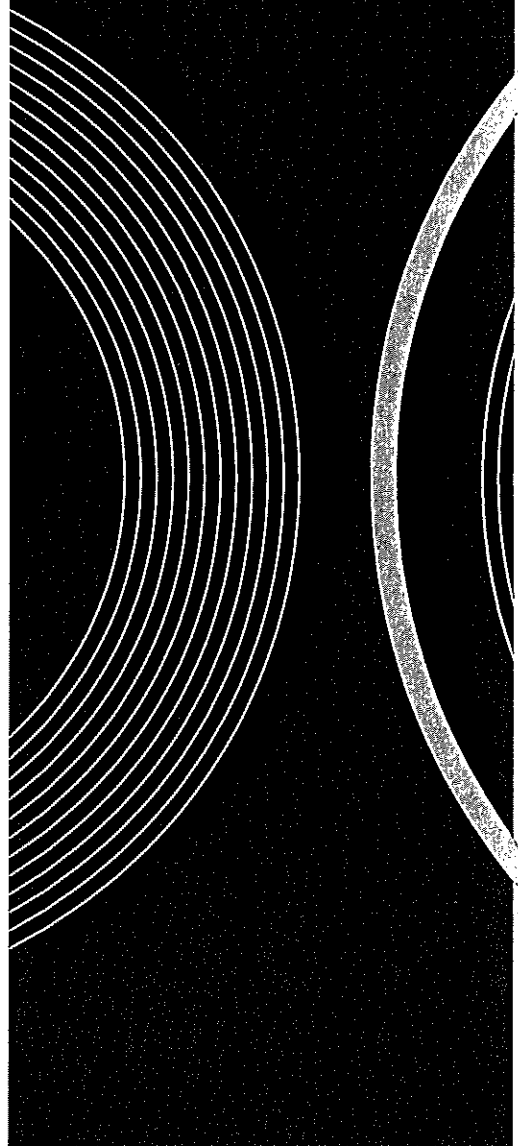


JATMA

THE JAPAN AUTOMOBILE TYRE MANUFACTURERS ASSOCIATION, INC.

TYRE INDUSTRY OF JAPAN

2017



TYRE INDUSTRY OF JAPAN 2017

Contents

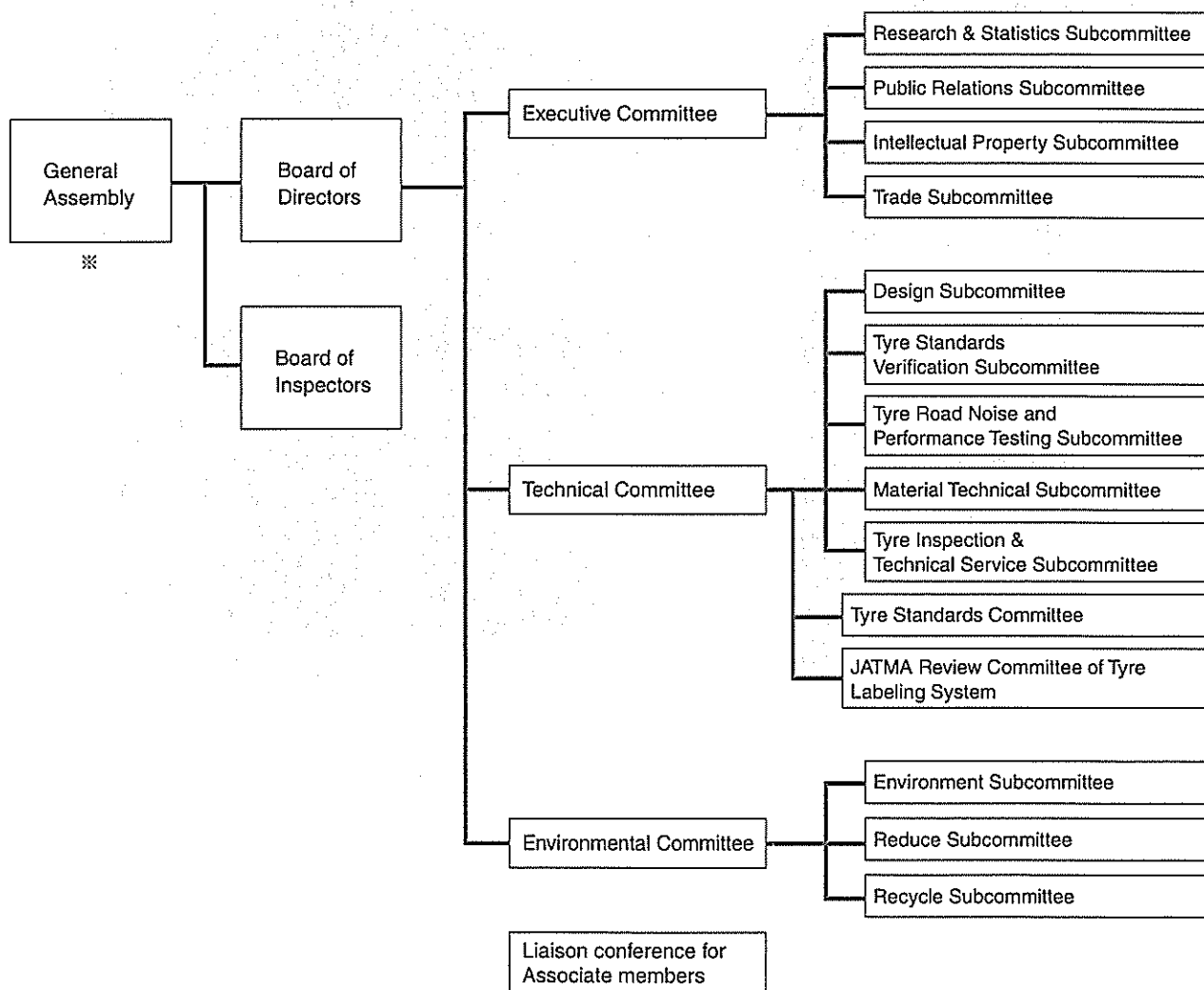
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The Japan Automobile Tyre Manufacturers Association, Inc.

Chairman: Ikuji Ikeda, President, Sumitomo Rubber Industries, Ltd.
Vice-Chairman: Takashi Shimizu, President, Toyo Tire & Rubber Co., Ltd.
Executive Director: Kenji Kurata
Established: September 1947 (incorporated in December 1968)
Head Office: Toranomom No. 33 Mori Bldg., 8F, 8-21, Toranomom 3-chome, Minato-ku, Tokyo 105-0001, Japan
 Tel.: 03 (3435) 9091 Fax: 03 (3435) 9097
Members:
 [Full member]
 Bridgestone Corporation
 Sumitomo Rubber Industries, Ltd.
 The Yokohama Rubber Co., Ltd.
 Toyo Tire & Rubber Co., Ltd.
 [Associate member]
 Nihon Michelin Tire Co., Ltd.
 Goodyear Japan, Ltd.

Organization

Under General Assembly and Board of Directors, three committees are established: Executive Committee, Technical Committee, and Environmental Committee. The committees have relevant subcommittees which promoting their activities such as surveys and studies.



※ Associate member:
 By getting certification of the Board of Directors, an Associate member can attend the General Assembly Meeting as an observer without voting right.

JATMA Member Firms

[Full member]

Bridgestone Corporation

President Masaaki Tsuya
Established: March 1, 1931
Capital: ¥126,354 million
(as of the end of December 2016)
Annual sales: ¥3,337,017 million
(consolidated) (fiscal year ending December 2016)
Employees: 143,616
(consolidated) (as of the end of December 2016)
Head office: 1-1, Kyobashi 3-chome,
Chuo-ku, Tokyo 104-8340
Tel.: 03 (6836) 3001
<http://www.bridgestone.co.jp/>

Sumitomo Rubber Industries, Ltd.

President Ikuji Ikeda
Established: March 6, 1917
Capital: ¥42,658 million
(as of the end of December 2016)
Annual sales: ¥756,696 million
revenue* (fiscal year ending December 2016)
(consolidated)
Employees: 33,792
(consolidated) (as of the end of December 2016)
Head office: 6-9, Wakinohama-cho 3-chome, Chuo-ku,
Kobe, Hyogo Prefecture 651-0072
Tel.: 078 (265) 3000
<http://www.srigroup.co.jp/>

*International Financial Reporting Standards (IFRS) has been applied from 2016.

The Yokohama Rubber Co., Ltd.

President Masataka Yamaishi
Established: October 13, 1917
Capital: ¥38,909 million
(as of the end of December 2016)
Annual sales: ¥596,200 million
(consolidated) (fiscal year ending December 2016)
Employees: 24,610
(consolidated) (as of the end of December 2016)
Head office: 36-11, Shimbashi 5-chome,
Minato-ku, Tokyo 105-8685
Tel.: 03 (5400) 4531
<http://www.y-yokohama.com/>

Toyo Tire & Rubber Co., Ltd.

President Takashi Shimizu
Established: August 1, 1945
Capital: ¥30,484 million
(as of the end of December 2016)
Annual sales: ¥381,635 million
(consolidated) (fiscal year ending December 2016)
Employees: 11,684
(consolidated) (as of the end of December 2016)
Head office: 2-13, Fujinoki 2-chome, Itami,
Hyogo Prefecture 664-0847
Tel.: 06 (6441) 8801
<http://www.toyo-rubber.co.jp/>

[Associate member]

Nihon Michelin Tire Co., Ltd.

President Paul Perriniaux
Established: June 10, 1975
Capital: ¥100 million
(as of the end of December 2016)
Employees: 650
(as of the end of December 2016)
Head office: 13F., Shinjuku Park Tower, 7-1,
Nishi-Shinjuku 3-chome, Shinjuku-ku,
Tokyo 163-1073
Tel.: 03 (5990) 5600
<http://www.michelin.co.jp/>

Goodyear Japan, Ltd.

President Yujiro Kanahara
Established: January 10, 1952
Capital: ¥2,336 million
(as of the end of December 2016)
Employees: 102
(as of the end of December 2016)
Head office: 3F., Sankaido Bldg., 9-13,
Akasaka 1-chome, Minato-ku,
Tokyo 107-0052
Tel.: 03 (5572) 8235
<http://www.goodyear.co.jp/>



History of the Japanese Tyre Industry

1. Brief History of the Japanese Tyre Industry

The production scale of the automobile tyre industry of Japan steadily increased from the second half of 1990s to 2008, supported by generally firm demand in the domestic market and active export. It declined severely in 2009 due to the world economic crisis. Though it was recovered to a certain extent in 2010, thereafter it has been gradually decreasing and one of the causes is globalization of the production system.

Number of tyre production in 2016 was 146.38 million (tyres). This is the amount of 1.02 million tons of rubber, which accounts for more than 80% of the domestic rubber production (newly produced rubber).

Brief history of the tyre industry of Japan in chronological order is as below:

(1) 1940s-1950s

The industry restructured after World War II, following the destruction of facilities and equipment. In the early 1950s, after the long-term government regulation and during the Korean War, the industry enjoyed special procurement and improved tyre demand. However, after the Korean War, deflationary pressures affected the Japanese economy. Demand for tyres decreased sharply, and the tyre market experienced considerable difficulty.

(2) 1960s

Around 1960, full-fledged motorization, including increased automobiles on the road and the advent of expressways, spurred the industry toward a technological revolution, including expansion and automation of equipment, as well as changes in the raw materials for tyres, and enjoyed a high-growth phase.

(3) 1970s

From 1970, the industry suffered demand downturns temporarily as a result of the first oil crisis. However, exports led the growing Japanese economy. Tyre production expanded, as a result of an increase in the number of vehicles produced and registered, and product diversification spurred demand.

(4) 1980s

Low economic growth under the worldwide recession following the second oil crisis (1979) combined with the progress of radial tyres, which caused demand downturns, forcing the Japanese tyre industry into a period of extreme difficulty. In 1983, however, a turnaround was seen owing to economic recovery in Japan and in principal nations worldwide. In September 1985, however, tyre demand dropped, influenced by the strong yen. Then in December 1986, the Japanese economy started to grow steadily, backed by solid consumer spending and capital investment. As a result, the volume of rubber consumption reached the 1-million-ton mark in 1989.

(5) 1990s

With the collapse of Japan's "bubble economy," the stock market crashed, corporate profits declined, the job environment became uncertain, consumer spending and capital investment slowed, and the yen appreciated causing further deepening of economic stagnation. Signs of recovery were seen in 1995, but in 1997 Japan entered a recession. In 1998 and 1999, large-scale restructuring in the financial sector and the introduction of foreign capital into the automotive industry arose as serious concerns. On the other hand, the global economy in general remained steady despite economic difficulties in Southeast Asia, supported by the robust U.S. economy. In this environment, the Japanese tyre industry grew overall, although rubber consumption fell below the 1-million-ton mark in 1993. Supported by brisk exports, Japanese tyre production volume increased to 1.13 million tons in 1999, a record high.

(6) 2000s

The Japanese economy was on a trend of gentle recovering, and although it was still suffering from such problems as continuing high prices of raw materials, it continued the biggest economic growth after the Second World War owing to improved corporate earnings and increased capital investments. Global economy continued strong as a whole until 2007 owing to supports by the robust economy of the United States, Europe, Middle East and BRICs countries, and tyre rubber production volume marked a record high every year from 2002 and it reached 1.36 million tons in 2007.

However, tyre production volume took a downward turn in 2008 after seven years due to the serious worldwide economic crisis from September 2008 and decreased by 360,000 tons, then declined to 990,000 tons under 1 million tons after fifteen years.

(7) 2010-2016

Japanese economy seemed recovered once supported by the government's economic policies etc.; however it turned in negative growth in 2011 due to the Great East Japan Earthquake and the record appreciation of the yen. Although the need for reconstruction after the earthquake boosted Japan's economy and resulted in positive growth again 2012 and it has continued its steady increase since 2013 by the effect of high stock prices and depreciation of the yen, there was also the rise of consumption tax in April 2014 and the growth has been weakened. The world economy was gradually recovering from the after effect of the financial crisis, however, since 2012, in developing countries and resource-rich countries it has decelerated and the growth has remained low. In this demand environment, tyre production amount in Japan has decreased for 5 consecutive years to 1.02 million tons in rubber consumption in 2016.

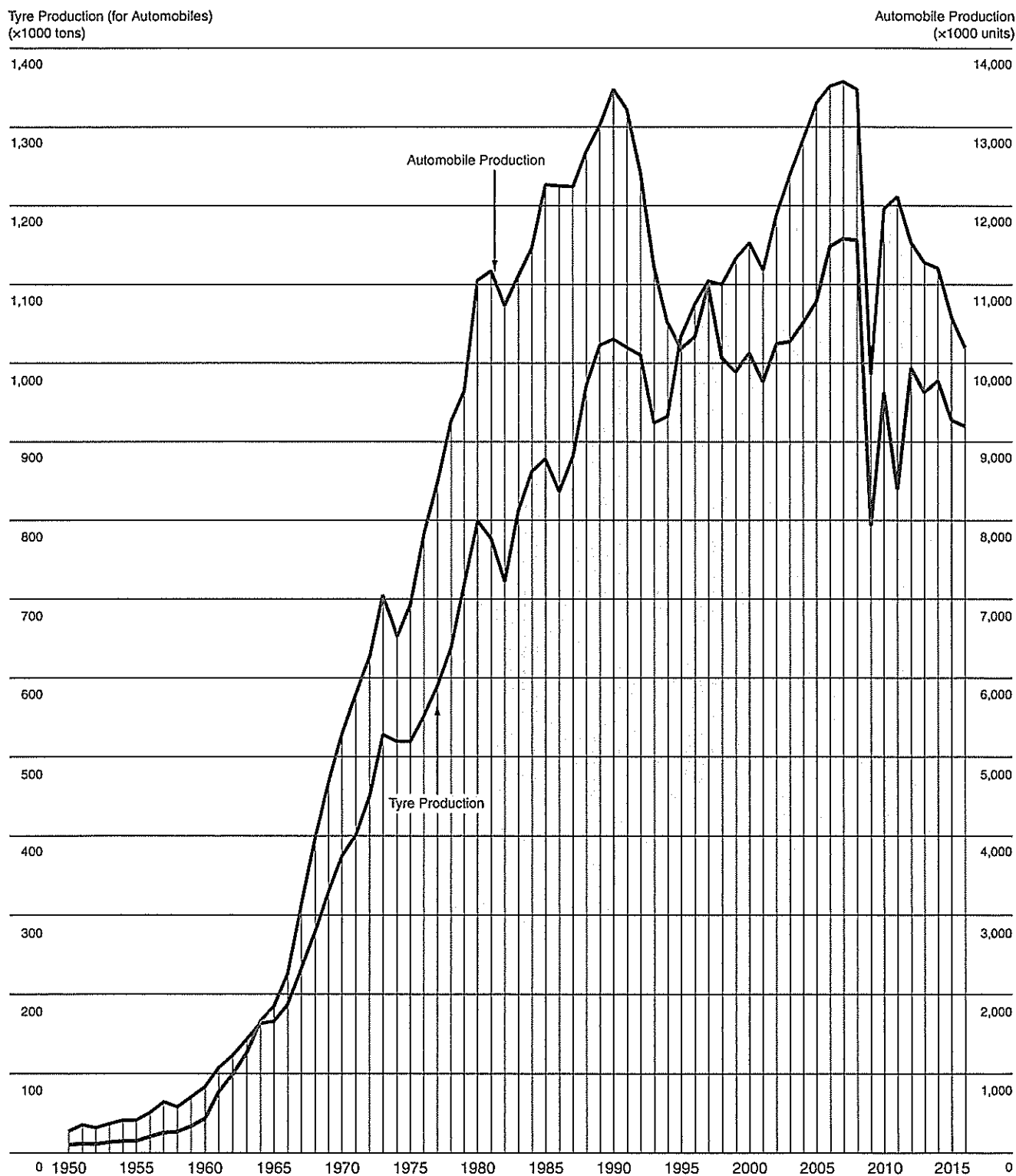
2. Changes in Production Volume of Tyres and Automobiles

Table 1: Changes in Production Volume of Tyres and Automobiles

	1950	1960	1970	1980	1990	2000	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Tyre Production (for Automobiles) (x1000 tons)(quantity of rubber)	14	83	369	784	1,031	1,153	1,358	1,348	986	1,196	1,212	1,147	1,128	1,121	1,058	1,020
Automobile Production (x1000 units)	32	482	5,289	11,043	13,487	10,141	11,596	11,576	7,934	9,629	8,399	9,943	9,630	9,775	9,278	9,205

Source: JATMA

Figure 1: Changes in Production Volume of Tyres and Automobiles





The Japanese Tyre Industry Today

1. Overview

The proportion of tyre production (fig. 2 and 3) in the rubber product industry decreased by 0.2 points from the previous year to 80.1% in raw material consumption (the amount of newly produced rubber) and decreased by 2.0% from the previous year to 52.5% in the sales amount. (Source: Ministry of Economy, Trade and Industry current survey of production)

The proportion of tyre production in the rubber product industry in 2016 (excluding cart tyres, tubes and flaps)

Figure 2: Raw material consumption (the amount of newly produced rubber)

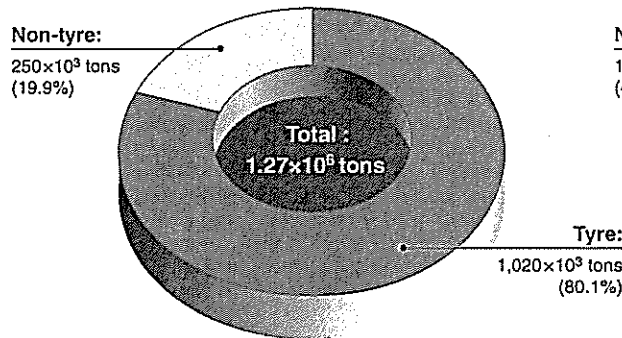
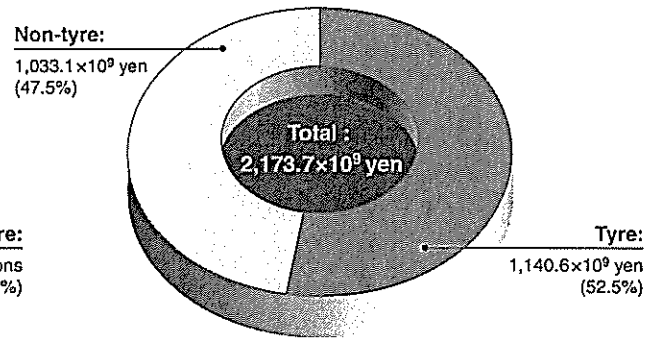
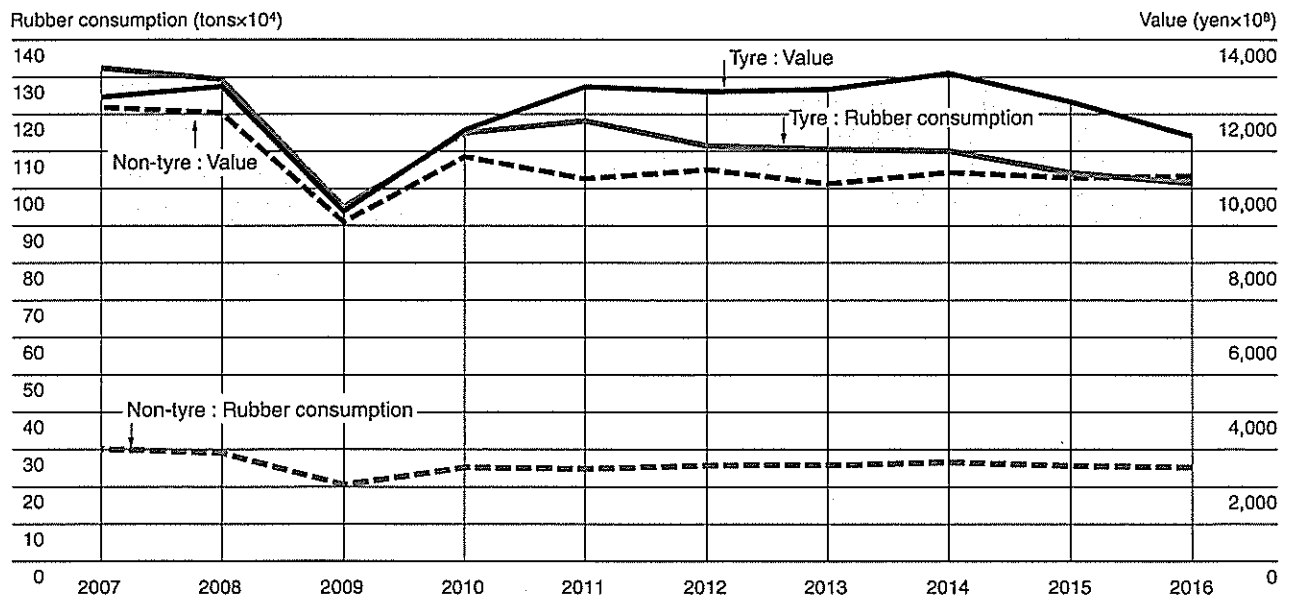


Figure 3: The sales amount



Source: Ministry of Economy, Trade and Industry current survey of production

Figure 4: Changes in the raw material consumption (the amount of newly produced rubber) and the sales amount of the tyre industry of Japan



Source: Ministry of Economy, Trade and Industry current survey of production

2. Trends in Production by Tyre Category

The production volume of automobile tyres decreased by 3.6% to 146.38 million tyres in 2016, decreased from the previous year for two consecutive years. Mainly due to the decrease in export, the production volume of the all types decreased from the previous year, respectively, passenger car tyres, light truck tyres, and truck & bus tyres decreased by 3.4%, by 5.9%, and by 3.7%.

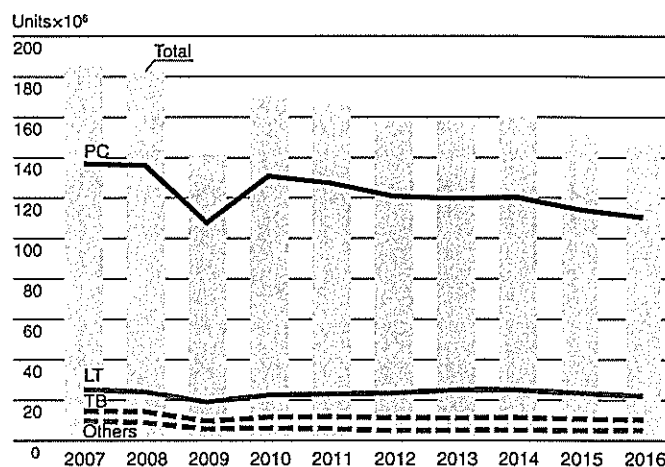
Table 2: Automobile tyre production in 2016

	Production	
	Units(x10 ³)	2016/2015(%)
Passenger car tyres	110,002	96.6
Light truck tyres	21,783	94.1
Truck and bus tyres	9,888	96.3
Others	4,702	102.5
Total	146,375	96.4

N.B.: 1. "Others" are off-the-road tyres, industrial tyres, agricultural tyres, cart tyres, and motorcycle tyres.
2. Figures of some domestic manufacturers that are non-member of JATMA are included.

Source: JATMA

Figure 5: Trends in automobile tyre production



3. Trends in Sales of Original Equipment Tyres

The sales volume of original equipment tyres decreased by 1.2% to 44.53 million tyres in 2016, decreased from the previous year for two consecutive years.

The sales volume of passenger car tyres increased by 0.3% from the previous year, and truck & bus tyres increased by 0.1% from the previous year and both have kept almost the same level as the previous year. However, light truck tyres significantly decreased by 9.6% from the previous year.

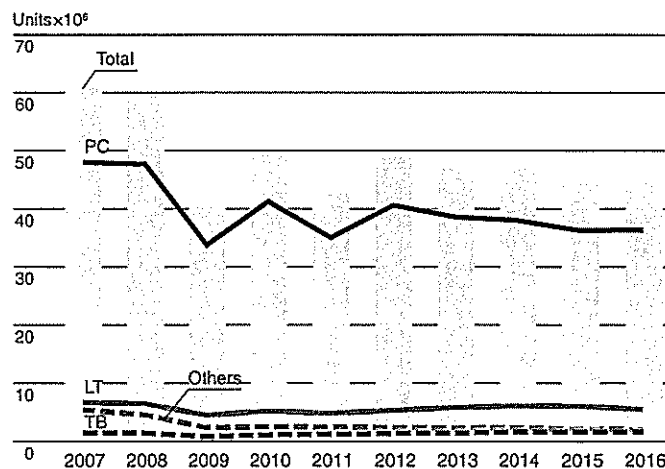
Table 3: Sales of original equipment tyres in 2016

	Sales	
	Units(x10 ³)	2016/2015(%)
Passenger car tyres	36,129	100.3
Light truck tyres	5,265	90.4
Truck and bus tyres	1,373	100.1
Special vehicle tyres	778	88.1
Motorcycle tyres	984	98.3
Total	44,529	98.8

N.B.: 1. Special vehicle tyres include off-the-road, industrial, agricultural, and cart tyres.
2. Figures of some domestic manufacturers that are non-member of JATMA are included.
3. Imported tyres manufactured outside Japan by Japanese manufacturers are included.

Source: JATMA

Figure 6: Trends in sales of original equipment tyres



4. Trends in Sales of Replacement Tyres

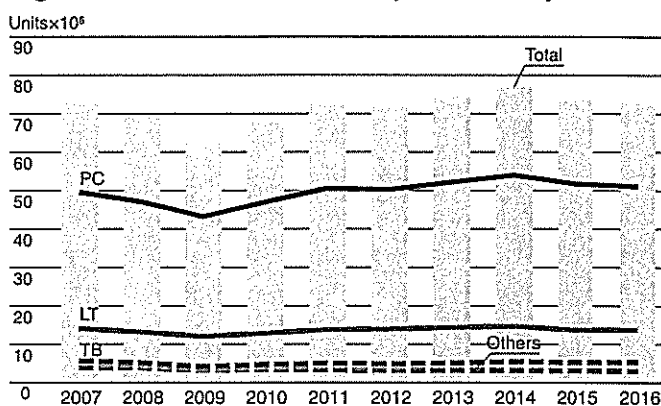
The sales volume of replacement tyres decreased by 0.8% from the previous year to 72.81 million tyres in 2016 and slightly decreased from the previous year.

Table 4: Sales of replacement tyres in 2016

	Sales	
	Units($\times 10^3$)	2016/2015(%)
Passenger car tyres	51,023	98.7
Light truck tyres	13,628	100.1
Truck and bus tyres	5,233	101.7
Special vehicle tyres	788	98.6
Motorcycle tyres	2,135	98.3
Total	72,807	99.2

N.B.: 1. Special vehicle tyres include off-the-road, industrial, agricultural, and cart tyres. Source: JATMA
 2. Figures of some domestic manufacturers that are non-member of JATMA are included.
 3. Imported tyres manufactured outside Japan by Japanese manufacturers are included.

Figure 7: Trends in sales of replacement tyres



Trends in Sales of Summer Tyres and Winter Tyres for Replacement (for Four-Wheeled Vehicles)

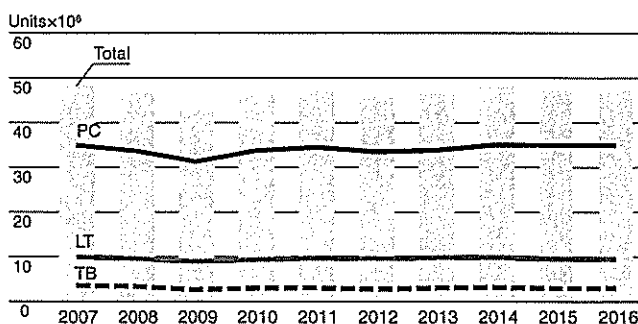
The sales volume of summer tyres (normal tyres except snow tyres) increased by 0.2% from the previous year to 47.28 million tyres in 2016. Passenger car tyres increased by 0.2% from the previous year, and light truck tyres increased by 0.1%, both have kept almost the same level as the previous year. Truck & bus tyres increased by 1.6% from the previous year.

Table 5-1: Sales of summer tyres for replacement (for four-wheeled vehicles) in 2016

	Summer tyres		
	Units($\times 10^3$)	2016/2015(%)	Summer tyre rate(%)
Passenger car tyres	34,907	100.2	68.4
Light truck tyres	9,434	100.1	69.2
Truck and bus tyres	2,943	101.6	56.2
Total	47,284	100.2	67.7

N.B.: 1. "Summer tyre rate" indicates a percentage of summer tyres in total number of replacement tyre sales. Source: JATMA
 2. Imported tyres manufactured outside Japan by Japanese manufacturers are included.
 3. All-season tyres are included in this category.

Figure 8-1: Trends in sales of summer tyres for replacement (for four-wheeled vehicles)



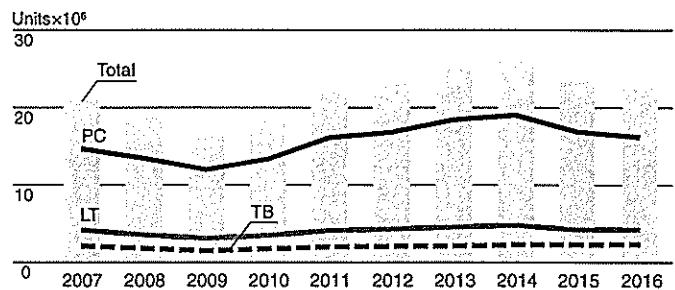
The sales volume of winter tyres decreased by 2.9% from the previous year to 22.60 million tyres in 2016, decreased from the previous year for two consecutive years. Though there was a snowfall in November in Kanto-Koshin region, there was an effect of the mild winter continuing from the previous year nationwide and the sales volume of passenger car tyres decreased by 4.3% from the previous year. Light truck tyres increased by 0.1% from the previous year and have kept the almost same level as the previous year, and truck & bus tyres increased by 1.9% from the previous year.

Table 5-2: Sales of winter tyres for replacement (for four-wheeled vehicles) in 2016

	Winter tyres		
	Units(x10 ³)	2016/2015(%)	Winter tyre rate(%)
Passenger car tyres	16,116	95.7	31.6
Light truck tyres	4,194	100.1	30.8
Truck and bus tyres	2,290	101.9	43.8
Total	22,600	97.1	32.3

N.B.: 1. "Winter tyre rate" indicates the percentage of winter tyres in total number of replacement tyre sales. Source: JATMA
 2. Imported tyres manufactured outside Japan by Japanese manufacturers are included.

Figure 8-2: Trends in sales of winter tyres for replacement (for four-wheeled vehicles)



5. Trends in Sales of Export Tyres

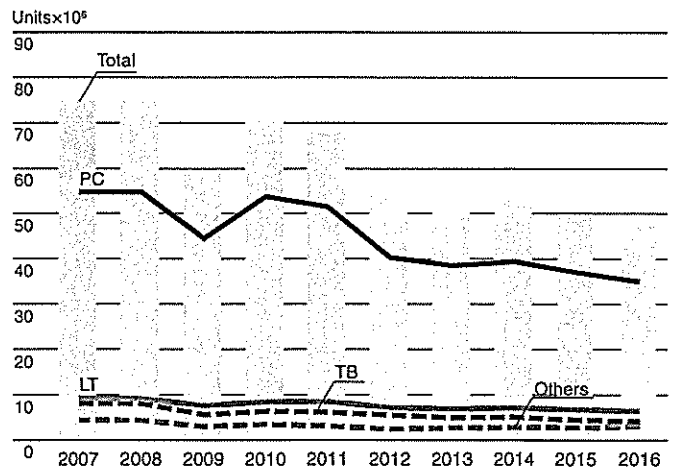
The export volume of automobile tyres decreased by 5.0% from the previous year for two consecutive years to 47.28 million tyres in 2016, respectively, decreased by 5.7% for passenger car tyres, 5.2% for light truck tyres and 7.5% for truck & bus tyres, from the previous year and the export volume of the all tyres decreased from the previous year.

Table 6: Sales of export tyres in 2016

	Sales	
	Units(x10 ³)	2016/2015(%)
Passenger car tyres	34,608	94.3
Light truck tyres	6,101	94.8
Truck and bus tyres	3,837	92.5
Others	2,737	111.4
Total	47,283	95.0

N.B.: 1. "Others" are off-the-road tyres, industrial tyres, agricultural tyres, cart tyres, and motorcycle tyres. Source: JATMA
 2. Figures of some domestic manufacturers that are non-member of JATMA are included.

Figure 9: Trends in sales of export tyres



6. Exports by Region of Destination

The export volume of automobile tyres (on customs clearance basis of Ministry of Finance) decreased by 4.2% from the previous year to 48.88 million tyres in quantity basis, and decreased by 20.7% from the previous year to ¥503.6 billion in value basis and by 4.8% from the previous year to 1.09 million tons in product weight basis in 2016.

By region (in quantity basis), North America and South & Central America exports significantly decreased and resulted in decrease from the previous year in total.

Table 7: Exports by region of destination in 2016

	Tyre Units($\times 10^3$)				2016/ 2015 (%)	Value (FOB) (yen $\times 10^6$)	2016/ 2015 (%)
	PC	TB<	Others	Total			
North America	11,309	1,339	474	13,122	87.6	135,106	72.3
South & Central America	1,716	769	145	2,630	84.5	50,119	69.6
Europe	11,269	787	1,451	13,507	99.5	105,653	88.2
Middle East	6,533	2,444	63	9,040	98.5	72,852	78.8
Africa	1,179	1,045	72	2,296	99.7	28,255	77.0
Asia	4,283	894	402	5,579	107.7	64,917	84.9
Oceania	2,014	553	137	2,704	100.7	46,704	92.7
Total	38,303	7,831	2,744	48,878	95.8	503,606	79.3
Weight(tons)	479,475	304,764	301,916	1,086,155	95.2		

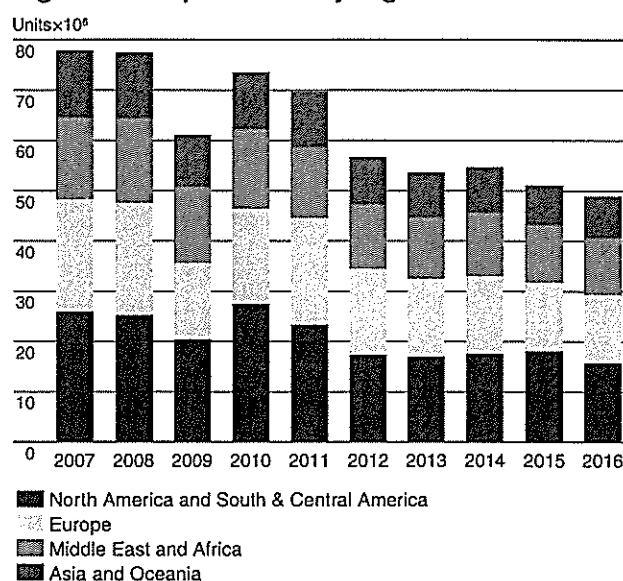
N.B.: 1. Exchange rates are averages of spot rates for Tokyo interbank trade. Source: Ministry of Finance customs records

2015: 1dollar = 121yen

2016: 1dollar = 109yen

2. "Others" doesn't include Aircraft tyres and Bicycle tyres.

Figure 10: Export trend by region



7. Imports by Region of Origin

The import volume of automobile tyres (on customs clearance basis of Ministry of Finance) was 27.61 million tyres in quantity basis and 100.0% comparing with the previous year, decreased by 13.1% from the previous year to 108.2 billion in value basis, and decreased by 0.7% from the previous year to 0.24 million tons in product weight basis.

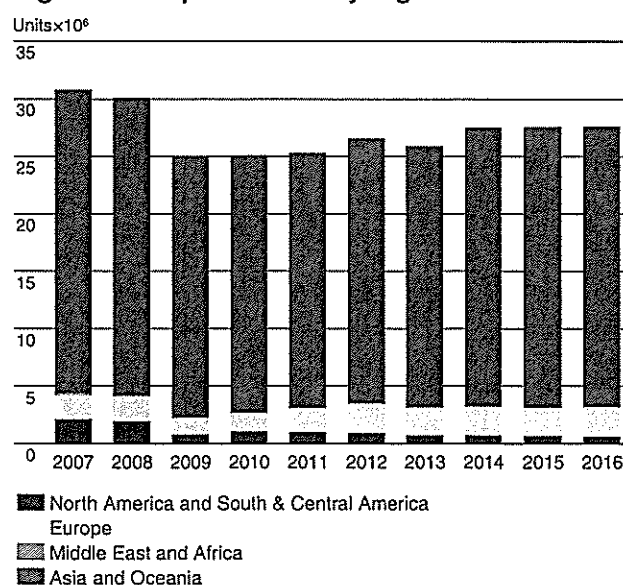
By region (in quantity basis), imports from Europe increased but imports from North America and Asia decreased and resulted in the same levels with the previous year in total.

Table 8: Imports by region of origin in 2016

	Tyre Units($\times 10^3$)				2016/ 2015 (%)	Value (C/F) (yen $\times 10^6$)	2016/ 2015 (%)
	PC	TB<	Others	Total			
North America	486	2	24	512	89.2	5,236	99.3
South & Central America	10	0	64	74	101.0	763	155.6
Europe	2,171	117	257	2,545	105.1	21,873	98.6
Middle East	31	0	1	32	73.9	231	89.9
Africa	2	0	0	2	100.4	27	96.7
Asia	19,218	2,181	3,041	24,440	99.8	80,095	83.2
Oceania	0	0	0	0	0.0	0	0.0
Total	21,918	2,300	3,387	27,605	100.0	108,225	86.9
Weight(tons)	173,717	40,975	27,443	242,135	99.3		

N.B.: "Others" doesn't include Aircraft tyres and Bicycle tyres. Source: Ministry of Finance customs records

Figure 11: Import trends by region





Measures for Tyre Safety

1. Safety Standards for Automobile Tyres

Various standards have been specified regarding tyres from the viewpoint of automobile safety because tyres are automobile's important parts.

Each Individual state has its own legislation specifying the standards and the tyres are requested to satisfy the standards of the state where the tyres are to be used. In Japan we have the Safety Regulations for Road Vehicles and their detailed items, enacted by the Ministry of Land, Infrastructure, Transport and Tourism.

In addition to these regulations, the guidelines for the items to be complied in usage and maintenance of automobile tyres are specified in "Standards for Selection, Usage and Maintenance of Automobile Tyres" by JATMA to ensure and enlighten the tyre safety.

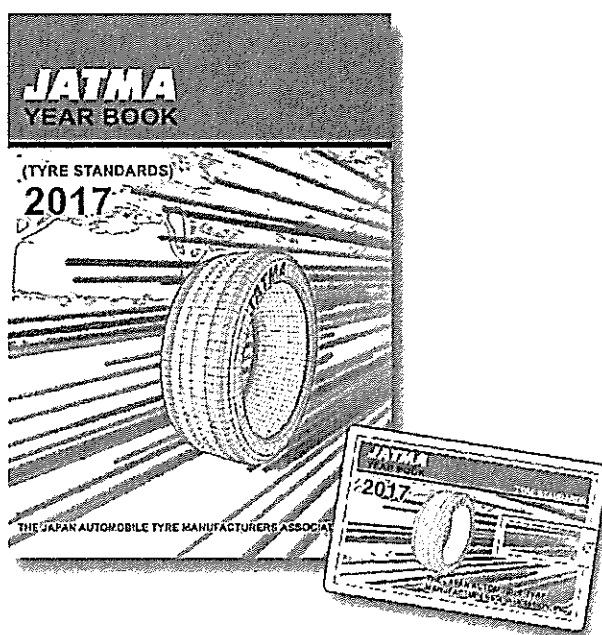
2. Tyre Standards

Besides the safety standards, standards for specifications of automobile tyres, rims and valves are set by the Tyre Standards Committee which comprises representatives from tyre manufacturers and vehicle manufacturers, and government ministries concerned and published in book form as JATMA YEAR BOOK annually by JATMA. JATMA YEAR BOOK is designed to promote standardization, simplification, and unification of tyre use within Japan, and is contributing to rationalization of production and use of fair tyres while ensuring the interchangeability.

The JATMA standards are quoted in the Federal Motor Vehicle Safety Standards and Regulations of U.S., applied to tyres exporting to Canada, Australia and so on; and recognized as one of authoritative guidelines such as the ETRTO standards of Europe and TRA standards of US.

The JATMA standards cover the following tyre categories:

- passenger car tyres,
- light truck tyres,
- truck and bus tyres,
- off-road vehicle tyres,
- agricultural equipment tyres,
- industrial vehicle tyres, and
- motorcycle tyres.



3. Legal Limits on Tread Wear

Worn tyres could be a threat to road safety. They're easier to slip especially on wet roads because of the degradation of their braking performance, comparing to new tyres. Thus the Ministry of Land, Infrastructure, Transport and Tourism prescribed requirements for tyre groove depth (minimum groove depth) in its Safety Regulations for Road Vehicles, and proscribed the use of tyres of insufficient groove depth on roads. (see table 9 and 10 (table 10 for high-speed driving)). Shown in figure 12 is the result of actual inspection on in-service vehicles conducted by JATMA. As it is shown, the number of improper inflation pressure tyres, uneven wear tyres, and insufficient groove depth tyres are notably high.

4. Product Inspection

In 1954, JATMA started its tyre inspection activity at its branch offices.

Defective or damaged tyres are now observed and checked at seven offices according to the requests from their consumers to find causes of the damages and to provide advice to them regarding correct usage of tyres.

Table 9: Wear limit for automobile tyres

Tyre type	Groove depth limit
Passenger car tyres	1.6 mm
Light truck tyres	1.6 mm
Truck and bus tyres	1.6 mm
Motorcycle tyres	0.8 mm

Table 10: Wear limit for automobile tyres in high-speed driving

Tyre type	Groove depth limit
Passenger car tyres	1.6 mm
Light truck tyres	2.4 mm
Truck and bus tyres	3.2 mm

Figure 12: Breakdown of tyre defects

(Parentheses show defect rates)

Insufficient tyre grooves		32 (1.9)
Uneven wear		48 (2.9)
External cuts (reaching the cord)		3 (0.2)
Pins or alien matter		5 (0.3)
Insufficient inflation pressure		178 (10.7)
Others		36 (2.2)

Notes:

- Multiple tyre defects per vehicle are possible, thus the number of tyre defects does not correspond to the number of vehicles with tyre defects.
- The defect rate is the number of defects divided by the number of vehicles inspected.
- Tyre inspections were carried out a total of 36 times (14 times on expressways and 22 times on ordinary roads) in 2016.

IV

Consideration for Environment

1. Tyre Labeling System

The need for further improvement of energy efficiency in the transport field is globally discussed as IEA (International Energy Agency) made a proposal at G8 Summit. In the circumstances, the Japanese government established "the Fuel-Efficient Tyre Promotion Council" in order to study promotion of fuel-efficient tyres etc. JATMA took part in it and the discussions focused on concrete measures had been made over and over from January 2009. And eventually, in January 2010, JATMA launched their voluntary standard "Tyre Labeling System" by displaying performance levels of fuel efficient tyres on the labels plainly for consumers, for the purpose of further promotion of fuel efficient tyres.

Principal contents of the system

- **Scope** : Summer-use tyres for passenger vehicles that are purchased as replacement tyres by consumers at tyre dealers etc.
- **Grading System** :
 Rolling Resistance Coefficient (RRC)
A range of five grades (Grade AAA to C)
 Wet Grip Performance
A range of four grades (Grade a to d)

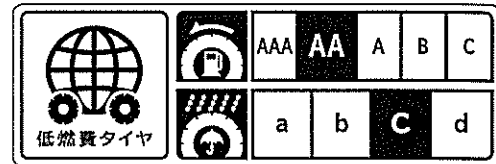
Unit (N/kN)	
RRC	Grade
RRC ≤ 6.5	AAA
6.6 ≤ RRC ≤ 7.7	AA
7.8 ≤ RRC ≤ 9.0	A
9.1 ≤ RRC ≤ 10.5	B
10.6 ≤ RRC ≤ 12.0	C

Unit (%)	
Wet Grip Performance (G)	Grade
155 ≤ G	a
140 ≤ G ≤ 154	b
125 ≤ G ≤ 139	c
110 ≤ G ≤ 124	d

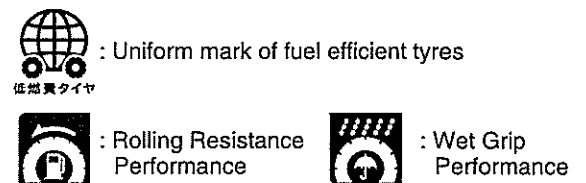
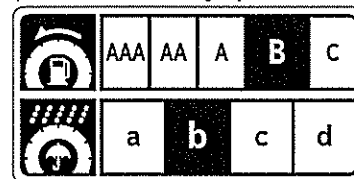
- **Performance requirements for fuel efficient tyres** :
 Rolling Resistance Coefficient
9.0 and below (Grade AAA to A)
 Wet Grip Performance
 110 and above (Grade a to d)
- **Date of application** :
 The application shall begin from January 2010 in voluntary stages.

Labeling method (Display)

(Fuel efficient tyre)

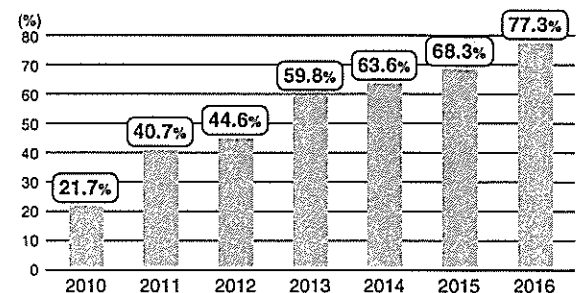


(Non fuel efficient tyre)



The spread of fuel efficient tyres :

Fuel efficient tyres are on the increase year by year, and most tyres sold at tyre dealers etc. are fuel efficient tyres now.



2. Approach to Reduce CO₂ Emissions

The members of JATMA are committed to the reduction of output of CO₂ throughout the lifecycle of the tyres they manufacture (raw material procurement, manufacturing, distribution, use, end of life and recycling).

In the lifecycle of a tyre, over 80% of CO₂ emissions occur in the usage stage. A key issue in reducing these emissions is the reduction of tyres' rolling resistance.

According to the results of our member companies' researches on their CO₂ emissions from all passenger-vehicle tyres sold by JATMA members in Japan in 2006 and in 2012 (including both original equipment and replacement tyres, available as summer and winter tyres), they have achieved an improvement on CO₂ reduction of 18.5kg (7.5%) per tyre during tyre usage stage.

On the full-year basis (comparison of the total CO₂ amount emitted from the time the tyre is sold to the time it is discarded in 2006 and 2012), they have achieved the total of 1,674,000 tons reduction.

*Above calculations are made according to "Tyre LCCO₂ calculation guidelines Ver. 2.0", assuming a driving life for passenger-vehicle tyres of 30,000km

Figure 13: CO₂ emission amount during tyre usage stage (per tyre)

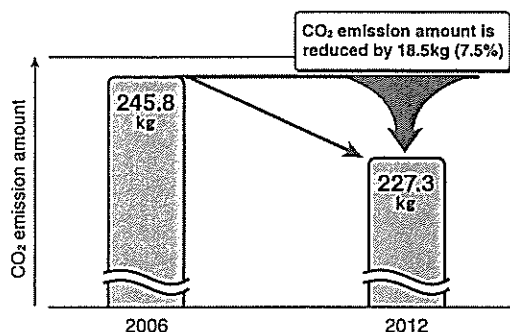
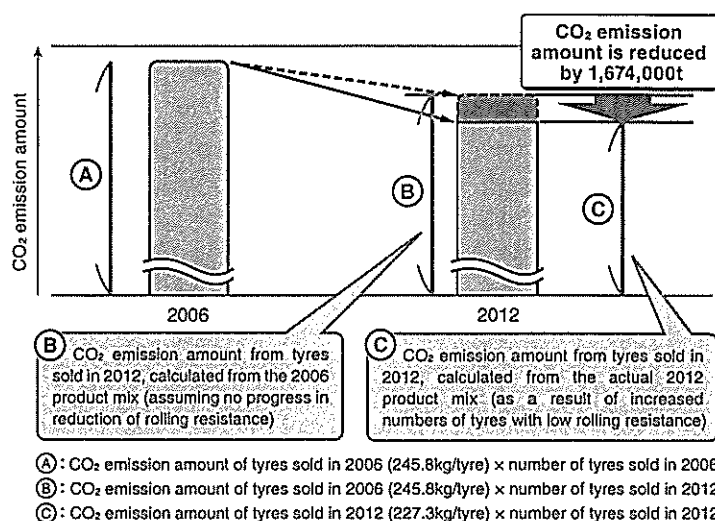


Figure 14: Reduction in CO₂ emission amount during tyre usage stage (comparison of 2006 and 2012)



3. Effort to "Reduce"

A new concept, "Reduce Index (Re Index)" which focusing on longer wear life and weight saving has been adopted. Taking this concept as the benchmark on tyre product design and development, endeavor to achieve 10% reduction (actual reduction of 3-5% is least expected) by promoting monitoring of the Re achievement rate.

Table 11: Monitoring of Re Achievement Rates

Category	Monitored Size	Classification	Re Achievement Rate				
			2012	2013	2014	2015	2016
Passenger car tyres	155/65R13	Summer tyres	105	117	113	120	111
		Studless tyres	130	110	93	97	100
Passenger car tyres	175/65R14	Summer tyres	109	121	110	104	105
		Studless tyres	128	101	93	97	103
Passenger car tyres	195/65R15	Summer tyres	108	110	119	108	126
		Studless tyres	128	94	93	96	103
Passenger car tyres	215/45R17	Summer tyres	115	115	113	101	123
		Studless tyres	128	104	93	97	102
Light truck tyres	145R12	Summer tyres	119	-	96	-	-
		Studless tyres	-	133	152	105	-
Light truck tyres	185R14	Summer tyres	-	-	-	-	-
		Studless tyres	-	140	148	104	-
Light truck tyres	205/70R16	Summer tyres	-	118	119	-	125
		Studless tyres	-	-	111	105	-
Truck and bus tyres	225/80R17.5	Summer tyres	-	116	-	100	100
		Studless tyres	109	102	-	-	-
Truck and bus tyres	245/70R19.5	Summer tyres	120	112	104	100	100
		Studless tyres	-	120	-	-	-
Truck and bus tyres	11R22.5	Summer tyres	115	107	-	100	96
		Studless tyres	-	112	-	-	-

N.B.: 1. Re Index = L:M

Re Achievement Rate = Re Index × 100

where L=Wear Life Index (Wear Life Index for the present model based on the previous model assumed as 100)

M=Weight Index (Weight index for the present model based on the previous model assumed as 100)

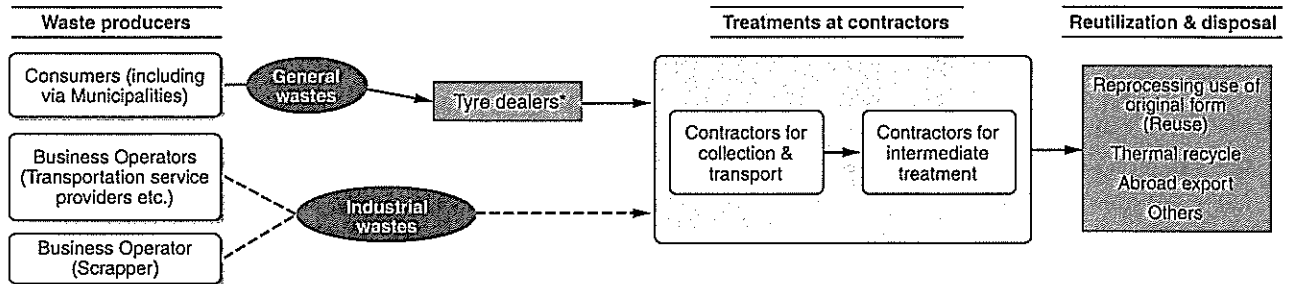
2. Tyres surveyed : Representative sizes selected in advance from replacement tyres for the domestic market.

3. 245/70R19.5 (Truck and Bus tyres) is adopted for monitoring as the replacement of 7.50R16 (Light Truck tyres) from 2007.

Source: JATMA

4. Current Status on Scrap Tyre (Used Tyre) Recycling

Figure 15: Processing flow of scrap tyre recycling



*Any tyre sellers such as tyre retailers, tyre shops, auto-supply shops, gas stations, car dealers, car repair shops, and so on.

(1) Volume of scrap tyres generated

The sum of scrap tyres (used tyres) generated at the time of "tyre replacement" and "vehicle scrapping" in 2016 (January to December) was: 94 million tyres in quantity, 997,000 tons in weight; decreased by 1 million tyres, approximately 3,000 tons respectively from the previous year.

① At "tyre replacement"

The volume of newly scrapped tyres at "tyre replacement" was 81 million tyres in quantity, and 879,000 tons in weight; the unit was the same but the weight increased compared with the previous year.

This is the effect of decrease in the sales unit of passenger car tyres and increase in the sales unit of light truck tyres and truck & bus tyres.

② At "vehicle scrapping"

The volume of newly scrapped tyres at "vehicle scrapping" decreased from the previous year to 13 million tyres in quantity and decreased in weight to 118,000 tons from the previous year. With the decrease in the volume of scrapped vehicles, both the quantity and weight decreased.

(2) Current status of the recycling

The total recycled volume decreased by 19,000 tons from the previous year to 903,000 tons in 2016, and the recycling rate was 91%, decreased by 1 point.

(3) Others

In recent years, some users of scrap tyres whose required amounts for their production cannot be satisfied by the scrap tyres generated within Japan have been purchasing cut/shredded tyres from foreign countries.

The importing volume of 2016 was 66,000 tons, decreased by 8,000 tons from 74,000 tons of the previous year. 110,000 tons in 2013 is the peak and it is decreasing year by year.

The recycling status provided here is based on the calculations of scrap tyres generated within the country, not including the scrap tyres imported from overseas.

Figure 16: Recycling of scrap tyres in 2016

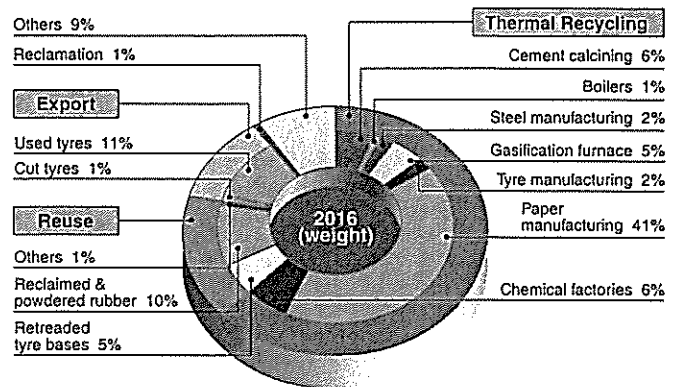


Table 12: Newly scrapped tyres

(Tyres: millions; Tons: thousands)

		2012	2013	2014	2015	2016		
						units and tons	distribution (%)	2016/2015 (%)
At "tyre replacement"	Tyres	80	82	84	81	81	86	100
	Tons	876	894	924	877	879	88	100
At "vehicle scrapping"	Tyres	15	14	15	14	13	14	93
	Tons	134	128	127	122	118	12	97
Total	Tyres	94	97	99	95	94	100	99
	Tons	1,010	1,021	1,052	1,000	997	100	100

Source: JATMA

Table 13: Recycled tyres

(Tons: thousands)

			2012	2013	2014	2015	2016			
			tons	tons	tons	tons	tons	distribution(%)	2016/2015(%)	
Kind of recycling	Domestic	Reuse	Retreaded tyre bases	57	59	59	56	53	5	95
			Reclaimed & powdered rubber	91	100	106	105	104	10	99
			Others	2	2	3	3	5	1	167
			Subtotal (A)	150	161	168	164	162	16	99
	Thermal Recycling	Paper manufacturing	363	372	415	439	407	41	93	
		Chemical factories	37	40	46	51	58	6	114	
		Cement calcining	66	62	53	59	63	6	107	
		Steel manufacturing	30	27	27	20	19	2	95	
		Gasification furnace	45	44	50	49	51	5	104	
		Tyre manufacturing	27	27	22	23	23	2	100	
		Boilers	6	6	2	2	5	1	250	
		Subtotal (B)	574	578	615	643	626	63	97	
	Abroad	Export	Used tyres	151	153	130	108	108	11	100
			Cut tyres	8	7	8	7	7	1	100
			Subtotal (C)	158	160	138	115	115	12	100
Total recycling (A+B+C)			882	899	921	922	903	91	98	
Reclamation			2	2	1	1	1	1	100	
Others			126	120	130	77	93	9	121	
Subtotal (D)			128	122	131	78	94	9	121	
Total scrap tyres (A+B+C+D)			1,010	1,021	1,052	1,000	997	100	100	

N.B.: There can be some cases that distribution's subtotals and the sums of their constituent items don't match due to the handling of decimals.

Source: JATMA

5. Situation in Illegal Piling & Dumping of Scrap Tyres

As of February 2017 the total number of cases of illegal piling & dumping of scrap tyres was 91, and the total weight of scrap tyres was 35,741 tons. Comparing to the statistical research of February last year, the number of cases decreased by 1 and the total weight increased by 13 tons.

"Newly found cases" are cases additionally reported from municipalities and so on, not newly occurred cases.

The demand for scrap tyre as an alternative fuel is still high, thus illegal piling & dumping tends to be decreasing.

The total of 4 removal operations have been carried out last year. Among them, 1 removal operation has used the support program for dumping site restoration of JATMA.

6. Support Program for Dumping Site Restoration by JATMA

The tyre industry established the support program for dumping site restoration in 2005 and has been operating it in order to reduce illegal piling and dumping of scrap tyres.

In the total of twelve years, from 2005 to 2016, for 22 cases, JATMA supported 362.13 million yen and removed 2,966,396 units/29,867 tons of scrap tyres.

In 2017, this support is continued.

Note: Please refer to the following Uniform Resource Locator for details.

<http://www.jatma.or.jp/english/tyrerecycling/report03.html>



1. Automobiles and Tyres

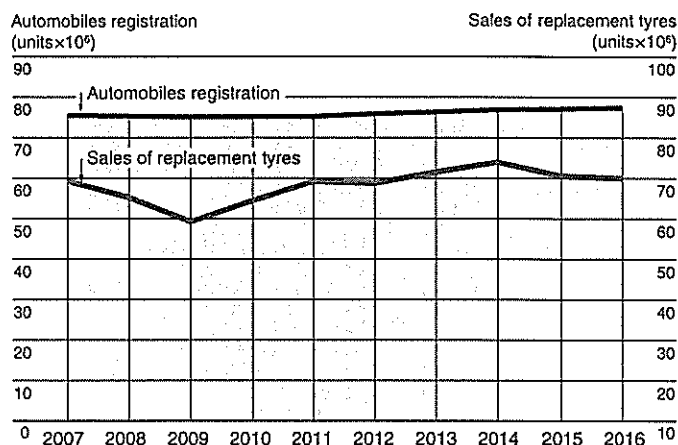
①The number of registered automobiles as of the end of December 2016 increased by 0.4% from the previous year to 77.41 million. The sales volume of replacement tyres (for four-wheeled vehicles) is 69.88 million, which decreased by 0.8% from the previous year.

Table 14: Automobile registrations and sales of replacement tyres in 2016

Automobile	Registrations($\times 10^3$)	2016/2015(%)
Passenger cars	61,404	100.7
Trucks and buses	16,005	99.5
Total	77,409	100.4
Replacement tyres	Sales($\times 10^3$)	2016/2015(%)
Passenger car tyres	51,023	98.7
Commercial vehicle tyres	18,861	100.5
Total	69,884	99.2

Source: Ministry of Land, Infrastructure, Transport and Tourism, JATMA

Figure 17: Trends in automobile registrations and sales of replacement tyres



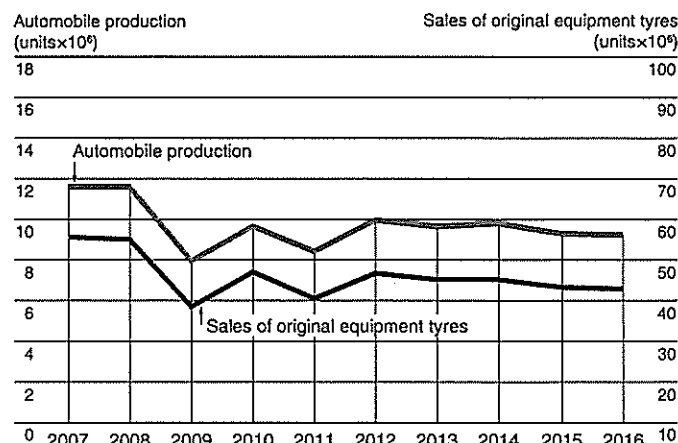
②The volume of domestic production of automobile decreased by 0.8% from the previous year to 9.21 million. Under the influence of this, the sales volume of original equipment tyres (for four-wheeled vehicles) is sameily decreased by 1.0% from the previous year to 42.77 million tyres in 2016.

Table 15: Automobile production and sales of original equipment tyres in 2016

Automobile	Productions($\times 10^3$)	2016/2015(%)
Passenger cars	7,874	100.5
Trucks and buses	1,331	92.0
Total	9,205	99.2
Original equipment tyres	Sales($\times 10^3$)	2016/2015(%)
Passenger car tyres	36,129	100.3
Commercial vehicle tyres	6,638	92.3
Total	42,767	99.0

Source: Japan Automobile Manufacturers Association, JATMA

Figure 18: Trends in automobile production and sales of original equipment tyres



2. Distribution Channels

The distribution of automobile tyres is divided into three channels: original equipment, replacement and exports. The channel for replacement is particularly wide-ranging with distributors as key stations as shown in Figure 19. The routes for the channels are roughly divided into two types: direct sales and indirect sales. Direct sales are those under which distributors sell tyres directly to some large users, such as transport, bus and taxi companies, and government and municipal users. Indirect sales are those under which tyre dealers supply tyres to end users. About 90 distributors and approximately about 110,000 tyre dealers supply replacement tyres. In addition, the component ratio (quantity) of sales for each channel in 2016 is 27.1% for original equipment, 44.2% for replacements and 28.7% for exports.

Figure 19: Distribution channels

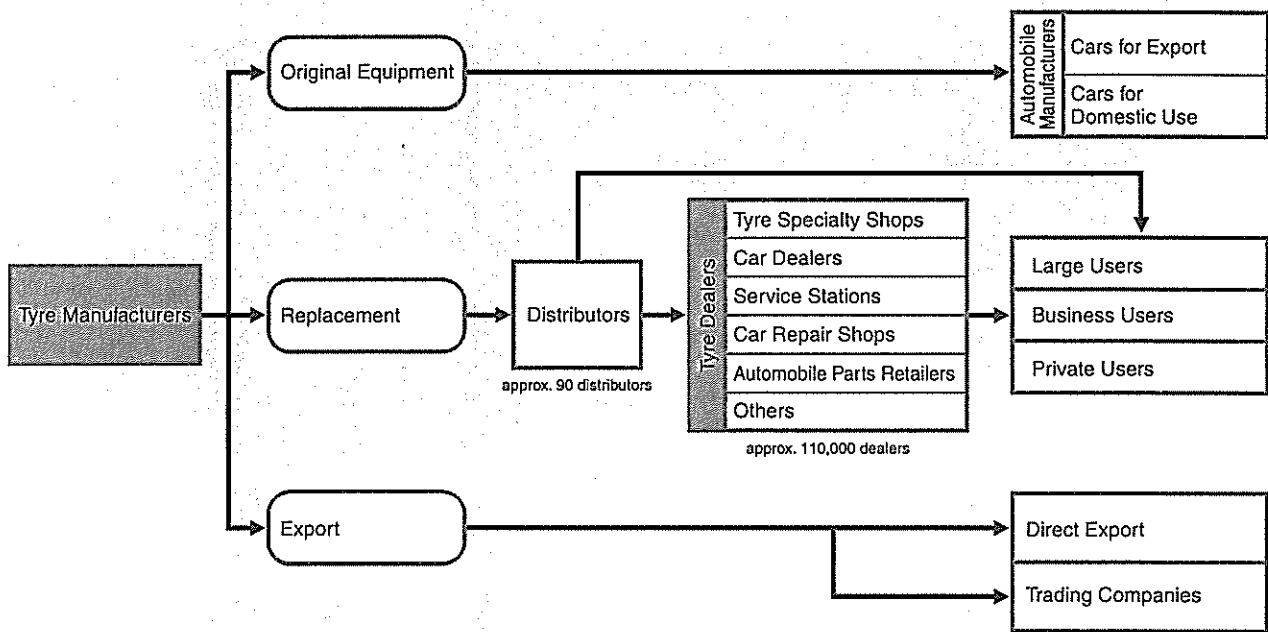
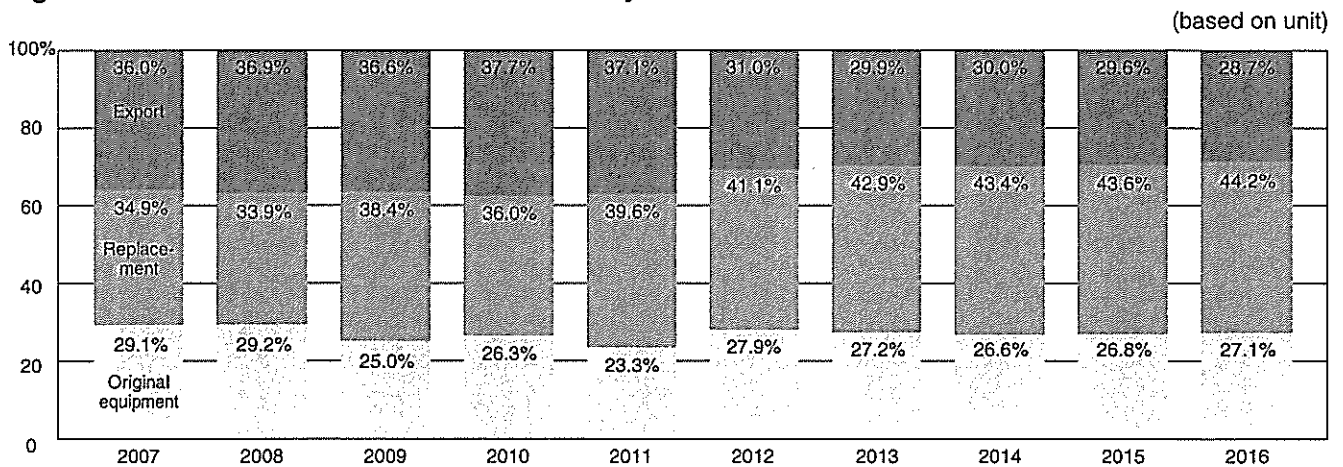


Figure 20: Trends in sales share of automobile tyres



3. Raw Materials

More than 100 raw materials are used in the production of automobile tyres, including raw rubber, tyre cord, carbon black, bead wire and compounding ingredients. Approximately half of these materials are chemical products based on petroleum, principally naphtha. As a result, the tyre industry is dependent on petroleum.

The percent distribution in weight of raw materials used in tyres was approximately the same as the previous year, rubber constituting about half of a tyre (natural rubber 30% and synthetic rubber 21%), next comes reinforcing agent 24%, and then tyre cord 14%.

Table 16: Basic composition

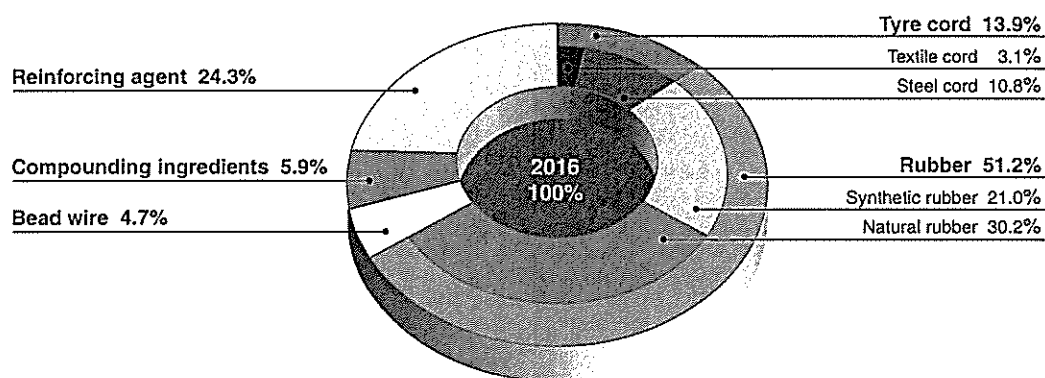
Composition	Examples
Rubber	Natural rubber, Synthetic rubber
Compounding ingredients	Vulcanizing agent, Vulcanizing accelerator, Vulcanizing accelerator aid, Antioxidant, Filler, Softener
Reinforcing agent	Carbon black, Silica
Tyre cord	Steel cord, Textile cord

Table 17: Consumption of main raw materials used in automobile tyres in 2016

Raw Materials	Consumption (tons)	2016/2015(%)	
Tyre cord	Steel	212,651	96.2
	Nylon	17,495	98.2
	Polyester	40,159	96.6
	Rayon	3,930	105.7
	Others	339	46.1
	Total	274,574	96.4
Rubber	Natural rubber	598,093	98.9
	Synthetic rubber	415,426	95.4
	Total	1,013,519	97.4
Reinforcing agent	481,561	95.8	

Source: JATMA

Figure 21: Tyre raw material weight composition



4. Tyre Production Worldwide

According to IRSG (International Rubber Study Group) research, it is estimated that the total production of tyres of the world of 2016 was 15.95 million tons, increased by 3% from the previous year.

By region it is estimated that the Asia and Oceania region takes up 66% of the world production, of which China accounts for 39% and Japan accounts for 7%.

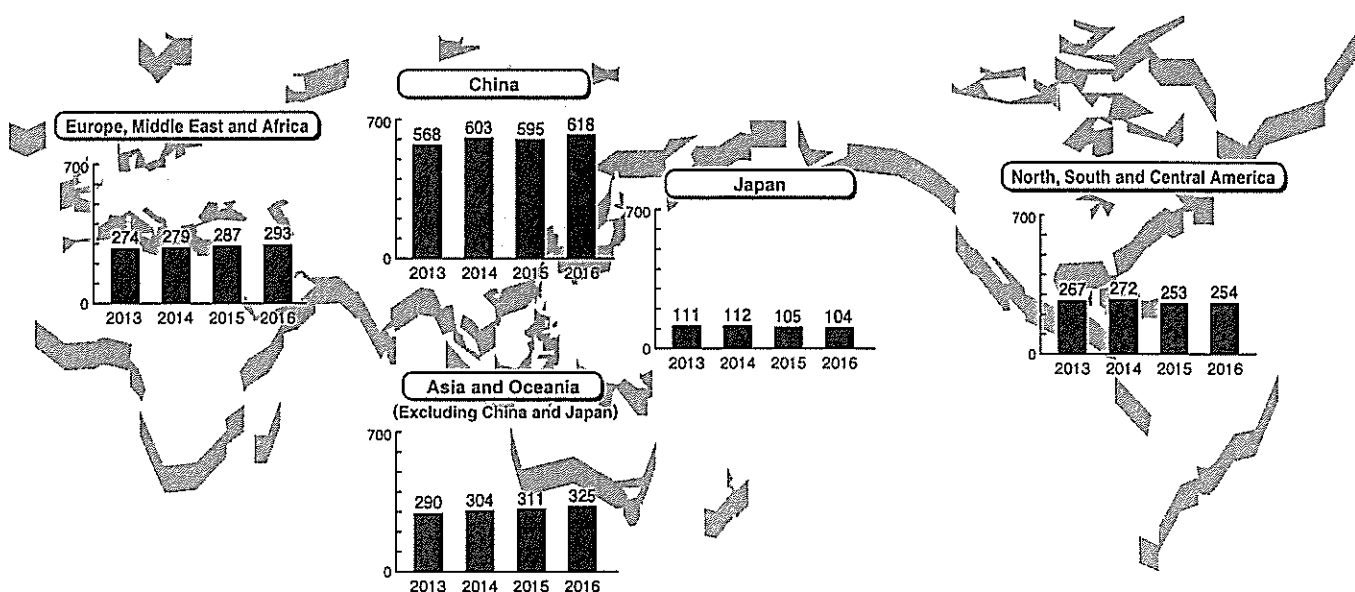
Table 18: Share of world tyre production by geographic region (units×10³ tons (produced rubber))

	2013	2013/2012(%)	2014	2014/2013(%)	2015	2015/2014(%)	2016	2016/2015(%)	composition ratio(%)
Asia and Oceania	9,700	106	10,184	105	10,112	99	10,476	104	66
(China)	(5,684)	(108)	(6,027)	(106)	(5,952)	(99)	(6,184)	(104)	(39)
(Japan)	(1,113)	(104)	(1,119)	(101)	(1,049)	(94)	(1,038)	(99)	(7)
Europe, Middle East and Africa	2,740	98	2,789	102	2,873	103	2,929	102	18
North, South and Central America	2,665	102	2,721	102	2,528	93	2,542	101	16
Total	15,108	104	15,694	104	15,513	99	15,947	103	100

N.B.: Each value is rounded, so the total doesn't match.

Source: IRSG (International Rubber Study Group)

Figure 22: Tyre Production Worldwide

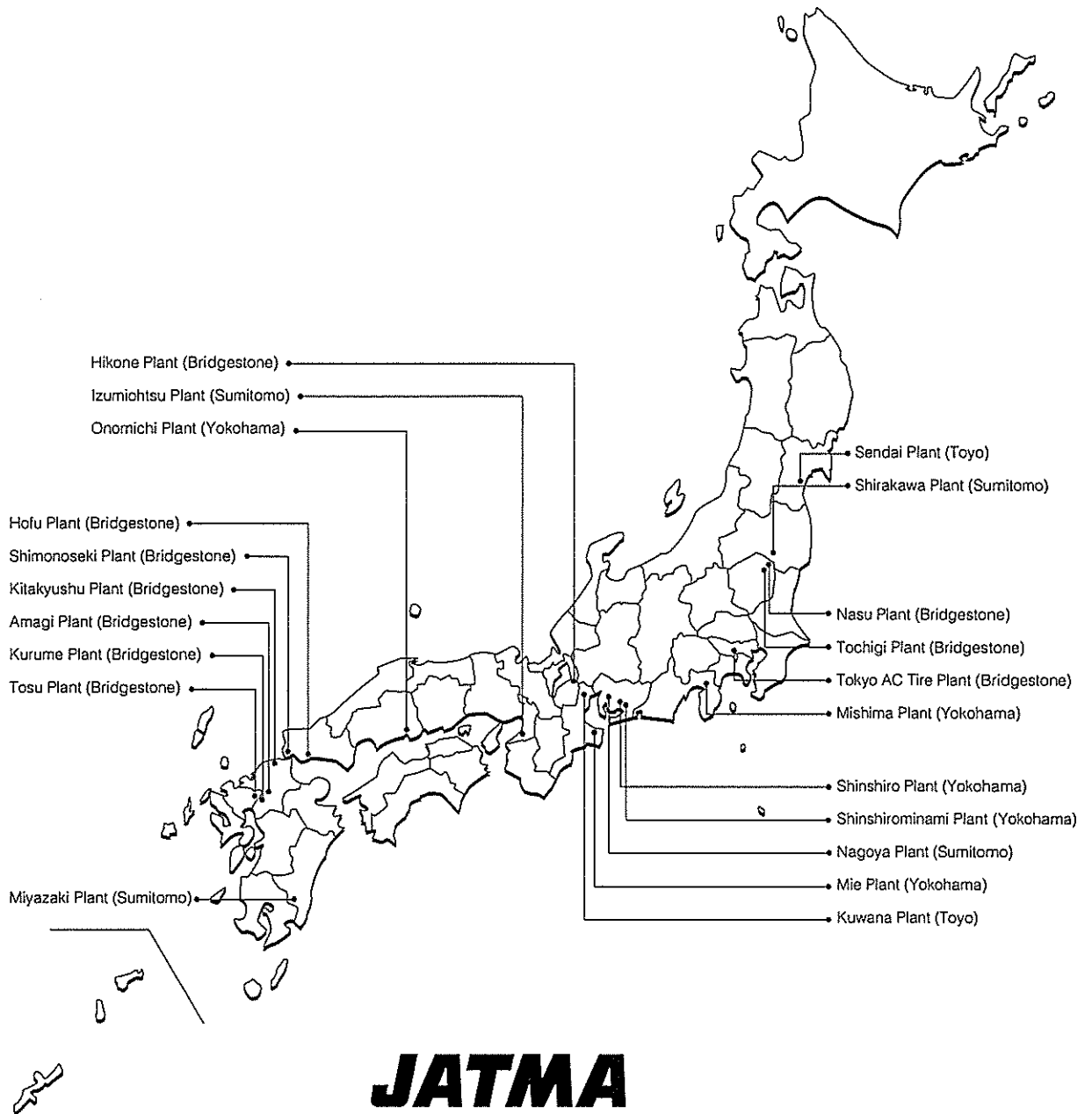


N.B.: 1. Unit: x10,000 tons (produced rubber)
2. Including tyres other than vehicle tyres.

Source: IRSG (International Rubber Study Group)

Distribution of Member Firms' (Full Member) Automobile Tyre Plants

(July 2017)



JATMA

The Japan Automobile Tyre Manufacturers Association, Inc.

<http://www.jatma.or.jp>

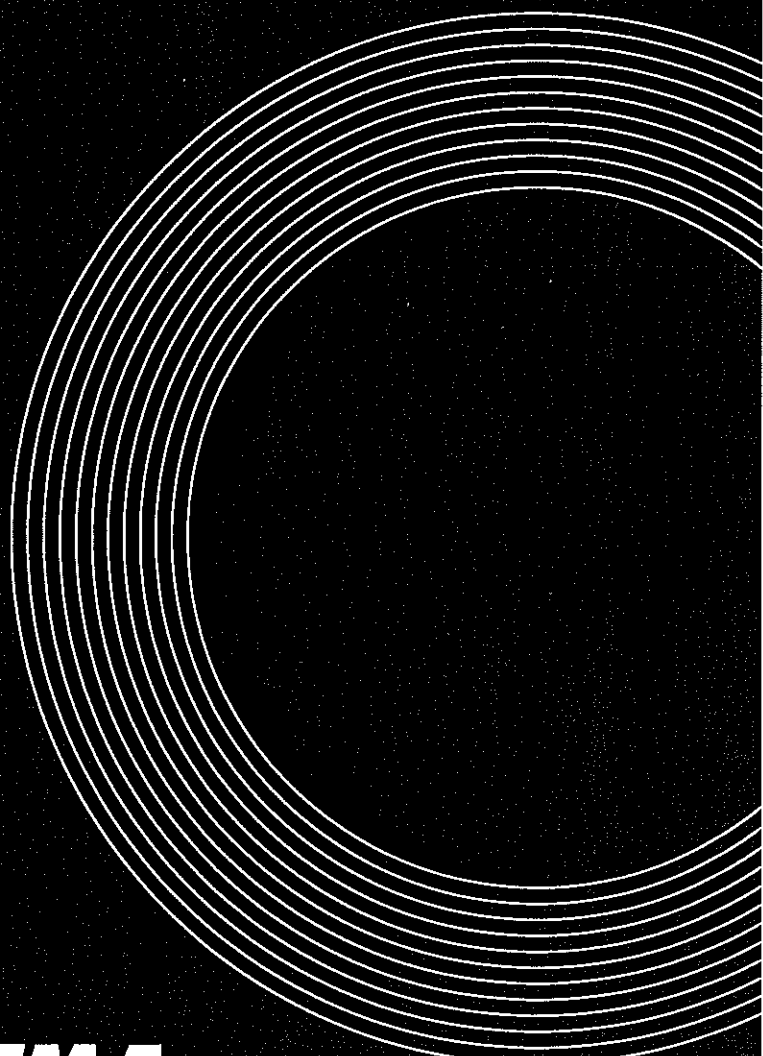
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(Research and Statistics)
(Public Relations)
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International Affairs Department
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JATMA

THE JAPAN AUTOMOBILE TYRE MANUFACTURERS ASSOCIATION, INC.

Time-series Statistical Tables

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7. Exports of tyres and tubes based on Ministry of Finance customs statistics
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Production of automobile tyres and tubes

tyres : x 10³, rubber : tons, () : year to year comparison %

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Tyres	14,394 (97.0)	14,140 (98.2)	9,450 (66.8)	11,208 (118.6)	11,387 (101.6)	10,843 (95.2)	10,808 (99.7)	11,001 (101.8)	10,266 (93.3)	9,888 (96.3)
Rubber	370,286 (97.4)	363,618 (98.2)	240,743 (66.2)	281,604 (117.0)	282,053 (100.2)	263,370 (93.4)	259,638 (98.6)	263,082 (101.3)	239,596 (91.1)	229,072 (95.6)
Tyres	25,082 (94.7)	23,986 (95.6)	18,915 (78.9)	22,176 (117.2)	22,604 (101.9)	23,194 (102.6)	24,682 (106.4)	24,649 (99.9)	23,141 (93.9)	21,783 (94.1)
Rubber	164,489 (93.1)	159,078 (96.7)	122,208 (76.8)	141,588 (115.9)	144,734 (102.2)	142,125 (98.2)	146,561 (103.1)	148,518 (101.3)	139,477 (93.9)	130,183 (93.3)
Tyres	136,731 (101.6)	135,815 (99.3)	107,409 (79.1)	130,530 (121.5)	126,998 (97.3)	120,609 (95.0)	119,485 (99.1)	120,005 (100.4)	113,821 (94.8)	110,002 (96.6)
Rubber	643,085 (102.8)	633,863 (98.6)	485,515 (76.6)	599,075 (123.4)	583,792 (97.4)	535,354 (91.7)	523,064 (97.7)	526,341 (100.6)	505,586 (96.1)	486,732 (96.3)
Tyres	588 (106.1)	588 (100.0)	293 (49.8)	438 (149.5)	525 (119.9)	504 (96.0)	453 (89.9)	479 (105.7)	446 (93.1)	440 (98.7)
Rubber	142,492 (109.1)	157,097 (110.3)	117,670 (74.9)	152,870 (129.9)	181,585 (118.8)	188,224 (103.7)	181,232 (96.3)	164,831 (91.0)	155,453 (94.3)	156,083 (100.4)
Tyres	748 (103.7)	763 (102.0)	429 (56.2)	449 (104.7)	476 (106.0)	442 (92.9)	399 (90.3)	453 (113.5)	415 (91.6)	429 (103.4)
Rubber	9,144 (104.9)	9,108 (99.6)	4,696 (51.6)	5,451 (116.1)	5,899 (108.2)	5,744 (97.4)	4,864 (84.7)	5,761 (118.4)	5,380 (93.4)	5,766 (107.2)
Tyres	8,286 (98.2)	7,371 (89.0)	4,642 (63.0)	4,906 (105.7)	4,452 (90.7)	3,607 (81.0)	3,804 (105.5)	3,838 (100.9)	3,726 (97.1)	3,833 (102.9)
Rubber	28,836 (95.5)	25,618 (88.8)	15,272 (59.6)	15,123 (99.0)	13,900 (91.9)	12,088 (87.0)	12,591 (104.2)	12,529 (99.5)	12,078 (96.4)	11,965 (99.1)
Tyres	185,829 (100.1)	182,663 (98.3)	141,138 (77.3)	169,707 (120.2)	166,442 (98.1)	159,199 (95.6)	159,631 (100.3)	160,425 (100.5)	151,815 (94.6)	146,375 (96.4)
Rubber	1,358,332 (100.5)	1,348,382 (99.3)	986,104 (73.1)	1,195,711 (121.3)	1,211,963 (101.4)	1,146,905 (94.6)	1,127,950 (98.3)	1,121,062 (99.4)	1,057,570 (94.3)	1,019,801 (96.4)

N.B.: 1. Source : JATMA

N.B.: 2. "Others" are "agricultural tyres", "motorcycle tyres", "cart tyres", and "flaps and rim-bands". ("Rubber" only)

N.B.: 3. 2001 and following years had a category shift between truck and bus tyres and light truck tyres.

Domestics shipment of automobile tyres and tubes

		tyres : ×10 ³ , rubber : tons, () : year to year comparison %										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
Truck and bus tyres	Tyres	6,681 (99.9)	6,300 (94.3)	4,319 (68.6)	5,166 (119.6)	5,647 (109.3)	5,611 (99.4)	6,051 (107.8)	6,294 (104.0)	6,102 (96.9)	6,041 (99.0)	
	Rubber	147,205 (99.9)	138,982 (94.4)	94,056 (67.7)	111,821 (118.9)	121,806 (108.9)	118,001 (96.9)	128,194 (108.6)	132,039 (103.0)	125,959 (95.4)	124,704 (99.0)	
Light truck tyres	Tyres	16,563 (97.0)	15,227 (91.9)	11,863 (77.9)	14,130 (119.1)	14,576 (103.2)	16,313 (111.9)	18,034 (110.5)	17,766 (98.5)	16,913 (95.2)	15,574 (92.1)	
	Rubber	92,450 (97.7)	86,314 (93.4)	64,126 (74.3)	74,287 (115.8)	76,891 (103.5)	84,184 (109.5)	89,746 (106.6)	90,023 (100.3)	84,935 (94.3)	77,304 (91.0)	
Passenger car tyres	Tyres	82,987 (99.3)	81,240 (97.9)	64,410 (79.3)	77,274 (120.0)	76,304 (98.7)	81,640 (107.0)	81,411 (99.7)	81,736 (100.4)	77,441 (94.7)	75,960 (98.1)	
	Rubber	363,280 (100.9)	348,690 (96.0)	260,861 (74.8)	315,780 (121.1)	304,580 (96.5)	319,184 (104.8)	318,344 (99.7)	319,414 (100.3)	304,460 (95.3)	298,886 (98.2)	
Off-the-road tyres	Tyres	217 (100.9)	192 (88.5)	102 (53.1)	140 (137.3)	172 (122.9)	169 (98.3)	188 (111.2)	199 (105.9)	194 (97.5)	163 (84.0)	
	Rubber	18,594 (111.0)	18,487 (99.4)	7,514 (40.6)	12,757 (169.8)	16,152 (126.6)	14,985 (92.8)	12,823 (85.6)	14,406 (112.3)	12,889 (89.5)	11,841 (91.9)	
Industrial tyres	Tyres	733 (101.0)	762 (104.0)	470 (61.7)	556 (118.3)	608 (109.4)	545 (89.6)	539 (98.9)	568 (105.4)	541 (95.2)	528 (97.6)	
	Rubber	8,413 (104.1)	8,686 (103.2)	5,184 (59.7)	6,230 (120.2)	6,825 (109.6)	6,157 (90.2)	6,124 (99.5)	6,414 (104.7)	6,111 (95.3)	6,008 (98.3)	
Others	Tyres	4,223 (94.2)	4,003 (94.8)	2,676 (66.9)	2,641 (98.7)	2,528 (95.7)	2,261 (89.4)	2,097 (92.8)	2,091 (99.7)	1,988 (95.1)	1,857 (93.4)	
	Rubber	15,399 (94.7)	15,609 (101.4)	9,914 (63.5)	9,971 (100.6)	9,464 (94.9)	8,961 (94.7)	8,786 (98.1)	8,797 (100.1)	8,490 (96.5)	7,502 (88.4)	
Total	Tyres	111,404 (98.8)	107,724 (96.7)	83,840 (77.8)	99,907 (119.2)	99,835 (99.9)	106,539 (106.7)	108,320 (101.7)	108,654 (100.3)	103,179 (95.0)	100,123 (97.0)	
	Rubber	645,341 (100.3)	616,768 (95.6)	441,655 (71.6)	530,846 (120.2)	535,718 (100.9)	551,472 (102.9)	564,017 (102.3)	571,093 (101.3)	542,844 (95.1)	526,245 (96.9)	

N.B.: 1. Source : JATMA

N.B.: 2. "Others" are "agricultural tyres", "motorcycle tyres", "cart tyres", and "flaps and rim-bands". (**"Rubber" only)

N.B.: 3. 2001 and following years had a category shift between truck and bus tyres and light truck tyres.

Export shipment of automobile tyres and tubes

		tyres : ×10 ³ , rubber : tons, () : year to year comparison %										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
Truck and bus tyres	Tyres	7,760 (97.0)	7,743 (99.8)	5,288 (68.3)	6,011 (113.7)	5,803 (96.5)	5,208 (89.7)	4,630 (88.9)	4,739 (102.4)	4,146 (87.5)	3,837 (92.5)	
	Rubber	224,257 (97.7)	224,628 (100.2)	152,284 (67.8)	171,056 (112.3)	163,608 (95.6)	146,529 (89.6)	129,486 (88.4)	133,266 (102.9)	114,516 (85.9)	104,618 (91.4)	
Light truck tyres	Tyres	8,939 (93.9)	8,800 (98.4)	7,347 (83.5)	8,122 (110.5)	8,184 (100.8)	6,867 (83.9)	6,616 (96.3)	6,840 (103.4)	6,437 (94.1)	6,101 (94.8)	
	Rubber	75,470 (91.7)	73,511 (97.4)	61,294 (83.4)	68,985 (112.5)	69,691 (101.0)	59,288 (85.1)	57,844 (97.6)	59,719 (103.2)	56,596 (94.8)	52,947 (93.6)	
Passenger car tyres	Tyres	54,355 (105.3)	54,351 (100.0)	44,139 (81.2)	53,420 (121.0)	51,097 (95.7)	39,953 (78.2)	38,182 (95.6)	39,070 (102.3)	36,717 (94.0)	34,608 (94.3)	
	Rubber	282,519 (106.1)	281,589 (99.7)	229,881 (81.6)	280,881 (122.2)	274,091 (97.6)	216,362 (78.9)	204,849 (94.7)	209,103 (102.1)	201,221 (96.2)	189,369 (94.1)	
Off-the-road tyres	Tyres	388 (108.1)	401 (103.4)	241 (60.1)	350 (145.2)	408 (116.6)	388 (95.1)	335 (86.3)	346 (103.3)	326 (94.2)	324 (99.4)	
	Rubber	122,943 (107.9)	137,891 (112.2)	112,522 (81.6)	140,328 (124.7)	166,756 (118.8)	174,104 (104.4)	170,369 (97.9)	151,308 (88.8)	143,992 (95.2)	144,645 (100.5)	
Industrial tyres	Tyres	146 (103.5)	118 (80.8)	108 (91.5)	109 (100.9)	78 (71.6)	59 (75.6)	56 (94.9)	70 (125.0)	65 (92.9)	85 (130.8)	
	Rubber	2,304 (103.6)	2,064 (89.6)	1,692 (82.0)	2,044 (120.8)	1,866 (91.3)	1,840 (98.6)	1,355 (73.6)	1,841 (135.9)	1,832 (99.5)	2,112 (115.3)	
Others	Tyres	3,500 (107.1)	3,531 (100.9)	2,353 (66.6)	2,704 (114.9)	2,304 (85.2)	1,682 (73.0)	2,000 (118.9)	2,035 (101.8)	2,066 (101.5)	2,328 (112.7)	
	Rubber	13,068 (99.0)	13,310 (101.9)	9,879 (74.2)	10,514 (106.4)	8,985 (85.5)	7,163 (79.7)	7,678 (107.2)	7,763 (101.1)	7,468 (96.2)	7,734 (103.6)	
Total	Tyres	75,088 (103.0)	74,944 (99.8)	59,476 (79.4)	70,716 (118.9)	67,874 (96.0)	54,157 (79.8)	51,819 (95.7)	53,100 (102.5)	49,757 (93.7)	47,283 (95.0)	
	Rubber	720,561 (101.8)	732,993 (101.7)	567,552 (77.4)	673,808 (118.7)	684,997 (101.7)	605,286 (88.4)	571,581 (94.4)	563,000 (98.5)	525,625 (93.4)	501,425 (95.4)	

N.B.: 1. Source : JATMA

N.B.: "Others" are "agricultural tyres", "motorcycle tyres", "cart tyres", and "flaps and rim-bands". ("Rubber" only)

N.B.: 3. 2001 and following years had a category shift between truck and bus tyres and light truck tyres.

Sales of original equipment tyres

tyres : x10³, () : year to year comparison %

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Truck and bus tyres	1,243 (97.0)	1,217 (97.9)	582 (47.8)	900 (154.6)	989 (109.9)	1,131 (114.4)	1,180 (104.3)	1,402 (118.8)	1,372 (97.9)	1,373 (100.1)
Light truck tyres	6,471 (92.6)	6,277 (97.0)	4,290 (68.3)	4,990 (116.3)	4,591 (92.0)	5,109 (111.3)	5,588 (109.4)	5,900 (105.6)	5,821 (98.7)	5,265 (90.4)
Passenger car tyres	47,782 (103.9)	47,443 (99.3)	33,551 (70.7)	40,989 (122.2)	34,827 (85.0)	40,376 (115.9)	38,295 (94.8)	37,752 (98.6)	36,012 (95.4)	36,129 (100.3)
Total for four-wheeled vehicle tyres	55,496 (102.3)	54,937 (99.0)	38,423 (69.9)	46,879 (122.0)	40,407 (86.2)	46,616 (115.4)	45,063 (96.7)	45,054 (100.0)	43,205 (95.9)	42,767 (99.0)
Off-the-road tyres	96 (106.7)	88 (91.7)	37 (42.0)	65 (175.7)	83 (127.7)	90 (108.4)	101 (112.2)	108 (106.9)	106 (98.1)	82 (77.4)
Industrial tyres	456 (107.0)	412 (90.4)	149 (36.2)	223 (149.7)	245 (109.9)	248 (101.2)	230 (92.7)	244 (106.1)	238 (97.5)	207 (87.0)
Agricultural tyres	627 (97.7)	690 (110.0)	522 (75.7)	519 (99.4)	566 (109.1)	556 (98.2)	524 (94.2)	537 (102.5)	533 (99.3)	483 (90.6)
Motorcycle tyres	2,379 (95.7)	1,933 (81.3)	970 (50.2)	996 (102.7)	951 (95.5)	960 (100.9)	986 (102.7)	1,039 (105.4)	928 (89.3)	889 (95.8)
Cart tyres	1,065 (83.5)	802 (75.3)	221 (27.6)	279 (126.2)	137 (49.1)	56 (40.9)	24 (42.9)	31 (129.2)	6 (19.4)	6 (100.0)
Total	60,119 (101.6)	58,862 (97.9)	40,322 (68.5)	48,961 (121.4)	42,389 (86.6)	48,526 (114.5)	46,928 (96.7)	47,013 (100.2)	45,016 (95.8)	44,434 (98.7)

N.B.: 1. Source : JATMA (Total of members only)

N.B.: 2. 2001 and following years had a category shift between truck and bus tyres and light truck tyres.

N.B.: 3. The figures include imported tyres.

Sales of replacement tyres

tyres : x10³, () : year to year comparison %

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Truck and bus tyres	5,588 (99.6)	5,091 (91.1)	4,042 (79.4)	4,620 (114.3)	4,931 (106.7)	4,727 (95.9)	5,026 (106.3)	5,319 (105.8)	5,143 (96.7)	5,233 (101.7)
Light truck tyres	14,057 (97.2)	13,103 (93.2)	11,959 (91.3)	12,769 (106.8)	13,731 (107.5)	13,820 (100.6)	14,272 (103.3)	14,615 (102.4)	13,615 (93.2)	13,628 (100.1)
Passenger car tyres	49,504 (95.3)	46,952 (94.8)	43,124 (91.8)	46,908 (108.8)	50,448 (107.5)	50,119 (99.3)	52,109 (104.0)	53,956 (103.5)	51,699 (95.8)	51,023 (98.7)
Total for four-wheeled vehicle tyres	69,149 (96.0)	65,146 (94.2)	59,125 (90.8)	64,297 (108.7)	69,110 (107.5)	68,666 (99.4)	71,407 (104.0)	73,890 (103.5)	70,457 (95.4)	69,884 (99.2)
Off-the-road tyres	132 (100.8)	117 (88.6)	76 (65.0)	87 (114.5)	102 (117.2)	94 (92.2)	101 (107.4)	105 (104.0)	103 (98.1)	93 (90.3)
Industrial tyres	741 (98.0)	711 (96.0)	530 (74.5)	593 (111.9)	635 (107.1)	565 (89.0)	583 (103.2)	597 (102.4)	581 (97.3)	580 (99.8)
Agricultural tyres	130 (77.8)	120 (92.3)	110 (91.7)	114 (103.6)	109 (95.6)	103 (94.5)	100 (97.1)	93 (93.0)	86 (92.5)	88 (102.3)
Motorcycle tyres	2,096 (97.6)	2,092 (99.8)	1,877 (89.7)	1,908 (101.7)	1,702 (89.2)	1,637 (96.2)	1,604 (98.0)	1,551 (96.7)	1,510 (97.4)	1,503 (99.5)
Cart tyres	38 (95.0)	35 (92.1)	33 (94.3)	29 (87.9)	28 (96.6)	27 (96.4)	30 (111.1)	28 (93.3)	29 (103.6)	27 (93.1)
Total	72,286 (96.1)	68,221 (94.4)	61,751 (90.5)	67,028 (108.5)	71,686 (106.9)	71,092 (99.2)	73,825 (103.8)	76,264 (103.3)	72,766 (95.4)	72,175 (99.2)

N.B.: 1. Source : JATMA (Total of members only)

N.B.: 2. 2001 and following years had a category shift between truck and bus tyres and light truck tyres.

N.B.: 3. The figures include imported tyres.

Sales of summer tyres and winter tyres for replacement(for four-wheeled vehicles)

		tyres : x10 ³ , () : year to year comparison %										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
Truck and bus tyres	Total	5,588 (99.6)	5,091 (91.1)	4,042 (79.4)	4,620 (114.3)	4,931 (106.7)	4,727 (95.9)	5,026 (106.3)	5,319 (105.8)	5,143 (96.7)	5,233 (101.7)	
	Summer	3,511 (103.2)	3,331 (94.9)	2,587 (77.7)	2,923 (113.0)	2,969 (101.6)	2,710 (91.3)	2,961 (109.3)	3,090 (104.4)	2,896 (93.7)	2,943 (101.6)	
	Winter	2,077 (94.1)	1,760 (84.7)	1,455 (82.7)	1,697 (116.6)	1,962 (115.6)	2,017 (102.8)	2,065 (102.4)	2,229 (107.9)	2,247 (100.8)	2,290 (101.9)	
Light truck tyres	Total	14,057 (97.2)	13,103 (93.2)	11,959 (91.3)	12,769 (106.8)	13,731 (107.5)	13,820 (100.6)	14,272 (103.3)	14,615 (102.4)	13,615 (93.2)	13,628 (100.1)	
	Summer	9,911 (100.5)	9,561 (96.5)	8,901 (93.1)	9,344 (105.0)	9,654 (103.3)	9,547 (98.9)	9,750 (102.1)	9,863 (101.2)	9,426 (95.6)	9,434 (100.1)	
	Winter	4,146 (90.1)	3,542 (85.4)	3,058 (86.3)	3,425 (112.0)	4,077 (119.0)	4,273 (104.8)	4,522 (105.8)	4,752 (105.1)	4,189 (88.2)	4,194 (100.1)	
Passenger car tyres	Total	49,504 (95.3)	46,952 (94.8)	43,124 (91.8)	46,908 (108.8)	50,448 (107.5)	50,119 (99.3)	52,109 (104.0)	53,956 (103.5)	51,699 (95.8)	51,023 (98.7)	
	Summer	34,859 (101.3)	33,564 (96.3)	31,183 (92.9)	33,620 (107.8)	34,394 (102.3)	33,366 (97.0)	33,738 (101.1)	34,979 (103.7)	34,851 (99.6)	34,907 (100.2)	
	Winter	14,645 (83.6)	13,388 (91.4)	11,941 (89.2)	13,288 (111.3)	16,054 (120.8)	16,753 (104.4)	18,371 (109.7)	18,977 (103.3)	16,848 (88.8)	16,116 (95.7)	
Total	Total	69,149 (96.0)	65,146 (94.2)	59,125 (90.8)	64,297 (108.7)	69,110 (107.5)	68,666 (99.4)	71,407 (104.0)	73,890 (103.5)	70,457 (95.4)	69,884 (99.2)	
	Summer	48,281 (101.3)	46,456 (96.2)	42,671 (91.9)	45,887 (107.5)	47,017 (102.5)	45,623 (97.0)	46,449 (101.8)	47,932 (103.2)	47,173 (98.4)	47,284 (100.2)	
	Winter	20,868 (85.8)	18,690 (89.6)	16,454 (88.0)	18,410 (111.9)	22,093 (120.0)	23,043 (104.3)	24,958 (108.3)	25,958 (104.0)	23,284 (89.7)	22,600 (97.1)	

N.B.: 1. Source : JATMA (Total of members only)

N.B.: 2. 2001 and following years had a category shift between truck and bus tyres and light truck tyres.

N.B.: 3. 1998 and following years had all season tyres in the summer tyre category.

Exports of tyres and tubes based on Ministry of Finance customs statistics

tyres : $\times 10^3$, value : FOB dollar $\times 10^3$, () : year to year comparison %

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Asia	Tyres	9,063 (100.7)	9,129 (100.7)	6,999 (76.7)	7,560 (108.0)	7,827 (103.5)	6,477 (82.8)	6,356 (106.2)	5,180 (81.5)	5,579 (107.7)
	Value	680,002 (108.6)	799,530 (117.6)	674,912 (84.4)	808,465 (119.8)	1,031,338 (127.6)	1,054,305 (102.2)	962,418 (91.3)	836,093 (86.9)	631,309 (75.5)
Middle East	Tyres	13,921 (118.2)	14,702 (105.6)	13,412 (91.2)	13,627 (101.6)	12,031 (88.3)	10,606 (88.2)	10,370 (100.4)	9,180 (88.5)	9,040 (98.5)
	Value	956,237 (121.4)	1,184,574 (123.9)	1,107,936 (93.5)	1,173,872 (106.0)	1,263,993 (107.7)	1,234,746 (97.7)	1,087,672 (88.1)	977,794 (89.9)	763,439 (78.1)
Europe	Tyres	22,170 (109.3)	22,200 (100.1)	15,070 (67.9)	18,908 (125.5)	21,108 (111.6)	17,057 (80.8)	15,324 (99.6)	13,570 (88.6)	13,507 (99.5)
	Value	1,668,181 (129.4)	1,849,351 (110.9)	1,162,604 (62.9)	1,486,981 (127.9)	1,928,789 (129.7)	1,725,179 (89.4)	1,377,041 (91.2)	988,576 (71.8)	967,527 (97.9)
North America	Tyres	22,090 (89.1)	20,729 (93.8)	17,352 (83.7)	23,016 (132.6)	19,353 (84.1)	14,152 (73.1)	13,996 (102.9)	14,972 (107.0)	13,122 (87.6)
	Value	1,529,500 (92.2)	1,613,517 (105.5)	1,359,334 (84.2)	1,870,321 (137.6)	2,064,587 (110.4)	1,907,040 (92.4)	1,608,169 (96.0)	1,543,873 (96.0)	1,244,632 (80.6)
South and Central America	Tyres	3,815 (103.9)	4,512 (118.3)	3,086 (88.4)	4,365 (141.4)	3,993 (91.5)	3,160 (79.1)	3,556 (104.4)	3,113 (87.5)	2,630 (84.5)
	Value	351,155 (118.7)	437,762 (124.7)	410,729 (93.8)	573,743 (139.7)	727,322 (126.8)	817,381 (112.4)	675,734 (83.8)	595,299 (88.1)	461,168 (77.5)
Africa	Tyres	2,329 (108.7)	2,140 (91.9)	1,771 (82.8)	2,274 (128.4)	2,085 (91.7)	2,146 (102.9)	2,284 (122.3)	2,303 (100.8)	2,296 (99.7)
	Value	274,414 (111.1)	289,539 (105.5)	273,759 (94.5)	338,985 (123.8)	369,284 (108.9)	433,173 (117.3)	408,086 (94.2)	357,368 (87.6)	303,212 (84.8)
Oceania	Tyres	4,214 (114.4)	3,959 (94.0)	3,332 (84.2)	3,697 (111.0)	3,243 (87.7)	3,093 (95.4)	2,747 (90.7)	2,686 (97.8)	2,704 (100.7)
	Value	462,104 (123.8)	490,931 (106.2)	442,356 (90.1)	589,773 (133.3)	763,649 (129.5)	802,393 (105.1)	537,353 (77.1)	416,188 (77.5)	430,784 (103.5)
Total	Tyres	77,602 (103.0)	77,371 (99.7)	61,022 (78.9)	73,447 (120.4)	69,640 (94.8)	56,691 (81.4)	54,633 (101.9)	51,004 (93.4)	48,878 (95.8)
	Value	5,921,593 (112.2)	6,665,204 (112.6)	5,431,630 (81.5)	6,842,160 (126.0)	8,148,962 (119.1)	7,974,217 (97.9)	7,145,520 (89.6)	6,369,552 (89.1)	5,241,896 (82.3)

Source: Ministry of Finance customs export records

Imports of tyres and tubes based on Ministry of Finance customs statistics

tyres : x10³, value : CIF yen×10⁴, () : year to year comparison %

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
Passenger car tyres	Tyres	24,089 (92.9)	23,572 (97.9)	19,302 (81.9)	19,346 (100.2)	19,401 (100.3)	20,267 (96.9)	21,304 (105.1)	21,924 (102.9)	21,918 (100.0)	
	Value	7,261,682 (101.6)	7,386,186 (101.7)	5,292,031 (71.6)	5,527,743 (104.5)	6,247,210 (113.0)	7,293,639 (116.8)	8,034,798 (110.2)	9,126,658 (113.6)	9,101,192 (99.7)	7,901,000 (86.8)
Commercial vehicle tyres	Tyres	3,207 (118.5)	3,145 (98.1)	2,880 (91.6)	2,617 (90.9)	2,577 (98.5)	2,170 (84.2)	2,639 (117.6)	2,322 (88.0)	2,300 (99.1)	
	Value	1,159,415 (110.8)	1,124,280 (97.0)	911,466 (81.1)	947,069 (103.9)	1,081,932 (114.2)	1,149,559 (106.3)	1,151,719 (100.2)	1,713,412 (148.8)	1,757,492 (102.6)	1,483,087 (84.4)
Motorcycle tyres	Tyres	3,091 (98.0)	2,895 (93.6)	2,362 (81.6)	2,595 (109.9)	2,743 (105.7)	2,931 (106.9)	3,009 (105.9)	2,768 (92.0)	2,889 (104.4)	
	Value	463,459 (116.2)	382,082 (82.4)	330,296 (86.4)	385,462 (116.7)	416,944 (108.2)	469,834 (112.7)	514,251 (109.5)	558,067 (108.5)	540,554 (96.9)	521,073 (96.4)
Others	Tyres	423 (110.3)	510 (120.5)	401 (78.6)	556 (138.7)	593 (106.7)	557 (93.9)	592 (111.3)	584 (98.6)	498 (85.3)	
	Value	528,694 (130.4)	712,295 (134.7)	395,608 (55.5)	701,082 (177.2)	777,141 (110.8)	821,736 (105.7)	833,951 (101.5)	728,744 (87.4)	725,961 (99.6)	667,630 (92.0)
Tubes	Value	128,103 (301.3)	421,909 (329.4)	312,576 (74.1)	351,526 (112.5)	272,805 (77.6)	300,251 (110.1)	302,412 (100.7)	328,625 (108.7)	323,553 (98.5)	249,739 (77.2)
	Tyres	30,811 (95.8)	30,122 (97.8)	24,945 (82.8)	25,114 (100.7)	25,314 (100.8)	26,578 (105.0)	25,885 (97.4)	27,544 (106.4)	27,598 (100.2)	27,605 (100.0)
Total	Value	9,541,352 (105.5)	10,026,752 (105.1)	7,241,977 (72.2)	7,912,882 (109.3)	8,796,032 (111.2)	10,035,019 (114.1)	10,837,131 (108.0)	12,448,752 (114.9)	12,448,752 (99.9)	10,822,529 (86.9)

Source: Ministry of Finance customs import records