930

Natural Rubber : Agromanagement and Crop Processing
Editors : P.J. George and C. Kuruvilla Jacob

Chapter 33

Natural rubber industry in India : An overview

E. Lalithakumari and Jom Jacob

1. INTRODUCTION

The growth attained by the Indian rubber plantation industry since its commercial beginning in 1902 has no parallel in the agricultural scenario of the country. In terms of productivity, growth in area and production and the extent of price realization at the farm gate, the Indian rubber plantation industry is ahead of all the other major natural rubber (NR) producing countries in the world. Owing to the pace of development in the industrial sector, the demand for rubber has been dynamic.

2. PRODUCTION SECTOR

2.1 Area

The growth in area under rubber during the first decade of the 20th century was rather slow, but recorded a hike by 60 times during the beginning of the second decade. By 1947-48, the area under rubber in India recorded 71336 ha and the production 15000 t, the productivity, however, being mere 300 kg per ha per annum. The progress in the expansion of area was more pronounced during the 1950s and 1960s (Table 1). This was partly due to the fact that rubber cultivation was almost confined to Kerala (Table 2) and during these years agrarian reforms in the State were only in the anvil. Since the legislation had proposed to exempt rubber and other plantation crops from the purview of land ceiling, a considerable extent of area under coconut and arecanut was brought under rubber. Widespread prevalence of root wilt disease of coconut in the Central Kerala and a relatively remunerative price for rubber during the period fuelled the process of crop-shift in favour of rubber. However, owing to a prolonged sluggishness in the rubber market, the period 1970 to 1977 suffered a major set back in the process of area expansion. The average annual rate of new planting which was 12000 ha during the period 1956 to 1962 and 6000 ha during 1963 to 1970 came down to 4200 ha. By the late 1970s, the situation, however, changed and there was in fact a boom in new planting activity. This could be ascribed to the upward trend in the

Table 1. Area, production and productivity of NR in India

Year	Area (ha)	Production (t)	Productivity (kg/ha)
1902-03	200	–	–
1910-11	11900	80	–
1925-26	30886	6400	–
1930-31	48000	6500	–
1940-41	47200	16100	–
1947-48	71336	15000	300
1950-51	74915	15800	284
1955-56	86067	23730	353
1960-61	143905	25697	365
1965-66	186713	50530	448
1970-71	217198	92171	653
1975-76	235876	137750	772
1980-81	284166	153100	788
1985-86	382831	200465	898
1990-91	475083	329615	1076
1991-92	488514	366745	1130
1992-93	499374	393490	1191
1993-94	508420	435160	1285
1994-95	515547	471815	1362
1995-96	524075	506910	1422
1996-97	533246	549425	1503
1997-98	544534	583830	1549
1998-99	554000	605045	1563

Sources : Burger *et al.*, 1995; Rubber Board, 1998; 1999a

Table 2. Area under rubber in different states

State/Union Territory	Area (ha)			
	1950-51	(% share)	1997-98	(% share)
Kerala	70365	(93.93)	465282	(85.44)
Tripura	–	–	22582	(4.15)
Tamil Nadu	3025	(4.04)	18470	(3.39)
Karnataka	1415	(1.89)	18475	(3.39)
Assam	–	–	10060	(1.85)
Meghalaya	–	–	3757	(0.69)
Manipur	–	–	1308	(0.24)
Nagaland	–	–	1287	(0.23)
Andaman & Nicobar	110	(0.14)	989	(0.18)
Mizoram	–	–	628	(0.12)
Goa	–	–	924	(0.17)
Orissa	–	–	305	(0.06)
Maharashtra	–	–	149	(0.03)
Others	–	–	318	(0.06)
Total	74915	100.00	544534	100.00

Sources : Rubber Board, 1999 b,c

price of rubber, coupled with the incentives then newly introduced by the Rubber Board in the form of cash subsidy for new planting. The average annual rate of new planting during the first half of the 1980s was around 20000 ha and the total area under rubber increased to nearly 383000 ha by 1985-86. Though there were short-term fluctuations, the pace of area expansion continued and by 1998-99, the total area under the crop reached 554000 ha with 387000 ha under tapping.

2.2 Geographical distribution

Another important feature of the Indian rubber plantation industry is the regional concentration of the area under the crop. The relative share of Kerala and the Kanyakumari district of Tamil Nadu, together constituting the traditional rubber growing region in the country, was 98 per cent in 1950-51 (Rubber Board, 1997). But there was a shift in the geographical composition of area over the years and the relative share of the traditional region came down to 89 per cent in 1997-98 (Table 2). This structural change has stemmed from the Rubber Board's policies and programmes implemented during the VI and VII Five Year Plans for the introduction and promotion of rubber cultivation in non-traditional regions, especially in the north-east. Currently rubber is successfully grown in Karnataka, Tripura, Assam, Meghalaya, Mizoram, Manipur, Nagaland, the Andaman and Nicobar Islands, Goa and Maharashtra. Besides, the crop has recently been introduced in the states of Orissa, Andhra Pradesh, Madhya Pradesh and West Bengal. However, Kerala enjoys a near monopoly position by holding 85 per cent of the area occupied by the crop in the country even today (Rubber Board, 1998).

2.3 Dominance of smallholdings

A salient feature of the rubber plantation industry in the country is the dominance enjoyed by the smallholding sector, as the result of a major structural change. Until 1956-57, the rubber plantation industry in the country was dominated by estates. The estate

sector shared as much as 55 per cent of the area during 1955-56. But owing to subdivisions and fragmentations of large units, the share of smallholding sector gradually increased. Further, on account of a relatively remunerative price of rubber, a large segment of small and marginal land holdings shifted their cropping pattern in favour of rubber. Consequently, during 1957-58, the share of area under the smallholding sector surpassed that of estates. Currently, 86 per cent of the area and production of rubber is contributed by the smallholding sector which is composed of 958000 units (Rubber Board, 1998). Notably, the average size of a rubber smallholding in the country is less than half a ha. A further disaggregation of holdings and estates according to their size is provided in Table 3.

Table 3. Size-classification (1997-98) of holdings and estates

Size-class	No. of units	Area (ha)	Average size (ha)
Holdings			
2 ha and below	936090	394412	0.42
Above 2 ha and up to 4 ha	16576	44104	2.66
Above 4 ha and up to 20 ha	5058	36364	7.19
Total	957724	474880	0.49
Estates			
Above 20 ha and up to 40 ha	111	3165	28.51
Above 40 ha and up to 200 ha	136	11732	86.26
Above 200 ha and up to 400 ha	23	6821	296.57
Above 400 ha and up to 600 ha	22	11396	518.00
Above 600 ha and up to 800 ha	11	7328	666.18
Above 800 ha	19	29212	1537.47
Total	322	69654	216.32
Grand total	958046	544534	0.57

Source : Rubber Board, 1999b

2.4 Employment potential

Rubber provides direct employment to over 0.3 million people in India. The progress of employment generation in this sector since 1961, given in Table 4, shows that over a span of 35 years the employment generation in the rubber plantation sector has registered a threefold increase. Apart from this, other related activities such as processing, transportation and marketing of rubber provide considerable employment avenues. The plantation industry also offers substantial employment opportunities indirectly.

Table 4. Average daily employment in rubber plantations in India

Year	Number	Year	Number
1961	101776	1990	282674
1966	126958	1991	293108
1971	147902	1992	304618
1976	162661	1993	310800
1981	199775	1994	315900
1986	235351	1995	322300
1987	244477	1996	328900
1988	257742	1997 P	335450
1989	271601		

Source : Rubber Board, 1999a P : Provisional

2.5 Production and productivity

As mentioned already, an important characteristic of the Indian rubber plantation industry is the marginal and tiny size of individual units in the dominant smallholding sector. Moreover, the holding size is getting further reduced year after year. Though size-constrained, the level of technology among the smallholding sector is quite appreciable. More than 95 per cent of the total area under the crop is occupied by high yielding varieties of planting materials (Rubber Board, 1997). Apart from introducing high yielding varieties, in adopting short-term productivity enhancement measures also the smallholding sector of the country is not behind the estate sector. Since the lion's share of the production comes from the smallholding sector, their status in adopting frontier technologies is a crucial factor determining the aggregate productivity of NR in the country. The productivity measured in terms of average yield per unit area (ha), which was 1540 kg during 1997, was higher than the corresponding figures of other major producing countries (Table 5). The productivity has gone up to 1563 kg per ha during 1998-99 (Rubber Board 1999c).

Table 5. Area, production and productivity of NR in major producing countries during 1997

Country	Area ('000 ha)	Production ('000 t)	Estimated productivity (kg/ha)
Thailand	1966	2033	1362
Indonesia	3516	1505	655
Malaysia*	1635	971	980
India	545	580	1540
China**	592	444	1089
Sri Lanka	158	106	857

Source : ANRPC, 1998 * Relates to 1996; ** Relates to 1995

Since the increase in productivity was coupled with a sustained growth in the expansion of area under the crop, there was acceleration in the production of rubber. The production (Table 1) during 1998-99 was 605045 t. Though NR is being processed into different forms, in India about 72 per cent is processed as ribbed smoked sheets (RSS). Latex concentrates (11%) and technically specified rubber (10%) are the other two major forms of processed rubber in the country.

3. CONSUMPTION SECTOR

The manufacturing of rubber-based products in India has a history of more than seven decades. The first rubber good manufacturing unit in India was established in 1922. Though the 1920s witnessed the coming up of a few rubber products manufacturing units, most of them could not survive as the industrial atmosphere prevailed during the period was not congenial. The real beginning of the industry however can be said to have taken place during the 1930s when the International Rubber Regulation Agreement (IRRA) came into force, restricting the export of NR from main exporting countries (Indian Tariff Board, 1947). The restriction on export of NR under the IRRA made NR available at a lower price for domestic consumption. In order to take advantage of this favourable situation,

a few overseas investors entered in the rubber goods manufacturing industry and set up their subsidiary units in India. The dynamic growth of the industry since then resulted in a sustained growth in demand for rubber and it went to the extent of outstripping the supply and thereby placing the country into the status of a net importer since 1947, except for a brief period (Rubber Board, 1997).

3.1 Geographical structure

Among the 5595 licenced rubber goods manufacturing units in India, a vast majority are small-scale operators consuming only less than 100 t of NR per year. In 1997-98, about 61 per cent of the total rubber consumed was accounted for by less than one per cent of the manufacturing units. Unlike its production, which is characterized by a high degree of regional concentration, the consumption of NR as well as synthetic rubber (SR) is rather dispersed throughout the country (Table 6). With respect to the quantum of NR consumed during 1997-98, Punjab and Kerala occupied the first and second positions respectively among the states in the country.

Table 6. Consumption (t) of natural (NR) and synthetic (SR) rubber in different states of India

State/Union Territory	1965-66			1975-76			1985-86			1997-98		
	NR	SR	Total	NR	SR	Total	NR	SR	Total	NR	SR	Total
West Bengal	27091	10234	37325	27300	9090	36390	27538	9091	36629	38931	10885	49816
Maharashtra	16018	5886	21904	28400	10668	39068	37351	14966	52317	54832	23415	78247
Tamil Nadu	9889	2768	12657	20900	4140	25040	19097	7340	26437	37129	13910	51039
Punjab	-	-	-	5743	227	5970	27172	3845	31017	78250	9209	87459
Haryana	4555	1901	6456	11110	3109	14219	18780	7025	25805	34351	9244	43595
Kerala	3353	517	3870	9268	1062	10330	28341	5896	34237	68542	27825	96367
Delhi	1076	66	1142	4168	591	4759	10209	1654	11863	17465	2576	20041
Gujarat	882	70	952	2138	447	2585	4962	780	5742	30757	6625	37382
Uttar Pradesh	444	32	476	9672	1363	11035	29458	6889	36347	63233	16145	79378
Karnataka	242	72	314	1920	953	2873	11670	5119	16789	26048	8608	34656
Goa	-	-	-	3483	268	3751	4180	1683	5863	23101	3086	26187
Rajasthan	-	-	-	-	-	-	12259	3623	15882	30929	8503	39432
Andhra Pradesh	-	-	-	-	-	-	4538	901	5439	22664	9709	32373
Others	215	7	222	1590	534	2124	1885	1223	3108	45588	11175	56763
Total	63765	21553	85318	125692	32452	158144	237440	70035	307475	571820	160915	732735

Sources : Rubber Board, 1999a,c

3.2 Tyre sector

An important feature of the Indian rubber goods manufacturing industry from the very beginning is the dominant role of the tyre and tube sector. The tyre and tube sector of automobiles and cycles together accounts for about 66 per cent of the consumption of rubber. Auto tyres and tubes alone share as much as 47 per cent of the total consumption. The pattern of consumption of rubber by different end product groups is given in Table 7.

Table 7. Consumption (t) of natural (NR) and synthetic (SR) rubber in India

Product	1975-76			1985-86			1997-98		
	NR	SR	Total	NR	SR	Total	NR	SR	Total
Automobile tyres and tubes	62115	17101	79216	114031	36007	150038	259272	85554	344826
Cycle tyres and tubes	15979	2756	18735	29915	9220	39135	77687	16485	94172
Camel back	5545	2303	7848	15047	4142	19189	33575	8367	41942
Footwears	12387	4135	16522	24194	9645	33839	59807	29610	89417
Belts and hoses	8943	894	9837	15870	4372	20242	37720	7446	45166
Latex foam	2033	–	2033	11396	–	11396	29729	–	29729
Cables and wires	590	300	890	1004	708	1712	1586	1628	3214
Battery boxes	280	561	841	890	1128	2018	1793	2779	4572
Dipped goods	3478	–	3478	9050	–	9050	26708	–	26708
Others	14342	4402	18744	16043	4813	20856	43943	9046	52989
Total	125692	32452	158144	237440	70035	307475	571820	160915	732735

Source : Rubber Board, 1999a

3.3 Non-tyre sector

The non-tyre sector or the general rubber goods sector is characterized by the existence of a large number of small-scale units. This sector which includes about 85 per cent of the manufacturing units accounts for only 34 per cent of the total NR consumed in the country (Rubber Board, 1996).

4. IMPORTS AND EXPORTS

During the 1950s and 1960s, manufacturers of rubber goods were allowed to import specified quantities of raw rubber in accordance with the licence issued to them. However, this was restricted by the Government of India by way of exercising various barriers in accordance with the policy of domestic price protection given to NR. Since the price of NR has generally been higher in India than that in the international market, from 1956-57, manufacturers had to pay to the Rubber Board the difference between the price in the domestic market and that of imported rubber. Later, in 1957, Government of India introduced import duty on NR in line with the general import policy. The system of direct import by manufacturers was continued up to the close of 1960s. On account of the various drawbacks associated with it, such as untimely import by the manufacturers and the difficulty in the estimation of deficit in advance, it was found inefficient in regulating the domestic supply of rubber. Consequently, at the end of 1968 the State Trading Corporation of India Limited (STC), a public sector undertaking, was brought to the scene to regulate the supply of raw rubber in the domestic market according to the directions from the Government of India from time to time.

The status of the country as a net importer of NR remained unchanged until 1970. But, during the first three years of the 1970s, owing to industrial recession and slackness in demand, there was excess supply of rubber. Coincident with this, the market price of rubber also took a declining phase. As a measure to check the receding movement of the price, rubber import was banned from April 1973. Apart from this measure, a total

of about 26000 t of NR was exported during 1973-74, 1974-75, 1976-77 and 1977-78. Meanwhile, due to adverse climatic conditions and a strike called by the plantation workers, there had been a major set back in the supply of raw rubber during 1977-78 and 1978-79. Since this was coincident with a significant improvement in demand, the situation necessitated to resume import of rubber from 1978-79.

Another phase of industrial slackness and accumulation of surplus stock of rubber was during 1991-92. During this period, though the import of rubber was not banned, the situation was overcome by allowing the export of rubber. Under the Export and Import (Exim) Policy of the Government of India for the period 1992-97, NR was included in the 'negative list' of restricted items of import. It could be imported against a licence issued by the Government or in accordance with a Public Notice issued in this regard. Besides, NR could be imported under Advance Licence which is an incentive for the export of rubber products. This included both Quantity Based Advance Licence (QBAL) and Value Based Advance Licence (VBAL). NR could also be imported against Special Import Licence (SIL). Since April 1992, NR could be exported without restriction. In the Exim policy for the period, April 1997 to March 2002, the provisions for the import under Advance Licence have been modified. A new scheme called Duty Entitlement Pass Book (DEPB) scheme was introduced replacing the VBAL. However, QBAL has been allowed to continue.

The volume of import and its share in the domestic consumption vary from year to year. The volume of import and export of NR since 1960-61 is given in Table 8. After 1995-96, there was no import of NR against Public Notice. However, the imports against Advance Licence and SIL have been continued. The total quantity imported against Advance Licence and SIL during 1997-98 was 32020 t. In 1997-98, the growth in demand of NR in the country declined to 1.8 per cent from the average growth of 8.1 per cent attained

Table 8. Production, consumption, import and export (t) of natural (NR) and synthetic (SR) rubber

Year	Production			Consumption			Import			Export
	NR	SR	Total	NR	SR	Total	NR	SR	Total	NR
1960-61	25697	–	25697	48148	7397	55545	23125	8097	31222	–
1965-66	50530	14741	65271	63765	21553	85318	16357	2735	19092	–
1970-71	92171	29791	121962	87237	33160	120397	2469	5014	7483	–
1975-76	137750	25119	162869	125692	32452	158144	–	6391	'6391	–
1980-81	153100	25293	178393	173630	47050	220680	9250	17492	26742	–
1985-86	200465	34758	235223	237440	70035	307475	41431	39086	80517	–
1990-91	329615	57293	386908	364310	104735	469045	51942	51715	103657	–
1991-92	366745	57726	424471	380150	105650	485800	15070	39210	54280	5834
1992-93	393490	57892	451382	414105	108690	522795	17884	47362	65246	5999
1993-94	435160	49633	484793	450480	113395	563875	19940	64338	84278	186
1994-95	471815	63681	535496	485850	122710	608560	8093	73860	81953	1961
1995-96	506910	68223	575133	525465	134085	659550	51635	71735	123370	1130
1996-97	549425	64563	613988	561765	142810	704575	19770	79640	99410	1598
1997-98	583830	71993	655823	571820	160915	732735	32068	89408	121476	1415
1998-99	605045	67590	672635	591545	156395	747940	26413	80580	106993	1840

Sources : Rubber Board, 1998; 1999a

during 1992-93 to 1996-97 and for the first time since 1970s, NR became a surplus commodity. As the situation remained unchanged in 1998-99, on 20 February 1999, Government of India issued orders banning the import of NR under Advance Licence and instructed rubber goods exporters to purchase rubber from STC against import quota at the international price.

5. PRICE

A remunerative price and a reasonable degree of price stability are the prerequisites for sustained growth in any agricultural commodity and NR is no exception. Due to its export orientation, the price realized for raw rubber in India until the late 1920s was mostly governed by a variety of factors in the global arena. These include the first World War and voluntary restriction on the production of NR in the British plantations in Malaya (Malaysia) and Ceylon (Sri Lanka) under the Stevenson Restriction Scheme during the period from 1922 to 1928 (Haridasan, 1978). This was a period characterized by extreme fluctuation in the price of rubber. Thereafter an important factor which had a considerable impact on the domestic price was the IRRA of 1934. Since the agreement imposed restriction on the export of rubber, there was excess supply of rubber in the domestic market. However, the considerable growth registered by the rubber goods industry during the late 1930s absorbed the surplus and helped to realize a better price for raw rubber in India. The average market price of RSS 1 grade rubber at Kottayam market increased to Rs.55.53 per 100 pounds (equivalent to Rs. 122 for 100 kg) during the year 1940, from Rs. 27.14 (Rs. 60 for 100 kg) during 1935. Table 9 gives the average market price of RSS 1 grade rubber from 1935 to 1942.

Table 9. Average market price of RSS 1 grade rubber in India (1935-1942)

Year	Price in Kottayam market	
	(Rs./100 lb)	(Rs./100 kg)
1935	27.14	59.83
1936	40.60	89.51
1937	48.77	107.52
1938	36.04	79.45
1939	45.77	100.91
1940	55.53	122.42
1941	55.90	123.24
1942 (up to 26.5.42)	61.60	135.80

Source : Sarma, 1947

5.1 Government control

Though NR price is no exception to the cyclic characteristic of agricultural commodity markets, after 1940 it ruled more or less at a remunerative level. Regulatory mechanisms and domestic price protection measures of the government have played a key role in realizing such a situation. In fact, domestic protection for the price of raw rubber in India had its beginning during the second World War period. During the war, due to the conquest of Malaya and South East Asian countries by Japan, India along with Ceylon became the main source of NR supply to the allied nations. On account of this, to increase

the production of rubber, a Rubber Production Board was set up in the country by issuing the Rubber Control and Production Order, 1942 and on 27 May 1942 rubber price was brought under statutory control. The control introduced was subsequently revised on the basis of various notifications of the Government and it continued up to September 1981, with a short break of 15 months from October 1946 to November 1947. During the period from December 1947 to December 1963 and again from October 1967 to November 1968 maximum price had also been enforced apart from minimum price. The minimum and maximum prices were occasionally revised on account of the changes in the cost of cultivation and yield per unit area. The statutory prices prevailed during the period 1942 to 1981 are summarized in Table 10. During the intervening period from 27 May 1942 to 30 September 1946 Government

Table 10. Price of RSS 1 grade rubber notified by the Government of India

Period covered	Price/100 lb at F.O.B. Cochin					
	Maximum			Minimum		
	Rs.	As.	Ps.	Rs.	As.	Ps.
Period from 27-05-1942 to 30-09-1946						
27.05.42 to 18.02.43	71	8	0			
19.02.43 to 09.04.44	77	5	0			
10.04.44 to 31.07.44	77	5	0 + bonus	11	1	9
01.08.44 to 30.09.44	77	5	0			
01.10.44 to 31.12.44	77	5	0 + bonus	11	1	9
01.01.45 to 30.06.45	77	5	0 + bonus	33	5	3
01.07.45 to 31.01.46	100	0	0			
01.02.46 to 29.04.46	77	5	0			
30.04.46 to 30.09.46	87	1	0			
Period from 17-12-1947 to 31-03-1961						
17.12.47 to 07.06.48	72	8	0	71	8	0
08.06.48 to 31.10.48	78	8	0	77	8	0
01.11.48 to 06.03.51	90	8	0	89	8	0
07.03.51 to 20.05.51	122	8	0	121	8	0
21.05.51 to 27.10.52	128	0	0	127	0	0
28.10.52 to 14.02.55	138	0	0	137	0	0
15.02.55 to 23.09.55	150	0	0	149	0	0
24.09.55 to 31.03.61	155	12	0	154	12	0
Period from 01-04-1961 to 11-09-1970+						
01.04.61 to 27.04.62*	329.60			327.40		
28.04.62 to 15.12.63**	325.20			323.00		
16.12.63 to 19.10.67	–			323.00		
20.10.67 to 15.11.68	416.00			415.00		
16.11.68 to 11.09.70	–			415.00		
Period from 12-09-1970 to 15-09-1981++						
12.09.70 to 05.08.77	–			520.00		
06.08.77 to 16.04.79	–			655.00		
17.04.79 to 15.09.81	–			825.00		

Rs. : Rupees As. : Anas Ps. : Paise

\+ Price in Rs./100 kg, f.o.b. Cochin

* Price since 01.04.61 excludes cess

++ Price in Rs./100 kg at nearest district headquarters

** Price since 28.04.62 excludes sales tax and cess

Sources : Sarma, 1947; Rubber Board, 1997

of India has statutorily notified the price of rubber as a fixed price. For the period from 17 December 1947 to 15 December 1963 maximum and minimum prices were notified. Hence during these periods market prices were not quoted.

The average market prices of RSS 1 grade rubber from 1964 to 1976 and that of RSS 4 grade rubber from 1977-78 to 1998-99 are given in Table 11. Apart from enforcing statutory prices, the protection mechanisms operated by the Government involved procurement of surplus rubber from the market and its export. For instance, when there was a prolonged decline in raw rubber price during the 1970s, the accumulated surplus in the market was procured and a quantity of 26424 t of NR was exported.

Table 11. Average price of rubber in Kottayam market, India

Year	Price (Rs./100 kg)	Year	Price (Rs./100 kg)
RSS 1 grade		1980-81	1242
1964	325	1981-82	1460
1965	360	1982-83	1440
1966	591	1983-84	1752
1967	410	1984-85	1655
1968	436	1985-86	1732
1969	545	1986-87	1660
1970	489	1987-88	1791
1971	444	1988-89	1815
1972	465	1989-90	2131
1973	493	1990-91	2129
1974	798	1991-92	2141
1975	827	1992-93	2550
1976	653	1993-94	2569
		1994-95	3638
RSS 4 grade		1995-96	5204
1977-78	642	1996-97	4901
1978-79	965	1997-98	3580
1979-80	1035	1998-99	2994

Source : Rubber Board, 1999a

As the NR market in the country took a receding phase from November 1996, Government of India again intervened in the market in August 1997 by procuring about 9600 t of NR through the STC. As this operation did not yield the desired goal, in May 1998 the Government again authorized the STC to procure an additional quantity of 20000 t from the domestic market and the actual procurement up to the end to March 1999 was 11500 t. The procured quantity has been distributed to domestic manufacturers against the quota for duty free import entitled under Advance Licence.

5.2 Buffer stock scheme

During the period from September 1981 to February 1986 there was no direct control on the price of rubber. However, the mechanism introduced in 1978-79 for the import of rubber and its release in the market during the lean season of production was operated. But, since the price differential between lean and peak production seasons got

widened, it was felt that it would no longer be possible to ensure stability in NR prices by the release of NR during lean production season alone. Hence, the Government of India again intervened in the market by way of introducing a buffer stock scheme in February 1986. The scheme was designed to stabilize the price of NR at a level which is remunerative to growers and fair to the consuming industry. Under the buffer stock scheme, operated by the STC, the price in the market was regulated by procuring stock of NR from domestic market when the price tends to go below a lower band and releasing the accumulated stock when the price shows a tendency to go above an upper band. The lower and upper bands were occasionally revised taking into account the cost of production of the crop (Table 12).

Table 12. Fair price, upper band and lower band (Rs./100 kg) fixed for RSS 4 grade rubber under buffer stock scheme

Effective from	Fair price	Upper band	Lower band
February 1986	1650	1700	1600
May 1987	1700	1750	1650
September 1988	1780	1830	1730
January 1991	2145	2195	2095
January 1993	2345	2395	2295

Source : Burger *et al.*, 1995

In conformity with the reform process in the Indian economy, in February 1994 Government of India phased out the buffer stock scheme and introduced the system of updation and notification of benchmark price on the basis of changes in the cost of production. The benchmark prices per 100 kg notified in February 1994 were Rs. 2490 for RSS 4 and Rs.2440 for RSS 5 and were revised on 28 September 1998 to Rs.3405 for RSS 4 and Rs. 3355 for RSS 5.

5.3 Impact of liberalization

The economic reforms being introduced by the Government of India since 1991 emerged as a major factor influencing the price of rubber during the 1990s. The liberalized policies of the Government in respect of international trading of rubber and rubber products gave the country a relatively free access to the world market. Consequently the ups and downs in the world market began to be reflected in India also. Thus, after 1991, price movement of NR in the domestic market has been in tandem with that in the world market.

In 1996, since the global output of NR exceeded the consumption, considerable pressure was exerted on the prices in the world market. With the fall of the 'Asian Tigers' in 1997, the prices nose-dived and the Indian market also followed suit.

5.4 Farm gate price

The most striking feature of India's rubber market is that growers are able to realize more than 92 per cent of the terminal market price for their produce at the farm gate (Sreekumar *et al.*, 1990). This is a unique situation quite exclusive to the Indian rubber market. Small rubber growers in most other countries are not known to realize more than 70 to 85 per cent of the terminal market price at their farm gate.

6. SYNTHETIC RUBBER

The year 1963 marks the beginning of the production of synthetic rubber (SR) in India. It is currently produced by six firms, the major two being Synthetics and Chemicals Ltd. and Indian Petrochemicals Corporation Ltd. The Synthetics and Chemicals Ltd., which started production in 1963 has presently a capacity to produce 70000 t of styrene butadiene rubber (SBR). The Indian Petrochemicals Corporation Ltd. went on stream in 1978 and currently has a capacity to produce 50000 t of polybutadiene rubber (BR). The others produce limited quantities of different varieties of SR. The yearwise trend in the production of SR in the country is given in Table 8. The quantity of 67590 t of SR produced in India during 1998-99 was composed of 20730 t of SBR (including latex form), 36760 t of BR, 4514 t of ethylene propylene diene methylene (EPDM), 4672 t of nitrile (including latex form) 384 t of vinyl pyridine (VP) latex and 530 t of various other grades.

India's elastomer demands is characterized by a marked preference to NR in sharp contrast to the global pattern. The country consumes NR and SR in the ratio 79:21 while the pattern the world over is 40:60. In India, since the price of SR is considerably higher than that of NR, so far there has been no competition between the two types of elastomers. In fact, they are complementary to each other. Though after 1996, the prices of various grades of SR were subjected to sharp downward revisions, still they continued to remain at a considerably higher level over NR prices. The trend in the consumption of SR since the year 1960-61 is provided in Table 8. India's consumption of SR during the year 1998-99 was 156395 t.

Apart from the different varieties of SR produced domestically, the Indian rubber goods manufacturing industry requires a few other varieties of special purpose SR, such as butyl rubber and polychloroprene rubber, the requirement of which is met by imports. The volume of import of SR from 1960-61 is summarized in Table 8. The quantity imported during 1998-99 was 80580 t.

7. RECLAIMED RUBBER

Besides natural and synthetic rubber, India is producing, as well as consuming, reclaimed rubber (RR). In fact, India has become the largest producer and consumer of RR in the world. Currently there are 38 units engaged in the manufacture of RR. During 1998-99, the country produced and consumed about 64000 t of RR. The proportion of the use of NR, SR and RR by the Indian rubber goods manufacturing industry during the year was 73:19:8.

8. FOREIGN TRADE

To a large extent, the direction of movement of India's foreign trade in rubber products was governed by Exim policies followed by the Government of India from time to time. One striking feature of the country's foreign trade in rubber products is the trade balance enjoyed during the past three decades. The considerable increase realized in India's export of rubber products during the 1990s has resulted from the outward-oriented policies followed by the Government since 1991.

A major feature of the export basket since the very beginning is the dominant role played by automobile tyres and retreads. Export value realized by India by the export of different rubber products since 1965-66 is given in Table 13. Among the estimated earning of Rs. 13190 million during 1998-99, around 62 per cent was from the single product group. A substantial increase in the export of gloves and other rubber-based surgical articles was another discernible trend of the 1990s.

In contrast to the exports, the composition of rubber products imported into the country does not exhibit any product concentration. The value of various rubber products imported into the country during 1996-97 was Rs.3343 million. The share of automobile tyres and tubes was only 20 per cent.

Table 13. Value of rubber products exported (in million Rs.) from India

Item	1965-66	1970-71	1975-76	1980-81	1985-86	1990-91	1995-96	1996-97	1997-98	1998-99P
Automobile tyres and tubes including tyre retreading materials	27.48	55.38	85.14	131.52	470.00	1826.00	7176.80	7944.20	9043.90	8240.00
Beltings	0.12	1.64	8.87	42.80	395.00	241.00	369.40	578.80	539.80	530.00
Cycle tyres and tubes	2.31	4.36	9.89	25.88	10.00	120.00	807.40	711.80	740.80	880.00
Hoses	0.79	1.88	2.74	8.23	65.00	77.00	71.20	88.50	90.70	110.00
Hygienic medical and surgical articles, including gloves	0.21	6.18	2.40	20.94	7.07	139.00	1288.30	1477.20	1338.80	1450.00
Rubber footwear	0.88	1.59	1.36	3.66	5.00	7.50	84.30	90.90	103.20	88.00
Rubber-soled footwear with canvas upper	13.98	21.58	21.74	41.77	45.00	112.00	134.20	175.60	312.50	362.00
Rubber coats and aprons for textile industry	1.57	1.46	0.85	3.94	7.10	11.00	52.30	59.80	83.40	93.00
Rubber sheetings	0.07	0.47	0.80	0.63	5.00	7.20	147.70	172.90	227.60	250.00
Others	2.58	2.42	11.54	34.23	60.83	89.80	821.30	951.70	929.30	1187.00
Total	49.99	96.96	145.33	313.60	1070.00	2630.50	10952.90	12251.40	13410.00	13190.00

Source : CAPEXIL, 1999 P : Provisional

9. WORLD SCENARIO

The production of NR in the world during the year 1998 was 6.67 million t. By sharing 33 per cent of the global output, Thailand was the largest producer (IRSG, 1999), followed by Indonesia (26%), Malaysia (13%), India (9%) and China (7%). Until 1990, Malaysia was the largest producer. Thereafter, the country registered a sharp decline in production whereas in Thailand the trend was just the opposite.

Though in terms of the production of NR India's position is only the fourth, the country has attained the first position in productivity among the major rubber producing countries. The area, production and productivity of NR in the major producing countries are given in Table 5. As in the case of India, in other major producing countries also NR has become a smallholders' crop. In Thailand, the smallholding sector holds 96 per cent of the area under rubber. The corresponding figure of Indonesia is 83 per cent and that of Malaysia is 86 per cent (Rubber Board, 1997). One distinct feature of India and

China among the leading NR producers is that these two countries absorb the entire domestic production of NR for their internal consumption.

The world production and consumption of NR from 1900 to 1998 is given in Table 14. The total consumption of NR in the world during the year 1998 was 6.61 million t. USA, China, Japan and India are the first four major consumers of NR in the world. In the combined use of NR and SR, India currently occupies the fifth position after USA, China, Japan and Germany. It is seen that the composition of NR and SR in the global pattern of consumption is gradually tilting towards NR (Table 15). During the year 1998, the share of NR was 40 per cent against 32 per cent during 1975. But, in the case of China, the trend was sharply in favour of SR. By the year 1998, the relative share of NR in that country came down drastically from more than 80 per cent in 1975 to 45.6 per cent. Another unique characteristic of India among the leading consuming countries is its relatively low level of the per capita consumption of rubber (Table 16). The per capita consumption in India during the year 1997 was only 0.70 kg.

Table 14. World production and consumption of natural rubber (in thousand t)

Year	Production	Consumption	Year	Production	Consumption
1900	45	53	1960	2035	2135
1905	55	70	1965	2353	2445
1910	98	103	1970	3103	2990
1915	173	163	1975	3315	3368
1920	348	303	1980	3850	3760
1925	535	563	1985	4400	4430
1930	838	723	1990	5140	5200
1935	843	955	1995	6050	5990
1940	1440	1128	1996	6370	6150
1945	255	267	1997	6380	6510
1950	1890	1750	1998 P	6670	6610
1955	1948	1920			

Source : IRSG, 1999 P : Provisional

Table 15. Percentage of consumption of natural rubber in main consuming countries

Country	1975	1980	1985	1990	1995	1996	1997	1998
USA	25.3	22.8	28.0	30.7	31.6	31.4	31.0	33.0
UK	39.1	34.6	38.5	37.9	34.3	32.6	33.7	43.2
France	35.9	35.5	33.3	33.8	29.0	29.5	31.6	33.1
Germany	35.4	30.0	33.0	29.0	33.2	28.8	29.7	31.9
Italy	34.9	31.4	31.4	29.5	25.8	25.6	28.7	34.5
China	80.4	68.7	62.9	62.4	50.6	48.2	47.8	45.6
Brazil	25.1	24.9	32.3	30.3	35.7	34.8	34.0	34.8
India	80.1	78.8	76.9	78.7	79.5	79.8	78.3	78.9
Japan	32.8	32.5	36.3	37.4	38.9	38.9	38.0	38.8
Republic of Korea	37.9	54.4	51.6	47.8	44.7	40.5	42.7	51.0
World	32.4	30.3	33.0	34.9	39.3	39.0	39.6	40.2

Source : IRSG, 1999

Table 16. Estimated per capita consumption (kg) of natural and synthetic rubber

Country	1970	1975	1980	1985	1990	1995	1996	1997
USA	12.28	12.18	11.26	11.43	10.52	12.07	11.96	12.61
Canada	8.77	11.04	11.65	10.65	10.12	10.77	12.05	12.88
Germany	9.21	9.01	9.77	10.05	9.07	7.69	8.19	8.72
France	8.25	8.22	9.84	8.48	9.34	10.32	10.59	10.39
UK	8.53	7.80	6.77	5.78	6.24	6.06	5.82	6.12
Japan	7.47	7.80	11.23	12.31	14.65	14.19	14.62	14.93
Australia	7.51	7.20	6.87	5.19	5.39	6.37	5.80	5.50
Italy	5.78	6.10	7.44	7.05	7.63	6.93	6.81	7.08
Brazil	1.32	2.24	2.68	2.52	2.76	2.98	2.82	2.94
China	0.35	0.38	0.50	0.62	0.83	1.25	1.36	1.56
India	0.22	0.27	0.32	0.40	0.55	0.70	0.76	0.70
World	2.35	2.57	2.82	2.77	2.82	2.61	2.73	2.86

Sources : Rubber Board, 1999a,c

10. CONCLUSION

In terms of its size and different structural parameters, Indian rubber industry passed through many vicissitudes and attained a fairly significant position in the global arena. Currently India has attained the position of the fourth largest producer in the world by sharing nine per cent of the global output of NR against a share of only 4.1 per cent during 1975. In the case of consumption of NR, the country's position was significantly improved from 3.8 per cent of the global demand in 1975 to 8.7 per cent in 1998. Two important factors which influenced the dynamic growth of the rubber plantation sector in the country were the captive domestic market and the relatively remunerative price enjoyed by the crop during the period. In this context, the role of the Government by way of exercising import barriers and domestic price protection mechanisms is remarkable. Various development schemes operated by the Rubber Board and the research contributions of the Rubber Research Institute of India had a significant promotional role in transforming the industry.

REFERENCES

ANRPC (1998). Report of the Tenth Meeting of the ANRPC Committee on NR Statistics, 1998, pp. 16-17, 24, 28, 34.

Burger, K., Haridasan, V., Smit, H.P., Unni, R.G. and Zant,W. (1995). The Indian rubber economy : History, analysis and policy perspectives, Manohar Publishers and Distributors, New Delhi, p. 176, 215.

CAPEXIL (1999). Statement showing panelwise and itemwise export of rubber manufactured products. Chemicals and Allied Products Export Promotion Council, Calcutta (Communicated).

Haridasan, V. (1978). Rubber plantation industry in India : First World War to independence. *Rubber Board Bulletin*, 15(3&4) : 63-66.

Indian Tariff Board (1947). Report of the Indian Tariff Board on the Protection of the Rubber Manufacturing Industry.

IRSG (1999). *Rubber Statistical Bulletin* (International Rubber Study Group, London), 53(5): 4, 7, 9, 10, 44.

Rubber Board (1996). Directory of rubber goods manufacturers in India : 1995-1996. Ed. 4., Kottayam, India.

Rubber Board (1997). *Indian Rubber Statistics*, 22: 2, 4, 9, 11, 30-31, 78.

Rubber Board (1998). *Rubber Statistical News*, 56(12) : 1-4.

Rubber Board (1999a). Compiled from various issues of Indian Rubber Statistics, Kottayam.

Rubber Board (1999b). Rubber and its cultivation, Kottayam, p. 78.

Rubber Board (1999c). *Rubber Statistical News*, 57(3):4; 57(7):4; 57(8):4; 57(9):4; 57(12):1.

Sarma, P.V.S. (1947). A short note on rubber plantation industry in India. Indian Rubber Board, Kottayam, 16 p.

Sreekumar, B., Haridasan, V. and Rajasekharan, P. (1990). Farm gate price of natural rubber. *Indian Journal of Natural Rubber Research*, 3(2) : 111-115.