CHALLENGES BEFORE THE NR INDUSTRY – An Indian Approach

by

K.J. MATHEW, IAS
Chairman, Rubber Board

The global economy has been undergoing unprecedented changes in the backdrop of the liberalisation of economic policies and the resultant globalisation of economic activities cutting across geographical and idealogical boundaries since the 1990's. The growing process of market integration in the context of the globalisation of economic activities is very often justified on the logical premise that the economic reforms invariably leads to a more efficient use of world resources by reforming a highly distorted world trade and reorienting the organisation of production. In the emerging scenario, it is presumed the farms and firms would be moulded for globalised production and constantly animated by the urge to excel in a borderless world unbounded by the constraints of a mere national frame of economic decisions. An obvious outcome of the ongoing process of globalisation has been a steady increase in cross-border mergers and acquisitions challenging the prevailing pattern of economic trends, form and content of economic policies across nations. These trends are broad indicators of the basic tenets of the emerging structure of global economy leading to concentration of economic power in the new millennium.

Another important development in the 1990s, seriously affecting the world economy in general and Asian region in particular, has been the Asian financial crisis since July, 1997. Although the root causes, economic consequences and remedial measures of the crisis have been vigorously debated without a consensus, its cascading effects on global trade and production has been widely in the academic and policy circles. The crisis has severely damaged the prospects of the so called "high growth centres" of Asia-pasific region in particular, hampering the performance of the real sector and various sub-sectors. The three major rubber (NR) producing countries, viz; Thailand, Indonesia and Malaysia, are among the worst-hit victims of the crisis with serious implications on the prospects of the world natural rubber (NR) economy in the new millennium. The combined share of these three countries in total world production and exports is around 72 per cent respectively. Therefore, the issues of future challenges and policy perspectives on India NR economy are conceived in the background of the cumulative effect of globalisation and the Asian crisis.

WORLD NR SECTOR

The colonial heritage and configurations of world NR economy during the colonial period are a well documented area of research. But the consequences of the colonial control over world NR production and marketing and the underlying factors behind its subsequent changes in ownership, size, technology of production, processing, labour use and market orientation are relatively under reported. The most noticeable trend during the post-colonial phase has been a growing uncertainty arising from the secular decline in the real price index of NR and other primary commodities exported from developing countries. In the specific case of NR, the major challenge persisting since the 1960's has been vulnerablity of its prices and absence of any meaningful mechanism to stabilise the price at remunerative level compared to the colonial phase from the angle of the producing countries. Despite the International Natural Rubber Agreement (INRA) since the early

1980's the buffer stock operations are found to be ineffective in absorbing the increase in cost of production. The aggravated apprehensions of the NR producing countries about the efficacy of the INRA in stabilising prices at remunerative levels are evident from the recent announcements of withdrawal by Malaysia, Thailand and Sri Lanka from the International Natural Rubber Organisation (INRO). To a large extent, the contentions of the NR producing countries are corroborated by a negative trend growth rate (–1.48 per cent) of DMIP even in nominal terms during the 19 year period between 1980-1998 compared to a positive trend growth rate (1.57 per cent) of the export price compared to the export prices of SBR.

It is the backdrop of the fragile framework of INRA that challenges confronting world NR economy in the context of globalisation and Asian financial crisis have to be assessed. Logically, the major impact of the structural adjustments consequent to the challenges on the NR economy arising from the new economic order is expected to take place in the production sector. Since 1980's the NR production sector has been seriously affected by steady increases in the cost of material inputs compared to productivity improvements and the resultant erosion in profit margins. Though the gravity of the growing uncertainty varied across major NR producing countries, the response has been less dispersed as evident from the inter and intra-sectoral adjustments to capitalise available opportunities for squeezing unit cost of production and exploring potential outlets for increasing the net income per unit area. Inspite of isolated gains, the experience during the last two decades indicate that there are well defined limits for the structural adjustments to overcome the major issues of uncertain prices and steady increases in the cost of production.

What are major factors contributing to this crisis?

The major contributing factors of the crisis are structurally rooted and have become more explicit since the 1980's. The major structural characteristics of the production sector are geographical concentration of production in Asia (93 per cent), sectoral concentration of production in the dominant smallholdings sector (73 per cent) and average export orientation of the raw material (60 per cent). These inherent structural characteristics were exposed to the growing uncertainty arising from globalisation of economic activities and economic consequences of Asian

TABLE 1 : Annual Growth Rates of Key Economic Indicators

Economic indicators	1995-96	1996-97	1997-98	1998-99
Gross Domestic Product (at 1993-94 prices)	7.6	7.8 (P)	5.0 (Q)	5.8 (A)
Agricultural production	–2.7	9.1	–6.0	3.9 (P)
Industrial production	12.8	5.6	6.6	3.5 (#)
Imports (at current prices)	36.4	13.2	9.0	23.2 (#)
Exports (at current prices)	28.6	11.7	6.3	11.7 (#)
Foreign currency assets	–11.5	37.5	27.5	13.7 (B)
Exchange rate (Rs/US $)	–6.1	–5.8	–4.5	–11.5 (C)

Q – Quick estimates, A – Advance estimates
P – Provisional B – At the end of January 1999
– April - December 1998 C – April - January 1998-99

TABLE 2 : Classification of area under rubber (1997-98)

Size class (ha.)	No. of units	% share	area (ha.)	% share	average size (ha.)
Upto 2	935456	97.64	394412	72.13	0.42
> 2 - 4	17210	1.80	44104	8.10	2.56
> 4 - 20	5058	0.53	36364	6.68	7.19
Holdings total	957724	99.97	474880	87.21	0.50
Estates total (Above 20 ha.)	322	0.03	69654	12.79	216.32
Grand total	958046	100.00	544534	100.00	0.57

Source : Rubber Board, Statistics and Planning Department, Kottayam.

financial crisis on the NR producing countries in the 1990s. The emerging trends In the world NR economy indicate the limitations of the producing countries in absorbing the shocks and responding to the challenges due to : (1) a high degree of dependence on the export markets and the resultant vulnerability of prices, (2) negligible value addition in the producing countries in contrast to increasing cross-border mergers and acquisitions in the dominant tyre sector and other consuming industries leading to the possibility of an oligopsony market structure and (3) inherent constraints of the smallholdings sector in adapting and adjusting to the changes. Inspite of the optimistic projections on the NR price and its frequent revisions, the future scenario is likely to be dictated by comparative competitiveness in cost of production, quality and value addition.

INDIAN ECONOMY : Key Economic Indicators

An overview of the Indian economy in the aftermath of the Asian crisis is relevant as the basic characteristics of the Indian NR sector is a very high degree of the inward market orientation compared to the 3 major NR producing countries. Despite the fact that Indian economy has not been affected to the extent as the East Asian economies, there have been a significant economic impact on the economy mainly due to the industrial recession. Table 1 summarises the performance of the Indian economy during the period 1995-96 to 1998-99.

Among the seven economic indicators given in Table 1 the trends in the annual growth of industrial agricultural production and exchange rate assume relatively more importance in any serious discussion on the performance of the Indian NR sector. The trends in the industrial production are of paramount importance to the NR sector since the fortunes of the sector are primarily dependant on the absorption of rubber by the Indian rubber products manufacturing industry which is intrinsically related to the performance of the larger industrial segment of the country. As evident from Table 1 the deceleratiion of industrial growth in the country during the last three years has serious implications on the NR sector. Therefore, the analysis of the prospects and policy imperatives of Indian NR sector has to be viewed in the context of the deceleration of industrial growth

TABLE 3 : Productivity of estates and small holdings (kg/ha)

Year	Estates	Holdings	Total
1990-91	1217	1048	1076
1991-92	1255	1107	1130
1992-93	1296	1171	1191
1993-94	1331	1277	1285
1994-95	1343	1366	1362
1995-96	1434	1420	1422
1996-97	1535	1498	1503
1997-98	1571	1546	1549

Source : Rubber Board, Statistics and Planning Department, Kottayam.

TABLE 4 : Trends in area, yield and production of NR

Year	Area ('000 ha)	Yield (kg/ha)	Production (tonnes)	Annual growth in production (%)
1950-51	75	284	15,830	
1960-61	144	365	25,697	
1970-71	217	653	92,171	
1980-81	284	788	153,100	
1990-91	475	1076	329,615	
1991-92	489	1130	366,745	11.3
1992-93	499	1191	393,490	7.3
1993-94	508	1285	435,160	10.6
1994-95	516	1362	471,815	8.4
1995-96	524	1422	506,910	7.4
1996-97	533	1503	549,425	8.4
1997-98	545	1549	583,830	6.3
1998-99 (E)	557	1563	605,000	3.6

Source : Rubber Board, Statistics and Planning Department, Kottayam.

and decline in the exchange rate value of the Indian currency.

THE RUBBER PRODUCTION SECTOR

Indian rubber production sector consists of three segments : the NR, Synthetic Rubber (SR) and Reclaimed Rubber (RR). As in the case of the three major NR producing countries, NR producing countries, NR producing sector has been the dominant segement from the very beginning in terms of its relative share (81 per cent) In total rubber production in the country. However, the unique feature of the Indian rubber production sector is its internal market orientation arising from a captive domestic market compared to the export orientation of the three major NR producing countries. In 1996-97, the relative share of exports of rubber in the total production was less than one per cent which is in sharp contrast to the respective shares of Thailand (91 per cent), Indonesia (89 per cent) and Malaysia (60 per cent). Among the three constituent segments of the Indian rubber production sector the NR production segment demands further elaboration in terms of the economic and social dimensions involved in the context of the Asian crisis.

The two cardinal features of Indian NR production sector are : a relatively high degree of regional and structural concentration. Regional concentration of NR production in the country is characterised by a near monopoly position of the state of Kerala in terms of control over the area under the crop 85 per cent and production (93 per cent). The structural concentration is characterised by the dominance of the smallholdings sector in area under the crop (87 per cent) and production (87 per cent). In the context of the Asian economic and financial crisis, the structural dimension of the Indian NR production sector assumes relatively more importance in terms of vulnerability as about 0.96 million units of the smallholdings with an average size of about 0.50 ha. accounts for a major portion of the area under the crop and production. **Table 2.**

An important milestone in the history of the rubber plantation industry in the country has been the active intervention of the Government through the Rubber Board since Independence at the levels of cultivation, production, processing and marketing of NR. The process has been effectively supplemented by a very high degree adoption of modern technology by the smallholdings comparable to the estate sector and a growing internal market for the crop (George et al, 1988). In 1996-97, about 96 per cent of the total area under the smallholdings was cultivated with HYV planting materials and the smallholders are highly receptive to the recommended package of practices propagated by the Rubber Board. **Table - 3.**

The average productivity of 1563 kg/ha in 1998-99 in the country is

TABLE 5 :
Production, Consumption, Import and Export of NR (Tonnes)

Year	Production	Consumption	Import	Export
1990-91	329615 (10.9)	364310 (6.6)	49013	—
1991-92	366745 (11.3)	380150 (4.3)	15070	5834
1992-93	393490 (7.3)	414105 (8.9)	17884	5999
1993-94	435160 (10.6)	450480 (8.7)	19940	186
1994-95	471815 (8.4)	485850 (8.0)	8093	1961
1995-96	506910 (7.4)	525465 (8.0)	51635	1130
1996-97	549425 (8.4)	561765 (7.0)	19770	1598
1997-98	583830 (6.3)	571820 (1.8)	29389	1415
1998-99 *	605000 (3.6)	592000 (3.5)	26000	1669

* Estimate
Note : Figures in brackets are annual growth rates.
Source : Rubber Board, Statistics and Planning Department, Kottayam.

TILT - 25 EC

(PROPICONAZOLE 25% EC)

BLISTER BLASTER

RECOMMENDATION OF **TILT** FOR BLISTER BLIGHT DISEASE

Tea under plucking: TILT 25 EC (Propiconazole) schedule

Month	Fungicide (Dosage / Ha)		NW A (ml)✧	Spray Interval (Days)	No. of Rounds
	Tilt (ml)♈	C O C (g)*			
June	125	210	35	10	3
July	125	210	35	10	3
August	125	210	35	7	4
September	125	210	35	7/10	3
October	125	210	35	7.10	3
November	125	210	35	7/10	3
Total No. of **TILT** Rounds					**19**

Tea recovering from pruning: TILT 25 EC (Propiconazole) schedule

Month	Fungicide (Dosage / Ha)		NW A (ml)✧	Spray Interval (Days)
	Tilt (ml)♈	C O C (g)*		
April Pruned Tea	100 -125	210	35	5
August Pruned Tea	100 -125	210	35	5

* COC – Copper Oxychloride

✧ NWA = Non-ionic wetting agent at 0.05% for 70 litres of spray volume / ha with mist blowers

♈ Spray interval of "TILT" can be altered with in the range mentioned depending on the disease pressure and climatic factors to reduce the cost on fungicide rounds.

For further details contact

NOVARTIS INDIA LIMITED
8/23, 24, Race Course Road, Coimbatore – 641 018.
Phone: 211514 / 213516 Fax: 91 - 422 – 217432

Distributor
Ooppoottil Agricultural Services
P.B.No 219, Kottayam 686 001.
Tel (O) 0481 562376 / 560202 Fax 560202

the highest among the major NR producing countries. The cumulative effect of R & D programmes and well co-ordinated extension schemes initiated by the Rubber Board, a positive price policy followed by the Government since independence and an enlightened outlook of the planters have enabled the country to achieve impressive results in the NR production sector.

The country has achieved excellent progress in area, production and productivity of rubber. Currently, India is the fourth largest producer, next to Thailand, Indonesia and Malaysia, sharing about nine per cent of world's NR output. **Table - 4** depicts the trends in area, production and the yield per ha. of NR in India.

The other two segments in the Indian rubber production sector, viz; SR and RR, occupy relatively insignificant positions in terms of the relative shares in total elastomer production and consumption. To a large extent, the three types of elastomers have been complementary to each other compared to the competition between SR and NR in the international market. Though during 1996 and 1997 prices of various grades of SR were subjected to sharp downward revisions, the prices remained considerably higher than NR prices. Despite the production of five different types SR in the country, the requirements of butyl rubber and polychloroprene rubber for the domestic manufacturing industry are met by imports. In 1997, the total imported quantity of 78103 tonnes of SR was higher than the domestic production of 71993 tonnes. Among the nine SR processing units in the country eight are in the private corporate sector and the remaining one is in the public sector.

There are 38 units engaged in the processing of RR in India. RR is used in the manufacturing of rubber products, usually in blends with either NR or SR. During 1997 the total production and consumption of RR in the country were 69,840 tonnes and 70,085 tonnes respectively. The proportion of total NR, SR and RR consumption by the rubber products manufacturing sector during the year was 71 : 20 : 9. Conversely, the international elastomer consumption pattern is characterised by a dominant share of SR (60 per cent) compared to NR (40 per cent).

TABLE 6 : Comparison of World and Indian price of NR

Year	World Price RSS 3 (Rs./100 kg.)	Indian Price RSS 4 (Rs./100 kg.)	Ratio of Indian to World Price
1990	1425	2147	1.51
1991	1796	2128	1.18
1992	2457	2463	1.00
1993	2538	2546	1.00
1994	3455	3107	0.90
1995	5030	5059	1.01
1996	4764	5122	1.07
1997	3614	4091	1.13
1998	2844	3012	1.05

Source : Rubber Board, Statistics and Planning Department, Kottayam.

TABLE 7 : Projections on area, tapped area and productivity of rubber in India

Year	Area ('000 ha.)	Tapped area ('000 ha.)	Productivity (kg./ha.)
1999-00	569	395	1588
2000-01	581	403	1615
2001-02	593	411	1640
2002-03	603	418	1661
2003-04	613	427	1679
2004-05	623	433	1697
2005-06	633	436	1715
2010-11	683	470	1790

Source : Rubber Board, Statistics and Planning Department, Kottayam.

Table - 5 shows the recent trends in the domestic rubber production, consumption, import and export of NR.

Table - 5 is illustrative of the recent trends exhibiting a deceleration in rubber consumption. A significant decline in growth of the consumption appears to be mainly rooted in the recent industrial recession in the country and partly due to the structural characteristics of this industrial sub-sector. The evolution of Indian rubber products manufacturing sector as a supplementary segment catering to the requirements of the large industrial base in the country rather than as a relatively independent export oriented sector as in the case of Malaysia is the most important structural characteristic of the industry. This strong linkage between the Indian industrial sector and the rubber products sub-sector appears to be the major factor behind the steep decline in the rate of growth in NR consumption.

TRENDS IN PRICES

The declining trends in world market prices of NR assume importance due to a very high degree of export-orientation of NR production in Thailand, Indonesia and Malaysia and its indirect effect on Indian NR process since early 1990's. Despite a higher price of NR in Indian and world markets compared to the 1992 level, there has been a substantial decline in both the prices since 1996. To a certain extent, the comparability of the prices is circumscribed by the exchange rate variations in the relevant local currencies vis-a-vis the US dollar. However, an important trend having serious implications on the Indian NR production sector has been a more or less synchronised movement of the prices in both the markets since 1992. **Table - 6** illustrates the point.

A plausible explanation for the observed trend since 1992 is the policy changes on the procedural formalities regarding the channel of imports. Since 1991-92 the canalised imports through the State Trading Corporation has not only been dropped, but also more than 97 per cent of the total quantity of imported NR till 1997-98 (1,61,781 tonnes) was exempted from import duty under the Export Incentive Scheme and Public Notification Scheme. Inspite of the serious limitations in quantifying the net impact of the policy change, it is increasingly becoming evident that with the liberalisation of the procedural formalities, the Indian manufacturers-cum-exporters of rubber products will be inclined to import NR if the domestic prices are higher than the C.I.F. value of the imported rubber. Therefore, the repercussions of the declining world NR prices and the liberalised export-import policies appear to have serious impact on the dominant NR production sector in India as there are limitations in pursuing a protected price policy regime.

PROJECTIONS OF NR PRODUCTION AND CONSUMPTION IN INDIA

In the backdrop of the emerging trends in the Indian NR sector, proejctions have been done on the annual planted area, tapped area, productivity, production and consumption of NR till 2010-11 AD (Tables 7 and 8).

The estimated area under rubber at the end of 1998-99 is 0.557 million

TABLE 8 :
Projections on production and consumption of NR in India

Year	Consumption ('000 ha.)	Growth rate (%)	Production ('000 tonnes)	Growth rate (%)	Deficit-/ surplus + ('000 tonnes)
1999-00	624	5.4	627	3.7	3
2000-01	664	6.4	651	3.8	–3
2001-02	710	6.9	674	3.6	–36
2002-03	760	7.0	694	3.0	–66
2003-04	813	7.0	717	3.3	–96
2004-05	866	6.5	735	2.5	–131
2005-06	921	6.4	748	1.8	–173
2010-11	1217	5.4	841	2.4	–376

Source : Rubber Board, Statistics and Planning Department, Kottayam.

hectares with 0.387 million hectares under tapping. The targets proposed for new planting and replanting during the five year period 1997-2001 are 60,000 and 30,000 hectares respectively. Out of the proposed new planting 58 per cent is in non-traditional region especially in the North-East. **Table - 8.**

The outlook for future is that of a widening demands-supply gap. The estimated deficit may increase from 13,000 tonnes in 2000-01 to 376,000 tonnes in 2010-11.

POLICY PERSPECTIVES ON THE INDIAN NR SECTOR

The hitherto insulated status of the Indian rubber sector has been undergoing significant changes since 1991-92 consequent to the implementation of liberalised economic policies. The major identifiable consequence is a considerable dilution in the extent of projection given to the NR production and the rubber products manufacturing sectors. To a certain extent, this has affected the growth prospects of the industry as a whole as evident from the emerging trends. Therefore, the future priorities and strategies of Indian rubber sector shall be focussed on the basis of the issues confronting the NR production, rubber products manufacturing and export sectors.

The focus on the production sector is confined to the NR sector due to its dominant position in total rubber production and consumption in the country. Inspite of the achievement of the highest reported productivity of NR in the world, there exists marked differences in productivity among the different rubber growing regions to the extent of more than 40 per cent. Among the dominant smallholdings the observed differences in productivity is to the extent of 681 per cent indicating the tremendous potential for productivity enhancement. **Table - 9.**

The major issues in the traditional rubber growing region of Kerala are : increasing share of part-time farmers, growth of homestead farms and operational level problems associated with the availability of hired labour. In the emerging scenario, there are serious constraints in pursuing expansion of NR cultivation in marginal areas where the realisable productivity is below the national average.

An important area strength of the Indian NR production sector has been its pattern of processing dominated by the sheet rubber **(Table 10).**

The operational level significance of the dominance of the sheet rubber stems from two sources : (i) the sheet rubber has been processed at the producers' level to cater to the requirements of the captive domestic market and (ii) the reported share of farm gate price in the terminal market price is higher than the relative shares in other major NR producing countries.

STRATEGIES FOR THE FUTURE

As natural rubber comes from a perenial crop, it has a rigid supply structure and coming as it does from small growers of hand to mouth existence, short term adjustments to market fluctuations are difficult. Hence, while framing the policies for the production sector, long term issues are extremely relevant. It is felt that

TABLE 9 : Classification of Smallholders According to Yield

Yield Groups (kg/ha)	No. of Small-holders	Tapped Area (ha.)	Production (Tonnes)	Yield/ha. (Kg.)	(%) to total tapped area
Upto 500	6242	3289	1110	337	11.8
501-750	7424	3792	2429	641	13.6
751-1000	8801	4319	3828	886	15.6
1001-1250	8693	3822	4347	1137	13.7
1251-1500	7666	3296	4530	1374	11.8
1501-1750	6288	2762	4492	1626	9.9
1751-2000	5078	2047	3823	1868	7.4
Above 2000	12034	4517	11900	2634	16.2
Total	62226	27844	36459	1309	100.0

Source : Rubber Board, Statistics and Planning Department, Kottayam.

the current situation of surplus availability of NR in the country is a passing phase coincident with the slow down in the industrial sector and the long term prospects and promising. Considering the long gestation phase of the rubber tree, it is necessary to widen the supply base of NR to meet the future demands. Accordingly, the policy adopted is to continue with the newplanting and replanting activities. With this objective, government assistance for scientific newplanting and replanting has been enhanced. However, for further expansion of the area, land is increasingly becoming scarce in the traditional rubber growing region in the country. The traditional region in the country is characterised by low per-capita availability of land and high land price. As regards the non-traditional regions in the country, socio-political disturbances and non-availability of sufficient investment resources are problems facing the expansion of rubber cultivation. Further, owing to the unfavourable price situation prevailing in the market for more than two years, the enthusiasm for newplanting activity has been reduced. On account of these factors, the rate of area expansion in the future is likely to be slightly lower when compared with the growth attained in the past. So the current focus of the development strategy is shifted with greater emphasis to productivity enhancement and competitiveness in production.

Attainment of cost-efficiency has been identified as a key to sustain NR production in the emerging new global environment. The strategies adopted in the short run for cost competitiveness include popularising discriminatory fertiliser application on the basis of soil and leaf testing of individual small holdings, low frequency tapping system and group processing of raw rubber ensuring better quality. Together with this, measures are taken to enhance the yield of existing plantations by promoting systematic plant protection operations, soil conservation and improved crop harvesting such as controlled upward tapping (CUT), scientific tappings, rain-guarding and stimulation.

Economic sustainability of rubber cultivation by small rubber holders is given special emphasis in the development strategy. The action programmes being executed to achieve the goal include diversification of the income base by popularising exploitation of various sources of ancillary income from rubber holdings. This includes popularising inter-cropping during immature and mature phase, commercial exploitation of rubber seed oil, oil cake, rubber honey and rubber wood. Use of biogas from effluents from sheet processing centres is becoming an important source of fuel.

Though a comparatively large industrial base ensuring a captive domestic market has a "cushioning effect" to the manufacturing sector at times of crisis in the export market, it is important to note that the industrial base itself is undergoing significant transformation process. Therefore, matching efforts to modernise and upgrade the manufacturing sector are vital

TABLE 10:
Gradewise Production of Natural Rubber in India (Tonnes)

Grades	1996-97		1997-98	
	Production	% share	Production	% share
RSS-1X & 1	3680	0.67	3720	0.64
RSS-2	8100	1.47	8400	1.44
RSS-3	21000	3.82	24700	4.23
RSS-4	202700	36.89	223375	38.26
RSS-5 & Offgrade	160680	29.25	176365	30.21
Sheet total	396160	72.10	436560	74.78
Latex (DRC)	61550	11.20	55400	9.49
Block rubber	51960	9.46	49910	8.55
Crepe & Others	39755	7.24	41960	7.18
Grand total	549425	100.00	583830	100.00

Source : Rubber Board, Statistics and Planning Department, Kottayam

for maintaining the share in the domestic market as well as sustaining the growth in exports.

Already, substantial investments have been made by the dominant tyre sector for the production of radial tyres consequent to the entry of MNCs in the commercial vehicles and tyre manufacturing sectors. Nevertheless, the prevailing differences in the nature and quality of products required for the internal and export markets call for policy prescription from a long term perspective. While equipping the manufacturing sector for global production with cost competitiveness and quality in the long run, the immediate concerns are centered around identification and promotion of products suited for the domestic and export markets with an inbuilt option for flexibility in restructuring the production process. The guiding principles in this endeavour shall be optimum allocation of the available resources in the rubber sector and comparative advantage in the manufacturing and export of rubber products.

We are confident that with this approach, the Indian Rubber Industry can continue to succeed in the new millennium and overtake Japan in the not too distant future to become the world's third largest rubber consuming country.

– INDIAN RUBBER JOURNAL

OBITUARY

Mr. V.P. KRISHNAN

Mr. V.P. Krishnan who was an Executive Committee member of the Karnataka Planters' Association during 1992-93 and 1998-99, died in Bangalore on 26th January 2000.

The development strategy of NR *Interalia* envisages the following programmes

- Expansion of area under rubber.
- Replanting of old and low yielding trees with high yielding varieties.
- Reducing the operational cost of production of NR.
- Increasing the productivity of existing yielding trees through adoption of improved technology.
- Exploitation of sources of ancillary income from rubber holdings.
- Special development programmes for tribals and women.
- Promotion of natural rubber as an eco-friendly activity.
- Value addition of the produce in the smallholding sector by improving processing and presentation of NR through group processing operations.
- Exploring new uses of NR.
- Promotion of NR export.

GOLDEN JUBILEE OF INDIAN MEDICAL ASSOCIATION (IMA)

The Indian Medical Association – Anamallai Branch, which mainly consists of Plantation Medical Officers, is celebrating its Golden Jubilee Year. Connected therewith, the Association is conducting a "CONTINUING MEDICAL EDUCATION PROGRAMME FOR PLANTATION MEDICAL OFFICERS" on 10th and 11th March 2000, at Valparai. *For further details,* **Dr. C. John Philip,** Sr. Medical Officer, Iyerpadi Garden Hospital, IYERPADI P.O. - 642 108, Coimbatore District, (Tel : (04253) - 72488 / 72445) (OR) **Dr. T.K. Atmaram,** Chief Medical Officer – Plantations, Mudis Garden Hospital, MUDIS P.O. - 642 117, Coimbatore District, (Tel : (04253) - 74255 / 74224) may be contacted.