
Developing an ASEAN Framework for Trade Negotiations:

Determining the Role of the Philippine Natural Rubber and Rubber Based Products Manufacturing Industries in the ASEAN Economic Integration Plan: Is the Philippines capable of making significant contributions to the region and obtaining substantial gains from these industries?

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I. Introduction

The initial reduction of tariff rates under the ASEAN Free Trade Area (AFTA) agreement was a major step towards integrating the economies of member countries within the region. This initiative was designed and taken in order to create one large regional market made up of roughly 530 million consumers that would serve to stimulate the growth of various industries which would exploit the advantages behind economies of scale, encouraging firms to reap the benefits of mass production, lower average costs and lower prices. In view of the competition that would further intensify within the ASEAN region as well as from other regional trading blocs, the quality of goods and services is expected to further improve as ASEAN based firms try to strengthen efforts to increase market shares in the midst of widening global trade.

At the Bali Summit of October 2003, the ASEAN Economic Community (AEC) was established as one of the three pillars of a broader ASEAN Community. ASEAN leaders had declared that the AEC was the realization of the end goal of economic integration as outlined in the ASEAN Vision 2020 which characterizes the region as a single market and production base, with the free flow of goods, services, investment, skilled labor and a freer flow of capital by 2020. As a larger market, countries in the region will be in a better position to compete and allocate resources more efficiently through investments in international production networks and transfer skilled labor into areas where they are expected to make the most contributions and generate the largest returns. Economic integration is crucial for ASEAN in order to better compete with fast growing rivals in the Asia Pacific region as well as in other regional trading blocs.

In September of 2004, ASEAN finance ministers agreed to lay out a ‘road map’ for integration and the opening of doors to wider global trade. In particular, tariff rates in eleven (11) industry sectors will be abolished by 2012, forming a common market

containing more than 530 million people. Under this road map, tariff rates on **rubber**, electronics, autos, textiles, air travel, tourism, agriculture, e-commerce, fisheries, wood and healthcare will be scrapped in 2007 between ASEAN's more developed members namely: Brunei, Indonesia, Malaysia, the Philippines, Singapore and Thailand while the four other members namely: Cambodia, Myanmar, Laos and Vietnam, have been given until 2012 to abolish tariff rates in the 11 priority sectors and to fully integrate with the AFTA.

This paper focuses on the Philippine **natural rubber and rubber based products manufacturing industries** with the objective of providing insights on the possible or potential role of these sectors as ASEAN moves towards greater economic integration within the next few years.

II. The Philippine Natural Rubber Industry

Rubber is an elastic substance obtained by coagulating the milky juice of tropical plants of the genera *Hevea* and *Ficus*. Rubber trees that are 5 years old or more produce a white or yellow colored latex that can be harvested by cutting bark with a herringbone pattern, deep enough to reach the latex vessels but before the phloem (the hard wood). The older the rubber tree gets, the more latex is produced. Production from the Philippine rubber industry begins in the plantation where latex, the milk like substance tapped from the bark of the rubber tree (*Hevea brasiliensis* Mull. Arg.) is collected into small containers, heated and smoked by burning wood, stirred and then combined with acid or alkali in order to coagulate or thicken the latex to produce cake like products called coagulum or cuplumps.. The resulting flat "cakes" are hung to dry and after which shipped to factories and made into various types of rubber products. This is essentially a polymer of isoprene, prepared into sheets and then dried with the end product being referred to as Casathosec or India Rubber. It extends to the intermediate industries of processing latex concentrates and baled rubber, down to rubber product manufacturers. The industry spills over from an agricultural based sub group of rubber growers and processors to rubber product manufacturers (BOI-DTI ITRC Report, 1998).

Rubber trees grow best in tropical countries with temperatures ranging from 20 to 28 degrees centigrade and with well distributed rainfall. The mature trees can grow to as high as 20 to 30 meters with upward extending branches and a slim trunk. Rubber trees were planted in Mindanao as early as 1906. Tapping for commercial production began at the Menzi Agricultural Corporation in Basila in 1914. Another early planter was the Rio Grande Rubber Estate in Kabacan, North Cotabato, the area where the Philippine Industrial Crops Institute, a major rubber research center under the University of Southern Mindanao is now situated (BETP-DTI ITRC Report, 2000).

Goodyear Tire and Rubber Company started a 1,000 hectare plantation in Zamboanga del Sur in 1919. In 1929, American Rubber Co. planted another 1,000 hectares in Basilan. By the late 1950's, large scale planting was being tried by Goodrich in Basilan, Firestone in North Cotabato, and Goodyear in Zamboanga del Sur. Goodyear invited neighboring farms to grow rubber by making production technology and planting

materials available, a strategy later followed by Goodrich and Firestone. The lifespan of the rubber tree may extend beyond one hundred years, but its economic life in the plantation covers only 32 years, of which the first seven fall within the immature phase and the succeeding 25 years the productive phase. Small and medium sized landowners were thus encouraged to venture into rubber farming with the support of soft financing from the Development Bank of the Philippines and the Philippine National Bank (BETP-DTI ITRC Report, 2000).

The Philippine rubber industry covers four major product groups namely: natural rubber, tires, molded rubber, and articles of rubber. Natural rubber is the primary product processed from latex into air-dried sheets, crumb rubber and centrifuged latex. Molded rubber refers to materials such as paste, sheets, rods, threads, tubes and latex products. Articles of rubber are final products such as bottle nipples and other articles like conveyor belts, stoppers, plugs, weather strips and gaskets which are mostly used as components of machines (BOI-DTI ITRC Report, 1998).

Product Description	Coverage	HS Code	PSIC Code	SITC Code
Natural Rubber	Natural rubber such as air dried sheets, crumb rubber and centrifuged latex	40.01	231	232
Rubber Tires	Tires	40.11 40.12 40.13	625	625
Molded Rubber Products	Materials of rubber such as paste, sheets, rods, thread, tubes of rubber, latex products	40.03 40.09	621	621
Rubber Articles	Bottle nipples, conveyor and transmission belts, stoppers, plugs and seals, gaskets and weather strips.	40.10 40.14 40.17	629	628

Source: BOI-DTI ITRC Report, 1998.

Natural rubber is the raw material for more than 50,000 industrial and consumer products. Among its domestic uses are vehicle tires (41%), footwear (32%) and motorcycle and bicycle tires (15%) (BETP-DTI ITRC Report, 2000).

Tires used for machines and heavy equipment, pick-up vehicles and trucks, automobiles and civil and military aircraft generally use radial tires made of natural rubber. Only natural rubber can provide the necessary resistance in the flanks and the best quality of adhesion for steel belts. The United States which imports more than 1 million tons per year of natural rubber also reflects a 95 percent share of radial tire sales in its total pneumatic market. Radial tires are safer, more resistant, more durable and perform better in terms of contributing to fuel consumption efficiency, than conventional tires. This partly explains the international market's growing preference for radial tires as compared to conventional tires made of synthetic rubber. In addition, synthetic rubber

which is obtained from petroleum products are becoming more expensive because of rapidly rising oil prices during the past three years (BETP-DTI ITRC Report, 2000).

Surgical gloves, condoms, surgical tubes, catheters and other pharmaceutical products are major users of natural rubber in the health services sector. The outbreak of the Acquired Immune Deficiency Syndrome (AIDS) has encouraged the use of condoms for safe sex and dramatically increased the demand for this product over the past several years. These products used by hospitals, clinics and health centers use 100 percent natural rubber and its consumption in the medical industry has grown substantially over the past years. The adhesive characteristics of natural rubber as applied to steel and glass, and its ability to support heat and vapor during sterilization makes it the ideal raw material for these types of products being used by the health services sector (BETP-DTI ITRC Report, 2000).

Rubber artifacts such as soles for shoes, auto parts, small artifacts, camel back for recapping tires and carrier belts are also intensive users of natural rubber as raw materials. These products represent a huge potential in terms of business opportunities for rubber based manufacturing firms gearing to take advantage of a single unified market in the ASEAN region.

2.1 Domestic Production

The domestic production of rubber has grown substantially over the past seven years from 214,575 metric tons in 1999 to 315,600 metric tons for the year 2005. The fastest growth in production was recorded during the year 2001 at 22.07 percent. For the year 2002, production growth slowed down at 1.40 percent but began to accelerate at 2.34 percent to 6.29 to 8.36 percent for the years 2003, 2004 and 2005 respectively. The average growth rate for production was at 6.94 percent. Increases in productivity can also be observed during the seven year period with the yield per hectare improving from 2.34 metric tons per hectare in 1999 to 3.85 metric tons per hectare in 2005. Aside from the new technologies designed to increase productivity, improvements in the yield per hectare may have also been stimulated by rising farm gate prices of rubber cup lumps which increased from P7.29 per kilogram in 1999 to P17.12 per kilogram in 2003. Producers were encouraged to take advantage of the attractive prices by further raising production through productivity improvements.

Philippine Rubber (cup lump) Production Volume from 1999-2003

Year	Production volume in metric tons	Growth rate (percentage)	Yield (metric ton/ hectare)
1999	214,575	-0-	2.34
2000	216,309	0.81	2.67
2001	264,042	22.07	3.38
2002	267,712	1.40	3.30
2003	273,979	2.34	3.42
2004	311,240	13.60	3.85
2005	315,600	1.40	3.85

**Source: Bureau of Agricultural Statistics
NEDA Statistical Yearbook**

Rubber planters in the Philippines are predominantly small land holders, with a farm size falling within a range of seven to ten hectares. The implementation of the Comprehensive Agrarian Reform Law transformed the natural rubber sector from a structure with a few large-based plantations to one with many small farm land holdings. The remaining rubber plantations are owned by private companies or are formed as a group of integrated small land holders functioning as cooperatives. After land redistribution under the Agrarian reform program, the management of formerly vast tracts of land were consequently left to farmers who were trained to tap rubber trees but did not possess adequate technical and marketing skills and did not have the financial capability to maintain or increase the land's productivity (BOI-DTI ITRC Report 1998).

Rubber is mainly cultivated in the three regions of Mindanao, with most of the farms located in Region 9 which makes up 41 percent of the total land area being used for production. Region 11 and 12 make up 8 percent and 29 percent of the land area used for rubber production respectively. For the year 2004, the total area used for planting rubber was 82,314 hectares (BAS 2005). The number of hectares planted with rubber trees was estimated at 81,925 hectares by the end of 2005 (Panganiban, 2006) . Although there was a decrease in the number of hectares being used for growing rubber trees, cup lump production had still expanded from 291,239 to over 315,600 metric tons due to the continued increases in productivity as shown by the larger yield per hectare of 3.54 metric tons in 2004 to 3.85 metric tons in 2005.

During the last few years, the area planted to rubber had been declining from 91,536 hectares in 1999 to 81,295 hectares by the year 2005. The lowest number of hectares planted to rubber during this period was at 80,144 hectares in 2003, only to make a slight recovery in 2004 at 82,314 hectares. The number of hectares used for growing rubber trees had been decreasing by an average of 4.17 percent. A substantial number of senile as well as less productive old trees were being cut down to be used as wood, without having a sustainable replanting program to replace the old trees particularly from 1999 to 2003.

Area used for Planting Rubber Trees (in hectares) 199-2005

Year	Area Planted to Rubber (in hectares)	Growth Rate (percentage)
1999	91,536	-0-
2000	81,036	-11.47
2001	78,108	-3.61
2002	81,087	3.81
2003	80,144	-1.16
2004	82,314	2.70
2005	81,925	-0.47

**Source: Bureau of Agricultural Statistics
NEDA Statistical Yearbook**

There are seven recommended clones for high yielding rubber trees and these are: RRIM 600 (Rb99-01), RRIM 712, RRIM 901, PB217 (Rb 99-02), PB235 (Rb 99-04), PB260, USM1 (Rb 99-03), PB330, and PB 311. Currently there are 29 million rubber trees in the country producing over 315 thousand metric tons of output as of 2005 (Panganiban 2006).

The Department of Agriculture estimates that 500,00 hectares are currently suitable for growing rubber in Mindanao but at present less than 82,000 hectares are being used. The areas being identified for potential expansion are Agusan del Sur with 110,000 hectares; Zamboanga del Sur with 100,000 hectares; Bukidnon with 50,000 hectares; North Cotabato with 50,000 hectares; Zamboanga del Norte with 50,000 hectares and Basilan with 20,000 hectares (BETP-DTI ITRC Report, 2000).

Number of Productive Rubber Trees

Year	Number of Productive Rubber Trees	Growth Rate (percentage)
1999	26,810,997	-0-
2000	25,250,262	-5.82
2001	25,190,726	-0.24
2002	25,127,597	-0.25
2003	24,992,305	-0.54
2004	26,916,712	7.69
2005	28,989,299	7.70

**Source: Bureau of Agricultural Statistics
NEDA Statistical Yearbook**

The number of productive rubber trees declined from 1999 to 2003, from over 26.8 million to 24.99 million trees with an average rate of decline of approximately 1.7 percent over the four year period. The growing domestic and global demand for natural rubber and the increasing price in the world market prompted government to implement a national rubber development program which included a substantial increase in the production of rubber seedlings and a consequent expansion of hectares used for growing

rubber trees. This resulted to an increase in the number of productive trees from 24.99 million in 2003 to 26.9 million in 2004 to 28.9 million in 2005 (Panganiban 2006).

Rubber is mainly produced in the provinces of Zamboanga Sibugay, Zamboanga del Sur and North Cotabato. These provinces account for 28 percent, 22 percent and 20 percent respectively of the total domestic production in the Philippines. The other provinces which may be considered as major producers are Basilan and Agusan del Sur which contribute 8 percent and 6 percent to local production respectively (Department of Agriculture Report 2004).

At present, the total plantation area devoted to rubber is about 92,067 hectares, 50 percent of which is located in Western Mindanao, followed by Central Mindanao with 24 percent share. There are 31, 215 rubber growers classified as either small or large scale growers (Eleazar, BAR Chronicle, 2006).

Approximately 40,000 farmers and over a thousand farm workers in the rubber tree tapping and tending nurseries directly benefit from the industry. In addition, downstream industries in primary processing and the manufacture of finished products such as tires, footwear and other industrial products provide other benefits to various sectors of the economy. Roughly 95 percent of the domestic rubber production is used by the downstream industries and from this, 70 percent of the rubber produced is purchased by the tire and footwear industries (Costales 2006).

2.2 Exports of Natural Rubber

Natural rubber exports which include rubber products in its primary form, plates, crepe sheets and strips have been performing well over the past six years. Exports were initially valued at \$14.29 million during the year 2000 and have grown substantially reaching a level of \$36.51 million during the year 2005. Except for the 7.32 percent decline during the year 2001, all other years going into 2005 revealed positive growth, the highest of which was at 80.23 percent in 2003, and the lowest at 5.21 percent in 2004. Natural rubber exports for 2002 at \$18.187 million, increased by almost twice as much in 2003 at \$32.779 million.

Philippine Exports and Imports of Natural Rubber (in U.S.\$)

Year	Exports	Imports	Trade Balance	Net Trade Ratio
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				(percent)
2000	14,292,880	521,870	13,771,010	92.95
2001	13,246,525	1,348,346	11,898,179	81.52
2002	18,187,449	917,727	17,269,722	90.39
2003	32,779,749	1,635,770	31,143,979	90.49
2004	34,487,598	1,764,147	32,723,451	90.26
2005	36,508,385	5,360,466	31,147,919	74.39

Source: National Statistics Office

The major buyers of Philippine rubber primary products were Taiwan, mainland China, Malaysia, Singapore, Hong Kong and Germany. The people's Republic of China purchased more than \$11.2 million worth of rubber products, followed by Taiwan at \$9.3 million, Malaysia at \$8.9 million and Singapore at \$3.6 million.

Growth Rate of Exports and Imports (in percentage)

Year	Exports	Imports
2001	-7.32	158.37
2002	37.30	-31.94
2003	80.23	78.24
2004	5.21	7.85
2005	5.86	203.85

Source: National Statistics Office

2.3 Imports of Natural Rubber

Imports of natural rubber were relatively smaller but had increased substantially over a six year period. In the year 2000, imports were at \$521,870, and by 2005 this had reached \$5.360 million. Import growth was rapid during the year 2001 and 2005 at 158.37 and 203.85 percent respectively. During the six year period, imports declined in 2002 registering a 31.94 percent reduction from \$1.348 million in 2001 to \$917,727 in 2002. Although imports grew by more than 200 percent during the year 2005, its \$5.360 million level was still below the export value of \$36.508 million for the same year. The Philippines imports natural rubber largely from Thailand worth \$1.972 million, followed by Singapore at \$1.788 million and Indonesia at \$542,707. Despite the rapid growth of natural rubber imports, it remained substantially lower compared to exports for all years within the 2000-2005 period.

2.4 Trade Balance and Net Trade Ratios

The trade balance had remained positive all throughout the six year period with exports outpacing imports resulting to an increase in the trade surplus from \$13.77 million in 2000 to \$31.147 million in 2005. The trade balance became significantly wider beginning in the year 2002 at \$17.269 million and this further increased to \$31.144 and \$32.723 in years 2003 and 2004 respectively. The net trade ratio was over 90 percent during the years 2000, 2002, 2003 and 2004. The lowest net trade ratio was recorded for the year 2005 at 74.39 percent caused by the rapid expansion of imports in 2005. Despite the dramatic increase in imports last year, the trade surplus for natural rubber products continued to stay above \$30 million indicating its potential comparative advantage in the industry.

2.5 Domestic Prices

The growing demand for natural rubber which may be attributed to the higher demand for tires used by the automotive industry, the expanding output of the footwear industry as well as the declining competitiveness of synthetic rubber caused by rapidly increasing oil prices, has put pressure on farm gate prices to increase.

Farm Gate Prices of Cup Lump Rubber

Year	Price (Pesos/kg.)	Percentage change
1999	7.29	-0-
2000	9.25	26.89
2001	7.90	-14.59
2002	11.03	39.62
2003	17.12	55.21
2004	26.00	51.87
2005	28.00	7.69

Source: Bureau of Agricultural Statistics

In 1999, cut lump rubber used to be sold at P7.29 per kg. Prices had continuously risen over the past seven years settling at P28.0 per kg. for the year 2005. Cup lumps normally become even more expensive during the summer months of March and April as well as September to December because of seasonal increases in demand caused by additional purchases of raw materials by producers of rubber based products.

Except for the year 2001, prices had risen significantly over the past seven years with the largest increase at 55.21 percent during the year 2003. Increases of 51.87 , 39.62 and 26.89 percent were recorded during the years 2004, 2002, and 2000 respectively. These price increases may have encouraged natural rubber producers to increase cup lump production as shown by the growth in total output from over 214 thousand metric tons in 1999 to over 315 thousand metric tons by 2005, despite a reduction in the number of hectares used for planting rubber trees.

2.6 International Prices

Prices of natural rubber have been increasing in the world market due to strong demand. A comparison of prices across the European, Asian and North American markets reveal a consistent trend of price increases from the year 2004 to 2006. In Europe, the natural rubber grade TSR20 had a price of 1039 euro per ton, which increased to 1197 euro per ton by the end of 2005 and further rose to 1666 euro per ton by the 1st quarter of 2006. This reflected a price increase of 15.21 percent from 2004 to 2005 and 39.2 percent by the end of the 1st quarter of 2006. During the four quarters of 2005, prices have consistently risen from 976 euros per ton during the first quarter to 1446 euros per ton by last quarter reflecting a price increase of 48.15 percent.

Natural Rubber Prices

Natural Rubber Grade	2004	2005 1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Year- end 2005	2006 1st Quarter
Europe TSR20 euro/ton	1039	976	1056	1311	1446	1197	1666
SICOM RSS3 S\$/ton	2187	2057	2292	2809	2841	2500	3283
New York TSR20 US \$/ton	1350	1354	1381	1625	1783	1535	2036

Source:IRSG Rubber Statistical Bulletin

In the Asian market, the natural rubber grade RSS3 was shown in Singapore to be at S\$2187 per ton in 2004. This price had risen to S\$2,500 per ton by the end of 2005 and consequently became S\$3283 per ton by the 1st quarter of 2006. This represented a price increase of 14.31 percent from 2004 to 2005 and 31.32 percent by the 1st quarter of 2006. Asian prices during the four quarters of 2005 have also shown consistent increases from S\$2057 per ton during the first quarter to S\$2841 per ton in the last quarter of the year. This reflected a price increase of 38.11 percent within the year 2005.

For the North American market, the New York price of the natural rubber grade TSR20 had risen from \$1350 per ton in 2004 to \$1535 per ton by the end of 2005 to \$2036 going into the 1st quarter of 2006. This represented a growth rate of 13.7 percent and 32.64 percent for the years 2005 and 2006 (1st quarter) respectively. Across the four quarters of the year 2005, prices have also risen from \$1354 per ton during the 1st quarter to \$1783 per ton by the end of the 4th quarter reflecting an increase of 31.68 percent

It can be observed that for the three grades of natural rubber, prices in Europe, Asia and North America had all risen from 2004 to 2006, with the biggest rates of increase recorded going into the 1st quarter of 2006 (39.2 percent for Europe TSR20, 31.32

percent for SICOM RSS3 and 32.64 percent for New York TSR20). This provides an indication of the strength of demand in the world market which continues to put pressure on natural rubber prices to increase.

By the end of 2006, international prices had increased substantially (more than 30 percent) for the three different grades of natural rubber as presented in the following table:

Natural Rubber Grade	2005	2006 (year end)
Europe, TSR20 e/tonne	1197	1646
SICOM, RSS3 S\$/tonne	2500	3344
New York, TSR20, US \$/tonne	1535	2113

Source: International Rubber Study Group 2007

The price of Europe TSR 20 had increased by 37.5 percent followed by New York TSR 20 at 37.65 percent and the RSS3 in the Singapore commodity market at 33.76 percent.

**Relative Price of Natural Rubber to Synthetic Rubber
(price ratio NR/SR in percent)**

Ratio of NR to SR	2004	2005 1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Year-end 2005	2006 1st Quarter
New York TSR20 / USA SBR	100.8	83.9	84.3	102.8	111.9	95.6	123.5

Source:IRSG Rubber Statistical Bulletin

Robust world demand and higher international prices have made natural rubber more attractive for firms to produce relative to synthetic rubber which has been negatively affected by the rising price of oil in the world market. Synthetic rubber uses petroleum products as a major component in production and rising oil prices from \$50 to \$70 per barrel has made synthetic rubber production more costly and less competitive as compared to natural rubber. A comparison of international prices shows that natural rubber is more attractive relative to synthetic rubber because of its higher prices in the global market.

The price ratio of natural rubber to synthetic rubber (New York TSR20 / USA SBR) was at 100.8 percent in 2004, 95.6 percent in 2005 and 123.5 percent in 2006. This indicates that for the years 2004 and 2006, the price of natural rubber has been higher than that of synthetic rubber making it more attractive for current as well as prospective natural rubber producers. Although, synthetic rubber prices were slightly

higher than natural rubber by the end of 2005, the 3rd and 4th quarters of the year show that natural rubber prices were still higher compared to those of its synthetic counterpart. It was only during the 1st and 2nd quarters of 2005 where synthetic rubber was priced higher than that of natural rubber. Natural rubber is cheaper to produce (due to its non-dependence on petroleum), and its demand coming from the automotive and footwear industries are strong because of its superior durability, elastic and strength characteristics as compared to synthetic rubber. The price increases in the international market have definitely served as an incentive for natural rubber producers to increase domestic output as well as production for export.

Synthetic Rubber Prices

	2005	2006
USA SBR Export Values US \$/ tonne	1607	1710
Japan SBR Export Value '000 Yen/tonne	182	205
France, SBR Export Value e/tonne	1284	1382

Source: International Rubber Study Group 2007

Synthetic rubber prices had increased by the end of 2006 with the USA SBR price rising by 6.4 percent, the Japan SBR at 12.64 percent and France SBR at 7.63 percent

Relative Natural Rubber to Synthetic Rubber Price Ratio

	2005	2006
New York, TSR20/ USA SBR	95.6	123.6

Source: International Rubber Study Group 2007

By the end of 2006, natural rubber prices had surpassed synthetic rubber prices with the ratio of New York TSR 20 to USA SBR moving from 95.6 percent in 2005 to 123.6 percent in 2006.

Natural Rubber Prices in Malaysia (Ringit per kg.) 2001-2004

Natural Rubber Grade	1999-2001 average	2002	2003	2004
RSS1 cif	243.3	292.1	401.4	480.7
SMR20 cif	225.5	284.8	380.0	519.6

Source: Rubber Commodity Notes, FAO 2004

Malaysia, being the third largest natural rubber producer in the world, also exhibited dramatic price increases across the 2001 to 2004 period. The natural rubber

grade of Malaysian RSS1 reveals continuing price increases from 243.3 ringit per kilogram in 2001 to 292.1, 401.4 and 480.7 for the years 2002, 2003 and 2004 respectively. Prices had risen by 20 percent in 2002, 37.42 percent in 2003 and 19.76 percent in 2004. For the natural rubber grade of Malaysian SMR20, prices had risen from 225.5 ringit per kg. in 2001 to 284.8, 380 and 519.6 ringit per kg in 2002, 2003 and 2004 respectively. These price increases represented annual growth rates of 26.3 percent in 2002, 33.43 percent in 2003 and 36.74 percent in 2004. The rising prices boosted Malaysian natural rubber production during the same period and extending to both 2005 and 2006.

Natural Rubber Prices 1995-2006
(US cents per kg)

Year	USS3	RSS3	STR20
1995	138.76	157.21	153.22
1996	121.39	138.51	132.33
1997	87.28	96.89	95.71
1998	62.07	70.91	67.07
1999	52.25	62.10	60.07
2000	58.32	66.41	64.82
2001	50.65	56.97	53.84
2002	67.77	76.03	75.33
2003	95.62	107.03	101.16
2004	115.92	128.46	122.28
2005	136.61	148.94	139.85
2006	192.86	210.94	194.54

Source: Tavarolit, IRCo, 2006

The upswing in international prices for natural rubber during the year 2000 and 2002, actually began as a recovery from a period of declining prices during the years 1995 to 1999. The three natural rubber grades USS3, RSS3 and STR20 all experienced falling prices from 1995 to 1999, only to recover in the year 2000 and 2002. The lowest price level for the three natural rubber grades were 50.65 US cents per kg for USS3, 56.97 US cents per kg for RSS3 and 53.84 US cents per kg for STR20 all occurring during the year 2001. By the end of 2002, prices began to recover for the three natural rubber grades. For USS3, prices had risen to 67.77 US cents per kg in 2002 to 192.86 US cents per kg in 2006. For RSS3, prices increased from 76.03 US cents per kg in 2002 to 210.94 US cents per kg by 2006. And lastly, for STR20, from a price level of 75.33 US cents per kg in 2002, this had increased to 194.54 US cents per kg in 2006. Price increases for 2006 were 41.17 percent for USS3, 41 percent for RSS3 and 39.1 percent for STR20.

Export prices have generally been increasing, with the price of exported rubber crepes rising by 31 percent from \$560 per metric ton in 2003 to \$773 per metric ton by

the end of 2004. The same trend can also be observed with natural rubber plates which had increased from \$640 per metric ton in 2003 to \$932 per metric ton in 2004 reflecting a 45 percent rate of increase. By the year 2005, natural rubber had been selling in the world market for \$1,100 to \$1,200 per metric ton (Costales, 2006).

Thailand, being one of the largest producers in the world market provides a benchmark for price movements in natural rubber. Driven largely by increasing demand from China and other Asian countries, rubber prices in world major rubber exchange markets continued to move upward in 2003, 2004 and early 2005. The average price of RSS rubber in 2003 in Thailand was 44.5 Baht/kg. (\$1.07/kg), which was 36 percent higher than in 2002 and 77 percent higher than 2001. Similar price increases could be observed in other major markets such as London and Tokyo. After reaching 55.9 Baht/kg. in June 2004, the price of RSS rubber in Thailand started falling because of expected higher production in 2004 and a lower growth in demand from China. However, the price reduction was contained. The average price in August 2004, was at 52 Baht/kg. or 16 percent higher than the 2003 level. The price of oil (which is the basic material for producing synthetic rubbers) had risen significantly over the past few years to exceed US\$50/barrel, thus providing natural rubber some price competitiveness over synthetic rubber (FAO, 2004).

Thai RSS3 reached a price level of Baht 100.4 per kg, the highest level in the history of the organized rubber market in Thailand. New York TSR20 a proxy for Indonesian SIR 20 and the Malaysian SMR 20 had risen to \$2.46 per kg and \$2.23 per kg respectively. The latest price gains are a continuation of the four and a half year long bull run and are underwritten by tight global rubber market conditions, affected by recurring but temporary supply interruptions caused by heavy rains, especially over the main producing areas (IRSG Report 2006).

Since the final quarter of 2005, global natural rubber latex consumption and imports have been recovering while production and exports have decline sharply. As a result, latex prices have been rising sharply, responding to rising farmgate prices and overall tightness of the global rubber market. Despite the rising and high cost of raw materials, exports of latex based rubber goods had performed well during the first quarter of 2006 ((IRSG Report 2006).

World rubber prices should continue to show some strength in the near future largely due to high oil prices and continuing global economic growth. If global economic growth particularly in the developed countries such as those in the European Union, Japan and the United States and large developing countries such as China and India continue at their current pace, further price strengthening can be expected. It would however, be limited in the long run by the great potential to increase supply by more intensive tapping and by increasing yield in the major producing countries (FAO, 2005).

III. Natural Rubber in the International Market

3.1 World Consumption of Natural Rubber

The consumption of natural rubber in the world market for the year 2005 was measured at 8.777 million metric tons. This indicates growth of approximately 5.2 percent as compared to the 2004 level of 8.343 million metric tons. The regional group which consumes the largest volume of natural rubber are composed of countries falling within the Asia/ Oceana group which had consumed 4.919 million metric tons of natural rubber during the year 2004, and 5.248 million metric tons by the end of 2005 reflecting a rate of increase of approximately 6.69 percent.

Natural Rubber Consumption (in thousands of metric tons)

Region	2004	2005 1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Year- end 2005	2006 1st Quarter
North America	1290	336	335	329	316	1316	328
Latin America	520	136	143	133	120	532	129
European Union	1295	353	337	320	325	1335	321
Other Europe	196	57	56	59	54	225	53
Africa	123	33	30	31	26	121	29
Asia/Oceana	4919	1296	1301	1323	1328	5248	1303
Total	8343	2211	2201	2195	2170	8777	2162

Source:IRSG Rubber Statistical Bulletin

The second largest regional group consuming natural rubber were countries belonging to the European Union which had used 1.295 million metric tons in 2004 and had increased this to 1.335 million metric tons by the end of 2005. Consumption growth for this regional group was at 3.09 percent.

The third largest consumers of natural rubber are the countries found in the North American region which had used 1.290 million metric tons during the year 2004 and increased this further to 1.316 million metric tons by the end of 2005. Consumption in the North American region grew by 2 percent for this period. Countries in the Latin American region represent the fourth largest consumers, using up 520 thousand metric tons of natural rubber in 2004 and increased this to 532 thousand in 2005, with consumption growing at a rate of 2.3 percent. The rest of the other regional groupings had shown consumption levels which were either “close to” or substantially lower than 200 thousand metric tons. Countries falling in the regional group classified as “the other

Europe” used up 196 thousand metric tons in 2004 and increased this to 225 thousand metric tons in 2005, reflecting growth at 14.8 percent.

The regional group which consumed the smallest volume of natural rubber were the countries belonging to the African region with consumption measured at 123 thousand metric tons in 2004. The region’s use of natural rubber had even declined by 1.62 percent to a level of 121 thousand metric tons by the end of 2005, due to their relatively weak economies and the absence of well integrated industries in the automotive, tire manufacturing, footwear, machinery / equipment manufacturing and pharmaceutical industries which are considered to be the major users of natural rubber.

The consumption of natural rubber has been growing rapidly over the past seven years. As of May 2006, the consumption of natural rubber in the world market reached 8.79 million tons and this represents an increase of 10.98 percent compared to the 2003 level of 7.92 million tones. The consumption level in 2006, also reflects growth of 16.58 percent relative to the 2002 level of 7.54 million tones and 32 percent as compared to the 6.655 million tones purchased in the international market in 1999.

Nearly half of the natural rubber used globally is for tire production. The higher demand for motor vehicles, and consequently for tires, stimulated further by stronger economic growth in several key markets, particularly in China and other Asian countries together with substantial increases in oil prices (resulting to higher prices for synthetic rubber), contributed to the stronger demand for natural rubber (Rubber Commodity Notes, FAO, 2004).

The growing economies of developed countries such as the United States, Japan, Canada and other European countries have also contributed significantly to the increase in natural rubber consumption. The United States and Canada maintains consumption from a range of 1.13 to 1.20 million tones to supply their respective transportation industries (Rubber Commodity Notes, FAO, 2004).

China has been a major consumer of natural rubber over the past several years. During the year 2003, its consumption of natural rubber reached nearly 1.49 million tones, 13 percent more than the previous year and nearly 75 percent higher than in 1999. Other countries including India, Japan, the Republic of Korea and Malaysia, also registered substantial increases in consumption in 2003. Brazil became an important driving force for higher consumption in South America using roughly 256,000 tones in 2003, which was 10 percent higher than the previous year and about 39 percent higher than in 1999. While most Western European countries have stabilized consumption over the past few years, several eastern European countries, particularly Poland and the Czech Republic, experienced considerable growth. In 2003, their consumption reached 73,000 and 52,000 tones respectively reflecting an annual growth rate of 10 percent since 1999 (Rubber Commodity Notes, FAO, 2004).

China became the world’s largest natural rubber importer in 2003, purchasing over 1.1 million tones, which is approximately 26 percent more than in 2002. This increase

was fuelled by continuing growth in demand by the automotive industry along with the stagnation of their domestic natural rubber industries. China's net imports increased by 430,000 tones from 1999 to 2003, representing close to 60 percent of the increase in world consumption over the four-year period (Rubber Commodity Notes, FAO, 2004).

The economic value of China's rubber product market is estimated at \$9.7 billion and most of this can be found in the shoe and transportation industries (Friedl Business Information, 2003). China is the leading producer and exporter of footwear in the world while its automotive industry consumes a large bulk of natural rubber either produced locally and or imported for use in passenger cars, trucks and other commercial vehicles. For the past two decades, the demand for cars and other commercial vehicles have been increasing by an average of 29 percent and 11 percent respectively. China's automotive industry requires a 1 percent increase in natural rubber supply to be used for tires for every 110,000 cars produced. In 2003, its production of 4.4 million cars produced 40 percent more demand for natural rubber (Business in China, 2004).

**Regional Natural Rubber Consumption
(in thousands of tons)**

Region	2004	2005	2006
North America	1290	1316	1148
Latin America	523	538	519
European Union	1292	1331	1305
Other Europe	198	227	157
Africa	122	120	115
Asia/Oceania	5156	5463	5625
Total	8581	8994	8956

Source: International Rubber Study Group (IRSG, 2007)

By the end of 2006, the Asia Oceana region registered the highest consumption at 5.625 million tons followed by the European Union at 1.305 and North America at 1.148 million metric tons respectively.

**Global Natural Rubber Consumption
(in thousands of tonnes)**

Ranking	Country	Volume 2006	% of the world
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			total
1	China	2235	24.4
2	USA	1939	21.1
3	Japan	881	09.6
4	India	808	08.8
5	Malaysia	312	03.4
-0-	World	9175	100.0

Source: IRSG Report 2006

For the year 2006, global natural rubber consumption had risen to 9.175 million tones, growing at a rate of 1.5 percent. The largest volume of natural rubber consumption was attributed to China which accounts for a 24.4 percent of world consumption, followed by the United States at 21.1 percent and Japan at 9.6 percent . (IRSG 2006).

3.2 World Production of Natural Rubber

The production of natural rubber in the world market has grown substantially over the last few years with an average growth rate of 5.93 percent over the 2001 to 2005 period. For the past five years, production had the fastest growth in 2003 at 8.84 percent reaching a world output level of 8.0 million metric tons. From 6.93 million metric tons in 2001, production in the world market had surpassed 8.87 million metric tons by 2005.

Although growth was relatively slower for the year 2005 at 2.14 percent , production is still expected to expand further in succeeding years as fueled by the rising demand coming from the tire and footwear industries of both developed as well developing countries, the continued increase in the price of natural rubber in the international market, as well the increasing prices of synthetic rubber which has made it less competitive compared to its natural rubber counterpart.

World Production of Natural Rubber (in thousands of metric tons) 2001-2005

Year	Total Production	Growth Rate (percentage)
1999-2001	6,930 (ave.)	-0-
2002	7,350	6.06
2003	8,000	8.84
2004	8,686	8.58
2005	8,872	2.14

Source: IRSG Rubber Statistical Bulletin

Growing demand for rubber and higher prices have revived rubber tapping in Asian countries and lead to the conversion of some plantation crops such as palm oil into

rubber. Intensive tapping has increased yield and consequently production (Rubber Commodity Notes, FAO 2004).

World Production Across Regions

For the period covering 2004 to 2006, world production distributed across regions reveals that Asia had consistently provided the largest volume of natural rubber output at 8.115 million metric tons in 2004 and 8.277 million metric tons by the end of 2005. Asia's share out of world production was approximately 93.43 and 93.29 percent in 2004 and 2005 respectively. Second to Asia was the African region which produced 380 thousand and 399 thousand metric tons for the year 2004 and 2005, representing 4.37 percent and 4.5 percent of world production. Latin America was the third largest contributor to world production with 191 million metric tons in 2004 and 196 million metric tons in 2005. This represented a share of 2.2 percent and 2.21 percent out of world production for the years 2004 and 2005.

Natural Rubber Production Across Regions (in thousands of tons)

Region	2004	2005 1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Year- end 2005	2006 1st Quarter
Latin America	191	53	55	41	47	196	55
Africa	380	96	97	99	107	399	100
Asia	8115	2158	1899	2129	2091	8277	2222
Total	8686	2307	2051	2269	2245	8872	2377

Source:IRSG Rubber Statistical Bulletin

Natural rubber production in Asia grew by 2 percent by the end of 2005, while Africa and Latin America increased output by 5 percent and 2.62 percent for the same year respectively.

A comparison of world production during the 1st quarter of 2005 as against the same period in 2006 also reveals an increase in output from 2.307 million metric tons to 2.377 million metric tons reflecting growth of approximately 3.03 percent. All other natural rubber producing regions in the world showed improvements in the first quarter of 2006 compared to that of 2005, with Asia growing by 2.96 percent, Africa increasing by 4.16 percent and Latin America by 3.77 percent. Asia's role as the world's largest natural rubber producer is explained by the fact that the top five producers are found in this region and these are namely; Thailand, Indonesia, Malaysia, India and China. These five countries combined already account for roughly 85 percent of natural rubber production in the world.

Global production which was recorded at 8.872 million metric tons in 2005, was higher by 2.14 percent compared to the previous year and 10.9 percent compared to that

of 2003. Thailand, which is the world's largest natural rubber producer had surpassed its record of 2.87 million metric tons in 2003 to a level of 2.953 million metric tons in 2004 and over 3 million metric tons by the end of 2005. The country accounts for approximately 35 percent of the world's natural rubber production. Higher prices in the international market has been the major factor inducing more intensive tapping by rubber producers in Thailand. Production in Thailand had grown by 9.9 percent, 2.78 percent and 2.13 percent during the years 2003, 2004 and 2005 respectively.

**Regional Natural Rubber Production
(in thousands of tons)**

Region	2004	2005	2006
Latin America	191	200	203
Africa	363	392	401
Asia	8132	8280	8928
Total	8686	8872	9532

Source: International Rubber Study Group (IRSG, 2007)

By the end of 2006, Asia produced the largest volume of natural rubber at 8.928 million tons, followed by Africa and America at 401 and 203 thousand tons respectively. Asian output grew by 7.8 percent, followed Africa at 2.3 percent and Latin America at 1.5 percent.

**Natural Rubber Production
(in thousands of metric tons)
2001-2005**

Country	1999-2001 average	2002	2003	2004	2005
World	6930	7350	8000	8686	8872
Thailand	2274	2615	2873	2984	3016
Indonesia	1369	1630	1792	2066	2156
Malaysia	860	890	986	1169	1163
India	627	641	707	743	750
China	456	468	480	486	450
Vietnam	279	373	380	415	450
Philippines	264	268	274	311	316
Coite de Ivoite	122	120	127	130	131
Liberia	104	109	110	107	110
Brazil	87	89	94	101	103
Sri Lanka	90	91	92	94	95
Others	197	57	81	80	132

Source:IRSG Rubber Statistical Bulletin

The second largest natural rubber producer in the world is Indonesia which had contributed over 2.156 million metric tons in 2005 representing growth of over 4.36

percent compared to the previous year. Growth in 2004 was faster at 15.29 percent when output increased from 1.792 million metric tons in 2003 to 2.066 million metric tons in 2004. Indonesia's share from world output production was approximately 24.3 percent. The country's production of natural rubber has been increasing since 2001 with growth rates of 19 percent in 2002, 9.9 percent in 2003, 15.29 percent in 2004 and 4.35 percent for the year 2005.

Malaysia is the third largest producer in the world which generated output at a level over 1.163 million metric tons in 2005. Malaysian production had actually decreased by 0.51 percent in 2005 as compared to the 2004 level of 1.169 million metric tons. The Malaysian natural rubber industry had actually performed better before 2005, growing at rates of 3.5 percent, 10.78 percent, and 18.6 percent during years 2002, 2003 and 2004. Production of natural rubber in Malaysia accounts for 13.10 percent of the world production for the year 2005.

India, China, Vietnam and the Philippines make up the rest of the major producers of natural rubber in the world. For the year 2005, India generated output of over 750 thousand metric tons, followed by China at 450 thousand metric tons, Vietnam also at approximately 450 thousand metric tons and the Philippines at 316 thousand metric tons. Natural rubber production has grown steadily for India, Vietnam and the Philippines over the past five years, while China had experienced an actual reduction in output of roughly 7.4 percent for the year 2005. Output growth for natural rubber in China has not been as fast as its other Asian counterparts because of the limited land area being allocated for growing rubber trees. For the year 2005, India had an output growth of 0.94 percent, Vietnam at 8.43 percent and the Philippines at 1.6 percent.

Although the Philippines may be considered as the seventh largest producer of natural rubber in the world, 85 percent of the output produced is used as raw material inputs by the local economy, while the remaining 15 percent is exported. Being the seventh largest producer in the world already provides an indication of the country's potential to be a major contributor in the international market.

For the country to take advantage of the opportunity presented by rising demand in both domestic and international markets, local firms must rehabilitate the existing natural rubber plantations and increase the number of hectares being used for growing rubber trees. And aside from this, it is also necessary to improve the quality of natural rubber and encourage more firms to move into production with higher value added such as rubber blocks and concentrated latex (Costales, 2006).

**Natural Rubber Production
(in thousands of tonnes)**

Country	2004	2005	2006	2007 (projections)

Thailand	2984	2937	2942	3235
Indonesia	2066	2271	2468	2722
Malaysia	1169	1126	1263	1297
India	743	772	835	890
Vietnam	403	509	563	600
China	486	428	428	456
Philippines	311	316	na	na
Sri Lanka	95	104	109	115
World	8638	8813	9346	10074

Source: IRSG Report 2006

The Asia Pacific region continues to produce the largest volume of natural rubber in 2006 and is expected to continue within the next few years. World production in natural rubber had increased by 2 percent (from 8.638 to 8.813 million tons) in 2005, and 6 percent (to 9.346 million tons) in 2006. Thailand, Indonesia and Malaysia continue to maintain their position as the three largest producers by the end of 2006.

3.3 Natural Rubber Demand and Supply in the World Market

A comparison of production and consumption levels in the global market reveal that the differences between supply and demand for natural rubber in the world has been consistently less than 1 million metric tons over the last six years. There was a surplus occurring during the years 1999, 2001, and 2003 up to 2005. On the other hand, deficits had appeared during the years 2000 and 2002. Although there were more years where surpluses appeared in the world market, the deficits in year 2000 and 2002 were relatively larger. The largest surplus generated was 343 thousand metric tons in 2004, while the biggest deficit was at 577 thousand metric tons. The smallest deficit during the seven year period was 196 thousand metric tons in 2002, while the lowest surplus was recorded in 2003 at 34 thousand metric tons.

The deficits of 577 thousand metric tons in year 2000 and 196 thousand metric tons in 2002 were large enough to offset all of the other surpluses during the 1999-2005 period. This is reflected by the negative (deficit) average of 5.14 thousand metric tons over the seven year period. In addition, despite more years of surpluses, the average supply over the seven year period turned out to be lower at 7.682 million metric tons compared to the average demand of 7.688 million metric tons. The average growth for world supply also reflected a relatively lower rate of increase at 4.43 percent compared to world demand with an average growth rate of 4.8 percent.

The larger average demand over the seven year period, along with its higher average growth rate, the extremely large deficits in 2000 and 2002, as well as the negative average deficit indicates strong pressure on the demand side for natural rubber.

This also explains why prices have been rising in the world market for the past several years. The results also support the claim that world demand has been pushing manufacturers to produce more because of the increasing need for natural rubber as a raw material for the growing tire manufacturing, footwear, machinery and equipment and pharmaceutical and health industries.

World Natural Rubber Situation (in thousands of metric tons) 1999-2005

Year	Supply	Growth rate (percentage)	Demand	Growth rate (percentage)	Surplus/Deficit
1999	6872	-0-	6646	-0-	226
2000	6739	-1.94	7316	10.08	-577
2001	7261	7.75	7222	-1.28	39
2002	7350	1.22	7546	4.49	-196
2003	8000	8.84	7966	5.57	34
2004	8686	8.58	8343	4.73	343
2005	8872	2.14	8777	5.2	95
Average	7682.86	4.43	7688	4.8	-5.14

Source: Tavarolit, IRCo, 2006

It was discussed earlier that production exceeded consumption during the years 2004 and 2005 with surpluses recorded at 343 thousand metric tons and 95 thousand metric tons respectively. A closer look at the quarterly estimates for 2005, reveal that a huge deficit was registered during the second quarter at 150 thousand metric tons, only to be offset by the surpluses of the 3rd and 4th quarters of the year.

**Natural Rubber Demand and Supply
in the World Market 2004-2005
(in thousands of metric tons)**

Region	2004	2005 1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Year- end 2005	2006 1st Quarter
World Production	8686	2307	2051	2269	2245	8872	2377
World Consumption	8343	2211	2201	2195	2170	8777	2162
Surplus/ (Deficit)	343	96	(150)	74	75	95	215

Source: IRSG Rubber Statistical Bulletin

In effect, despite reflecting a surplus of 95 thousand metric tons at the end of the year, strong demand particularly during the second quarter of 2005, continues to put pressure on world production to catch up with consumption and consequently to push prices upward.

Supply - Demand Gaps

(in thousands of tons)

Year	2004	2005	2006
World Production (Supply)	8654	8777	9188
World Consumption (Demand)	8581	8994	8956
world supply - demand surplus/deficit	73	-217	232

Source: International Rubber Study Group (IRSG, 2007)

Both world production and consumption continued their increasing trends during the 2004 to 2006 period. By the year end of 2006, production had surpassed consumption with a surplus of over 232 thousand tons, reversing the deficit of 217 thousand tons recorded in 2005.

3.4 World Exports of Natural Rubber

World natural rubber exports was at a level of 6.423 million metric tons during the year 2005, which was 4 percent higher than the 2004 level of 6.176 million metric tons, and 25.6 percent larger than the 2001 level of 5.114 million metric tons. In 2005, the three largest exporters of natural rubber were Thailand at 2.743 million metric tons, followed by Indonesia at 1.950 million metric tons and Malaysia at 707 thousand metric tons. Output growth for Thailand was at 4 percent, Indonesia also at 4 percent and Malaysia at 3.97 percent. Thailand continues to maintain an export market share of 42.7 percent followed by Indonesia at 30.4 percent and Malaysia at 11 percent.

Natural rubber exports had consistently increased for the top three countries over the 2001 to 2005 period. Thailand's exports had risen by 34.33 percent from a level of 2.042 million metric tons in 2001 to the 2005 level of 2.743 million metric tons. Indonesia registered growth of 30.26 percent from the 2001 to 2005 period while Malaysia grew by 4.37 times its 2001 level of 162 thousand metric tons to 707 thousand metric tons by 2005.

Natural Rubber Exports (in thousands of metric tons) 2002-2004

Country	2001	2002	2003	2004	2005
Thailand	2042	2354	2573	2637	2743
Indonesia	1497	1502	1661	1875	1950

Malaysia	162	430	510	680	707
Vietnam	283	325	325	351	365
India	4	44	58	71	74
Philippines	33	45	56	58	60
Cambodia	38	40	41	41	42
Others	1055	492	463	463	482
World	5114	5232	5687	6176	6423

Source: IRSG Rubber Statistical Bulletin

Vietnam, India and the Philippines make up the 4th, 5th and 6th largest exporters of natural rubber in the world for the year 2005 with exports at 365 thousand metric tons, 74 thousand metric tons and 60 thousand metric tons respectively. For the same year, Vietnam had a export market share of 5 percent, followed by India at 1.2 percent and the Philippines at approximately 1 percent. Vietnamese exports grew by 4 percent in 2005, Indian exports increased by 4.22 percent while Philippine natural rubber exports had risen by 3.45 percent.

Across the 2001 to 2005 period, exports from Vietnam, India and the Philippines had also grown steadily. Vietnamese exports increased from 283 thousand metric tons in 2001 to 365 thousand metric tons in 2005 registering growth of 29 percent over the five year period. India was at 4 thousand metric tons in 2001 and this increased by 18.5 times as much by the end of 2005 to a level of 74 thousand metric tons. Philippine exports were at 33 thousand metric tons in 2001 and this grew by 1.81 times as much to a level of 60 thousand metric tons by the year 2005.

Asia's share of natural rubber exports in the world market has grown steadily over the past five years with 80 percent in 2001, 91 percent in 2002, 92 percent in 2003 and 2004, and 93 percent in 2005. Considering that Asian production of natural rubber also makes up 93 percent of world output, and that prices continue to increase making the product more attractive to produce compared to synthetic rubber, it is reasonable to expect that the current share of Asian exports will continue to stay at their current level over the next few years.

3.4 World Imports of Natural Rubber

World imports of natural rubber was at 5.181 million metric tons in 2005, which was lower than the 5.978 million metric tons in 2004 reflecting a decline of 13.33 percent. World imports had steadily risen from 5.216 million metric tons in 2001 to 5.978 million metric tons in 2004, representing growth of over 14.6 percent during the four year period. The six largest importers of natural rubber during the year 2005 were China at 1.054 million metric tons, the United States at 973 thousand metric tons, Japan at 712 thousand metric tons, South Korea at 309 thousand metric tons, Germany at 216 thousand metric tons and France at 194 thousand metric tons.

**Natural Rubber Imports
(in thousands of metric tons) 2001-2004**

Country	2001	2002	2003	2004	2005
China	943	915	1150	1206	1054
United States	972	1110	1077	1144	973
Japan	713	772	792	801	712
S. Korea	330	323	333	352	309
France	282	231	300	230	194
Germany	245	243	260	242	216
Spain	172	182	189	178	154
Brazil	121	144	162	175	152
Canada	141	154	146	149	129
Italy	134	136	142	136	118
United Kingdom	83	76	96	87	75
Others	1080	1048	1168	1278	1095
World	5216	5334	5815	5978	5181

Source: IRSG Rubber Statistical Bulletin

China's share from world imports was at 20 percent, followed by the United States at 19 percent, Japan at 14 percent, South Korea at 6 percent and Germany and France at 4 percent. China has been importing over 1 million metric tons of natural rubber since 2003, recording its highest level at 1.206 million in 2004, and then slowing down in 2005 at 1.054 million metric tons. On the other hand, the United States had been importing over 1 million metric tons of natural rubber since 2002, reaching its highest level at 1.144 million in 2004, and consequently decreasing to 973 thousand metric tons in 2005. Natural rubber imports of Japan have remained above 700 thousand metric tons from 2001 to 2003, peaked at 801 thousand metric tons in 2004, and decreased to 712 thousand metric tons in 2005.

3.6 Synthetic Rubber in the World Market

Synthetic rubber is any type of artificially made polymer material which acts as an elastomer. An elastomer is a material with mechanical (or material) property that can undergo much more elastic deformation under stress than most materials and still return to its previous size without permanent deformation. Synthetic rubber serves as a substitute for natural rubber in many cases when improved material properties are needed. Synthetic rubber can be made from the polymerization of a variety of monomers including isoprene (2-methyl-1,3-butadiene), 1,3-butadiene, chloroprene (2-chloro-1,3-butadiene) and isobutylene (methylpropene). with a small percentage of isoprene for cross linking (wikipedia.org, 2006). Other conventional forms of synthetic rubber are copolymers of butadiene and styrene (Buna S-type), copolymers of butadiene

and acrylonitrile (Buna N-type or perbunans) together with neoprene and butyl type rubbers. The need for synthetic rubber was derived from the expanded use of motor vehicles which began during the late 19th century.

Synthetic rubber production in the world during the last six years had consistently surpassed the 10 million metric ton level with significant increases recorded during the years 2000, 2002 to 2004. For the year 2005, world production of synthetic rubber was approximately 11.953 million metric tons. Although this represents a decline of 0.2 percent compared to the 2004 level of 11.974 million metric tons, world production has grown by an average of 2.5 percent from the year 2000 to 2005. On the other hand, world demand for synthetic rubber was recorded at 11.881 million metric tons, and has grown by an average of 2.7 percent during the last six years (Tavarolit, 2006).

**Synthetic Rubber Situation
1999 – 2005 ('000)**

Year	Supply	+/- (%)	Demand	+/- (%)	Excess/ Deficit	Total Stock
1999	10,336		10,188		148	2,707
2000	10,819	4.7%	10,755	5.6%	64	2,771
2001	10,485	-3.1%	10,243	-4.8%	242	3,013
2002	10,882	3.8%	10,712	4.6%	170	3,183
2003	11,448	5.2%	11,369	6.1%	79	3,262
2004	11,974	4.6%	11,846	4.2%	128	3,390
2005	11,953	-0.2%	11,881	0.3%	72	3,462
Average		2.5%		2.7%		3,113

Source: Tavarolit, IRCo, 2006

From 1999 to 2005, the ratio of natural rubber production to synthetic rubber production in the world increased from 40 percent to 42 percent, while the ratio of world natural rubber demand to synthetic rubber demand increased from 39 percent to 42 percent over the seven year period. This indicates that the proportion of natural rubber production and use in the world market has increased relative to synthetic rubber, although both supply and demand have steadily increased over the last six years (Tavarolit, 2006).

Ratio of Natural Rubber to Synthetic Rubber

1999 – 2005 ('000)

Year	Supply			Demand		
	NR	SR	% of NR	NR	SR	% of NR
1999	6,872	10,336	40%	6,646	10,188	39%
2000	6,739	10,819	38%	7,316	10,755	40%
2001	7,261	10,485	41%	7,222	10,243	41%
2002	7,344	10,882	40%	7,546	10,712	41%
2003	7,992	11,448	41%	7,966	11,369	41%
2004	8,646	11,974	42%	8,319	11,846	41%
2005	8,660	11,953	42%	8,706	11,881	42%

Source: Tavarolit, IRCo, 2006

Combining both the world production of natural and synthetic rubber and then comparing these figures with the total world demand reveals that from the period 1999-2005, production had surpassed demand during the years 1999, 2001, and 2003 to 2005. Excess demand in the world market was recorded during the years 2000 and 2002. Total rubber supply had increased to 17.208 million metric tons in 1999 to 20.613 million metric tons in 2005, while demand increased from 16.834 million metric tons to 20.587 million metric tons over the same period. Although world production had surpassed demand for five years during the seven year period, world demand grew faster at an average annual rate of 3.47 percent as compared to production at 3.08 percent.

**Total Supply and Demand of Rubber
1999 – 2005 ('000)**

Year	Total			Annual Growth	
	Supply	Demand	+/-	Supply	Demand
1999	17,208	16,834	374		
2000	17,558	18,071	(513)	2.03%	7.35%
2001	17,746	17,465	281	1.07%	-3.35%
2002	18,226	18,258	(32)	2.70%	4.54%
2003	19,440	19,335	105	6.66%	5.90%
2004	20,620	20,165	455	6.07%	4.29%
2005	20,613	20,587	26	-0.03%	2.09%
Average				3.08%	3.47%

Source: Tavarolit, IRCo, 2006

The three largest producers of synthetic rubber in the world for the year 2005 are the United States, Japan and China with output levels of 1.960, 1.339 and 1.331 million metric tons respectively. The United States produces 20 percent of the world output for synthetic rubber, while Japan and China account for 14 percent and 13 percent respectively. The fourth and fifth largest producers are Russia and Germany, with a world production share of 10 percent and 7 percent respectively. However, compared to the top three producers, output levels for Russia and Germany are

currently below 1 million metric tons. Russia and Germany produced 947 thousand metric tons and 698 thousand metric tons of synthetic rubber respectively for the year 2005.

**Synthetic Rubber Production
1999 – 2005 ('000)**

No.	Country/ Year	1999	2000	2001	2002	2003	2004	2005	%
1	U.S.A.	2,354	2,397	2,062	2,164	2,270	2,325	1,960	20%
2	Japan	1,577	1,592	1,466	1,522	1,577	1,616	1,339	14%
3	China	754	826	1,052	1,133	1,272	1,478	1,331	13%
4	Russia	737	837	919	919	1,070	1,112	947	10%
5	Germany	720	849	828	869	888	905	698	7%
6	France	592	669	672	681	718	776	567	6%
7	S. Korea	655	678	663	586	700	710	620	6%
8	Taiwan	495	465	480	523	529	545	445	4%
9	U.K.	283	286	333	337	327	351	277	3%
10	Others	2,169	2,221	2,011	2,147	2,097	2,157	1,731	17%
11	Total	10,336	10,819	10,485	10,882	11,448	11,974	9,915	100%

Source: Tavarolit, IRCO, 2006

By the end of 2006, the largest volume of synthetic rubber production came from the Asia Oceania region at 5.248 million tons, followed by the European Union and North America at 2.718 and 2.5 million tons respectively.

Regional Synthetic Rubber Production
(in thousands of tons)

Region	2004	2005	2006
North America	2409	2430	2500
Latin America	675	653	720
European Union	2871	2696	2718
Other Europe	1232	1234	1262
Africa	74	78	67
Asia/Oceania	4731	4988	5248
Total	11989	12078	12515

Source: International Rubber Study Group (IRSG, 2007)

Synthetic rubber consumption in the world for the year 2006 was at 12.617 million tons, with the Asia Oceania region consuming the largest volume at 6.024 million tons, followed by the European Union and the United States at 2.588 and 2.032 million tons respectively. Consumption figures for the other regions are presented as follows:

Regional Synthetic Rubber Consumption
(in thousands of tons)

Region	2004	2005	2006
North America	2139	2181	2032
Latin America	797	766	797
European Union	2651	2563	2588
Other Europe	950	966	894
Africa	103	104	101
Asia/Oceania	5139	5325	6024
Total	11894	12010	12617

Source: International Rubber Study Group (IRSG, 2007)

In the international synthetic rubber market, world consumption had surpassed world production in 2006 revealing a deficit of 102 thousand tons, significantly larger than the previous years surpluses of 68 and 95 thousand tons during the years 2005 and 2004 respectively.

Supply – Demand Gaps
(in thousands of tons)

Year	2004	2005	2006
World production	11989	12078	12515
World consumption	11894	12010	12617
world supply - demand surplus/deficit	95	68	-102

Source: International Rubber Study Group (IRSG, 2007)

The largest importer of synthetic rubber in the world is China with 880 thousand metric tons imported during the year 2005. Chinese imports account for 15 percent of total imports in the world market. The second largest importer is the United States with 550 thousand metric tons representing 9 percent of world imports. These two countries are followed by Germany with 454 thousand metric tons (8 percent share), Belgium and Luxemburg combined with 335 thousand metric tons (6 percent share) and France with 333 thousand metric tons (6 percent share). Canada, Italy and Japan occupy the sixth, seventh and eighth positions with imports of 318 thousand, 267 thousand and 163 thousand metric tons respectively. It is also important to note that the countries with the leading automotive industries in the world are also among the largest importers of synthetic rubber namely, the United States, Germany, and Japan.

**Net Imports of Synthetic Rubber
1999- 2005 ('000)**

No.	Country/ Year	1999	2000	2001	2002	2003	2004	2005	%
1	China	629	670	715	892	999	1,074	880	15
2	U.S.A.	582	657	595	607	577	580	550	9
3	Germany	394	435	424	438	426	490	454	8
4	Belg-Lux	382	424	371	376	381	404	335	6
5	France	343	373	325	337	356	367	333	6
6	Canada	301	339	332	340	336	376	318	5
7	Italy	330	349	319	325	323	325	267	5
8	Japan	122	171	165	175	186	186	163	3
9	Others	2,514	2,761	2,614	2,743	2,795	3,357	2,637	44
10	Total	5,596	6,179	5,859	6,233	6,377	7,159	5,937	100

Source: Tavarolit 2006

On the other hand, France and Italy are one of the leading automotive producers in the European market. The automotive industry generates the largest demand for both synthetic and natural rubber as a primary input for the production of tires, timing belts, fan belts, gaskets, engine supports and other automotive parts

3.7 Philippine Exports and Imports of Natural Rubber and Rubber Based Products Using the Seven Digit Product Standard Classification Code (PSCC)

Using the Department of Trade and Industry seven digit product standard classification code (PSCC), it can be observed that there are currently 54 different types of rubber products being exported by the Philippines as compared to 108 various types of rubber products which the country imports. A complete list of these products is provided in appendix A with both natural and synthetic rubber products included in the list. Based on the figures provided by the Department of Trade and Industry for the year 2005, there are approximately eight (8) specific rubber product categories wherein

exports exceeded imports. The trade surpluses for these product categories were obtained from Malaysia, Singapore, Japan, Taiwan, Thailand, the United States, Vietnam, and Hong Kong. The balance of trade (exports minus imports) as well as the net trade ratio (balance of trade divided by the combined value of export and imports) is estimated for the following product categories in order to provide an indication of competitiveness in the industry. There were five (5) product categories that had registered trade surpluses which exceeded \$1 million during the year 2005:

1. The product category which generated the largest trade surplus in the industry was **"natural rubber in its primary forms (other than latex) such as crepe sheets" (PSCC 2312901)**. In the year 2005, exports for this product category reached \$8.411 million in the Malaysian market, while imports were recorded at only \$5,646.00, reflecting a trade surplus of \$8.406 million and a positive net trade ratio of 99.87 percent. A trade surplus with Singapore was also recorded for this product category at a level of \$2.518 million. Exports to Singapore were at \$3.094 million while the value of imports were at \$576,441. A positive net trade ratio was recorded with Singapore at 69 percent.

2. **"Steel belted automobile tires, pneumatic, of all sizes, new" (PSCC 6251001)** is the product category which generated the second largest trade surplus with Malaysia at a level of \$6.1008 million. Philippine exports to Malaysia under this category reached \$6.130 million while imports were recorded at \$29,678, reflecting a positive net trade ratio of 99 percent.

The above mentioned product category also reveals a trade surplus with the United States at approximately \$3.6886 million. Philippine exports to the United States reached \$3.848 million while imports were at \$159,500, yielding a positive net trade ratio of 92 percent.

For the same product category, large trade surpluses were also obtained from trade arrangements with Taiwan and Thailand with \$5.315 million and \$5.107 million respectively. Philippine exports to Taiwan reached \$5.320 million while exports to Thailand were at a level of \$6.0649 million. Imports from Taiwan were valued at \$4,828 which was substantially lower compared to imports from Thailand which were at \$957,641. The Philippines had positive net trade ratios with both Taiwan and Thailand at 99.82 percent and 72.73 percent respectively.

3. The product category with the third largest trade surplus generated was for **"other articles of hard rubber, including hard rubber buckets" (PSCC 6299109)**. The trade surplus of \$5.827 million was obtained from Japan. Exports of this product category to the Japanese market were at \$5.834 million while the value of imports were at \$5,979. A positive net trade ratio of 99.79 percent was obtained for this product category.

Under the above mentioned product category, trade with Hong Kong yielded a surplus of \$1.225 million. Philippine exports to Hong Kong were valued at \$1.226 million while imports were at \$614 revealing a positive net trade ratio of 99.9 percent.

4. The fourth largest surplus was at \$4.8376 million for the product category "**other articles of unhardened non-cellular vulcanized rubber**" (PSCC 6299929), obtained from Japan. Philippine exports to Japan under this product category reached \$6.8415 million while imports were at \$2.0038 million, reflecting a positive net trade ratio of 54.7 percent.

5. The product category which registered the fifth largest trade surplus within the industry was for "**transmission belts or belting of trapezoidal cross-section (v-belts and v-belting)**" (PSCC 6292015) with a value of \$1.3707 million. Philippine exports to the United States under this product category reached \$1.3774 million while imports were valued at \$6,719. Trade with the United States within this product line reflected a positive net trade ratio of 99.029 percent.

Aside from the five (5) product categories that were previously mentioned, several other product types reflected trade surpluses that exceeded the \$500,000 level. A trade surplus of \$979,696 was obtained from Vietnam under the product category of "**other tires, pneumatic, new, of a kind used on buses (and) or lorries (including trucks)**" (PSCC 6252009), with a positive net trade ratio of 95.63 percent. This is followed closely by a trade surplus with Singapore of \$939,382 for the product category "**other articles of unhardened non-cellular vulcanized rubber**" (PSCC 6299929), with a positive net trade ratio of 46.87 percent. A trade surplus of \$820,509 with Japan for the product category "**other tubes, pipes and hoses of unhardened vulcanized rubber with fittings**" (PSCC 6214509) with a positive net trade ratio of 91.94 percent. A trade surplus with Thailand of \$745,576 for the product category "**other articles of hard rubber, including hard rubber buckets**" (PSCC 6299109) with a positive net trade ratio of 97.34 percent and finally a trade surplus with Malaysia OF \$537,229 under the product category "**natural rubber in plate, sheet or strip**" (PSCC 2312902) with a positive net trade ratio of 92.53 percent.

Rubber Based Products with Exports and Trade Deficits over \$1 million

There are two other product categories which had generated exports that surpassed the \$1 million level, however, imports for these product lines were substantially larger registering huge trade deficits and negative trade ratios. The product category on "**other tires, pneumatic, new, of a kind used on buses (and) or lorries (including trucks)**" (PSCC 6252009) generated exports to Thailand of over \$1.791 million. However, imports of the same product line from Thailand were substantially larger at \$6.9897 million, indicating a trade deficit of \$5.1986 million and reflecting a negative net trade ratio of 59.2 percent.

Exports to Japan of the product line: "**gaskets, packings, washers and other seals, other than those of sub-items 629.99-04 to 629.99-05 [6]**" (PSCC 6299907) reached \$1.0897 million, while imports were valued at \$2.6059 million, reflecting a trade deficit of \$1.516 million and registering a negative net trade ratio of 41 percent.

With over 54 different types of rubber based products being exported to various countries in Asia, North America, Europe and Australia, as well as 108 product categories being imported from the above mentioned regions, other trade surpluses (or deficits) can still be identified from the list provided by the Department of Trade and Industry. However, these other product categories had shown exports and trade surpluses below the \$500,000 level.

In addition, a large number of rubber based product categories had shown imports exceeding exports on a per country basis, reflecting relatively larger trade deficits and negative net trade ratios for the year 2005.

Since it is important to identify the product categories which have a good chance of competing in the ASEAN and Asian markets, the rubber based product lines which had exhibited large trade surpluses and positive net trade ratios, should be considered by the business sector and government policy makers as the initial batch of potential winners which can be given more attention and support in order to establish the role and contribution of the Philippine rubber based products manufacturing industry in ASEAN regional trade. A summary of the above mentioned rubber based product categories with significantly large trade surpluses and positive net trade ratios is provided below:

Rubber Based Product Exports for the year 2005
(Export values and trade surpluses of over \$500,000)

PSCC #	Description	Philippine Exports in \$	Imports in \$	Trade Surplus & net trade ratios	Trading Partner
2312901	NAT'L RUBBER, NES, IN PRIMARY FORMS(OTH THN LATE); CREPE SHEETS	8,411,983	5,646	8,406,337 99.87%	Indonesia
2312901	NAT'L RUBBER, NES, IN PRIMARY FORMS(OTH THN LATE); CREPE SHEETS	3,094,572	576,441	2,518,131 69%	Singapore
2312902	NAT'L RUBBER,IN PLATE,SHT/STRIP	558,900	21,671	537,229 92.53%	Malaysia
6214509	OTHER TUBES,PIPES & HOSES, OF UNHARDENED VULCANIZED RUBBER, W/ FITTINGS	856,483	35,974	820,509 91.94%	Japan
6251001	STEEL BELTED AUTOMOBILE TIRES, PNEUMATIC, OF ALL SIZES, NEW	5,320,621	4,828	5,315,793 99.82%	Taiwan
6251001	STEEL BELTED AUTOMOBILE TIRES, PNEUMATIC, OF ALL SIZES, NEW	6,130,505	29,678	6,100,827 99%	Malaysia
6251001	STEEL BELTED AUTOMOBILE TIRES, PNEUMATIC, OF ALL SIZES, NEW	6,064,900	957,641	5,107,259 72.73%	Thailand

Source: Department of Trade and Industry
Bureau of Export Trade Promotion

Rubber Based Product Exports for the year 2005
(Export values and trade surpluses of over \$500,000)

PSCC #	Description	Philippine Exports in \$	Imports in \$	Trade Surplus & net trade ratios	Trading Partner
6251001	STEEL BELTED AUTOMOBILE TIRES, PNEUMATIC, OF ALL SIZES, NEW	3,848,138	159,500	3,688,638 92%	United States
6252009	OTHER TIRES,PNEUMATIC,NEW,OF A KIND USED ON BUSES [AND] OR LORRIES (INCLUDING TRUCKS)	1,002,056	22,360	979,696 95.63%	Vietnam
6292015	TRANSMISSION BELTS OR BELTING OF TRAPEZOIDAL CROSS-SECTION(V-BELTS & V-BELTING) OTHER THAN THOSE OF	1,377,467	6,719	1,370,748 99.029%	United States
6299109	OTHER ARTICLES OF HARD RUBBER, INCLUDING HARD RUBBER BUCKETS	1,226,212	614	1,225,598 99.9%	Hong Kong
6299109	OTHER ARTICLES OF HARD RUBBER, INCLUDING HARD RUBBER BUCKETS	5,833,828	5,979	5,827,849 99.79%	Japan
6299109	OTHER ARTICLES OF HARD RUBBER, INCLUDING HARD RUBBER BUCKETS	755,718	10,202	745,576 97.34%	Thailand
6299929	OTHER ARTICLES OF UNHARDENED NON-CELLULAR VULCANIZED RUBBER, N.E.S.	6,841,520	2,003,854	4,837,666 54.7%	Japan
6299929	OTHER ARTICLES OF UNHARDENED NON-CELLULAR VULCANIZED RUBBER, N.E.S.	1,471,765	532,383	939,382 46.87%	Singapore
6252009	OTHER TIRES,PNEUMATIC,NEW,OF A KIND USED ON BUSES [AND] OR LORRIES (INCLUDING TRUCKS)	1,791,080	6,989,735	(5,198,655) (59.2%)	Thailand
6299907	GASKETS, PACKINGS, WASHERS AND OTHER SEALS, OTHER THAN THOSE OF SUB-ITEMS 629.99-04 TO 629.99-05 [6]	1,089,789	2,605,903	(1,516,114) (41%)	Japan

Source: Department of Trade and Industry
Bureau of Export Trade Promotion

For the year 2006, trade surpluses were largest for **steel belted automobile tires**, followed by **unhardened non-cellular vulcanized rubber, hard rubber buckets, natural rubber in plates sheets and strips and natural rubber in crepe sheets**. These product categories had trade surpluses ranging from \$19.395 million to \$3.359 million particularly with the United States, Japan, China, Malaysia, Taiwan, Thailand, Malaysia and Hong Kong as the major trading partners.

**Trade Surpluses
FOB Value in US Dollars
January- December 2006**

PSCC #	Description	Trading Partner	Trade Surplus
2312901	NAT'L RUBBER, NES, IN PRIMARY FORMS(OTH THN LATE); CREPE SHEETS	Taiwan	3,359,733
		Korea	165,995
2312902	NAT'L RUBBER,IN PLATE,SHT/STRIP	Hong Kong	5,345,579
		China	4,925,659
		Malaysia	3,797,424
		Korea	237,655
		Japan	41,032
6214509	OTHER TUBES,PIPES & HOSES, OF UNHARDENED VULCANIZED RUBBER, W/ FITTINGS	USA	85,129
		Taiwan	38,117
		Malaysia	5,467
		Australia	3,944
6251001	STEEL BELTED AUTOMOBILE TIRES, PNEUMATIC, OF ALL SIZES, NEW	USA	19,394,890
		Thailand	7,938,729
		Malaysia	7,896,112
		Taiwan	6,323,096
		South Africa	2,490,458
		Korea	681,041
		Vietnam	644,030
		India	433,826
		China	166,927
6252009	OTHER TIRES,PNEUMATIC,NEW,OF A KIND USED ON BUSES [AND] OR LORRIES (INCLUDING TRUCKS)	USA	813,132
		Argentina	53,030
		Vietnam	44,936

Source: Department of Trade and Industry
Bureau of Export Trade Promotion

Trade Surpluses
FOB Value in US Dollars
January- December 2006

6292015	TRANSMISSION BELTS OR BELTING OF TRAPEZOIDAL CROSS-SECTION(V-BELTS & V-BELTING) OTHER THAN THOSE OF	USA	1,539,216
		China	546,889
		Japan	272,870
		Singapore	172,418
		Hong Kong	39,426
		Germany	6,643
		Australia	2,748
6299109	OTHER ARTICLES OF HARD RUBBER, INCLUDING HARD RUBBER BUCKETS	Japan	5,256,363
		Hong Kong	456,749
		USA	182,030
		Germany	145,533
6299929	OTHER ARTICLES OF UNHARDENED NON-CELLULAR VULCANIZED RUBBER, N.E.S.	Japan	7,548,644
		USA	616,556
		Germany	257,280
		Thailand	243,711
		Indonesia	242,135
		Hong Kong	200,428
		Vietnam	128,845
		Netherlands	33,713
		Belgium	23,517
		Great Britain	1,735
6299907	GASKETS, PACKINGS, WASHERS AND OTHER SEALS, OTHER THAN THOSE OF SUB-ITEMS 629.99-04 TO 629.99-05 [6]	Germany	36,867
		Netherlands	17,301
		Hungary	12,421
		Denmark	10,725
		Vietnam	4,004

Source: Department of Trade and Industry
Bureau of Export Trade Promotion

Other Rubber Based Product Exports w/o corresponding Imports 2005

Based on the figures released by the Department of Trade and Industry, several other product categories among Philippine rubber based exports reached levels that had surpassed \$1 million without any corresponding importation from the designated trading partner. The product category of **"natural rubber in its primary forms (other than latex) such as crepe sheets" (PSCC 2312901)** generated exports to China valued at \$9,632,696, and to Taiwan at \$7,502,080. There were no corresponding imports from this product category from the aforementioned countries.

For the product category under **"natural rubber in plates, sheets and strips" (PSCC 2312902)**, exports to China reached \$1.637 million and \$1.8654 million to Taiwan, again without any corresponding imports from the two countries.

The product category on **"latex of acrylonitrile-butadiene rubber" (PSCC 2321501)** provided exports to Indonesia of approximately \$1.4477 million, without any imports from the same product line.

For the product category which includes **"Steel belted automobile tires, pneumatic, of all sizes, new" (PSCC 6251001)"**, Philippine exports under this product line were substantially large with the highest export revenue at \$5.447 million coming from Italy, followed by \$5.2329 million from Australia, \$4.6467 million from Germany, \$3.7334 million from Finland, \$3.1813 million from Brazil \$2.5408 million from the United Kingdom, \$2.474 million from Singapore and \$2.2387 million from France. Exports of over \$1 million for this product category were sold to Greece, Portugal, Puerto Rico, Saudi Arabia, South Africa and Sweden. There were also no corresponding imports of the same product line coming from the above mentioned countries. A summary of the exports from these product categories is provided in the following table:

**Other Rubber Based Product Exports
w/o corresponding Imports 2005
(Export values of over \$1 million)**

PSCC #	Description	Philippine Exports in \$	Imports in \$	Trade Surplus & net trade ratios	Trading Partner
2312901	NAT'L RUBBER, NES, IN PRIMARY FORMS(OTH THN LATE); CREPE SHEETS	9,632,696	none	n.a.	China
2312901	NAT'L RUBBER, NES, IN PRIMARY FORMS(OTH THN LATE); CREPE SHEETS	7,502,080	none	n.a.	Taiwan
2312902	NAT'L RUBBER,IN PLATE,SHT/STRIP	1,637,156	none	n.a.	China
2312902	NAT'L RUBBER,IN PLATE,SHT/STRIP	1,865,553	none	n.a.	Taiwan
2321501	LATEX OF ACRYLONITRILE-BUTADIENE RUBBER(NBR)	1,447,724	none	n.a.	Indonesia
6251001	STEEL BELTED AUTOMOBILE TIRES, PNEUMATIC, OF ALL SIZES, NEW	5,232,957	none	n.a.	Australia
6251001	STEEL BELTED AUTOMOBILE TIRES, PNEUMATIC, OF ALL SIZES, NEW	3,181,330	none	n.a.	Brazil
6251001	STEEL BELTED AUTOMOBILE TIRES, PNEUMATIC, OF ALL SIZES, NEW	3,733,476	none	n.a.	Finland
6251001	STEEL BELTED AUTOMOBILE TIRES, PNEUMATIC, OF ALL SIZES, NEW	2,238,778	none	n.a.	France
6251001	STEEL BELTED AUTOMOBILE TIRES, PNEUMATIC, OF ALL SIZES, NEW	4,646,732	none	n.a.	Germany
6251001	STEEL BELTED AUTOMOBILE TIRES, PNEUMATIC, OF ALL SIZES, NEW	1,031,623	none	n.a.	Greece
6251001	STEEL BELTED AUTOMOBILE TIRES, PNEUMATIC, OF ALL SIZES, NEW	5,447,391	none	n.a.	Italy
6251001	STEEL BELTED AUTOMOBILE TIRES, PNEUMATIC, OF ALL SIZES, NEW	1,774,117	none	n.a.	Portugal
6251001	STEEL BELTED AUTOMOBILE TIRES, PNEUMATIC, OF ALL SIZES, NEW	1,195,929	none	n.a.	Puerto Rico
6251001	STEEL BELTED AUTOMOBILE TIRES, PNEUMATIC, OF ALL SIZES, NEW	1,604,426	none	n.a.	Saudi Arabia
6251001	STEEL BELTED AUTOMOBILE TIRES, PNEUMATIC, OF ALL SIZES, NEW	2,474,108	none	n.a.	Singapore
6251001	STEEL BELTED AUTOMOBILE	1,342,551	none	n.a.	South

	TIRES, PNEUMATIC, OF ALL SIZES, NEW				Africa
6251001	STEEL BELTED AUTOMOBILE TIRES, PNEUMATIC, OF ALL SIZES, NEW	1,388,673	none	n.a.	Sweden
6251001	STEEL BELTED AUTOMOBILE TIRES, PNEUMATIC, OF ALL SIZES, NEW	2,540,826	none	n.a.	U.K.

**Source: Department of Trade and Industry
Bureau of Export Trade Promotion**

n.a. : not applicable

For the year 2006, the above mentioned product categories which generated trade surpluses of over \$ 1 million consistently had the following countries as the top ten export markets for rubber based products and these are: China, the United States, Japan, Taiwan Thailand, Malaysia, Singapore, Hong Kong, Germany and South Korea. The top ten country markets for each of the rubber based product categories is presented as follows:

**Top Ten Export Markets
FOB Value in US Dollars
January- December 2006**

PSCC #	Description	Trading Partner	Trade Surplus
2312901	NAT'L RUBBER, NES, IN PRIMARY FORMS(OTH THN LATE); CREPE SHEETS	China	5,646,415
		Malaysia	3,582,040
		Taiwan	3,421,999
		Hong Kong	3,322,748
		Vietnam	2,527,124
		Singapore	620,225
		Germany	274,176
		Korea	215,935
		India	89,330
		Japan	38,263
2312902	NAT'L RUBBER,IN PLATE,SHT/STRIP	Hong Kong	5,353,229
		China	4,932,463
		Taiwan	4,835,689
		Vietnam	4,177,527
		Malaysia	3,827,183
		Singapore	1,348,324
		Germany	1,062,432
		South Africa	501,120
		Korea	254,748
		Thailand	74,000

**Source: Department of Trade and Industry
Bureau of Export Trade Promotion**

**Top Ten Export Markets
FOB Value in US Dollars
January- December 2006**

6214509	OTHER TUBES,PIPES & HOSES, OF UNHARDENED VULCANIZED RUBBER, W/ FITTINGS	Japan	769,817
		USA	238,949
		Taiwan	57,743
		China	56,529
		Australia	30,037
		Malaysia	24,400
		Thailand	17,085
		Hong Kong	6,131
		Singapore	5,345
		Madagascar	3,801
6251001	STEEL BELTED AUTOMOBILE TIRES, PNEUMATIC, OF ALL SIZES, NEW	USA	19,579,373
		Finland	11,459,670
		Australia	8,562,063
		Thailand	8,475,702
		Italy	8,411,023
		Malaysia	7,904,333
		Great Britain	6,610,419
		Taiwan	6,331,827
		Germany	5,715,798
		Singapore	4,813,037
6252009	OTHER TIRES,PNEUMATIC,NEW,OF A KIND USED ON BUSES [AND] OR LORRIES (INCLUDING TRUCKS)	Thailand	4,543,258
		USA	895,927
		Vietnam	349,450
		Malaysia	261,242
		Finland	90,069
		Singapore	71,499
		Argentina	60,704
		South Africa	52,859
		Great Britain	34,328
		Australia	32,852

Source: Department of Trade and Industry
Bureau of Export Trade Promotion

**Top Ten Export Markets
FOB Value in US Dollars
January- December 2006**

6292015	TRANSMISSION BELTS OR BELTING OF TRAPEZOIDAL CROSS-SECTION(V-BELTS & V-BELTING) OTHER THAN THOSE OF	USA	1,544,949
		China	558,829
		Mexico	366,872
		Canada	302,254
		Japan	283,131
		Singapore	236,841
		Thailand	104,620
		Indonesia	72,261
		Hong Kong	45,416
		El Salvador	42,250
6299109	OTHER ARTICLES OF HARD RUBBER, INCLUDING HARD RUBBER BUCKETS	Japan	5,273,695
		Thailand	477,563
		Hong Kong	461,144
		USA	206,768
		Germany	151,489
		Indonesia	125,031
		Great Britain	83,519
		China	44,339
		Vietnam	41,143
		Taiwan	40,066
6299929	OTHER ARTICLES OF UNHARDENED NON-CELLULAR VULCANIZED RUBBER, N.E.S.	Japan	9,862,328
		USA	1,309,612
		Thailand	754,000
		Hong Kong	606,689
		Germany	508,343
		China	503,333
		Indonesia	319,040
		Malaysia	258,923
		Netherlands	206,271
		Vietnam	147,593

Source: Department of Trade and Industry
Bureau of Export Trade Promotion

**Top Ten Export Markets
FOB Value in US Dollars
January- December 2006**

6252009	OTHER TIRES,PNEUMATIC,NEW,OF A KIND USED ON BUSES [AND] OR LORRIES (INCLUDING TRUCKS)	Thailand	4,543,258
		USA	895,927
		Vietnam	349,450
		Malaysia	261,242
		Finland	90,069
		Singapore	71,499
		Argentina	60,704
		South Africa	52,859
		Great Britain	34,328
		Australia	32,852
6299907	GASKETS, PACKINGS, WASHERS AND OTHER SEALS, OTHER THAN THOSE OF SUB- ITEMS 629.99-04 TO 629.99-05 [6]	Japan	1,653,201
		Germany	278,709
		Netherlands	74,333
		USA	68,580
		Thailand	33,474
		Singapore	32,364
		Indonesia	31,094
		Denmark	25,560
		Hungary	13,419
		China	10,414

Source: Department of Trade and Industry
Bureau of Export Trade Promotion

3.8 The Philippine Rubber Industry and its implications on ASEAN, China and South Korea

The Southeast Asian region produces roughly 80 percent of the natural rubber in the world market. The Philippines is ranked fifth in the ASEAN region where countries such as Thailand, Indonesia, Malaysia and Vietnam produce the largest proportion of output in the region. In the year 2005, the Philippines produced 316 thousand metric tons of natural rubber. Thailand, Indonesia, and Malaysia being the three largest producers in both the ASEAN and world markets generated 3.016 million, 2.156 million and 1.163 million metric tons of natural rubber. Cambodia and Myanmar have output levels below 300 thousand metric tons and are ranked behind the Philippines. Natural rubber production has grown for all countries particularly with Thailand and Indonesia having the largest increases in production volume for the year 2004 and 2005.

Estimates of average yield per hectare

A comparison of the average yield per hectare among the major natural rubber producers in the ASEAN region reveals that Thailand is the most efficient producer at 1,418 kg per hectare, followed by Malaysia, the Philippines and Indonesia at 950, 907 and 843 kg per hectare respectively.

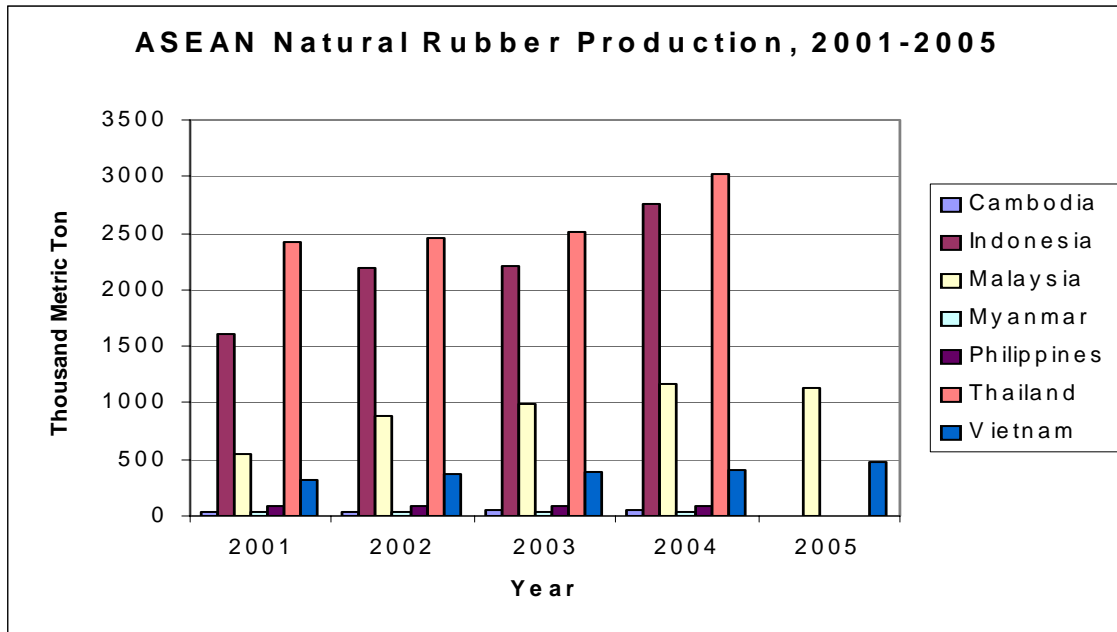
Yield per hectare in selected ASEAN countries

Country	Average yield (kg per hectare)
Thailand	1,418
Malaysia	950
Philippines	907
Indonesia	843

Sources: RCMA Commodities Asia 2006, Colombo Rubber Traders Association 2005, BAR Philippines 2006.

In Thailand and Malaysia, yield per hectare have been known to increase to a maximum of 2,500 kg per hectare depending on the number of trees planted which can range from 375 to 450 trees per hectare. Experimental hybrids of rubber trees with a planting density of 450 trees per hectare have been known to generate a maximum yield of 3,335 kg per hectare under ideal weather conditions in Thailand (RCMA Commodities Asia 2006, Colombo Rubber Traders Association 2005).

Throughout the last decade, Thailand has become the largest natural rubber producer and exporter in the world. The leading export markets for Thai rubber are Japan, the United States, China, Malaysia and South Korea. Rubber plantations in Thailand are dominated by the small land holding sector characterized as production cultivated from four hectares or less. Small farmers continue to be offered incentives and guidance to help them improve the quality of rubber and shift towards production of rubber blocks and concentrate. More focus is also being placed on attracting and expanding rubber based industries which includes the production of rubber gloves, condoms and tires.



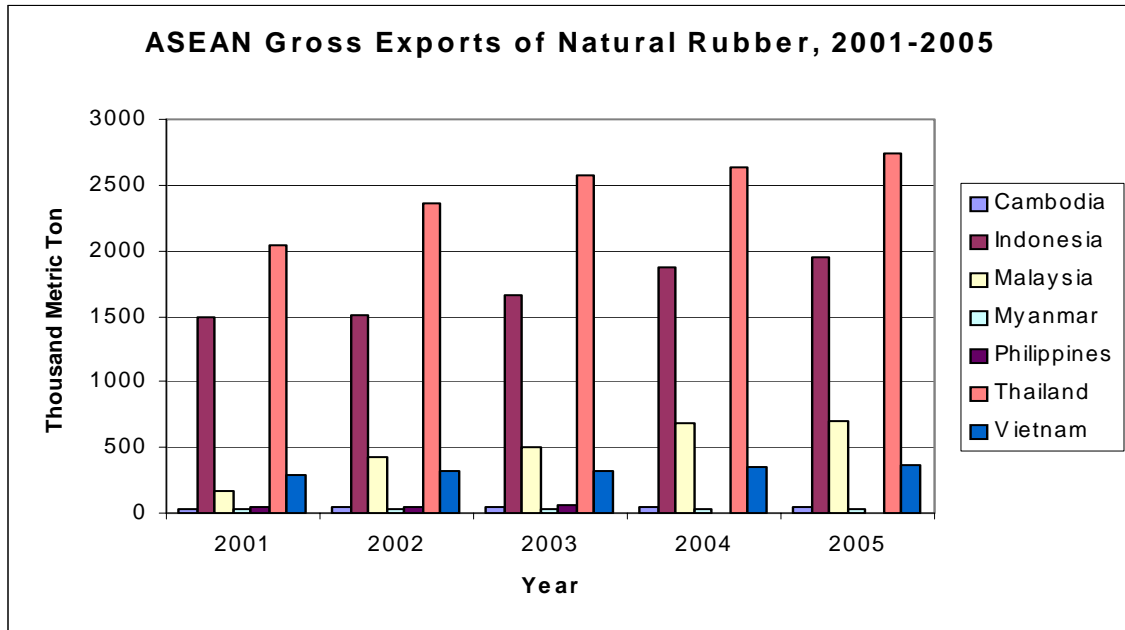
Source: ASEAN Statistical Yearbook 2005; Malaysia Rubber Board (Malaysia, 2005); General Statistics Office of Vietnam (Vietnam, 2005)

Within the ASEAN region, the Philippines is ranked as the fifth largest exporter of natural rubber in 2005 with an export volume of 60 thousand metric tons. In the world market it ranks sixth behind India, Vietnam, Malaysia, Indonesia and Thailand. Both Thailand and Indonesia remain to be the top two exporters of rubber in the ASEAN region as well as in the world with production volumes of 2.743 million and 1.950 million metric tons for the year 2005. Malaysia and Vietnam are ranked fourth and fifth in both ASEAN and the world market with export volumes of 707 thousand and 365 thousand metric tons respectively, while Cambodia and Myanmar lag behind the Philippines with export volumes of less than 42 thousand metric tons. Natural rubber exports have steadily increased during the last five years for the major producers in the ASEAN region.

The intra ASEAN trade pattern for rubber based products indicates that less developed members (Indonesia, Myanmar, the Philippines, Thailand and Vietnam) exported natural rubber to more developed members (Malaysia and Singapore) who in turn supplies them with rubber based manufactured products (Austria 2004). Deeper integration can be achieved if the value added of the natural rubber and other rubber based industries will be increased through further industrial processing, with each economy specializing in the production of a particular rubber based product for export to the rest of the region, with specialization being driven by each country's comparative advantage (Austria 2004)

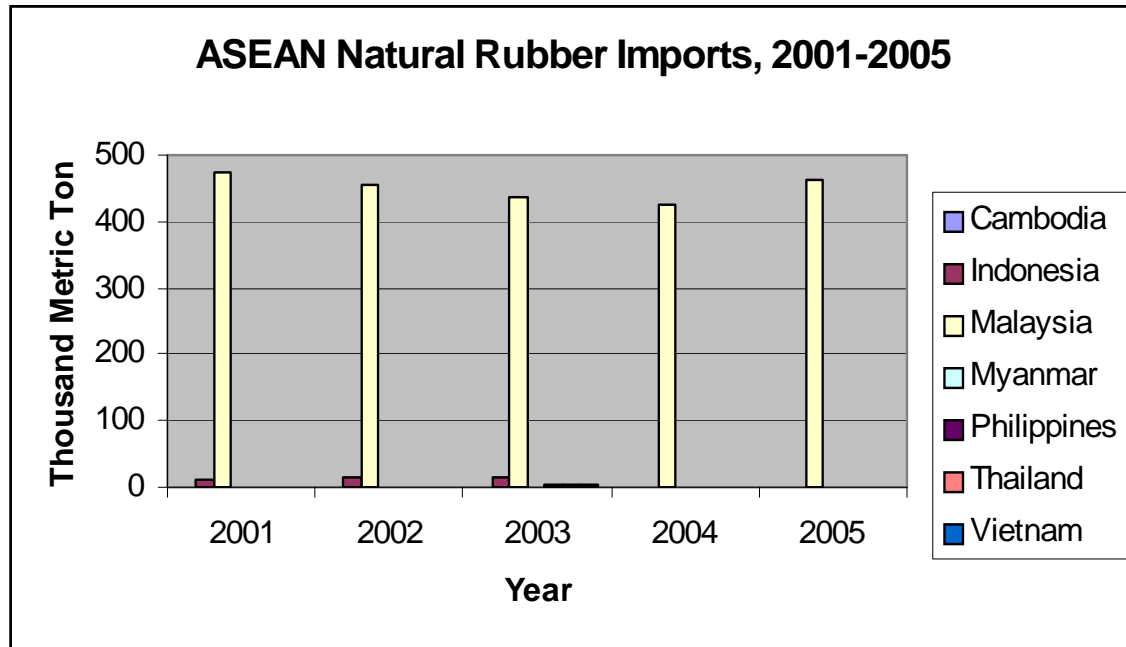
The continued increase in prices of natural rubber in the world market since 2002, had encouraged producers in Thailand, Indonesia, Malaysia and Vietnam to plant more rubber trees, consequently replacing lower income crops. Thailand has been successful

in attracting and promoting domestic rubber manufacturing companies, and continues to focus on the further development of high value added industries as 90 percent of natural rubber is exported. Tire and tube manufacturers are the largest users of natural rubber in Thailand accounting for 47 percent of domestic rubber consumption. There are three well known large tire companies producing tires for cars, trucks, buses and aircraft operating in Thailand, with other large manufacturing industries producing rubber gloves, condoms, balloons, auto parts, cushions and elastic bands (WTO report 2000).



Source: International Rubber Consortium Limited (2006), Bureau of Agricultural Statistics

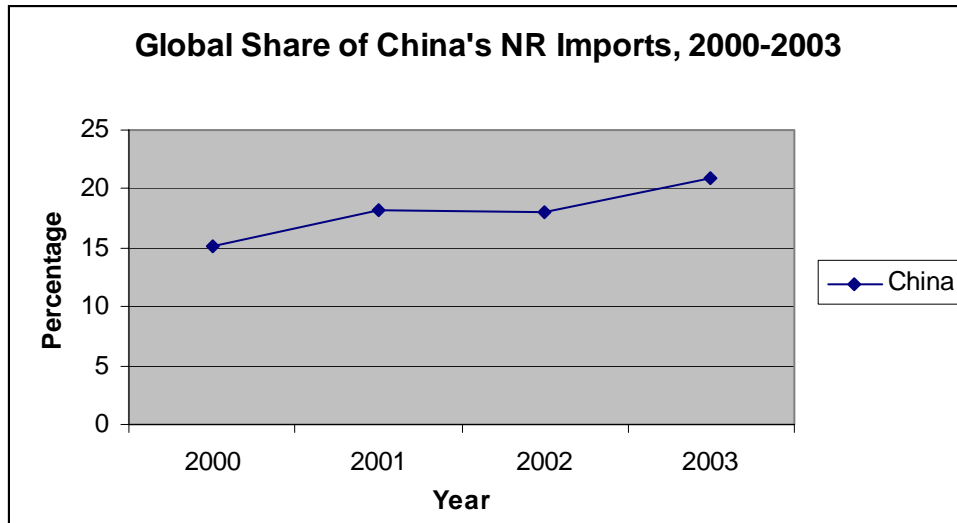
Data on ASEAN natural rubber imports reveal that Malaysia is the largest importer in the region. Although it is the third largest exporter of natural rubber in the world in 2005, it is also the fifth largest consumer in the world (Market Watch Malaysia Rubber 2004) using over 460 thousand metric tons of natural rubber annually. The Philippines is ranked as the fourth largest importer in the ASEAN region behind Malaysia, Indonesia and Vietnam.



Source: Food and Agriculture Organization of the United Nations, Malaysian Rubber Board

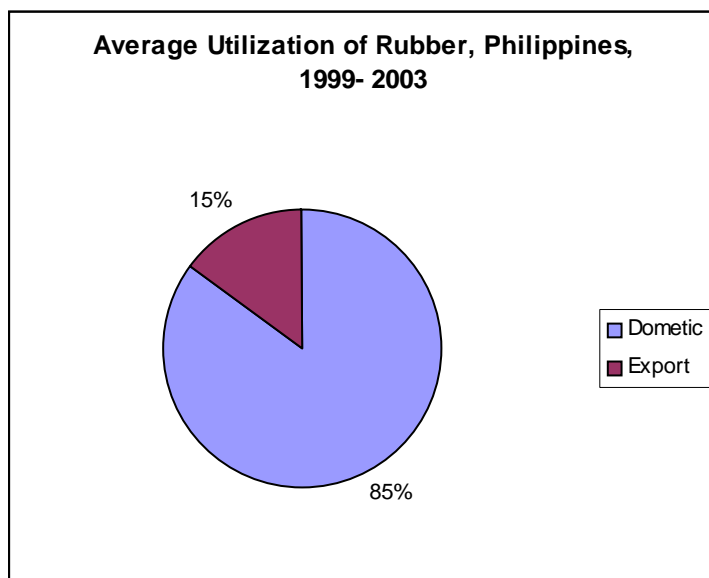
Demand for natural rubber from China

The Chinese rubber industry has grown impressively during the past few years with demand increasing rapidly putting pressure on domestic production to catch up along with increases in imports. With China's production not able to meet demand, the country increased its imports capturing 15 percent of the world's natural rubber imports during the year 2000 and cornering close to 21 percent in 2003. By the year 2005, China had the largest import volume for natural rubber at 1.054 million metric tons which is roughly 20 percent of world imports. The rapidly growing tire and rubber goods industries is the major reason why China is the largest natural rubber importer in the world today. An insufficient supply of natural rubber will seriously affect the sustained growth and development of the Chinese rubber based manufacturing industry and there will be a need to import from several countries particularly Thailand, Indonesia, Malaysia, Vietnam, India and the Philippines.



Source: Food and Agriculture Organization of the United Nations Philippines has shown

Based on the recent monthly integrated surveys of selected industries conducted by the National Statistics Office, initial results show the potential for continued growth in the Philippine rubber industry. The survey indicated growth in the value of production and the value of net sales in the industry. There has been a 14.4 percent increase in rubber production as of August 2006, and firms have been using more than 80 percent of their current production capacity. Presented below is a graph illustrating the average utilization of rubber from 1999-2003.



Source: Bureau of Agricultural Statistics

There is an opportunity for the Philippines to supply more natural rubber to China, considering that it is looking to further sustain growth in their domestic rubber industry.

China cannot depend on its domestic production of natural rubber and neither can it rely on a few producers in the world market to meet the growing demand of its industries . There is a large gap between domestic production and consumption and the growth of the industries which use natural rubber as inputs is too rapid as shown by the amount of natural rubber that is imported yearly by China. The sharp rise in rubber consumption requires the need for more natural rubber inputs.

The Philippines may not be a major competitor as compared to Thailand Indonesia and Malaysia, but the opportunity to increase export volumes in China should be exploited. The large population and the continued growth in the level of output and income show the enormous potential for export revenues coming from China. The demand and consumption per capita is rising as GDP increases and China uses a lot of natural rubber as inputs to produce rubber based industrial and consumer products for other export markets.

The Philippines needs to upgrade its current production capacity, improve product quality to meet international standards and increase rubber production volume in order to exploit the growing demand in China. The industry will need support from government in order to take advantage of this opportunity.

Natural Rubber Imports of South Korea

Aside from China, and the traditional markets such as the United States and Japan, It will also be important to consider the potential of South Korea as a major importer of natural rubber. During the year 2005, it imported 309 thousand metric tons of natural rubber, which is the fourth largest in the world, making up 6 percent of total world imports. Although South Korean imports of natural rubber decreased in 2005, for the years 1999 to 2004, imports remained over 300 thousand metric tons peaking at 352 thousand metric tons in 2004.

Aside from being the fourth largest importer of natural rubber in the world, an economy situated in the Northeast Asian region, and a member of the Asia Pacific Economic Cooperation (APEC) bloc, it is important to note that Korean imports of natural rubber from the Philippines (**natural rubber in plates, sheets and strips, PSCC 2312902**) remains extremely low and insignificant at \$31,586. **Its imports of waste paring and scrap of unhardened rubber and powder and granule OBT, PSCC 2322200**) from the Philippines were only at \$28,532. Considering that South Korea is a potentially large market with over 300 thousand metric tons of natural rubber imports, is geographically closer to the ASEAN region compared to the United States and is a member of the APEC trading bloc, efforts should be made to further improve on the Philippine export performance of natural rubber and rubber based products in the South Korean market. South Korea has also been aggressive in promoting its automotive industry with new passenger car models and sports utility and commercial vehicles being produced and sold both in its domestic economy as well as in markets in the ASEAN region, Japan, Europe and the United States. The growing South Korean automotive industry generates additional demand for tires and consequently its raw materials both

natural and synthetic rubber, which the Philippines can try to exploit if more effort and support are provided by government in order to gain more access to the South Korean market.

Trade barriers on natural rubber in other large markets

Tariff rates on natural rubber imports have been reduced to zero percent in Japan, South Korea, Thailand, the United States and the European Union. However, two major country markets continue to maintain relatively high tariff rates namely: China at 20 percent and India at 25 percent.

Tariffs on Natural Rubber Imports (2006)

Country	Tariff (in %)
European Union	0
United States	0
China	20
Japan	0
South Korea	0
Thailand	0
India	25

Source: Napoletano & Un Sinath

Although China had cancelled non-tariff measures such as import quotas and licensing controls on natural rubber in January 2005, it still continues to maintain tariff rates at 20 percent.

Most of the non-tariff barriers being imposed on natural rubber imports in the above mentioned countries generally focus on the strict enforcement of product standards (particularly with regard to the different grades of natural rubber which are being imported) and the compliance with certification procedures.

The Malaysian External Trade Development Corporation, for example reports that the South Korean tariff rate on technically specified natural rubber (TSNR processed block types in 33 1/3 kg bales) used to be at 1 percent in 2004 and was reduced to 0 percent in 2006. There is no specific regulation concerning imports of TSNR into South Korea, and that special sample tests are not necessary before customs clearance. However, strict adherence to international standards (ISO 2000) are necessary with TSNR at least complying with the enforced specifications indicated in the 6 different grades (TSR-CV, TSR, LTSR-S, TSR-10, TSR-20, and TSR-50) which are currently being imported by the Korean economy.

IV. Philippine Imperatives and Prospects in

ASEAN and other Large Country Markets

Although the share of Philippine natural rubber production from world output is only close to one percent, the country still ranks as the seventh largest producer of natural rubber in the world market, with 315.6 thousand metric tons of output, and the sixth largest exporter in the world with 60 thousand metric tons for the year 2005. The Philippines has been a net exporter of natural rubber products with a trade surplus of US\$ 13.771 million during the year 2000, and this had further increased to \$31.147 million by the end of 2005. Its net trade ratio in 2005 was at 74 percent, with exports expected to increase further as world demand expands and natural rubber prices increase.

Prospects are good and promising for natural rubber producers in ASEAN as well as for the rest of the world. Global production had reached 8.872 million metric tons in 2005, growing at a rate of 4 percent, while world demand was at 8.706 million metric tons which increased at a rate of 4.7 percent. Although production was larger than demand, the increase of 4.7% in consumption which was higher than output growth of 4% indicates pressure coming from the demand side due to the growing automotive, tire, footwear, and health and pharmaceutical industries. Natural rubber prices have been rising steadily which should serve as an incentive for firms to produce more. In addition, the cost of producing synthetic rubber has been increasing because of higher oil prices reducing its competitiveness relative to natural rubber. This should further boost the demand for natural rubber products.

Recent updates from the International Rubber Study Group have shown that at the end of 2006, natural rubber production in the world had reached 9.188 million metric tons, while world consumption was recorded at 8.956 million metric tons. World production had grown by 4.68 percent while global consumption had slightly decreased by 0.42 percent compared to its 2005 level of 8.994 million metric tons.

The Philippines should continue to promote its local natural rubber industry because: 1) rubber prices are more lucrative compared to other crops; 2) a vast land area is available for rubber planting; 3) the country's climate is suitable for good rubber growth and production; 4) there are available workers for rubber plantations; 5) rubber is a familiar crop, especially for residents in Mindanao; 6) there is a relatively high income and effort potential for rubber farmers; and lastly : 7) rubber is relatively easy to market (Ismael, T. BAR Chronicle, 2006).

Strategies

The strategies to be adopted are actually within the scope and framework being used by the Department of Agriculture in its vision and mission to develop the industry. Its vision is to develop a sustainable rubber industry that is technologically advanced and globally competitive. Its mission in particular focuses on promoting and developing a globally competitive rubber industry with the view of achieving increased volume as well as quality of production, increasing farmer's incomes and improving the efficiency

of the marketing system through the participation of the private sector, local government units and government agencies.

One of the objectives of this mission is to increase the production of natural rubber by 10 percent per year, and to achieve this, it will be necessary to identify and increase the land area used for planting rubber trees and rehabilitate previously planted areas and increase yield per hectare by 5 percent. This is to be accomplished through more replanting, fertilization, training of production and management personnel, improving rubber tapping and production technology and the effective use of pest and disease control. In order to satisfy domestic demand without importation, the country has to expand its area planted to at least 250 thousand hectares. To further increase export volume as well as its world market share, the country must maintain at least 400,000 hectares of productive rubber trees. Based on the estimates of the Department of Agriculture, there are roughly 52,000 hectares which can be used immediately for natural rubber production and an actual potential area of 300,000 hectares suitable for rubber production in Mindanao specifically in Central Mindanao, Zamboanga peninsula and the ARMM.

The area being planted to rubber is to increase by 10,000 hectares per year using new recommended tree varieties and planting designs using production clusters of 500 hectares as well as the inclusion of other cash crops to be planted during the 5 to 6 year gestation period. It will also be necessary to incorporate rubber into the Agro-forestry program of the Department of Environment and Natural Resources (DENR), the local government units (LGU's) and the non-governmental organization (NGO's). Quedancor through its self reliant team (SRT) program extends credit to farmers in the amount of P50,000 to P110,000 per hectare with an interest rate of 14 percent per annum payable within one year. For technology adoption and production expansion, the Land Bank of the Philippines similarly provides credit and financial assistance through its ACCESS program. Commercial banks are mandated by law to set aside a certain percentage of their reserves for agricultural loans (Department of Trade and Industry Report 2005). In addition, access to development and rehabilitation loans should be increased along with the possibility of exploring co-financing schemes with other countries.

The procurement of funds from investors, funding agencies or financial institutions

It is important to consider that rubber trees require a gestation period of five to six years, and that any loan or credit program should provide a reasonable grace period to allow farmers to pay interest, not immediately, but at a preferably later date. The General Banking Act (RA337), provides for a maximum grace period of three years for loans. However, this may not be of much assistance for rubber because of the 5 to 6 year gestation period. In the interim, the Departments of Agriculture, Agrarian Reform and Environment and Natural Resources under a proposed Perennial Crop Development Financing Fund (as an integral component of the High Value Crops Development Fund under RA 7099) should provide financing for the first three years of the investment phase

and the Development Bank of the Philippines and the Land Bank during the 4th, 5th and 6th year under an innovated long term rubber financing scheme.

In Thailand, government was able to achieve its objective of increasing the number of hectares planted to rubber by implementing a program under the Rubber Replanting Aid Fund which provides grants to rubber planters within a period of 7 ½ years on 9 installments. These payments were applied only to planting materials during the last five years of the program, and the strategy was successful to the extent that it was able to meet the target of increasing the amount of land planted to rubber to approximately 400,000 rai from 1989 to 1993 (Jassadakasamwimon S. and Preecha, Wishit Suwan, 2006).

Private sector investments will play a crucial role in the expansion of large scale rubber plantations, or the formation of joint ventures with cooperatives or consolidated rubber small holding production units. Although strong international demand and attractive world prices may provide an incentive for businessmen to invest in natural rubber production, this must be complemented by access to low cost long term financing, fiscal incentives, and infrastructure support such as farm to market roads, rural electrification to complement processing, and more efficient access to sea ports and shipping facilities.

There is a need to address the problem of cost inefficiency attributed to the existence of small scale farms, processing inefficiency and logistical constraints. Considering that with an average production area of 8 hectares, it becomes difficult for rubber planters to exploit the advantage behind economies of scale and prevents the adoption of productivity enhancing technologies as well as the optimal utilization of workers. Logistical costs also increase because of the difficulty in consolidating the output of small farms specially if locations are fragmented. **Shipping costs** are high and a large number of farmers do not have the capability to bring their products to the market. This encouraged the entry of traders that unnecessarily increase the cost of distribution. (Costales, 2006).

Aside from increasing output, productivity, efficiency and quality of natural rubber products, it will also be necessary to integrate and strengthen existing markets and expand new ones for natural rubber, rubber wood and manufactured products. To accomplish this, it will be necessary to strengthen the current management information systems being used in the industry, improve infrastructure through new investments in rural electrification, farm to market roads, bridges and irrigation. Improvements in the transport system particularly farm to market roads and ports that would facilitate inter-island shipping should be facilitated as soon as possible. **Shipping cost** is a major part of the cost structure of marketing, distribution and transport of primary rubber products. Rubber crepes have to be transported by sea freight to Metro Manila and Metro Cebu for further processing (Costales 2006). Investments on rural infrastructure would provide an environment for a competitive production transport system and communication network. There will be a need to establish down stream rubber wood industries, organize

marketing clusters and focus on China and South Korea as the main markets for natural rubber and rubber wood products.

The need to identify a lead institution on natural rubber development

Quality improvements and consistency which are outcomes of improved production technologies should meet world market standards if the country intends to increase its share of world production and exports. The Philippine Rubber Research and Development Center in Kabacan North Cotabato provides and extends research and development services to the industry. The Department of Agriculture provides technical assistance and other forms of extension services through its High Value Commercial Crops program (HVCC). This should include further training of extension workers and farmers, as well as the establishment of model farms in order to showcase the latest technologies.

At the level of the producers, rubber organizations should be strengthened in order to further promote internal quality control within the industry. Efforts to shift from low value primary products to higher value rubber blocks and latex should be pursued. Current institutional support from the Philippine Rubber R&D Center and the High Value Commercial Crops Program (HVCC) may be inadequate which makes it necessary for the private sector and government to create a lead institution that could further promote natural rubber development by mobilizing more funds for research and development, identify goals and objectives for the industry and better organize both industry associations and the natural rubber producers which include the large scale firms with plantations, and the small land holding rubber producers which must be integrated into cooperatives or consolidated production units.

Quality and productivity improvements involving the development of technology that covers the entire supply chain of the natural rubber industry should continue to be pursued by the Philippine Rubber R&D Center. For traders, better or more attractive incentives should be given for good quality cup lumps and dry rubber. Trading of cut lumps and latex in the local level is done through the local or municipal assemblers and provincial assemblers who then sell to processors or agents of exporters and manufacturers. An international set of standards serves as a guide in the grading of natural rubber products (Costales 2006). Processors should continue upgrading the efficiency of existing facilities and consequently invest in new capacity in order to accommodate increased production induced by larger demand.

Livelihood alternatives during the five year gestation period

To further encourage rubber tree growing and cup lump production among small land holders, it will be important to significantly increase the income of growers and those in the peripheral industries at a rate of 5 to 10 percent per year. This may be accomplished through the introduction of an integrated and sustainable farming systems approach in relatively flat lands. The Department of Agriculture should implement programs that will provide livelihood alternatives for the farmers as rubber trees are allowed to mature within the next 5 to 7 years. Based on the Malaysian and Thai experience for small land holders, livelihood alternatives may include livestock raising (swine, cattle and poultry), timber production, the cultivation of fruit trees and the production of cash crops which are to be integrated within the rubber plantations.

Establishing more nurseries for massive planting material production

The lack of planting materials continues to limit output expansion considering that there are only seven bud wood gardens with each site having an approximate area of ½ hectares located at various sites in Mindanao. There are 17 nurseries, seven of which are owned by government and the rest are owned by either the local government or the private sector (Department of Agriculture 2005).

A hectare of bud wood garden can supply the requirement for planting materials of about 300 hectares of natural rubber trees. The capacity of the present bud wood gardens can only supply the requirement for 1,050 hectares of expansion. For 2005-2006, the available expansion area in Mindanao is 6,196 . For the industry to utilize this total area for rubber production would require 21 hectares of bud wood gardens. To support the planting material needs of 10,000 new hectares per year, 34 hectares of bud gardens should be established yearly to meet this goal. (Department of Agriculture 2005, Ismael, T. BAR Chronicle, 2006).

In the short term, government can immediately provide support to the industry by assisting in the opening of clusters of area for development, promoting product quality improvement through advocacy and training in focused areas, controlling the back door marketing operations of raw rubber, establishing more bud wood gardens and nurseries and the implementation of Philippine National Standards for natural rubber products .

Recommendations from the Private Sector

Encouraging joint ventures with domestic and foreign investors

It will be important to explore the possibility of forming joint ventures (probably between the National Development Corporation (NDC) and foreign investors/ firms which use natural rubber as major inputs) particularly in the development of new rubber plantations, (with clusters of 500 hectares) which could exploit the advantages behind economies of scale, and new production technologies which increase yields and improve quality. In view of the land redistribution being implemented under Agrarian Reform, it will be necessary to consolidate the production of small land holding rubber producers through the organization of cooperatives, the establishment of contract growing agreements among firms, buyers and exporters, and as mentioned earlier, the formation of joint ventures involving plantation type lands with long term leasing arrangements between the private sector and the NDC.

The Malaysian experience has shown that small land holdings may still be able to produce with relative efficiency as long as the consolidation of production activities will include the formation of nucleus small holdings, group replanting schemes, group processing centers, centralized processing centers, the formation of mini estates and an efficient management approach to consolidating output. Mechanisms for effective transfer of technologies is the key for successful development of economically viable smallholdings (Seenivasagam, 2006).

It will also be necessary to establish on-site rubber manufacturing plants and implement Philippine National Standards (PNS) for rubber based product manufacturing. The production of rubber blocks and concentrated latex already have established product quality standards which manufacturers should adopt in order to have a chance to compete in the export market.

Leasing agreements and amendments to agrarian reform

In connection with encouraging joint ventures between foreign investors and the NDC, it may be necessary to propose amendments to the Comprehensive Agrarian Reform Law (CARL). Since the implementation of the law, owners of rubber tree plantations have been discouraged to continue with natural rubber production because of the consequent redistribution of land to farmer beneficiaries. Large tracts of land which are going to be subdivided and redistributed will lose their economies of scale advantage since smaller land holdings will not facilitate the mass production of natural rubber. Although owners of large tracts of private agricultural land may have either disposed of their properties, or converted their land to industrial, commercial or residential estates, the private sector can still consider investing into natural rubber production and the development of large scale rubber tree plantations if public agricultural lands can be offered to prospective natural rubber producers on a long term leasing arrangement covering a period of at least 20 to 25 years. Leasing agreements will provide investors both local and foreign the opportunity to set up and operate large scale rubber plantations, which will have economies of scale advantages. In addition, with

government as the owner of the public agricultural land can generate revenues from the leasing agreement which would put it in a better position to finance its operations and reduce its fiscal deficit.

V. Developing an ASEAN Framework for Trade Negotiations in the Natural Rubber Industry

Based on the discussions conducted during the Second Consultative Meeting for the Priority Integration Sectors, organized by the ASEAN Secretariat last June 2006, the following areas should be considered within the scope of the ASEAN framework for trade negotiations concerning the natural rubber industry:

Technical and product cooperation

There is a need to initiate and encourage proposals to form technical and product cooperation agreements among ASEAN countries which would involve technology transfers that would help increase yields from natural rubber trees and improve the quality of processed rubber products. In addition to this, it will be necessary to promote and encourage the use of rubber products made in ASEAN among member countries. The benefits would be substantial for the entire region if the more developed member countries could initiate the formation of agreements to purchase natural rubber intermediate inputs from less developed member countries to be used in the production of higher value added rubber based products, in order to further strengthen the linkages in both agriculture and industry across all member countries.

Product Testing and Establishing Product Standards

Rubber manufacturers should be encouraged to make use of available accredited testing facilities within ASEAN which are recognized and accepted by ASEAN domestic regulators. Mutual recognition arrangements on testing facilities should be developed to encourage recognition of testing facilities among member countries before promoting them to the manufacturers.

There will be a need to accelerate the harmonization of member countries standards for rubber products through adoption of one common set of standards for all ASEAN member countries based on international standards wherever applicable. Where international standards are not available, these should be developed by member countries. It will also be necessary to accelerate the harmonization of technical regulations imposed by member countries in relation to safety, health and the environment.

ASEAN must have a common position on new standards for rubber products at an international forum such as the International Rubber Organization.

Promoting ASEAN Rubber Exports

In coordination with the ASEAN Rubber Business Council, rubber associations as well as export promotion agencies in member countries will be expected to establish a regional grouping of export promotion agencies in ASEAN member countries in order to promote natural rubber and other rubber based products. It will be important to undertake joint promotional efforts in other international markets and to counter adverse publicity against natural rubber products by using various forms of media to present its positive attributes which are based on scientific findings.

Research and Development in ASEAN Rubber

In cooperation with the ASEAN Committee on Science and Technology and in coordination with International Rubber Research and Development Board, the promotion of joint research and development of rubber based products at all stages from procurement, production and distribution must be undertaken in order to ensure that continuous efforts are made towards improving quality, improving production efficiency and upgrading product and processing standards. The ASEAN Rubber Business Council, the ASEAN Ministers on Agriculture and Forestry and the members of the ASEAN 6 must enhance cooperation with Cambodia, Laos, Myanmar and Vietnam in the development of rubber plantations and processing facilities.

Environmental Implications

To further promote ASEAN natural rubber exports in the world market, it will also be necessary to put more emphasis on the environmental implications of using more natural rubber based products compared to synthetic rubber substitutes. An intensive marketing campaign jointly sponsored by all members of the ASEAN should be developed with the intention of promoting natural rubber as the more favorable source of raw materials for rubber based manufactured products because of its contributions to the preservation of the environment particularly in encouraging and increasing the number of rubber trees being planted in tropical countries. Increasing the number of hectares and trees planted for rubber will generate more environmental benefits for ASEAN countries, relative to the use of petroleum based synthetic rubber substitutes.

Creating an ASEAN Rubber Organization within the Framework of the International Rubber Consortium Limited

Other countries in the ASEAN region which are producers of natural rubber should initiate efforts to form an ASEAN Rubber Organization that will facilitate stability in rubber prices, ensuring consistent supply, strengthening domestic rubber industries in other member countries to sustain demand, as well as support research and development

in technology that would raise farm yields, improve farming methods, and improve the quality of both intermediate and finished rubber based products. During the year 2001, Thailand, Indonesia and Malaysia met and signed a Joint Ministerial Declaration (the Bali Declaration 2001) pledging to work collectively to ensure fair and remunerative income for rubber small holders by establishing the "International Tripartite Rubber Council". The body is responsible for coordinating and overseeing the implementation of natural rubber supply measures such as the Supply Management Scheme (SMS) and the Agreed Export Tonnage Scheme (AETS).

By the year 2004, the three countries had formed the "International Rubber Consortium Limited (IRCo)" with an authorized capital stock of \$225 million fully subscribed by Thailand, Indonesia and Malaysia at a ratio of 4:3:2. Its objectives are presented as follows: 1) to achieve a long term price trend that is stable, sustainable and remunerative to the farmers and: 2) to maintain a healthy balance between international supply and demand to encourage adequate production in the market at fair prices. The IRCo is expected to carry out strategic market operations using the SMS and AETS schemes in order to strengthen its bargaining power as organized producers and improve cooperation in the areas of technological development, product quality improvement and increasing market access.

Other ASEAN countries who are currently not members of this consortium should take the initiative of applying for membership in the IRCo or as mentioned earlier, set up an ASEAN Rubber Organization along the framework of the IRCo with the same goals but with a larger base of members which would include other natural rubber producers in the region such as the Philippines, Vietnam, Laos, Cambodia, Brunei and Myanmar. The IRCo's "Supply Management Scheme" and "Agreed Export Tonnage Scheme" may be implemented on a regional level under the ASEAN Rubber Organization in order to efficiently manage the supply of natural rubber within the area, stabilize prices and provide an encouraging remunerative system in order to promote the growth and development of small to medium scale natural rubber producers.

Final Notes

The country has the potential to further improve on its production and export performance in ASEAN as well as other regions in the international market as long as it can continue to develop the local natural rubber industry by increasing the number of rubber bearing trees, increasing the number of hectares being used for planting rubber, and increasing the intensity of rubber tapping activities in order to take advantage of strong demand and rising prices in the world market. The increases in output and productivity can be achieved with the adequate provision of credit, infrastructure (such as farm to market roads, and ports to facilitate shipping transport), management services, research and development extension services as well as the strengthening of cooperatives, specifically for organized groups of small land holders.

With the assumption that all of the above mentioned conditions are met, substantial increases in investments from the private sector into the natural rubber industry will only be fully realized if the peace and order situation in the Mindanao area is finally resolved, along with the resolution of land disputes under the Agrarian Reform program, and the prospective application of long term leasing arrangements for public land to be part of a joint venture scheme between government and private firms to develop large scale plantations. The consolidation of the production activities of small rubber land holdings through cooperatives and contract growing agreements should further boost production as the country attempts to increase its share of the market both within and outside the ASEAN region.

APPENDIX A

EXPORTS

2312901	NAT'L RUBBER, NES, IN PRIMARY FORMS(OTH THN LATE); CREPE SHEETS
2312902	NAT'L RUBBER,IN PLATE,SHT/STRIP
2321501	LATEX OF ACRYLONITRILE-BUTADIENE RUBBER(NBR)
2321901	LATEX OF OTH SYNTHETIC RUBBERS
2321902	SYNTHETIC RUBBER, NES, IN PRIMARY FORMS (OTH TN LATEX)
2322100	RECLAIMED RUBBER IN PRIMARY FORMS/IN PLATES, SHEETS/STRIP
2322200	WASTE,PARING & SCRAP OF UNHARDND RUBBER & POWDER&GRANULE OBT THEREFROM
6212909	OTH FORMS & ART, OF UNVULCNZ RUBBER,NES
6213201	PLATES, SHEETS & STRIP, OF UNHARDENED VULCANIZED CELLULAR RUBBER
6213303	RUBBER SHEETING FOR FOOTWEAR, OF UNHARDENED VULCNZ NON-CELLULAR RUBBER
6213309	OTH PLATES,SHEETS & STRIP,OF UNHARDENED VULCANIZED NON-CELLULAR RUBBER
6214209	OTH TUBES,PIPES & HOSES, OF UNHARDENED VULCANIZE RUBBER,REINFORCED OR W/ METAL
6214309	OTH TUBE,PIPE&HOSES,OF UNHARDND VULCNZ RUBBER, REINFORCED OR W/ TEXTILE MAT'L
6214309	OTH TUBE,PIPE&HOSES,OF UNHARDND VULCNZ RUBBER, REINFORCED OR W/ TEXTILE MAT'L
6214509	OTH TUBES,PIPES & HOSES, OF UNHARDENED VULCANIZED RUBBER, W/ FITTINGS
6251001	STEEL BELTED AUTOMOBILE TIRES, PNEUMATIC, OF ALL SIZES, NEW
6251009	OTH TIRES, PNEUMATIC, NEW, USE ON MOTOR CARS(INCLDG STATION WAGON&RACING CARS)
6252001	STEEL BELTED TIRES,PNEUMATIC,NEW,OF A KIND USED ON BUSES[&]OR LORRIES(INCLUDING TRUCKS)
6252009	OTHER TIRES,PNEUMATIC,NEW,OF A KIND USED ON BUSES [AND] OR LORRIES (INCLUDING TRUCKS)
6253000	TIRES, PNEUMATIC, NEW, USED ON AIRCRAFT
6254100	TIRES,PNEUMATIC,NEW,USED ON MOTORCYCLES
6254200	TIRES, PNEUMATIC, NEW, USED ON BICYCLES
6255903	TIRES, PNEUMATIC, FOR AGRI'L,CONST&IND EQUIPMENT, NES
6259101	AUTOMOBILE TUBES, NEW
6259103	TRUCK TUBES, NEW
6259105	BICYCLE TUBES, NEW
6259203	RETREADED AIRCRAFT TIRES
6259303	AIRCRAFT TIRES, PNEUMATIC, USED
6259402	INTERCHANGEABLE TIRE TREADS&TIRE FLAPS
6291100	SHEATH CONTRACEPTIVES(CONDOM)
6291903	NIPPLES FOR FEEDING BOTTLE, OF UNHARDENED VULCANIZED RUBBER
6291909	UNHARDENED VULCANIZED RUBBER, NES
6292001	CONVEYOR BELTS OR BELTING REINFORCED ONLY WITH METAL
6292009	OTHER CONVEYOR BELTS OR BELTING
6292014	ENDLESS SYNCHRONOUS BELTS,OF A CIRCUMFERENCE EXCEEDING150 CM BUT NOT EXCEEDING 198 CM
6292015	TRANSMISSION BELTS OR BELTING OF TRAPEZOIDAL CROSS-SECTION(V-BELTS

& V-BELTING) OTHER THAN THOSE OF
 6292019 OTHER TRANSMISSION BELTS OR BELTING
 6299102 HARD RUBBER (E.G., EBONITE), IN ALL FORMS, IN BULK (OTHER THAN THOSE
 OF SUB-ITEMS 629.91-01 AND 629.
 6299103 SCRAP, WASTE AND POWDER, OF HARD RUBBER
 6299104 HYGIENIC, MEDICAL AND SURGICAL ARTICLES, OF HARD RUBBER
 6299105 BOTTLE CAPS, BULBS, STOPPERS, PLUGS AND SEALS, OF HARD RUBBER
 6299109 OTHER ARTICLES OF HARD RUBBER, INCLUDING HARD RUBBER BUCKETS
 6299200 ARTICLES OF UNHARDENED CELLULAR VULCANIZED RUBBER, N.E.S.
 6299901 FLOOR COVERINGS & MATS, OF UNHARDENED NON-CELLULAR VULCANIZED
 RUBBER
 6299902 ERASERS [FOR PENCILS], OF UNHARDENED NON-CELLULAR VULCANIZED
 RUBBER
 6299905 PACKING FOR ELECTROLYTIC CAPACITORS, OF UNHARDENED NON-CELLULAR
 VULCNZ RUBBER
 6299907 GASKETS, PACKINGS, WASHERS AND OTHER SEALS, OTHER THAN THOSE OF
 SUB-ITEMS 629.99-04 TO 629.99-05 [6]
 6299901 FLOOR COVERINGS & MATS, OF UNHARDENED NON-CELLULAR VULCANIZED
 RUBBER
 6299902 ERASERS [FOR PENCILS], OF UNHARDENED NON-CELLULAR VULCANIZED
 RUBBER
 6299905 PACKING FOR ELECTROLYTIC CAPACITORS, OF UNHARDENED NON-CELLULAR
 VULCNZ RUBBER
 6299907 GASKETS, PACKINGS, WASHERS AND OTHER SEALS, OTHER THAN THOSE OF
 SUB-ITEMS 629.99-04 TO 629.99-05 [6]
 6299922 RUBBER GROMMETS AND RUBBER COVERS FOR AUTOMOTIVE WIRING
 HARNESS
 6299929 OTHER ARTICLES OF UNHARDENED NON-CELLULAR VULCANIZED RUBBER,
 N.E.S.

IMPORTS

2311000 NATL RUBBER LATX,PREVULCANZE/NOT
 2312901 NAT'L RUBBER, NES, IN PRIMARY FORMS(OTH THN LATE); CREPE SHEETS
 2312902 NAT'L RUBBER,IN PLATE,SHT/STRIP
 2313001 BALATA, GUTTA-PERCHA, GUAYULE, CHICLES & SIMLR NATL GUM,IN PRIMARY
 FORM
 2321101 LATEX OF STYRENE-BUTADIENE RUBBER (SBR)
 2321102 LATEX OF CARBOXYLATED STYRENEBUTADIENE RUBBER (XSBR)
 2321103 STYRENE-BUTADIENE RUBBER (SBR),IN PRIMARY FORMS (OTHER THAN LATEX)
 2321104 CARBOXYLATED STYRENE-BUTADIENE RUBBER (XSBR), IN PRIMARY FORMS
 (OTHER THAN LATEX)
 2321105 STYRENE-BUTADIENE RUBBER (SBR), AND CARBOXYLATED STYRENERUBBER
 (XSBR), IN PLATES, SHEETS OR STRIP
 2321201 BUTADIENE RUBBER (BR), IN PRIMARY FORMS
 2321301 ISOBUTENE-ISOPRENE(BUTYL) RUBBER(IIR), IN PRIMARY FORMS
 2321302 ISOBUTENE-ISOPRENE(BUTYL) RUBBER(IIR), IN PLATES, SHEETS/STRIP
 2321501 LATEX OF ACRYLONITRILE-BUTADIENE RUBBER(NBR)
 2321502 ACRYLONITRILE-BUTADIENE RUBBER(NBR), IN PRIMARY FORMS(OTH THN
 LATEX)
 2321503 ACRYLONITRILE-BUTADIENE RUBBER(NBR), IN PLATES, SHEETS/STRIP

2321601 ISOPRENE RUBBER(IR), IN PRIMARY FORMS
 2321701 ETHYLENE-PROPYLENE-NON-CONJUGATED DIENE RUBBER(EPDM), IN PRIMARY FORMS
 2321702 ETHYLENE-PROPYLENE-NON-CONJUGATED DIENE RUBBER(EPDM),IN PLATE,SHTS/STRIP
 2321901 LATEX OF OTH SYNTHETIC RUBBERS
 2321902 SYNTHETIC RUBBER, NES, IN PRIMARY FORMS (OTH TN LATEX)
 2321903 FACTICE DERIVED FROM OILS
 2321904 OTH SYNTHETIC RUBBERS, NES, IN PLATES, SHEETS/STRIP
 2322100 RECLAIMED RUBBER IN PRIMARY FORMS/IN PLATES, SHEETS/STRIP
 2322200 WASTE,PARING & SCRAP OF UNHARDND RUBBER & POWDER&GRANULE OBT THEREFROM
 6211100 RUBBER COMPOUNDED W/ CARBON BLACK/ SILICA, IN PRIMARY FORMS, PLATES, ETC
 6211200 RUBBER SOLUTIONS, DISPERSIONS(OTH THN OF ITEM 62111)
 6211901 COMPOUNDED RUBBER, OTH THN 6211100 UNVULCANIZED,IN PLATES,SHEETS/STRIP
 6211902 GRANULES OF UNVULCNZ NAT'L/SYNTHETIC RUBBER COMPOUNDED READY FOR VULCNZN
 6211909 OTH COMPOUNDED RUBBER, UNVULCANIZED, IN PRIMARY FORMS, NES
 6212100 CAMEL-BACK STRIPS FOR RETREADING RUBBER TIRES
 6212901 RUBBER TREAD, CUSHION & TREAD GUMS, UNVULCNZ, FOR TIRE MANUFACTURING&REPAIR
 6212901 RUBBER TREAD, CUSHION & TREAD GUMS, UNVULCNZ, FOR TIRE MANUFACTURING&REPAIR
 6212909 OTH FORMS & ART, OF UNVULCNZ RUBBER,NES
 6213100 VULCANIZED RUBBER THREAD & CORD
 6213201 PLATES, SHEETS & STRIP, OF UNHARDENED VULCANIZED CELLULAR RUBBER
 6213202 RODS & PROFILE SHAPES, OF UNHARDENED VULCANIZED CELLULAR RUBBER
 6213301 PRESSURE SENSITIVE TAPES,OF UNHARDENED VULCANIZED NON-CELLULAR RUBBER
 6213302 RUBBER BLANKET FOR PRINTING MACHINE, OF UNHARDENED VULCNZ NON-CELLULAR RUBBER
 6213303 RUBBER SHEETING FOR FOOTWEAR, OF UNHARDENED VULCNZ NON-CELLULAR RUBBER
 6213309 OTH PLATES,SHEETS & STRIP,OF UNHARDENED VULCANIZED NON-CELLULAR RUBBER
 6213311 RODS & PROFILE SHAPES, OF UNHARDENED VULCANIZED NON-CELLULAR RUBBER
 6214101 GARDEN HOSE,OF UNHARDENED VULCANIZED RUBBER, W/O FITTINGS
 6214109 OTH TUBES, PIPES & HOSES, OF UNHARDENED VULCANIZED RUBBER, W/O FITTINGS
 6214201 MINING SLURRY SUCTION&DISCHARGE HOSE,OF VULCNZ RUBBER,REINFORCED OR W/ METAL
 6214209 OTH TUBES,PIPES & HOSES, OF UNHARDENED VULCANIZE RUBBER,REINFORCED OR W/ METAL
 6214301 MINING SLURRY SUCTION&DISCHARGE HOSE,OF RUBBER, REINFORCED OR W/ TEXTILE MAT'L
 6214309 OTH TUBE,PIPE&HOSES,OF UNHARDND VULCNZ RUBBER, REINFORCED OR W/ TEXTILE MAT'L
 6251001 STEEL BELTED AUTOMOBILE TIRES, PNEUMATIC, OF ALL SIZES, NEW
 6251009 OTH TIRES, PNEUMATIC, NEW, USE ON MOTOR CARS(INCLDG STATION

WAGON&RACING CARS)

6252001 STEEL BELTED TIRES,PNEUMATIC,NEW,OF A KIND USED ON BUSES[&]OR LORRIES(INCLUDING TRUCKS)

6252009 OTHER TIRES,PNEUMATIC,NEW,OF A KIND USED ON BUSES [AND] OR LORRIES (INCLUDING TRUCKS)

6253000 TIRES, PNEUMATIC, NEW, USED ON AIRCRAFT

6254100 TIRES,PNEUMATIC,NEW,USED ON MOTORCYCLES

6254200 TIRES, PNEUMATIC, NEW, USED ON BICYCLES

6255101 TRACTOR TIRES, PNEUMATIC, NEW, HAVING A "HERRING-BONE" OR SIMILAR TREAD

6255102 OFF-THE-ROAD TIRES OF 300KG & ABOVE, PNEUMATIC, NEW, HAVING "HERRING-BONE" OR SIMILAR TREAD

6255109 OTHER PNEUMATIC TIRES, NEW, HAVING "HERRING-BONE" OR SIMILAR TREAD, N.E.S.

6255901 TRACTOR TIRES, PNEUMATIC, NEW, HAVING TREADS OTH THN HERRING-BONE/SIMLR TREAD

6255902 OFF-THE-ROAD TIRES OF 300 K & ABOVE, PNEUMATIC, NEW, NES

6255903 TIRES, PNEUMATIC, FOR AGRI'L,CONST&IND EQUIPMENT, NES

6255909 OTH PNEUMATIC TIRES, NEW, NES

6259102 AUTOMOBILE TUBES, USED

6259103 TRUCK TUBES, NEW

6259105 BICYCLE TUBES, NEW

6259113 MOTORCYCLE TUBES, NEW

6259114 MOTORCYCLE TUBES, USED

6259117 INNER TUBES FOR AGRICULTURAL, CONSTRUC- TION & INDUSTRIAL EQUIPMENT

6259119 INNER TUBES, NES

6259203 RETREADED AIRCRAFT TIRES

6259209 RETREADED TIRES, NES

6259302 TRUCK TIRES, PNEUMATIC, USED

6259309 PNEUMATIC TIRES, N.E.S., USED

6259401 SOLID/CUSHION TIRES

6259402 INTERCHANGEABLE TIRE TREADS&TIRE FLAPS

6291100 SHEATH CONTRACEPTIVES(CONDOM)

6291901 RUBBER BAGS FOR ICE, HOT WATER & OXYGEN

6291903 NIPPLES FOR FEEDING BOTTLE, OF UNHARDENED VULCANIZED RUBBER

6291905 OTH HYGIENIC/PHARMACEUTICAL ARTICLES OF RUBBER COT SHEET, AIR FILLED

6291909 UNHARDENED VULCANIZED RUBBER, NES

6292001 CONVEYOR BELTS OR BELTING REINFORCED ONLY WITH METAL

6292002 CONVEYOR BELT OR BELTING REINFORCED ONLY WITH TEXTILE MATERIALS

6292003 CONVEYOR BELTS OR BELTING REINFORCED ONLY WITH PLASTICS

6292009 OTHER CONVEYOR BELTS OR BELTING

6292011 ENDLESSS TRANSMISSION BELTS OF TRAPEZOIDAL CROSS SECTION (V-BELTS), WHETHER OR NOT GROOVED, OF A CIR

6292011 ENDLESSS TRANSMISSION BELTS OF TRAPEZOIDAL CROSS SECTION (V-BELTS), WHETHER OR NOT GROOVED, OF A CIR

6292012 ENDLESS TRANSMISSION BELTS OF TRAPEZOIDAL CROSS-SECTION(V-BELTS), WHETHER OR NOT GROOVED,OF A CIRCUM

6292013 ENDLESS SYNCHRONOUS BELT,OF A CIRCUMFERENCE EXCEEDING 60 CM BUT NOT EXCEEDING 150 CM

6292015 TRANSMISSION BELTS OR BELTING OF TRAPEZOIDAL CROSS-SECTION(V-BELTS

& V-BELTING) OTHER THAN THOSE OF
 6292019 OTHER TRANSMISSION BELTS OR BELTING
 6299105 BOTTLE CAPS, BULBS, STOPPERS, PLUGS AND SEALS, OF HARD RUBBER
 6299109 OTHER ARTICLES OF HARD RUBBER, INCLUDING HARD RUBBER BUCKETS
 6299200 ARTICLES OF UNHARDENED CELLULAR VULCANIZED RUBBER, N.E.S.
 6299901 FLOOR COVERINGS & MATS, OF UNHARDENED NON-CELLULAR VULCANIZED
 RUBBER
 6299902 ERASERS [FOR PENCILS], OF UNHARDENED NON-CELLULAR VULCANIZED
 RUBBER
 6299904 STOPPERS FOR PHARMACEUTICAL VIALS, OF UNHARDENED NON-CELLULAR
 VULCNZ RUBBER
 6299905 PACKING FOR ELECTROLYTIC CAPACITORS, OF UNHARDENED NON-CELLULAR
 VULCNZ RUBBER
 6299907 GASKETS, PACKINGS, WASHERS AND OTHER SEALS, OTHER THAN THOSE OF
 SUB-ITEMS 629.99-04 TO 629.99-05 [6]
 6299908 BOAT/DOCK FENDERS,WTR/NOT INFLATABLE,OF UNHARDENED NON-CELLULAR
 VULCNZ RUBBER
 6299911 STORAGE TANKS, OF UNHARDENED NON- CELLULAR VULCANIZED RUBBER
 6299912 PNEUMATIC PILLOWS,CUSHIONS&OTH INFLATBL ART,UNHARDND NON-
 CELLULAR VULCNZ RUBBER
 6299914 ARTICLES OF A KIND USED IN MACHINERY OR MECH'L. OR ELEC'L. APPLIANCES
 OR FOR OTHER TECH'L. USES, OF
 6299915 LINERS FOR BALL MILLS, CHUTES & OTHERS, OF UNHARDND NON-CELLULAR
 VULCNZ RUBBER
 6299916 INSULATOR HOODS FOR INSULATION OF UNHARDND NON-CELLULAR VULCNZ
 RUBBER
 6299917 CHASIS MOUNTING RUBBERS&OTH, FOR MOTOR VEHICLES, UNHARDND NON-
 CELLULAR RUBBER
 6299918 BRAKE-BLOCK,MUDGUARD-FLAP&OTH,FOR CYCLE OF UNHARDND NON-
 CELLULAR VULCNZ RUBBER
 6299922 RUBBER GROMMETS AND RUBBER COVERS FOR AUTOMOTIVE WIRING HARNESS
 6299929 OTHER ARTICLES OF UNHARDENED NON-CELLULAR VULCANIZED RUBBER,
 N.E.S.

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