

CHAPTER IV

NATURAL RUBBER, A POTENTIAL CASH CROPS COMMODITY

We use Rubber in so many ways; it becomes a servant that follows us literally, from the cradle to the grave...
– The late Ralph Wolfe, chemist and author, in an article in the October 1964 edition of "Rubber World."

4.1. Introduction

Civilization as people knows it today is wholly dependent on rubber. It is a material of many uses, unlike anything that the world had previously known. It enters into daily lives in a thousand ways. It is indispensable in transportation, in communication, in cushioning the bodies and protecting the senses from the jars, virus. Even in spending the leisure time, rubber is essential, for there are only few sport games which do not use rubber-made ball. It is a servant that follows everyone.

As Ralph Wolfe's poetic prose confirms, (*IISRP Articles*, 2002) rubber is as indispensable to modern society as steel and wood and mortar. Everyone use products made of rubber at work, at home, at play, even when they travel. Automobiles, trains and aircraft rely on it for safety and comfort. Industry uses it to produce hoses, belts, gaskets, tyre, molding, and thousands of other products.

It comes from two sources: nature and man. Natural rubber (NR) is drawn off from cultivated trees on plantations in Asia and Africa. Synthetic rubber (SR) is man-made and is produced around the world in manufacturing plants that synthesize it from petroleum and other minerals.

Whether it is *natural* or *synthetic*, rubber in its native form is virtually useless. However, after chemicals are added, it takes on properties that, as Ralph

Wolf noted, make it totally “unlike” any material the world has ever known. Depending on the chemicals used, products made of rubber can be as soft as a sponge, as elastic as a rubber band, or as hard as a bowling ball. As a result, much rubber products are used with varying degrees of hardness in people’s daily lives.

NR has been available for centuries, SR for less than a hundred years. Although man began experimenting with synthetic in 1906, not until after World War II did he improve the quality to the point that it rivaled that of NR. Wartime necessity became the impetus for the emergence of synthetic on a large-scale basis when developed countries began building plants to offset NR shortages. SR plants were built around the world after 1945, primarily in Europe, North America, and Japan. In 1960 use of synthetic surpassed that of natural for the first time.

4.2. World Data

Currently, about 65 percent of rubber production is synthetic product which is made of crude oil. North America, European Union and Japan dominate about 60 percent of SR utilization in both the production and the consumption since automotive industry is essential to them. Nevertheless, the utilization trends are decreasing as the recent prices of crude oil turn out to be quite expensive.

Production of natural rubber from the tree *Hevea brasiliensis* plays a major role in socio-economic fabric of many developing countries. Over 80 percent of the production comes from small farms, each typically 2 ha or less (INRO articles, August 2002). Asia is the centre of the production, accounting for 95 percent of the world production. The three largest producers are Thailand,

Indonesia and Malaysia and the rests are in Africa, and tropical America, the original home of *Hevea brasiliensis*.

Table 4.1: Supply/Demand Balance for Rubber ('000 tonnes)

| | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
|-------------------------|-------|--------|--------|--------|--------|--------|
| Natural Rubber | | | | | | |
| World Production | 6,821 | 6,831 | 6,836 | 6,930 | 7,130 | 7,264 |
| World Consumption | 6,494 | 6,709 | 6,920 | 6,893 | 7,450 | 7,690 |
| Synthetic Rubber | | | | | | |
| World Production | 9,884 | 10,476 | 10,998 | 10,819 | 11,830 | 12,383 |
| World Consumption | 9,890 | 10,377 | 10,971 | 10,953 | 12,101 | 12,736 |

Source: LMC International Ltd

There is only one kind of Natural Rubber (NR). Because the rubber plant only thrives in hot and damp regions near the equator, about 90 percent of true rubber production today occurs in the Eastern Asian countries of Thailand, Indonesia, India, Malaysia, etc. Table 4.2 shows that in 2002, the first three countries mentioned are now leading the world NR production by shares of 34%, 22% and 9%, respectively. However, its huge amount of NR mostly is exported while only in small number is consumed domestically.

Table 4.2: Total Production of NR ('000 tonnes)

| | 1999 | 2000 | 2001 | 2002 | 2002 |
|-----------|-------|-------|-------|-------|------|
| Thailand | 2,199 | 2,378 | 2,424 | 2,456 | 34% |
| Indonesia | 1,604 | 1,610 | 1,607 | 1,630 | 22% |
| Malaysia | 769 | 615 | 546 | 589 | 8% |
| India | 605 | 622 | 630 | 650 | 9% |
| Other | 1,659 | 1,705 | 1,923 | 1,939 | 27% |
| | 6,831 | 6,836 | 6,930 | 7,130 | 100% |

Sources: FAO-STAT

Some interesting cases occur and it is necessary to notify that China is now the most-consuming country of NR exceeding the US and Japan with the shares about 16.5%, 13.3%, and 10.4% of total world consumption, respectively (see table 4.3). The demand for NR is increase because of the fast growing

industry of automotive within the country when US' and Japan's suffer from their contracted economies. India also succeeds optimizing its local market with the self-sufficient of NR utilization when the international market is not help much due to the decreasing price.

Table 4.3: World Consumption for NR ('000 tonnes)

| | 1999 | 2000 | 2001 | 2002 | 2002 |
|-------|-------|-------|-------|-------|------|
| USA | 1,116 | 1,087 | 978 | 937 | 13% |
| China | 920 | 1,000 | 1,075 | 1,155 | 16% |
| Japan | 733 | 753 | 727 | 734 | 10% |
| India | 617 | 638 | 655 | 682 | 10% |
| Other | 3,323 | 3,442 | 3,458 | 3,524 | 50% |
| total | 6,709 | 6,920 | 6,893 | 7,032 | 100% |

Sources: FAO-STAT

However, expanding in NR utilization is not followed by its price. The price tends to drop at the world market. It estimates the price goes down up to 0.45 USD or decline more than 75 percent for the last fifty years. That is caused by the demand and supply imbalance. The world's largest rubber producers, Indonesia and Thailand, practices to over-flooding the world market when they were experiencing a highly currency depreciation in 1998-1999. They tend to compete rather than gathering efforts to increase the price at the world market.

The impact of SR substitution products attack also influences the NR price to decrease. Of the world total consumption on NR, 65% of it came from SR utilization and only 35% of it came from NR. Unfortunately, world producers of SR are mainly developed countries (and they act as the world consumers on NR as well). Therefore, it is too hard for NR to compete in the same market, Mostly the US and Japan.

4.3. Indonesian Natural Rubber Structure (Market Opportunity)

NR is one of the most important agriculture commodities in Indonesian economy. Despite its declining contribution to total non-oil exports, NR is the second largest agriculture commodity in revenue terms after animal husbandry. Smallholdings who have 85 percent of the plantation dominate 76 percent of national production (CBSI 2003).

The rubber-growing areas of Indonesia stretch across a five-thousand kilometer band, from Aceh to Irian. The most extensive plantings are in West Java, Riau, North and South Sumatra, and West Kalimantan. These regions are tropical areas, with a well-distributed annual rainfall of 2000-2500 mm, having average temperatures of 24-28°C, and most of the soil is provided with adequate drainage. These are necessary conditions for successful rubber cultivation.

Since the early 1970s several government initiatives have been launched to improve the rubber sector. An important initiative, which gave significant benefits to the estates, was the provision of low-cost capital for rubber development and encouraging rejuvenation with high-yielding clone material (Barlow and Muharminto, 1982; Ririn Purnamasari, Oscar Cacho, and Phil Shimmons, 1999). Smallholding rubber development was initiated through various Nucleus Estate Smallholder System (NESS) schemes in 1977. The NESS program and other integrated schemes have caused a massive increase in total area planted. In 1967, total area of rubber was 2.1 million ha, and by the end of 2003, the total planted area was 3.7 million ha. (See table 4.4)

4.4. Industry Status

4.4.1. Natural Rubber Production

Improvement in the production of Indonesian natural rubber is dominated by the area intensification and high productivity through “PIR”, project implementation unit (UPD), and small scale rubber development project (PPKR). In the decade of 1970s the growth of NR production was 2.22% in average.

Table 4.4 Planted Area and Production of NR
(in '000 ha) (in '000 tonnes)

| Obs | Planted Area (productivity growth) ⁵ | | | Production (production growth) | | |
|----------------|--|------------------|-------------------|-----------------------------------|-----------------|------------------|
| | Smallholder | Estates | Total | Smallholder | Estates | Total |
| 1990-94* | 13,766.9 3.5% | 2,643.3 2.4% | 16,410.2 2.9% | 1,031.1 5.66% | 328.4 0.90% | 1,359.4 4.50% |
| 1995-99* | 15,057.5 0.0% | 2,662.1 -2.8% | 17,719.6 -0.7% | 1,229.3 1.64% | 326.5 -1.94% | 1,555.8 0.85% |
| 2000 | 3,046.0 -5.5% | 549.0 27.0% | 3,595.0 1.1% | 1,125.2 -6.73% | 375.8 27.95% | 1,501.0 0.06% |
| 2001 | 3,120.6 5.0% | 548.0 5.7% | 3,668.6 4.9% | 1,210.5 7.58% | 396.6 5.53% | 1,607.1 7.07% |
| 2002 | 3,120.6 -5.6% | 548.0 22.8% | 3,668.6 1.4% | 1,143.1 -5.57% | 486.9 22.77% | 1,630.0 1.42% |
| 2003 | 3,132.4 1.8% | 549.0 22.5% | 3,681.4 8.0% | 1,168.0 2.18% | 597.8 22.77% | 1,765.8 8.33% |
| Average | 0.8% | 5.7% | 1.81% | 2.2% | 5.6% | 3.0% |

Sources: CBS 2003, IMF, FAO-STAT

*in average

As seen in table 4.4, since the beginning of 1990s, total NR production continually grows as the previous rejuvenation takes the results begun in this period. The rapid growth of total production is due not only to increases in the area but also the improvement of productivity in both smallholdings and large

⁵ Productivity Growth is obtained by firstly find out its productivity (say Pt), in percentage. Then, obtain $((P_t - P_{t-1}) / P_{t-1}) \times 100\%$

estates. Between 1967 and 2003 smallholdings improve the yield from 262 kg per ha to 373 kg per ha. This yield is still low reaching as large estates are able to improve the yield from 506 kg per ha to 1,088 kg per ha in the same period.

The productivity-growth of both smallholdings and large estates tend to increase. A significant trend, from period 1990-2003, identified 0.8 percent of smallholding productivity-growth in average and 5.7% productivity-growth of large estates in average, respectively.

Indonesian productivity is now below the Thailand's (as the highest production in less planted area). Indonesia has much potency to boost NR production because of having large planted area. This represents key indicator of the projection which predicts Indonesian NR production will surpass Thailand in 2006, and it is not exaggerates.

4.4.2. Import-Export of Natural Rubber

Cash crops commodity is potential to generate foreign exchange, provide the raw materials for agro-industries, and absorb a large quantity of manpower. Before and during the monetary crisis in 1998, cash crops commodity gives consistent contribution to the country through their export.

Table 4.5 shows that approximately 90 percent of Indonesian NR production is exported. The three main destinations are the United States, Japan, and Singapore which in 2002 accounted for 39.5%, 13.9%, and 4.8% of total NR exports respectively. Though, the exports have suffered from fluctuations in prices.

Table 4.5: Export Volume of NR by Major Country of Destination

| | (in '000 tonnes) | | | | |
|---------------------|------------------|----------------|----------------|----------------|----------------|
| | 1998 | 1999 | 2000 | 2001 | 2002 |
| USA | 726.5 | 694.9 | 562.5 | 517.2 | 593.1 |
| Japan | 87.8 | 126.2 | 144.6 | 151.6 | 208.1 |
| Singapore | 152.1 | 115.6 | 89.6 | 78.1 | 72.5 |
| Germany | 50.6 | 41.8 | 56.4 | 62.5 | 62.3 |
| Belgium & Luxemburg | 39.5 | 30.5 | 39.5 | 53.5 | 47.0 |
| Others | 584.7 | 485.6 | 487.0 | 590.5 | 513.0 |
| Total | 1,641.2 | 1,494.6 | 1,379.6 | 1,453.4 | 1,496.0 |

Source: CBSI 2003

The annual volume of natural rubber export increases. On the other hand, the export values are declined as the prices drop significantly. In 2001, although the NR export volume to Japan increases by 7000 tonnes (table 4.5), its value declines for 7.8 million USD. It is caused by the severe currency depreciation and the decreasing price.

Table 4.6: Export Value of NR by Major Country of Destination

| | (in million USD, fob) | | | | |
|---------------------|-----------------------|--------------|--------------|--------------|----------------|
| | 1998 | 1999 | 2000 | 2001 | 2002 |
| USA | 487.8 | 400.3 | 363.7 | 281.7 | 395.8 |
| Japan | 55.8 | 71.0 | 91.1 | 83.3 | 159.3 |
| Singapore | 81.7 | 66.1 | 56.4 | 43.8 | 54.2 |
| Germany | 70.1 | 24.4 | 37.0 | 33.3 | 43.2 |
| Belgium & Luxemburg | 26.3 | 17.3 | 24.9 | 29 | 34.7 |
| Others | 379.8 | 270.0 | 315.5 | 315.1 | 347.5 |
| Total | 1,101.5 | 849.1 | 888.6 | 786.2 | 1,034.7 |

Source: CBSI 2003

Some issues come into view when the NR producers face problems of declining prices and currency depreciations. For this reason, in 2002, the three major producing countries (Thailand, Indonesia, and Malaysia) decide to establish an association, namely the *International Tripartite Rubber Corporation* (or ITRCo). The objective is to overcome the declining price and is expectedly able to raise the currency. They agreed to cut their rubber productions by 4 percent and to reduce their rubber exports by 10 percent to align with slower growth in the global rubber industry after the terrorist attacks of 11th September. To following up the

agreement, Indonesia lowered its rubber exports to 1.23 million tons as well as Thailand and Malaysia that lowered exports to 1.93 million tons and 227,000 tons, respectively.

4.4.3. Natural Rubber Consumption

Natural rubber is the raw material used in the manufacture of industrial products (conveyor belts, rubber rollers, etc.), automotive products (fan belts, radiator hoses, etc.), latex products (rubber gloves, toys hygienic products, etc.) and adhesives. The major users of natural rubber are the tyre and footwear industries.

Traditionally, natural rubber is an export crop and until recently consumption was mainly in the industrialized countries. A significant new trend has emerged in recent years whereby most of the producing countries are moving "downstream", converting a significant proportion of their production into manufactured products for domestic use and export with the result that the three largest exporting countries have now joined the ranks of the 12 largest consuming countries (LMC Commodity Bulletin, January 2002).

In the period 1990-94 Indonesia consumed moderately as much as 154,600 ton, in average, because of a rapid growth in elastomer goods, motorcycles, bikes, and tyre industry. Since the seventies, new investment in both foreign-firms expansion (Goodyear, Dunlop, and Bridgestone) and national firms (Intirub, Mega Rubber, United kingstone, and United Kingland) has absorbed lots of natural rubber as their raw material. Tire industry absorbed at least 65% of it (each unit of tire needs 9-10 natural rubber as their material). The need for rubber is not only

fulfilled by local rubber but also by importing synthetic rubber, elastomer goods, and even importing natural rubber.

Table 4.7: Indonesian Production, Export and Consumption for NR
(in '000 tonnes)

| Obs | Total Production | Total Export | Consumption* | Consumption Growth (%) |
|---------|---------------------|-----------------|--------------|---------------------------|
| 1990-94 | 1,359.4 | 1,204.8 | 154.6 | 25.10 |
| 1995-99 | 1,555.8 | 1,462.0 | 93.8 | -35.15 |
| 2000 | 1,501.0 | 1,379.6 | 121.4 | 2107.27 |
| 2001 | 1,607.1 | 1,453.4 | 153.7 | 26.61 |
| 2002 | 1,630.0 | 1,496.0 | 134.0 | -12.82 |
| 2003 | 1,765.8 | 1,541.4 | 224.3 | 67.43 |

Sources: CBS 2003, IMF, FAO-STAT

*Consumption = Production – Export

After the period 1995, industrial business demand for NR, gradually decreased since many of investors pulled back their investment because Indonesian economic condition are not preferable for them to invest their capital. Many of business firms suffered from the monetary economy crisis attacked in 1998. Furthermore, the government only encourages the export while discourages the absorption of NR by domestic industries. Industries producing rubber goods, except tyres, have not developed properly, as it is very costly to develop such industries. It is often found that, ironically, Industry which uses NR as the raw material has to buy the material in term of dollar

Consequently, businesses switch to synthetic rubber substitution product⁶ and more SR enters Indonesian market. This is in contradiction with the world rubber consumption, which is switching to natural rubber. Therefore, it is not surprised when Indonesia's rubber consumption, currently, is still quite low

⁶ "Investment Opportunities Labuhan Ratu: Crumb Rubber Industry", *North Sumatra Regional Investment Coordinating Board*, BPKMD Sumut (2000)

reaching only 224,000 tons per year. Thus, Indonesia's NR consumption per capita is about 1.5Kg/year. It is significant gap as developed countries reach 15-20Kg/year per capita NR consumption.

What action should be taken by Indonesian government to optimize the strategic position of natural rubber as potential cash crops commodity? If it is promoted in Indonesian domestic market, what is the prospect? And can Indonesian natural rubber be "traded on" in domestic market—beside international market? In next chapter, this thesis will try to discuss farther about the problems.

