CHAPTER-4

# DEMAND FOR NATURAL RUBBER

## 4.1. Introduction

In India, the demand for NR is mainly derived from the domestic rubber goods manufacturers for their basic raw material. But in other rubber producing countries of the world, demand for NR is mostly taking place for the purpose of export. Demand for NR has impact on the rubber market in varying proportions by its changes from time to time and the consequent fluctuations in the price level. Therefore, this chapter is incorporated with a view to analyse the demand for natural rubber in India during pre and post-liberalisation periods. Demand for Synthetic Rubber (SR) and Reclaimed Rubber (RR) which can exert influence on the natural rubber consumption is also included in this chapter, together with world demand for natural and synthetic rubber.

## 4.2. World Demand for NR

An analysis of the global demand for NR is required to evaluate the demand for NR in the Indian rubber market. The USA is the largest consumer of NR in the world followed by Japan, China, India, Korea,

Malaysia, Germany and France. The consumption of NR has increased from 3368000 tons in 1975 to 6700000 tons in 1999. The world consumption of NR from 1975 to 1999 is presented in table 4.1. From the table it can be noticed that the annual growth rate varies from 2.88% in 1991 to 5.85% in1997. Though the consumption during 1997 and 1998 has increased, the annual growth rate shows a decreasing trend.

**Table:4.1:-World Consumption of Natural Rubber (in Thousand Tons)**

| Country | 1975 | 1980 | 1985 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| USA | 666 | 585 | 764 | 858 | 867 | 808 | 756 | 910 | 967 | 1002 | 1004 | 1002 | 1044 | 1157 | 1093 |
| Japan | 285 | 427 | 540 | 623 | 657 | 677 | 690 | 685 | 631 | 640 | 692 | 715 | 713 | 707 | 734 |
| China * | 225 | 340 | 415 | 660 | 650 | 600 | 610 | 640 | 650 | 720 | 780 | 810 | 910 | 839 | 852 |
| India | 129 | 171 | 233 | 311 | 333 | 358 | 375 | 405 | 444 | 473 | 517 | 558 | 572 | 580 | 619 |
| Korea Rep * | NA | NA | 155 | 235 | 232 | 255 | 264 | 276 | 271 | 290 | 300 | 300 | 302 | 282 | 331 |
| Malaysia | 31 | 45 | 69 | 103 | 122 | 184 | 216 | 249 | 269 | 292 | 327 | 357 | 327 | 334 | 344 |
| Germany | 197 | 180 | 202 | 204 | 221 | 209 | 211 | 213 | 175 | 186 | 212 | 193 | 212 | 248 | 224 |
| France | 156 | 188 | 156 | 181 | 184 | 179 | 183 | 179 | 169 | 180 | 176 | 182 | 192 | 223 | 253 |
| Brazil | 59 | 81 | 98 | 125 | 124 | 124 | 123 | 123 | 132 | 145 | 155 | 155 | 160 | 168 | 170 |
| UK * | 171 | 131 | 126 | 140 | 133 | 136 | 119 | 125 | 119 | 135 | 118 | 111 | 119 | 142 | 131 |
| Italy | 118 | 132 | 127 | 140 | 143 | 130 | 120 | 115 | 108 | 100 | 102 | 100 | 117 | 146 | 134 |
| Taiwan * | NA | NA | 84 | 150 | 100 | 105 | 120 | 115 | 109 | 105 | 103 | 96 | 105 | 103 | 111 |
| C.I.S. | NA | NA | 210 | 100 | 140 | 150 | 80 | 28 | 36 | 12 | 13 | 16 | 9 | 6 | 11 |
| TOTAL ** | 3368 | 3760 | 4430 | 5100 | 5190 | 5210 | 5060 | 5320 | 5430 | 5680 | 5990 | 6150 | 6510 | 6610 | 6700 |
| Growth Rate ( in %) *** | | | | | | 0.39 | -2.9 | 5.14 | 2.07 | 4.6 | 5.46 | 2.67 | 5.85 | 1.54 | 1.36 |

*NA-Not Available*

** Estimated*

*** Including allowances for officially reported statistics and those countries not reported separately*

**** Computed*

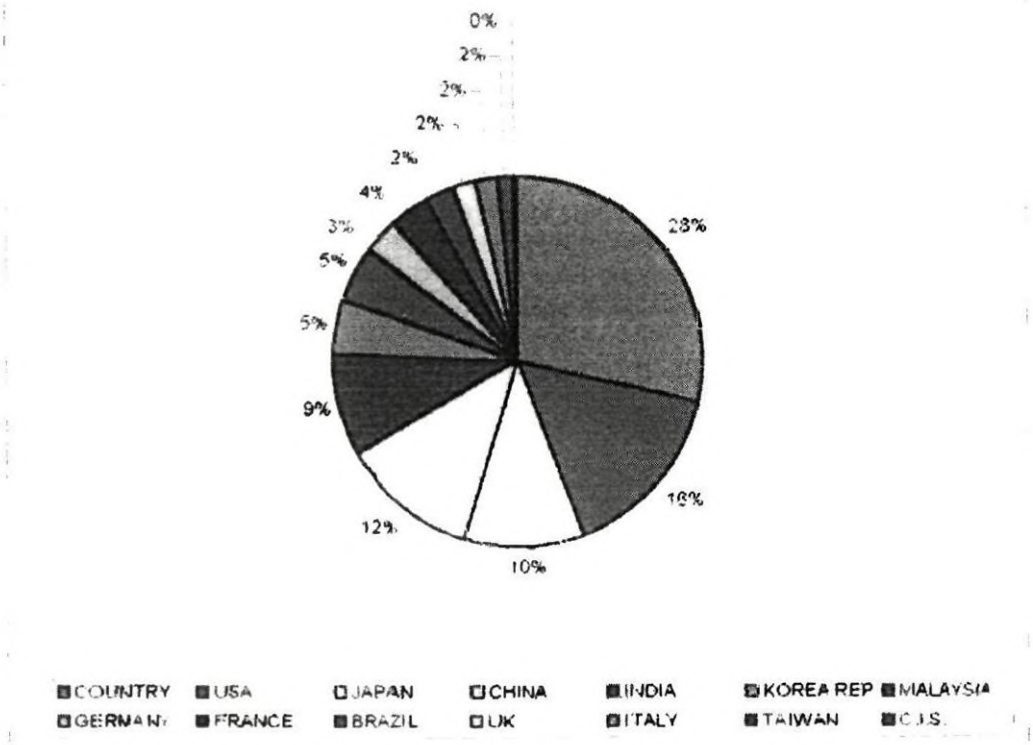
*Source-IRSG,(2000 b),pp.9-10*

Figure 4.1 exhibits the world consumption of NR more clearly. The diagram discloses that 28% of the global consumption of NR took place in the USA followed by 16% in Japan, 12% in China, 10% in India and 7% in Korea in 1999.

In the major rubber consuming countries NR is mainly used for the production of tyre and allied products. When the USA consumes 75% of NR for tyre production, Japan, Germany, Italy and England utilise 87%, 68%,81%,

and 84% respectively for the production of tyre and allied goods[1]. World per capita consumption of rubber had increased from 1.46 kg. in 1960 to 2.86kg.in 1997. but it decreased to 2.79 kg. in 1998. Per capita consumption of rubber is the highest in Japan (14.42 kg.) followed by the USA (12.98 kg.). Canada (12.74 kg.). France (11.46) and Germany (9.47). In India per capita consumption is only 0.76 kg.[2]

**Figure:4.1:-World consumption of NR in 1999**




It is noted that the prominent rubber producing countries are not its important consumers. Thailand consumes only 8.41% of its internal production of NR. Indonesia and Malaysia consume 5.66% and 37.7% respectively of

[1] IRSG (2000a) p.10

[2] Rubber Board (2000) p.86

their domestic production of natural rubber[3]. When Thailand and Indonesia export more than 90% of their production, Malaysia exports more than 60%. It indicates that major NR producing countries concentrate their attention in the export marketing, instead of internal consumption. It is again noticed that in Malaysia, Indonesia and Thailand, latex based rubber industries are prominent rather than dry rubber based industries.

## 4.3. Demand for Rubber in India

In India, the total demand for rubber includes demand for NR, SR and RR. Natural rubber is the vital segment constituting 72% of the total demand for rubber, followed by SR and RR having the shares of 19% and 9% respectively. This proportion seems to be relatively stable from year to year.

### 4.3.1. Demand for NR

The demand for NR is derived from three needs such as consumption, export and stock. Consumption by the rubber manufacturing sector constitutes the major demand for NR in India. Indian rubber manufacturing sector consists of 32 well organised auto-tyre factories, 250 medium scale units and 5500 small and tiny rubber manufacturing units. These units together produce about 30000 individual rubber products in India[4]. Demand for NR emerged from the need for export is negligible as the export marketing of NR is not developed in the country. Small quantity of rubber was exported in the early 1950s, again in 1974 to 1977 and from 1991-92 to 1999-2000.

Stock of rubber is not a final consumption category but only retains it for a short period of time before its consumption or export. Stock of rubber depends on production fluctuation, government policy and stock policy of manufacturers.

---

[3] IRSG(2000 b)

[4] Patel(2001),p.9

### 4.3.1.1. Special Features of Indian Rubber Consuming Sector.

In order to study the peculiarities of NR demand, it is necessary to study the features of rubber consuming sector in India. Following are the salient features of rubber consuming sector in India.

#### 4.3.1.1.1. Structural Peculiarity of the Rubber Consuming Sector.

Rubber goods manufacturing sector in India evolved as a supplementary industry to provide requirements of the automobile industry of the country. Therefore, the rise and growth of rubber manufacturing sector depends on the fortunes of automobile industry. Table 4.2 shows the number of registered motor vehicles and NR consumption and the growth rate of both from 1975-76 to 1999-2000, to understand the relationship between the automobile industry and rubber manufacturing sectors.

**Table:4.2:-Number of Registered Motor Vehicles and NR Consumption**

| Year | No.of Vehicle | Growth Rate * % | Qty (In Tons) | Growth Rate * % |
|---|---|---|---|---|
| 1975-76 | 270000 | 9.22 | 125692 | -5.21 |
| 1980-81 | 5391000 | 99.66 | 173630 | 38.13 |
| 1985-86 | 10577000 | 96.19 | 237440 | 36.75 |
| 1990-91 | 21374000 | 102.07 | 364310 | 53.43 |
| 1995-96 | 33783000 | 58.05 | 525465 | 44.23 |
| 1999-2000 | 48001000 | 42 | 628110 | 19.53 |

*Source-Rubber Board,(2000) p.33, p.56 * Computed*

It can be seen from the table that NR consumption and production of motor vehicles have made impressive growth rates from 1980-81 to 1995-96. In 1999-2000 their growth rates have diminished. It denotes the fact that NR consumption has increased whenever the automobile industry reached new heights in its progress and development. It can again be noted that correlation between motor vehicle production and NR consumption is 0.9947 which is

very high. It is statistically significant too. It proves the dependence of NR sector on the automobile industry for its progress.

**4.3.1.1.2.Well Developed Domestic Rubber Consuming Sector.**

Indian rubber consuming sector is large and wide so as to absorb the whole internal production of NR. It has the capacity to consume 100% of the domestic production of natural rubber while Thailand, Indonesia and Malaysia consume only 8.4%, 5.66% and 37.7% respectively.

Table 4.3 shows the production and consumption of NR in India from 1955-56 to 1999-2000 to see that the internal production of NR is completely consumed by the Indian rubber manufacturers themselves.

**Table:4.3:-Production and Consumption of NR in India**

| Year | Production (in tons) | Consumption (in tons) | Consumption as a percentage to Production (%) ** |
|---|---|---|---|
| 1955-56 | 23730 | 28445 | 119.86 |
| 1960-61 | 25697 | 48148 | 187.37 |
| 1965-66 | 50530 | 63765 | 126.19 |
| 1970-71 | 92171 | 87237 | 94.65 |
| 1975-76 | 137750 | 125692 | 91.25 |
| 1980-81 | 153100 | 173630 | 113.41 |
| 1985-86 | 200465 | 237440 | 118.44 |
| 1990-91 | 329615 | 364310 | 110.53 |
| 1995-96 | 506910 | 525465 | 103.66 |
| 1998-99 | 605045 | 591545 | 97.77 |
| 1999-2000* | 622265 | 628110 | 100.94 |

*Source-Rubber Board (1999)PP12,13,32,33, *-Rubber Board(2000) PP.12,13,32,33*
***- Computed*

From the table, it can be seen that the internal rubber manufacturers consume more than the natural rubber domestically produced, except a few years. In 1970-71, 1975-76 and 1998-99 consumption did not reach 100% of its internal production.

### 4.3.1.1.3.Geographical Decentralisation of NR Consumption.

When the production of NR is highly concentrated in Kerala, its consumption is widely distributed all over the country. Table 4.4 shows the state- wise consumption of NR in India.

Table:4.4:-State-wise Consumption of NR in India.(Consumption in tons)

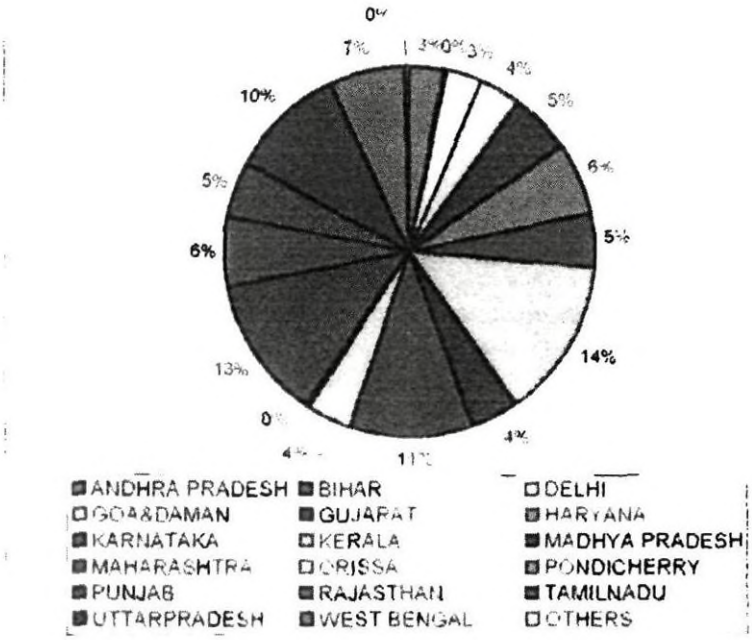
| States | 1970-71 | | 1980-81 | | 1990-91 | | 1997-98 | | 1999-2000 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Consu mption | % toCon sumption | Cons umption | % toCons umption | Consu mption | % toConsu mption | Consu mption | % to Cons umption | Consu mption | % to con sumption |
| Andhra Pradesh | NA | NA | 2223 | 1.28 | 8907 | 2.44 | 22664 | 3.96 | 19729 | 3.14 |
| Bihar | NA | NA | NA | NA | NA | NA | 1307 | 0.23 | 1396 | 0.22 |
| Delhi | 1956 | 2.24 | 6311 | 3.63 | 15613 | 4.29 | 17465 | 3.05 | 18926 | 3.01 |
| Goa&Daman | NA | NA | 2409 | 1.39 | 6214 | 1.71 | 23101 | 4.04 | 23469 | 3.74 |
| Gujarat | 1192 | 1.33 | 3034 | 1.75 | 6889 | 1.89 | 30757 | 5.38 | 32429 | 5.15 |
| Haryana | 4475 | 5.13 | 14974 | 8.63 | 22728 | 6.24 | 34351 | 6 | 39678 | 6.32 |
| Karnataka | 631 | 0.73 | 5770 | 3.33 | 16978 | 4.66 | 26048 | 4.56 | 29736 | 4.73 |
| Kerala | 6739 | 7.73 | 19283 | 11.12 | 55365 | 15.2 | 68542 | 12 | 86849 | 13.83 |
| Madhya Pradesh | NA | NA | NA | NA | 4120 | 1.13 | 21789 | 3.81 | 26677 | 4.28 |
| Maharashtra | 19696 | 22.58 | 33119 | 19.02 | 47219 | 12.96 | 54832 | 9.59 | 68644 | 10.93 |
| Orissa | NA | NA | NA | NA | NA | NA | 18859 | 3.3 | 23496 | 3.74 |
| Pondicherry | NA | NA | NA | NA | NA | NA | 2544 | 0.44 | 2255 | 0.36 |
| Punjab | 2277 | 2.62 | 13232 | 7.62 | 46158 | 12.67 | 78250 | 13.68 | 79242 | 12.62 |
| Rajasthan | NA | NA | 5482 | 3.16 | 17936 | 4.92 | 30929 | 5.41 | 37534 | 5.98 |
| Tamil Nadu | 17548 | 20.13 | 17050 | 9.83 | 21213 | 5.82 | 37129 | 6.49 | 31989 | 5.1 |
| Uttar Pradesh | 1160 | 1.33 | 22578 | 13.01 | 46795 | 12.84 | 63233 | 11.06 | 61707 | 9.82 |
| West Bengal | 30988 | 35.52 | 27414 | 15.79 | 42292 | 11.62 | 38931 | 6.81 | 42952 | 6.84 |
| Others | 575 | 0.66 | 751 | 0.44 | 5883 | 1.61 | 1089 | 0.19 | 1392 | 0.22 |
| Total | 87237 | 100 | 173630 | 100 | 364310 | 100 | 571820 | 100 | 628110 | 100 |

source-Rubber Board,(1999), pp.37,38,39
*Rubber Board,(2000),p.39.)
** computed

From the table it can be noted that all the major states in India have rubber based industries. Maharashtra, Punjab, U.P., West Bengal, Gujarat, Haryana and Kerala are the major rubber consuming states in India. Figure 4.2 shows the above mentioned facts more clearly. From the figure, it can be noticed that 13.83% of total NR consumption took place in Kerala followed by Punjab (12.62%), Maharashtra (10.93%) and U.P. (9.82%) in 1999-2000[5].

[5] Though Kerala has near monopoly in the production of NR, its average consumption comes only 12% during the period from 1970-71 to 1999-2000. Consumption of NR in the state took place in an increased quantity only from 1990-91 onwards. Presently, Punjab and Maharashtra are the other states which consume NR equal to or greater than the consumption in Kerala.

Figure:4.2:State-wise Consumption of NR 1999-2000




### 4.3.1.1.4.Pattern of Domestic Consumption

Rubber products are broadly divided into two groups viz., products of latex based industries and products of dry rubber based industries. Tyres, tubes, battery boxes, belts and hoses are the products of dry rubber based industries whereas latex foam and dipped goods are examples of products of latex based industries. In India, dry rubber based industries dominated over the latex based industries by constituting 90% and 10%, respectively of the total rubber products. In the dry rubber based industries itself, 66% of the NR consumption is related to tyre and tyre related products[5]. Table 4.5 shows product-wise consumption of NR in India since 1975-76.

[5] Non-tyre sector includes the following products
a. Cycle tyres and tubes

**Table:4.5:-Product- wise Consumption of NR**

| Products | 1975-76 | | 1980-81 | | 1985-86 | | 1990-91 | | 1995-96 | | 1999-2000 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Actual | % | Actual | % | Actual | % | Actual | % | Actual | % | Actual | % |
| Auto tyres &tubes | 62115 | 49.42 | 87295 | 50.28 | 114031 | 48.02 | 161578 | 44.4 | 245654 | 46.8 | 290196 | 46.2 |
| Cycle tyres & ubes | 15979 | 12.71 | 20664 | 11.9 | 29915 | 12.6 | 50180 | 13.8 | 66358 | 12.6 | 81654 | 13 |
| Camel back | 5545 | 4.41 | 9130 | 5.26 | 15047 | 6.33 | 25440 | 6.98 | 32316 | 6.15 | 37601 | 6 |
| Foot wears | 12387 | 9.86 | 17800 | 10.25 | 24194 | 10.18 | 37574 | 10.3 | 52003 | 9.9 | 68013 | 10.8 |
| Belts & Hoses | 8943 | 7.12 | 11812 | 6.8 | 15870 | 6.68 | 25583 | 7.02 | 35838 | 6.82 | 38089 | 6.06 |
| Latex foam | 2033 | 1.62 | 5753 | 3.31 | 11396 | 4.8 | 19598 | 5.38 | 28633 | 5.45 | 31762 | 5.05 |
| Cables & wires | 590 | 0.47 | 779 | 0.45 | 1004 | 0.43 | 1252 | 0.35 | 1494 | 0.28 | 1684 | 0.26 |
| Battery boxes | 280 | 0.22 | 485 | 0.28 | 890 | 0.37 | 1265 | 0.35 | 1784 | 0.34 | 1862 | 0.3 |
| Dipped goods | 3478 | 2.76 | 4945 | 2.85 | 9050 | 3.82 | 15578 | 4.28 | 24947 | 4.75 | 29898 | 4.75 |
| Others | 14342 | 11.41 | 14967 | 8.62 | 16043 | 6.77 | 26262 | 7.21 | 36438 | 6.93 | 47351 | 7.56 |
| Total | 125692 | 100 | 173630 | 100 | 237440 | 100 | 364310 | 100 | 525465 | 100 | 628110 | 100 |

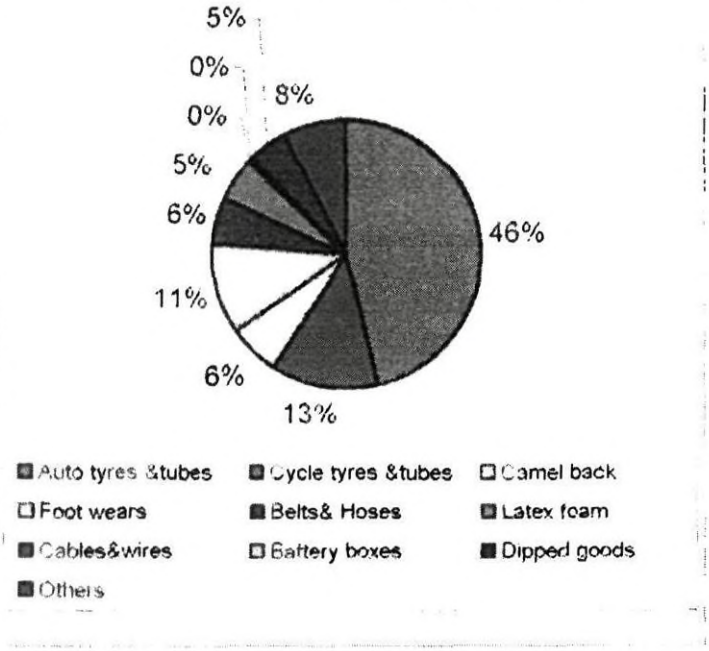
*Source-Rubber Board,(2000),pp.57-59*

From the table it can be noted that product wise consumption of NR is more or less stable during the period 1975-76 to 1999-2000. But there is an increase in the consumption of NR for latex based rubber products. It has increased from 4.36% in 1975-76 to 9.8% in 1999-200.

Figure 4.3 is the diagrammatic representation of product-wise consumption of NR in India during 1999-2000. It can be seen from the figure that auto tyres and tubes consume 46% of the total NR consumption, followed by footwears 13%, cycle tyres and tubes 11% and camel back 5%.

a. Cycle tyres and tubes
b. Belts and hoses
c. Footwear
d. Tread rubber
e. Batter boxes
f. Cables and wires
g. Other miscellaneous products.

Figure:4.3:-Product wise Consumption of SR 1999-00




### 4.3.1.1.5.Composition of Indian Rubber Consuming Sector.

Indian rubber consuming sector is composed of small and tiny rubber goods manufacturers, medium scale manufacturers and large scale manufacturers including large tyre companies[7]. Table 4.6 shows the profile of rubber manufacturing sector in India. From the table it can be observed that total number of manufacturers have increased from 1281 in 1970-71 to 5303 in 1999-2000. Small scale manufacturers are large in number and constitute about 85% of the total number of rubber goods manufacturers in India. But they consume only 12% of the total quantity of rubber consumption in the country.

[7] For the present study, small, medium and large scale manufacturers are categorised on the basis of their NR consumption as follows:-

a. Manufacturers who consume NR up to 50 tons are treated as small scale
b. NR consumption of 51 to 500 tons are treated as medium scale and
c. Consumption of NR above 501 tons are considered as large scale manufacturers

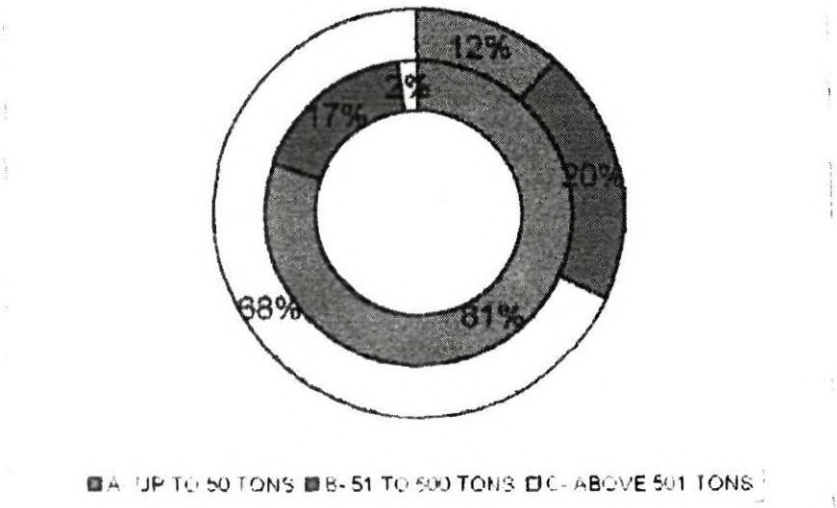
**Table:4.6:-Composition of Indian Rubber Consuming Sector on the Basis of NR Consumption (in tons)**

| Consumption Group | 1970-71 | | 1980-81 | | 1990-91 | | 1995-96 | | 1999-2000 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No. of Manufactures | Consumption | No. of Manufactures | Consumption | No. of Manufactures | Consumption | No. of Manufactures | Consumption | No. of Manufactures | Consumption |
| A- UP TO 50 TONS | 1137 | 8059 | 2513 | 21218 | 4325 | 49420 | 4905 | 63128 | 4230 | 53371 |
| Percentage* | 88 | 9 | 89 | 12.22 | 86 | 13.58 | 82.52 | 12.56 | 83 | 12 |
| B- 51 TO 500 TONS | 130 | 72984 | 271 | 57727 | 626 | 75552 | 867 | 102809 | 926 | 126587 |
| Percentage* | 10 | 15 | 9.58 | 15.97 | 12.48 | 20.74 | 15.71 | 19.91 | 17 | 20 |
| C- ABOVE 501 TONS | 21 | 66223 | 42 | 124685 | 77 | 239288 | 98 | 359531 | 107 | 128151 |
| Percentage* | 2 | 76 | 1.42 | 71.81 | 1.53 | 65.68 | 1.77 | 67.53 | 2 | 68 |
| TOTAL | 1281 | 87267 | 2826 | 173630 | 5028 | 364310 | 5572 | 525465 | 5303 | 628110 |

*Source: Rubber Board (2000), P.57*
** Computed*

Medium scale operators constitute 12.5% and consume 16% of the total rubber consumption. In the case of large scale manufacturers, they are few in number and varies between 1.5% to 2%. Their consumption comes to 72% of the total consumption of NR in the country. Figure 4.4 shows the influence of manufacturers in the Indian Rubber market.

**Figure:4.4:-Classification of Manufactures by Consumption 1999-2000**



The inner and outer circles of the above figure represents groups of manufacturers and quantity of NR consumption respectively. It can be seen from the above figure that when 2% of the rubber goods manufacturers consume 68% of the NR consumption, 81% manufacturers consume only 12% in 1999-2000. Another 17% consume 20% of the total rubber consumption in the country in the same year.

These manufacturers are playing a decisive role on the demand side of the Indian Rubber Market. The large scale manufacturers of 2% are very powerful group in the Indian Rubber Economy. They are in a strategic position by using 68% to 76% of the total rubber consumption in the country. These manufacturers are mainly the operators of the tyre companies. They are well organised, financially sound and politically influential. National and international developments in their respective field of marketing, production, finance etc., will be at their desk top through their R&D wing, so that they can change strategies in accordance with the varying situations.

The large manufacturers also resorting to different methods such as temporary withdrawal from the market, import of rubber even at a greater price, reduction of stock period etc. to control the Market in their favour.

The demand side of the Indian rubber market is more powerful than the supply side. The supply side consists of 986489 small and marginal cultivators. They are unorganised and cannot regulate supply in accordance with the demand. They produce about 88% of the total production of NR in India. The estate sector produces only 12% and cannot exert any influence on the supply side even though they are organized.

Thus it can be stated that the demand side is more powerful than the supply side of the Indian rubber market and it is a buyers market (Refer third hypothesis p.17 ).

### 4.3.1.1.6.Ratio of NR and SR

Indian rubber manufacturing sector highly depends upon the plantation sector for its inputs and has established a close link between the two sectors. Synthetic rubber is also used as raw material by the manufacturers under technical and economic considerations[8].

In India the ratio of NR to SR stands at 79:21 when the global standard is 40:60. Table 4.7 gives the consumption of NR and SR in India for the period 1960-61 to 1999-2000.

**Table:4.7:-Consumption of Synthetic and Natural Rubber**

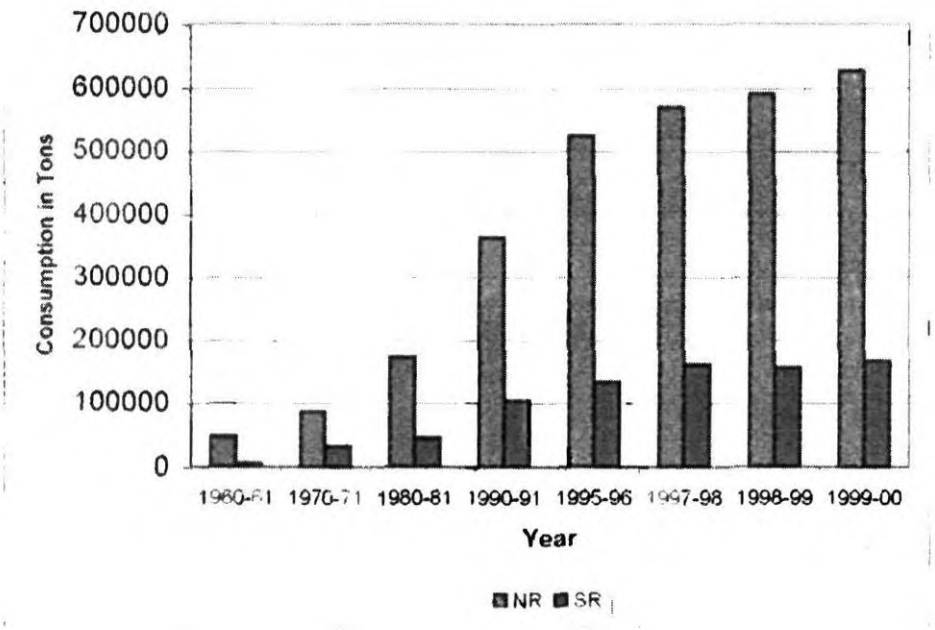
| Year | Consumption in tons | | | Ratio of SR&NR* |
|---|---|---|---|---|
| | NR | SR | Total | |
| 1960-61 | 48148 | 7397 | 55545 | 87:13 |
| 1970-71 | 87237 | 33160 | 120397 | 72:28 |
| 1980-81 | 173630 | 47050 | 220680 | 79:21 |
| 1990-91 | 364310 | 104735 | 469045 | 78:22 |
| 1995-96 | 525465 | 134085 | 659550 | 80:20 |
| 1997-98 | 571820 | 160915 | 732735 | 78:22 |
| 1998-99 | 591545 | 156395 | 747940 | 79:21 |
| 1999-2000 | 628110 | 167220 | 795330 | 79:21 |

*Source: Rubber Board(2000), PP.32,33*
**- Computed*

From the table it can be seen that the ratio of NR to SR is more or less stable since 1960-61. It can be noted that the use of SR has increased from 7397 tons in 1960-61 to 167220 tons in 1999-2000. Figure 4.5 shows the consumption of synthetic and natural rubber in India. From the figure it can be noted that consumption of NR is always greater than the consumption of SR in India. But it can be observed that when the consumption of NR records 12 fold increase, SR records 22 fold increase in its consumption.

[8] Details given in chapter-3 p.68

**Figure:4.5:-Consumption of NR and SR**




## 4.3.2. Consumption of NR in the Pre-Liberalisation Period.

The emergence of pneumatic tyre and the introduction of internal combustion engines by the close of the 19th century created an unprecedented demand for rubber all over the world. In 1900, the world demand for rubber was for 52500 tons but the production was only 45000 tons[9]. The World War II compelled allied nations to depend upon India and Sri Lanka for getting rubber as a result of conquest of Malaysia and other South East Asian countries by Japan. This situation created new heights in the demand for NR in India. Before the World War II NR produced in India was entirely exported[10]. The first rubber goods manufacturing unit was started in 1921 in Calcutta[11]. On independence of the country a number of rubber manufacturing companies

[9] Haridasan (1975) p 120
[10] Haridasan (1978),p 64
[11] Patel (2001),p 9

were cropped up in different parts of the country. Then the domestic production of NR began to be consumed entirely by the Indian rubber manufacturers.

**4.3.2.1.Consumption of NR During 1950s and 1960s.**

During 1950s and 1960s NR consumption in India registered an impressive growth rate as a result of five big tyre companies coming into prominence[12]. It was a notable development in the rubber manufacturing sector during the period. Table 4.8 shows the consumption of NR and its annual growth rate during 1950s and1960s.

**Table:4.8:-Consumption of NR during 50s and 60s**

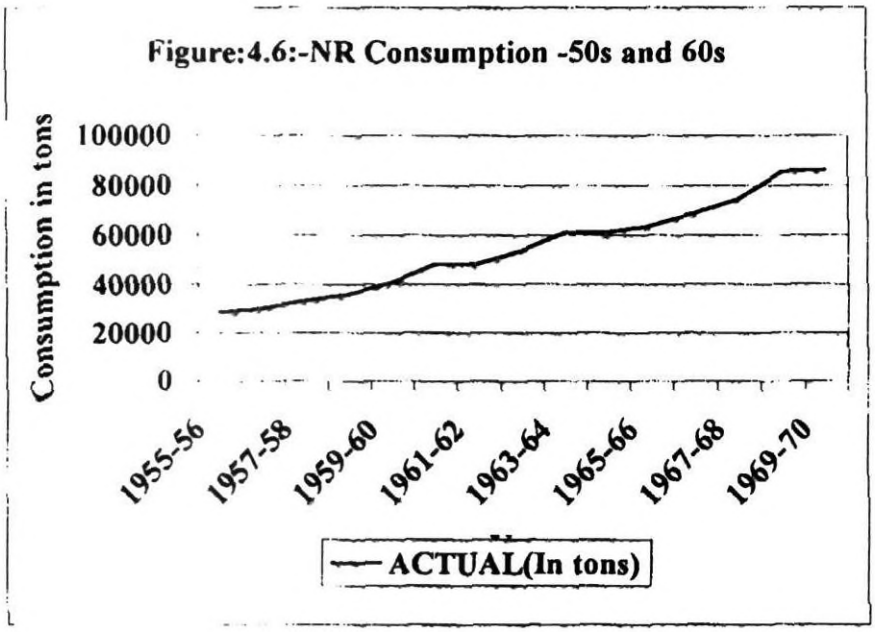
| Year | Actual(in Tons) | Annual Growth Rate (%) |
|---|---|---|
| 1955-56 | 28445 | - |
| 1956-57 | 29998 | 5.46 |
| 1957-58 | 33074 | 10.25 |
| 1958-59 | 35767 | 8.14 |
| 1959-60 | 40491 | 13.21 |
| 1960-61 | 48148 | 18.91 |
| 1961-62 | 48410 | 0.54 |
| 1962-63 | 53553 | 10.62 |
| 1963-64 | 61155 | 14.19 |
| 1964-65 | 61057 | -0.16 |
| 1965-66 | 63765 | 4.44 |
| 1966-67 | 68685 | 7.72 |
| 1967-68 | 74518 | 8.49 |
| 1968-69 | 85515 | 16.23 |
| 1969-70 | 86213 | -0.46 |

*Source-Rubber Board,(2000) p31*

From the table, it can be seen that the country attained an average growth rate of 8.4%during 1950s and 1960s. The high annual growth rate of 18.91% occurred in 1960-61 followed by 16.23%, 13.21%, 10.62% and 10.25% in 1968-69,1959-60, 1962-63 and 1957-58 respectively.

[12] 1.Ceat Ltd with a capacity of 11.8 lakhs units per annum in 1958 in Maharashtra, 2. Tyre Corporation of India Ltd. with a capacity of 10250 units per month in 1960 in Andhra Pradesh, 3.

1964-65 and 1969-70 showed negative growth rates. Figure 4.6 reveals the growth of NR consumption during 1955-56 to 1969-70. The figure shows the steady growth of NR consumption during 1950s and 1960s except during 1961-62, 1964-65 and 1969-70.




### 4.3.2.2. Consumption of NR during 1970s and 1980s

Acute power crisis during 1970s affected the industrial progress of the country adversely. Rubber industry was also not free from the crisis. Most of the rubber manufacturing units, including large scale units either stopped or curtailed production resulting low consumption and culminated the situation of excess of production over consumption. Thus the 1970s witnessed surplus of NR in the Indian rubber market.

But during 1980s the picture changed drastically to the effect of increased NR consumption. Commencement of production by eleven tyre

Good Year India Ltd. in Haryana with a capacity of 3600 units per day in 1961, 4. MRF Ltd. in 1962 in TamilNadu and 5. Metro tyres Ltd. in 1968 in Punjanb.

companies during 1970s and 1980s helped the rubber manufacturing sector to wake up from the slumber of low consumption[13]. It was a landmark in the history of Indian rubber manufacturing sector.

Table 4.9 shows consumption of NR during 1970s and 1980s and its annual growth rate

**Table:4.9:-Consumption of NR during 1970s & 1980s**

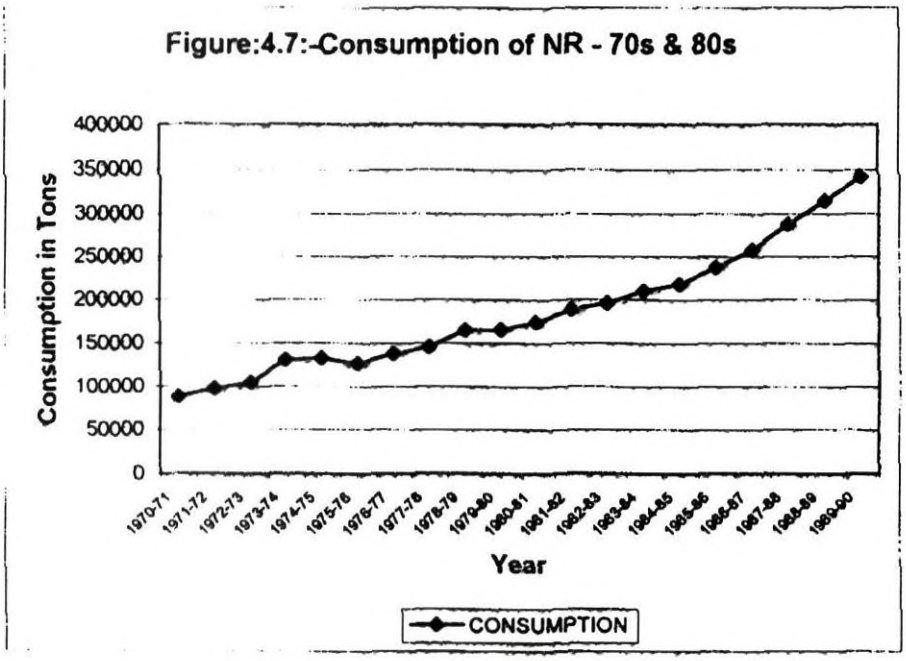
| Year | Consumption | Annual Growth Rate (%) |
|---|---|---|
| 1970-71 | 87237 | 1.19 |
| 1971-72 | 96454 | 10.57 |
| 1972-73 | 104028 | 7.85 |
| 1973-74 | 130302 | 25.25 |
| 1974-75 | 132604 | 1.77 |
| 1975-76 | 125692 | -5.21 |
| 1976-77 | 137623 | 9.49 |
| 1977-78 | 144967 | 5.34 |
| 1978-79 | 164524 | 13.49 |
| 1979-80 | 165245 | 0.44 |
| 1980-81 | 173630 | 5.07 |
| 1981-82 | 188420 | 8.52 |
| 1982-83 | 195545 | 3.78 |
| 1983-84 | 209480 | 7.13 |
| 1984-85 | 217510 | 3.83 |
| 1985-86 | 237440 | 9.16 |
| 1986-87 | 257305 | 8.37 |
| 1987-88 | 287480 | 11.73 |
| 1988-89 | 313830 | 9.17 |
| 1989-90 | 341840 | 8.93 |

*Source-Rubber Board,(1999), PP.32-33*

It can be seen from the table that consumption of NR has increased from 87237 tons in 1970-71 to 165245 tons in 1979-80 and again increased to 341840 tons in 1989-90. When the average growth rate of 1970s records 8.94%, during 1980s it was 9.64%.

[13] MRF started Kottayam, Goa, and Arkonam units in 1971, 1973 and 1973 respectively. Modi Rubber Ltd., in 1974 in U.P, Ceat Ltd., in 1974 in Maharashtra, Falcon Tyres Ltd., in 1975 in Karnataka, J.K. Industries Ltd.,in Rajasthan in 1976, Appollo Tyres Ltd., in 1977 in Kerala, J.K. Industries Ltd., in Karnataka in 1980, Vikrant Tyres Ltd., in 1980 in Karnataka and TVS Srichakra Ltd., in Tamil Nadu in 1983 were the other tyre companies came up during 1970s and 1980s.

Figure 4.7 reveals the growth of rubber consumption during 1970s and 1980s more prominently. The figure discloses the slow growth during 1970s and fast and steady growth during 1980s.




## 4.3.3.NR Consumption in the Post-Liberalisation Period.

Liberalisation policy of the government influenced the NR consumption of the country significantly. An evaluation of the influence of these policies on the rubber manufacturing sector is noted below.

In the post-liberalisation period, six major tyre companies have started production and could have influenced on the consumption of NR[14]. The number of licensed rubber manufacturers of small, medium and large scale

[14] Baroda unit of Appollo Tyres Ltd in 1991, Balasone (Orissa) unit of Birla Tyres in 1991, Banmore(M.P.) unit of J.K. Industries Ltd. in 1991, Medak and Pondicherry units of MRF in 1991 and 1997 respectively are the first five companies that started tyre production in the country during the post liberalisation period. The world leader in the tyre industry, Bridgestone Corporation of Japan in collaboration with India's leading cement company, ACC launched a new tyre company called Bridgestone ACC India Ltd. (BAIL) in India in 1998 is the sixth tyre company during the post-liberalisation period.

operators have increased to an all time record of 5595 in 1997-98 from 5249 in 1991-92. But the number reduced to 5494 in 1998-99 and again to 5303 in 1999-2000[15].

Table 4.10 shows the consumption of NR and its annual growth rate during the post-liberalisation period.

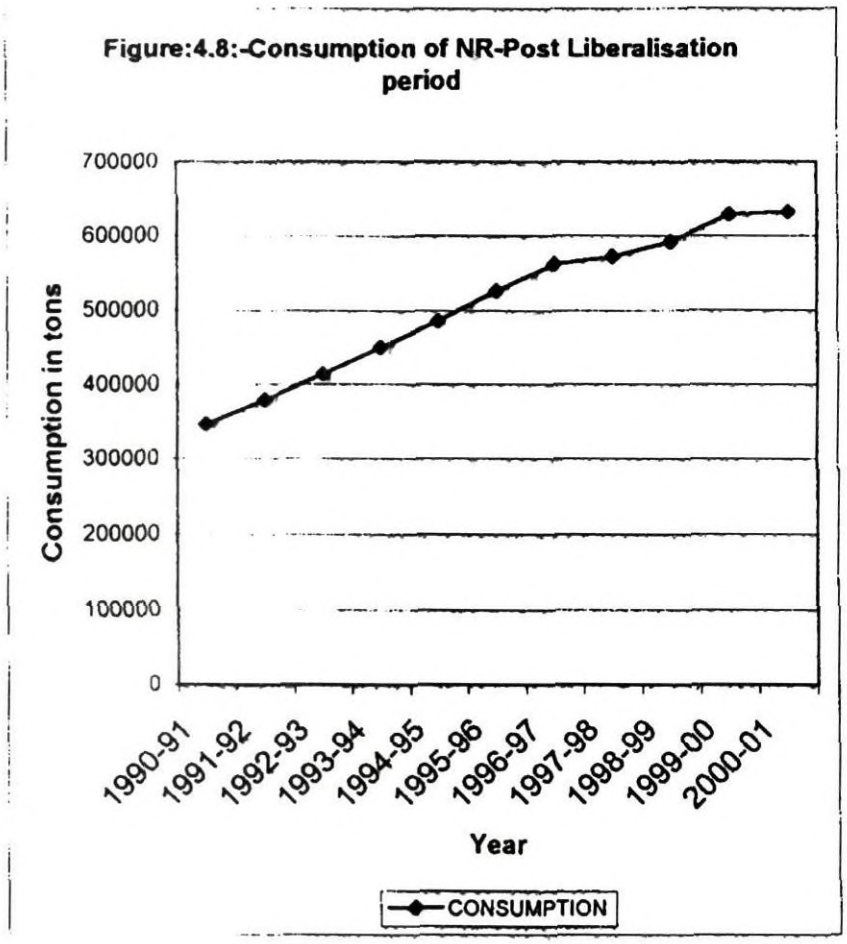
**Table:4.10:-NR Consumption 1990-91 to 2000-01**

| Year | Consumption | Annual Growth Rate (%)*** |
|---|---|---|
| 1990-91 | 346310 | 6.57 |
| 1991-92 | 380150 | 4.35 |
| 1992-93 | 414105 | 8.93 |
| 1993-94 | 450480 | 8.78 |
| 1994-95 | 485850 | 7.85 |
| 1995-96 | 525465 | 8.15 |
| 1996-97 | 561765 | 6.91 |
| 1997-98 | 571820 | 1.79 |
| 1998-99 | 591545 | 3.45 |
| 1999- 2000* | 628110 | 6.18 |
| 2000-2001** | 631475 | 0.54 |

*Source Rubber Board,(1999),p.32*
**Rubber Board,(2000,)p.32*
*** Rubber Board,(2001)*
*** Computed*

It can be observed from the above table that the consumption of NR was 380150 tons with an annual growth rate of 4.35% when the liberalisation policies initiated in the country in 1991-92. Annual growth rate has reached the highest level of 8.78% in 1993-94 of the post-liberalisation period by consuming 450480 tons. But in the year 1997-98 growth rate reduced to 1.79% and again to 0.54% in 2000-01 after reaching 6.18% in 1999-2000. During the 10 years period of the post-liberalisation period, NR consumption shows an average growth rate of 8.13%. Figure 4.8 exhibits the trend of NR consumption during the post-liberalisation period more clearly.

[15] Rubber Board,(2000),p.52




The above figure shows that consumption has been increasing but at a decreasing rate. Decreasing trend in the NR consumption is mainly attributed to the following reasons.

I. Liberalised policies of the government with regard to import of all types of tyres and tubes.

II. Technological upgradation of Indian made rubber products resulting in the improvement of the life of the products.

III. Increased use of radial tyres resulting in more mileage with consequent reduction in demand for new tyres.

IV. Increase in the consumption of synthetic rubber for technology upgradation, facilitated by the phased reduction of import duties.

Further analysis is required to quantify the trend of low NR consumption and to prove the authenticity of reasons for such a situation as stated above. From the foregoing analysis, it can be noted that NR consumption has increased at an average growth rate of 7.74% during the period from 1985-86 to 1995-96. If the consumption of rubber had increased in the same percentage in the subsequent years too, the consumption would have been 566136 tons, 609955 tons and 657165 tons in 1996-97, 1997-98 and 1998-99 respectively[16]. But the actual consumption of rubber was 561765, 571820 and 591545 tons during the same period. It shows there is a decline in the NR consumption by 4371 tons in 1996-97, 38135 tons in 1997-98 and 65620 tons in 1998-99.

This decline in the consumption can be attributed to the high import of used as well as new tyres especially since 1996-97 under the liberalised policies and procedures in this regard. It is estimated that when a truck tyre is imported, there is a reduction of NR consumption by 29 kg. In the case of bus tyre reduction of NR consumption is 24.70 kg. per tyre and it is 4.60 kg. when a motor car tyre is imported[17].

In India, new as well as used tyres have been imported with the advent of liberalisation policies in 1991-92. It is estimated that 390817, 376390 and 489375 tyres including bus, truck, and car have been imported in 1996-97, 1997-98 and 1998-99 respectively[18].

As a result of this import of tyre, consumption of NR has decreased by 7582 tons,7302 tons and 9494 tons in 1996-97, 1997-98 and 1998-99

---

[16] Computed on the basis of average growth rate of consumption from 1985-86 to 1995-96

[17] Statistics and planning department, Rubber Board Kottayam

[18] Chapter 2 p.28

respectively[19]. If the imported tyre had been produced in the country, the consumption of NR would have been in the order on 569347 tons, 579122 tons and 601039 tons in 1996-97, 1997-98 and 1998-99 respectively and the production and consumption of NR would also have been more or less balanced[20]. Table 4.11 shows the import of tyre and its impact on NR consumption in India during the post-liberalisation period.

**Table:4.11:-Import of Tyre and its Impact on NR Consumption in India**

| Year (1) | Consumption (In tons) (2) | Production (In tons) (3) | Surplus/Deficiency in Production (Col3-Col2) (4) | Import of Tyre (Nos) (5) | Reduction in NR due to import of Tyre (6)(in tons) | Consumption of NR in the absence of tyre import(Col2 +Col6) (7) | Deficiency/Surplus in Production in the absence of tyre import(Col3-Col7) (8)(in tons) |
|---|---|---|---|---|---|---|---|
| 1996-97 | 561765 | 549425 | -12340 | 390817 | 7582 | 569347 | -19922 |
| 1997-98 | 571820 | 583830 | 12010 | 376390 | 7302 | 579122 | 4708 |
| 1998-99 | 591545 | 605045 | 13500 | 489375 | 9494 | 601039 | 4006 |

*Source: Rubber Board(2000)pp.15,22*
*Col-5 Col.4,6,7,8-Computed*

---

[19] Due to the non-availability of accurate figure segregating truck, bus and car tyres, it is difficult to calculate the loss of weight in consumption of NR for each class of tyre. Therefore, average reduction in the quantity of NR consumption for three classes of tyre is considered as the criteria for calculating the reduced consumption.

Average reduction in the consumption of NR per tyre is calculated as follows:

$$\frac{29\ kg+24.70\ kg+4.60\ kg}{3} = 19.40\ kg.$$

Then reduction in consumption of NR is calculated as below:-

1996-97 - $\frac{390817 \times 19.40}{1000}$ = 7582 tons

1997-98 - $\frac{376390 \times 19.40}{1000}$ = 7302 tons

1998-99 - $\frac{479375 \times 19.40}{1000}$ = 9494 tons

Note: Decline in the consumption of NR due to the import of used tyre and tyre of aircraft, tractor, motor cycle, scooter and bicycle has not been taken in to consideration due to the non-availability of relevant data. Impact of synthetic rubber has not been assessed due to the absence of relevant data.

[20] production of NR in 1996-97,1997-98and 1998-99 was 549425,583830and 605045 tons respectively.

From the above table it can be observed that the gap between production and consumption would have narrowed if the import of tyre had not taken place. The gap would have further narrowed and consumption would have exceeded production if the used tyre, tyre of aircraft, tractor, scooter, bicycle etc. were not imported. From the above analysis it can be seen that the consumption of NR during the post-liberalisation period has declined compared to that of pre-liberalisation period.

Statistical significance of this finding is tested by using 'T test'by taking the null hypothesis that there is no difference between average growth rate of NR consumption of pre and post-liberalisation periods. Relevant data for the test are given in Table 4.12.

**Table:4.12:-Descriptive Statistics**

| Variables | Mean | Std.Dev. | Minimum | Maximum | Number |
|---|---|---|---|---|---|
| Pre-liberalisation | 7.71 | 5.94 | -5.21 | 25.25 | 35.00 |
| Post-Liberalisation | 5.69 | 3.00 | 0.54 | 8.93 | 10.00 |

Note- The descriptive statistics is computed on the basis of tables 4.8,2.9 and 4.10.

Since P == 0.1512, the null hypothesis is rejected and it is confirmed that difference between NR consumption during post and pre-liberalisation periods is significant. The growth rate of NR consumption during pre and post-liberalisation periods are also given in table 4.12. The table shows that the average growth rate of NR consumption during post-liberalisation period is 5.69% which is substantially lower than the 7.71% growth rate during the pre-liberalisation period.

### 4.3.4 Export of NR

Demand arising out of export of NR is to be evaluated to know the whole gamut of demand for NR in the Indian rubber market. Though rubber cultivation started in India in the early 1900s, there was no domestic consumption of NR till 1930. The entire rubber produced was exported till then. Table 4.13 shows the export of NR from 1922 to 1933.

**Table:4.13:-Export of Rubber at Early Stage of Rubber Plantation in India**

| Year | Quantity (Tons) | Year | Quantity (Tons) |
|---|---|---|---|
| 1922 | 4979 | 1928 | 7316 |
| 1923 | 3861 | 1929 | 8027 |
| 1924 | 4572 | 1930 | 6909 |
| 1925 | 6401 | 1931 | 5487 |
| 1926 | 6604 | 1932 | 1118 |
| 1927 | 7112 | 1933 | 1422 |

*Source- Haridasan(1978 b) p.63*

From the table it can be seen that the quantity of rubber exported varies from 1118 tons to 8027 tons in the early stage of rubber plantation in India.

International Rubber Regulation Agreement (IRRA) came in to existence in 1934, to fix quota of export to each member country in the Agreement with a view to control the supply and price of NR in the International Rubber Market[21]. The Agreement was in operation in India from 1934 to 1942 only. Table 4.14 shows the export of NR and quota for export from 1934 to 1942.

**Table:4.14:-Export of NR Against Quota**

| Year | Quota (tons) | Export (tons) |
|---|---|---|
| 1934 | 6960 | 6096 |
| 1935 | 8382 | 8230 |
| 1936 | 9144 | 8738 |
| 1937 | 9144 | 10161 |
| 1938 | 13209 | 8128 |
| 1939 | 17781 | 9856 |
| 1940 | 18035 | 13209 |
| 1941 | 18035 | 4164 |
| 1942 | 18035 | -- |

*Source:Haridasan (1978) pp.64,65*

[21] The agreement was the first comprehensive international plan to control the internal supply and price of NR. All the major NR producing countries at that time such as Malaysia, Sri Lanka, India, Burma, Indonesia, Thailand and China were the main signatories to the Agreement.

It can be observed from the table that exported quantity of rubber was lower than the quota fixed from 1934 to 1941 except in the year 1937.

Domestic consumption has increased considerably since 1930 and 1947. Domestic consumption of NR exceeded domestic production and from 1948 onwards India became a net importer of NR. Export of NR has occurred rarely after independence.

**4.3.4.1. Export of NR During the Pre-Liberalisation Period.**

After independence of the country NR was exported for the first time in 1955-56. During the 35 years period from 1955-56 to 1990-91, only 26517 tons of NR was exported. Table 4.15 shows the export of NR in the pre-liberalisation period.

**Table:4.15:-Export of NR during the pre-liberalization period**

| Year | Export (tons) | Production (Tons) | % of Export to Production |
|---|---|---|---|
| 1955-56 | 12 | 23730 | 0.05 |
| 1956-57 | 81 | 24060 | 0.34 |
| 1973-74 | 2700 | 125153 | 2.15 |
| 1974-75 | 350 | 130143 | 0.27 |
| 1976-77 | 12296 | 149632 | 8.22 |
| 1977-78 | 11078 | 146987 | 7.54 |
| **Total** | **26517** | **599705** | **4.42** |

*Source Rubber Board(99) pp.32,33*

From the table it can be noted that export of NR is not frequent during the pre-liberalisation period. After the export in 1956-57, NR was exported only in 1973-74 i.e.. after a period of 24 years.

**4.3.4.2. Export of NR During the Post - Liberalisation Period.**

As per the EXIM policy announced on 1st April 2001 by the Government, rubber can be exported by any individual at any time and at any quantity. But export of NR did not reach a significant level. Table 4.16 shows export of NR during the post-liberalisation period.

**Table:4.16:-Export of NR-Post Liberalization period.**

| Year | Export (Tons) | Production(Tons) | Export (%) |
|---|---|---|---|
| 1991-92 | 5834 | 366745 | 1.59 |
| 1992-93 | 5999 | 393490 | 1.52 |
| 1993-94 | 186 | 435160 | 0.04 |
| 1994-95 | 1961 | 471815 | 0.42 |
| 1995-96 | 1130 | 506910 | 0.22 |
| 1996-97 | 1598 | 549425 | 0.29 |
| 1997-98 | 1415 | 583830 | 0.24 |
| 1998-99 | 1840 | 605045 | 0.30 |
| 1999-2000 | 5989 | 622265 | 0.96 |
| **Total** | **25952** | **4534685** | **0.57** |

*Source:Rubber Board(2000) P.33.*

From the table it can be noticed that only 25952 tons of NR has been exported during the 10 years period from 1991-92 to 1999-2000. But export has been a continuous process since 1991-92 though the quantity of export is nominal.

From the foregoing analysis it can be noticed that the export marketing of NR has not developed in India. It can be attributed to the following reasons.

i) Since India was always a net importer of NR Indian rubber is unknown abroad.

ii) Because of a protected market hither to enjoyed, producers were not keen on maintaining international quality standards

iii) Since domestic price is greater than the international price. export is not remunerative

iv) India's rubber is not known popularly through a brand name abroad

v) No steps to popularise the Indian rubber abroad

vi) No continuous and regular presence in the international rubber market.

### 4.3.5. Stock of NR

Final demand for NR is emerging out of the necessity of having stock of rubber by dealers and manufacturers. When rubber dealers maintained stock

under economic considerations, manufacturers maintained it under economic as well as production considerations. They are compelled to maintain NR due to the reasons such as uneven production and evenly distributed consumption of NR throughout the year and geographical concentration and decentralisation of production and consumption respectively.

Dealers maintain stock only when they can make profit. But a number of factors governed the manufacturers in maintaining the stock. These factors include production, consumption, finance and marketing policies of the manufacturing concern, availability of NR, price of NR, inventory regulations etc.

In India, it is the practice of the manufacturers to maintain stock for two months[22]. This practice is followed due to the geographical concentration of NR production in Kerala, but its consumption take place all over the country. They can control the rubber market to a certain extent by increasing or decreasing the period of stock. When they purchase rubber for maintaining three or four months stock, the price will increase as a result of increased demand. Conversely, the price will decline due to the reduced demand when they reduce the period of stock. Table 4.17 shows the stock of rubber in the rubber economy from 1980-81 to 1999-2000. From the table it can be noted that excess stock has been accumulating in the Indian rubber market from 1980-81 to 1999-2000 except during 1994-95.

It is the limitation of the Indian rubber market that there is no mechanism to dispose off the accumulated surplus rubber to balance the demand and supply and thereby to stabilize the price of NR. This situation pointed towards the necessity of improving either the internal consumption or export of NR.

**Table:4.17:-Different Aspects of NR Stock**
**(qty. in tons)**

| Year | Stock | Required Two Months's Stock | Excess Stock * |
|---|---|---|---|
| 1980-81 | 33700 | 28938 | 4762 |
| 1981-82 | 39700 | 31403 | 8297 |
| 1982-83 | 43400 | 32590 | 10810 |
| 1983-84 | 45150 | 34913 | 10237 |
| 1984-85 | 51550 | 36251 | 15299 |
| 1985-86 | 55360 | 39573 | 15787 |
| 1986-87 | 62700 | 42884 | 19816 |
| 1987-88 | 64100 | 47913 | 16187 |
| 1988-89 | 69280 | 52305 | 16975 |
| 1989-90 | 69610 | 56973 | 12637 |
| 1990-91 | 86430 | 60718 | 25712 |
| 1991-92 | 81250 | 63358 | 17892 |
| 1992-93 | 71140 | 69017 | 2123 |
| 1993-94 | 77015 | 75080 | 1935 |
| 1994-95 | 69550 | 80975 | -11425 |
| 1995-96 | 103190 | 87577 | 15613 |
| 1996-97 | 107310 | 93627 | 13683 |
| 1997-98 | 147300 | 95303 | 51997 |
| 1998-99 | 187965 | 98590 | 89375 |
| 1999-2000 | 192570 | 104685 | 87885 |

*Source-Rubber Board(2000) p35*

** Computed*

*Note- Two Month's stock is calculated by the following formula.*
*Total consumption in an year /12x2*

### 4.3.6.Demand for Synthetic Rubber(SR) in India

SR constitutes a prime segment in the global rubber consumption. It has a share of 60% in the world consumption of rubber. The share of SR is lower than the NR only in four NR producing countries such as Malaysia, Indonesia, Thailand and India. In all the other countries in the world the share of SR is substantially higher than that of NR. In the USA the ratio of SR and NR is 67:33. In China, Japan, Germany, France, Brazil and Italy the ratio stood at 54:46, 61:39, 70:30, 67:33, 66:34 and 66:34 respectively. Table 4.18 shows global consumption of SR. From the table it can be seen that the global consumption of SR has increased from 7028000 tons in 1975 to 10110000 tons in 1999.

[22] Appendix-6

**Table:4.18:-World Consumption of Synthetic Rubber (in thousand tons)**

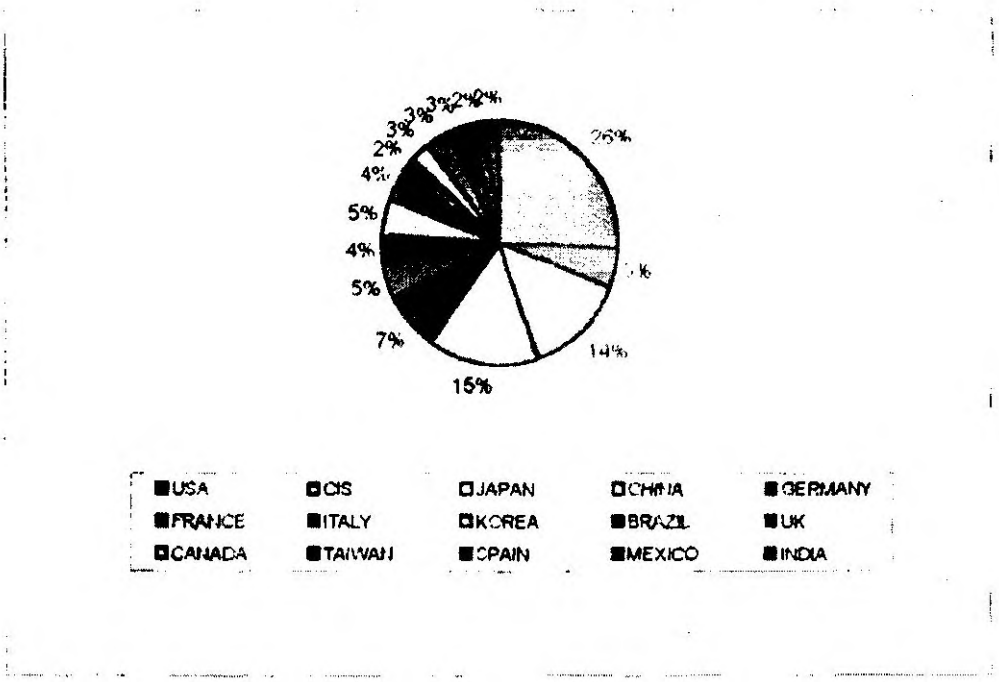
| Countries | 1975 | 1985 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| USA | 1964 | 1962 | 2051 | 1821 | 1768 | 1960 | 2001 | 2118 | 2172 | 2187 | 2323 | 2354 | 2094 |
| CIS | NA | 2115 | 2180 | 2078 | 1980 | 1200 | 770 | 422 | 424 | 438 | 450 | 420 | 425 |
| Japan | 585 | 948 | 1103 | 1133 | 1119 | 1081 | 1022 | 1026 | 1085 | 1125 | 1163 | 1116 | 1133 |
| China | 55 | 245 | 330 | 340 | 395 | 495 | 520 | 680 | 760 | 870 | 995 | 1000 | 1260 |
| Germany | 360 | 411 | 476 | 511 | 502 | 506 | 488 | 512 | 426 | 478 | 501 | 529 | 605 |
| France | 278 | 312 | 358 | 351 | 342 | 365 | 315 | 400 | 430 | 436 | 416 | 451 | 411 |
| Italy | 220 | 277 | 325 | 310 | 305 | 295 | 280 | 285 | 293 | 291 | 290 | 277 | 287 |
| Korea | NA | 145 | 236 | 279 | 251 | 275 | 300 | 320 | 370 | 440 | 406 | 275 | 394 |
| Brazil | 176 | 235 | 285 | 284 | 290 | 297 | 270 | 275 | 280 | 290 | 310 | 315 | 312 |
| UK | 266 | 201 | 240 | 223 | 201 | 231 | 211 | 220 | 226 | 230 | 235 | 187 | 189 |
| Canada | 179 | 173 | 191 | 185 | 184 | 198 | 200 | 205 | 198 | 242 | 259 | 238 | 221 |
| Taiwan | NA | 95 | 145 | 195 | 206 | 211 | 223 | 281 | 284 | 274 | 246 | 228 | 263 |
| Spain | NA | 144 | 154 | 166 | 147 | 165 | 147 | 171 | 195 | 200 | 222 | 251 | 242 |
| Mexico | NA | 140 | 107 | 114 | 110 | 124 | 119 | 126 | 132 | 160 | 162 | 180 | 169 |
| India | 32 | 70 | 90 | 97 | 100 | 110 | 111 | 116 | 133 | 142 | 158 | 155 | 164 |
| **Total** | **7028** | **9000** | **10040** | **9660** | **9220** | **9360** | **8630** | **8820** | **9260** | **9560** | **9960** | **9850** | **10110** |
| Growth Rate | | | | -3.78 | -4.55 | 1.52 | -7.8 | 2.2 | 5 | 3.24 | 4.18 | -1.1 | 2.64 |

*Note- Total includes consumption of those countries not reported seperately.*
*Source- IRSG(1999)pp.20,21*

But the growth rate is not stable. It fluctuates from –7.8% to 5%. The USA is the biggest consumer of SR followed by Japan, China, Germany, France, Korea, Brazil and Italy. Figure 4.9 gives world consumption of synthetic rubber. From the figure it can be noticed that the USA is the largest consumer of synthetic rubber with 26% followed by China, Japan and Germany by 15%, 14% and 7% respectively.

As noted earlier SR has the share of 20% in the total consumption of rubber in India and balance being met by NR. Its consumption is limited to dry rubber based industries for the production of tyres & tubes, footwears, belts and hoses, camel back, battery boxes etc. More than 50% of the SR consumption took place in the production of tyre and related products( Meaning , Types and uses of SR are narrated in the Chapter3 p.68).

**Figure:4.9:-World Consumption of Synthetic Rubber**




### 4.3.6.1.Demand For SR in the Pre-Liberalisation Period.

Domestic production of SR in India started in 1962-63 only. Till then the demand for SR was fully met by import. Even after starting its domestic production in India, a substantial quantity of SR was being imported in each year. Table 4.19 shows the consumption of SR during the pre-liberalisation period.

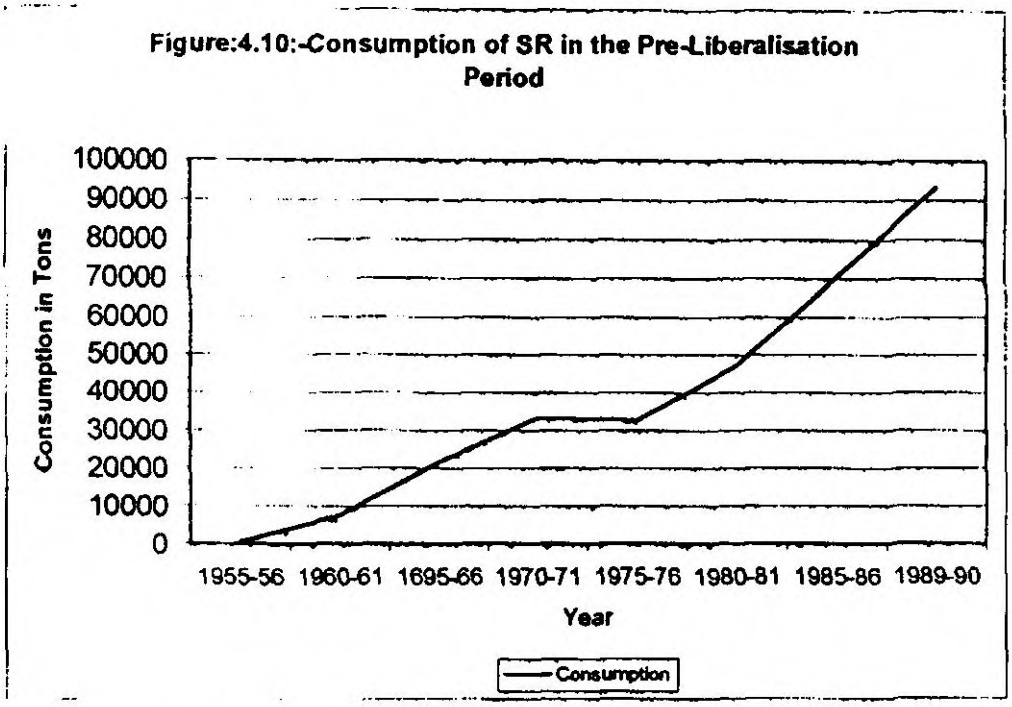
**Table:4.19:-Consumption of SR Pre-liberalisation period**

| Year | Consumption (in tons) | Average Growth Rate |
|---|---|---|
| 1955-56 | 461 | -- |
| 1960-61 | 7397 | 300.91% |
| 1965-66 | 21553 | 38.27% |
| 1970-71 | 33160 | 10.77% |
| 1975-76 | 32452 | -0.43% |
| 1980-81 | 47050 | 9% |
| 1985-86 | 70035 | 9.77% |
| 1989-90 | 93550 | 8.39% |

*Source: Rubber Board.(1999), pp.32,33*

From the table, it can be seen that the consumption of SR has increased steadily in the pre-liberalisation period except during 1970s. Consumption of mere 461 tons in 1955-56 became 93550 tons in 1989-90.

Figure 4.10 exhibits the diagrammatic representation of the growth of SR in the pre-liberalisation period. The figure shows the high increase in the consumption from 1960-61 to 1965-66 and again from 1980-81 to 1989-90.




**4.3.6.2. Demand For SR in the Post-Liberalisation Period.**

The usage of SR has considerably increased in the post-liberalisation period as a result of phased reduction in the import duties under the new economic policies. Table 4.20 shows the consumption of SR during the period 1990-91 to 1999-2000. From the table it can be observed that the consumption has increased to 167220 tons in 1999-2000 from 104735 tons in 1990-91. Average growth rate of consumption was 6.08% for the period 1990-

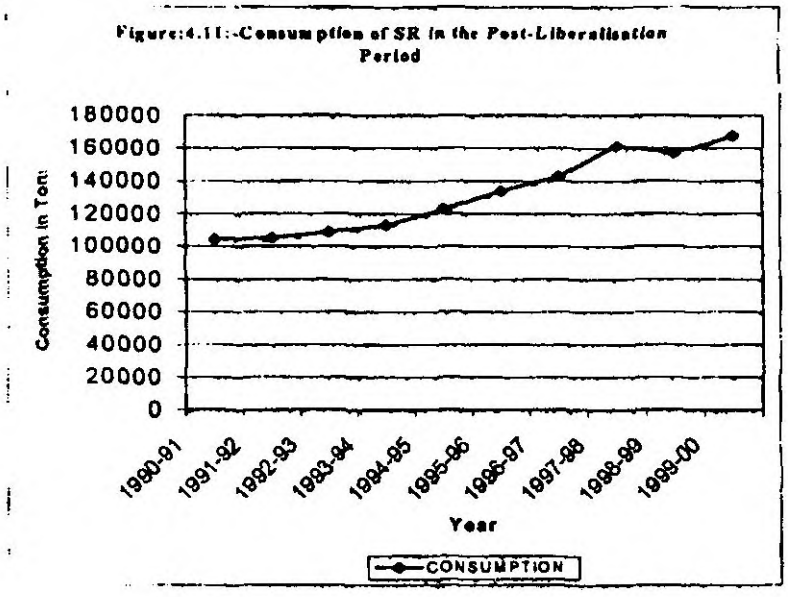
91 to 1999-2000. But the average growth rate in production was only 2.63% during the same period.

**Table:4.20:-Consumption of SR during Post-Liberalisation period**

| Year | Consumption in tons | Annual Growth Rate (%) |
|---|---|---|
| 1990-91 | 104735 | 11.96 |
| 1991-92 | 105650 | 0.85 |
| 1992-93 | 108690 | 2.88 |
| 1993-94 | 113395 | 4.33 |
| 1994-95 | 122710 | 8.21 |
| 1995-96 | 134085 | 9.27 |
| 1996-97 | 142810 | 6.51 |
| 1997-98 | 160915 | 12.68 |
| 1998-99 | 156395 | -2.81 |
| 1999-2000 | 167220 | 6.92 |

*Source:Rubber Board (1999),p.33*

Figure 4.11 shows the consumption of SR in the post-liberalisation period. From the figure, it can be observed that the consumption of SR has increased very fast during the post-liberalisation period except during 1991-92 and 1998-99.



### 4.3.7.Demand for Reclaimed Rubber in the Pre and Post-Liberalisation Periods

Reclaimed Rubber is the third segment of the rubber consumption in India and is a product obtained by reclaiming used tyre, tubes and other waste rubber goods (Details of RR given in the chapter-3 p.76). Table 4.21 shows the consumption RR during pre and post-liberalization periods.

**Table:4.21:-Consumption of RR in the pre and post liberalisation periods**

| Pre-liberalisation Period | | | Post-liberalisation Period | | |
|---|---|---|---|---|---|
| Year | Consumption (in tons) | Growth in % | Year | Consumption (in tons) | Growth in % |
| 1960-61 | 5453 | - | 1990-91 | 52500 | 13.40 |
| 1965-66 | 9774 | 13.21 | 1992-93 | 62470 | 6.33 |
| 1970-71 | 14348 | 7.80 | 1993-94 | 63110 | 1.02 |
| 1975-76 | 19342 | 5.80 | 1995-96 | 65775 | 1.41 |
| 1980-81 | 26850 | 6.47 | 1996-97 | 66585 | 1.23 |
| 1985-86 | 38215 | 7.05 | 1997-98 | 70085 | 5.25 |
| 1989-90 | 46300 | 4.23 | 1998-99 | 63095 | -9.97 |
| | | | 1999-2000 | 63450 | 0.56 |

*Source:Rubber Board,(2000)P.22*

It can be ascertained from the table that the consumption of RR increased in the pre-liberalisation period at an average growth rate of 8%. But in the post-liberalisation period, though the consumption has increased, average growth rate is only at 2.5%. Figure 4.12 shows the trend of RR consumption in the pre-liberalization period. From the figure it can be noted that consumption of RR has steadily increased in the pre-liberalisation period. Figure 4.13 shows the trend of RR consumption in the post-liberalisation period. It can be noted from the figure that RR consumption is in the increasing trend up to 1997-98 and reached the highest level of 70085 tons. But its consumption is decreasing in the following years of 1998-99 and 1999-2000. Consumption of NR was also not progressive during these years.

**Figure:4.12:-Consumption of Reclaimed Rubber (Pre-Liberalisation)**

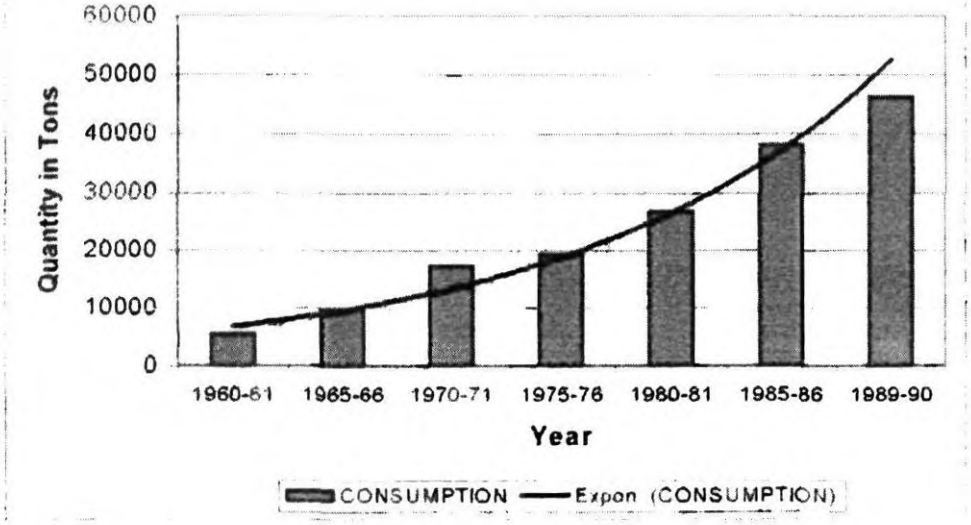
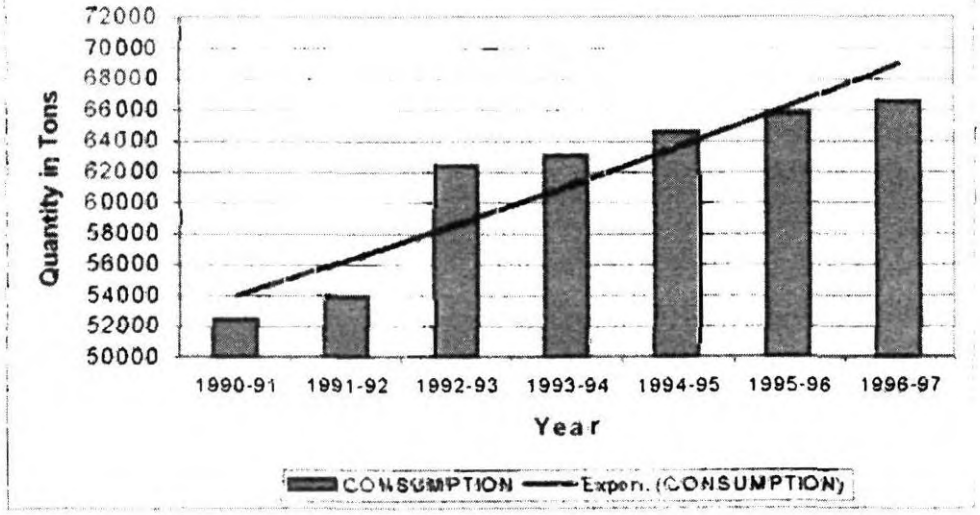



**Figure:4.13:-Consumption of Reclaimed Rubber (Post-Liberalisation)**



Thus it can be noted that NR constitute 72% of the total demand for rubber in the country followed by SR at 19% and RR at 9%. The consumption of NR has registered a steady growth during the pre-liberalisatiom period. During the post-liberalisation period, its consumption has increased but at a decreasing trend. It can be noted further that NR consumption in India is highly depends upon the progress made by the automobile industry.