

INDONESIA OVERVIEW

Djohan Narpati

PT Djasula Wangi, Jalan Garuda 99, Jakarta 10610, Indonesia
[e-mail : djasula@cbn.net.id; website : www.djasula.co.id]

Indonesia has undergone a number of social, political and financial changes recently, all of them affecting the essential oils industry to some degree. The most well-known of all these changes was the monetary crisis commended in 1997.

The Monetary Crisis

It was like a thunderstorm when we suddenly heard of sharp crash in the South Korean currency, the Won. Up to early 1997, South Korea was considered to have one of the strongest economies in the world and was classified as one of the rising economic giants in Asia-a 'tiger economy'. It did not take very long for this monetary typhoon to hit Thailand, Malaysia and Indonesia.

Indonesia was the most severely affected country among the Southeast Asian countries. It not only suffered a monetary crisis but soon had a political 'reform' – a milder form of revolution- and the introduction of a real democracy.

The reform process reached its peak on May 21, 1998 when the president of the Republic was forced to resign after 32 years in office. His resignation was the result of strong pressure from hundreds of thousands of students who conducted non-stop demonstrations and brought the economic life of the country to almost a complete standstill.

Because of the chaotic situation, some unknown social, political, or military groups incited some of population to conduct massive destruction of shops, department stores, offices, factories, and even private houses, of which some 90% were owned by Indonesian citizens of ethnic Chinese origin. The worst thing was that a sort of organized raping of ethnic Chinese woman, which is reported to have taken place during the two-day rioting. Looting and destruction by setting fire to shopping malls, churches, temples and residential houses was also carried out during this time. It was reported that in Jakarta 13 public markets, 2,479 private shops/ residence, 40 shopping malls, 1,604 shops, 45 workshop, 383 private offices, 9 gas stations, 12 hotels, 1,119 automobiles, 821 motorcycles and 1,026 private houses were completely destroyed or burned down in less than 24 hours. This does not include the destruction that had taken place in many other cities throughout the country.

Political power was transferred from the former President to the Vice President, who was to head a temporary Government until 1999. However, this change could not do much to cure the worsening economic crash, social disorder nor the monetary crisis. The public trust in the Government became a total void.

The extent of the monetary crisis is illustrated by the devaluation of the Rupiah :

- In August 1997 before the crisis, US\$1 = Rp. 2,500-2,700.
- At the peak of the crisis, the exchange rate reached an incredible US\$1 = Rp.17,000.
- Today the rate is US\$1 = Rp. 6,750.

Other adverse effects during the multi facet crisis period were :

- Many companies experienced major cash problems, especially the big ones that had been expanding too fast in too many projects which had been planned on the basis of the former rapid growth and optimism in our economy. Most investments were in long-term projects, real estate, housing, plantation, etc.
- Many companies also had borrowed foreign currency with an interest rate of only 8-10% without hedging the risk against any devaluation of our currency, instead of borrowing in

Rupiah with an interest rate of 20-24%. When the dollar rate escalated by more than 300%, most companies that were in debt in dollars effectively underwent a collapse and were unable to pay their debts to the bank, whether it was local or foreign-owned.

- As the result of the problems of borrowers, many big local banks (formerly enjoying a good reputation) were in deep trouble and had to be taken over by the authorities.
- During 1998, the Indonesian Central Bank on advice from the World Bank increased the interest rate of the public deposits up to 60% p.a. The idea of giving depositors up to 60% of interest rate p.a. was aimed at preventing excess and idle money being used for purchases or for speculation in dollars. This move caused the local banks to suffer a big the present time, all the big banks are practically in the hands of the authorities as are the big companies which had taken loans from those banks.

Essential Oil Production

The Impact of the Monetary Crisis

Logically, the export sectors benefited the most from the increased earnings from the foreign exchange earnings in dollars. Those involved in these sectors, especially the farmers or local based industries, have enjoyed the benefits from increased export earnings the most.

Logically, this should increase the production of many agro-based industries, including essential oils. However, there are other factors at play in Indonesian agriculture and supply of some essential oils has diminished.

Java Citronella Oil (*Andropogon nardus* Java de Jong)

Instead of encountering an increase in production, the supply of Java citronella oil has contracted during a period when the market price has been fluctuating in a normal range.

Production and Export of Java Citronella Oil, 1997 to 1998

	Production (tones)
1997	222
1998	203
1999 (est.)	200

The export figures for citronella oil over a 12-year period are shown overleaf and reveal a longterm progressive reduction.

The causes of the decline in output are :

- The citronella plantations are located solely on the island of Java.
- The population of Java has increased to some 120 million and the demand for foodstuffs has grown in parallel.
- The farmers have found that they can produce other crops yielding much higher returns today than citronella; notably sugarcane, potatoes, cassava, cereals, vegetables and fruits.

If supplies of citronella are to be maintained into the future, the cultivation of citronella must be promoted on other islands. However, this will take a few years to accomplish.

Exports of Java Citronella Oil 1997-98

Source : Central Bureau of Statistics, Jakarta

	Kilos	US\$
1987	503,720	3,947,510
1988	484,260	4,162,511
1989	599,355	2,922,207
1990	651,737	2,282,035
1991	618,831	2,072,820
1992	335,330	1,367,031
1993	244,610	1,226,286
1994	296,213	2,170,214
1995	348,660	4,165,703
1996	106,775	842,340
1997	84,545	325,566
1998	203,650	779,768

Vetiver Oil (*Vetiveria zizanioides* Stapf)

The planting of vetiver grass takes place only in one area of young volcanic ground at Garut in West Java. In spite of the comparatively high return from vetiver oil production, many farmers in Garut have now switched to growing vegetables and other food crops for the nearby big cities. Output of the oil has progressively decreases, as is shown in the expert figure table below.

Additionally, the demand for Java vetiver oil on the world market has been slow. This is partly the result of a recent decline in the odour quality, which is attribute to over-pressure during distillation and formation of burnt smell.

Exports of Vetiver Oil, 1992-98

Source : Central Bureau of Statistics, Jakarta

	Kilos	US\$
1992	48,935	1,479,744
1993	59,035	2,478,742
1994	54,249	3,572,332
1995	39,105	2,679,072
1996	33,118	1,877,629
1997	37,738	1,302,104
1998	24,778	1,064,765

Sandalwood Oil [*Santalum album* L. Santalaceae]

The price of Indonesian sandalwood oil did not fall in spite of the higher dollar value. On the contrary, in 1999 the price went up by around 20% as a consequence of the higher prices quoted for Indian sandalwood oil.

Local authorities on the Island of Timor exclusively supply sandalwood. For the last 3 years there has been no harvesting of the wood as over-harvesting had taken place in previous years.

No one knows exactly how much wood can be harvested in the coming years while maintaining sustainability. The tree takes some 40 years before it is considered suitable for harvesting with a good yield and quality of oil.

The wood is not only used to obtain the oil, but also is sold to the incense/ agarbathi industry, for woodcarving and as ingredient for traditional medicines.

As there are no private enterprises that cultivate sandalwood, it will depend purely on the local Government to take care of replanting and the allocation for harvesting in order to maintain a regular supply to the essential oil industry.

Export of Sandalwood Oil, 1987-94

Source : Central Bureau of Statistics, Jakarta

	Kilos	US\$
1987	21,880	2,261,058
1988	9,550	1,371,460
1989	11,710	1,736,520
1990	12,800	1,946,000
1991	10,350	781,106
1992	12,700	1,625,600
1993	14,682	1,946,900
1994	8,339	1,146,992
1995	8,557	1,619,423

Clove Leaf Oil (*Eugenia caryophyllus*)

The story of cloves is really tragic. In 1970 when we were dependent on the import of cloves as an ingredient for the manufacture of Kretek cigarettes, the authorities made strenuous efforts at the mass planting of clove trees, which practically can grow anywhere in the whole archipelago.

In the 1980s, Indonesia achieved self-sufficiency in production of cloves for the tobacco industry. Also, production of clove leaf oil from fallen leaf had developed to substantial levels. Over 1,000 tonnes of clove leaf oil was exported annually in the mid-1980s and up to 2,000 tonnes was consumed annually by local industry for the manufacture of eugenol, iso-eugenol and other derivatives.

By the early 1990s, there was a surplus production of the spice over the average yearly consumption of 80,000 tonnes by the tobacco industry. At one time, a buffer stock was held in store, which equated to 3 years consumption.

Then started a big misery. A monopoly body (BPPC) had been set up to be the sole buyer from the farmers and the sole supplier to the cigarette industry. This body had the power to fix at its discretion the clove purchase price from the farmer and the price for the cigarette industry.

When the BPPC realized that supply was in excess, it introduced an incentive scheme to cut down clove trees with a compensation of Rp. 10,000 (=US\$4) per tree to the farmers. Being desperate for cash, many farmers cut down their clove trees for the compensation and switched to other crops. Because of the low earnings from cloves, tree maintenance had been neglected and many clove trees also died from diseases.

In 1998, the Government abolished the clove monopoly at the request of the IMF. However, the general decline in clove cultivation has adversely impacted on the essential oil industry. During the 3 years prior to 1997, the supply of clove leaves for distillation was found to be insufficient for the

clove oil derivatives industry. Indonesia from time has to import crude clove oil from Madahgaskar. Consumption of clove leaf oil by the derivatives industry over the three years 1997 to 1998 ranged between 1,3000 and 1,800 tonnes per annum.

It is unlikely that the production of clove leaf oil in Indonesia can be increased within the near future.

Exports of Clove Leaf Oil, 1985/95

Source : Central Bureau of Statistics, Jakarta

	Kilos	US\$
1985	1,010,525	2,914,168
1986	1,093,085	3,267,801
1987	1,074,370	2,576,409
1988	645,818	1,431,850
1989	650,625	1,387,168
1990	707,350	1,660,494
1991	757,670	2,097,828
1992	405,710	1,055,444
1993	383,315	1,027,952
1994	622,165	1,905,155
1995	370,798	1,571,786

Nutmeg Oil (*Myristica fragrans* Houtt)

True nutmeg is found in several places throughout Indonesia. The mayor production centers are in : Manado-North Sulawesi, Ambon-the Mollucus, Tapaktuan-North Aceh, Padang-West Sumatera, Bogor- West Java, Semarang-Central Java.

In addition, there is another type of nutmeg (*Myristica argentea* Warb.) which is found only in West Irian. This is not important as an essential oil source as both its myristicine content and distillation yield are low.

The nutmeg oil is mostly distilled from young nutmeg, including the still undeveloped mace that is hard to separate from young nuts at that stage.

The supply of nutmeg is actually inelastic and depending on season, the volume of supply is quite variable from one year to the other. There are only two major world producers of nutmeg, viz. Indonesia, which holds approx. 75% of the world market and Grenada.

The use and demand for nutmeg oil since 1993 has shown a regular increase as shown by the export statistics below.

Exports of Nutmeg Oil, 1993/98

Source : Central Bureau of Statistics, Jakarta

	Kilos	US\$
1993	82,036	775,776
1994	155,064	1,431,919
1995	109,509	1,529,609
1996	216,581	3,105,894
1997	209,513	3,778,535
1998	382,100	10,014,413

As mentioned above, the increase of exports is not linked to the Rupiah-dollar rate as supply of this oil is perfectly inelastic. In other words, the world demand has shown a physical increase in the use of this oil. Any price increase of nutmeg oil is mainly caused by the increase of the price of nutmeg as spice.

Patchouli Oil [*Pogostemon patchouli*]

Everyone will agree that patchouli is most important essential oil for Indonesia and that it's a very important oil for the fragrance world. This is evident by the ever-increasing world consumption and demand for the oil.

Exports of Patchouli Oil, 1990/98
Source : Central Bureau of Statistics, Jakarta

	Kilos	US\$
1990	872,529	13,262,166
1991	764,720	9,470,300
1992	774,761	13,062,557
1993	987,582	18,772,386
1994	1,268,011	22,670,928
1995	1,445,119	15,026,548
1996	1,067,156	15,706,706
1997	766,290	33,072,542
1998	1,355,948	53,177,052

As natural product, the supply is always affected by the seasons. During a long drought like the one occurring in 1997, scarcity occurred; coincidentally during the time of monetary crisis when the dollar rate was escalating almost daily. This brought a great fortune to the modest farmers on the island of Nias where the only plantings remained after the long drought.

An increase in production and exports of patchouli took place successively in the years 1994 to 1996. However, the low price prevailing in 1995/1996, and the long drought that took place in 1997 brought with it a big shortage and the price of patchouli soared out of control. The price paid towards the end of 1997 went as high as US\$150/kg, C&F by air. In early 1998 and only after more than one year, the high ruling price fell to a more normal level by the end of 1998.

The high prices induced farmers to intensify their old plantations and start new plantings in several provinces. While expansion in cultivation was occurring, the price decreased to US\$17.50 per kg. Today the price has reached the marginal cost for some producing areas.

We expect that the volume of exports in 1999 will be as large as in 1998. However, if prices slide below US\$15/kg, the time will come again for shortages and further price chaos.

Cananga Oil [*Cananga odonata* (lam). Hook f.]

Cananga trees at maturity may reach sometimes up to 30m tall. The husbandry of the cananga tree is different from that of the ylang-ylang tree, which is topped at beginning of the third year to keep the trees low and to facilitate harvest. The oil of cananga is sold as substitute to third quality ylang-ylang oil.

Exports of Cananga Oil

Source : Central Bureau of Statistics, Jakarta

	Kilos	US\$
1984	52,040	1,477,645
1985	51,210	655,162
1986	26,532	513,886
1987	54,550	972,991
1988	38,601	727,137
1989	45,704	917,005
1990	28,430	520,981
1991	45,016	706,400
1992	54,985	561,636
1993	25,387	544,624
1994	22,865	686,044
1995	26,202	1,448,562

Although the supply of cananga oil is only affected by the season the export figures for 1993-1994 and 1995 showed a steady decrease compared to the previous years. The reason was that cananga is grown in privately owned gardens, which are mainly found in the areas of Blitar and Solo, which are densely populated. There is so far no new plantings being undertaken and from time to time when new roads are built across villages, or new residential houses are erected, many cananga trees have to be sacrificed and are never replaced or renewed.

There has been almost no financial inducement for farmers to replant cananga, as it is perceived to be a too long investment (5 years) and the business is not that lucrative.

Quality issues

As regards to the quality of oils traditionally exported by Indonesia, one of the most frightening and industry damaging phenomena is adulteration. The adulteration generally takes place somewhere along the way as the oil is passed from the distillers through the middlemen until it finally reaches the hands of the exporters.

The use of gas liquid chromatography (GLC) is quite effective in detecting adulteration. However, when buying essential oils "on the spot" from small distillers one does not have the opportunity to use GLC analysis.

Generally, when the species of the plant is correct and distillation is done professionally, most of the Indonesian oils conform to the buyers' requirements. With the introduction of the Indonesian National Standard (SNI) fewer claims for any form of inferior Indonesian oil are being encountered.

The new Emerging Oils : Ginger and Massoia Bark

Although Indonesia has a good potential to produce a range of new essential oils, there are only two oils, ginger and massoia bark, that are being developed in small quantities for regular export.

Fresh ginger oil is being distilled and this has a much sweeter 'note' compared to Chinese or Indian ginger oils which are usually distilled from unsold dried ginger and provide oils with a much harsher 'note'. As a result, the price of Indonesian fresh ginger oil is naturally much higher than that of the Chinese or Indian oils, but generally it has a different demand source or end-use.

Massoia bark oil has been pioneered by a French flavour house. The oil is now becoming a regular export commodity with a demand from a number of flavour houses in several Western countries. The oil is derived from the bark of forest tree, *Cryptocaria massoia*, that occurs only on the island of Irian. Because of the absence of roads in Irian, one has to enter the forest on foot in order to collect the bark. There seems to be a number of varieties of the tree and the differences in bark are difficult to distinguish by visual inspection and after distillation, one may find the oil to be inferior in quality, having a low lactone content (5,6-dihydro-6-pentyl-2 H-pyran-2-one). Buyers usually insist on a high lactone content as the cost of separating this lactone is said to be quite expensive.

Future possibilities

Indonesia as an agricultural country will for a long time to come still be a source of supply of many essential oils. Some prospective oils are Black pepper oil, Cassia bark oil, Lemongrass oil, Gingergrass oil, Palmarosa oil, Basil oil, Jasmine oil, Rose oil, Tuberose oil, Lime oil, Geranium oil, eucalyptus oil, Peppermint oil.

The government's policy is to entice smallholders to become involved in the small industries and especially with regard to the growing the crops.

Domestic Use of Essential Oils

Other than the clove leaf oil derivatives industry, the domestic market for essential oils in Indonesia is still very low. Up to now we see no equivalent domestic trend linked to that of exports. The essential oils industry is fully export-oriented at present. As a consequence of the severe economic crisis in this country, it may take at least another five years before the local branches of the large international flavour and fragrance houses will start using large quantities of local oils in their compounding.

The author, Djohan Narpati, is the President and Founder of PT Djasula Wangi. His experience of the cultivation, distillation, and exports of essential oils dates from 1962. Mr. Narpati is Chairman of the Indonesian Essential Oil Exporters Association, Vice-Chairman of the Indonesian Vanilla Exporters Association and A Member of the Board of the Indonesian Chamber of Commerce.