

# Rubber Industry

## A Competitiveness Strategy for Sri Lanka's Rubber Industry

Developed by The Rubber Industry Cluster



Supported and funded by The Competitiveness Initiative, a joint project of the United States Agency for International Development (USAID), Nathan Associates Inc., and J.E. Austin Associates.

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Colombo, Sri Lanka  
March 2002

This publication was made possible through support provided by the U.S. Agency for International Development Mission to Sri Lanka under the terms of Contract No. PCE-I-801-98-000-16-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the U.S. Agency for International Development.

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# Acknowledgments

**T**he findings and recommendations in this report are the result of missions conducted by Terrance G. Mohoruk in Sri Lanka from October 12–December 15, 2001 for The Competitiveness Initiative (TCI), a project supported by the United States Agency for International Development (USAID) and managed by Nathan Associates Inc. and J.E. Austin Associates.

The author would like to acknowledge the generous contributions of the Sri Lanka Rubber Cluster, whose members shared their knowledge and experience during strategy sessions that covered industry problems, goals, issues, and opportunities. Participants included the Cluster Chairman and the Steering Committee, which consists of rubber industry leaders and government officials, including the heads of institutions and ministry secretaries. Assistance given by the officials at the Rubber Research Institute and the Board of Investment was invaluable in developing strategies.

Cluster members helped organize visits to rubber plantations, processing plants, manufacturing units, and other commercial facilities. Special thanks are due to the Plastics and Rubber Institute of Sri Lanka, the Colombo Rubber Traders' Association, the Planters' Association of Ceylon, and the Sri Lanka Association of Manufacturers and Exporters of Rubber Products, all of which fully supported the cluster initiative and cooperated in all cluster activities.

The author would also like to acknowledge the contributions of staff and consultants from international agencies, including the World Bank, the International Finance Corporation, Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), the Asian Development Bank, the Canadian High Commission, the High Commission of India, the International Rubber Study Group, and the United Nations Industrial Development Organization. The assistance of USAID staff and TCI representatives was highly appreciated, as was the support of expatriate consultants.



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# Executive Summary

**I**n the last two decades privately owned and operated Sri Lankan industries have entered global markets for value-added rubber products, such as solid rubber tires and surgical gloves. Against stiff competition, these industries have won significant market share and have established a reputation for quality and reliability. Their success is the best indicator of a strategy for Sri Lanka's rubber industry as a whole: *increase value-addition in Sri Lanka by increasing the volume and variety of value-added rubber products*. With a reliable, competitive domestic supply and duty-free access to raw materials at global prices, the manufacturing sector should be able to double its exports of rubber products from 50,000 to 100,000 metric tons by 2010, and increase the value per metric ton of product from an average of US\$3,300 to US\$4,300. The industry could more than double its contribution to national income by 2010.

The value of Sri Lanka's rubber exports has been increasing significantly. In 1995, export value was approximately US\$135 million, and in 2000 it exceeded US\$200 million, with rubber products accounting for 87 percent of that value. To grow and retain market share, Sri Lanka's rubber product industries need access to raw rubber at global market prices. Liberalizing imports of raw rubber will increase supply even as it exposes manufacturers to swings in market prices and to anomalies such as the cartel recently formed by Thailand, Indonesia, and Malaysia. Meanwhile, locally produced rubber has to meet or exceed international standards for quality or price to remain part of the industry's future.

In the 1970s, Sri Lanka was producing 155,000 tons of raw rubber annually; by 2002 it was producing only 90,500 tons. It now accounts for less than 1.2 percent of global market share of rubber production. This decline in market share, however, is not as alarming as the decline in productivity. Raw rubber yields per hectare have fallen to almost half those of leading producers. In 2001, when global rubber prices were near cyclical lows, the obvious way to increase supply in Sri Lanka was to simply import more. Indeed, the global oversupply of rubber is a strong point against increasing the supply of raw rubber for export, but not against improving the yields and productivity of raw rubber supplied to domestic manufacturers.



Why is Sri Lanka's domestic supply shrinking? In addition to the 30-year-low selling prices that have prevailed since the Asian financial crisis of 1997, the plantation sector faces other systemic constraints, such as inadequate marketing, extension services, and credit facilities. Smallholders lack organized long-term purchase and sale agreements. Low world prices combined with the low yields and productivity have deterred investment in plantations. Owners and operators have postponed investments and even maintenance, while government regulations have discouraged private sector development. Given low prices, poor productivity, and policy barriers to entering production, it is not surprising that manufacturers and other investors have little interest in rubber plantations.

If, however, Sri Lanka does not improve plantation productivity it could lose its rubber products industry to locations that have stable supplies of competitively priced rubber. Liberalizing rubber imports will help Sri Lanka avoid that kind of defeat and, combined with another strategy, offer even more benefits. For example, when Malaysia faced a similar challenge it reduced total hectares of land planted in rubber, phasing out low productivity land while keeping enough higher productivity land under cultivation to produce the quantity and quality of raw rubber needed by its domestic rubber products industry. As a result, Malaysia channels a high percentage of its raw rubber into its domestic rubber products industry.

Improving plantation productivity will require investment, deregulation, and private sector management. International rubber prices recently strengthened as a result of the cartel-type agreement between Thailand and Indonesia, who between them produce more than half of the world's annual output of raw rubber. This has caused rubber product industries in Sri Lanka to reassess options for investing in plantations. Prices are continuing to strengthen and feasibility studies of "backward linkage" investment are underway.

Because of a limited supply capacity for field latex, related to land mass, the Sri Lankan rubber industry cannot aspire to lead the market in volume categories. Instead, to improve its competitiveness, the industry should pursue small volume, high-margin applications in niche markets. Such markets carry higher selling prices and yield higher profits. To increase exports of manufactured products, the manufacturing sector should be upgraded and expanded. Increased manufacturing capacity will require a consistent, high-quality domestic supply of raw rubber. The manufacturing sector will also benefit from duty-free access to all other required raw material imports, such as synthetic rubbers, chemicals, and other compounding components. Energy and fuel costs need to be managed by efficient use and competitive sourcing.

With a reliable domestic supply and duty-free access to raw materials, the manufacturing sector should be able to double its exports of rubber products from 50,000 to 100,000 metric tons by 2010. If the recommended strategy is implemented, the value per metric ton

of production should rise from an average of US\$3,300 to US\$4,300 by 2010. The following are initial steps in the strategy for achieving industry sector growth:

- **Sustain clustering.** Institutionalize the Society of Rubber Industry (SRI) or an equivalent industry unit as a legal entity to unify industry stakeholders, promote and monitor commercial interests, engage in cluster advocacy, and pursue strategic goals.
- **Enhance manufacturing.** Increase manufacturing capacities and enhance value-added conversions of raw rubber and latex into semi-finished and finished products for export to select markets and for specified applications. Set up a central latex storage and fulfillment facility and begin repositioning crepe rubber in the market. A custom compounding facility, a joint procurement program, and a dedicated industrial park with all support services for rubber goods are all recommended.
- **Improve supply side.** Double the yields of Sri Lanka rubber cultivation to an average of 1,600 kgs per hectare. Increase private ownership and management of plantations. Launch a national rubber tree forest policy under the auspices of the Ministry of Plantation Industries (or other ministry) with the support and participation of other ministries and institutions. New standards for smallholders and the plantation sector should include the design parameters of the Model Hectare of the Rubber Research Institute of Sri Lanka (RRISL). Plant high-yielding hectareage while retiring older low-yield hectareage. Following these recommendations will result in a minimum of 200,000 hectares planted in rubber tree and raise national production to more than 150,000 tons per year by 2010. Organize smallholders, who control 60 percent of latex tapping, into societies with legal status governed by standards for performance and living. Adequate land for expansion can be found in non-traditional locations such as Moneregala, where growing conditions are favorable.
- **Improve research and product development capabilities.** Improve human resources and capabilities in research and development, product development, and specifications standardization. Form a research and development consortium to coordinate efforts. Establish a research chair for the rubber industry in a local university and launch a Technical Innovation Center for prototyping and product development. Improve the educational programs of the Plastics and Rubber Institute and National Institution of Plantation Management and establish a “rubber technology campus” at a dedicated training center or new school.
- **Improve Marketing.** Establish a marketing intelligence program with the Subcontracting and Partnership Exchange, a United Nations International Development Organization (UNIDO) project, and connect to UNIDO databases. Establish long-term purchase agreements with major importers (China, United States, European Union). Draw up an industry-wide, five-year marketing plan. Begin a pilot project to reposition latex crepe rubber and launch a joint venture with a suitable partner.

- **Attract and Retain Investments.** Promote foreign investment through joint ventures, partnerships, technology agreements, and strategic supply agreements among Sri Lankan companies. Encourage rationalization and reconfiguration of plants and companies and promote investment. Investigate the feasibility of a dedicated rubber industry park and include this in the investment promotion campaign. Pursue open procurement policies for raw rubber and other materials and components, along with other policy reforms.
- **Use Rubber Wood to Enhance Returns.** Use rubber wood in value-added applications that yield significant profits. Upgrading each hectare under rubber wood to the RRISL Model Hectare should yield significant harvests in the short term and sustainable volumes over time. Introduce improved timber processing performance codes and establish a model timber-processing center in the Forestry Department.
- **Work with Public Sector as a Partner in Progress.** As segments of the value chain learn to be self-reliant and market disciplined, they are also learning how to identify and pursue opportunities for industry-wide development. Public and private effort devoted to improving rubber sector productivity and competitiveness would benefit from a coordinated and strategic approach. The private sector has organized an industry cluster and, with encouragement from the Ministry of Enterprise Development, an industry task force. The private sector would like to see the Government of Sri Lanka create an interministerial policy committee that can act on behalf of multiple ministries and agencies and accept input from the private sector. Implementation will be the responsibility of stakeholders, wherever feasible using the private sector and market-based options.

The recommended strategy assumes that the rubber industry will be more productive and profitable if its stakeholders act as a cluster. A cluster is as a collection of companies participating in commercial transactions and agreements and representing every segment of the business value chain, including all goods and services relating to a final product. For the rubber industry, this chain would link companies from the smallholders and plantations and the forests, with rubber-processing and product-manufacturing companies and the export market. Stakeholders include all related and supporting industries, as well as academia and regulatory bodies. Firms or companies in a cluster compete with each other in relevant markets, but also agree to cooperate in areas that benefit the industry and the nation.

At present, the rubber manufacturing industry in Sri Lanka has produced a handful of internationally competitive products. To become more profitable, members of Sri Lanka's rubber industry should rely less on government patronage and programs and begin working together on industry-driven strategic initiatives. In pursuing the strategic initiatives presented in this report, members of the industry will begin to work efficiently and effectively as an industry cluster, reaping financial rewards all along the value chain and helping to raise the standard of living of Sri Lankans in this sector.

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# Competitive Environment of the Rubber Industry

**A**s with most rubber-growing countries, the rubber plantation industry in Sri Lanka is one of the remaining beneficial colonial legacies. Sri Lanka's rubber industry began in 1876 with the planting of 1,919 Hevea rubber seedlings in Henarathgoda Gardens in Gampaha. Sri Lanka held a celebration, 125 Years of Rubber, in October 2001 which included a conference attended by many foreign experts and local industry and government leaders.

Rubber products manufacturing, primarily tire retreading, began in Sri Lanka in the 1950s and expanded rapidly after free trade policies and investment promotion zones were introduced in the late 1970s. Today, Sri Lanka's rubber industry consists of two closely interdependent sectors: (1) the plantation industry, including smallholders, which grows rubber trees and harvests latex that is converted into stable concentrates and raw rubbers; and (2) the rubber products manufacturing industry, which converts raw rubber into value-added finished rubber goods. Harvested rubber trees are also used in the manufacture of wood-based value-added products, a relatively new and small scale enterprise in Sri Lanka. The value of manufactured rubber products now exceeds the export value of raw rubber by six times. The existence of the plantation sector, however, is the primary competitive advantage of the rubber products manufacturing sector.

Members of Sri Lanka's rubber industry are concerned about the competitiveness and viability of their industry compared to the rubber industry in other countries such as India, Malaysia, Thailand, and Vietnam. They believe that studies should be concluded and a strategy for increasing profitability and global competitiveness pursued. Under the aegis of a USAID-funded technical assistance program, The Competitiveness Initiative (TCI), industry members have agreed to work together to improve performance and increase Sri Lanka's share in new and more lucrative markets on the basis of the global and local environment for the industry.

## GLOBAL ENVIRONMENT

Raw rubber, a natural polymer or elastomer, is available in natural rubber and synthetic rubber. Natural rubber is obtained from the *Hevea brasiliensis* tree, which yields liquid rubber polymer as well as timber. Production of natural rubber is indirectly responsible for significant carbon sequestration within rubber tree forests. Natural rubber is available to the market in ribbed smoked sheets (RSS), latex crepes and sole crepes, scrap crepes, technically specified rubbers (TSR), latex concentrates, and a variety of specialty rubbers.

Synthetic rubber is a manmade polymeric material derived from petroleum feedstock, a non-renewable resource. It is available as styrene-butadiene rubber, polybutadiene rubber, and ethylene-propylene rubbers, which are the large volume elastomers used in industrial applications. It is produced in 33 industrialized countries that have access to competitively priced petrochemical feedstock. In Asia, the synthetic rubber industry has developed rapidly to become one of the most important regional industries anywhere in the world.<sup>1</sup>

### Consumption and Production of Natural and Synthetic Rubber

The global consumption of rubber has increased by an average of 3.5 percent per year since 1960, reaching nearly 18 million tons in 2000 (Table 1). Demand peaked in early 2001 and then fell for 12 months at about 3 percent annualized. According to the International Rubber Study Group (IRSG), this decline appears to have ended for natural but not synthetic rubber.

	1998	1999	2000
<b>Natural rubber</b>			
Production	6.68	6.76	6.85
Consumption	6.55	6.68	7.22
<b>Synthetic rubber</b>			
Production	9.90	10.23	10.79
Consumption	9.90	10.15	10.68
<b>Total production</b>	<b>16.80</b>	<b>16.90</b>	<b>17.64</b>
<b>Total consumption</b>	<b>16.40</b>	<b>16.30</b>	<b>17.90</b>

SOURCE: IRSG, June 17, 2001.

**Table 1. Global Production and Consumption of Raw Rubber, 1998–2000**  
(millions of metric tons)

<sup>1</sup>In 2001, the leading producers were the United States at 2.1 million tons; Japan, 1.4 million tons; China, 1 million tons; Russian Federation, 0.9 million tons; Germany, 0.8 million tons. Brazil, China, India, Indonesia, and Thailand, which all produce natural rubber, also produce synthetic rubber. In 2000, Asia's share of world capacity was 28 percent or 3.48 million tons.

Currently, global supplies of natural rubber exceed global demand; however, world demand for natural rubber continues to grow, and analyses based on average per capita consumption indicate potential for further growth. World average per capita consumption of rubber is 3 kg. Consumption is highest in the Asia-Pacific region, ranging from 14 kg in Taiwan to 19 kg in Malaysia—reflecting rubber product production. That region's share of global rubber consumption reached 44 percent in 2000, compared with 21 percent for North America and 19 percent for the European Union. China's rubber consumption per capita is below the world average, around 2 kg per capita. As the Chinese economy develops the demand for products using natural rubber will increase. Consumption of one more kilogram per person will raise global demand by 1.2 million tons. A 1998 forecast estimated that natural rubber consumption in China would rise to 1.09 million tons in 2005. But by 2000 China already was consuming 1.08 million tons of natural rubber and 1.45 million tons of synthetic rubber. China's accession to the World Trade Organization (WTO) will expose manufacturers to more competition but will not reverse industry growth trends. Analysts predict that China will have the world's largest rubber industry before 2010.

A recent study by Burger and Smit of Free University, Amsterdam, predicts that worldwide rubber consumption will exceed 28 million tons by 2020 and that “demand will exceed supply creating upward pressure on prices.” They also projected natural rubber production for 2000 at 6.539 million metric tons. In 1998, the Freedonia Group forecast that total rubber consumption would reach 19.5 million metric tons in 2004. China will produce more than 700,000 metric tons by 2014 and will show the highest growth at 4.2 percent. According to IRSG studies, rubber consumption and absorption may be saturated for the near term. This implies that more consumption in one country leads to less in another (e.g., investment in vehicle and tire facilities in Asia and Central and Eastern Europe has occurred at the expense of vehicle and tire production in the West). IRSG analysis shows that 18 of 25 major consuming countries were saturated and all rises in consumption have been in Asia. Per capita consumption in Sri Lanka is 3 kg, the world average. Even if world rubber consumption stays at 3 kg, historical population growth of 1.8 percent implies that the industry will have to produce an extra 8.5 million tons of rubber by 2020.

### **Market Share of Natural and Synthetic Rubber**

Synthetic rubber is estimated to account for 59.8 percent of consumption and natural rubber 40.2 percent. The share of synthetic rubber increased from 53 percent in 1960 to 71 percent in 1979, then fell to 60 percent in 2000. This decline is attributable to the popularity of radial tires, which use more natural than synthetic rubber, versus cross-ply tires. Continued sharp increases in synthetic rubber consumption for other applications, however, will reverse the decline.

A surplus of natural rubber is expected for the short term, but a shortage is predicted for the long-term. The shortage is expected to result from growth in world population and

income and declining supply. Total elastomer demand is expected to rise faster than natural rubber supply, so the market will depend more on synthetic rubber. In addition, allergies to natural rubber latex are requiring substitute materials in consumer products, and technological advances in the tire sector have reduced the significance of natural rubber's properties, such as green strength and tensile strength. As tire manufacturing becomes more automated, demand for synthetic rubber, which is highly processable and consistent, will increase. Unless natural rubber of consistent quality can be supplied in large volumes, synthetic rubber is likely to take a greater share of the elastomer industry.

### Trends in Natural Rubber Supply and Demand

Three trends in natural rubber production have emerged in the past 40 years: (1) relative shares among major producing countries have changed; (2) concentrations in world output have declined as new producers enter the market; and (3) producing countries, such as Sri Lanka, China, India, and Malaysia, have increased domestic consumption and conversion. Table 2 presents production facts about some of Sri Lanka's leading competitors.

Country	2000 (MT)	%	2001 (MT)	%
Thailand	2,525,000	36.7	2,305,000	32.6
Indonesia	1,567,000	22.8	1,630,000	23.0
Malaysia	615,000	8.9	545,000	7.7
India	629,000	9.1	632,000	8.9
China	445,000	6.5	450,000	7.0
Vietnam	269,000	3.9	317,000	4.0
Liberia	127,000	1.8	105,000	1.5
Côte d'Ivoire	113,000	1.6	108,000	1.5
Sri Lanka	87,000	1.3	86,000	1.2
Others	433,000	6.4	902,000	12.7
Total world	6,810,000	100.0	7,080,000	100.0

SOURCE: IRSG.

**Table 2. Natural Rubber Production and Market Share of Sri Lanka and Its Competitors**

Worldwide land area planted in rubber tree has increased steadily from 400,000 hectares in 1910 to 9.6 million hectares in 2000. The Asia region accounts for 8.8 million hectares. Indonesia has the largest area—3.3 million hectares—but is second in rubber production to Thailand, which has 1.9 million hectares planted in rubber.

In many rubber-producing countries, smallholders produce the bulk of latex and raw rubber. Average smallholder contribution around the world is 77 percent, and in Asia, 80

percent. In Sri Lanka, smallholders account for 63 percent of the area planted in rubber tree, which explains the government's involvement in the rubber industry, especially the plantation sector.

As the economies of the natural rubber producing countries advance, the opportunity cost of production increases. For example, the biggest problem facing rubber manufacturers is a shortage of skilled tappers, who are lured from latex harvesting by higher wages in urban areas. Mechanized tapping has been attempted but is not commercially attractive. In addition, competition for land and capital makes it relatively expensive to produce raw rubber.

Some countries import raw rubber. Malaysia, for example, imports raw rubber to augment its latex concentrate supplies, to treat and re-export as technically specified rubber, and to use in manufactured products. Imports were needed because from 1975 to 2000 rubber consumption in Malaysia grew at an annual average of 11.4 percent. Growth peaked at 21.3 percent from 1990 and 1994. Only China came close with an average annual growth rate of 8.5 percent. China and India also import raw rubber for manufacturing. Despite the current glut, demand continues to grow while supplies have not. Softer prices have already resulted in lowering investment and, in some cases, operations have uprooted rubber trees in favor of other plantation crops. Eventually, demand will overtake supply.

### **Trends in Natural Rubber Prices**

Natural rubber prices began declining in 1995 because of rising global output of latex and related stocks of natural rubber followed by the East Asian crisis of 1997. Prices fell from US\$1,000 per ton in January 1998 to approximately US\$500 per ton in 2001. In most cases this is below the cost of production. Until 2001, this trend was a direct result of imbalanced supply and weak demand. IRSG calculations indicate that prices have been falling for 40 years in real value terms.

Rubber-producing countries have attempted to stabilize prices by controlling outputs and exports, but with little impact. Some, such as Malaysia, have reduced plantation area and related production. Malaysia produced approximately 1.5 million tons in 1990 but cut production to 547,000 tons by 2001. After the International Natural Rubber Organization (INRO), which was formed to control production and export, disbanded, Indonesia, Malaysia, and Thailand formed the International Tripartite Rubber Organization (ITRO). ITRO has planned to cut production by 10 percent and exports by 4 percent to stabilize prices at US\$750 per ton. ITRO's effectiveness is uncertain but other intervention schemes have not been successful. The Rubber Estate Organization of Thailand has independently attempted to control stocks.



Other countries have increased production in response to rapidly increasing industrial activity and domestic consumption. In 2001, India produced 632,000 tons and China produced 450,000 tons. The productive capacity of both countries has grown very quickly. Government-supported extension and price support schemes have also increased smallholder production. In 2001, smallholders in Thailand produced 2.3 million tons and in Vietnam 317,000 tons.

## Rubber Products

For industry, natural and synthetic rubbers are considered complementary materials. Natural rubber is preferred for certain applications, such as aircraft tires, for its ability to handle a wide temperature range. Synthetic rubber's resistance to oils and chemicals is preferred for other applications, such as petroleum hoses. When technical performance parameters are marginal, price and other supply factors determine selection. Table 3 presents the consumption of natural and synthetic rubber by the leading rubber-product manufacturing countries and Table 4 the use of natural rubber across industries.

Country	Natural Rubber	Synthetic Rubber	Total	% Global
United States	1,191	2,118	3,309	18.4
China	1,080	1,455	2,535	14.1
Japan	755	1,150	1,920	10.8
Germany	250	621	871	4.8
India	638	171	809	4.5
France	309	482	790	4.4
Republic of Korea	331	382	713	4.0

SOURCE: IRSG 2002 Reports.

**Table 3. Rubber Consumption by Leading Rubber-product Manufacturing Countries ('000 tons)**

Product	%
Tires	75.3
Heavy truck	33.3
Light truck	18.5
Car	15.9
Other	7.9
Industrial goods	12.4
Latex products	12.3

**Table 4. Share of Natural Rubber in Industries, 1998 (estimated)**

Automotive tires account for more than 60 percent of all rubber consumed, or 9.9 million tons. As high technology products, tires have evolved since their introduction in 1888. Radial tires are now used almost exclusively on personal passenger cars and are increasingly preferred for commercial vehicles. Tires are categorized as those for car, light truck, heavy truck, and other. This last category includes tires used for aircraft, tractors, earthmovers, implements (such as caterpillar tracks), industrial applications, motorcycles, scooters, bicycles, retreading materials, inner tubes, and flaps. Elastomers used in this sector are natural rubber, styrene-butadiene rubber, polybutadiene rubber. IIR and total consumption is approximately 2 million metric tons (Table 5).

Year	Natural Rubber	%	Synthetic Rubber	%	Total
1939	450,000	100	0	0	450,000
1969	393,000	25	1,210,000	75	1,603,000
1999	798,000	37	1,338,000	63	2,136,000

SOURCE: Rubber Manufacturers Association (RMA) trade data.

**Table 5. Natural and Synthetic Rubber Usage in the U.S. Tire Industry (metric tons)**

General rubber goods make up the remaining 40 percent of rubber consumed and comprise more than 10,000 products, such as wiper blades and mounts; cables; gaskets and seals; footwear; rubber covered rollers; lining and sheeting; ebonite; sporting goods, including balls; floor mats; fenders; springs and bearings; earthquake protection and vibration isolators; rubber bands; insulations; bumpers; flooring; roofing; and extrusion profiles. Most latex-based products are gloves and other dipped products used in industrial, household, and medical settings, as well as special products such as electrician's gloves. Other latex-based products include foam cushions, toys, balloons, latex thread, condoms, and composites, such as rubberized coir/hair and fabrics.

While the automotive sector consumes the most rubber, the amount used per vehicle has been declining steadily since the early 1970s, falling from 35 kg to 22 kg per vehicle, as a result of smaller tires and the replacement of rubber components by other polymers. Market dynamics for finished rubber products, and the amount of natural and synthetic rubber in those products, determines demand for raw rubber (Table 6). The market for rubber products is growing 2 percent annually, although the recession in the United States has slowed growth. Recovery in the automotive market will increase demand for tires and other automotive components and therefore demand for raw rubber.

Segment	US\$ Millions	SL Rps Millions
Tires sold by top 75 companies	67,950	6,319,350
Tires sold by others	1,500	139,500
Other rubber products	37,396	3,477,828
Subtotal	106,846	9,936,678
Composite products	13,000	1,209,000
<b>TOTAL</b>	<b>119,846</b>	<b>11,145,678</b>

Note: SL Rps 93 per US\$1.

SOURCE: Projections based on Rubber & Plastics News, September 4, 2000.

**Table 6. Value of Global Rubber Products Market (estimated)**

In 1998, Malaysia produced 885,700 metric tons of natural rubber, exported 424,900 tons, and consumed 334,100 tons. In 2000, it produced about 55 percent of the world supply of rubber gloves, worth US\$900 million, and ranked second to Thailand in exports of surgical examination gloves, meeting 28.5 percent of global demand, with a value of US\$119.6 million. Table 7 shows the growth in Malaysia's exports of rubber products from 1995 to 1998.

	1995	1998	Percent increase
Latex goods	62,060	105,200	169
General goods	6,580	9,660	147
Footwear	4,080	4,242	104
Tires	3,680	6,420	174
Industrial goods	1,040	3,960	381
Tubes	294	316	107
<b>TOTAL</b>	<b>77,740</b>	<b>129,820</b>	<b>168</b>

SOURCE: Malaysian Rubber Board/IRSG.

**Table 7. Export Value of Malaysia's Rubber Products, 1995 and 1998  
(millions of LKR)**

## Rubber Wood

Given the decline in rubber prices, the rubber wood sector is increasingly important to the competitiveness of the rubber industry as a potential source of income. Rubber trees are harvested after 25 to 30 years, when latex yields become uneconomical. Until the mid-1980s, felled trees had little commercial value and were used as fuel. Since then, rubber wood has become popular in furniture and other wood-based products because of its woodworking properties, creamy color, and steady supply ensured through replanting programs. It is also considered environmentally sound because it is grown as a renewable

resource on organized plantations. Demand for rubber wood is driven by the export of furniture and wood components to the United States, Japan, and Europe. It is usually sold in value-added products such as furniture, kitchen utensils, wooden toys, and decorative products. It is also used in particleboard, medium density fiberboard, wood fiber and cement-bonded particleboard, and plywood. The technology for preserving rubber wood timber was initially developed in Sri Lanka. Malaysia commercialized this technology and has become the world's leading exporter of processed tropical wood products.

Global rubber wood plantation area is about 10 million hectares, situated mostly in South East Asia. The average annual growth of fiber stock is 95 cubic meters per hectare. The annual production potential of rubber wood is estimated at 39 million cubic meters and could reach 52 million cubic meters by 2010. According to the IRSG, the average output per hectare over a 25-year life cycle is 40 tons of latex, and timber output at the end of that period is 90 tons of wood.

The import value of processed wood products of countries in the Organization for Economic Cooperation and Development (OECD) has risen steadily for 10 years. Imports grew from US\$23.1 billion in 1992 to US\$35.7 billion in 1999. Furniture, with a value of US\$23.7 billion, accounted for 66.5 percent of imports. Builders' joinery and carpentry was US\$5.6 billion, domestic and decorative articles constituted US\$1.6 billion, and other products such as brooms, tools, handles, and shoe lasts made up US\$1.0 billion.

Certification of sustainable forest management and labeling of forest products is a trend that could affect the rubber wood sector. More than 25 certification schemes operate worldwide, with 80 million hectares of forests being certified. The world's leading retailers of wood-based products are adopting policies that favor certified wood products. For example, B&Q, Home Depot, and IKEA have announced plans to sell only certified wood products. For producers, this is an opportunity to receive a premium for certified products and to establish a marketing edge.

In addition, the continuing debate on mechanisms to mitigate climate changes has attached a new environmental value to rubber wood—carbon sequestration, which is the capture, separation, and storage or reuse of carbon.

Major suppliers of rubber wood products are China, Indonesia, Malaysia, Thailand, and Taiwan. In Malaysia, the estimated annual volume through 2005 is 8 million to 10 million cubic meters. Approximately 2 million cubic meters are used for timber and wood-based manufacturing. Malaysia and Thailand produce 80 percent of their furniture exports using rubber wood. Indonesia, however, has not developed a rubber wood industry because of problems with accessibility and logistics. India is setting up a modern integrated processing plant with the assistance of the Timber Research and Development Association (TRADA), a UK group specializing in standards and technology for forest products.

The supply of timber fiber from naturally occurring forests is declining. Rubber wood is therefore a timely entrant to support timber-based manufacturing in countries that grow rubber trees. It is important, however, that the sector move beyond primary processing to processing of elements, components, and finished wood products. Global trade in such forest products is expected to expand 9 to 10 percent per year in the medium term and will continue to be greater than world GDP, which has been averaging 4 to 5 percent per year.

From 1992 to 1996, the United Nations' International Trade Center (ITC) undertook the Global Development of the Rubber Wood Industry project to mobilize a sustainable supply of rubber wood from plantations that employ rural populations and to reverse the destruction of tropical forests. The project assessed rubber wood resources, analyzed the technical and economic viability of mechanical processing, gathered market information, and promoted market access. One ITC study showed that, compared to latex, the financial contribution of rubber wood processing to a plantation is small. For example, the internal rate of return on investment improved from 9.5 percent to 10.2 percent only if income from rubber wood logs was added to total revenue over a 30-year cycle. To maximize plantation revenue, the ITC recommends using dual-purpose clones to produce large amounts of latex and good timber yields. This approach requires informed decisions about planting density, replanting cycles, clones, soil, terrain, tapping, tree harvesting methods, and road access.

## SRI LANKA'S RUBBER INDUSTRY

In the past three decades, Sri Lanka's rubber industry has shifted from the tapping of latex and primary processing to the manufacture of value-added goods in the latex and dry rubber industrial segments. In the 1970s, Sri Lanka was producing 157,000 tons of raw rubber annually; by 2001 it was producing 86,000 tons. This decline is contrary to the continuous global increase in annual tons of natural rubber. It also runs counter to the high-growth trends of smaller producers, such as Vietnam, India, China, and several African countries. Smallholders, private individuals holding less than three hectares on average, dominate the ranks of rubber tree growers, accounting for 65 percent of raw rubber production in Sri Lanka. Smallholders produce smoked sheets, which halts the organic deterioration of latex, and requires little technology. Some sell field latex to latex processing factories. A few factories manufacture centrifuged latex using field latex, but seasonal demand often drives selling prices below the cost of production.

Large estates and corporate plantations, including a few remaining state-owned plantations, produce the balance of raw rubber, consisting mostly of latex crepe rubber and some latex concentrate in addition to a small volume of smoked sheets. Latex crepe has been fetching low prices at the Colombo auctions. And the technically specified rubber industry, which began in the early 1970s, has not grown as expected because the quality of raw materials is not consistent enough for the efficient operation of semi-automated factories.

## Consumption and Production

Declining production of raw rubber is of concern. In 2001, Sri Lanka produced 86,000 metric tons of natural rubber, representing only 1.3 percent of global production (Table 8). Its national yield of 600 to 900 kg per hectare per year is at the bottom of global rankings. Leading latex-producing countries yield 1,800 kg per hectare per year. This difference represents a two- to threefold gap in productivity.

Type	2000		2001	
	Production	Exports	Production	Exports
Ribbed smoked sheets	34,003	10,566	30,344	9,523
Latex crepe	28,111	16,737	26,096	16,970
Sole crepe	4,512	2,971	3,915	2,808
Scrap crepe	1,788	10	2,743	133
Technically specified rubber	3,879	1,756	3,656	1830
Latex Concentrate	<u>15,343</u>	<u>461</u>	<u>19,461</u>	<u>731</u>
<b>TOTAL</b>	<b>87,636</b>	<b>32,502</b>	<b>86,216</b>	<b>31,995</b>

SOURCE: Rubber Development Department.

**Table 8. Sri Lanka's Raw Rubber Production, 2000 and 2001 (metric tons)**

According to the Rubber Development Department (RDD), local consumption and conversion of raw rubber was about 53,945 tons in 2001. Of this, 35,215 tons were dry rubber and 18,730 were latex concentrate. This accounts for 63 percent of production. In 2000, local consumption was 53,753 metric tons, or 61 percent of production. Although these total tons are consistent, the tons of latex fell and the tons of dry rubber grew. Table 9 presents Sri Lanka's performance as a percent of market and Table 10 presents Sri Lanka's exports by product category.

	Quantity	Global %	Global Rank
Natural rubber			
Consumption	55,000 MT	0.76	
Production	87,636 MT	1.27	9
Imports	4,300 MT		
Exports	32,502 MT	0.70	8
Synthetic rubber			
Imports	10,000 MT	0.20	50
Consumption (natural, synthetic)	60,000 MT	0.33	
Rubber plantation area	159,000 hectares	1.59	10
Value of raw rubber exports	US\$21,790,000		
Value of rubber products exports	US\$149,240,000	0.15	

SOURCE: Computation based on RDD data, IRSG, and U.S. trade data.

**Table 9. Sri Lanka's Position in Global Rubber Industry, 2000**

Type	1999	%	2000
Ribbed smoked sheet grades	7.51	32.6	5.46
Pale crepe	9.15	39.7	
Sole crepe	3.66	15.9	
Technically specified rubber	1.44	6.2	
Other types	1.28	5.6	
Raw rubber income	23.04	100.0	21.79
Rubber products income	113.51		149.24
TOTAL	136.55		171.03
Value of all exports from Sri Lanka <sup>a</sup>	3,251.71		4,201.14
Rubber as percent of exports	4.20		4.07

<sup>a</sup>Agricultural, industrial, mineral, and unclassified

SOURCE: Sri Lanka Customs & Central Bank of Sri Lanka.

**Table 10. Sri Lanka's Export Income from Raw Rubber and Rubber Products, 1999/2000**  
(US\$ 000,000)

## Rubber Products

A study by the Sri Lanka Association of Manufacturers and Exporters of Rubber Products (SLAMERP) concluded that annual turnover in the rubber industry in 1996 was US\$177.88 million (Table 11).<sup>2</sup> A few companies have demonstrated differentiated product or marketing performance. These include Loadstar Limited, which sells Solideal branded industrial tires, and Dipped Products Limited, which sells industrial and household gloves under various brand names. Loadstar is the global market leader in solid tires and enjoys more than 20 percent of the global market, while Dipped Products Limited is the world's fourth largest industrial glove manufacturer.

Two multinational corporations in Sri Lanka are operating regional manufacturing plants. Ansell Lanka Limited makes and sells latex-based products, such as surgical gloves, and Trelleborg Lanka Limited produces solid tires for export. Other companies, such as Richard Pieris & Company, Associated Motorways Limited, DSI Samson Group Limited, and Ceat-Kelani Limited, concentrate on the local market, selling tires, floor mats, hoses, toys, and many household items. The export performance of these companies could be improved with investment in marketing, capacity expansion, technology, human resource development, and new product development. These groups of companies account for 90 percent of production destined for the domestic market.

Raw rubber can be converted into specialty products that have higher value and higher margins for producers, or into commodity products that have less value and lower margins.

<sup>2</sup>More recent analyses are not available.

Product Type	Domestic Use	Exports	Total
Tire retreading	13.00	0.30	13.30
Industrial solid tires	-	32.80	32.80
Pneumatic tires/tubes	18.09	4.49	22.58
Latex dipped goods	2.10	62.00	64.10
Latex foam rubber	4.70	0.30	5.00
Footwear	18.00	13.00	31.00
Flooring	2.60	0.40	3.00
Others	<u>4.20</u>	<u>1.90</u>	<u>6.10</u>
TOTAL	62.70	115.19	177.88
<i>Central Bank figure</i>		<i>93.57</i>	

SOURCE: SLAMERP report.

**Table 11. Sri Lanka's Rubber Industry Turnover by Product Type, 1996**  
(US\$ 000,000)

The following figures, based on a special study by the Malaysian Rubber Manufacturer's Association using 1998 data, compare value addition for raw rubber produced in Malaysia and Sri Lanka:

	<i>Value Created</i> <i>US\$ (Millions)</i>	<i>Rubber Used</i> <i>(MT)</i>	<i>Avg. Value</i> <i>US\$/ MT</i>
Sri Lanka	275.4	60,000	4,590
Malaysia	2,210.9	334,100	6,617

Malaysia is doing a superior job of creating and capturing value from raw rubber. To narrow this difference in value addition, Sri Lanka could convert latex crepe rubber into more sophisticated, customer-specific, value-added compounds and products for the global market. Sri Lanka has the capacity to produce 25,000 tons annually of premium quality crepe, and it could enjoy a niche position with little or no established competition in the under-exploited high-end crepe market. More generally, Sri Lanka's rubber products are exported at an average selling price of US\$3,300 to US\$4,600 per ton of rubber used. Malaysia's achievement in value-added processing indicates Sri Lanka's potential: increase average earnings per unit of raw rubber by approximately 44 percent to an average value of US\$ 6,700 per metric ton.



## Crepe Rubber

In 1983, Sri Lanka produced 68,377 metric tons of latex crepe rubber and exported 65,034 metric tons at premium prices. In 2001, it exported only 19,778 metric tons, less than one-third the 1983 volume. While Sri Lankan plantations had promoted their latex crepe as the “Champagne” of natural rubber, consumers had developed a different perception. That perception was well described by Dr. L. M. K. Tillekeratne, Director of the Rubber Research Institute of Sri Lanka, who spoke at a meeting of The Planters’ Association of Ceylon in October, 1993:

Upon returning from a trip to Germany and the United Kingdom, a leader in Sri Lanka’s rubber industry reported on observations and recommendations offered by western consumers in the rubber industry. According to the chairman of Weber & Schaer, European buyers of Sri Lankan crepe rubber have problems with poor packaging, inconsistent quality, inaccurate grading, and defaults on confirmed orders. In addition, lack of organization and coordination among suppliers and their representatives leads to unstable market conditions and unreliable sourcing.

Although Dr. Tillekeratne told this story 10 years ago, the problems he described continue to thwart development of this product. Latex crepe, considered the purest form of rubber, is manufactured in well-managed factories, while RSS, a general-purpose rubber with wide specification variances, is produced by rural smallholders as a cottage industry. Nevertheless market prices for latex crepe dropped below those of RSS at Colombo auctions in February 2002.

In 2001, Sri Lanka produced 26,096 metric tons of latex crepe and exported 16,970 tons—and at an average selling price lower than the cost of production. In the 1999–2001, most rubber plantation companies operated with financial losses and many are considering replanting their land with other crops. Producers had given up trying to convince buyers of the virtues of latex crepe as a high-quality polymer with inherent values and performance parameters. They could not overcome the problem of variances in specifications of output. Production methods, which date to the early 1900s, yield inconsistent batches. Product is categorized crudely according to physical appearance and dirt content and is not sold on designated technical merits. Variations within a batch and from batch to batch result from the old processing techniques and inadequate cleaning and filtering methods. Crepe factories do not use standardized laboratory methods for quality assurance. Even ISO-certified crepe factories do not satisfy the sophisticated analytical specifications of industrial clients. Production processes, testing procedures, and quality management systems all require radical change. Most important, crepe producers must build strong working relationships with product users. The product must be upgraded according to the processability needs of the market.

Although technically feasible improvements in production methods are known, firms in the industry have not undertaken investments that might help reduce the variances and help crepe rubber attain product status. The question of financial feasibility has not been explored. Sri Lankan producers have acceded to international perceptions of crepe rubber as a “problem” product rather than working with buyers to develop standards and then improving quality to meet those standards.

## Rubber Yields

One of Sri Lanka’s competitive weaknesses is a relatively low yield of rubber per hectare. Yields reported for the 1990s in the *Rubber Economics Yearbook, 2000* showed that India, Guatemala, Cameroon, and Cote D’Ivoire were achieving yields ranging from 1,500 to 1,990 metric tons per hectare. The reported average for Sri Lanka was 850 metric tons per hectare, with ranges from 633 to 1,100 metric tons per hectare (Table 12).

Country	Kgs/Ha.
Nigeria	260
Bangladesh	380
Philippines	720
Indonesia	730
Sri Lanka	850
Malaysia	896
Brazil	1000
Vietnam	1120
Thailand	1130
Gabon	1230
India	1500
Cameroon	1610
Guatemala	1680
Cote d’Ivoire	1990

**Table 12. Average Yields of Natural Rubber per Hectare in the 1990s**

Yet Sri Lanka has no obvious technical barriers to raising yields. The climate is similar to that of India which has managed average yields 75 percent greater than those in Sri Lanka. Some of the highest yields in the world (e.g., Cameroon) have been achieved using rubber tree clones developed in Sri Lanka. Simply removing the worst performing plantations from the average will help raise average yields in Sri Lanka. Technical solutions call for planting the best clones and raising more trees per hectare when replanting. It will take 5–7 years before returns are realized from new plantings. This requires strong, stable investors with substantial funds, and a long-term strategic vision. Sri Lanka’s rubber industry has such

investors for rubber products, businesses with a strategic interest in ensuring a reliable, domestic supply of good rubber at a globally competitive price.

## Rubber Wood

Sri Lanka has 159,000 hectares of land planted in rubber tree, of which smallholders own about 90,000 hectares. From 1981 to 1996, replanting averaged 2,000 hectares per year. New planting averages 4,500 hectares per year, but there is no net increase in total rubber tree hectares because of switch-outs to palm oil trees and other crops. According to the Rubber Research Institute of Sri Lanka (RRISL), Sri Lanka harvests 3 percent of all rubber trees annually, yielding 100,800 cubic meters of sawn timber per year from a total greenwood harvest of 960,000 cubic meters.

Rubber wood is underused in Sri Lanka. Less than 5 percent of the harvest is processed as veneer products and less than 50 percent is converted to sawn timber. Most of the harvest is used as fuel wood for tea kilns and rural domestic cooking. About 40 percent, or 275,000 cubic meters, is used for tea drying. Bread, lime, tile, and brick kilns all consume mainly rubber wood. Even as sawn timber, rubber wood is used untreated in low-value products, such as broomsticks and brush heads. Construction shutters and tea crates use rubber wood extensively; very little timber is used for high-value products. If plantations and smallholders divert rubber wood into high-value applications, the tea industry and rural society could face a severe energy crisis. Alternative fuels, such as gas and electricity, are either unavailable or unaffordable in rural areas.

Sri Lankan plantations and smallholders receive only US\$6 per tree after felling. Sawn rubber timber is sold at US\$120 per cubic meter. Exports are allowed only if the selling prices are higher than US\$600 per cubic meter because the government has imposed a 10 percent annual increase in the floor price for rubber wood exports.

Sri Lanka classifies treated rubber wood as Class II timber, four classes below the top class. The country's 200 processing units, which qualify as small and medium enterprises, are concentrated in two administrative districts, a situation that hinders transport and reduces farm gate prices. The supply–demand balance has been affected greatly by Merbok Hilir Berhard's medium-density fiberboard plant. The plant has an input capacity of 200,000 cubic meters of rubber wood logs. Neither Merbok nor the Board of Investment (BOI) has demonstrated a coherent and sustainable strategy to acquire sufficient fiber feedstock without causing significant social impact.

## INDUSTRY STRENGTHS, WEAKNESSES, OPPORTUNITIES, AND THREATS

A strategy helps an industry determine where to compete, what to achieve, and how to achieve it. As a planned response to marketplace challenges, it is based on an analysis of an industry's internal and external competitive environment. In this section we present the Rubber Cluster's assessment of the strengths, weaknesses, opportunities, and threats facing Sri Lanka's rubber industry. The assessment was developed as part of a collaborative strategic planning exercise carried out in November 2001.

At present, the strategies and actions of other countries and global corporations in the rubber industry have contributed to excess supply and falling prices for natural rubber. In any case, Sri Lanka, which supplies only 0.5 percent of the world's natural and synthetic rubber, cannot affect the global market or prices. This poses a dilemma for Sri Lanka:

- The plantation sector's return on investment and profitability is low;
- Rubber supply to local industry is uncertain;
- Smallholders, who are receiving insufficient revenue because of low yields, low prices, and the absence of effective extension services, are converting land to other crops;
- The domestic market cannot consume the base-load volumes of semi-finished and finished rubber products that normally reduce the cost of goods sold in a manufacturing scenario; and
- Privatization of plantations is not complete and many "private companies" merely lease land and assets from the government under long-term agreements.

In addition, government policies and activities do not seem to address these problems effectively. Restrictions on the import of raw rubber, for example, discourage foreign and domestic investment in value-added products. The many agencies (e.g., the Ministry of Plantation Industries; Ministry of Enterprise Development, Industrial Policy, and Investment Promotion; Ministry of Commerce and Consumer Affairs) and the institutions under them directly influence the industry but do not have a common strategy for supporting it. Some, such as the Ministry of Agriculture and Forestry and the Land Use Ministry, have resources and strengths to support the industry but do not. Moreover, the government's subsidizing of the state-owned rubber manufacturing company (Sri Lanka Rubber Manufacturing & Export Company Ltd.) affects market dynamics. Nor does the government collect the data and information necessary for informed policymaking.

Launching and promoting new products for niche markets will require technology development and innovation. But Sri Lanka's rubber research agencies rarely plan or work together on projects that might call for and better use their individual resources. Since the

Rubber Cluster was formed under the TCI project more research has been devoted to product development as opposed to plantation yields, but much more could be done. Collaboration with international testing institutes and buyer-favored laboratories also has to expand.

Human resources, long a comparative advantage for Sri Lanka's rubber industry, are beginning to lose competitiveness because universities, the Plastics and Rubber Institute (PRI), and the National Institute of Plantation Management (NIPM), work in isolation, lack adequate professional resources, and have no input on strategy.

For a variety of reasons, the current state of the Sri Lanka rubber industry reflects very uneven development. Some companies are world class, while others have lost their competitive edge. Weak prices have discouraged investment and prompted risk-averse behavior. But lack of investment over time has contributed to uneven development and increased risks for the whole value chain. The various members of Sri Lanka's rubber industry are only now exploring opportunities for and potential benefits of collaboration on certain activities and investments. Industry members are just starting to systematically gather, analyze, and share the market intelligence crucial for investment decisions and long-term growth.

While investment has been restricted by lack of capital and high interest rates, individual firms have neither collaborated on investments nor secured external assistance. Stakeholders in the value chain are compartmentalized in their associations and interaction and linkages among them are novel and tentative, thereby limiting the effectiveness and potential benefits of cluster-related activities.

The rubber industry as a whole has limited advocacy power with respect to the government. Elements of the value chain have rarely advocated a joint, industry-wide development agenda. Individual associations have addressed policy issues in response to problems (or a donor program) without enlisting others in the value chain. The industry does, however, credit four associations with solving some problems: Planters' Association of Ceylon, Colombo Rubber Traders' Association, PRI, and Sri Lanka Association of Manufacturers and Exporters of Rubber Products (SLAMERP).

In the following paragraphs we review in detail the strengths and weaknesses, opportunities, and threats facing Sri Lanka's rubber industry in manufacturing, technological capability, human resources, supply, marketing, investment, public sector support and infrastructure, and supporting industries.

## Manufacturing

### *Strengths and Weaknesses*

Since the late 1980s, the export value of Sri Lanka's rubber products manufacturing sector, which consumes 60 percent of local raw rubber, has been increasing. This growth could continue if the industry can ensure adequate supply, improve productivity, and control costs. At present, the industry's strong skill base, necessary for developing and launching niche products, is countered by a small raw material base that does not justify significant foreign investment in manufacturing. For example, Sri Lanka has different types of natural rubber raw available for value addition on a just-in-time basis with no inventory costs; theoretical and practical expertise in compounding and complex manufacturing processes; opportunities for small-capacity operations requiring only minor capital investment; and plantations with enough land to position rubber-based industries closer to the source of latex. But the industry has not developed expertise in synthetic rubber, imports secondary raw materials needed for manufacturing, and exists in a sociopolitical environment that deters investment. A couple of manufacturers have captured larger market share in small segments for products such as solid tires—ranked first in the world—and industrial gloves—ranked fourth in the world. Others, trying to compete in larger segments such as tires and examination gloves and general rubber goods, have had little success overseas. In addition, the latex industry is considered a polluting industry requiring special effluent treatments that raise costs. Fortunately, RRISL has developed sound treatments.

### *Opportunities*

More specialty raw rubber and better research and development would enable Sri Lanka's manufacturers to enter new and promising niche markets. To ensure adequate supply, raw rubber can be imported at competitive prices. If research and development consortium and prototyping centers are established, synthetic rubber could be imported for value addition and new products could be developed. Growth in the manufacturing sector could encourage domestic production of such materials. The industry should be able to attract investment as foreign corporations seek to relocate manufacturing facilities. A dedicated industrial park with well-designed central treatment facilities would allow Sri Lanka's processors to consolidate and control processing costs.

### *Threats*

Even as other rubber-producing countries are expanding manufacturing and enjoying lower input costs and higher productivity, Sri Lanka's competitive advantages are threatened by rising costs for materials, labor, and other inputs and a diminishing supply of raw rubber. In addition, relative costs may increase because Sri Lanka does not produce petroleum-based synthetic rubber, and natural rubber production is declining. Global pricing of secondary materials and local government policies may drive up costs for manufacturing goods and services. If Sri Lanka achieves new manufacturing success it should be wary of

threats to that success. At present, for example, local stakeholders do not have the critical mass or resources to ensure that products are delivered on time and according to specifications. Converting from short-run to long-run manufacturing could move production, human resources, and technology offshore. And a drive for expansion could be stymied by the lack of infrastructure and other facilities in rural areas, where other industries may take precedence.

## **Technological Capabilities**

### ***Strengths and Weaknesses***

Sri Lanka should pursue the opportunities presented by small-volume runs, niche markets, and product launches. Product development and prototyping, however, are expensive and require a significant resource base. A few, large private sector firms with research and development facilities have developed innovative and profitable products. Most, however, rely entirely on the RRISL, the Industrial Technology Institute (ITI), and the International Development Bank (IDB). Budget cuts at those institutes, the universities, and the Sri Lanka Standards Institute have reduced the intensity of research and development. Some work is duplicated among institutions, and the private sector finds their output insufficient. RRISL, the premier rubber research institute, has an excellent tradition of plantation research and has developed good clones and solutions to plant diseases, among others. It also has good experience in effective extension work. RRISL's budget, however, is hardly sufficient to maintain the systems in place. Its resources for product-oriented research and development are limited.

### ***Opportunities***

If the RRISL is prepared to change its objectives, outlook, and management systems and structures, private sector involvement could remedy this situation. In addition, institutional programs should be rationalized, and the industry should consider contracting directly with the institutes or creating research and development consortia to collaborate in pre-competitive research, such as protein allergy research. Government could support private research and development through tax credits, scholarships for training overseas, and other incentives.

### ***Threats***

Sri Lanka's rubber industry is threatened by inadequate product development capabilities, which discourages corporate manufacturing projects, and by the lack of cooperation and resource sharing among technical institutions under different ministries. Likewise, its technological capacities are threatened by declining raw rubber production and exports and decreasing hectares under rubber, all of which could diminish the importance of RRISL and steadily erode government support for the industry. In competing countries, small and medium-size firms are well supported by public sector research and development. Sri

Lankan firms that are not similarly supported will be severely challenged by international competition.

## **Human Resources**

### ***Strengths and Weaknesses***

Although Sri Lanka's rubber industry has long had a skilled and competitive workforce, the best and brightest are leaving the country to earn higher wages. And its managers, with solid technical skills and from respected technical institutions, require more practical business management training (e.g., marketing, accounting, information and communications technology, manufacturing resource planning, total quality assurance, finance). PRI and three universities—Moratuwa, Kelaniya, and Jayewardenepura—deliver undergraduate and graduate courses in rubber technology that lead to certificates and diplomas, but courses do not address the modern manufacturing environment. NIPM, lacking permanent faculty, conducts short courses on plantation management and the theories and historical practices of primary processing factories.

### ***Opportunities***

To better serve the needs of the rubber industry, Sri Lanka Rubber Manufacturing & Export Company (SLRMEC), NIPM, and RRISL could work jointly to establish a dedicated training center, with private sector participation, similar to the Rubber Research Institute Malaysia Sungei Buloh training center. Affiliation with foreign universities and institutions and joint programs could expose university faculty to other countries' industries. And the private sector could help upgrade outmoded teaching facilities. If Sri Lanka's rubber industry successfully pursues niche markets and higher value-added production, it will realize higher profits and be able to offer profit sharing and better wage incentives to retain and upgrade its workforce.

### ***Threats***

If trends continue, the rubber industry faces long-term threats to its human resource base. The quality of teaching could decline for various reasons, and graduates could be increasingly deterred from joining the industry, choosing instead to emigrate for better salaries and quality of life. If the plantation and smallholder sectors do not become profitable, the government will allocate fewer resources to support the industry.

## **Supply**

### ***Strengths and Weaknesses***

Sri Lanka's supply of field latex and dry rubber grades is adequate to sustain its rubber products sector, but producers bear high costs and have low productivity. In fact, global pricing is causing negative returns. Low prices are also discouraging employment among



rural poor, who have long viewed tapping as a source of employment. Quality suffers because of low-yielding clones, poor stands, scant fertilization, and poor harvesting practices. And, while Sri Lanka's well-organized plantations can produce medium-volume special materials and its smallholders can produce bulk grades according to specifications, financial results are poor. Value-added production is commercially successful for only a very few. Smallholders, who dominate the supply chain, can respond quickly to market signals, have little overhead, and need little investment and other management inputs. At the same time, they face fierce competition for land and workers, have little access to technology, and sorely need extension services and central processing facilities. Furthermore, even though smallholders are capable of rapidly upgrading field latex quality and quantity, collection and sale are not driven by standardized specifications and volumes from the demand side.

The manufacturing sector is interested in long-term offtake agreements and upstream integration on the supply side, as well as free markets for imports and exports. The current lack of commercial obligations and responsibilities among industry stakeholders could lead to a "sunset" on rubber and field latex—and ultimately offshore manufacturing. The long tradition of rubber plantations backed by the historical successes of RRISL is undercut by the lack of symbiotic relationships between producers and manufacturers. Rubber plantations are concentrated within a 150 km radius of Colombo, underscoring the high costs associated with infrastructure (e.g., electricity, transportation). Infrastructure problems, along with an absence of marketing and technology, also impede the development of rubber wood industries.

### ***Opportunities***

All these problems can be corrected. Technology can increase yields per hectare and lower costs; new, high-yielding clones can improve quality and sustain profits; and timber can be used to supplement income. If strong commercial linkages are established in the value-added sector, value-added applications will begin yielding profits all along the supply chain. Smallholders should pursue long-term commercial contracts linked to improved collection practices and quality certifications; they should also seek assistance through the RDD, Thurusaviya Program, and SLRMEC. Along with better methodologies and procedures, standardized specifications and certifications for field latex will raise quality, consistency, and selling price.

Manufacturers should establish long-term supply contracts with a price index tied to international posted prices, with discounts and premiums depending on market conditions. Producer and manufacturers should pursue formal vertical integration through joint ventures, mergers, and other contractual obligations. A needs analysis has shown that infrastructure development would significantly lower fixed and variable costs and spur progress across all economic sectors.

### ***Threats***

Solutions to supply-side problems are long term; meanwhile, producers, lacking capital and responding to current cost-benefit analyses, may choose to replant in other crops, such as palm. A clear trend of supply decline will feed the perception that rubber plantations are a sunset industry and the government and private sector may do little to revive the sector with investments. In addition, if smallholders remain unorganized they will probably continue to generate low yields and revenues, then switch to tea and other crops. If supply and manufacturing sectors do not pursue strong contractual relationships, the value chain will remain fragmented. In fact, pressure to replant in other crops will increase if the manufacturing sector decouples from domestic supply. If smallholders upgrade, markets may not pay premiums for higher quality and improved compliance with specifications. If the state continues managing RDD, SLRMEC, and Thurusaviya, technical assistance for smallholders may decline. If the government cannot fund infrastructure improvements, the industry will continue to bear unnecessarily high fixed and variable costs, and the government may be tempted to continue its protectionist strategy vis-à-vis imports. And, if rubber wood remains mostly a fuel wood, its income potential for the supply side will be wasted.

## **Marketing**

### ***Strengths and Weaknesses***

Sri Lanka has long been considered a leading rubber producer with a solid market position. Its industry is flexible enough to target small market applications and develop new products—a strength proven by the traditional market position of crepe. Very little rubber, however, is available for export in Sri Lanka, so major buyers do not operate there. And although flexible, its industry has no influence over market trends or conditions. Without commercial incentives to gather producers behind a national strategy, specializations are unlikely. Sri Lanka is very near to the world's largest rubber producers and is a member of South Asian Association for Regional Cooperation (SAARC), whose member countries have a substantial market for rubber. Yet Sri Lanka's rubber industry does not benefit from formal relations with neighbors and has not attracted large foreign or local investment because of its small local market. The Export Development Board (EDB) provides limited financial assistance to companies marketing overseas through trade fairs, but no follow-up or market forecasts. In any case, the private sector seems unwilling to unite in marketing.

### ***Opportunities***

Sri Lanka's traditional image can be used to promote rubber products around the world. To begin attracting buyers' attention, the industry should focus on short-run, high-value products for international companies and establish a new standard for organic, pure "super latex," available in limited quantities. Technology or trade protocols between large rubber-producing countries and Sri Lanka should be investigated, as should trade agreements

directly relevant to the rubber industry. Such agreements will open markets and improve investment policy to boost local industry. The industry should also unite to pursue a market information center as a private–public initiative, along with joint market surveys and marketing campaigns.

### ***Threats***

Other producers are outpacing Sri Lanka and the latex protein allergy issue is affecting the viability of natural rubber products. Successful short-run products could go into large-scale production, but offshore; and the success of “super latex” could be threatened by land constraints that limit maximum domestic production of field latex. If Sri Lanka pursues technology or trade agreements, it must be aware that such agreements may favor larger producers’ market strengths. Existing foreign investors and some local investors could choose to relocate their expansion programs (e.g., Ansell, Dipped Products Limited). In the absence of a unified industry marketing strategy, the industry depends on government-led and international donor-led marketing schemes, but government may choose to reallocate resources to tea and other industries and donor agencies could pull support from the rubber sector.

## **Investment**

### ***Strengths and Weaknesses***

Sri Lanka’s plantation companies can provide land, buildings, manpower, and high-quality raw material for joint venture manufacturing projects; they do not have the technology, marketing, or management skills necessary to attract investment. International donor agencies and other sources of funds are in Sri Lanka, but credit costs are high because of political risk, government intervention, and arbitrary premiums. The BOI, which has incentive packages for attracting foreign direct investment and carry out promotional work overseas, has created efficient and well-designed industrial parks. Unfortunately, very few new investments in the rubber products sector have survived the first round because of poor labor productivity, high costs, diminishing raw rubber supply, and security concerns.

### ***Opportunities***

Plantation companies can form mutually beneficial joint ventures with foreign or local companies in the products sector, especially to produce items based on latex crepe grade. The industry could pursue networking and cooperation among international agencies for specific projects and the establishment of a dedicated industrial park for the rubber and plastics industries with proper zoning (plots for such development are available in rubber-growing areas). Success in peace initiatives may improve investor confidence.

### ***Threats***

If peace initiatives fail or political and social unrest continues, investors will not invest in Sri Lanka. Unless plantation companies improve productivity and reduce unit costs, investors

may not want to share the costs of inefficiency when raw rubber is available cheaper elsewhere. Without unified, convergent objectives, the industry will not be able to make effective use of what little investment funds there are. Investment may be attracted to India's rubber industry parks and to other countries with better infrastructure and facilities.

## **Public Sector Support and Infrastructure**

### ***Strengths and Weaknesses***

Because Sri Lanka's rubber industry is a national interest and involves many smallholders and estates, it has received subsidies and other forms of government support. Three ministries—Ministry of Plantation Industries, Ministry of Enterprise Development, Industrial Policy and Investment Promotion—attend to industry interests and other government institutes are available to assist the industry. The industry has not developed a long-term strategy with these ministries and organizations, which do not communicate effectively, and certain policies (e.g., import restrictions and floor price for rubber wood) are not helpful. Colombo's large port can process oceangoing freighters, but the labor force and policies raise port costs and slow shipping turnaround times.

### ***Opportunities***

Before overcoming common obstacles, individual industry stakeholders need to set clear, focused strategic targets and timeframes. So far, the Rubber Cluster has involved many government officials in the strategy process and works closely with two rubber sector committees in the ministries. Upgraded port facilities and services will make costs competitive and increase throughput.

### ***Threats***

The industry's fragmentation and lack of focus could continue to mismatch goals and waste resources, and the government's direct involvement in rubber manufacturing through SLRMEC may continue to distort market forces. Continued lack of understanding and cooperation between industry, bureaucracy, and policymakers poses a real threat, as do port inefficiencies that compel high inventories.

## **Related and Supporting Industries**

### ***Strengths and Weaknesses***

Institutional support for the rubber sector offers world-class expertise, and commercial stakeholders, though few, are eager for success and appreciate the support offered by TCI. At the same time, attempts to unify the industry behind grand, and perhaps unwarranted, expectations have left commercial stakeholders unwilling to formalize cooperative business ventures and interdependence. This is reinforced by powerful and successful stakeholders who may be satisfied with the status quo. The value-added products sector receives

adequate support from the raw rubber sector, but not from other industries (e.g., the chemical industry, engineering, research and development, market information services).

### ***Opportunities***

To develop its supporting industries, Sri Lanka's rubber sector must achieve critical mass. Stakeholders need to recognize that binding, proprietary ventures can achieve economies of scale and standardization. An advocacy committee can achieve policy changes to free the market and promote capacity building. Increasing demand will present an opportunity to develop the local raw material base and other service industries.

### ***Threats***

If the rubber industry does not unify, non-vested third parties will continue controlling commercial drivers and exploiting fragmented stakeholders, thus perpetuating the belief that Sri Lanka's rubber industry is insignificant and unreliable. If the industry does not monitor competitors, they will continue establishing new market positions. And if the industry does not lobby for growth-oriented policies, the government's debilitating command-and-control approach will continue.

## **SRI LANKA RUBBER CLUSTER**

Under the auspices of the Competitiveness Initiative, a technical assistance project funded by USAID under an agreement with the Government of Sri Lanka, the Sri Lanka Rubber Cluster began its activities in January 2000 with the participation of four associations that represent the entire rubber industry—the Plastics and Rubber Institute of Sri Lanka, Planters' Association of Ceylon, Colombo Rubber Traders' Association, and Sri Lanka Association of Manufacturers and Exporters of Rubber Products. The cluster consists of private sector firms and non-market institutions representing every part of the value chain—plantation, manufacturing, retail, trade—including academic and government institutions. It aims to achieve competitiveness in the global marketplace by cooperating in pursuit of the long-term industry strategy examined in the next chapter.

A steering committee of 16 senior representatives from all sectors of the industry directs the cluster program. The committee has nominated a chairman and a secretary-cum-treasurer to lead the team. During the first year, Mr. Tilak De Zoysa served as chairman, a position now held by Mr. W. T. Ellawala. Mr. Damitha Dharmasena continues to serve as secretary and treasurer.

Representatives from several government organizations regularly participate in cluster activities. The Ministry of Enterprise Development, the BOI, the EDB, and the RRISL are valued participants as are university academics, trade chambers, and other government departments.

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# Competitiveness Strategy

**B**efore it can begin to realize full potential profit and value, members of the rubber industry in Sri Lanka must begin working to improve competitiveness in infrastructure and technology, the policy and regulatory framework, and communication between the public and private sectors. To accelerate and sustain growth, the industry needs to pursue a comprehensive strategy and take unified action. Taking unified action will require industry members to act as an effective industry cluster. All industry members—manufacturers, field latex and field grade rubber producers, industry associations, government ministries, and related external vested interest groups and investors—must take ownership of the strategy and support and implement strategic action plans. Strategic goals must be pursued through initiatives that will strengthen the rubber industry value chain. The performance improvements likely under this strategy will yield acceptable financial returns to all investors and stakeholders over time.

*The strategy is to achieve significant, sustainable market share in low-volume, high-margin product applications for finished and semi-finished value-added goods for export by capitalizing on traditional strengths and comparative advantages in a fully integrated industry sector and using external resources and applying best business practices.*

## WHY THIS STRATEGY?

For the foreseeable future, the Sri Lankan rubber industry is unlikely to become competitive in large-volume segments of the global market for rubber products. In the medium to long term, however, it can become more competitive by participating in small-volume niche markets, where higher product values generate higher margins. In fact, exports of value-added products have driven and will continue to drive industry growth and sustain profits. Value-added niche products require better technological input, superior human resources, and improved management skills, which in turn require investment. The competitiveness strategy recognizes that the survival of Sri Lanka's rubber industry depends on long-term obligations, responsibilities, and commercial linkages between suppliers and manufacturers that improve the efficiency and efficacy of the entire industry.

In addition, it is unlikely that synthetic rubber will replace natural rubber because natural rubber offers superior performance for many applications. The interests of Sri Lanka's manufacturing sector, therefore, will be served best by a strong and sustainable domestic supply of raw rubber, which will help the sector retain its comparative cost advantage. As the sector grows, however, it must not be constrained by the domestic supply.

Manufacturers will become neutral about the source of raw materials. For example, synthetic rubber and other materials must be freely available for use as complements to natural rubber in some applications. At the same time, field latex producers will not depend exclusively on local product manufacturers for markets, but will develop export markets for intermediate rubbers with unique selling properties, such as a new latex crepe compounds. In addition, rubber compounds with unique performance characteristics are likely to attract foreign direct investment for the manufacture of finished products.

## BASELINE ADVANTAGES

Sri Lanka's small land area constrains the expansion of natural rubber production; therefore, local industry cannot compete for large, single-supply contracts requiring 100,000 to 200,000 metric tons. Instead, it should seek specialty applications of smaller volumes and meet the technical demands of select customers. The manufacturing sector, if sufficiently flexible in responding to market changes, can add high value to tons. The applications for such tons will necessarily be of low volume and therefore of higher value, generating higher margins. With a long history in the rubber industry, Sri Lanka has the institutional expertise and know-how necessary to convert its advantages into profits.

## MARKET

Initial research has confirmed demand for small-volume, non-commodity applications based on special compounds and formulations. Potential customers, or those requiring manufacturing partners to produce to their specifications, already have shown interest. In addition, manufacturers in the United States, Canada, and the European Union are increasingly interested in relocating production capacity. High labor costs and environmental pressures make it costly for those manufacturers to relocate or expand in their own countries. Some countries are experiencing idle capacity and some have assistance programs for relocating capacities and process lines to developing countries, where labor costs and other conditions favor cost-effective manufacturing. The stakeholders in such countries would be available to participate in joint ventures or long-term offtake agreements to facilitate relocation. Favorable financing for such projects is available. Major corporations could become strategic partners for small-volume runs, product launches, or core capacity augmentation.

The market for custom compounded materials exported as semi-finished rubber products is also promising. Success in that market will depend on redefining and repositioning Sri Lanka's plantation rubber as an industrial polymer material rather than commodity-grade raw rubber. Developing technical specifications that match manufacturers' processing demands will help the industry identify niche applications for polymeric raw material. Successful product development projects would build strong relationships between local firms and offshore users who could provide investment, technology, and markets. A scientist with BF Goodrich Company invented polyvinyl chloride while seeking a replacement for natural rubber. Since then, corporations have continued to refine polymers to meet new application standards. Very few scientists are working on the next great consumer or industrial product that uses natural rubber as a base material. If a partner in Sri Lanka is willing to develop compounds and composites and re-establish the inherent benefits of natural rubber in the marketplace, this trend can be reversed for certain applications.

## SUPPORTING INDUSTRIES AND SERVICES

In successful industry clusters, members standardize packaging, environmental criteria, product specification coding, terms, and joint procurement and labor standards. Only a strong trade association consisting of members representing all sectors of the industry can address such important issues. Sri Lanka's rubber industry value chain has many participants who add cost and value to rubber and rubber products. The industry, however, has not benefited from a well-formed group of related and supporting industries.

Under the proposed strategy, the Rubber Cluster will be institutionalized as the Society of Rubber Industry (SRI), a legal entity recognized by all stakeholders, including the government. SRI will develop a detailed business plan to govern its functions, delegate standing committees to direct and monitor strategic initiatives, and work to implement action plans for industry cluster goals.

Establishing close working relationships with international agencies operating in Sri Lanka is essential.<sup>3</sup> Many of the issues facing the industry are addressed by international agency projects, which are open to the influence of beneficiaries. Industry stakeholders should become partners in managing such projects and assist project leaders in reaching mutually beneficial goals.

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<sup>3</sup>These agencies include, among others, the Asian Development Bank; the World Bank; the International Finance Corporation (IFC), Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), United Nations Development Programme, Food and Agriculture Organization, United Nations International Development Organization, and Common Fund for Commodities.



To avoid duplicated effort and conflicts of interest or agenda, certain government departments need to reallocate resources and redefine their mandates. Sri Lanka can ill afford to waste already scarce resources. When the entire state sector supports one strategy and allocates resources accordingly, the industry's competitive position will be strengthened. The industry should maintain a permanent dialogue with the government through the new Rubber Industry Development Center (RIDC) and keep the government bureaucracy informed of changes in the marketplace and suggest responses. This becomes easier if the industry, through SRI, advocates for responsive government.

## ORGANIZATION, COOPERATION, AND COLLABORATION

Instead of waiting for government-led responses to marketplace challenges, the rubber industry must take charge of its strategy. Industry members must be willing to allocate resources to each SRI committee, and those committees must deliver on each action plan. To implement strategic initiatives, members must formalize long-term commercial relations according to clearly defined deliverables. This will standardize expectations, oblige various parties to meet specified terms and conditions, and strengthen the industry in general while encouraging integration. Old attitudes and behavior must yield to new organization and cooperation, driven solely by market and customer demands. When, for instance, a company is not able to meet all its contractual demands, several others should be able to collaborate to do so. Such cooperation, based on good faith and trust, means sharing risk as well as reward over the long term.

The rubber industry has the opportunity to reposition its materials by redefining their characteristics and uses. Volumes are limited and future returns will be low if materials are not differentiated or are viewed as commodities. The main opportunity is therefore in the specialty rubber market. Repositioning will require upgrading all activities and quality standards in the supply chain. As the total value of semi-finished and finished rubber products increases, revenue and profits will increase. But those profits must be distributed appropriately throughout the supply chain; otherwise, operations may not be upgraded and the system will fail.

Sri Lanka has numerous support enterprises, including significant technical expertise and excellent institutions for education and research. Middle management, however, does not have sufficient authority to execute its responsibilities. The performance of middle managers, who should be held accountable for day-to-day operations and operational results, can be influenced through fair incentives and motivation.

Cooperation with other industry clusters also presents opportunities; for example, intercropping rubber lands with tea, banana, cocoa, and spices, and production of composites such as rubberized coir for special applications. Industry clusters for tea, spices, and coir—also supported by TCI—are now well organized and seek such opportunities.

## POLICY AND OPERATIONAL IMPLICATIONS

### Policy

The success of the competitiveness strategy depends on industry's persistent and unified implementation of the strategic initiatives. Such action will be most effective if general legal and labor law reforms are enacted. When these issues are addressed through effective advocacy, government will be limited to true policymaking and industry will be able to act in its own interests. Continued restriction and intervention will squelch private sector initiative and frustrate growth.

The government of Sri Lanka has not established an attractive environment for foreign investment. In addition to simple matters of the judiciary, creditors have no recourse on unsecured debt. Industry development is also hampered by infrastructure problems related to energy, transportation, and land use. Since land reform laws were introduced in 1975, most land is owned by the state. Rubber industrialists find it difficult to locate their plants without affecting neighboring populations, and export-oriented rubber factories have been closed on the basis of judicial decisions.

Task allocation among various ministries can be improved, but in the meantime ministries and agencies need to work together on a common program for rubber industry development led by SRI and RIDC. Armed with a logical and reasonable strategy, SRI will be able to promote policy changes that eliminate barriers to investment and permit growth, such as liberalization of rubber imports.

Of particular concern is the lack of economic incentive to replant rubber lands. If this trend continues, Sri Lanka's rubber plantations will fail and the rubber goods industry will falter and shrink. Under the proposed initiatives, a National Forest Policy, administered by the Plantation Reform Project, under ADB, or another project created for that purpose, will be developed to plan and promote the planting of land in rubber. The Ministries of Plantation Industries, Agriculture, and Enterprise Development and Industrial Policy would all play key roles in policy development.

Existing rubber stands have been neglected because of a lack of investment and low projected returns. The National Forest Policy could include a plan to upgrade existing stands to meet the criteria of the new RRISL Stand Model, which is to be adopted as the industry norm. Participation in such a scheme implies short-term revenue loss to reconfigure the profile of all stands in estates and smallholdings. Until the Stand Model project yields benefits after six or seven years, estates and smallholders will require financial backing to cover revenue shortfalls. Assistance is available through international programs such as Clean Development Mechanism (CDM).

Safeguards against dumping and underinvoicing of rubber products imported from Asian countries where costs for labor and other inputs are artificially low because of government intervention also need to be considered. Some Sri Lankan factories producing for the local market have had to cease operations because they could not compete with cheaper imports, such as shoes and pneumatic tires. Under the strategic initiatives, a joint committee of public and private sector representatives will investigate, recommend, and report on remedial actions.

## Operations

If manufacturing is strengthened and Sri Lanka begins to attract investment, investment in capital goods to expand operations or create new manufacturing capacities could be substantial. Industry will immediately demand more raw materials, which will require higher yields and greater productivity from rubber lands. The net effect on operations will be significant growth, higher employment, upgraded worker skills, better standards of operational performance, and greater revenues and profits. The likely result: greater industry capitalization and higher total export value for high-value rubber and rubber. The increase in export value will have a significant impact on Sri Lanka's balance of trade.

## ADDING VALUE IN THE BUSINESS PROCESS

The uncoordinated and fragmented behavior of industry stakeholders is costing the industry significant value. In 2000, Sri Lanka exported 32,000 metric tons of raw rubber valued at US\$22 million and rubber products made from 50,000 metric tons of rubber valued at US\$166 million. Improving the organization of the value chain will ensure that more value is created in Sri Lanka. If the rubber industry meets strategic objectives, it will be able to export 100,000 metric tons of rubber products by 2010 and earn US\$430 million.

All industry participants—smallholders, central processors, compounders, manufacturers—will gain if each accepts new norms and performs to higher standards. This does not imply that each stakeholder has only one option. Each must analyze long-term relationships and participate in several scenarios. The enduring goal is to remain aware of the end user, where the product goes, and how it is used. Stakeholders must satisfy their customers, whether domestic or international, internal or external. If diligently and effectively pursued, this strategy will improve each part of the value chain, from plantation to end user, and every stage of the business process in industry segments (Figure 1).

- **Research and development.** Improving technological capabilities will have ramifications for producers and manufacturers. Combining resources for a research and development organization that focuses on applied research, product development, and prototyping will reduce costs for individuals and speed development of high-value products.



Figure 1. Rubber Industry Business Process Value Chain

- **Procurement.** Plantation revival, forestry integration, and extension of rubber to nontraditional areas will guarantee future supplies of raw rubber in strategic and competitive quantities. Joint procurement initiatives and other supply chain management recommendations will have a significant impact on cost competitiveness.
- **Production.** Superior specialty grades of rubber and products targeted at more sophisticated niche markets will necessitate better production processes and planning. Efficient prototyping facilities and custom compounding centers will satisfy the need to develop innovative products.
- **Distribution.** The strategic initiatives will force Sri Lankan producers to develop their own brands and to undertake their own distribution. Greater ownership of the distribution channels will improve margins and reduce the threat of having Sri Lankan rubber products downgraded to commodity status.
- **Sales and marketing.** Gathering market intelligence will benefit many medium and small-scale producers who do not have access to real-time knowledge of the marketplace. Developing a long-term marketing plan will be an important step in allocating resources according to consumer need rather than production capabilities.
- **Customer service.** The strategic initiatives will require closer interaction with and knowledge of the end user. The introduction of technical data sheets, material safety data sheets, and certification standards will provide the means necessary to understand customer needs more efficiently and to react more quickly to changes in the marketplace. Direct communication with consumers will promote long-term relationships that allow sharing of resources, knowledge, and benefits.
- **Administrative and management functions.** Institutionalizing the Rubber Cluster, improving corporate governance, developing human resources, and improving use of resources will require proactive management.

## STRATEGIC ACTION FRAMEWORK

To become operational, the Rubber Cluster's competitive strategies require quantified goals. Agreed to during cluster meetings and workshops, the following are the industry's value and volume targets over the next eight years by product category:<sup>4</sup>

	<i>2000 Actual Exports</i>		<i>2010 Export Targets</i>	
	<i>MT</i>	<i>Value (US\$)</i>	<i>MT</i>	<i>Value (US\$)</i>
Raw rubber materials	32,000	22,000,000	50,000	40,000,000
Finished products	50,000	166,000,000	100,000	430,000,000
TOTAL	82,000	188,000,000	150,000	470,000,000

These targets represent a 150 percent increase in hard currency export sales with only an 83 percent increase in total sector tons of output. The aim is to increase the average selling price (1) of raw rubber materials from US\$500–\$600 to US\$800 per metric ton, and (2) of finished goods from US\$3,300 to US\$4,300 per metric ton.

The key strategic driver is value addition supported by growing and primary processing. Primary processed rubber will be exported only for niche markets, and rubber wood will be considered an integral supplementary source of revenue. An institutionalized Rubber Cluster will be able to lead and sustain strategic developments, and government and the private sector will be able to collaborate in a single strategic framework.

This program calls for using all resources to increase and improve manufacturing, and value-added conversions of raw rubber and latex materials into semi-finished and finished rubber products for export to select markets and applications. This effort has to be of national magnitude and all industry stakeholders should collaborate with total commitment to achieving the goals agreed on.

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<sup>4</sup>Finished products are defined as the quantity of rubber consumed to make products.

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# Strategic Initiatives

In this chapter we present eight strategic initiatives recommended for implementing the overall strategy to reach industry targets:

- Sustain clustering
- Enhance manufacturing
- Improve supply side
- Enhance technological capabilities
- Improve marketing
- Attract and retain investment
- Use rubber wood to supplement returns
- Work with public sector as a partner in progress.

The action items for these initiatives were developed by the cluster members with assistance of industry experts and advisors. Each initiative is presented along with objectives and success indicators. Some activities aim at developing the industrial structure and enabling environment crucial for implementing the strategy and sustaining competitiveness. Others address more immediate operational issues and market opportunities. The cluster had prepared a timeline for major action items. Industry stakeholders or the Rubber Cluster will mobilize resources, develop action plans, and implement the initiatives.

## SUSTAIN CLUSTERING

This initiative calls for institutionalizing a single-purpose, dedicated legal entity, the Society of Rubber Industry (SRI), to consolidate and unify stakeholders, help the industry reach strategic goals, collaborate with the government, and monitor manufacturing and export issues, commercial interests, forestry and agriculture issues, market stabilization, proprietary product development, human resource development, procurement policies, trade and tax policies, research, and testing and certification standards. It also calls for establishing a strict code of performance for SRI and industry members to ensure the accountability, reliability, and operational and financial performance acceptable in the global marketplace and to all investors in Sri Lanka's rubber industry.

<b>Actions</b>	<b>Objectives</b>	<b>Success Indicators</b>
Institutionalize the Sri Lanka Rubber Cluster and form the SRI, a legal entity with the authority and resources to implement the strategy.	To establish the framework for collaborative action necessary for sustainable competitiveness.  To continue the Sri Lanka Rubber Cluster.	Sri Lanka rubber industry launches collaborative projects for common benefit.  The government listens to industry's collective opinion and offers support.  Industry receives more assistance from other agencies, including multilateral financial institutions.  Individual firms and stakeholders benefit as industry cluster becomes effective.
Develop a business plan for the SRI that specifies vision, mission, objectives, and action plans including timelines, membership and management structures, and financing mechanisms.	To specify objectives and how they will be achieved with a resource plan to ensure sustainability.	SRI incorporated and sustainable.  Strategic objectives achieved efficiently.
Promote strong and binding relationships among rubber industry stakeholders in Sri Lanka.	To improve product quality, consistency, and differentiation, and, ultimately, profits.	Profitable specialty rubber industry.
Define a code of ethics and establish guidelines and protocols for cluster members to meet standards of living and social obligations, protect the environment, and follow proper work ethic.	To create concern for social and corporate responsibilities.  To comply with good corporate governance practices.	Competitive environment for rubber industry.  Ability to attract and retain workers and professional staff.  Goodwill.

Actions	Objectives	Success Indicators
Create a shared vision and common objectives based on a new behavioral model for the rubber industry.	<p>To think and behave as a new industry or a new company, replacing outmoded behavior, rewards, and objectives with shared objectives and mutual benefits, beyond the gains of a few.</p> <p>To use proven manufacturing activities (e.g., natural versus synthetic rubber, import versus domestic, marketing intelligence, sales and distribution networks, linkages and strategic alliances) to drive business decisions.</p> <p>To facilitate buy-in from workers.</p>	<p>Attitudinal change in most stakeholders who have no economic incentive to remain dedicated to rubber.</p> <p>More investment in the sector and better standard of living and work ethic as industry meets social obligations, rights, and responsibilities.</p> <p>Industrial harmony, stability, and improved productivity.</p>
Use short-term technical assistance for advocacy and lobbying that unifies stakeholders in influencing the government on infrastructure, transportation, trade regulations, privatization, and labor policies.	<p>To use advocacy as a strategic tool of competitiveness.</p> <p>To develop internal expertise in creating a favorable and enabling business environment.</p>	<p>Better conditions for open market.</p> <p>The removal of all existing constraints.</p>
Harness public sector and leadership resources and establish an ombudsman for conflict resolution.	<p>To gain synergy and consolidate efforts of stakeholders</p> <p>To reduce dysfunctional conflicts.</p>	<p>RRISL, ITI, IDB, and EDB unified behind a stronger industry sector following a common strategy.</p> <p>Fair treatment of all stakeholders.</p>
Create a website for Sri Lanka's rubber industry.	<p>To use ICT for low-cost marketing communication</p> <p>To promote the Sri Lankan rubber brand.</p>	<p>Increased market reach, sales, turnover, and profits.</p>
Obtain associate membership in the International Rubber Study Group.	<p>To access to a large network of senior industry personnel, researchers, and government delegates.</p> <p>To obtain information about competition and global trends.</p>	<p>More industry contacts and market information.</p>



## ENHANCE MANUFACTURING

This initiative calls for improving the productivity of primary processing and rubber goods manufacturing to reduce costs, improve product consistency and reliability, shorten turnaround times, and improve customer service.

Actions	Objectives	Success Indicators
<b>Primary Processing</b>		
Centralize processing of smallholders—and even small and medium-sized estates—in facilities that may include plantation factories.	<p>To increase throughputs and make the operations cost-effective and competitive</p> <p>To increase batch sizes to ensure uniformity in processability.</p> <p>To increase volume and consequent bargaining power in marketing.</p>	<p>Low processing costs.</p> <p>Improved quality.</p> <p>Greater product consistency.</p> <p>Better marketability.</p> <p>Better prices and profits.</p>
Implement cost reduction practices in all phases of rubber processing and incorporate ISO, MRP, TQA, JIT, MIS tools.	To meet customer requirements on time and according to specification while managing cash and sustaining profits.	<p>Lower costs.</p> <p>Better markets.</p> <p>Increased profits.</p>
Revise material grading to reflect practical, quantifiable, and meaningful market requirements, quantifying differences in performance from one grade to another.	<p>To end inappropriate or wasteful material classifications.</p> <p>To redefine grades to meet technical quantitative terms and performance specifications as described in technical data sheets and material safety data sheets.</p>	<p>Receive appropriate selling prices based on correct process applications.</p> <p>New market segments.</p>
Achieve higher value-added applications for raw rubber and demand performance improvements along the value chain.	To improve the performance of the entire supply chain and thereby offer higher financial returns and investment incentives to stakeholders.	<p>More revenue available to the industry.</p> <p>Appropriate distribution of profits along the value chain.</p>
Establish training program for personnel engaged in rubber processing.	<p>To improve the efficiency of production.</p> <p>To be relevant to modern market requirements and technological improvements.</p>	<p>Better products of consistent quality.</p> <p>Lower production costs.</p> <p>Increased profits.</p>
Establish standards for field latex tapping, collection, and preservation; and for latex concentrate manufacturing and quality control.	To improve field latex and latex concentrate.	<p>High-quality field latex and concentrate available.</p> <p>Efficient and profitable latex-based products industry.</p>
Establish a central latex storage facility with sufficient tanks and a laboratory to store required volumes under stringent standards and controls.	To ensure adequate and regular supplies of latex concentrate to manufacturers and reduce need for latex imports.	<p>Efficient and profitable latex-based products industry</p> <p>Minimal imports of latex.</p> <p>Smallholders sell latex on regular basis without facing vagaries of demand fluctuations.</p>

<b>Actions</b>	<b>Objectives</b>	<b>Success Indicators</b>
<p>Reposition by redefining crepe rubber; develop technical data sheets, visit consumers, and promote the new polymer in an aggressive marketing campaign backed by process and product improvements and better delivery.</p> <p>Have short-term technical specialists in polymer science and product development train technical staff to fulfill customer requests for specialty and proprietary material applications.</p>	<p>To improve plantation profitability by using traditional strengths and opportunities.</p>	<p>Better prices for latex crepe rubber.</p> <p>More volume sold.</p> <p>Increased plantation profitability.</p>
<b>Rubber Goods Manufacturing</b>		
<p>Establish a custom compounding plant for dry rubber in the new Rubber City, which is being proposed.</p>	<p>To gain economies of scale and allow industries to focus on producing goods.</p> <p>To upgrade raw rubber to technical performance specifications and sell as formulated polymer directly to converters, domestic or international.</p>	<p>Lower cost of compounds.</p> <p>Higher-quality compounds.</p> <p>Proprietary products manufactured to meet manufacturing performance parameters yielding higher margins.</p>
<p>Establish a custom compounding plant for latex in Rubber City.</p>	<p>To gain economies of scale and allow latex converters to focus on production of goods.</p> <p>To develop a Center of Excellence in latex compounding and develop expertise.</p>	<p>Lower production costs and higher profits.</p> <p>Greater range of products.</p>
<p>Initiate collaborative supply chain management, including joint procurement and bonded warehouses, and invite overseas suppliers to set up regional warehouses in Sri Lanka.</p>	<p>To increase bargaining power, lower costs through just-in-time inventory, and minimize supply disruptions.</p>	<p>Lower cost of materials.</p> <p>Fewer supply disruptions.</p> <p>Lower inventory costs.</p>
<p>Promote cleaner production and green technologies in manufacturing units.</p>	<p>To decrease costs and environmental damage while improving public relations and financial incentives.</p>	<p>Better social relationships.</p> <p>Increased profits.</p>
<p>Use short-term technical assistance to study joint contract irradiation plant for surgical glove industry.</p>	<p>To increase value-added surgical glove exports at a lower shared cost.</p>	<p>Increased surgical glove sales volumes and profits.</p>

## IMPROVE SUPPLY SIDE

Field latex varies from clone to clone and from hectare to hectare. These naturally occurring variations are worsened by the fragmentation of the rubber industry's supply side. The result: inconsistent quality, inefficiencies, and unacceptable price variation. The purpose of this initiative is to improve annual raw rubber yields in Sri Lanka from an average of 800 kgs/ha to 1600 kgs/ha. This will increase the supply of high quality, competitively priced raw rubber available to the value-added products sector. This will require devising and overseeing a supply plan, improving stakeholder organization and performance, and devising a national rubber forest policy under the auspices of the Ministry of Plantation Industries and working with the Ministry of Enterprise Development and Industrial Policy, plantation and smallholder growers, the Forest Department, the RRISL, National Land Use Policy administrators, and other stakeholders. The goal is to comply with the RRISL Stand Model and to ensure enough forest cover in rubber tree to meet sustainable production of 150,000 metric tons per annum of raw rubber by 2010 and 300,000 metric tons per annum by 2020.

This initiative also calls for continuing to privatize government-held rubber plantations, institutionalizing smallholder field latex producers, and forming village and regional societies to build a commercial organization. This organization would work with plantation companies and other stakeholders to influence policies and procedures to ensure adequate and appropriate economic incentives and social standards that sustain the significant portion of field latex supplied by the smallholders.

Actions	Objectives	Success Indicators
<b>Establish National Rubber Forest Policy</b>		
Oversee, support, and promote a supply plan, consisting of performance improvements and standards among supply side stakeholders and applying RRISL models for upgraded stands.	To develop high-yield tapping and replanting of stands.	Delivery of 150,000 metric tons of high-quality raw rubber by 2004 and 400,000 metric tons by 2010.
Rationalize and consolidate the supply side using contractual obligations or merger and acquisition.	To improve the financial and operational performance of stakeholders in the sector.	Expansion of planted area
Develop National Rubber Forest Policy that (1) includes rubber tree in its strategy of forest cover; (2) sets protocol and procedures for ensuring a sustainable rubber wood forest that can meet projected annual latex demand; (3) establishes certification of stands to new performance standards; and (4) administers and supervises annual support budgets for smallholders and plantations that participate in the RRISL Stand Model project.	To allocate more hectares to rubber tree forest in nontraditional regions, as determined by the RRISL, the Forest Department, and the Plantation Reform Project, in the Ministry of Plantation Industries.  To certify land under rubber tree forest to RRISL standards.	Additional 40,000 hectares allocated to rubber tree forest in nontraditional regions.  All land under rubber tree forest certified to RRISL standards.  By 2015, 200,000 hectares under rubber tree, 500 trees per hectare and 2,000 kg/hectare/year of latex yield.

Actions	Objectives	Success Indicators
Supply side member of the Rubber Cluster form a joint venture with or agree to work with the Forest Department and other government agencies; the RRISL will have concessions and operate the new estates under rubber.	The Forest Department and the RRISL will select and control the sites and plant the initial stands, monitor the sites for the first several years, and then the cluster members will take responsibility for various estates as agreed upon.	New hectare models under management of new JV concerns
Through the National Latex Marketing Board, set contractual procedures and agreements between field latex producers, including smallholders and plantations, and rubber and rubber products manufacturers; and establish and monitor farm gate pricing policy.	To stabilize market conditions in Sri Lanka.  To categorize raw material according to technical data grading protocol.	Posted prices set and published weekly and raw materials graded by technical standards.
Through the National Land Use Policy, establish environmental management guidelines for rubber wood tree forestation and set standards with RRISL for microclimate, soil structure, configuration, elevation and other agricultural, social, and geographical impacts respecting the choice of land for rubber wood forests.	The government will offer concessions to estates and smallholders and will offer incentives to manage new rubber tree forests in nontraditional areas.	Expansion of area planted
Through the National Land Use Policy and the Ministry of Agriculture, set out best practices for crop mixing and symbiotic relations between and among multiple uses for properties planted in rubber tree.	The ADB and GTZ will continue to implement their programs and the Rubber Cluster will ensure that the long-term objectives of the industry are met while maximizing returns on land use; the Rubber Cluster will work with the Spice Cluster to achieve mutual benefits.	Intercropping practices.
Through the RRISL and the Plantation Reform Project, establish and monitor best practices for clone selection and harvest rotation and work with the administrators of the National Rubber Forest Policy to upgrade rubber wood stands.	To maximize quality and quantity of field latex outputs as well as rubber tree timber outputs.  To upgrade all rubber wood stands as soon as practicable.	Significant changes in age profiles of stands achieved in the short term  Higher outputs of latex and fiber in the near and long term  Each plantation achieves ISO 9000 and ISO 14000 certification.
Field latex producers, smallholders and plantations, develop and implement a two-year plan to (1) ensure that smallholder field latex volumes pass through estates and plantations to the greatest extent possible; and (2) ensure replanting and better yields, quality, and consistency for field latex supplied to Sri Lankan manufacturers.	The government will agree to a plan proposed by the Rubber Cluster that would offer financial support to offset revenue reductions resulting from the stand modifications in the short term.	A proposal to obtain financial assistance through the CDM.

Actions	Objectives	Success Indicators
Plantations and smallholders organize to structure a reliable flow of field latex from each stand and estate to the desired specification of raw material for an application or process.	To stabilize prices and volumes, matched to the needs of the manufacturing sector. To provide consistent volumes of field latex that meet standardized specifications.	Long-term commitments established. Large-batch blending facilities established.
<b>Strengthen Smallholders</b>		
Establish legal entities with which smallholders can become associated (Village Rubber Producers' Societies and Regional Smallholder Societies).	To establish critical mass for legal representation, efficient supply side operations, standardized quality and volumes to meet internal market demands.	Increased number of smallholders active in rubber planting
Regional societies work together and form a federation of smallholder societies.	To strengthen bargaining power and to share experiences and learning opportunities.	Federation of smallholder societies
Federation of smallholder societies affiliates with the Society of Rubber Industry.	Smallholders become integrated with mainstream industry activities, creating cordial relations with the rest of the value chain.	Smallholders integrated in to the cluster
Formulate a supply strategy for smallholder rubber societies to meet long-term supply requirements of the general strategy.	Smallholder societies will provide consistent supply of field latex through regionalized process centers, whether plantations or new process centers, to meet the goals of the strategy.	Increased smallholder rubber production
Certify and authorize the societies and the individual smallholders and hold all accountable to the SRI Code of Performance.	The societies will comply with accepted international standards adopted by the rubber industry and thereby become reliable partners in the strategy.	Improvement of quality of rubber produced by smallholders
Establish a microcredit program with a large donor such as the World Bank to offer capital to upgrade living quarters and private property.	To improve smallholder standards of living. To attract workers to the industry.	Improved labor supply
Establish a minimum living standards code for smallholders who agree to follow the National Forest Policy and participate in the RRISL Stand Model project.	As a result of participating in the National Forest Policy, the societies and all smallholders will be guaranteed adequate subsidies to meet minimum criteria during the replanting cycles of the plan.	Increased smallholder plantations
Establish a purchase and sale agreement model for the societies and the plantations or process centers, with minimum purchase prices, based on a profit-sharing scheme.	The plantations and process centers will be obligated to buy minimum volumes at minimum prices annually, tied directly to sales agreements between these entities and the stakeholders in the manufacturing sector.	Stable rubber prices
Improve standard measurement procedures for purchasing latex. The "metrolac" system should be scientifically correlated with laboratory determinations of dry rubber content to build trust in the purchase process. Smallholder societies need access to their own, possibly mobile, laboratory with dry rubber content testing facilities for random checks.	Widespread experience with metrolac's percentage of error has eroded smallholder confidence. Human errors have also decreased the reliability and validity of results. Laboratory dry rubber content determinations must be used to correct discrepancies.	Increased supplies of field latex to central latex processing plants

## ENHANCE TECHNOLOGICAL CAPABILITIES

Most Sri Lankan firms in the rubber industry do not have the technological capabilities, or related human resource capabilities, required to compete in the global market. The purpose of this initiative is to strengthen innovative activities that depend on technology so the industry can offer new products, improve existing products, speed delivery, and lower costs. One action is to establish an industry research chair in rubber science. The Ministry of Economic Reform, Science and Technology, and the ADB development project personnel are willing to financially support use of university facilities to conduct research, if counterpart private sector funding is available.

Actions	Objectives	Success Indicators
<b>Product Development, Processes, and Quality</b>		
Establish research and development consortium.	To have companies work with the RRISL, ITI, and IDB—and even foreign universities—to solve technical problems (e.g., Stevens Institute of Technology, in New Jersey, United States, is willing to participate in a latex protein allergy project if grant funds are available).	Optimum use of scarce resources  Common problems, such as those related to latex protein allergies, being worked on.
Establish Industry Research chair in Rubber Science.	To expand the consortium concept and cluster participation in research and development.	Chair established.  More cluster participation in research and development.
Establish technical data sheets for materials in the value chain.	To provide meaningful definitions and metrics to gauge quality.	Reliable supply chain and certified quality exports.
Use short-term technical assistance to create specifications, testing certification, and standards.	To establish and meet minimum standards for industry performance and comply with international specifications for materials and applications throughout the value chain.	Compliance with International Rubber Associates codes.  Technical data sheets and material safety data sheets issued for all material.  Customers certify that stakeholders meet ISO quality and consistency standards.
Use short-term technical specialist in technical and research and development centers to help pursue research and development, product development, and prototyping.	To complete needs analysis and feasibility study.  To determine viability and sustainability of a Technical Innovation Center (TIC).  To expand industry product base.	Recommendations and business plan to establish a cost-effective and efficient TIC supported by third-party fees.
Use short-term specialist to upgrade engineering and processing capabilities by training technical and production staff in achieving marketing and product development targets.	To improve resources and production units (machinery, tool and die, and molds).	Production units technically capable of providing new materials and products.

Actions	Objectives	Success Indicators
<b>Human Resources</b>		
<p>Conduct six-month-long courses in latex manufacturing until enough midlevel personnel are certified (approximately three years).</p> <p>The RRISL, the PRI, and the University of Moratuwa, with the assistance of SRI, could plan and conduct the course. Have short-term specialist advise on content of course on technological change in latex industry.</p>	To staff factories with trained, certified personnel.	<p>Latex processing factories staffed by properly trained personnel.</p> <p>Lower costs and improved productivity, quality, consistency, and customer service.</p>
Upgrade PRI educational programs and provide required institutional support based on an industry training and skill need assessment.	To improve teaching and curricula.	Increased knowledge and skills converted to productivity, innovation, and profits.
Upgrade NIPM courses on rubber planting and processing to meet industry needs.	To produce personnel for the plantation sector who can use technology to improve productivity and reduce costs.	Increased rubber plantation productivity and profits.
Create a permanent dialogue between universities and the private sector on human resources. PRI should take the initiative.	To create tailored programs in rubber science and technology.	Industry human resource needs fulfilled.
<p>Implement "Rubber Technology Campus," a technical and managerial personnel development plan.</p> <p>Rationalize programs and activities of various institutions, university departments, and faculties.</p>	To produce high-quality graduates in polymer and materials studies who have business acumen.	Steady supply of top-quality graduates entering the rubber industry prepared to assist short-term specialists in developing a rationalization and integration plan with the assistance of foreign institutes.
Establish a training center for midlevel personnel. (Ministry of Tertiary Education and Training, National Human Resource Development Council, National Apprentice Board, and the Rubber Cluster.)	To have a dedicated training center for the rubber industry.	Skills of rubber factories' supervisors and middle managers continually improving.

## IMPROVE MARKETING

Sri Lankan producers do not have information about or access to profitable markets. The purpose of this initiative is to implement well-informed, industry-wide marketing strategies. It calls for supervising and monitoring the details of all transactions and procedures among stakeholders and participants to validate the assumptions of the strategy. It also calls for immediately launching a pilot project to reposition and market crepe rubber under the guidance of the SRI. This project will test the manufacturing strategy and provide direct experience in marketing approaches. Recommendations for the crepe rubber repositioning program are as follows:

- Consolidate a few influential representatives in the European and North American markets to stabilize the market and obtain premium pricing for crepe rubber.
- Have representatives bring customers into direct contact with suppliers and producers so customer demands can be met efficiently; and protect these representatives as service providers for the buyer and the seller.
- Modify the grading system and develop new product categories according to technical specifications to meet the needs of market applications or manufacturing processes, or both.
- Market the desirable attributes of crepe rubber (i.e., low levels of leachable proteins and non-rubber contaminants) and ensure the rubber has a consistent pale color.
- Ensure that suppliers and producers of new crepe rubber are qualified, certified, and registered as meeting strict guidelines for operations and quality and for complying with sourcing and processing standards and procedures.
- Certify all shipments for quality and quantity through Lloyd's Registry, or Société Générale de Surveillance, and have shipments backed by the Sri Lanka Export Credit Agency.

If these terms and conditions are met, European and North American buyers will be prepared to sign long-term purchase contracts with qualified Sri Lankan suppliers. An independent authority, such as the RRISL or another body, must regulate the industry's compliance with these procedures. The market is expected to be saturated for the foreseeable future but Sri Lanka's relatively small volumes of rubber production could enjoy a competitive advantage through product differentiation.



Actions	Objectives	Success Indicators
<b>Market Information and Planning</b>		
Establish a central industry information center that collects and disseminates industry information.	To enable informed decisions, including correct investment and marketing decisions.	More profits and minimized losses.
Establish a remote site for the UNIDO database and industrial statistics and information project  Establish a formal relationship with UNIDO's Subcontracting and Partnership Exchange program and the Small and Medium Enterprise Developers program.  Hire short-term specialist in networking and business connections to exploit hardware and software supplied by UNIDO and to train a staff member in accessing UNIDO international data and in working with Subcontracting and Partnership Exchange staff.	To provide Sri Lanka exporters of raw rubber with marketing intelligence on end use of materials so they can manufacture application-specific grades or compounds.	A market research organization is established through cooperation with UNIDO.  Other agencies and cluster members support the organization and have access to databases and all other information and services.
Devise comprehensive industry marketing strategy. (Use services of short-term specialist in creating industry and corporate marketing campaigns.)	To create a long-term marketing plan based on comprehensive strategy.	Five-year marketing plan to achieve strategic objectives.
Optimize benefits of foreign trade and bilateral agreements. Have short-term specialist provide training in how to exploit national agreements.	To ensure that the obligations of agreements are balanced by worthwhile and fully exploited benefits.	Responsive assessments of export opportunities, funding opportunities, joint ventures, and analysis of related benefits to international foreign aid and development programs.
Work with the Sri Lanka Export Credit Agency to offer performance guarantees and other global standards to customers for reliable export transactions. The Export Credit Agency is a member of the Berne Union and offers instruments to expedite exports and assurances and guarantees to buyers and investors.	To gain confidence of customers in Sri Lankan export transactions.	
<b>Reposition Latex Crepe</b>		
Establish a pilot project to test the strategy of repositioning crepe as a new polymer.	To confirm the availability of the market segment proposed in the value-added, low-volume, high-margin scheme.	Confirmed orders for the product.
Select participants from the Rubber Cluster to work on the project.	To confirm the capacities and capabilities of stakeholders to meet higher performance standards and to cooperate to reach new goals.	Agreement of members to participate.
Conduct pilot market survey in Ohio and gather market intelligence for Rubber Cluster.	To promote a trade mission of potential customers from Ohio to visit Sri Lanka and key companies.	Actual visits by producers and consumers.

Actions	Objectives	Success Indicators
Fulfill all aspects of the crepe strategy on a limited volume and short-term basis.	To gain confidence in the manufacturing strategy from the standpoint of market validation as well as stakeholder performance.	Satisfactory fulfillment of orders.
Monitor and supervise the performance of all participants in the project according to the SRI's code of ethics (see the first strategic initiative, Sustain Clustering).	To set standards and furnish examples for future performance to meet international market demands.	
Obtain BOI status for crepe "new polymer" manufacturing plants and companies.	To encourage production and marketing of new polymer.	BOI status. Increased income and profits at plantation level.

## ATTRACT INVESTMENT

Rubber product manufacturers in Europe and North America are finding it too costly to diversify and specialize because their production lines are designed for large-volume, long-run production. Some lines are idle and manufacturers are seeking to relocate where costs are lower. This, however, requires that they be willing to invest. At the same time, Sri Lanka's rubber industry needs to attract foreign investment in order to expand and diversify. Many investors, however, are deterred by barriers in Sri Lanka, including inordinate political and economic risk, lack of legal recourse, and restrictions on imports. The purpose of this initiative is to attract foreign investment through joint ventures with companies that are members of the Rubber Cluster. This will require improving the environment for business, creating a business culture in which contractual obligations are met consistently and the highest standards of quality are maintained, promoting the virtues of relocating production to Sri Lanka, and removing import restrictions.

<b>Actions</b>	<b>Objectives</b>	<b>Success indicators</b>
Support the Advocacy Committee in the Rubber Cluster and pursue legal reform to ensure creditors rights and recourse, mitigate political risk, clear title, transparency in government and corporate governance, and elimination of all other barriers to foreign direct investment.	To attract the foreign investment necessary to fund industry expansion, diversification, and upgrading.	Investment inquiries and missions. Actual investments.
Pursue joint ventures and strategic alliances.	To obtain long-term contracts with end-users under favorable conditions; mount new process lines to manufacture specified products and specialty rubbers.	Commitments and linkages with corporate customers offshore. New capacities and production processes in Sri Lanka.
Package and promote the benefits of having finished goods produced in Sri Lanka.	Relocate idle processing units from other countries to Sri Lanka.	Low-volume specialized production equipment dedicated to long-term customers.
Improve operations so foreign banks and lending agencies are willing to finance expansion and capital goods investments and foreign corporations are willing to invest in either debt or equity positions.	To gain confidence in pursuing foreign direct investment and attracting strategic partners by having something to offer.	Investment inquiries and missions. Actual investments.
Improve the investment environment.	To gear improved performance parameters toward turnaround plans.	More attractive investment opportunity for foreign direct investors and strategic partners.
Promote Sri Lanka's low labor and capitalization costs to encourage relocation of production lines.	To interest foreign producers in relocating lines to Sri Lanka for cost-effective, low-volume runs of specialty products.	Inquiries about relocation. Relocations. Specialty products of low-volume demand produced in Sri Lanka.
Remove restrictions on material inputs such as raw rubber so manufacturers can source rubber from any market under competitive trade terms.	To encourage investment—supply restrictions deter investors. In the Sri Lankan market, shortages already occur because of bad weather, smallholder behavior, and other agricultural priorities such as paddy cultivation.	New factories and expanded factories. More investment, turnover, employment, profits, and other indirect benefits.

## USE RUBBER WOOD TO SUPPLEMENT RETURNS

Using rubber wood to increase plantation income is crucial to industry profitability. Unfortunately, the rubber wood-based industry in Sri Lanka is stagnating and some factories that make plywood and furniture have closed down. This initiative aims to maximize revenue per hectare within the life cycle of the rubber tree. This will require harvesting a maximum volume of timber in the shortest possible time, learning effective wood processing methods, investigating and pursuing value-added uses for harvested wood, and then using the wood in value-adding activities. Increasing export performance and value also will require reevaluating some policies, such as floor price formulation.

<b>Actions</b>	<b>Objectives</b>	<b>Success indicators</b>
Study the constraints and opportunities of Sri Lanka's rubber wood-based industries.	To begin countering stagnation in the rubber wood-based industry.	A development plan for the rubber wood industry that can be implemented with government policy support.
RRISL to recommend and propagate timber clones suitable to Sri Lankan conditions. Seek assistance from Rubber Research Institute Malaysia.	To increase harvest of rubber timber.	Increased harvest.
Introduce effective timber treatment methods at the field level. Logistical problems deter such methods.	To have timber treated within 72 hours of felling.	High-quality seasoned timber available for value addition and to make premium products.
Establish a model rubber wood-processing center. Seek financial assistance from ITC, International Tropical Timber Organization, and Common Fund for Commodities.	To demonstrate manufacturing methods for premium products.	Expansion of the rubber wood industry and higher income for farmers.
Evaluate alternative end uses for harvested rubber wood. Smallholders and plantations should consider joint ventures to make value-added rubber wood-based specialty products.	To increase revenue from the tree at the end of the tapping cycle.	Long-term commitments to new forest product enterprises. Maximized selling price per cubic meter of timber.
Re-evaluate the impact of floor price formula on export of rubber timber products. Floor price was imposed to protect local furniture manufacturing but no real progress can be seen.	To change formula when necessary to improve export performance.	More market opportunities and export income.

## WORK WITH PUBLIC SECTOR AS PARTNER IN PROGRESS

Plantation companies are not making profits because of low rubber prices; investment in research and development is considered too risky even though it is essential for capturing new niche markets; most companies have no budgets for human resource or product development. In addition, the Rubber Cluster requires financial and other resources to advance the industry. USAID/TCI currently provides such resources. The private sector, however, must assume managerial and financing responsibilities.

This initiative aims to address these problems by calling for public sector support of the industry, given its potential to earn revenue, provide employment, and protect the environment. Government ministries and institutions should take a holistic attitude toward industry development; and policymakers should participate in strategy formulation to ensure that policies facilitate strategies. It calls for establishing a Rubber Industry Development Center, supported by the SRI and involving the Ministries of Enterprise Development and Industrial Policy; Finance; Plantation Industries; Industries, Trade, and Commerce; Tertiary Education and Training; and possibly donor agencies. It also calls for the government to share resources and provide tax credits and other incentives that will allow the industry to flourish and become self-sustaining.

<b>Actions</b>	<b>Objectives</b>	<b>Success indicators</b>
Establish a Rubber Industry Development Center (RIDC) managed by a board representing relevant ministries and supported by the SRI.	To conduct strategic studies and policy analysis, monitor industry performance, and make recommendations to the government.  To have forum for participatory policy and strategy making that ensures efficient resource allocation and effective monitoring.	Minimal conflicts in policymaking and decision making.  Better understanding of industry problems.  Sri Lankan rubber industry is an effective cluster duly supported by the government.
Accommodate the Central Industry Information Center.	To have a source of information for RIDC.	RIDC directs Central Industry Information Center's information searches.  Mutual benefits and greater efficiency.
Investigate opportunities and facilitate obtaining funds for industry development from donor agencies.  Use short-term technical assistance to prepare proposals.	To obtain funds for development programs and strategic initiatives.	Funds available for development.
Investigate and recommend policy reforms to accelerate industry development.	To have the government accept recommendations with confidence in the collective opinion of stakeholders	Faster policy reform.

<b>Actions</b>	<b>Objectives</b>	<b>Success indicators</b>
Allocate an agreed number of government scholarships to private sector personnel for overseas training.	To use annual foreign scholarships available to the government for private sector training.	Effective use of public sector resources in supporting private sector human resource development.
Seek BOI regime facilities for new polymer producers and research and development consortia.	To support initial development and marketing of crepe as new polymer.	Effective incentive for innovation, product development, and new market capture.
Secure tax credits for expenses incurred for and contributions to cluster and SRI activities.	To enable the private sector to manage and finance cluster activities.	Private sector contributes more to collaborative activities that develop the rubber industry.
Pursue tax credits for human resource development budgets, research and development consortia, and market promotion.	To provide incentive for development of human resources, research and development, and marketing.	Improved human resource base, more innovation, and larger market share.
Secure EDB financial support for market promotion.	To promote Sri Lanka-branded rubber products.	Larger market share for Sri Lanka rubber industry.

## TIMELINE

Action	Months											
	1	2	3	4	5	6	7	8	9	10	11	12
<b>Establish Society of Rubber Industry</b>												
Form and register SRI with charter and mandate		●	—	●								
Appoint executive and board			●	—	●							
Assign committees and chairs				●	—	●						
<b>Enhance primary manufacturing</b>												
Form task force to implement strategic initiatives		●	—	●								
Create committees in SRI			●	—	●							
Begin to roll out initiatives			●	—	●							
SRI monitors and supervises progress and gains required approval				●	—	—	—	—	—	—	—	●
<b>Establish National Rubber Forest Policy</b>												
Form Forest Committee			●	—	●							
Explore options through Department of Forestry and Land Use			●	—	●							
Investigate industry supply needs and prepare plan				●	—	●						
Prepare budget and prospectus for investment required and timing					●	—	●					
Present findings and proposal to government							●	—	●			
<b>Establish regional smallholder societies</b>												
Form task force to work with government					●	—	●					
Develop model for societies with objectives						●	—	●				
Lobby government for concurrence in legal matters, budget								●	—	●		
<b>Institute crepe rubber campaign</b>												
Assign short-term technical assistance to pilot project		●	—	●								
Structure pilot, with financing options and products to be manufactured			●	—	●							
Monitor and report on project				●	—	●						

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# Glossary

<b>ADB</b>	Asian Development Bank
<b>BOI</b>	Board of Investment
<b>CDM</b>	Clean Development Mechanism
<b>EDB</b>	Export Development Board
<b>GTZ</b>	Deutsche Gesellschaft für Technische Zusammenarbeit
<b>IDB</b>	International Development Bank
<b>IFC</b>	International Finance Corporation
<b>INRO</b>	International Natural Rubber Organization
<b>IRSG</b>	International Rubber Study Group
<b>ISO</b>	International Standards Organization
<b>ITC</b>	International Trade Center
<b>ITI</b>	Industrial Technology Institute
<b>ITRO</b>	International Tripartite Rubber Organization
<b>LKR</b>	Sri Lanka Rupee
<b>MT</b>	metric ton
<b>NIPM</b>	National Institute of Plantation Management
<b>OECD</b>	Organization for Economic Cooperation and Development
<b>PRI</b>	Plastics and Rubber Institute
<b>RDD</b>	Rubber Development Department
<b>RIDC</b>	Rubber Industry Development Center
<b>RMA</b>	Rubber Manufacturers Association
<b>RRISL</b>	Rubber Research Institute of Sri Lanka
<b>RSS</b>	ribbed smoked sheets
<b>SAARC</b>	South Asian Association for Regional Cooperation



<b>SLAMERP</b>	Sri Lanka Association of Manufacturers and Exporters of Rubber Products
<b>SLRMEC</b>	Sri Lanka Rubber Manufacturing & Export Company
<b>SRI</b>	The Society of Rubber Industry
<b>TCI</b>	The Competitiveness Initiative
<b>TIC</b>	Technical Innovation Center
<b>TSR</b>	technically specified rubber
<b>TRADA</b>	Timber Research and Development Association
<b>UNIDO</b>	United Nations International Development Organization