, benzoin is regarded as soothing and relaxing for tired muscles and can be used either in the form of a massage oil or as an additive to bath water. The Body Shop chain of shops sells a skin lotion containing lavender oil, sandalwood, vetivert, patchouli and benzoin.

Benzoin is believed to be widely used in Chinese medicines. The Chinese Pharmacopoeia (1992) states that benzoin preparations in the form of pills or powders are used to restore consciousness, activate the flow of blood and relieve pain. Typical indications for their use are loss of consciousness due to strokes, infantile convulsions and chest pains. The benzoin specified is that from *Styrax tonkinensis*.

In Bangkok, several pharmacies where benzoin is used in traditional Thai and Chinese medicines were visited during the regional fieldwork. Examples of two prescriptions are given in **Appendix 4**.

Sumatra benzoin is used a little in traditional *jamu* medicines in Indonesia (said to be asthma products) but no other information is available.

## 6.2 Fragrances

### 6.2.1 Incense use

In volume terms, the greatest use of benzoin – the Sumatra type – is for incense purposes. Most commonly, small or crushed pieces of the raw benzoin in block form are simply placed on an open fire, either in the

house or in the place of worship. It is used by several of the major religions, including Moslems and Hindus, and in Chinese temples, and accounts for the fact that the Middle East, North Africa, parts of Asia and the Indian sub-continent are important export destinations for Sumatra benzoin. It is also used in the Catholic and Orthodox churches and is often formulated with other natural fragrance materials such as frankincense, myrrh and storax (derived from *S. officinale*, the sole Mediterranean species of the genus).

The use of benzoin for incense purposes by the large Muslim population in Indonesia is impossible to estimate but could be great. It is said to be especially used in Central Java for ceremonies requiring incense.

One other popular retail outlet for benzoin in Indonesia which involves burning it in the home employs modern packaging and marketing. Ratus Dedes<sup>®</sup>, a small sphere about the size of a golf ball, consists of a mixture of crushed fragrant herbs and tree barks, as well as benzoin. The user sprinkles pieces of it on an open fire to create a fragrance, either to fill the whole room or over which a woman hangs her hair (marketing is aimed at young women).

Extracts of Sumatra benzoin are used to produce fragrances for joss sticks. Sometimes the fragrance formulation is traded internationally and sometimes the joss sticks themselves are exported. India uses fragrances containing benzoin and other natural oils and resins in the manufacture of *agar batti*. Although most imports of benzoin into Malaysia are of block benzoin for direct use as a source of incense, one fragrance compounder purchases benzoin extract for the production of joss stick perfumes. A little benzoin extract *goes a long way*, however, and in the case of Malaysia, less than 100 kg of extract are purchased per year.

### 6.2.2 Formulated fragrances (other than for incense)

The better grades of benzoin are extracted and used in the manufacture of fragrances which are then compounded and employed in a wide range of

end-products. These include personal health care products such as toilet soap, shampoo, body lotion and cream, bath oil, aerosol and talcum powder, and household and other products such as liquid soap, air freshener, fabric softener, washing detergent and other cleaning agents.

Although there is occasional overlap in end-use, such as shampoos, the more expensive Siam benzoin is generally used for fragrances at the higher end of the market, i.e. fine fragrances (perfumes and colognes) and the more expensive soaps. Siam benzoin has a pleasant, rounder, softer fragrance than that of Sumatra benzoin, which is somewhat bitter and harsher on the nose. Extracts of Sumatra benzoin also tend to be darker than those of Siam benzoin and for those products where this is not acceptable (and where the higher price of Siam can be tolerated), Siam benzoin is used in preference. However, Sumatra benzoin should not be regarded simply as a less expensive substitute for Siam benzoin – it may be selected on its own merits for use in perfumes. The Siam type is used to impart a sweet, *oriental* note to the fragrance, while the Sumatra type is used more in *spicy* and *floral-balsamic* fragrances. A few perfumers believe some Sumatra benzoin is adulterated with vanilla to pass it off as the Siam type.

Although benzoin contributes its own fragrance to the final, formulated product, one of its important functions is to serve as a fixative for the other fragrance materials, i.e. it increases the tenacity and prevents loss of the middle and top notes of the more volatile components.

## 6.3 Flavours

### 6.3.1 Food

Benzoin's principal role in foods is as a flavouring agent. The presence of substantial amounts of cinnamates in Sumatra benzoin accounts for its use in the manufacture of chocolate flavours, since cinnamates are also present in cocoa and their compatibility facilitates production of the flavour and improves its properties. The flavours are used in chocolate

bars, ice cream, milk products, syrups and other products. The level of incorporation in the flavour is around 0.1%, while the flavour may represent up to 4% of the final product.

Benzoin is used as a flavouring in baked goods, especially those containing vanilla or cassia, where it also serves to *fix* the other flavours and increase their spiciness. It is especially popular in Denmark and Sweden for this purpose. It is also employed as a glazing agent and tinctures of benzoin are used to confer a luster to chocolate eggs. In syrups it is used to produce turbidity.

In Japan, where it is approved for use, benzoin is employed as a chewing gum base. Some use levels for *Benzoin resin* in foods have been reported and these are shown in Table 6.2.

**Table 6.2 Use levels for benzoin resin in foods**

Baked goods	139.50 ppm
Frozen dairy	75.56 ppm
Soft candy	93.23 ppm
Confection, frosting	1.00 ppm
Gelatin, pudding	93.28 ppm
Non-alcoholic beverages	51.58 ppm
Alcoholic beverages	49.87 ppm
Chewing gum	54.62 ppm

Source: Burdock, 1995

Burdock (1995) also states that Siam benzoin is used in preference to Sumatra benzoin for food flavouring (but must first be de-acidified). It is difficult to reconcile this statement with the views expressed by others that Sumatra benzoin has greater use because of the price-sensitive nature of the flavour industry.

In the United States, benzoin is approved for food use. A tentative specification exists for benzoin as a food additive (FAO, 1992); the main parts of it are identical with the 1994 US Pharmacopoeia monograph on

benzoin (see **Appendix 3**). Like all food additives, benzoin is subject to periodic scrutiny by the Joint FAO/WHO Expert Committee on Food Additives to assess its safety. The most recent statement of the JECFA (FAO, 1996b) reaffirms the position given at their 21<sup>st</sup> session, 1977 (WHO, 1978), namely, that no toxicological data were available and therefore no ADI (acceptable daily intake; an indicator of food safety) was allocated. Although there has never been any suggestion that benzoin poses a health hazard when used in foods, the absence of toxicological data means that it is not included in the permitted list of Codex Alimentarius. If favourable data were forthcoming, and benzoin was included in the Codex, this might open up new markets for benzoin. Conversely, if data indicating harmful effects were submitted, this would have an adverse effect on benzoin. In the absence of any information indicating that this is so, however, this remains speculation.

### 6.3.2 Tobacco

In Indonesia, an important outlet for Sumatra benzoin is in flavouring tobacco. It is still used by some people in Central Java in its raw form – by mixing with tobacco when making their own cigarettes – but it finds wider use in the production of *Manila* flavour. This is used by cigarette companies in the manufacture of Kretek cigarettes (which also contain the well-known clove flavour). Use of benzoin in this way is unique to Indonesia since another ingredient of the *Manila* flavour is coumarin, a substance banned in most other countries. Total consumption of the flavour has been estimated by one industry source at about 250 tonnes, of which 5% is benzoin, i.e. about 12 tonnes. Another tobacco flavour uses benzoin in mixture with tolu and Peru balsams.

Benzoin is also used by the tobacco industry in China and possibly, also, in Viet Nam.

## 6.4 Other uses

Minor applications of benzoin include its use as a glazing agent in polishes and wood finishes. One company in the UK produces a formulation from an alcohol extract of block benzoin and seed lac. This is sold in 1 litre or 5 litre plastic bottles to the furniture trade. It is used particularly for traditional furniture. Sales of the product have increased in recent years, reflecting the fashion for this type of furniture, but purchases of benzoin are still very small – just a few tonnes per year by this company – compared with consumption in the major end-use industries.

One brief reference in a report of the Ministry of Forestry (MoF), Indonesia, states that benzoin is used by the porcelain industry.

## 6.5 Competition from other supplying countries

### 6.5.1 Indonesia

#### 6.5.1.1 Scale of production

The problem of quantifying actual Indonesian production of benzoin (as distinct from Sumatra benzoin of commerce, most of which contains damar) was alluded to in Chapter 1, section 1.1. Two widely varying estimates of production illustrate the divergence of views.

An official report (Anon., 1993) gives annual production of benzoin for the years 1990-93 as shown in Table 6.3.

**Table 6.3 Gum benzoin production in Indonesia<sup>a</sup>, 1990-1993 (tonnes)**

1990	1991	1992	1993 <sup>b</sup>
4,416	4,431	4,454	5,782

Notes: a: North Tapanuli, North Sumatra

b: At July 1993

Source: MoF, 1993



It is not clear how these estimates were arrived at, and unless there is a far higher consumption of benzoin in Indonesia than is thought to be the case, it is difficult to believe that the figures can be so high.

Jafarsidik (1986), in contrast, states that total production of benzoin in 1986 was about 470 tonnes, of which 420 tonnes was from Tapanuli, an order of magnitude lower than the Ministry of Forestry estimate. The source of the data for this second estimate is not stated.

Using the figure of approximately 1,000 tonnes given in Chapter 7, section 7.3.2 for average annual exports from Indonesia, subtracting something for the presence of damar in that figure, and then allowing for domestic consumption, it is possible that real production of benzoin could be of the order of 500-1,000 tonnes, a figure close to Jafarsidik's, at the lower end of the range.

Based on a detailed forest inventory (Anon., 1993b), the area of benzoin trees has been estimated at about 17,500 ha. If a benzoin yield of just over 300 g per tree is assumed, then three trees would yield 1 kg of benzoin, i.e. three million trees would be required to produce 1,000 tonnes of benzoin. If a density of 300 stems per hectare is then assumed, 1,000 tonnes of benzoin would require an area of 10,000 ha of trees (and 4,000 tonnes would require 40,000 ha).

#### 6.5.1.2 Location of production

Collection of benzoin in Indonesia occurs in the Tapanuli region of North Sumatra, mainly in the highlands above 1,000 m to the west and south of Lake Toba. Some production is from wild trees but many families plant *styrax* to provide a source of cash income. Seedlings from mixed stands are transplanted to sites where little or no seedlings occur to provide villagers with a high density and wide range of sizes of benzoin trees.

A network of internal trading exists. Agents purchase different types of benzoin from centers in or near the forest areas such as Tarutung. The

*almonds* type is usually bought in mixed size form and is then sold to larger traders, exporters or processors in Medan or Pematang Siantar, who clean and sort it. Producers of block benzoin in Pematang Siantar either export it themselves or sell to other traders in Medan who export it.

#### 6.5.1.3 Method of production

The trees are tapped during the flowering season, typically between June and September. Prior to tapping, the bark is scraped to remove moss and lichens. Vertical cuts 2-3 cm in length are made, about 30 cm apart, so as to penetrate the wood. On smaller trees, a single line of cuts is made but this increases to two or three on larger trees. Tapping extends to as high as 5 m on the large trees using a similar system of climbing them as that used in Lao PDR. The first tapping is made on trees 7-10 years old and continues annually for some years after. Replanting is recommended when the trees reach 25 years of age.

Harvesting of the benzoin takes place 3-4 months after tapping. Average yields of benzoin are said to be about 0.1-0.5 kg per tree; a good tree produces about 1 kg (Anon., 1993b). A vigorous, medium-size tree produces 0.5 kg *kasar* (white coloured) and 0.5 kg *juru* (dark coloured) (Watanabe *et al.*, 1996).

The methods used in Indonesia for preparing block benzoin have been described elsewhere (Anon., 1993b) and are the same as those used in Singapore.

#### 6.5.1.4 Grades and qualities

In Sumatra, more resin appears to run down the tree, rather than being trapped between the cut bark and the stem, than is the case in Lao PDR, and this results in a large number of different types and qualities of benzoin. Darker, dirtier grades are produced, which do not have Lao equivalents. Sorting yields the following types (Anon., 1993b):

- *Mata besar (big eye)* - first quality

- *Mata halus (soft eye)* - second quality, 1-2 cm, yellowish white
- *Jurus/jurir* - brown with yellowish white pieces, mixed with bark and dirt
- *Tahir* - similar to *jurus*
- *Barbar/Laklak*
- Dust - produced from the other grades

**Note:** Dust and *laklak* are usually mixed with *jurus* and *tahir* before sale.

The grading terms for benzoin almonds of commerce are comparable with the Lao ones, i.e., they are graded according to size: Grade 1 for the larger pieces and Grade 4 for dust/siftings. It is presumed that they are derived from the *mata besar* and *mata halus* types.

*Styrax paralleloneurum* is said to produce the best quality benzoin but in lower yields than *S. benzoin*. Watanabe *et al.* (1996) state that benzoin quality also depends on how it exudes from the tree: *kasar* has a white colour and is sold at a higher price than the coloured *juru*. Benzoin which has congealed on the bark is called *tahil*.

### 6.5.2 Viet Nam

Historically, Siam benzoin produced in Viet Nam was being exported to Europe along with that from Lao PDR at the beginning of the 20<sup>th</sup> century. Production was mainly in the northern provinces and continued into the 1950s; thereafter it has declined, apparently because the price is not sufficiently attractive to induce the people to tap the trees.

#### 6.5.2.1 Scale of production

Exports from Viet Nam of what appears to be benzoin are discussed in Chapter 7. The volumes are small (1-12 tonnes annually) and do not necessarily represent indigenous production. Some benzoin enters Viet Nam from Houa Phan Province, Lao PDR, and is re-exported. Before 1990, when the state import-export company NAFORIMEX had a monopoly on benzoin trade, they claimed to export up to 40-50 tonnes per year, mainly to France. Since then, other companies have been

allowed to export benzoin, which has reduced NAFORIMEX's share. They exported none in 1996 because the price of benzoin from Lao PDR was too high. In addition, a ban on exploiting the protected forest areas where *S. tonkinensis* grows has contributed to the decrease in domestic production.

#### 6.5.2.2 Location of production

The natural distribution of *S. tonkinensis* extends from the northern parts of Lao PDR into neighbouring Viet Nam to the northwest of Hanoi. The only area where benzoin collection is still practised is just west of Viet Tri in Vinh Phu province. There is large-scale planting of *S. tonkinensis* for pulp – over 20,000 ha have been established – but no attempt seems to be made to fit benzoin tapping into the rotation. Presumably, the trees are considered too young for tapping for a year or two prior to felling (or yields are too low).

#### 6.5.2.3 Grades

NAFORIMEX buys mixed benzoin from Lao PDR and then cleans and separates it into seven grades based on size and colour. Grade 1 consists of pale coloured pieces larger than 4 cm. The lower grades are increasingly smaller and darker, until the bottom grade is dust and siftings. Any larger pieces which have suffered from heat and compacted together are also assigned a low grade.

#### 6.5.3 People's Republic of China

It is reported that benzoin is produced in Yunnan Province but no details are known. Plant sources were indicated in Chapter 2, section 2.4. Sophisticated flavour and fragrance industries are developing in China and if benzoin is being produced it seems likely that it is all consumed domestically to meet the needs of an increasingly consumer-oriented and fashion-conscious market.

## ***Chapter 7. International trade***

### **7.1 Introduction**

In contrast to domestic consumption, which is not well documented, information on international trade *is* recorded, although there are some limitations in its coverage. Allowing for the inherent deficiencies of trade statistics, useful information on the size and scope of trade in gum benzoin can be obtained.

Before examining specific data four points should be made. First, unofficial trade, benzoin which does not pass through customs points, does not appear in trade statistics. Some Siam benzoin from Lao PDR enters Thailand in this way and the same may be true for some benzoin shipped into China and Viet Nam.

Second, the data are only as good as the customs' returns allow. If the exporter chooses not to describe his shipment as gum benzoin (or gum benjamin) then it clearly will not be recorded as such and the official returns will underestimate exports. Occasionally, items are misclassified which can result in either inflated or deflated figures. These instances can often be identified by knowing that the origin or destination cited cannot possibly be one relevant to the commodity in question. Use of the misleading term *Resin of frankincense* in Indonesian trade statistics is a potential pitfall when examining Indonesian exports; it can also result in errors in the statistics of importing countries.

Third, and most important, gum benzoin may not be separated in the trade statistics of the country concerned. If it is a major item, then it is usually recorded, but otherwise it is included with similar commodities under a general heading or a *not elsewhere specified* heading. This is the case for member countries of the European Union in the Eurostat statistics and for other countries such as Japan, China, Hong Kong, Philippines, South Korea, Bangladesh and Myanmar. In the English version of the

Chinese *Customs Statistics Yearbook 1995*, for example, import data are separated in the gums and resins section for lac, gum arabic, tragacanth, olibanum/myrrh/dragon's blood, asafoetida and pine resin. *Others not elsewhere specified* (which for 1995 amounted to 14,700 tonnes) acts as a catch-all for other gums and resins; 38 tonnes under this heading came from Lao PDR.

Lao PDR appears as a country of origin under the *Other natural gums and resins* heading in Eurostat data. In the case of Thai imports of gums and resins, gum benzoin is separated, but there are two other headings in which benzoin could be included if it were only described in general terms in the documentation: *Natural resins, unmodified* and *Other natural gums and gum-resins*. In both cases, imports from Lao PDR are generally the most important (although a major proportion of this is assumed to be damar). Calculation of unit values for imports from Lao PDR under these headings confirmed that a low-value item such as damar predominates in the data.

Fourth, and finally, the statistics do not distinguish between the two types of benzoin, Siam and Sumatra, nor between the different forms in which they are traded (e.g. pure almonds vs semi-processed block benzoin vs extracts and resinoids), and this makes it impossible to quantify accurately the movements of the different types in international trade. Even exports from Indonesia include some very small amounts of Siam benzoin, since it is known that this is imported into Indonesia for extraction and subsequent re-export. The fact that block benzoin is produced in Indonesia, and is included in the export data, makes an analysis of that country's production particularly difficult, since only a part of the total export figure represents real benzoin (i.e. resin from *Styrax* spp.).

Despite the above comments, valuable information can be derived from published trade statistics on benzoin and these are discussed following a brief explanation of trading channels.

## 7.2 Overview of international trade

### 7.2.1 Trading channels

Although some Sumatra benzoin is exported directly from Indonesia to the final destinations, most is exported to Singapore. Here, the importer either re-exports it without any material change apart from possible re-packaging, sells it on to other Singaporean traders, or subjects it to some form of processing (the products of which are mostly exported). For Siam benzoin, too, not all exports from Lao PDR go direct to the end-user country, and although the quantities involved are much smaller than for the Sumatra type, both Thailand and Singapore are sometimes intermediate destinations for it.

For both types of benzoin, therefore, much is to be gained by examining export statistics for these intermediate destinations, as well as those for the primary producers, where they exist.

Once the benzoin reaches its final destination it is either sold on to other, smaller traders, processed (extracted) by the same company which imports it, or sold on by the importer to other companies who process (extract) it. These companies either use the extract for their own purposes or sell it to other end-users at home or abroad.

### 7.2.2 Classification of benzoin

In trade statistics, if benzoin is specifically recorded it appears within the gums and resins category of commodities. Most countries use the Harmonised Commodity Description and Coding System (usually known as the Harmonised System) of the Customs Cooperation Council, in which a numbering hierarchy groups commodities according to type, and becomes increasingly more specific as the number of digits increases. A few countries show the SITC number (Standard International Trade Classification, Revision 3) of the United Nations alongside the HS

number. The classification numbers and nomenclature used by the countries whose statistics are analyzed below are shown in Table 7.1.

**Table 7.1 Gum benzoin - Trade classification and descriptions**

	HS number	SITC number	Description
Indonesia	130190130	-	Gum benjamin
	130190250	-	Resin of frankincense
Thailand	1301900027	-	Gum benzoin or benjamin
Singapore	130190100	2922910	Gum benjamin
Saudi Arabia	13019030	-	Benzoin
India	13019004	-	Benjamin ras
	13019005	-	Benjamin cowrie
Malaysia	130190400	292290400	Gum benjamin

### 7.3 Export data - Primary source countries

#### 7.3.1 Lao PDR

Export data were obtained for Lao PDR but it is impossible to judge their reliability or completeness. Destinations are not specified and it was only possible to obtain a reasonably long time series in terms of volumes exported. Figures for the ten years 1987-1996 are shown in Table 7.2.

**Table 7.2 Gum benzoin - Volume of exports from Lao PDR, 1987-1996 (tonnes)**

1987	1988	1989	1990	1991	1992	1993	1994	1995	1996 <sup>a</sup>
70.0	12.0	16.0	27.0	36.6	30.0	40.0	47.5	51.3	32.8

Note: a: Provisional

Source: Statistics Division, Ministry of Commerce, Vientiane

The volumes involved do appear to be in line with rough estimates made by traders and others in Lao PDR.

Limited data were obtained from Lao Customs which include value, as well as volume figures (Table 7.3). It should be noted that the quantities



involved are significantly less than the figures in Table 7.2 suggest. The unit values are consistent, although lower than what might have been expected from the prices of the different grades of benzoin as stated by Lao exporters.

Information provided by the Ministry of Commerce, Vientiane, for the first 9 months of 1996, gives the export of benzoin from Vientiane municipality as 17.9 tonnes, valued at US\$ 189,738 (equivalent to US\$ 10.60/kg).

**Table 7.3 Gum benzoin - Volume, value and unit value of exports from Lao PDR, 1993/94-1995/96<sup>a</sup>** (tonnes; 1,000 US\$; US\$/kg)

	1993/94	1994/95	1995/96
Volume	25.15	26.62	28.35
Value	193.65	206.72	221.86
Unit value	7.70	7.77	7.83

Note: a: Statistical year October-September

Source: Customs, Vientiane

### 7.3.2 Indonesia

Exports of benzoin from Indonesia by destinations, for the period 1987-1995 are shown in Table 7.4 in volume terms and in Table 7.5 in value terms. In an attempt to distinguish different types of benzoin which might be destined for different countries, unit values for each destination were calculated and these are also shown in Table 7.5. Note that from 1996, unfortunately, benzoin is not separated from other unspecified gums and resins in the trade statistics.

The data (Table 7.4) show that annual exports of benzoin in the 9-year period varied between around 800 tonnes and 1,300 tonnes (but block benzoin is included in these figures), with an average of 1,010 tonnes. As indicated above, most (93% on average) is shipped to Singapore. Other, minor, but reasonably regular, destinations include Malaysia, Taiwan, Japan, Switzerland, France and the USA.

**Table 7.4 Gum benzoin<sup>a</sup> - Volume of exports from Indonesia by destinations, 1987-1995<sup>b</sup> (tonnes)**

	1987	1988	1989	1990	1991	1992	1993	1994	1995
<b>Total</b>	<b>1,331</b>	<b>1,157</b>	<b>975</b>	<b>884</b>	<b>1,126</b>	<b>806</b>	<b>825</b>	<b>830</b>	<b>1,156</b>
<i>Of which to:</i>									
Singapore	1,324	1,099	881	773	1,062	735	781	755	1,058
Malaysia	-	7	36	27	17	39	7	17	24
Taiwan	-	21	30	-	13	-	12	16	25
Japan	-	~	~	1	8	6	12	6	12
Hong Kong	-	2	-	16	-	-	-	-	-
India	-	-	-	59	-	~	11	8	10
Pakistan	-	-	-	-	16	-	-	-	-
UAE	-	20	-	-	-	-	2	-	-
Kuwait	-	-	16	-	-	-	-	-	-
S. Arabia	-	-	-	~	1	9	-	~	~
Switzerland	3	4	1	3	3	6	-	4	2
France	1	2	6	2	4	3	-	1	1
UK	-	-	-	-	-	~	-	17	20
Netherlands	1	1	-	-	-	-	-	5	-
Spain	-	-	-	1	1	~	~	~	~
USA	2	1	2	2	1	2	-	1	3
Suriname	-	-	3	-	-	5	-	-	-

Notes: a: Apart from occasional, small amounts which are classified as *gum benjamin*, most is classified as *Resin of frankincense*.

b: Data for 1996 do not separate *resin of frankincense* from *other, unspecified gums and resins*.

-: indicates nil; ~: indicates figures less than 0.5 unit.

Source: Indonesia Foreign Trade Statistics

**Table 7.5 Gum benzoin<sup>a</sup> - Value and unit value of exports from Indonesia by destinations, 1987-1995<sup>b</sup> (1,000 US\$; US\$/kg)**

	1987	1988	1989	1990	1991	1992	1993	1994	1995
<b>Total value<sup>c</sup></b>	<b>1,486</b>	<b>1,279</b>	<b>1,262</b>	<b>1,062</b>	<b>1,671</b>	<b>1,184</b>	<b>1,207</b>	<b>1,399</b>	<b>1,380</b>
<b>(Unit value)<sup>d</sup></b>	<b>(1.12)</b>	<b>(1.11)</b>	<b>(1.29)</b>	<b>(1.20)</b>	<b>(1.48)</b>	<b>(1.47)</b>	<b>(1.46)</b>	<b>(1.68)</b>	<b>(1.19)</b>
<i>Of which to:</i>									
Singapore	1,424 (1.08)	1,197 (1.09)	1,140 (1.29)	911 (1.18)	1,554 (1.46)	1,002 (1.36)	1,125 (1.44)	11 (1.54)	1,123 (1.06)
Malaysia	-	4 (0.54)	27 (0.73)	9 (0.33)	12 (0.70)	32 (0.82)	11 (1.62)	10 (0.61)	23 (0.96)
Taiwan	-	9 (0.43)	13 (0.45)	-	6 (0.44)	-	6 (0.51)	11 (0.68)	24 (0.94)
Japan	-	~ (7.40)	1 (8.81)	12 (9.92)	17 (2.14)	15 (2.31)	21 (1.71)	12 (1.98)	27 (2.21)
Hong Kong	-	7 (3.54)	-	39 (2.51)	-	-	-	-	-

**Table 7.5 contd.**

	1987	1988	1989	1990	1991	1992	1993	1994	1995
India	-	-	-	41	-	2	38	29	37
	-	-	-	(0.70)	-	(15.78)	(3.59)	(3.74)	(3.85)
Pakistan	-	-	-	-	11	-	-	-	-
	-	-	-	-	(0.67)	-	-	-	-
UAE	-	-	-	-	-	-	2	-	-
	-	-	-	-	-	-	(0.91)	-	-
Kuwait	-	-	5	-	-	-	-	-	-
	-	-	(0.31)	-	-	-	-	-	-
S. Arabia	-	-	-	1	12	15	-	9	2
	-	-	-	(7.03)	(15.99)	(1.55)	-	(27.08)	(14.00)
Switzerland	22	35	12	23	16	52	-	40	21
	(8.52)	(8.72)	(8.30)	(8.26)	(5.79)	(8.46)	-	(9.67)	(9.84)
France	17	8	37	8	28	44	-	5	3
	(11.52)	(4.21)	(6.50)	(3.82)	(7.27)	(14.52)	-	(4.74)	(4.17)
UK	-	-	-	-	-	~	-	72	81
	-	-	-	-	-	(6.08)	-	(4.23)	(4.00)
Netherlands	3	9	-	-	-	-	-	32	-
	(5.28)	(8.75)	-	-	-	-	-	(6.47)	-
Spain	-	-	-	2	8	2	4	5	6
	-	-	-	(3.96)	(13.63)	(14.23)	(14.87)	(12.27)	(13.84)
USA	21	7	18	16	8	13	-	6	34
	(8.41)	(5.69)	(8.82)	(6.87)	(5.41)	(7.55)	-	(11.85)	(11.03)
Suriname	-	-	8	-	-	8	-	-	-
	-	-	(3.16)	-	-	(1.60)	-	-	-

Notes: a: See Table 7.4

b: See Table 7.4

c: FOB value recorded in source data in US\$

d: Calculated using exact figures for volume and value from source data rather than those rounded to nearest tonne and 1,000 US\$

Source: Indonesia Foreign Trade Statistics

Annual exports have been valued at 1-1.6 million US\$ (Table 7.5) but it is more instructive to look at unit values. Exports to Europe and the United States are significantly more valuable in value terms than those to Singapore, Malaysia and Taiwan. There are occasionally what appear to be abnormally high or low unit values. These may or may not be genuine but more significance is given here to the consistency of the values for a particular country, and their relative comparison with other countries, than to their absolute magnitude. Based on known usage, the higher grades go for fragrance, flavour and pharmaceutical uses, while the lower grades are destined, on the whole, for incense purposes. Therefore small but higher

value quantities of benzoin extract are included in the statistics. A leading Indonesian producer and world-wide exporter of benzoin extract was an information source. Customers for these extracts include the multinational flavour and fragrance companies, who undertake compounding and sell the formulated products to the end-users, which include their own overseas branches and subsidiaries. This accounts for the appearance of benzoin in the statistics of Switzerland, for example. Since 1990, Spain has been a regular destination for high value benzoin (or its extracts) but the intended end-use, or user, is not known.

Indonesian trade statistics give a breakdown of exports according to port of exportation and the data for benzoin are shown in Table 7.6 for the period 1988-1995.

Belawan, the port of Medan, is seen to be the principal port of export, accounting for 91-98% of exports between 1988 and 1993. However, its share has dropped significantly in the mid 1990s: to 72% in 1994 and 60% in 1995. The balance of trade in 1994-1995 has been taken largely by Batu Ampar, which is understood to be a newly developed port on Batam Island, just south of Singapore.

#### **7.4 Import data - Secondary source countries**

Before discussing exports from secondary source countries, their imports of benzoin are examined to see how well they match up with recorded exports from the primary producers. In the case of Thailand, it is of interest to see what is officially recorded as entering the country from Lao PDR, and in the case of Singapore, to see how well Indonesian export data correlate with Singapore's imports from Indonesia and whether other sources are recorded (e.g. Lao PDR or Viet Nam).

**Table 7.6 Gum benzoin<sup>a</sup> - Volume of exports from Indonesia by port of exportation, 1988-1995 (tonnes)**

	1988	1989	1990	1991	1992	1993	1994	1995
<b>Total</b>	<b>1,157</b>	<b>975</b>	<b>884</b>	<b>1,126</b>	<b>806</b>	<b>825</b>	<b>830</b>	<b>1,156</b>
<i>Of which shipped from:</i>								
<b>Sumatra:</b>								
Belawan	1,057	938	829	1,107	771	773	600	690
Palembang	58	-	-	-	-	-	-	-
Panjang	30	-	-	-	-	-	-	-
Padang/Tl. Bayur	5	2	-	-	-	-	-	-
Jambi	5	-	-	-	-	-	-	-
Batu Ampar	-	-	-	-	-	52	126	439
Medan (air)	~	-	~	~	1	~	~	~
<b>Java:</b>								
Tg. Priok	1	35	-	18	30	-	7	5
Surabaya/Tg. Perak	-	-	54	-	3	-	14	21
Semarang/Tg. Emas	-	-	-	-	-	-	83	1
Jakarta (air)	~	-	~	1	~	-	-	~

Note: a: See note a, Table 7.4

Source: Indonesia Foreign Trade Statistics

#### 7.4.1 Thailand

Volume and value/unit value data for imports into Thailand for the 10 years 1987-1996 are shown in Tables 7.7 and 7.8, respectively. Value data were converted from Thai Baht to US\$ using published historical exchange rates.

**Table 7.7 Gum benzoin - Volume of imports into Thailand by origins, 1987-1996 (tonnes)**

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
<b>Total</b>	<b>7</b>	<b>~</b>	<b>-</b>	<b>-</b>	<b>~</b>	<b>~</b>	<b>~</b>	<b>-</b>	<b>~</b>	<b>~</b>
<i>Of which from:</i>										
Lao PDR	6	-	-	-	-	-	-	-	-	-
Indonesia	1	~	-	-	-	-	-	-	-	-
China, PR	-	-	-	-	~	-	~	-	-	-
Japan	-	-	-	-	-	~	-	-	-	-
UK	-	-	-	-	-	-	-	-	~	-
USA	-	-	-	-	-	-	-	-	-	~

Source: Foreign Trade Statistics of Thailand

Table 7.7 is interesting for what it does not show as much as for what it does. Imports from Lao PDR only appear for 1987 (6 tonnes) and yet

exports of benzoin from Thailand for the same period (see Table 7.10), which are presumed to be of Lao origin, are recorded up to 1995. Apart from Indonesia, imports from all other sources were less than 0.5 tonnes.

The differences in unit value for the imports from Lao PDR and Indonesia (Table 7.8) reflect the differences in price between Siam and Sumatra benzoin. Imports from Japan, the UK and the USA appear to be processed products.

**Table 7.8 Gum benzoin - Value and unit value of imports into Thailand by origins, 1987-1996 (1,000 US\$, US\$/kg)**

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
<b>Total value<sup>a</sup></b>	<b>38</b>	~	-	-	~	~	~	-	<b>8</b>	~
<b>(Unit value)<sup>b</sup></b>	<b>(5.91)</b>	<b>(0.40)</b>	-	-	<b>(0.47)</b>	<b>(26.34)</b>	<b>(0.50)</b>	-	<b>(27.27)</b>	<b>(7.41)</b>
<i>Of which from:</i>										
Lao PDR	38	-	-	-	-	-	-	-	-	-
	(6.80)	-	-	-	-	-	-	-	-	-
Indonesia	~	~	-	-	-	-	-	-	-	-
	(0.38)	(0.40)	-	-	-	-	-	-	-	-
China, PR	-	-	-	-	~	-	~	-	-	-
	-	-	-	-	(0.47)	-	(0.50)	-	-	-
Japan	-	-	-	-	-	~	-	-	-	-
	-	-	-	-	-	(26.34)	-	-	-	-
UK	-	-	-	-	-	-	-	-	8	-
	-	-	-	-	-	-	-	-	(27.27)	-
USA	-	-	-	-	-	-	-	-	-	~
	-	-	-	-	-	-	-	-	-	(7.41)

Notes: a: CIF value in Baht converted to US\$ using following average exchange rates: 25.723 (1987), 25.294 (1988), 25.702 (1989), 25.585 (1990), 25.517 (1991), 25.400 (1992), 25.319 (1993), 25.150 (1994), 24.915 (1995), 25.323 (Jan.-Nov. 1996)

b: Calculated using exact figures for volume and value from source data rather than those rounded to nearest tonne and 1,000 US\$

Sources: Foreign Trade Statistics of Thailand; International Financial Statistics, IMF

### 7.4.2 Singapore

Volumes of imports into Singapore for the 10 years 1987-1996 are shown in Table 7.9.

**Table 7.9 Gum benjamin - Volume of imports into Singapore by origins<sup>a</sup>, 1987-1996 (tonnes)**

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
<b>Total</b>	<b>64</b>	<b>12</b>	<b>33</b>	<b>8</b>	<b>17</b>	<b>15</b>	<b>17</b>	<b>7</b>	<b>61</b>	<b>98</b>
<i>Of which from:</i>										
Thailand	56	6	6	-	3	-	12	-	-	-
India	-	3	24	-	13	13	-	-	-	-
USA	-	-	-	-	-	-	-	-	46	20
France	-	-	-	-	-	-	-	-	5	-
Pakistan	-	-	-	-	-	-	-	-	-	61
Malaysia	-	-	-	-	-	-	-	-	-	8
Others	8	3	3	8	1	2	5	7	10	9

Note: a: '-' does not necessarily indicate nil, but that the particular destination is not specified in the source data; it may be included in *Others*.

Source: Singapore Trade Statistics

It is immediately evident that Indonesia is never cited as a country of origin for Singaporean imports, despite the fact that it is overwhelmingly the major source, and this results in completely misleading figures for total, officially published imports. The volumes recorded are incompatible with Singapore's exports (see below). Although the Singapore Trade Development Board was unable to explain this, it is believed to be due to a protocol negotiated between the two countries during the late 1960s which allows certain commodities (including rubber and pepper as well as benzoin) to be imported into Singapore from Indonesia without being recorded in Singapore's trade statistics.

Figures for all of the source countries shown in Table 7.9 represent re-exports. The years for which Thai imports are recorded agree with those given below for Thai exports into Singapore (Table 7.10), although the volumes are slightly different, more so for 1987. This mismatch between a country's apparent imports from one source and the recorded exports from that source into the country is not uncommon, and not always easily explained. Some discrepancies arise because exports shipped at the end of one year are not recorded by the importing country until the following year. There may also be differences in the heading under which the item falls in the exporting and importing countries.

In view of the deficiencies in the Singaporean import data, values and unit values are not presented here, although they indicate that imports from Thailand, for example, which are likely to be Siam benzoin, are more highly valued than those from India, Pakistan and Malaysia.

## 7.5 Export data - Secondary source countries

### 7.5.1 Thailand

Exports of benzoin from Thailand, and destinations, for the period 1987-1996 are shown in Table 7.10 (volume) and Table 7.11 (value and unit value).

**Table 7.10 Gum benzoin - Volume of exports from Thailand by destinations, 1987-1996 (tonnes)**

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
<b>Total</b>	<b>10</b>	<b>17</b>	<b>6</b>	<b>11</b>	<b>14</b>	<b>3</b>	<b>8</b>	<b>18</b>	<b>6</b>	<b>-</b>
<i>Of which to:</i>										
Hong Kong	1	6	2	7	12	3	-	-	-	-
Singapore	5	5	2	-	~	-	8	-	-	-
Malaysia	-	-	-	-	-	-	-	15	-	-
Indonesia	-	-	-	-	-	-	-	-	6	-
Germany	3	4	2	3	1	-	-	1	-	-
France	1	2	-	1	1	-	~	2	-	-

Source: Foreign Trade Statistics of Thailand.

Exports were erratic, varying from nil in 1996 to 18 tonnes in 1994. The 10-year annual average is approximately 9 tonnes. Hong Kong and Singapore are both likely to be intermediate destinations. The Indonesian figure for 1995 is presumed to be Siam benzoin intended for extraction and so also represents an intermediate destination.

The high unit value of exports to Germany and France suggests that they include a high proportion of the top grades of Siam benzoin.



**Table 7.11 Gum benzoin - Value and unit value of exports from Thailand by destinations, 1987-1996 (1,000 US\$; US\$/kg)**

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
<b>Total value<sup>a</sup></b>	<b>87</b>	<b>163</b>	<b>42</b>	<b>91</b>	<b>111</b>	<b>1</b>	<b>11</b>	<b>56</b>	<b>47</b>	<b>-</b>
<b>(Unit value)<sup>b</sup></b>	<b>(9.04)</b>	<b>(9.67)</b>	<b>(7.60)</b>	<b>(8.41)</b>	<b>(7.89)</b>	<b>(0.50)</b>	<b>(1.37)</b>	<b>(3.17)</b>	<b>(8.14)</b>	<b>-</b>
<i>Of which to:</i>										
Hong Kong	4 (3.98)	39 (6.90)	6 (3.47)	30 (4.36)	76 (6.37)	1 (0.50)	-	-	-	-
Singapore	24 (5.33)	31 (5.99)	10 (6.17)	-	~ (3.42)	-	4 (0.50)	-	-	-
Malaysia	-	-	-	-	-	-	-	3 (0.22)	-	-
Indonesia	-	-	-	-	-	-	-	-	47 (8.14)	-
Germany	38 (13.23)	68 (15.20)	24 (12.22)	44 (14.82)	14 (14.02)	-	-	13 (16.42)	-	-
France	21 (17.08)	24 (16.28)	-	17 (16.75)	20 (20.26)	-	8 (15.35)	40 (19.98)	-	-

Notes: a: FOB value; see note a, Table 7.8

b: See note b, Table 7.8

Source: Foreign Trade Statistics of Thailand

### 7.5.2 Singapore

The volume of exports of gum benjamin (gum benzoin) from Singapore, and destinations, for the 10 years 1987-1996 are shown in Table 7.12.

Annual exports have varied from around 2,800 tonnes (1987) to just over 4,000 tonnes (1996). The annual average is 3,600 tonnes. Since 1990, the source data give both total exports and domestic exports, the latter therefore giving an indication, in the case of benzoin, of the amounts which are processed in Singapore (into block or extract). From 1991 to 1995, the proportion of benzoin exported in processed form was 51% of total exports; it rose slightly to 54% in 1996.

The volumes of benzoin exported are clearly much greater than the exports from Indonesia suggest. Recorded exports to Singapore averaged 940 tonnes for 1987-1995, compared with Singapore exports for the same period of 3,500 tonnes. This can be explained, however, by the considerable amounts of damar which are used in the preparation of

block benzoin, as well as the higher moisture content of the latter compared with benzoin almonds.

The destinations listed in Table 7.12 have been grouped according to geographical region and several features are evident. Most significantly, the data support the statements made by the various traders which were visited during the mission, namely, that the major markets are in the Middle East, India and North Africa, where the benzoin is used for incense purposes. Saudi Arabia is the biggest single market, and may re-export to some smaller Gulf states, but the United Arab Emirates also take significant quantities. In Africa, Djibouti serves as an entrepôt; Morocco, Tunisia and Egypt are other prominent importers. In West Africa, Nigeria is important. In the Indian sub-continent, India and Sri Lanka import large amounts of benzoin, and in Asia, Malaysia is by far the biggest importer. France, Germany and the UK are the biggest markets in Europe.

**Table 7.12 Gum benjamin - Volume of exports from Singapore by destinations<sup>a</sup>, 1987-1996 (tonnes)**

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
<b>Total<sup>b</sup></b>	<b>2,827</b>	<b>3,499</b>	<b>3,945</b>	<b>3,134</b>	<b>3,826</b>	<b>3,873</b>	<b>3,739</b>	<b>3,659</b>	<b>3,411</b>	<b>4,063</b>
<b>Domestic<sup>c</sup></b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>80</b>	<b>1,945</b>	<b>1,987</b>	<b>1,910</b>	<b>1,882</b>	<b>1,731</b>	<b>2,187</b>
<b>Difference</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>3,054</b>	<b>1,881</b>	<b>1,886</b>	<b>1,829</b>	<b>1,777</b>	<b>1,680</b>	<b>1,876</b>
<i>Of which to:</i>										
S. Arabia	819	872	904	662	858	835	735	746	708	869
UAE	135	141	174	145	196	161	328	442	428	268
Kuwait	114	249	120	25	-	-	-	-	36	36
Oman	16	9	21	24	25	16	18	-	12	-
Yemen	-	-	-	15	43	115	129	73	105	160
Yemen, Dem.	-	-	-	17	20	-	-	-	-	14
Jordan	-	-	-	-	74	131	-	37	-	-
Djibouti	283	317	457	340	646	374	405	505	235	366
Ethiopia	-	-	-	-	-	135	36	93	72	162
Morocco	114	209	187	166	165	180	212	176	123	167
Tunisia	84	110	279	195	158	90	117	54	221	118
Egypt	-	180	50	120	59	182	-	144	-	98
Algeria	-	-	-	-	-	-	72	54	-	-
Nigeria	32	26	92	95	89	106	164	36	103	102
S. Africa	-	-	-	-	-	-	-	-	24	37
Other Africa <sup>d</sup>	77	97	94	73	56	90	105	52	-	162

Table 7.12 contd.

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
India	318	378	434	456	370	511	317	260	244	350
Sri Lanka	146	147	205	171	219	223	354	245	285	308
Pakistan	39	29	51	63	51	40	58	38	48	36
Bangladesh	-	-	149	-	-	-	-	-	-	193
Malaysia	248	278	237	204	318	212	368	362	390	307
Taiwan	88	79	90	92	133	104	20	12	39	22
Japan	33	33	49	20	23	12	14	16	22	8
Viet Nam	-	-	-	-	-	-	-	15	20	-
France	80	124	89	88	51	56	73	78	90	72
Germany	26	36	108	41	71	64	53	64	62	79
UK	50	40	54	47	51	40	22	33	15	10
Netherlands	-	4	4	3	12	13	21	13	-	-
Italy	5	6	4	3	4	3	17	-	-	-
Greece	15	18	14	12	12	13	-	-	9	12
Denmark	-	-	-	-	41	40	-	-	-	-
USA	43	38	14	16	19	47	30	26	14	-
Others <sup>e</sup>	62	79	65	41	62	80	71	85	105	107

Notes: a: '-' does not necessarily indicate nil, but that the particular destination is not specified in the source data; it may be included in *Other Africa* or *Others*.

b: Total exports comprise domestic exports and re-exports (but exclude transshipment cargo on through bills of lading or through airway bill).

c: Domestic exports are those of Singapore origin and comprise *primary commodities grown or produced in Singapore and goods which have been transformed, that is processed in Singapore, including those with imported materials*.

d: Includes Benin, 19 tonnes (1987) and 26 tonnes (1988); Sudan, 26 tonnes (1987) and 40 tonnes (1988); and Libya, 38 tonnes (1989), which are specified in source data. Other source data are recorded simply as *Other countries, Africa*.

e: Includes Hong Kong, 5 tonnes (1991); Lebanon, 10 tonnes (1994); and Venezuela, 16 tonnes (1996).

Source: Singapore Trade Statistics

The data in Table 7.12 have been condensed in Table 7.13, which shows the destinations grouped into regions. The percentage of total exports for each year taken by each region is also given.

The Middle East is seen to account for about one third of Singapore's exports of benzoin, with Africa accounting for between a quarter and one third.

**Table 7.13 Gum benjamin - Volume of exports from Singapore, and destinations by region, 1987-1996 (tonnes, %)**

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
<b>Total</b>	<b>2,827</b>	<b>3,499</b>	<b>3,945</b>	<b>3,134</b>	<b>3,826</b>	<b>3,873</b>	<b>3,739</b>	<b>3,659</b>	<b>3,411</b>	<b>4,063</b>
<i>Of which to:</i>										
Middle East	1,084 (38%)	1,271 (36%)	1,219 (31%)	888 (28%)	1,216 (32%)	1,258 (32%)	1,210 (32%)	1,298 (35%)	1,289 (38%)	1,347 (33%)
Africa	590 (21%)	939 (27%)	1,159 (29%)	989 (32%)	1,173 (31%)	1,157 (30%)	1,111 (30%)	1,114 (30%)	778 (23%)	1,212 (30%)
Indian sub-continent	503 (18%)	554 (16%)	839 (21%)	690 (22%)	640 (17%)	774 (20%)	729 (19%)	543 (15%)	577 (17%)	887 (22%)
Asia	369 (13%)	390 (11%)	376 (10%)	316 (10%)	474 (12%)	328 (8%)	402 (11%)	405 (11%)	471 (14%)	337 (8%)
Europe	176 (6%)	228 (7%)	273 (7%)	194 (6%)	242 (6%)	229 (6%)	186 (5%)	188 (5%)	176 (5%)	173 (4%)
USA	43 (1%)	38 (1%)	14 ~	16 ~	19 ~	47 (1%)	30 (1%)	26 (1%)	14 ~	- ~
Others	62 (2%)	79 (2%)	65 (2%)	41 (1%)	62 (2%)	80 (2%)	71 (2%)	85 (2%)	106 (3%)	107 (3%)

Source: Table 7.12

The value of benzoin exports from Singapore for each of the destinations in Table 7.12 is shown in Table 7.14.

**Table 7.14 Gum benjamin – Value<sup>a</sup> of exports from Singapore by destinations<sup>b</sup>, 1987-1996 (1,000 US\$)**

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
<b>Total<sup>c</sup></b>	<b>3,431</b>	<b>4,110</b>	<b>4,265</b>	<b>3,457</b>	<b>4,235</b>	<b>3,878</b>	<b>4,173</b>	<b>4,231</b>	<b>4,754</b>	<b>5,205</b>
<b>Domestic<sup>d</sup></b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>94</b>	<b>2,011</b>	<b>1,867</b>	<b>1,830</b>	<b>2,022</b>	<b>2,327</b>	<b>2,896</b>
<b>Difference</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>3,363</b>	<b>2,224</b>	<b>2,011</b>	<b>2,343</b>	<b>2,209</b>	<b>2,427</b>	<b>2,309</b>
<i>Of which to:</i>										
S. Arabia	1,055	1,068	1,153	721	1,075	888	892	896	890	972
UAE	317	340	268	251	314	271	568	439	569	401
Kuwait	75	184	90	23	-	-	-	-	35	40
Oman	37	22	29	47	40	18	32	-	22	-
Yemen	-	-	-	17	26	116	125	88	133	223
Yemen, Dem.	-	-	-	18	15	-	-	-	-	19
Jordan	-	-	-	-	54	99	-	27	-	-
Djibouti	222	216	327	242	429	219	270	352	181	369
Ethiopia	-	-	-	-	-	97	24	64	66	117
Morocco	120	206	204	198	181	170	183	168	116	174
Tunisia	57	71	192	140	137	59	73	37	225	123
Egypt	-	313	27	68	29	95	-	69	-	74
Algeria	-	-	-	-	-	-	43	37	-	-

Table 7.14 contd.

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Nigeria	25	17	62	72	50	69	114	25	84	85
S. Africa	-	-	-	-	-	-	-	-	34	55
Other Africa <sup>e</sup>	55	77	79	54	50	85	86	50	-	165
India	348	422	495	503	416	431	339	403	531	685
Sri Lanka	110	108	160	130	193	191	284	282	337	378
Pakistan	32	16	31	44	30	28	38	28	33	33
Bangladesh	-	-	27	-	-	-	-	-	-	30
Malaysia	185	217	169	142	254	145	318	403	511	490
Taiwan	80	73	156	130	244	133	49	43	162	83
Japan	52	46	93	37	39	20	20	25	49	18
Viet Nam	-	-	-	-	-	-	-	18	20	-
France	257	270	231	218	124	179	244	238	346	244
Germany	72	87	173	146	157	209	178	211	167	231
UK	146	112	135	123	154	101	64	128	66	30
Netherlands	-	21	15	17	36	45	81	47	-	-
Italy	37	39	29	19	28	18	33	-	-	-
Greece	23	29	24	20	19	25	-	-	20	26
Denmark	-	-	-	-	21	23	-	-	-	-
USA	73	91	42	34	39	68	47	47	26	-
Others <sup>f</sup>	55	65	52	45	81	77	67	107	130	140

Notes: a: FOB value in S\$ converted to US\$ using following average exchange rates: 2.1060 (1987), 2.0124 (1988), 1.9503 (1989), 1.8125 (1990), 1.7276 (1991), 1.6290 (1992), 1.6158 (1993), 1.5274 (1994), 1.4174 (1995), 1.4109 (Jan.-Nov. 1996)

b: See note a, Table 7.12

c: See note b, Table 7.12

d: See note c, Table 7.12

e: Includes Benin, US\$12,000 (1987) and US\$18,000 (1988); Sudan, US\$17,000 (1987) and US\$25,000 (1988); and Libya, US\$32,000 (1989), which are specified in source data. Other source data are recorded simply as *Other countries, Africa*.

f: Includes Hong Kong, US\$31 000 (1991); Lebanon, US\$18 000 (1994); and Venezuela, US\$18 000 (1996)

Sources: Singapore Trade Statistics; International Financial Statistics, IMF

The total value to Singapore ranged from US\$ 3.4 million in 1987 to US\$ 5.2 million in 1996. Saudi Arabia remains the major market in value terms, but India, which was third behind Djibouti in volume terms, is the second biggest market in value. The relatively high value of exports to France (and other European destinations) compared with the modest volumes involved are particularly notable. The value data in Table 7.14 are summarized by region in Table 7.15.

**Table 7.15 Gum benjamin - Value of exports from Singapore, and destinations by region, 1987-1996 (1,000 US\$; %)**

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
<b>Total</b>	<b>3,431</b>	<b>4,110</b>	<b>4,265</b>	<b>3,457</b>	<b>4,235</b>	<b>3,878</b>	<b>4,173</b>	<b>4,231</b>	<b>4,754</b>	<b>5,205</b>
<i>Of which to:</i>										
Middle East	1,484 (43%)	1,614 (39%)	1,540 (36%)	1,077 (31%)	1,524 (36%)	1,392 (36%)	1,617 (39%)	1,450 (34%)	1,649 (35%)	1,655 (32%)
Africa	479 (14%)	900 (22%)	891 (21%)	774 (22%)	876 (20%)	794 (20%)	793 (19%)	802 (19%)	706 (15%)	1,162 (22%)
Indian sub-continent	490 (14%)	546 (13%)	713 (17%)	677 (20%)	639 (15%)	650 (17%)	661 (16%)	713 (17%)	901 (19%)	1,126 (22%)
Asia	317 (9%)	336 (8%)	418 (10%)	309 (9%)	537 (13%)	298 (8%)	387 (9%)	489 (12%)	742 (15%)	591 (11%)
Europe	535 (16%)	558 (14%)	607 (14%)	543 (16%)	539 (13%)	600 (15%)	600 (14%)	624 (15%)	599 (13%)	531 (10%)
USA	73 (2%)	91 (2%)	42 (1%)	34 (1%)	39 (1%)	68 (2%)	47 (1%)	47 (1%)	26 (1%)	-
Others	55 (2%)	65 (2%)	52 (1%)	45 (1%)	81 (2%)	77 (2%)	67 (2%)	107 (2%)	130 (3%)	140 (3%)

Source: Table 7.14

It can be seen by comparing the percentages of total exports taken by the different regions in volume (Table 7.13) with those in value terms (Table 7.15) that although Europe only accounts for around 5-6% of Singapore's benzoin exports in quantity, this share increases to around 14-16% in value terms. Conversely, in most years Africa has accounted for approximately 30% of exports but this drops to around 15-20% when considered in value terms.

Unit values have been calculated for each of the destinations and these are shown in Table 7.16 (individually) and Table 7.17 (by region).

**Table 7.16 Gum benjamin - Unit value of exports from Singapore by destinations, 1987-1996 (US\$/kg)**

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
<b>Total<sup>a</sup></b>	<b>1.21</b>	<b>1.17</b>	<b>1.08</b>	<b>1.10</b>	<b>1.11</b>	<b>1.00</b>	<b>1.12</b>	<b>1.16</b>	<b>1.39</b>	<b>1.28</b>
<b>Domestic<sup>b</sup></b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>1.18</b>	<b>1.03</b>	<b>0.94</b>	<b>0.96</b>	<b>1.07</b>	<b>1.34</b>	<b>1.32</b>
<b>Difference</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>1.10</b>	<b>1.18</b>	<b>1.07</b>	<b>1.28</b>	<b>1.24</b>	<b>1.44</b>	<b>1.23</b>
<i>Of which to:</i>										
S. Arabia	1.29	1.22	1.28	1.09	1.25	1.06	1.21	1.20	1.26	1.12
UAE	2.35	2.41	1.54	1.73	1.60	1.68	1.73	0.99	1.33	1.50
Kuwait	0.65	0.74	0.75	0.93	-	-	-	-	0.96	1.10
Oman	2.31	2.48	1.37	1.95	1.60	1.15	1.79	-	1.82	-
Yemen	-	-	-	1.10	0.61	1.01	0.97	1.21	1.27	1.39
Yemen, Dem.	-	-	-	1.04	0.75	-	-	-	-	1.37
Jordan	-	-	-	-	0.73	0.76	-	0.73	-	-
Djibouti	0.79	0.68	0.71	0.71	0.66	0.58	0.67	0.70	0.77	1.01
Ethiopia	-	-	-	-	-	0.72	0.67	0.69	0.91	0.72
Morocco	1.05	0.98	1.09	1.19	1.09	0.94	0.86	0.96	0.95	1.04
Tunisia	0.67	0.64	0.69	0.72	0.86	0.65	0.62	0.69	1.02	1.04
Egypt	-	1.74	0.53	0.57	0.49	0.52	-	0.48	-	0.75
Algeria	-	-	-	-	-	-	0.60	0.69	-	-
Nigeria	0.77	0.67	0.67	0.76	0.57	0.65	0.69	0.69	0.82	0.83
S. Africa	-	-	-	-	-	-	-	-	1.41	1.49
Other Africa <sup>c</sup>	0.72	0.79	0.85	0.73	0.90	0.95	0.73	0.97	-	1.02
India	1.09	1.12	1.14	1.10	1.12	0.84	1.07	1.55	2.18	1.96
Sri Lanka	0.75	0.73	0.78	0.76	0.88	0.86	0.80	1.15	1.18	1.23
Pakistan	0.82	0.57	0.61	0.69	0.58	0.71	0.65	0.74	0.69	0.91
Bangladesh	-	-	0.18	-	-	-	-	-	-	0.16
Malaysia	0.74	0.78	0.71	0.70	0.80	0.68	0.86	1.11	1.31	1.60
Taiwan	0.91	0.92	1.74	1.42	1.83	1.27	2.44	3.55	4.14	3.77
Japan	1.57	1.40	1.90	1.85	1.71	1.64	1.41	1.55	2.24	2.21
Viet Nam	-	-	-	-	-	-	-	1.18	1.02	-
France	3.21	2.18	2.60	2.48	2.44	3.19	3.35	3.06	3.85	3.39
Germany	2.76	2.43	1.60	3.57	2.22	3.27	3.36	3.29	2.69	2.92
UK	2.92	2.80	2.51	2.62	3.03	2.53	2.93	3.87	4.37	3.05
Netherlands	-	5.22	3.72	5.70	2.99	3.45	3.86	3.63	-	-
Italy	7.41	6.54	7.31	6.25	6.95	6.14	1.93	-	-	-
Greece	1.55	1.60	1.72	1.70	1.59	1.94	-	-	2.27	2.19
Denmark	-	-	-	-	0.51	0.57	-	-	-	-
USA	1.70	2.39	3.00	2.13	2.04	1.45	1.57	1.81	1.86	-
Others <sup>d</sup>	0.89	0.82	0.80	1.09	1.25	0.95	0.94	1.26	1.24	1.31

Notes: a: See note b, Table 7.12

b: See note c, Table 7.12

c: See note d, Table 7.12 and note e, Table 7.14

d: See note e, Table 7.12 and note f, Table 7.14

Source: Calculated from Tables 7.12 and 7.14 (using exact figures for value rather than those rounded to nearest 1,000 US\$).

**Table 7.17 Gum benjamin - Unit value of exports from Singapore, and destinations by region, 1987-1996 (US\$/kg)**

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
<b>Total</b>	<b>1.21</b>	<b>1.17</b>	<b>1.08</b>	<b>1.10</b>	<b>1.11</b>	<b>1.00</b>	<b>1.12</b>	<b>1.16</b>	<b>1.39</b>	<b>1.28</b>
<i>Of which to:</i>										
Middle East	1.37	1.27	1.26	1.21	1.25	1.11	1.34	1.12	1.28	1.23
Africa	0.81	0.96	0.77	0.78	0.75	0.69	0.71	0.72	0.91	0.96
Indian sub-continent	0.97	0.99	0.85	0.98	1.00	0.84	0.91	1.31	1.56	1.27
Asia	0.86	0.86	1.11	0.98	1.13	0.91	0.96	1.21	1.58	1.75
Europe	3.04	2.45	2.22	2.80	2.23	2.62	3.23	3.32	3.40	3.07
USA	1.70	2.39	3.00	2.13	2.05	1.45	1.57	1.81	1.86	-
Others	0.89	0.82	0.80	1.10	1.31	0.96	0.94	1.26	1.23	1.31

Source: Calculated from Tables 7.13 and 7.15

Looking first at regional differences in unit values (Table 7.17), the figures are highest for Europe and the United States, confirming that a greater proportion of high grade benzoin and/or extract is going to these regions. Unit values are lowest for Africa.

Closer inspection of the data (Table 7.16) reveals further differences within a region. In Europe, for example, apart from 1993, Italy's imports have had a consistently and significantly higher unit value than those of the other countries, presumably indicating that less lower quality benzoin is being imported which would have had the effect of lowering the overall unit value. The lower unit value for Greece indicates, perhaps, that the benzoin is intended mainly for incense use in the Greek Orthodox Church.

In Asia, Malaysian imports of benzoin are used mainly for incense purposes and this is reflected in lower unit values than those for Taiwan and Japan. Figures for India are higher than those for other countries in the Indian sub-continent and this may be a reflection of the strong fragrance and flavour industries in India and their requirements for suitable, higher quality benzoin.



## 7.6 Import data - Other countries

Where they were available, import data for a few of the major destinations, as indicated by the Singapore exports, were examined and these are discussed briefly below.

### 7.6.1 Saudi Arabia

Volumes of imports into Saudi Arabia for the years 1991, 1992 and 1994 (the only years available) are shown in Table 7.18.

**Table 7.18 Gum benzoin - Volume of imports into Saudi Arabia by origins, 1991-1994 (tonnes)**

	1991	1992	1993	1994
<b>Total</b>	<b>707</b>	<b>539</b>	<b>na</b>	<b>561</b>
<i>Of which from:</i>				
Indonesia	370	145	na	174
Singapore	231	238	na	205
USA	-	75	na	-
Malaysia	63	-	na	-
Others	43	81	na	182

Source: Saudi Arabia. Foreign Trade Statistics

The total volumes indicated in Table 7.18 appear to be reasonable when compared with total exports from Indonesia and Singapore but individual figures for the two countries agree poorly with those in Table 7.18. In the case of Indonesia (Table 7.4), there appears to be severe under-recording of exports to Saudi Arabia. This is even greater than Table 7.18 indicates because Indonesia is included as a country of origin for Saudi imports of frankincense; this represents benzoin and not genuine frankincense. Conversely, Singapore's exports to Saudi Arabia (Table 7.12) are much higher than those shown in Table 7.18. One explanation may be that in the case of imports from Singapore, some of which represent re-exports (without further processing) from Indonesia, Saudi data refer to the country of origin.

### 7.6.2 India

Indian imports of benzoin for the period 1990/91-1995/96 are shown in Table 7.19 (by volume). In the Indian trade statistics, benzoin (benjamin) is separated into *benjamin ras* and *benjamin cowrie* and these terms are retained in Table 7.19. An Indian trade source states that *benjamin cowrie* refers to benzoin almonds, while *benjamin ras* is block benzoin. However, this would suggest that unit values should be higher for *benjamin cowrie*, when in practice calculated values (not presented here) are very similar for the two types.

The volumes of annual imports shown in Table 7.19 are very erratic, varying from about 90 tonnes up to 280 tonnes, and there must be some question over their accuracy. The total figure of 182 tonnes from Myanmar is extremely doubtful. Levels of imports from Singapore are much lower than the Singapore export data indicate (Table 7.12) and this is not compensated for by high imports from Indonesia. Deliberate misrepresentation of benzoin to avoid import duties may be an explanation.

**Table 7.19 Gum benjamin - Volume of imports into India  
by origins, 1990/91-1995/96<sup>a</sup> (tonnes)**

		1990/91	1991/92	1992/93	1993/94	1994/95
<b>Total</b>		<b>138</b>	<b>129</b>	<b>86</b>	<b>144</b>	<b>281</b>
<b>Ras</b>		<b>110</b>	<b>121</b>	<b>31</b>	<b>37</b>	<b>194</b>
<b>Cowrie</b>		<b>28</b>	<b>8</b>	<b>55</b>	<b>107</b>	<b>87</b>
<i>Of which from:</i>						
Indonesia	Ras	9	18	2	12	13
	Cowrie	1	-	2	12	26
Singapore	Ras	101	103	29	25	49
	Cowrie	26	8	53	50	11
Myanmar	Ras	-	-	-	-	132
	Cowrie	-	-	-	45	50
Malaysia	Ras	-	-	-	-	-
	Cowrie	-	-	-	-	-
Italy	Ras	-	-	-	-	-
	Cowrie	-	-	-	-	-

Note: a: Statistical year runs April to March

Source: India. Foreign Trade Statistics

### 7.6.3 Malaysia

Malaysian imports are shown in Table 7.20 (by volume) and Table 7.21 (value and unit value).

As with Saudi Arabia, Malaysian imports from Indonesia are much higher than Indonesia's export statistics indicate, while imports from Singapore are much lower than the Singaporean export data show. Again, the answer may lie in the Indonesian origin of Singaporean re-exports.

The figures for unit value (Table 7.21) confirm the low quality of the benzoin imported into Malaysia.

**Table 7.20 Gum benjamin - Volume of imports into Malaysia by origins<sup>a</sup>, 1987-1996 (tonnes)**

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996 <sup>b</sup>
<b>Total</b>	<b>267</b>	<b>298</b>	<b>301</b>	<b>315</b>	<b>306</b>	<b>340</b>	<b>326</b>	<b>264</b>	<b>299</b>	<b>109</b>
<i>Of which from:</i>										
Indonesia	182	206	154	186	261	282	301	244	290	96
Singapore	76	79	141	121	40	47	21	17	7	4
India	9	13	4	3	5	11	4	2	2	7
Nepal	~	~	1	-	-	-	-	-	-	-
China, PR	-	~	1	~	-	-	-	-	-	-
Myanmar	-	-	-	4	-	-	-	-	-	-
Italy	-	-	-	-	-	-	-	1	-	-
Denmark	-	-	-	-	-	-	-	-	-	2

Notes: a: In addition to the countries listed, Tanzania (1987, 1990), Viet Nam (1988), Hong Kong (1988, 1989, 1990), Japan (1989), Taiwan (1989), UK (1989), Egypt (1989) and Iran (1990) supplied small (< 0.5 tonne) or very small (<< 0.5 tonne) volumes. Apart from Viet Nam, these are all likely to represent re-exports

b: Provisional (at April 1997). Final figures to be published October 1997

Source: Malaysia. External Trade Statistics

**Table 7.21 Gum benjamin - Value and unit value of imports into Malaysia by origins, 1987-1996 (1,000 US\$; US\$/kg)**

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
<b>Total value<sup>a</sup></b>	<b>174</b>	<b>199</b>	<b>200</b>	<b>204</b>	<b>196</b>	<b>277</b>	<b>347</b>	<b>292</b>	<b>404</b>	<b>129</b>
<b>(Unit value)<sup>b</sup></b>	<b>(0.65)</b>	<b>(0.67)</b>	<b>(0.66)</b>	<b>(0.65)</b>	<b>(0.64)</b>	<b>(0.82)</b>	<b>(1.06)</b>	<b>(1.11)</b>	<b>(1.35)</b>	<b>(1.18)</b>
<i>Of which from:</i>										
Indonesia	77 (0.42)	88 (0.43)	79 (0.51)	104 (0.56)	163 (0.63)	242 (0.86)	325 (1.08)	274 (1.12)	390 (1.34)	116 (1.21)
Singapore	90 (1.18)	97 (1.23)	110 (0.78)	85 (0.70)	27 (0.68)	21 (0.45)	14 (0.67)	14 (0.82)	10 (1.31)	6 (1.31)
India	8 (0.87)	13 (1.03)	7 (1.96)	4 (1.26)	5 (1.03)	14 (1.30)	8 (1.88)	3 (2.08)	4 (2.61)	4 (0.60)
Nepal	~ (1.67)	~ (3.46)	2 (3.21)	-	-	-	-	-	-	-
China, PR	-	~ (1.43)	2 (1.47)	~ (0.54)	-	-	-	-	-	-
Myanmar	-	-	-	11 (2.96)	-	-	-	-	-	-
Italy	-	-	-	-	-	-	-	1 (1.17)	-	-
Denmark	-	-	-	-	-	-	-	-	-	2 (1.27)

Notes: a: CIF value in Ringgit converted to US\$ using following average exchange rates: 2.5196 (1987), 2.6188 (1988), 2.7088 (1989), 2.7049 (1990), 2.7501 (1991), 2.5474 (1992), 2.5741 (1993), 2.6243 (1994), 2.5044 (1995), 2.5148 (Jan.-Nov. 1996)

b: Calculated using exact figures for volume and value from source data rather than those rounded to nearest tonne and 1,000 US\$

Sources: Malaysia. External Trade Statistics; International Financial Statistics, IMF

#### 7.6.4 The European Union

As noted earlier, Eurostat trade statistics for European Union member states do not separate benzoin from other natural gums and resins. However, inspection of the import statistics for *natural gums, resins, gum-resins and oleoresins other than lac and gum arabic* enables one to deduce possible levels of imports of Siam benzoin into Europe.

Table 7.22 shows the volume of imports with this classification into the European Union for the period 1988-95.

**Table 7.22 Natural gums and resins<sup>a</sup> - Volume of imports into the European Union<sup>b</sup> from Lao PDR, Thailand and Viet Nam, 1988-1995 (tonnes)**

	1988	1989	1990	1991	1992	1993	1994	1995
<i>From: Lao PDR</i>	5	15	27	7	21	19	29	14
<i>Of which to:</i>								
France	5	15	27	7	19	19	29	14
Germany	-	-	-	-	2	-	-	-
<i>From: Viet Nam</i>	12	5	5	1	2	3	11	-
<i>Of which to:</i>								
France	9	5	5	-	-	-	-	-
Germany	3	-	-	1	1	1	2	-
UK	-	-	-	-	1	2	9	-
<i>From: Thailand</i>	14	20	123	18	3	1	39	23
<i>Of which to:</i>								
France	8	6	46	4	2	-	2	6
Germany	5	14	68	14	1	-	1	2
UK	1	-	9	-	-	1	21	15
Italy	-	-	-	-	-	-	15	-

Notes: a: Classified as *Natural gums, resins, gum-resins and oleoresins other than lac and gum arabic*

b: Only data for the 12 member states of the former European Community are analyzed, i.e. the UK, France, Germany, Belgium, Luxembourg, Netherlands, Italy, Ireland, Denmark, Portugal, Spain and Greece

Source: Eurostat

In view of the large amount of data available from the statistics, most of which does not relate to benzoin, only Lao PDR, Thailand and Viet Nam – as potential sources of Siam benzoin – have been selected for inclusion in Table 7.22. Imports from Indonesia and Singapore have been excluded because large quantities of other gums and resins would be included in the figures. Totals are not shown - again, because they have no relevance to benzoin - but they usually amount to around 20,000 tonnes annually.

Imports into the EU from Lao PDR are all well within the levels of recorded Lao exports of benzoin (Table 7.2) and it is a reasonable assumption that most, if not all, of the totals for Lao PDR given in Table 7-22 comprise benzoin. France is the sole recipient in all years except 1992, when 2 tonnes of the 21 tonnes were imported into Germany; this is in accord with the fact that France is known to be the most important market for Lao benzoin.

Imports from Viet Nam are recorded for all years except 1995 and the three importing countries are all ones which NAFORIMEX stated that they exported benzoin to. Again, therefore, it is reasonable to suppose that the data for Viet Nam refer to benzoin. Table 7.22 shows that France was the main destination during 1988-1990 but imported nothing thereafter, the recipients, instead, being Germany and the UK.

It is more difficult to judge to what extent the imports from Thailand include benzoin. France and Germany are the main importers (and both countries are given as destinations in the Thai export statistics for benzoin – Table 7.10) but the high figures for 1990 make it likely that other gums or resins are included. Thailand exports large amounts of damar and although most goes to India it is possible that some is also shipped to Europe.

The difficulty of reconciling trade statistics with the opinions of people in the trade is illustrated by the view given by a large German importer of gums and resins, including benzoin. The company estimates German imports of Siam benzoin to be 10-15 tonnes per year, considerably more than the data in Table 7.22 indicate. The company states that they purchase benzoin mainly from Lao PDR and Viet Nam, with a little from Thailand.

Value/unit value data for EU imports of natural gums and resins from Lao PDR and Viet Nam for the period 1988-95 are given in Table 7.23. Unit values were calculated for imports from Thailand and they showed a wide range, supporting the contention that the data include gums other than benzoin; they have therefore not been included in Table 7.23.

The high unit values for French and German imports from Lao PDR support the view that the imports are likely to represent benzoin. On the whole, the same is true for imports from Viet Nam, although unit values for the UK and some of the German imports are lower than those for the French imports and may indicate the presence of gums or resins other than benzoin. The unit values of French imports from Viet Nam are

higher than those from Lao PDR and suggest that Vietnamese imports contain a higher proportion of the premium grades of benzoin.

**Table 7.23 Natural gums and resins<sup>a</sup> - Value and unit value of imports into the European Union from Lao PDR and Viet Nam, 1988-1995 (1,000 US\$; US\$/kg)**

	1988	1989	1990	1991	1992	1993	1994	1995
<i>From: Lao PDR</i>								
Value <sup>b</sup>	76	199	265	88	227	179	308	154
(Unit value)	(15.15)	(13.30)	(9.81)	(12.58)	(10.81)	(9.44)	(10.62)	(11.03)
<i>Of which to:</i>								
France	76	199	265	88	201	179	308	154
	(15.15)	(13.30)	(9.81)	(12.58)	(10.58)	(9.44)	(10.62)	(11.03)
Germany	-	-	-	-	26	-	-	-
	-	-	-	-	(12.97)	-	-	-
<i>From: Viet Nam</i>								
Value <sup>b</sup>	174	75	71	7	18	18	80	-
(Unit value)	(14.50)	(14.99)	(14.26)	(7.44)	(9.08)	(5.86)	(7.24)	-
<i>Of which to:</i>								
France	154	75	71	-	-	-	-	-
	(17.10)	(14.99)	(14.26)	-	-	-	-	-
Germany	20	-	-	7	13	Na	na	-
	(6.71)	-	-	(7.44)	(12.97)	(na)	(na)	-
UK	-	-	-	-	5	Na	na	-
	-	-	-	-	(5.19)	(na)	(na)	-

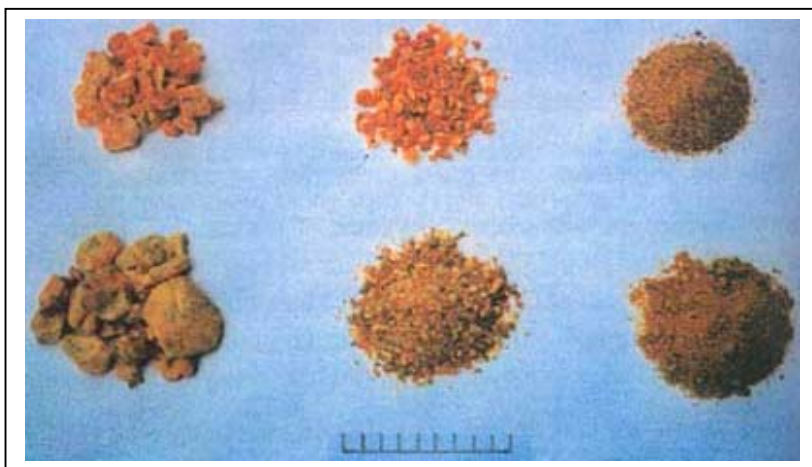
Notes: a: See note a, Table 7.22

b: CIF value in ECU converted to US\$ using following average exchange rates (US\$ per ECU): 1.1839 (1988), 1.1024 (1989), 1.2730 (1990), 1.2405 (1991), 1.2968 (1992), 1.1723 (1993), 1.1886 (1994), 1.3081 (1995)

Sources: Eurostat; International Financial Statistics, IMF



**Photo 7.1** Siam benzoin (Lao PDR)      Scale: 1 cm divisions  
Top (L→R) Grade A, B and C  
Bottom (L→R) Grade D and fresh mixed



**Photo 7.2** Sumatra benzoin (ex Singapore)      Scale: 1 cm divisions  
Top (L→R) Grade 1, 2 and 3 (dust) [company A]  
Bottom (L→R) Almonds, siftings and almonds dust [company B]



## ***Chapter 8. Marketing***

### **8.1 Products**

#### *8.1.1 Grades*

The sorting and grading of Siam benzoin according to size in Lao PDR was described earlier in Chapter 5, section 5.3.5. The grading criteria used in Viet Nam for Siam benzoin and in Indonesia for Sumatra benzoin almonds are similar. In Lao PDR the grades are given a simple letter or number designation, e.g. A-D or 1-4. The friable nature of the benzoin, particularly after it has been freshly harvested, means that it has a tendency to break into smaller pieces through physical attrition during its transport from the village to Vientiane and the repeated handling that it receives. The proportion of the smaller grades therefore increases at each stage of its handling and eventually accounts for the larger part of the year's crop. After cleaning and grading at the exporter's warehouse, there is typically around 10% of each of the two higher grades (A & B) and 35-40% of each of the lower grades (C & D). The large price differential between the top and bottom grades means that the process of physical attrition leads to an overall devaluation of the product.

#### *8.1.2 Quality*

Quality is clearly a key factor in determining the price which the exporter is able to get for benzoin. In order to see if there might be ways in which the quality of Lao benzoin can be improved it is necessary first to understand the factors which influence quality.

If the same grades of Siam and Sumatra benzoin (comparable size, colour and purity) are compared, the former commands a much higher price than the latter. There are therefore two aspects to quality: 1) intrinsic quality, which is a reflection of the chemistry of benzoin; 2) the quality

which is determined by its extraction and the treatment and handling of it subsequent to exudation from the tree. Since Siam benzoin from Lao PDR (at least, that intended for export) does not have the wide variation in types that the Sumatran has, the discussion here is focused mainly on benzoin almonds, which both Indonesia and Lao PDR produce.

#### 8.1.2.1 Intrinsic quality

The intrinsic quality is genetically determined at the species, provenance and individual tree level. Thus, benzoin from *Styrax tonkinensis* (Siam benzoin) is different to that from *S. benzoin* (Sumatra benzoin). Within a species, however, it is possible for resin from different natural populations, as well as individual trees within the population, to have different chemical (and therefore different sensory) characteristics.

Benzoin collected from different areas is said to have different properties. Benzoin from Luang Prabang province, Lao PDR, is claimed to have a stronger odour than that from other areas. When the FAO project trees are old enough, resin samples should be collected for analysis from individual trees from the provenance trials. If significant differences exist, then it may be possible to take advantage of these differences and select superior germplasm for planting. An Indonesian extractor of benzoin stated that odour strength varies between different parts of Sumatra, although in this case it is possible that the benzoin comes from different species. Jafarsidik (1986) states that benzoin from *S. parallelonurum* grown in Dolok Sanggul is a better quality than that from *S. benzoin* grown in Pangaribuan, Pahae and Sidilalang.

Even the same tree can yield resin of different qualities. Sometimes this is simply because the larger pieces of resin are picked off the tree first and the smaller, dirtier pieces are collected on a second visit to the tree. But in Sumatra, as noted in Chapter 6, section 6.5.1.4, white and coloured forms of benzoin are apparently exuded from the same tree, although it is not clear under what conditions they are produced.

### 8.1.2.2 Methodological influences on quality

The manner in which the tree is wounded can also affect the quality of resin obtained by tapping, either as a result of the particular system of tapping which is used or as a result of different standards of workmanship with which it is applied. If sufficient care is not taken when making the cuts in the tree, then it may not be easy to remove the hardened benzoin subsequently without also removing pieces of bark to which it is attached. In Indonesia, more resin seems to be allowed to run down the tree – rather than being trapped between the cut bark and the stem – than in Lao PDR, and is subsequently scraped off the tree, rather than picked; this results in a poor quality benzoin.

The length of time that the resin remains on the tree before it is collected, and the climatic conditions which prevail during this time, affect the quality of the benzoin. Although the resin has to be left on the tree a sufficient time to dry and harden, the longer it is left, the longer it is open to the degradation by sun and rain.

Once it has been collected, the major sources of quality deterioration of benzoin almonds are the repeated handling which the benzoin receives in going from the collector to the exporter, and the conditions in which it is stored, both at intermediate points in the delivery chain and at the exporter's warehouse prior to shipment. Breakdown of the large pieces to smaller ones, and sticking and compacting of pieces of benzoin or dust and siftings caused by high temperatures, are the main consequences.

Finally, if sufficient care is not taken during storage of the consignment at the exit and entry ports and during shipment to its destination overseas there may be some deterioration in quality. Undue exposure of the container to the sun or a source of heat such as a ship's boiler should be avoided. These are precautions which the exporter and importer, with the cooperation of the shipping agent and ship's owner, should attend to.

### 8.1.2.3 Quality criteria

Size is the principal criterion for grading of benzoin of the almonds type in the producer countries but the question now considered is how the end-user perceives quality, how this relates to size, and what other parameters are used to measure quality.

- 1) **Size and odour properties:** The most important properties of benzoin, and the reason it is used by the flavour and fragrance industries, are its sensory or organoleptic characteristics. These characteristics are not easy to measure in the laboratory since the presence of only trace amounts of some chemicals can drastically affect the odour of a substance. The perfumer's nose is still the best means of assessing odour quality. However, the superior properties of Siam benzoin over Sumatra benzoin are well-recognized and account for the higher price of the former. Siam benzoin has a rounder, more vanilla-like odour than Sumatra benzoin, which is harsher to the nose.

Given the great price differential between the top and bottom grades of both Siam and Sumatra types of benzoin, it is difficult to escape the conclusion that there *are* genuine differences in odour properties between them, and that the premium paid for larger sized pieces is not due to their size *per se*. If the smaller pieces and the dust had intrinsically the same purity and sensory characteristics as the large pieces, then end-users would not be prepared to pay a higher price for the latter. It is reasonable to suppose that the finely divided state of the benzoin dust and siftings promotes oxidation and loss of important volatile constituents, to the detriment of the odour properties.

- 2) **Foreign matter:** The presence of foreign matter will clearly also affect quality and smaller pieces of benzoin almonds are likely to have a greater proportion of bark (which has escaped the cleaning process) mixed in with them. Benzoin dust derived from almonds may also have finer extraneous material present (sand, dirt, tiny pieces of

bark) and this is a genuine reason for the buyer being unwilling to pay top prices for it. Even if it can be demonstrated that the dust is as pure as the larger pieces of benzoin, there is a natural reluctance on the part of any buyer to purchase material that can not be seen by the naked eye to be clean and free from adulteration. Low grade Sumatra benzoin is dark and dirty, with foreign matter present which is not easily removed from the benzoin itself.

- 3) **Yield:** For extractors of benzoin, the extractive yield is important in addition to the odour of the extract. However, the yield is, on the whole, determined by the factors just discussed. Siam benzoin gives higher yields than Sumatra benzoin; clean benzoin gives higher yields than material which contains foreign matter; and benzoin dust gives lower yields than larger pieces.
- 4) **Age and colour:** The question of age and colour appears to be clear-cut: the fresher and paler the benzoin is, the better. In Lao PDR buyers are unwilling to pay the same price for benzoin that is a year old that they would for material from the present year's crop. In the course of storage, there is an inevitable darkening of colour, from the very pale, uncharacteristic colour when the benzoin is freshly harvested, to one which is a tan, sandy colour. Efforts are therefore made to clear stocks of benzoin quickly and to prevent the colour darkening.

However, a leading producer of benzoin extract stated that fresh benzoin has a poor aroma and that if fresh material (Siam or Sumatra benzoin) is purchased it must be set aside to age for 2-3 years. This seemed to be true for a sample of freshly-collected benzoin in Lao PDR; it did not have the characteristic vanilla-like odour of older samples. Once again, therefore, good aroma is seen to be all-important in quality terms. The ideal situation would be to have the pale colour of fresh benzoin combined with the superior odour properties of the aged material.

Although the need to age the benzoin appears to contradict the evidence from the lower prices offered for older stock in Lao PDR, it does, nevertheless, appear to offer a way out for exporters who wish to find a market for such stock.

### 8.1.3 Analysis and analytical parameters

Because benzoin's end-uses depend mainly on its sensory characteristics and these are not easily quantified, exporters rarely lay down specifications for the raw material. Neither is it expected of them by the importer. The extractor or end-user does usually carry out some analyses to check the quality of a consignment and will take action if it is not what it should be. A detailed examination of the various analyses possible is beyond the scope of this discussion, but results of thin layer chromatography (TLC) analysis carried out on some of the samples of benzoin collected in the field is given below, together with some indication of the other parameters which can be measured.

#### 8.1.3.1 TLC analysis of benzoin samples collected

Thin layer chromatography (TLC) is a means of separating mixtures of compounds into their component parts. It presents a simple visual *fingerprint* of the sample being analyzed and can be used to check the purity of a substance or its identity with another one. An explanation of the method and the results which were obtained by analyzing 15 samples of benzoin collected are given in **Appendix 2**. Included were six samples of Siam benzoin of different grades (five from Lao PDR), six of Sumatra benzoin and three of benzoin block. The main findings were as follows:

- 1) The samples of Sumatra benzoin were immediately distinguishable from the Siam samples. The top running spot in the Sumatra samples is assumed to be due to one or more of the cinnamates, which are not present in Siam benzoin. The top running spot in the Siam samples

may be due to benzoates, which are also present in Sumatra benzoin but in smaller amounts.

- 2) Qualitatively, the different grades within each of the two types are the same, but quantitatively there appear to be some small differences. In particular, the freshly collected sample of Siam benzoin has a larger top running spot than the four standard grades, and the bottom grade (grade D, dust) has the weakest, suggesting that there are indeed genuine differences between the grades. It should be noted that vanillin, which is an important aroma constituent of benzoin, was not available to include in the analysis.
- 3) The sample of Siam benzoin obtained in Bangkok (glassy in appearance) was much poorer quality than the Lao ones (a very weak top spot and more polar material near the origin). Similarly, the sample of Sumatra mixed (low) quality was confirmed as being very poor compared with the standard grades.
- 4) The presence of damar in the two samples of low quality block benzoin was readily detected. The sample of good quality block benzoin (stated by the company to contain benzoin almonds rather than damar) was confirmed as having no damar present. The benzoin was the Sumatra type.

TLC is thus a simple, rapid method of analysis that can provide useful information when comparing different types of benzoin. It gives an indication of purity and can detect some forms of adulteration.

#### 8.1.3.2 Analytical parameters

Pharmaceutical use of benzoin generally requires compliance with national pharmacopoeia specifications. Examples of eight different specifications are given in **Appendix 3**. They are listed because they serve to illustrate the differences in quality between Siam and Sumatra benzoin (in terms of acceptable foreign matter or alcohol solubility, for example). More-

over, although designed for a pharmaceutical end-use, some of the test methods may be appropriate in any quality control or certification scheme which might be introduced in Lao PDR.

The parameters most commonly measured, and the limits given in the pharmacopoeias, are summarized in Table 8.1.

Alcohol solubility is important since this gives an indication of foreign matter present (and any alcohol-insoluble organic matter) and a measure of extractive yield. Acid value, ester value and total balsamic acids content can be determined using standard titrimetric methods and are often used by end-users as a means of quality control. For Siam benzoin, balsamic acids are calculated as benzoic acid, while for Sumatra benzoin they are calculated as cinnamic acid. Spectrophotometric measurements of a prepared resinoid are also used by some companies to assess the suitability of the benzoin for their purposes.

**Table 8.1 Pharmacopoeia specifications for benzoin<sup>a</sup>**

	<b>Benzoin type</b>	<b>Loss on drying</b>	<b>Alcohol-insoluble matter</b>	<b>Total ash</b>	<b>Acid-insoluble ash</b>	<b>Balsamic acids<sup>b</sup></b>
British (1980)	Siam	Max 10.0%	Max 5%	max 2.0%	-	min 25%
	Sumatra	Max 10.0%	Max 20.0%	max 2.0%	-	min 25%
British (1993)	Sumatra	Max 10.0%	Max 20.0%	max 2.0%	-	min 25%
Chinese	Siam	Max 2.0%	Max 2.0%	max 0.5%	-	min 30%
French	Siam	Max 10.0%	Max 5%	max 2.0%	-	min 25.0%
Japanese	Sumatra <sup>c</sup>	-	Max 30%	max 2.0%	max 1.0%	-
Swiss	Siam	Max 10.0%	Max 5%	max 2.0%	-	min 20%
Thai	Siam	Max 10.0%	Max 5.0%	-	max 0.5%	min 25%
	Sumatra	Max 10.0%	Max 20.0%	-	max 1.0%	min 25%
US	Siam	-	Max 10.0%	-	max 0.5%	min 12.0%
	Sumatra	-	Max 25.0%	-	max 1.0%	min 6.0%

Notes: a: For references see **Appendix 3**.

b: Calculated as benzoic acid for Siam benzoin and cinnamic acid for Sumatra benzoin (but see details of Thai and US specifications).

c: Specification refers to benzoin from *Styrax benzoin* (i.e. Sumatra type) or other species of the same genus (i.e. could include Siam benzoin).



#### 8.1.4 Brand names

The quality of block benzoin is determined not only by the qualities of the damar and benzoin used in its preparation but by the proportions in which they are mixed. The almost limitless number of permutations of benzoin quality, damar quality and ratios of the two in the mixture gives rise to a large number of different types of block benzoin, all with different qualities. Defining their quality would be no simple task and manufacturers in Singapore do not attempt to do so. Different producers have different *recipes*, which are proprietary information, and it is therefore impossible (and for the companies themselves, undesirable) to have a meaningful system of grading which relies solely on letters or numbers. Instead, there has evolved a large number of brand names that are registered by the producer but may be assigned for exclusive use by a trader. There are no specifications for the brands, but both importer and end-user know from experience which one suits their own requirements, presumably taking advice in the first instance from the producer or exporter.

The following list illustrates some of the brand names used in Singapore for block benzoin of commerce: *AI*; *AAA*; *Aeroplane*; *Arrow*; *Baby*; *Bee*; *Bridge*; *Butterfly*; *Camel*; *Cannon*; *Crocodile*; *Crown AI*; *Deer*; *Double key*; *Dragon fly*; *Eagle globe*; *Eye*; *Flower*; *Flying bomb*; *Flying eagle*; *Globe*; *Hand*; *Jade seal*; *Leopard*; *Oak tree*; *Palm*; *Pigeon*; *Pistol*; *Pomegranate*; *Rake*; *Shark*; *Shuttlecock*; *Spear*; *Squirrel*; *Stork*; *Tank*; *Tiger*; *Tower*; and *Turkey*.

#### 8.1.5 Adulteration

The deliberate inclusion of damar in block Sumatra benzoin is practised in Indonesia. Damar is considerably cheaper than benzoin and readily available within the country. It may serve a functional purpose by acting as a binder to enable the block to be made, and the block itself is a convenient form in which to transport and handle the benzoin.

In India, samples of benzoin from the local market have been found to be adulterated with pine rosin but this is almost certainly a problem peculiar to India.

Lao exporters have not reported any complaints from customers regarding perceived adulteration, nor have they complained about receiving adulterated benzoin themselves from traders and agents within Lao PDR. Sumatra benzoin is sometimes adulterated with vanilla to pass it off as Siam (using relatively cheap synthetic vanillin rather than natural vanilla extract).

## 8.2 Channels of distribution

The benzoin industry is one in which the product must pass through many hands in going from collector to exporter. Although the road infrastructure in Lao PDR is improving, the difficult nature of the terrain and the distance of many villages from roads or navigable rivers, still makes the task of transporting fragile goods like benzoin slow and arduous. Even if the village is near a road, the villagers may not have the means of transporting the benzoin other than on foot, and this may entail a day's travel. A *second best* to motor transport may be a bicycle. Out of necessity, the job is taken on by people with greater resources at each stage to see that the goods reach their final destination, the exporter. Occasionally, the exporter resorts to air freight to transfer benzoin quickly from a regional center such as Luang Prabang to Vientiane in order to meet an export order.

At the beginning of the chain there are a large number of people involved in benzoin collection. These collectors sell their production to a smaller number of village traders who, in turn, sell it to a still smaller group of other, larger traders who act as agents for the exporters. The situation is illustrated schematically in Figure 8.1.

The exporter's agent is not tied exclusively to the exporter, and he may choose to sell his purchases through other channels. This can include

making cross-border sales to the People's Republic of China or Viet Nam. The advantage of this to the agent is that he does not pay tax on the sale and, in the case of China, he can take the opportunity if he wishes to buy cheap, Chinese-made goods and transport them back to Lao PDR for subsequent resale.

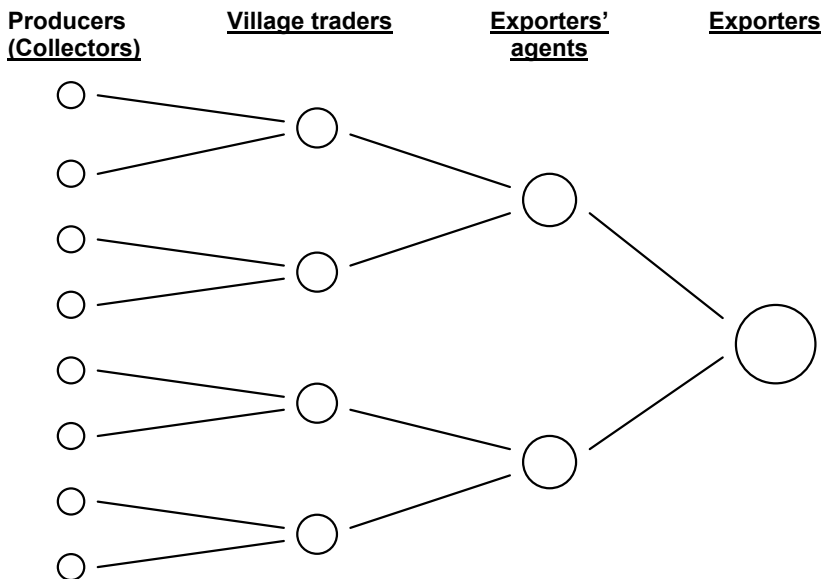
In practice there may be more or fewer stages in the chain than is indicated in Figure 8.1. At the village level, individual families who have chosen to collect benzoin may sell their production to a village middleman or they may sell it directly to the exporter's agent. In exceptional circumstances it is even possible for the exporter to buy directly from the village. The choice is often determined by the personalities of the various market participants and the outcome of previous years' transactions.

### **8.3 Prices**

#### *8.3.1 Producer prices*

The price of benzoin is critical to collector, trader and end-user alike. If the price paid to the collector is not attractive enough then he may prefer to undertake more profitable activities. The trader (whether a middleman or an exporter) tries to maximize his returns by buying at as low a price as possible and selling at the best price he can get. The importer or end-user likewise wishes to purchase benzoin at a favorable price.

The price at the point of export is clearly influenced by the number of middlemen in the chain between the collector and the exporter, as well as the exporter's own costs. Each member of the chain will introduce a mark-up on the buying price, reflecting the costs incurred and the profit margin. These costs include a number of things in addition to the purchase price, their magnitude (and relevance) reflecting the trader's position in the chain: transport; marketing; storage; insurance; cleaning and sorting; bank (or other lending institution) interest charges; packaging; and overheads.



**Figure 8.1. Schematic representation of marketing channels**

To a greater or lesser degree the costs are made up of different components: labour, materials, financial services, rent, warehouse and office overheads, depreciation, etc. A detailed analysis of these aspects and quantification of marketing margins at each stage of the chain is outside the scope of this discussion, but it would merit attention in any further study.

Knowledge of the price that can be expected for potential cash crops is a major factor in determining which one(s) the villager chooses to produce. In the case of benzoin, however, the decision is not an easy one to make. There is no single, fixed price and no mechanism for announcing prices in advance. Indeed, the agent is usually unable to give advance notice of prices because he only buys from villagers when he himself receives an order from the exporter or another trader, and this is often very close to the start of the collecting season.

Different villages or individuals adopt different strategies for arriving at their decision. In large part, the price obtained by an individual or someone else in the village the previous year will influence the decision. If no one in the village tapped trees the year before, then they may have to rely on information from neighbouring villages, or the farmer may decide, in any case, to tap the trees as an insurance. Once tapped, the farmer then has to make the decision as to whether to harvest the benzoin about 5 months later. He may decide to pick only the larger pieces from the best-yielding trees first and see what price he is offered, or he may wait to see what other villagers are paid before committing himself. If he is unhappy with the price he may hold on to the benzoin to see if a better offer is made or he may store it for sale at a later date.

Recent past experience is not encouraging for the benzoin collector. Prices (per kg) paid to the village trader for mixed benzoin by one middleman have fallen over the last 4 years:

1994	2,800 kip
1995	2,200 kip
1996	1,800 kip
1997	1,800 kip (price at start of harvesting season)

The price to the collector may be as low as 1,200 kip per kg. For an average harvest of 10 kg per family (a figure typical in Ban Kachet, Luang Prabang Province), this means 12,000 kip in cash income.

The above prices are only indicative. Undersupply encourages an increase in price in an effort to persuade those who have stocks of benzoin to release them. There is evidence that this occurred in mid-1997.

### 8.3.2 *Export prices*

Apart from sensory and other functional considerations, the relative prices of Siam and Sumatra benzoin determine to a large degree the particular end-use to which each is put, e.g. the dose levels which are employed,

the extent of blending of the two types, the use of cheaper alternatives, etc. Export prices for the different types and grades of benzoin are detailed in this section. Reliable time series for prices are not available, making it difficult to judge trends. In a few cases, prices quoted by one source have been significantly different from those quoted by another one for comparable grades. Such differences are not easily explained. The prices given below are the most reliable but should be regarded as indicative only.

In the case of Lao exports, only a few tonnes of benzoin are shipped at a time. Sharing a container with other goods, the ocean freight cost is relatively small and FOB approximates to C & F. A Singaporean exporter quoted about US\$ 65 per tonne for shipment to Europe. One Lao exporter quoted around US\$ 200 per tonne for transport Vientiane-Bangkok and US\$ 300 per tonne for Bangkok-Marseilles, which seems rather high.

#### 8.3.2.1 Siam benzoin

**Lao PDR:** Typical recent export prices to Europe are as follows:

(price per kg, C & F Marseilles, 1996)

Grade A: US\$ 16

Grade B: US\$ 13-14

Grade C: US\$ 10-12

Grade D: US\$ 8-9

Using these figures and the proportions of each grade indicated in section 8.1.1, the average export price of benzoin is approximately US\$ 10 per kg.

**Viet Nam:** Prior to 1990, when NAFORIMEX had a monopoly on sales, the average FOB price for the different grades was US\$ 7-8 per kg. The range of current prices is stated as:

Grade 1: US\$ 14-15

Grade 7: US\$ 2.50-3.00

### 8.3.2.2 Sumatra benzoin almonds

Two Singapore sources quoted US\$ 8-9 and US\$ 7-12 per kg for benzoin bought from importers in Singapore. A third Singapore source pays S\$10 per kg (*ca* US\$ 7.40) for *average* grade almonds.

Prices for specified grades imported into Singapore (price per kg, FOB Medan, 1997) are:

Grade 1:	US\$ 8
Grade 2:	US\$ 6
Grade 3:	US\$ 4
Grade 4:	US\$ 2

One Indonesian exporter claims to buy mixed benzoin for Rp 24,000 per kg (*ca* US\$ 10) and after cleaning and sorting to sell three grades of almonds for US\$ 10-15 per kg FOB Belawan. This seems very high compared with prices for Siam benzoin.

### 8.3.2.3 Block benzoin

Prices vary according to quality/brand. Typical ranges quoted by two sources for export prices from Singapore for block benzoin are shown below (manufactured in Singapore but bought and exported by other traders), price per kg, FOB Singapore, 1997:

Various brands:	1) US\$ 0.80-4.00; and
	2) US\$ 1.20-4.20

### 8.3.2.4 Benzoin extract

Prices per kg for hard extract (FOB Belawan, 1997):

Siam:	US\$ 20-25
Sumatra:	< US\$ 20

With regard to these prices, one source stated that Siam benzoin extract is 30-40% higher in price than Sumatra extract. Another source (a

flavour and fragrance manufacturer) stated that they buy hard Sumatran extract for US\$ 5-8 per kg.

### 8.3.2.5 Damar

The availability of low-cost damar in substantial quantities from Indonesia is a compelling reason for using it as a *filler* in the production of block benzoin. The low prices of all grades of damar compared to those of benzoin are illustrated below (price per kg, FOB Belawan, 1997):

<i>Mata kucing</i>	US\$ 0.90-1.00
<i>Lopaz</i>	US\$ 0.80
<i>Hitam/tanduk</i>	US\$ 0.40
<i>Batu</i>	US\$ 0.30-0.40

## 8.4 Promotion

The problem of Lao exporters wanting to increase their sales but having little or no access to market intelligence in order to try to do so is discussed in Chapter 9, section 9.7, since the problem is not restricted to exporters of benzoin. Attempts by benzoin exporters to negotiate long-term contracts with their established customers have been unsuccessful in the past. Importers prefer to retain a free negotiating position and not be tied to a contract price. Some exporters have tried notifying their customers of the stock position with respect to the different grades, with an indication of price and the enclosure of samples, to encourage orders. However, this does not always elicit a response. In general, and with a limited customer base, the exporters are obliged simply to wait for orders, with no certainty as to if and when they will be received.

### 8.4.1 Market prejudices

Importers of Siam benzoin in Singapore and Indonesia who do not buy directly from Lao PDR are sceptical that Lao exporters can supply benzoin of the required quality; they are also believed to be a business



risk. This prejudice against primary producers is not uncommon. Importers often prefer to deal with middlemen in Singapore, Hong Kong or some other intermediate destination, who they feel are more attuned to modern business practices and are less of a risk. If there is a dispute over a shipment the importer feels it is likely to be settled more quickly through a middleman than having to deal with a supplier at origin. Singaporean traders stated that buyers of Sumatra benzoin likewise preferred to deal with them rather than Indonesian exporters.

In seeking increased sales Lao exporters will have to overcome both the hesitance of existing customers to change existing practices, and the reluctance of potential new customers to do business directly with Lao PDR. In the latter case, the reluctance can only be overcome by a gradual process of confidence-building measures designed to first attract, and then retain, new customers.

#### *8.4.2 Quality certification*

Certification, although concerned with quality assurance, is relevant here because an important reason for its introduction would be to try and overcome the prejudices referred to above.

As an expression of the seriousness and good intentions of the Lao exporters, and as a demonstration to potential new customers of the ability to produce benzoin of acceptable quality, the concept of certification has some merit. In essence, each consignment of benzoin to be exported would be tested and given a certificate as evidence that it was of the quality stated. Such a scheme, if mandatory for all exports of benzoin, would have the added advantage of enabling the exports to be recorded for statistical purposes.

Before initiating such a procedure it would be necessary to decide which parameter(s) should be selected for testing, and to analyze a sufficient number of representative samples of the different grades to know the range of results expected for good quality benzoin. A reasonable limit

could then be set for each grade that would enable all such similar samples to be accepted, while excluding unacceptable samples outside the limit.

A parameter important to an extractor of benzoin is alcohol solubility, which is one of the specifications in many pharmacopoeas. A limit in these terms can be expressed as a minimum percentage alcohol solubility (e.g. 95%) or a maximum percentage alcohol-insoluble matter (e.g. 5%). It would therefore be of practical value to the extractor or end-user, as well as being an indicator of purity. It is also a parameter which can easily be measured without the need for expensive equipment. Visual inspection to ensure that the sample conformed with the stated grade (size) would be necessary in addition to measurement of alcohol solubility.

An institution capable of undertaking certification is the Food & Drug Quality Control Center in Vientiane. The laboratories are clean, spacious and well-equipped, and the Center undoubtedly has the facilities and competence to do the work. It also confirmed that its role as a government laboratory could include that of certification.

Some of the other points to be considered before deciding whether to adopt certification are discussed in Chapter 10, section 10.4.7.