

# **OVERCOMING MACROECONOMIC CHALLENGES AND REAPING EFFECTIVE BENEFITS THROUGH STATISTICAL ANALYSIS**

## **RUBBER INDUSTRY IN SRI LANKA**

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### **MIS 1112: Basic Statistics in Industry**

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**Due Date: 02.03.2022**

## **Certification**

We hereby certify that the material presented in this report is original and no other persons' work or ideas have been used without acknowledgement.

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## **Acknowledgements**

The writing of this dissertation has been one of the most significant academic challenges we have ever had to face. Without the support, patience and guidance of the following people, this study would not have been completed. It is to them that we owe our deepest gratitude

Prof. Leslie Jayasekara, Department of the Mathematics, Faculty of Science, University of Ruhuna, we would like to recall here the work done by the core statisticians in our industry, who have gone beyond the academic limitations of the course and studied the subjects through well-defined, detailed and detailed studies. That guidance provided us with a good insight into this study.

We thank the Head of Department and all the other staff members of the Department of Mathematics for their assistance during the Basic Statistics in Industry Course Unit. In addition to that, we would like to thank our Batch-mates and other family members of their unstinted support and motivation

## Content

1.	Introduction.....	07
2.	Methodology.....	08
	2.1. Methodological Approach	
	2.2. Methods of Data Collection	
	2.3. Methods of analysis	
	2.4. Evaluate & Justify Metrological Choices	
3.	Industries in Sri Lanka.....	09
4.	Rubber Industry.....	11
	4.1. History	
	4.2. Contribution of economy	
5.	Global Rubber Industry.....	13
	5.1. Introduction	
	5.2. Statistics	
6.	Current situation in Rubber Industry .....	16
	6.1. Introduction	
	6.2. Statistics in Industry	
7.	Rubber Plantation .....	19
	7.1. Introduction	
	7.2. Rubber Plantation Distribution	
	7.3. Strengths for Rubber Plantation	
	7.3.1. Government Support	
	7.3.2. Environmentally Friendly Raw Material	
	7.4. Problems	
	7.4.1. Decrease the No. Of People Engage with Industry	
	7.4.2. Lack of Technology	
	7.4.3. Inadequate Raw Materials	
	7.4.4. Low Plantation	
8.	Rubber Production Industry.....	24
9.	Latex industry .....	26
	9.1. Introduction	
	9.2. Current process	
	9.3. Current Strengths	
	9.3.1. Government Support	
	9.3.2. Availability Of Natural Product	
	9.3.3. Trained Workforce in Industry	
	9.4. Issues in industry	
	9.4.1. High cost of testing Certification	
	9.4.2. High cost of machineries	
	9.4.3. High cost of Energy	

10.	Dry Rubber Industry.....	30
10.1.	Introduction	
11.	Import Finished Rubber Product Industry .....	31
11.1.	Current situation	
11.2.	Disadvantages for economy by import finished products	
12.	Export Finished Rubber Product Industry .....	33
12.1.	Current Situation	
12.2.	Key players in the sector	
12.3.	Exports	
12.4.	Current strengths	
12.5.	Problems in Industry	
13.	Future Plans in Industry .....	36
13.1.	Government Plans	
13.2.	Increase the Rubber Plantation	
13.3.	Raw rubber production	
13.4.	Rubber wood	
13.5.	Reclaimed rubber	
14.	New Suggestions to Develop the Industry .....	43
14.1.	Introduction	
14.2.	How to increase the Production	
14.3.	Re-Develop the Export Revenue	
14.4.	Wages	
14.5.	Plantation	
14.6.	Get professionals involved in the industry & launching a new degree program related to the industry	
14.7.	Join the international market	
14.8.	Promote the industry to attract new foreign investments	
14.9.	Introduce New Technology	
15.	Executive-Summary .....	49
16.	Reference .....	50

## List of Tables

Table 4.1: Contribution of Economy –Rubber Industry

Table 6.1: Rubber Statistics in 2021

Table 6.2: Location of factories

Table 9.1: Latex Production

Table 9.2: High cost of testing Certification

Table 9.3: High cost of machineries

Table 11.1: Performance

Table 12.1: Value (US\$ Million))

Table 12.2: Production by Different Types

Table 12.3: Exports  
 Table 13.1: Exacted Statistics  
 Table 13.2: Rubber wood  
 Table 13.3: Reclaimed rubber  
 Table 14.1: Production fluctuation last five years  
 Table 14.2: Production Analysis  
 Table 14.3: Export Analysis  
 Table 14.4: Monthly Wages

## **List of Figures**

Figure 1.1: Total export income in Sri Lanka (Feb. 2021 – Jan. 2022)  
 Figure 3.1: Gross Domestic product from 2010 to 2020  
 Figure 3.2: National Export Strategy 2020  
 Figure 5.1: production of rubber worldwide  
 Figure 5.2: Consumption of natural rubber worldwide  
 Figure 5.1: production of rubber worldwide Figure 5.2: Consumption of natural rubber worldwide  
 Figure 6.3: Value of Global Industry  
 Figure 6.2: Percentage Share of total Exports  
 Figure 7.1: Rubber Plantation by District  
 Figure 7.2: Rubber Replanting  
 Figure 7.3: Air Monitors Rates (2022/02/23:4.40PM)  
 Figure 7.4: Labors vs Year  
 Figure 7.5: Key Indicators Rubber (Area)  
 Figure 8.1: Rubber Production 2015-2021  
 Figure 8.2: Cost of Production  
 Figure 8.3: Total Production  
 Figure 9.1: Production Categories  
 Figure 9.2: Latex prices  
 Figure 9.3: Energy consumption  
 Figure 9.4: Energy consumption Description  
 Figure 11.1: Major Import Categories - (Jan-Nov 2021)  
 Figure 12.1: Export Countries  
 Figure 13.1: Total Rubber Extent, Matured Extent  
 Figure 13.2: Outputs

Figure 13.3: Yield

Figure 13.4: Export, Local sale

Figure 13.5: Tires Industrial/Agricultural/Construction

Figure 13.6: Tires Automotive

Figure 13.7: Latex Based production

Figure 13.8: Total sales at local market

Figure 14.1: Production Distribution

Figure 14.2: Export performance

Figure 14.3: Year vs Export

Figure 14.4: Month Vs. Planting Male wage

Figure 14.5: Month vs. Tapping Male Wages

Figure 14.6: Annual Yield

Figure: 14.7 Yield Analysis

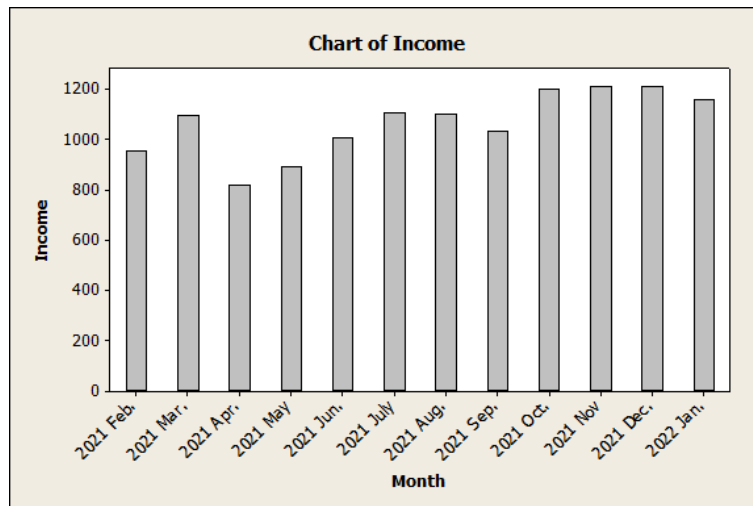
Figure 14.8: Web window of UOUW

## 1. Introduction

Sri Lanka is known as a third world developing country. Garment, tea, coconut, rubber and spices are the major products of the manufacturing economy. Through these products, a large amount of foreign exchange reserves flow into the Sri Lankan economy annually. Moreover, there are a huge number of people who are directly and indirectly involved with these industries.

The table below shows the outstanding contribution made by the above industries to the Sri Lankan economy during the last one-year period.

Figure1.1 Total export income in Sri Lanka (Feb. 2021 – Jan. 2022)



Resource: - Trade economic Sri Lanka website

Despite the pandemic situation, the contribution of the export economy to the Sri Lankan economy is well illustrated by the high returns.

This study aims to analyse the rubber industry, which is unique among these industries as well as contributing the most economically.

After a brief introduction to the history of the rubber industry, we hope to provide a clear understanding of the current state of the industry by conducting an optimal analysis of the current state of the industry.

We hope to conduct a comprehensive study of existing problems and strengths in the field using data analyzed using existing recognized databases and web searches in Sri Lanka to come up with numerical solutions to problems in the field as well as ideas to improve existing strengths. In the meantime, we are planning to make a new proposal using the data we have analyzed, as well as a forecast of plans in the field.

We hope that this will make a small or significant contribution to the future prosperity of the rubber industry.



## **2. Methodology**

### **2.1. Methodological Approach**

The study was started by reviewing the literature regarding the barriers for rubber products manufacturing industry. Then, the data sources were carried out to find out the present situations, barriers, difficulties, issues and solutions in the rubber products manufacturing industry.

### **2.2. Methods of Data Collection**

Target rubber industries were large and medium category and more than 15 web sites based on rubber industry were distributed according to the annual export performance (turnover) in each rubber products sectors. More than ten reports were distributed through plantation industry; eight of end reports were distributed through Latex/Gloves industries and five copies of surveys were distributed through Other Articles industries

### **2.3. Methods of analysis**

The gathered data was analyzed using Minitab software and Excel was illustrated using a diagram. Quantitative analysis was performed using statistical techniques such as linear correlation and Regression analysis was performed to identify barriers and solutions to them.

### **2.4. Evaluate & Justify Metrological Choices**

We analyzed our collected data by using methods, which were called in previously. Using these methods, we evaluated our historical data and predicted the next ten years in industry. Not only that but also, we were making new suggestions to improve the industry performance.

### 3. Industries in Sri Lanka

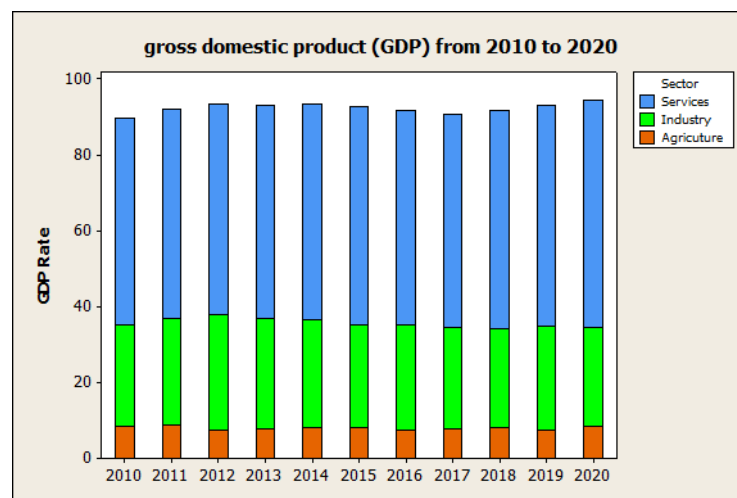
After a number of revolutions in the past, the world is moving towards a manufacturing-oriented industrialization. New industries are being created day by day, creating a competitive economy day by day.

Among the various industries that have been created around the world, especially those that started with natural resources, have a long history of existence.

From time immemorial, the manufacturing economy has occupied a special place in the Sri Lankan economy. Plantation crops and allied products and garments are the mainstays of the country's manufacturing economy. Among the plantation products, paddy, coconut, rubber, tea and cinnamon are the major products.

The major stakeholder sectors in the Sri Lankan economy are agriculture, industry and services. According to the table below, the service sector contributes the most. These services mainly focus on areas such as education, health, and transportation. Industries include garments, dry foods, tea and rubber. Agriculture mainly consists of paddy, vegetables and fruits

Figure 3.1: Gross Domestic product from 2010 to 2020

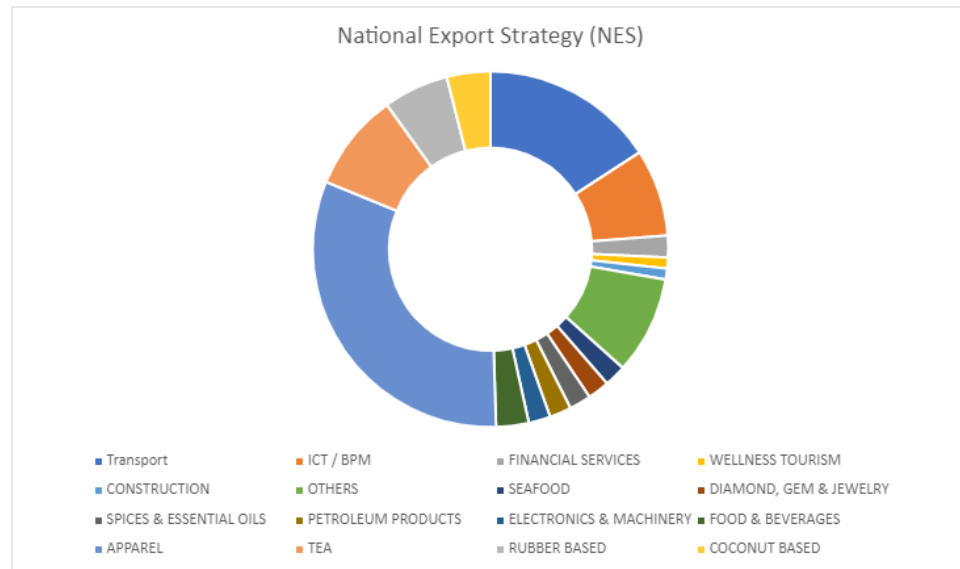


Source – CBSL official website

According to the table above, it is clear that the service sector contributes the most to the country's economy. Although no clear growth was observed in the agro-industrial sector, the services sector has been making steady growth and is making a commendable contribution to the economy. This is well illustrated by the above Central Bank Annual Data Report.

Sri Lanka's export earnings, as analyzed in the above fields, can also be represented as industries below.

Figure 3.2: National Export Strategy 2020



Resource: Volume 33, Issue 1/2020, Sri Lanka Export Development Board

Export related companies account for 18% of the total annual revenue of the country. Merchandise accounts for 27% of the total export earnings and the remaining 73% from service exports. Exports also account for 32% of the total contribution from the apparel sector, 16% from the transport sector and 9% from the tea sector. The rubber industry contributes 6% to the Sri Lankan economy. Except these sources Construction, ICT/BPM, finance service, wellness tourism are also contributing their contribution.

## 4. Rubber Industry

Although paddy cultivation was the main industry in the country, with the migration of the western nations, the agrarian economy shifted to the plantation crop industry. Tea, coconut, rubber and coffee are the major plantation crops that were started in this manner. Here we focus on rubber, which is an important industry.

### 4.1. History

On 12 August 1876, the Colonial Office, on the recommendation of Sir Joseph Hooker, sent 38 cases containing 1,919 rubber seedlings from Kew Gardens to Ceylon. The seedlings were germinated from seeds collected by **Sir Henry Wickham** in Brazil earlier that year. With a further 300 seedlings sent in late 1876/early 1877. Ceylon was selected by the Colonial Office as the most suitable site to cultivate and propagate the rubber plants, for further distribution to other comparable regions in the Indian subcontinent. The seedlings were planted at the **Henarathgoda Botanical Garden in Gampaha**, under the guidance of George Thwaites, the Garden's superintendent. In 1877, twenty-two of these young trees were sent to Singapore, and the seedlings from those trees were distributed throughout Malaysia and Borneo. In 1879, twenty-eight plants were sent to India and Burma. The first of the rubber trees in Ceylon flowered in 1881, and the first experiments in tapping subsequently commenced shortly afterwards. In 1893 over 90,000 seeds were supplied to planters throughout Ceylon, in 1900 there was approximately 405 hectares (1,001 acres) of rubber being cultivated and by 1923 there were over 180,085 hectares (445,000 acres).



Sir Henry Wickham

### 4.2. Contribution of Economy

The Sri Lanka Rubber industry has a long history and is crucial to the national economy. Because it generates over 1,000 million US dollars as an aggregate annual turnover, and it gives more than 500,000 employment opportunities to people in rural as well as urban areas.

Table 4.1: Contribution of Economy –Rubber Industry

Contribution of Economy –Rubber Industry		
Exports	6% in Total Exports in Sri Lanka	Export: Latex crepe rubber <b>Rs.4.8 billion</b> p.a
		Export: rubber finished product <b>Rs. 152 billion</b> p.a
Production (Raw rubber and Latex)	Export	<b>135,000 Mt</b> (2018)
	Domestic Consumption	<b>76,000 Mt</b> (2018)

Resource: Rubber Research Institute of Sri Lanka, Ministry of Plantation

Out of the 6% contribution to the overall economy of the country, Rs. The rubber industry has contributed Rs. 152 billion and Rs.4.8 billion in revenue from rubber milk products. Meanwhile, more than half of Sri Lanka's domestic rubber production, or 135,000 Mt, is exported and 76,000 Mt is used for domestic consumption

## **5. Global Rubber Industry**

### **5.1. Introduction**

The future of the rubber industry is tied to the global economy. The consumption of rubber worldwide during the period 1993-2003 was between 3.5 and 4.0% annually and was in line with the increase of world GDP. The growth rate for rubber should be more than those for motor vehicle production and motor vehicle registration in the coming years. Non-tire applications account for the majority of usage of rubber at 52 to 54 percent of the total, with little change expected. There are and will be numerous applications in various sectors like:

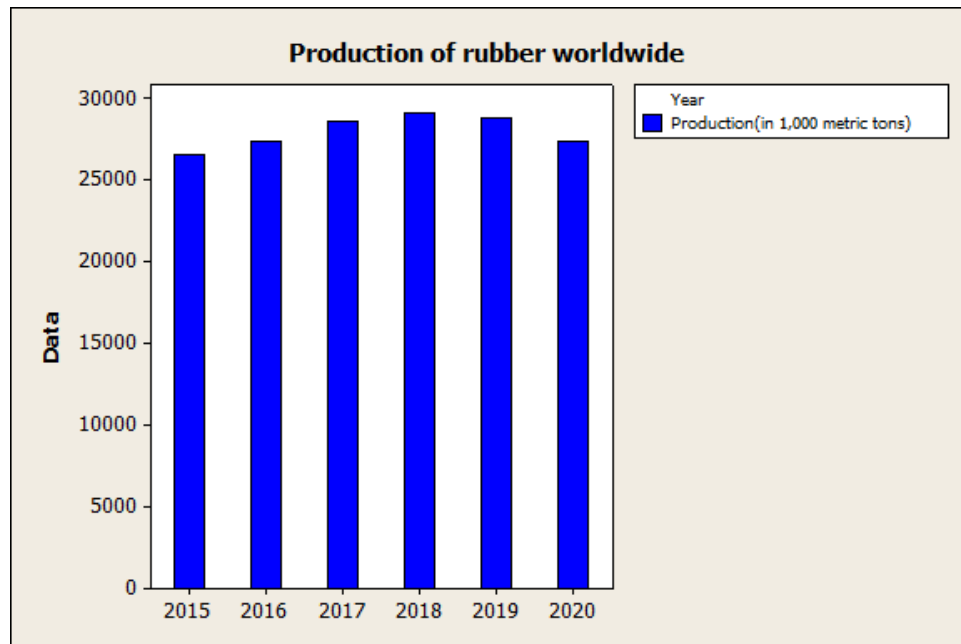
- Automotive (belts, hoses, gaskets, moldings)
- Industrial (adhesives, padding, belting, vibration dampening, wire sheathing)
- Consumer (toys, door moldings)
- Construction (roofing, sealants, moldings)

The outlook is very bright for midrange specialty elastomers, such as ethylene-propylene and nitrile. The US synthetic rubber industry reports more than \$4.5 billion in annual shipments, and it exports substantial amounts of these materials. The production and sales of rubber-based products constitute major market opportunities.

### **5.2. Statistics**

Here we attempt to provide an insight into the current state of the world rubber industry through data analysis over the past few years.

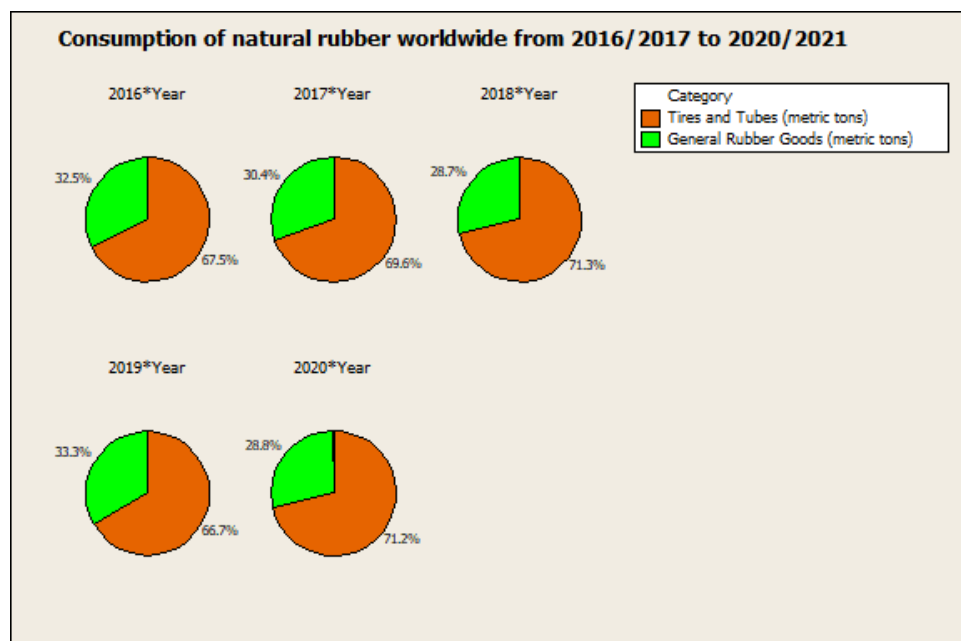
Figure 5.1: production of rubber worldwide



Source: Statista.com

The analysis of the above note shows that the global industry has also suffered a severe setback in the face of the current unfavorable economic situation.

Figure 5.2: Consumption of natural rubber worldwide



Source: Statista.com

The above notes illustrate the global rubber consumption in recent years. Accordingly, the main point that is clear from this is that nearly 70% of the total rubber production is used for tire related products and the remaining amount is used for general production



## 6. Current situation in Industry

### 6.1. Introduction

As the pioneer of the global Natural rubber industry, Sri Lanka is renowned for its production of high-quality natural rubber and rubber-based products. Initiated by the planting of 1,919 seedlings in 1876, the Sri Lanka rubber industry has given birth to an outstanding and profitable supply chain. Products made in Sri Lanka are internationally accepted for their durability and superior quality. Throughout the years, the industry has paved its way to niche market-based products such as solid tires, sole crepe for shoes, and high-quality surgical gloves and other gloves.

The manufactured raw natural rubber falls under types and varieties, out of which the main grades are ribbed smoked sheets (RSS) rubber, crepe rubber, technically specified rubber (TSR), and Latex concentrate.

The country's natural rubber manufacturing industry includes small, medium, and large product and material manufacturing organizations that collectively result in a large portfolio of products that are either sold locally or exported.

### 6.2. Statistics In Industry

The following is a brief overview of the rubber industry over the past year.

Table 6.1: Rubber Statistics in 2021

Export Revenue In 2021	\$1.09 billion
Export Revenue Target In 2024	\$4.4 billion
Yield	137,182 hectares
exports in 2021	84,566,799 kg

Source: Statistical Pocket Book 2021, Department of Census and Statistics

By the end of last year, the rubber industry had grossed over \$ 1 billion over the past year. Thus, the industry plans to increase this revenue to \$ 4.4 billion by 2024. It also has an area of 137,182 hectares of cultivable land with an export capacity of over 84 million by 2021. Thus, the enormity of the expansion of the rubber industry is very clear.

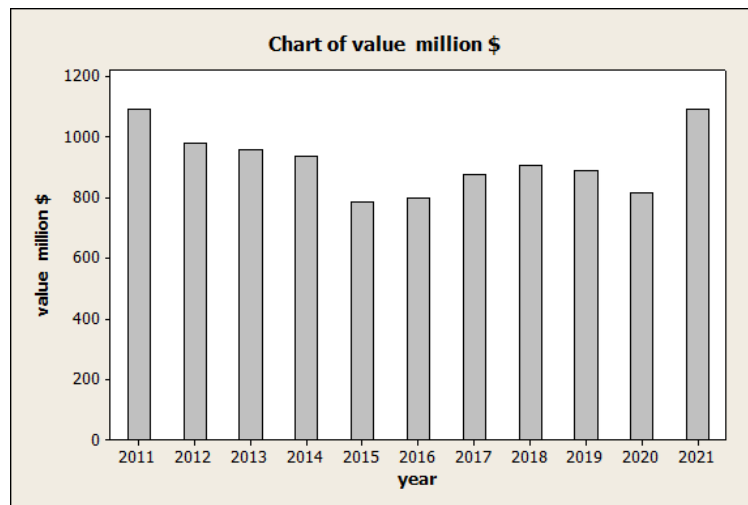
62 factories were surveyed in six districts in the country as given in Table. These were the total number of factories that were in operation at the time of data collection. As expected, the majority of the processing units that were in operation were found in the Kalutara district, as it is the main rubber-growing district in the country

Table 6.2: Location of factories

Location of factories	
Districts	No. of Factories Studied
Kalutara	26
Kegalle	12
Rathnapura	12
Colombo and Gampaha	6
Galle	6

The following is an overall capital variation of the global rubber industry. The value of the industry changed year by year and it reached its lowest value in 2020 because of the pandemic situation.

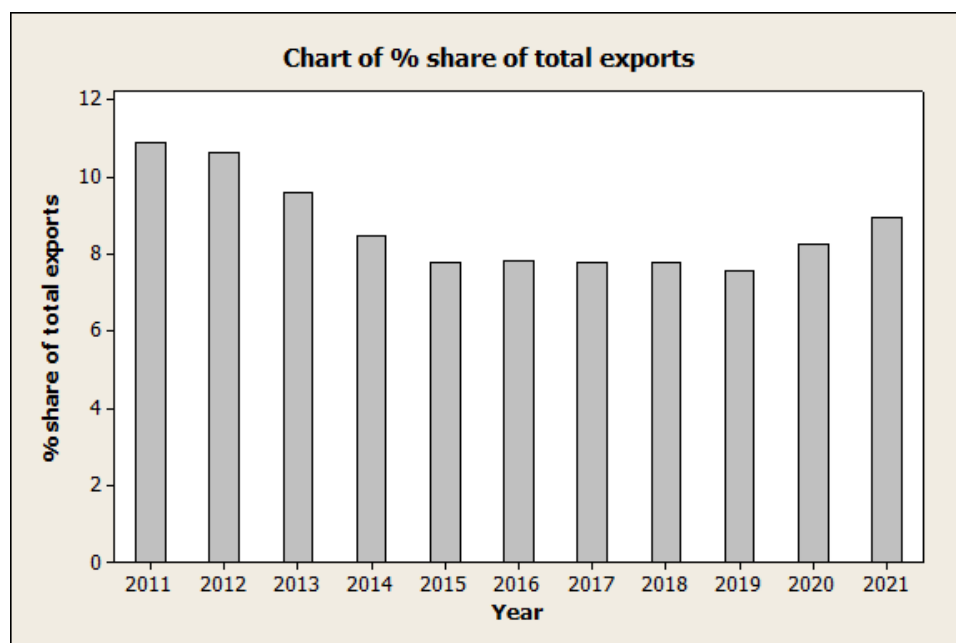
Figure 6.1: Value of Global Industry



Source: Industry Capability Report, Sri Lankan Rubber Products Sector

It is observed that in the face of the global epidemic, the decline in Sri Lankan production has now begun to grow steadily.

Figure 6.2: Percentage Share of total Exports



Source: Fiscal Management Report 2022

## **7. Rubber Plantation**

### **7.1. Introduction**

The rubber industry links traditional tree crop agriculture with sophisticated industrial manufacturing in a strongly interdependent manner that has made both the sectors more stable and competitive in the global marketplace.

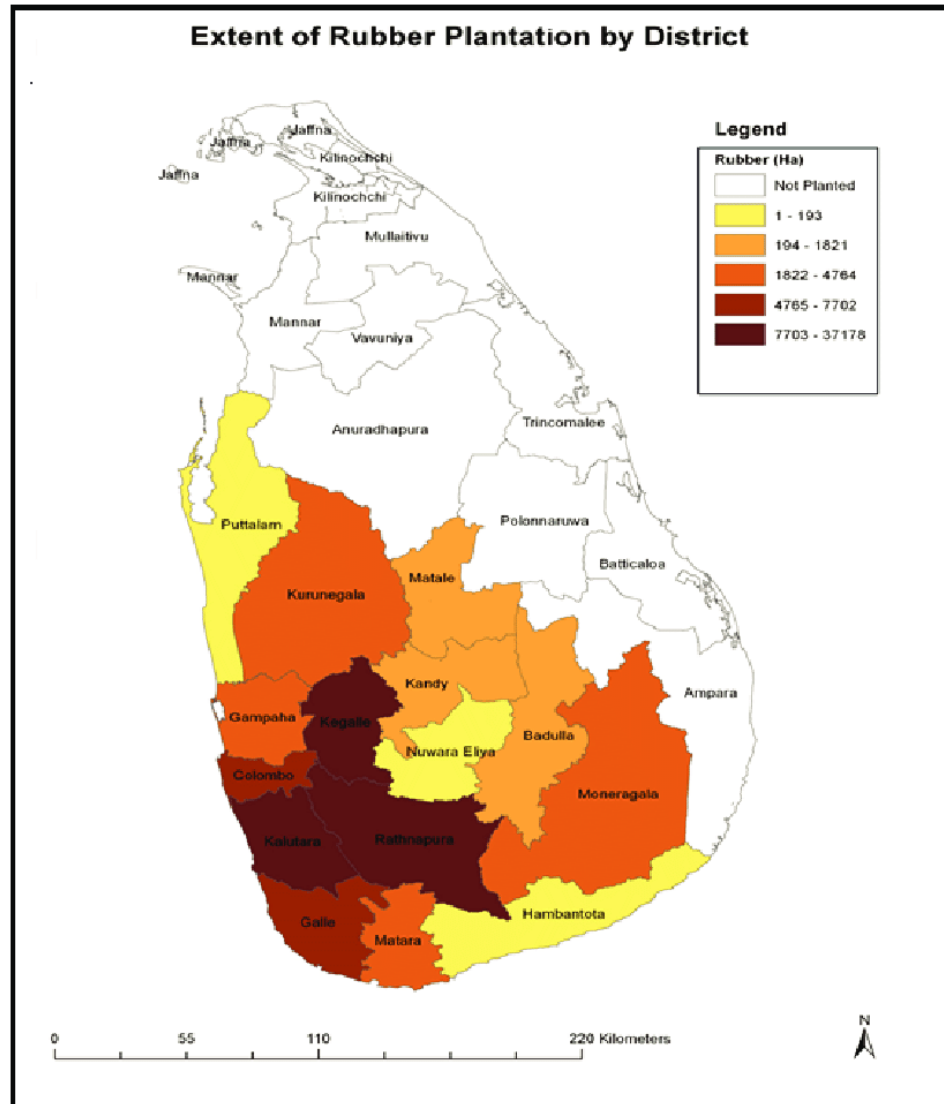
Sri Lanka has a well-established natural rubber industry with a well-organized infrastructure comprising all supporting institutes in the public and private sector. Rubber Research Institute (RRI) of Sri Lanka is one of the oldest research institutes for rubber in the world. Moreover, Sri Lankan rubber sector is the third largest export earner of the country providing over 300,000 direct and indirect job opportunities to Sri Lankans across various professions and walks of life

### **7.2. Rubber Plantation Distribution**

The traditional rubber growing areas of Sri Lanka is located mainly in the wet zone in a land extent of 127,500 hectares. The country's traditional rubber growing districts include Colombo, Gampaha, Kalutara, Kandy, Matale, Galle, Matara, Kurunegala, Rathnapura, and Kegalle.

Yet with the introduction of a series of new rubber clones by RRI, that can withstand the dry weather, dry non – traditional regions of Sri Lanka too have become locations of interest to local rubber growers.

Figure 7.1: Rubber Plantation by District



Source:

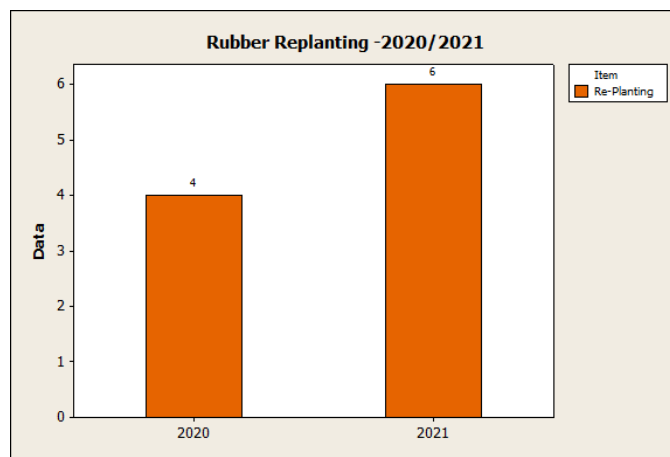
Rubber cultivation is most prevalent in the wetlands of the southwestern part of Sri Lanka and those areas are marked in bold in the note above. In addition, small-scale cultivation is carried out in other districts of the country such as Matara, Gampaha, Kurunegala, Monaragala, Matale, Badulla, Kandy, Nuwara Eliya as well as Hambantota and Puttalam districts.

## 7.3. Strengths for Rubber Plantation

### 7.3.1. Government Support

The Government is implementing various projects for the replanting of rubber to develop the rubber industry and strengthen the economy of the country. Thus, Rs. 4 million will be spent to restart rubber plantations in 2020 and Rs. 6 million in 2021. This is a 50% increase in investment over 2020

Figure 7.2: Rubber Replanting



Source: Budget 2022, Sri Lanka

### 7.3.2. Environmentally Friendly raw materials

Below is a graphic diagram of the International Air Indicators. It is clear to you that air pollution is high in the industrialized areas of the country. This is due to the high heat and harmful gasses emitted from the factories. However, despite the expansion of industries such as eco-friendly rubber, it does not adversely affect the environment and only creates an environmentally friendly environment by increasing plant density.

Figure 7.3: Air Monitors Rates (2022/02/23:4.40PM)



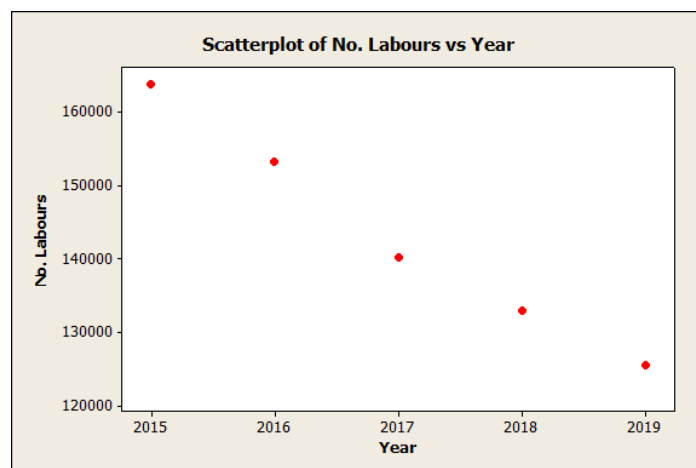
Source: IQair.com

## 7.4. Problems

### 7.4.1. Decrease the No. Of People Engage with Industry

Due to the difficulties in the industry as well as the shortage of wages, the number of employees shifting to other jobs and the non-recruitment of new employees are the main reasons for the decline in the labor force associated with the rubber industry. At the same time, the government as well as the private sector do not have a proper job promotion program

Figure 7.4: Labors vs Year



Source: Rubber Development Department

### 7.4.2. Lack of Technology

The rubber industry in Sri Lanka today has both traditional methods. Due to this a significant decline in the quality of rubber and rubber related products can be seen. At the same time, many tasks still depend on human labor, which can be costly and costly.

In addition, the demand for Sri Lankan products in the international market has

declined due to rubber cutting, vulcanization of rubber latex as well as the fact that some products are not yet advancing with the new technology.

### 7.4.3. Inadequate Raw Materials

It is observed that even the basic equipment required by many industries has risen sharply due to the daily depreciation of foreign exchange reserves as world market prices have risen. As a result, employers as well as clients have a hard time keeping up with the industry

### 7.4.4. Low Plantation

Table 7.1: Extent under Principal Crop and Food Crop, 2016-2020

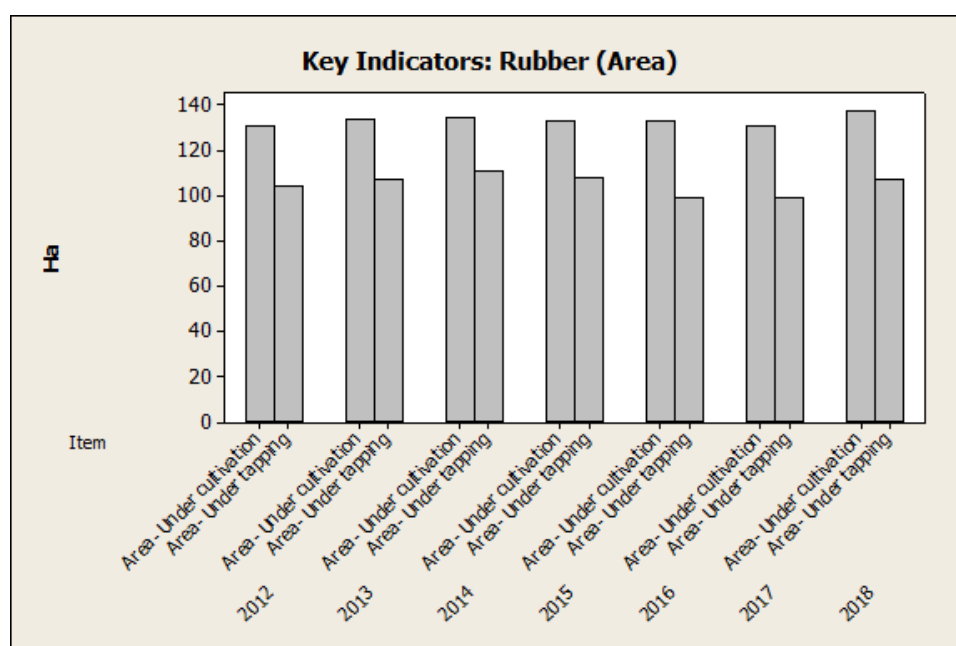
	2016	2017	2018	2019	2020
Yield (Hectares)	120,867	136,632	136,875	137,608	137,288

Source: Statistical Pocket Book 2021, CBSL

Although rubber cultivation has resumed due to the scarcity of land under rubber cultivation, there has been a setback. We see the main reason for this is the lack of proper supervision of projects and the lack of plans and policies to replant rubber.

According to the above data, despite the growth of 13% in 2017, the progress achieved in 2018 is as low as 0.1%. The failure of these programs is evident from the 0.5% growth rate in 2019 and the 0.2% decline in 2020

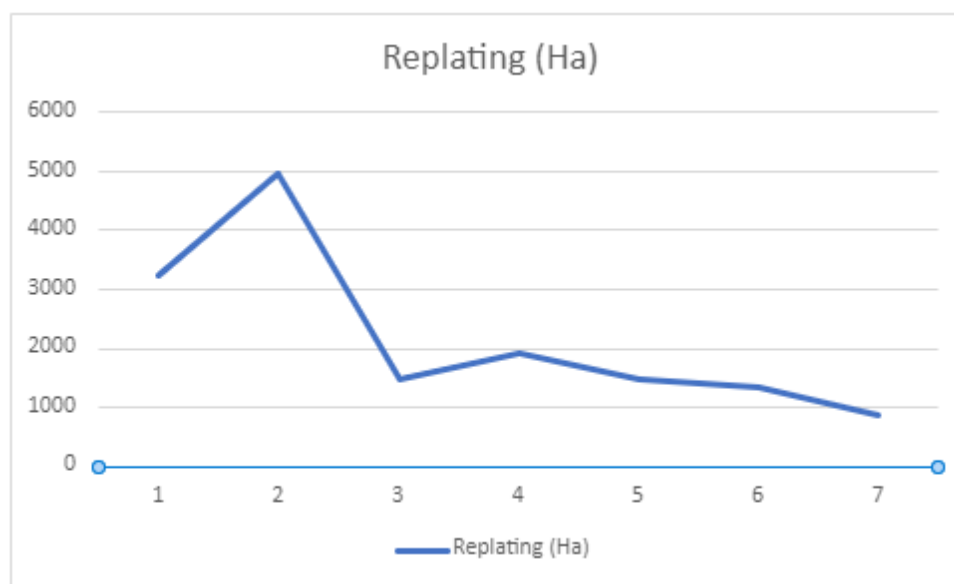
Figure 7.5: Key Indicators Rubber (Area)





The following are the areas where rubber cultivation and rubber tapping areas out of the total area of rubber cultivation in the country at present. There is a significant increase in rubber tapping areas as compared to rubber growing areas.

Figure 7.5: Key Indicators Rubber (Area)



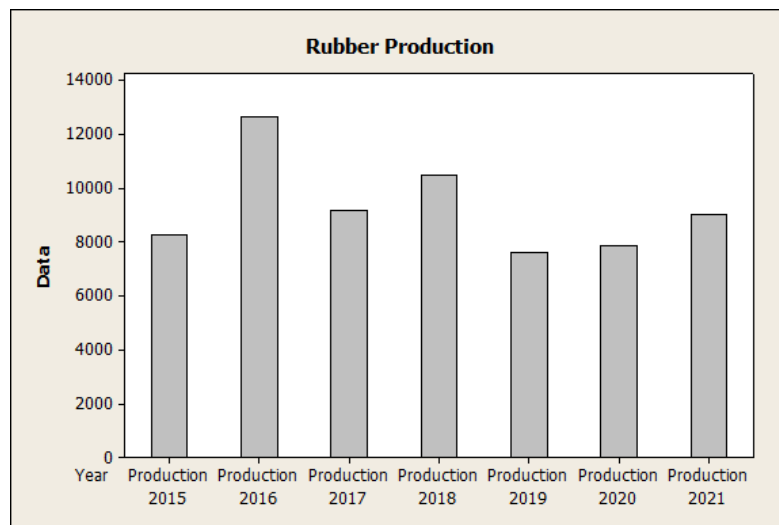
1. 2014 / 2. 2015 / 3. 2016 / 4. 2017 / 5. 2018 / 6. 2019 / 7. 2020

The above note also shows the growth rate of crop replanting for each year in the last few years, which has also declined sharply.

## 8. Rubber Production Industry

The rubber industry has played a significant role in the Sri Lankan economy as a key sector. Its stature is growing with the value-added products segment reaching great heights having been recognized as the world's preferred supplier of industrial solid Tyre and rubberized tracks. However, market share of Sri Lanka's raw rubber has been steadily declining during past years. During the literature review, it has been observed that key indicators for the rubber industry and their fluctuation since 2015 to 2021, when considering the raw rubber production in 2016, had been reached to the maximum level and coming down but there is no indication of stooping the downtrend. Therefore, there must be barriers for rubber production. Considering the area of cultivation, both under-cultivation area and under tapping area were also increasing since 2010 but production is reducing year by year. It can be observed by checking yield per hectare; it has been reduced from 1582 kg/ha in 2015 to 823 kg/ha in 2020. This implies that there are more barriers in the rubber plantation sector such as technological barriers. By considering the replanting area and new planting area, it can be observed that both are having declining trends. It means that Sri Lankan people are going to give up rubber cultivation in near future and there may be reasons for that such as political, social barriers or economic barriers.

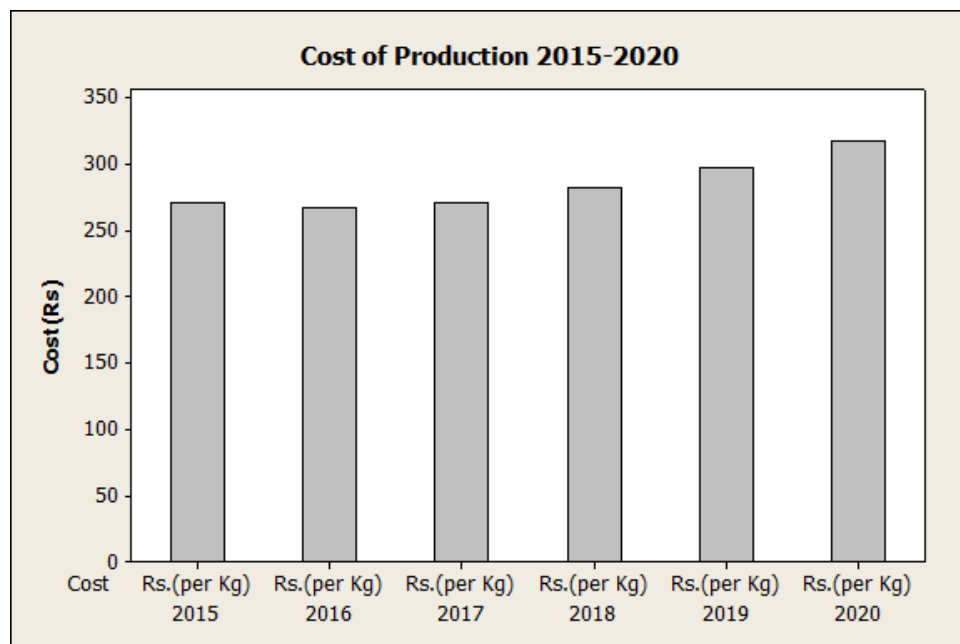
Figure 8.1: Rubber Production 2015-2021



Source: Rubber Research Institute of Sri Lanka, Ministry of Plantation

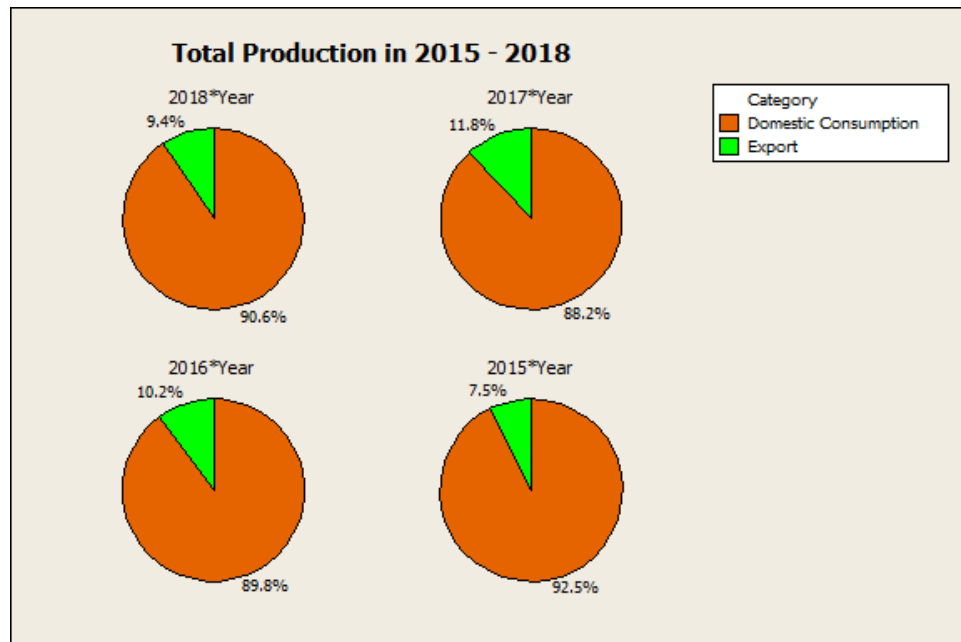
Since 2010, the rubber prices of Free on Board (FOB) and Colombo Auction have reached its maximum level in 2016 and thereafter coming down till 2019. It is obvious that no fair prices for raw rubber production due to cost of production of around Rs. 270 per kg for smallholdings sector and around Rs, 366 for estate sector and cost of production was increasing from 2015 up to 2020 although the other indicators decreased. This is also implied that there are big problems in the rubber industry such as technology transferring, legal, environmental or political barriers.

Figure 8.2: Cost of Production



The above shows how the cost per unit of rubber production fluctuates annually.

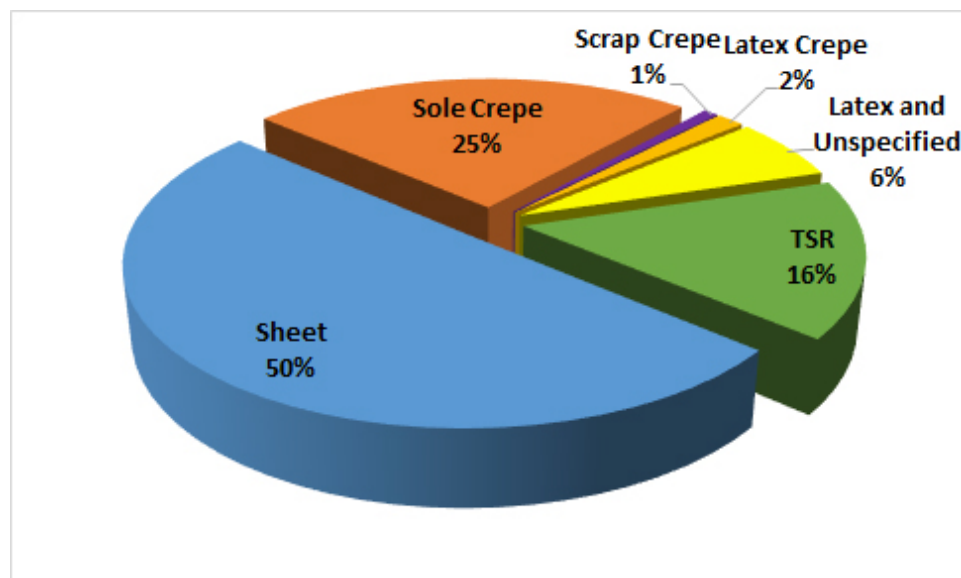
Figure 8.3: Total Production



## 9. Latex industry

### 9.1. Introduction

Figure 9.1: Production Categories



By upgrading technology on raw rubber processing, and promoting the premium grades of Latex Crepes, Sri Lanka exclusively manufactured Latex products for food, pharmaceutical and infant toy industry to gain highest price payable from the correct

end-users and developed the rubber product manufacturing industry by eliminating problems such as protein allergy, Sulfur blooming and environmental pollution.

Surgical, household, agricultural, and examination gloves, hygienic or pharmaceutical articles, balloons, Halloween masks, latex thread and articles of apparel and clothing products and rubber toys are among the major products manufactured by the Latex 28 product industries in Sri Lanka. Latex product industry has expanded significantly over the last decade and presently it attributes to around 35% of the local consumption of NR

## 9.2. Current process

### ● Prices

Figure 9.2: Latex prices



### ● Production

Table 9.1: Latex Production

Year	Sheet	Sole Crepe	Scrap Crepe	Latex Crepe	T.S.R.	Latex Other	Total (MT)
2015	44,392	1,939	886	8,266	7,606	25,478	88,567
2016	39,754	1,575	791	12,618	3,865	20,497	79,100
2017	41,523	1,476	830	9,160	1,204	28,878	83,071
2018	41,300	1,400	2,600	10,500	800	26,000	82,600

Source: Rubber Development Department

## 9.3. Current Strengths

### 9.3.1. Government Support

Rubber and value-added product oleaginous fruit subdivisions increased 15.8 and 10.2 percent, respective Percentage in the first half of 2021 respectively

Similarly, rubber production increased 12.1 per cent to 56.3 million kg first Eight months due to attractive prices. Caused by the high demand for rubber.

Average rubber latex crepe 1X price CRA increased at Colombo Rubber Auction Significantly 51.1 percent to Rs. 680 each Kg. In the first eight months of 2021, Rs.450 at the end of 2020

### 9.3.2. Availability Of Natural Product

Rubber is the main raw material in the production of rubber milk and as it is a natural raw material, it is less difficult to obtain and less likely to decay. Therefore, the industry is safe from the availability of raw materials as the main raw material of the industry is abundant.

## 9.4. Issues in industry

### 9.4.1. High cost of testing Certification

Manufacturers are facing a problem due to the high prices prevailing in quality testing as compared to the prevailing revenue in the sector.

Table 9.2: High cost of testing Certification

PARAMETER (LATEX)	TEST METHODS	APPROVED SAMPLE FEE (RS.)
(LATEX ALL TESTS) (DRC, TSC, VFA, MST, ALKALINITY)		Rs. 3825.00
PARAMETER (RAW RUBBER)	TEST METHODS	APPROVED SAMPLE FEE (RS.)
RAW RUBBER ALL TESTS (Dirt, Ash, VM, N2, Po, PRI ,Colour)		Rs. 4325.00
Bleaching Agent	RRISL	Rs. 2700.00

### 9.4.2. High cost of machineries

Below are the market values of some of the leading machinery used in the rubber industry.

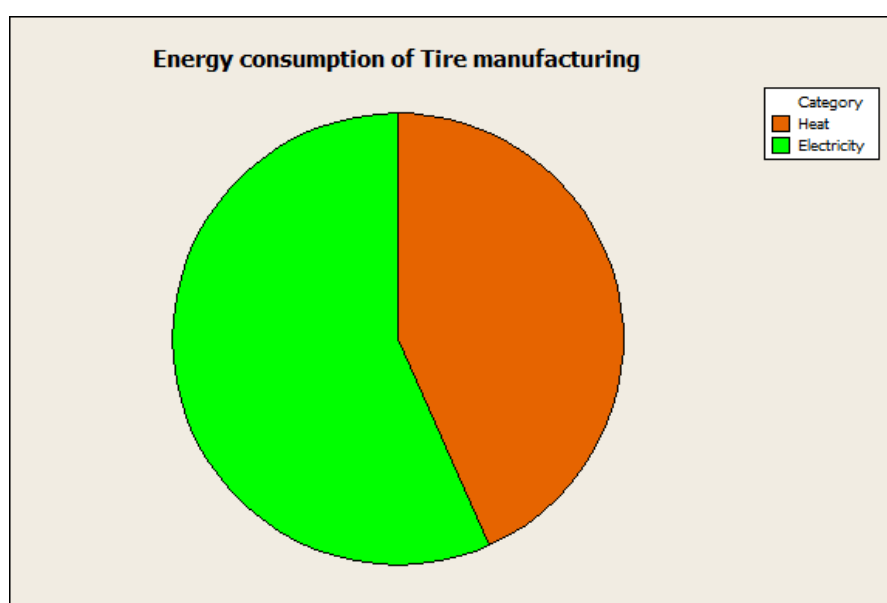
Table 9.3: High cost of machineries

Machine Type		Price
1	2RT Rubber Vulcanizing Press	USD 6,000-20,0000 (1,206,000-4,020,000) LKR
2	Rubber Mixing Machine 2 Roll Ball Bearing Bush SGS Approved	USD 6,000-20,0000 (1,206,000-4,020,000) LKR
3	24kw EPDM Rubber Hose Extrusion Machine	USD 4000- 10000 (804,000 – 2,010,000) LKR

### 9.4.3. High cost of Energy

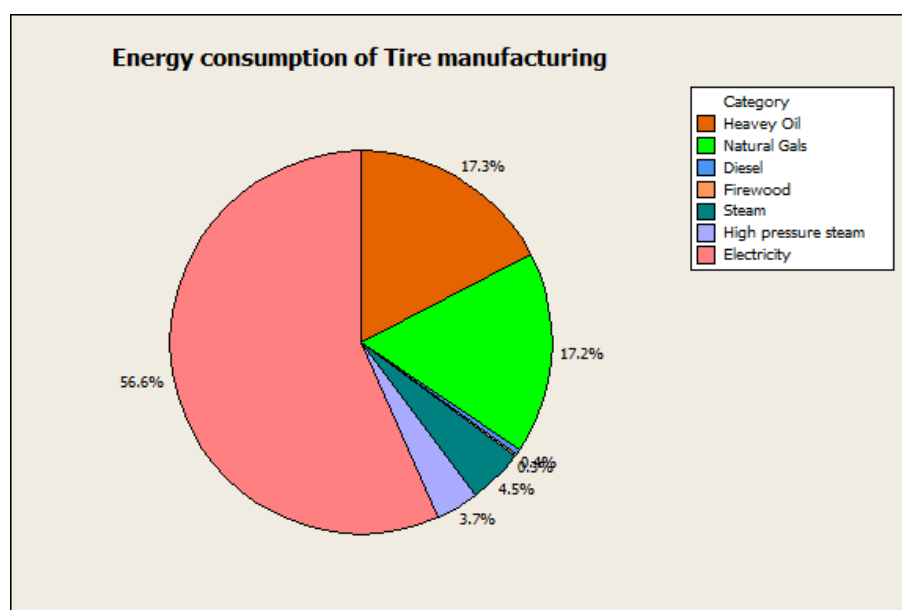
The industry is in serious trouble due to the high problem of energy supply in the industry and the high cost of fuel in view of the high cost. The following is its variation.

Figure 9.3: Energy consumption



The above energy use can also be presented in a detailed note as follows.

Figure 9.4: Energy consumption Description



## 10. Dry rubber Industry

Sri Lankan rubber product manufacturers and suppliers produce a wide range of value-added rubber-based products by processing raw rubber. This product range consists of extrusion products such as rubber bands, beadings, industrial products such as hoses, auto spare parts, industrial components, Tyrese, tubes, automotive and aviation Tyrese and general rubber products such as floor mats, carpets, sports goods, footwear, hot water bottles and related components. Solid rubber products mainly consist of two categories, namely Tire and non-Tire. Tire sector includes pneumatic tires, solid tires and tread materials. In the dry rubber sector, the Tyre category dominates the non-Tyre sector.

## 11. Import Finished Rubber Product Industry

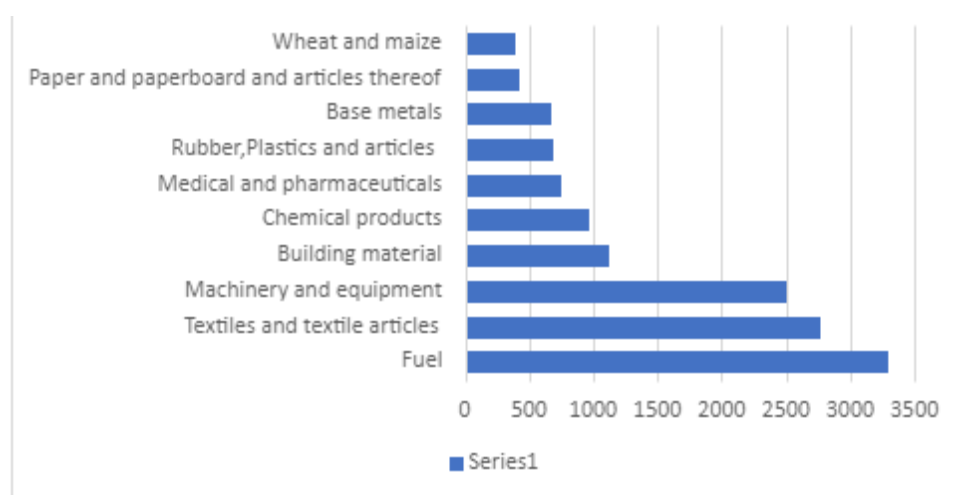
### 11.1. Current situation

As shown in Table 11.1, Sri Lanka imported different types in quantity of tons and total number of units 8.4 million with total CIF value of Rs.19, 614 million. Only Tyrese and tubes are given in units while all other products are in metric tons.

The main types of imported rubber product were new pneumatic Tyres that accounted for 3.2 million units with corresponding value of Rs.10, 538 million or 54% of total CIF value. In terms of CIF value, the next type ranked second was articles of vulcanized rubber (floor mats, gaskets, washers, seals, machinery parts) that accounted for Rs.3, 675.7 million or 19% of total. Inner tube of rubber, belts, pipe/hoses were followed by CIF value Rs.1, 953 million, 856 million, 751 million respectively. Other types of import (threads, cellular and non-cellular rubber products, solid Tyres, gloves and contraceptives) carried moderate quantity and value of CIF at Rs.1, 842 million or 9% of Total CIF.

In 2015, Sri Lanka exported new pneumatic Tyres almost 2-fold of such imports in value terms. In respect of the solid Tyres category compared to import value, export from Sri Lanka was more than 123 times. Similarly, gloves were exported 70-fold of the import value of the same. As rubber product imports are subject to 5% to 15% range of Cess rate on CIF value in 2020, the Cess income collected was Rs.2, 256 million.

Figure 11.1: Major Import Categories - (Jan-Nov 2021)



Resource: Monthly Trade Bulletin, Economic Research Department, Central Bank of Sri Lanka



Table 11.1: Performance

Description	Performance	
	Quantity (tons)	Value (Rs. millions)
Rubber thread and cord	918.00	280.70
Plates, sheets, strip, rods and profile shapes	1,058.30	669.60
Tubes, pipe and hoses of vulcanized Rubber	1,283.00	750.70
conveyer/transmission belts or belting V-belts and other types	1,105.00	856.00
New pneumatic Tyres of rubber (No)	3,170,224.00	10,537.90
Retreated and solid Tyre (No)	519,065.00	331.70
Hygienic/pharmaceutical articles	101.00	157.50
Inner tubes of rubber (No)	4,673,600.00	1,952.70
Gloves of vulcanized, unhardened rubber	388.90	321.20
Other articles of vulcanized rubber	4,869.10	3,675.70
Articles of hard rubber	503.90	80.70
<b>Total tons value</b>	<b>10,227.20</b>	<b>6,792.10</b>
<b>Total No (Unit) value</b>	<b>8,362,889.00</b>	<b>12,822.30</b>
<b>Total Value</b>		<b>19,614.40</b>

## 11.2. Disadvantages for economy by import finished products

In the face of the current economic crisis and the shortage of dollar reserves, further focus on imports has not been very successful. As a result, Sri Lanka's foreign reserves will continue to grow. Because of that, we should move to more exports. Import is one of the most disadvantages of current economic conditions.

## 12. Export Finished Rubber Product Industry

### 12.1. Current Situation

At present, nearly 60% of the rubber produced is used locally and the balance is exported. In 1997, the corresponding value was 42%. Thus, the local consumption of rubber has considerably increased during the last decade. Rubber is exported as smoked sheet, sole crepe, latex crepe and Technically Specified Rubber (TSR). In 2007, 18.1-million-kilogram sheets were exported. Rubber contributing over US\$ 890 million in 2019 to the economy of Sri Lanka. The Sri Lanka government aims to grow the rubber industry US\$ 2 billion by 2025.

Table 12.1: Value (US\$ Million)

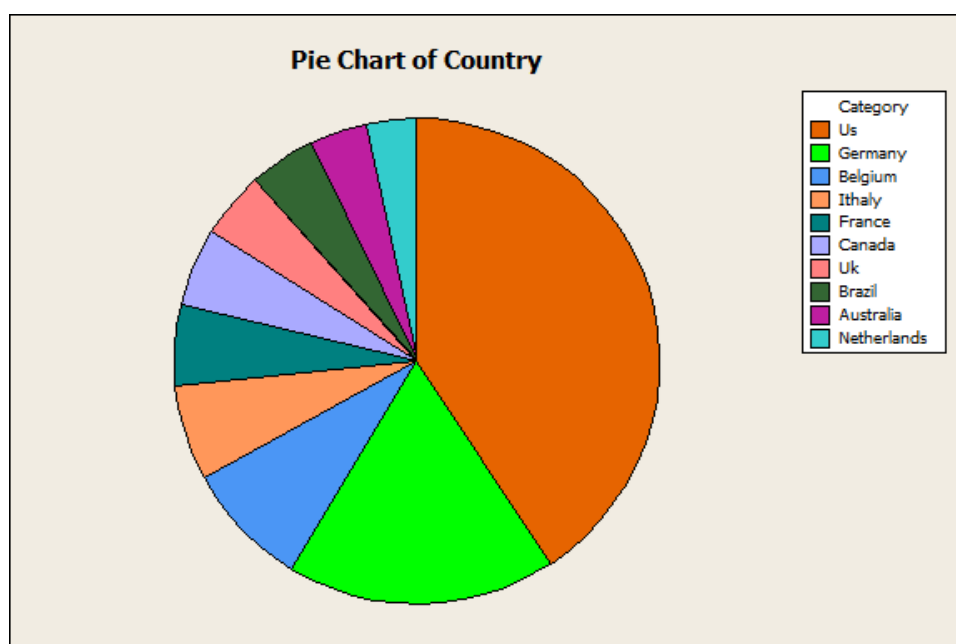
Year	Value (US\$ Million)
2016	800.56
2017	874.35
2018	906.92
2019	890.32
2020	816.18
2021	1092.6

Sri Lanka's export earnings during the last period are as follows. Accordingly, the highest export earnings could be recorded in 2018.

Table 12.2: Production by Different Types

Year	Sheet	Sole Crepe	Scrap Crepe	Latex Crepe	T.S.R.	Latex Other	Total (MT)
2015	44,392	1,939	886	8,266	7,606	25,478	88,567
2016	39,754	1,575	791	12,618	3,865	20,497	79,100
2017	41,523	1,476	830	9,160	1,204	28,878	83,071
2018	41,300	1,400	2,600	10,500	800	26,000	82,600

Figure 12.1: Export Countries



Sri Lanka exports rubber and rubber-based products to the USA, Germany, Belgium, Italy, and the United Kingdom. The country also exports semi-processed natural rubber to Pakistan, Malaysia, India, Japan, and Germany

## 12.2. Key players in the sector

- Camso Loadstar (Pvt) Ltd.
- Ansell Lanka (Pvt) Ltd
- Trelleborg Lanka (Pvt) Ltd
- Industrial Clothings Ltd
- Eu Retec (Pvt) Ltd
- Lalan Rubbers (Pvt) Ltd
- Global Rubber Industries (Pvt) Ltd
- Samson Rubber Products (Pvt) Ltd
- Dipped Products PLC
- Marangoni Industrial Tyres Lanka (Pvt) Ltd

## 12.3. Exports

Table 12.3: Exports

Product Sub Categories	2016	2017	2018	2019	2020
Pneumatic & Retreated Rubber Tyres & Tubes	479	513	549	515	424

Industrial & Surgical Gloves of Rubber	176	198	188	207	248
Gaskets, Washers, Seals etc. of Hard Rubber	88	99	113	118	91
Rubber Plates, Sheets Rods of Vulcanized or Unhardened Rubber	22	23	25	24	21
Other Rubber Products	1	2	1	1	1
Hygienic or Pharmaceutical Articles	1	1	1	1	1
<b>Total</b>	<b>768</b>	<b>835</b>	<b>875</b>	<b>866</b>	<b>786</b>

## 12.4. Current strengths

- ✓ Established industry in Sri Lanka as well as world
- ✓ Advantages of Export Finished Rubber
- ✓ Availability of natural rubber
- ✓ Trained workforce in the product industry
- ✓ Incentive to attract foreign investment
- ✓ Availability of labor force
- ✓ Compliance with labor standards and ethical practices
- ✓ Rubber is environmentally friendly raw material
- ✓ Government support to develop and promote the sector

## 12.5. Problems in Industry

- ✓ Decrease the New Investments
- ✓ Government Rules & Regulations
- ✓ Lack of New Technology
- ✓ Drop the Revenue of Export
- ✓ High Cost Of product
- ✓ Taxation

## 13. Future Plans in Industry

### 13.1. Government Plans

Historically, in almost all the NR producing countries in Asia, the rubber industry has been nurtured by respective governments primarily due to the involvement of millions of vulnerable smallholders in the supply chain. Thus, the policy environment has been created to serve the rubber producers with less focus on manufacturing industries which is the area dominated by the resilient private sector. The policy of the government has a major impact on industry competitiveness. Sri Lanka has been influenced by other rubber producing countries in policy formulation and collaborates with other governments in rubber industry matters. The Association of Natural Rubber Producing Countries (ANRPC) is an intergovernmental body that promotes rubber industry interests and provides a platform for information sharing and making collective decisions.

### 13.2. Increase the Rubber Plantation

The goals stated above are further elaborated below quantitatively.

- i. Increase the area under rubber to 169,000 hectares by 2025.
- ii. Increase local rubber production to 300,000 metric tons per annum by 2045.
- iii. Reach national rubber plantations yield to 1,700 kg per ha year by 2045.
- iv. Establish the Rubber City, a dedicated Rubber Industry Park by 2018 that will have a capacity to generate a turnover of US\$ 1 billion.
- v. Turnover of rubber products industry to exceed US\$ 5.0 billion by 2030.
- vi. Increase consumption of rubber to 240,000 tons (157,000 metric tons of NR types and 72,000 tons of SR types in addition to 11,000 Semi-processed types) by 2025.
- vii. Attract investments and develop markets for Latex Crepe based products by 2020.
- viii. Reach a conversion value equal to US\$ 15,000 per ton of rubber used by 2025.
- ix. Increase value of rubber wood-based products turnover to US\$ 350 million by 2025.

### 13.3. Raw rubber production

This graph clearly shows the next ten years of rubber production. In the face of the adverse economic conditions prevailing in 2019-2020, many economic price indices fell and did not rise as much as expected and the industry is expected to move forward overcoming those challenges in the coming years

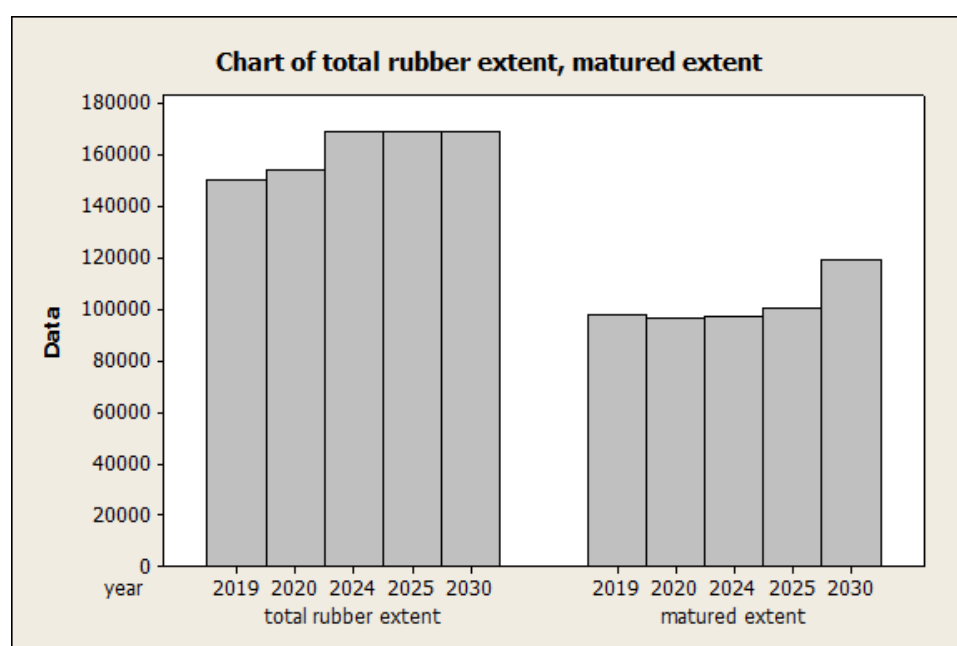
Table 13.1: Exacted Statistics

	Unit	Year				
		2019	2020	2024	2025	2030
Total rubber extent	Ha	150500	154200	169000	169000	169000
Matured extent	Ha	97930	96416	97000	100700	119200
Outputs	MT	102000	101000	101000	108990	145720

<b>Yield</b>	MT/Ha	1.04	1.05	1.04	1.08	1.22
<b>Exports</b>	MT	18000	17500	15570	15000	15000
<b>Local sale</b>	MT	84000	83500	85500	93990	130720
<b>Export value</b>	U\$M	63	61	64	68	68
<b>Local sale value</b>	U\$M	273	263	318	529	773
<b>Total sale</b>	U\$M	336	324	382	448	597

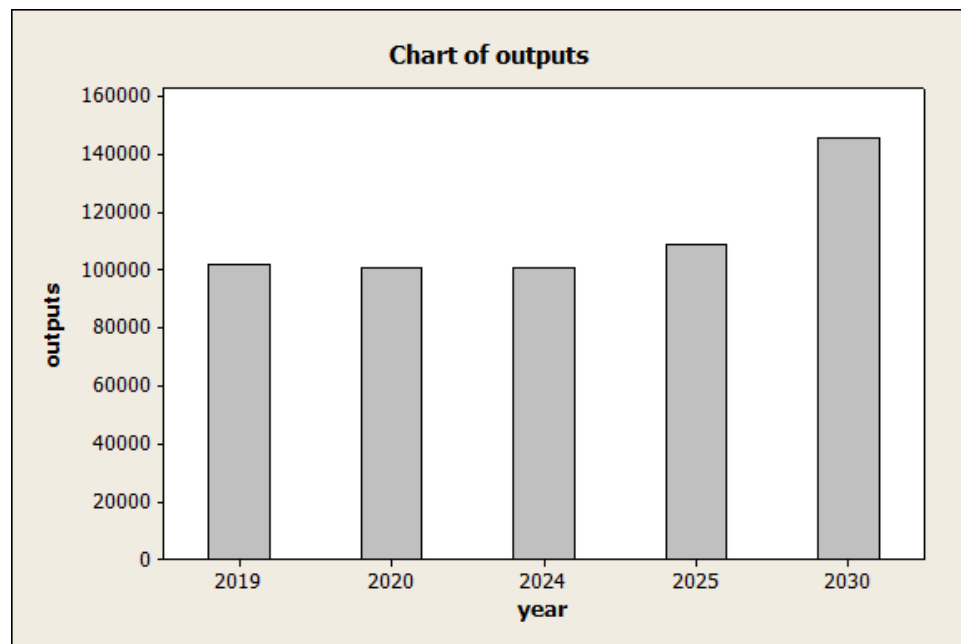
Following is the prospect of data analysis for the next ten years in the rubber industry.

Figure 13.1: Total Rubber Extent, Matured Extent



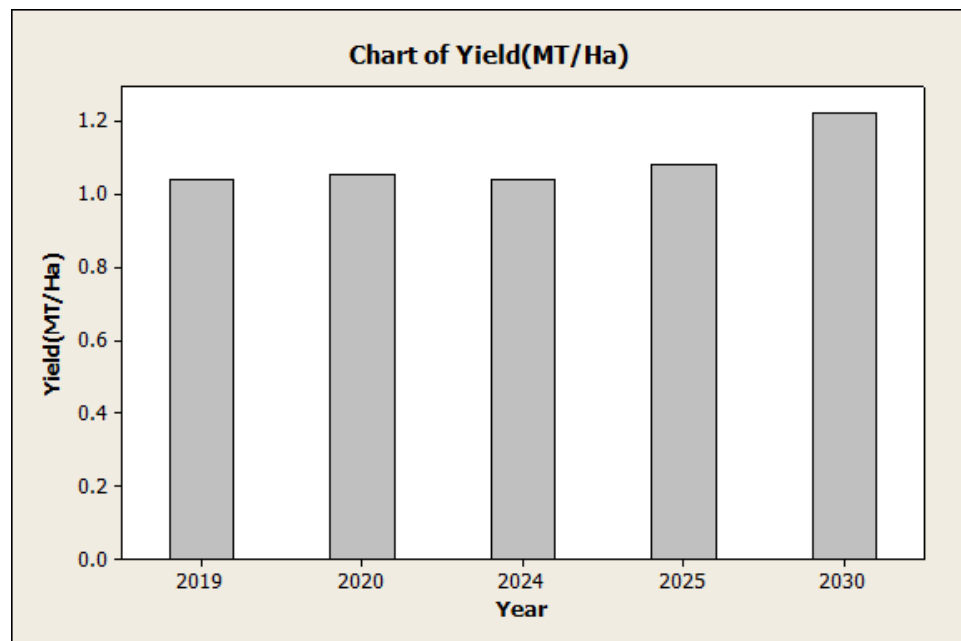
Source: Sri Lanka Rubber Industry Master Plan 2017 – 2026 A

Figure 13.2: Outputs



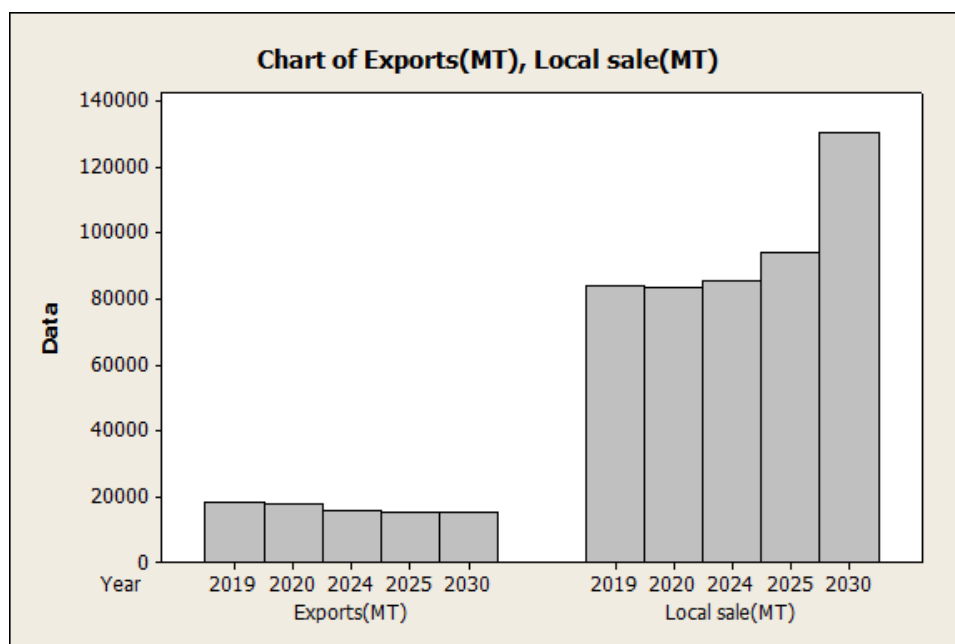
Source: Sri Lanka Rubber Industry Master Plan 2017 – 2026 A

Figure 13.3: Yield



Source: Sri Lanka Rubber Industry Master Plan 2017 – 2026 A

Figure 13.4: Export, Local sale



Source: Sri Lanka Rubber Industry Master Plan 2017 – 2026 A

### 13.4. Rubber wood

Rubber wood has a dense grain that is easily controlled in the kiln drying process. Rubber wood has very little shrinkage making it one of the more stable construction materials available for furniture, toys and kitchen accessories. It is easily worked, and takes on stains uniformly. As with all hardwoods, rubber wood comes in varying degrees of quality.

It is not suitable for outdoor use, as rain can leach the protective chemicals from the wood, exposing it to fungus and insect attacks. Excessive moisture will also cause the wood to warp and rot.

Table 13.2: Rubber wood

	Unit	Year				
		2019	2020	2024	2025	2030
Output of wood	M <sup>3</sup>	241,150	241,150	241,150	241,150	241,150
RWP exports	U\$M	78	145	203	271	386
Local sales	U\$M	78	96	87	90	96
Total sales	U\$M	157	241	289	362	482

Table 12.5: RWP Export, Local Sales



According to above table we can say that they are specially target on local exports more than local sales

### 13.5. Reclaimed rubber

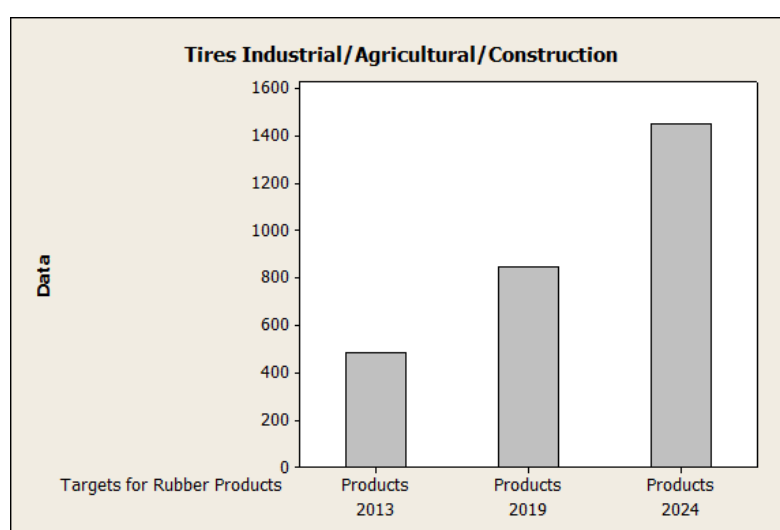
Reclaim Rubber is a low-cost technical substitute for natural rubber, manufactured using a chemical devocalization process by recycling end of life scrap tires and factory rubber product waste as base material. Reclaim rubber is mainly used as a process aid and large proportion extender in rubber compounding for the manufacture of several not so critical rubber products such as mats, dock fenders, semi-pneumatic Tyres, conveyor belts, etc.

Table 13.3: Reclaimed rubber

	Unit	year				
		2019	2020	2024	2025	2030
Output	MT	7700	8470	9317	10,249	11,274
Exports	MT	770	847	932	1025	1127
Exports value	US\$ M	0.9	1.0	1.7	2.0	2.8
Local sale	US\$ M	5.3	5.9	11.4	13.4	20.1
Total sales	US\$ M	6.2	6.8	13.1	15.7	22.9

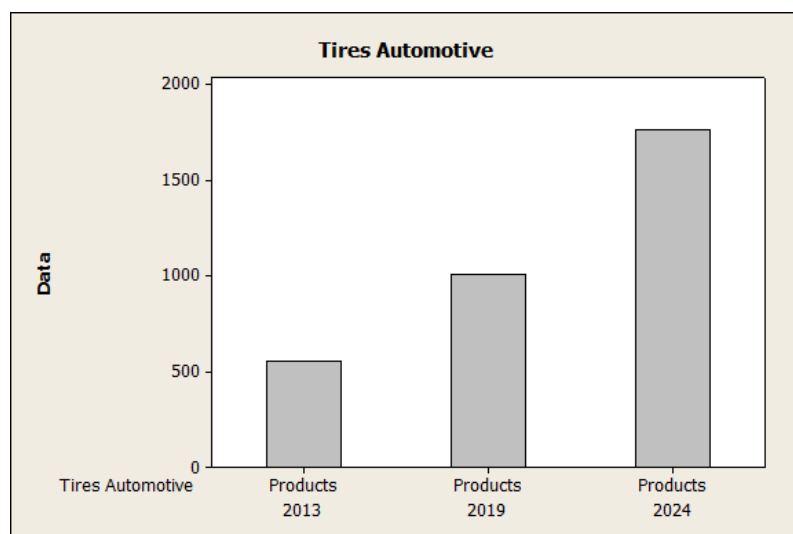
### 13.6. Market Targets for Rubber Products (in US\$ M)

Figure 13.5: Tires Industrial/Agricultural/Construction



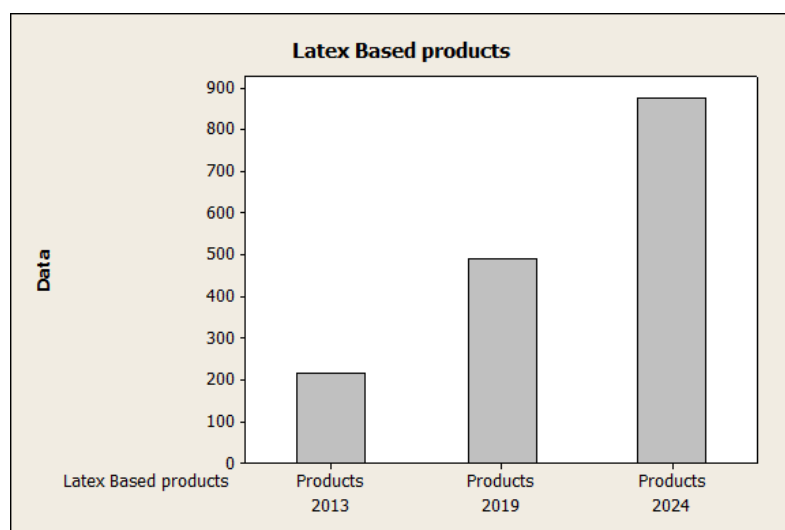
Sources: Sri Lanka Rubber Industry Master Plan 2017 – 2026 A

Figure 13.6: Tires Automotive



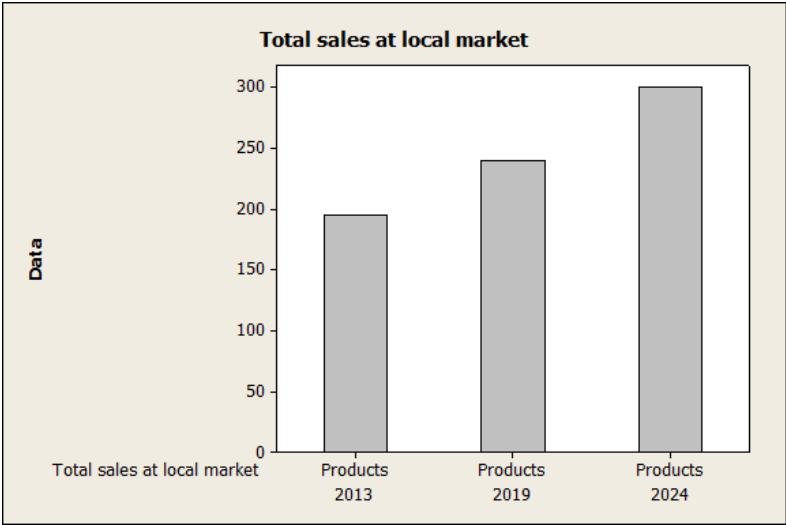
Sources: Sri Lanka Rubber Industry Master Plan 2017 – 2026 A

Figure 13.7: Latex Based production



Source: Sri Lanka Rubber Industry Master Plan 2017 – 2026 A

Table 13.8: Total sales at local market



Source: Sri Lanka Rubber Industry Master Plan 2017 – 2026 A

## 14. Recommendations

### 14.1. Introduction

Using the data we found, we made decisions that we thought were best for the industry. Those decisions can be analyzed using statistical data as follows.

### 14.2. How to increase the Production

Below you can understand how the rubber industry is deteriorating day by day despite its high contribution to the economy of the country. The decline in the rubber industry is evident from the fact that tea, coconut and paddy are the major sectors in the agricultural and industrial sectors.

Table 14.1: Production fluctuation last five years

Industry /Year	2015	2016	2017	2018	2019
Paddy (Mn. In kg)	4,819	4,420	2,383	3,930	4,592
Tea (Mn. In kg)	329	293	307	304	300
Rubber (Mn. In kg)	89	79	83	83	75
Coconut (Mn. In kg)	3,056	3,011	2,450	2,623	3,086

Source: -Annual Report 2020 CBSL

Production in the rubber industry has fallen by nearly 16% over the past five years, taking into account the increase in output from other industries. To this end, we mainly observe the lack of proper solutions to the problems related to the industry as well as the lack of proper support and attention required by the industry. We hope to provide our ideas and suggestions for these problematic situations through relevant data analysis.

Figure 14.1: Production Distribution

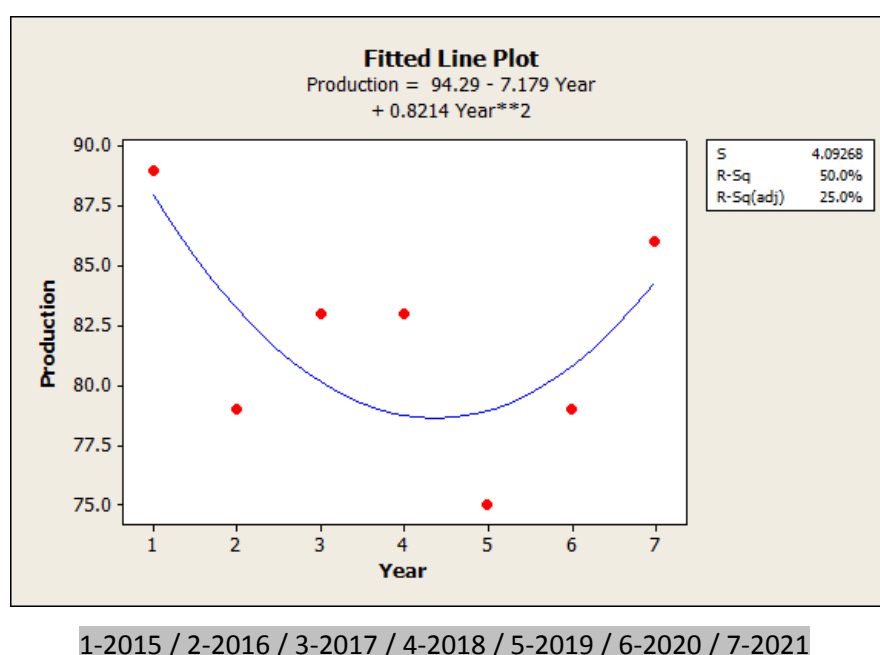


Table 14.2: Production Analysis

Expected Production (2022)	<b>89.43 MT(Mn)</b>
Increase compared to the previous year	3.9% ▲

Considering the last 6 years of rubber production in the country, the lowest production record is in 2019. From then until 2021, the industry will see progress again. Accordingly, the expected production for the year 2022 is 89.43, an increase of 3.9% over the previous year. However, productivity can be further encouraged by solving existing problems in the industry. We look forward to offering the optimal solutions to these problems

### 14.3. Re-Develop the Export Revenue

Figure 14.2: Export performance

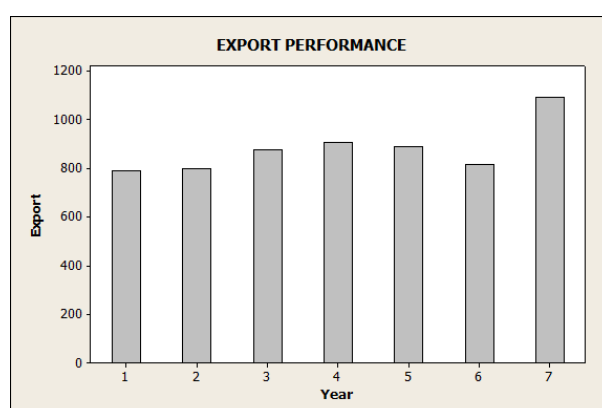
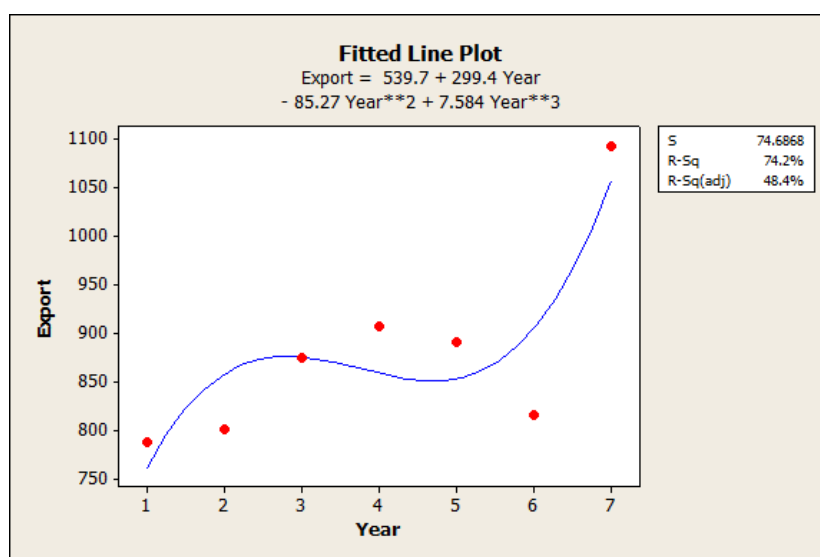


Figure 14.3: Year vs Export



Source: -Annual Report 2020 CBSL

Table 14.3: Export Analysis

Expected Export (2022)	<b>1360.43 \$(Mn)</b>
Increase compared to the previous year	24.53% ▲

## 14.4. Wages

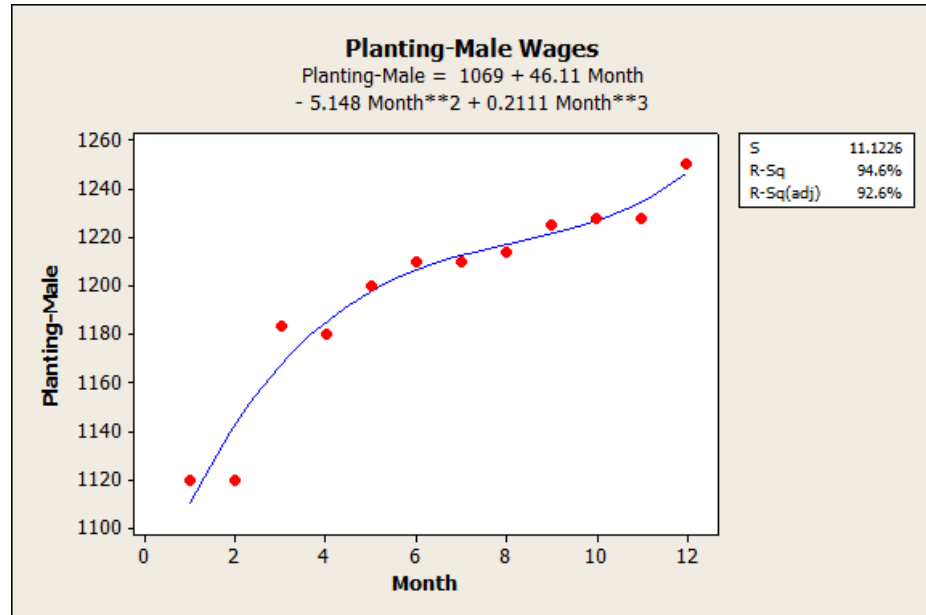
Compared to other industries, the wage variance of those engaged in the rubber industry is as follows:

Table 14.4: Monthly Wages

		Jan	Feb	Mar	Apr	May	Jun
Planting	Male	1,120	1,120	1,183	1,180	1,200	1,210
Tapping	Male	700	699	700	860	859	836
	Female	631	700	767	745	820	765
		Jul	Aug	Sep	Oct	Nov	Dec
Planting	Male	1,210	1,214	1,225	1,228	1,228	1,250
Tapping	Male	811	815	809	823	832	830
	Female	765	770	764	777	805	794

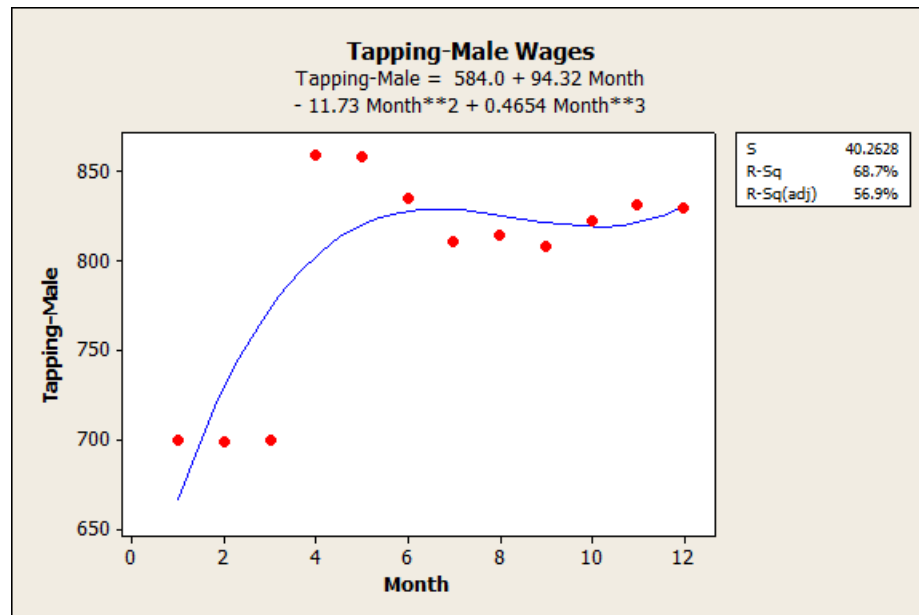
Source: -Annual Report 2020 CBSL

Figure 14.4: Month Vs. Planting Male wage



Source:

Figure 14.5: Month vs Tapping Male Wages



Source:

From the above analysis, it is very clear that rubber growers and rubber millers get a very low daily wage. Therefore, the number of people engaged in the industry is decreasing day by day. The influx of new entrants into the industry is also declining. The most effective solution to this problem is to provide them with a permanent salary and set up a system to determine their salary based on their work experience.

## 14.5. Plantation

Figure 14.6: Annual Yield

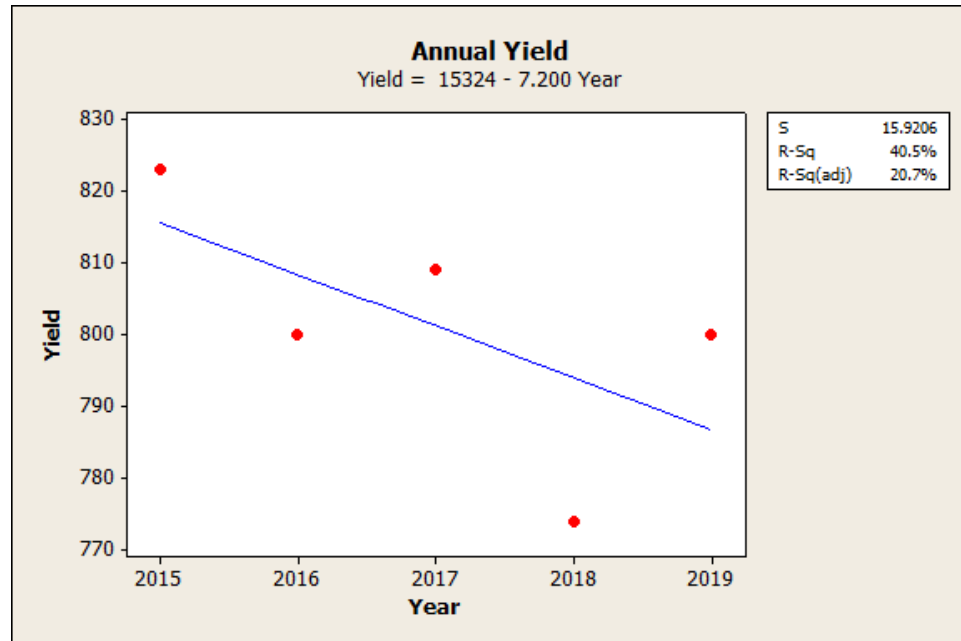


Figure:14.7 Yield Analysis

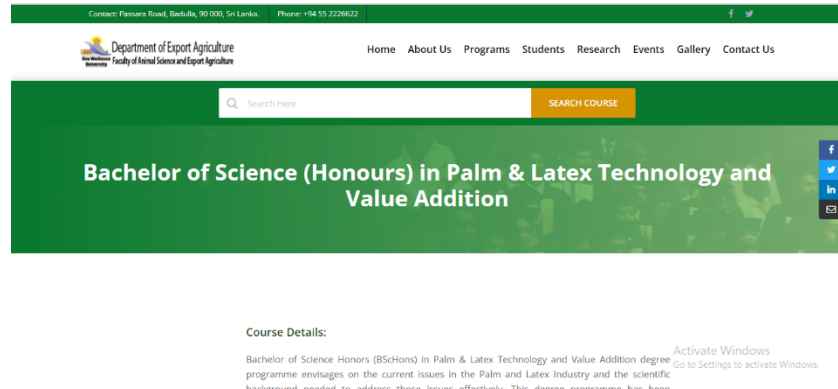
Expected Yield (2022)	<b>765.6 kg/ha</b>
Increase compared to the previous year	0.09% ▼

Yield in the rubber industry is rapidly declining year on year. Yield decline is questionable in a technologically advanced industry as well as in a context where chemical fertilizers are used. We see the main reason for this is the failure to use quality fertilizers and the introduction of proper technology to the industry. The importance of a standardized institution to standardize the fertilizers used is clear.



## 14.6. Get professionals involved in the industry & launching a new degree program related to the industry

Figure 14.8: Web window of UOUW



Source: Official website, University of Uwa-Wellassa

There is a huge shortage of people with the professional knowledge required for the rubber industry. Similarly, the state support available for this is minimal. There is only one course in this industry in the state university system. He holds an Honors Degree in Mammal Technology from the University of Uva Wellassa. Therefore, by expanding these opportunities, new technologies and knowledge can be made available to the industry as well as professionals.

## **15. Executive Summary**

The Sri Lankan rubber industry is currently experiencing burning problems. Mainly rubber industries are facing issues such as, low production, lack of cultivation area, low productivity, reduction of re-planting area and new planting area, decline trend of rubber prices, increase of cost of production, reduction of export of raw rubber, increase of domestic consumption and declined trend of exports earnings, lack of skilled labor. However, no one has identified which factors are affecting to create these problems and hardly to find any solution to the most important problems, which are presently available in rubber industry. Therefore, this research is aiming to find most important barriers of rubber product industry and find out what they are and how to avoid or minimize those barriers.

Objective of this report was to gather information related to the present status of the rubber product industry in Sri Lanka and analyses the gathered information to propose the way forward in terms of barriers in the rubber products manufacturing sector. Research was carried out by using data in reliable resources to find out the present situation, barriers, difficulties, issues, and solutions for the rubber products industry. Large and medium scale rubber industries were targeted and research were distributed according to the annual export performance (turnover) in each rubber products sectors. Gathered information from data in various resources was analyzed by using statistical analysis with linear correlation and regression.

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