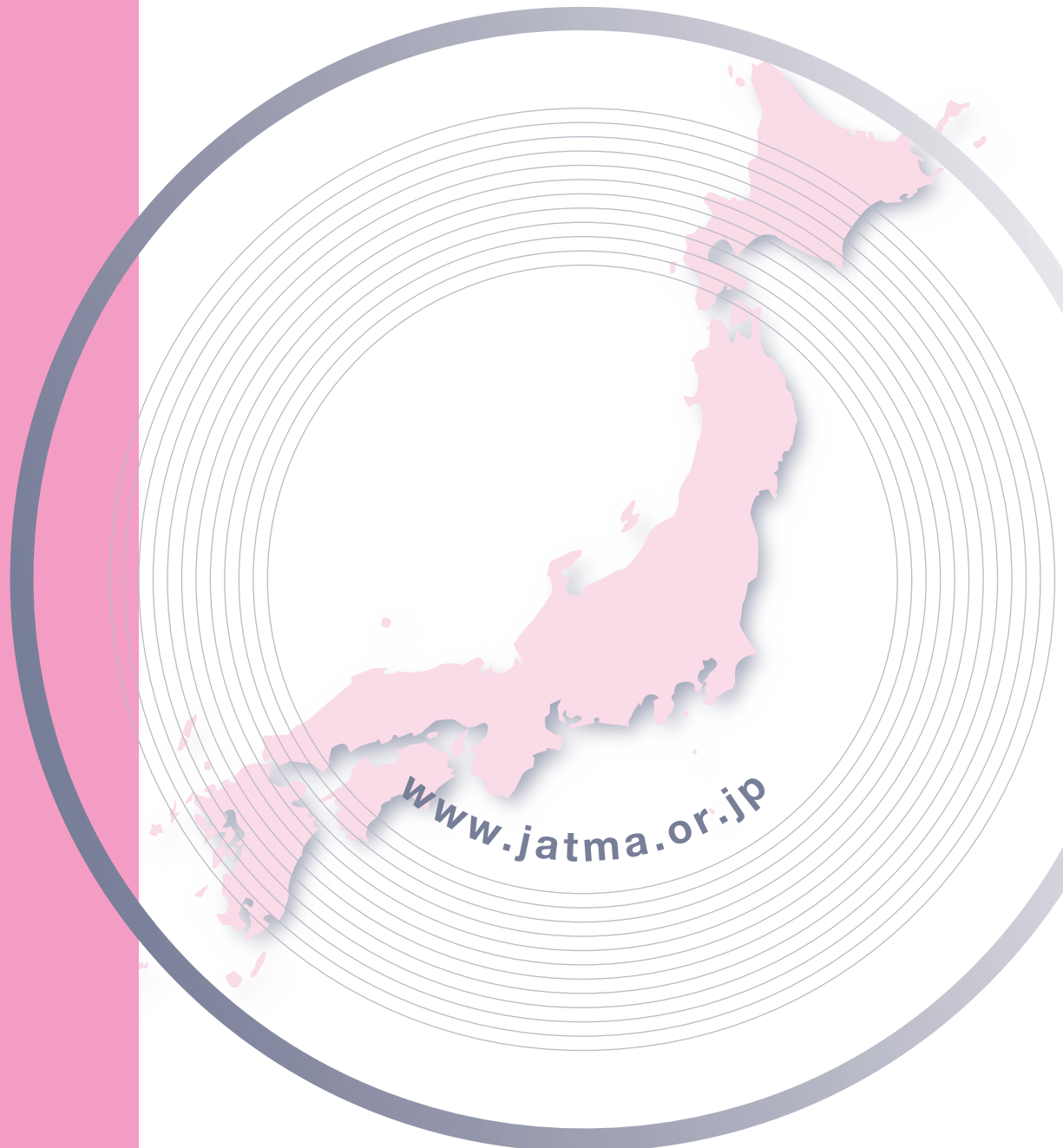


TYRE INDUSTRY OF JAPAN

2019



TYRE INDUSTRY OF JAPAN 2019

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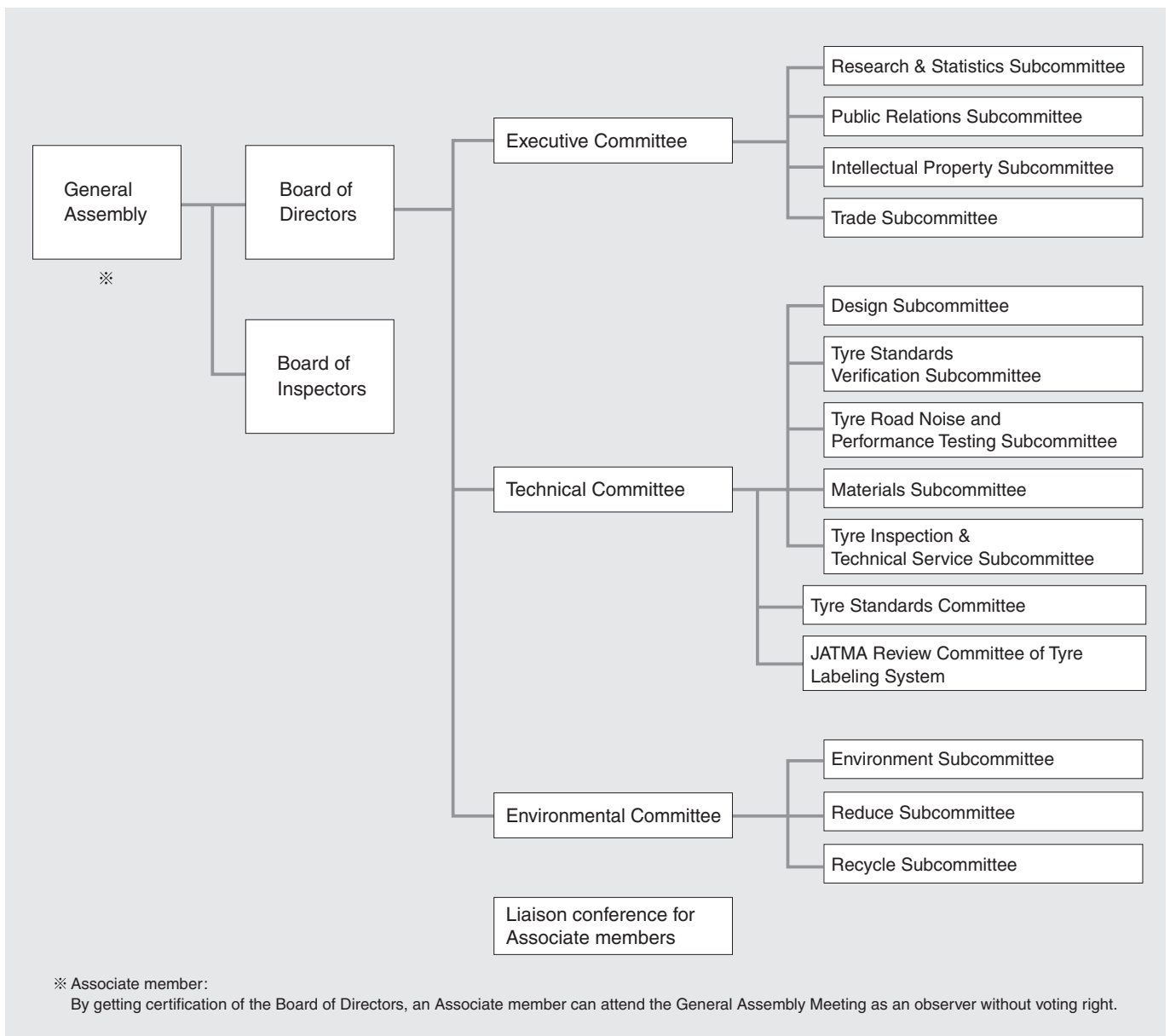
The Japan Automobile Tyre Manufacturers Association, Inc.

Chairman: Takashi Shimizu, President, Toyo Tire Corporation
Vice-Chairman: Akihiro Eto, President, COO and Representative Executive Officer, Bridgestone Corporation
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 Corporation
 [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.



JATMA Member Firms

[Full member]

Bridgestone Corporation

President Akihiro Eto
Established: March 1, 1931
Capital: ¥126,354 million
(as of the end of December 2018)
Annual sales: ¥3,650,111 million
(consolidated) (fiscal year ending December 2018)
Employees: 143,509
(consolidated) (as of the end of December 2018)
Head office: 1-1, Kyobashi 3-chome,
Chuo-ku, Tokyo 104-8340
Tel.: 03 (6836) 3001
<https://www.bridgestone.co.jp/>

Sumitomo Rubber Industries, Ltd.

President Satoru Yamamoto
Established: March 6, 1917
Capital: ¥42,658 million
(as of the end of December 2018)
Annual sales: ¥894,243 million
revenue* (fiscal year ending December 2018)
(consolidated)
Employees: 37,852
(consolidated) (as of the end of December 2018)
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 2018)
Annual sales: ¥650,239 million
(consolidated) (fiscal year ending December 2018)
Employees: 26,274
(consolidated) (as of the end of December 2018)
Head office: 36-11, Shimbashi 5-chome,
Minato-ku, Tokyo 105-8685
Tel.: 03 (5400) 4531
<https://www.y-yokohama.com/global/>

Toyo Tire Corporation

President Takashi Shimizu
Established: August 1, 1945
Capital: ¥55,935 million
(as of February 10, 2019)
Annual sales: ¥393,220 million
(consolidated) (fiscal year ending December 2018)
Employees: 12,804
(consolidated) (as of the end of December 2018)
Head office: 2-13, Fujinoki 2-chome, Itami,
Hyogo Prefecture 664-0847
Tel.: 072 (789) 9100
<https://www.toyotires-global.com/>

[Associate member]

Nihon Michelin Tire Co., Ltd.

President Paul Perrinaux
Established: June 10, 1975
Capital: ¥100 million
(as of the end of December 2018)
Employees: 600
(as of the end of December 2018)
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 2018)
Employees: 133
(as of the end of December 2018)
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 2018 was 146.75 million (tyres). This is the amount of 1.06 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) 2010-2018

Although Japanese economy recovered, supported by the government's economic policies etc, it turned in negative growth in 2011 due to the Great East Japan Earthquake and the record appreciation of the yen. After 2013, although there was also the rise of consumption tax in April 2014 and the growth has been weakened temporarily, it has continued its gradually increase by the effect of high stock prices and depreciation of the yen. The world economy was gradually recovering from the after effect of the financial crisis. In addition to the United States where stable growth continues, and Europe that turned into positive growth since the second half of 2013, emerging economies also remained robust in general due to recovery in resource prices and other factors, however, growth slowed in some countries and regions since the middle of the 2018. In this environment of demand, tyre production amount in Japan has increased from the previous year for two consecutive years to 1.06 million tons in rubber consumption in 2018.

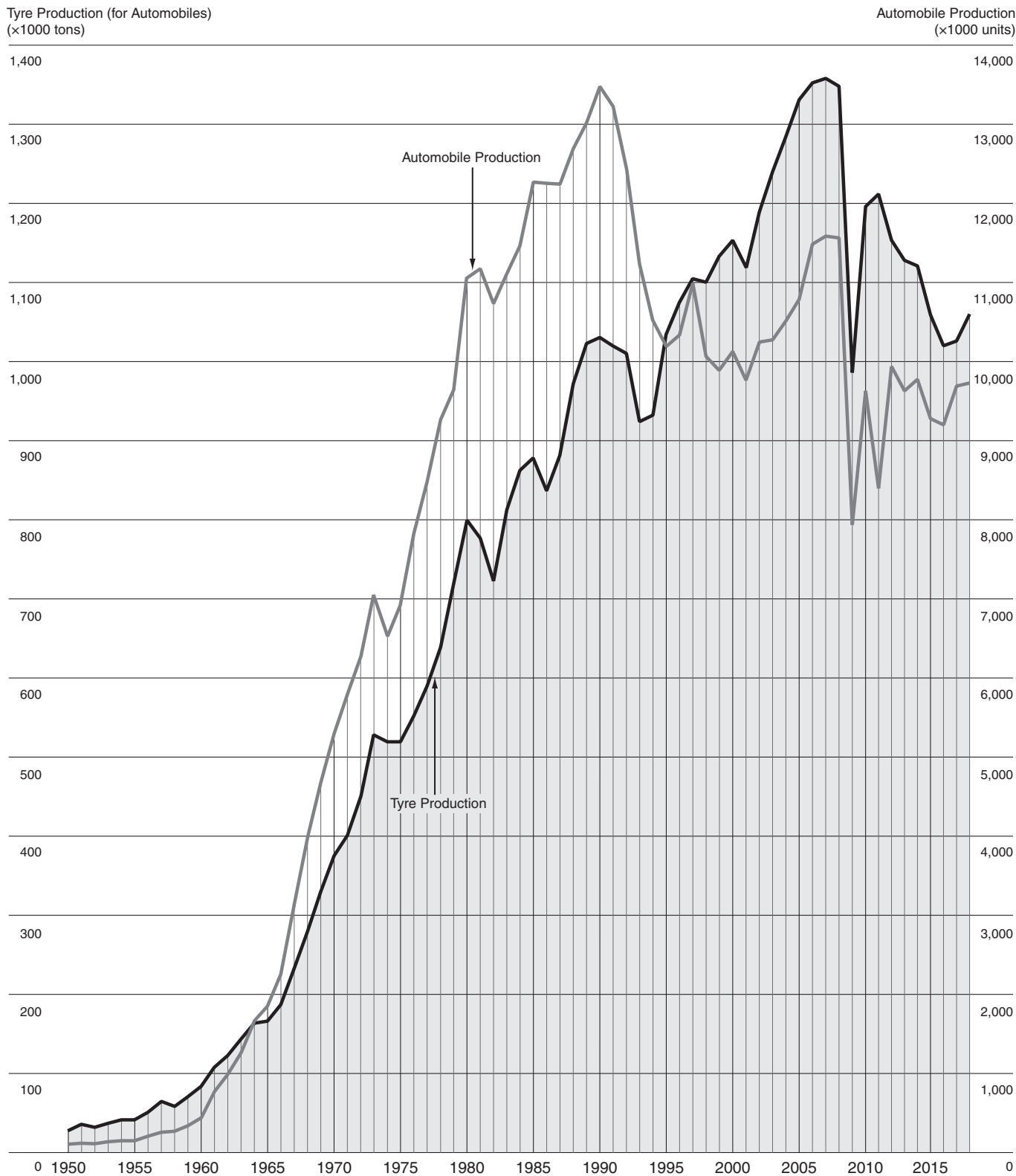
2. Changes in Production Volume of Tyres and Automobiles

Table 1: Changes in Production Volume of Tyres and Automobiles

	1950	1960	1970	1980	1990	2000	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Tyre Production (for Automobiles) (×1000 tons)(quantity of rubber)	14	83	369	784	1,031	1,153	986	1,196	1,212	1,147	1,128	1,121	1,058	1,020	1,026	1,060
Automobile Production (×1000 units)	32	482	5,289	11,043	13,487	10,141	7,934	9,629	8,399	9,943	9,630	9,775	9,278	9,205	9,691	9,730

Source: JATMA

Figure 1: Changes in Production Volume of Tyres and Automobiles



1. Overview

The proportion of tyre production (fig. 2 and 3) in the rubber product industry increased by 0.1 points from the previous year to 79.6% in raw material consumption (the amount of newly produced rubber) and increased by 1.0 point from the previous year to 52.1% 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 2018 (excluding cart tyres, tubes and flaps)

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

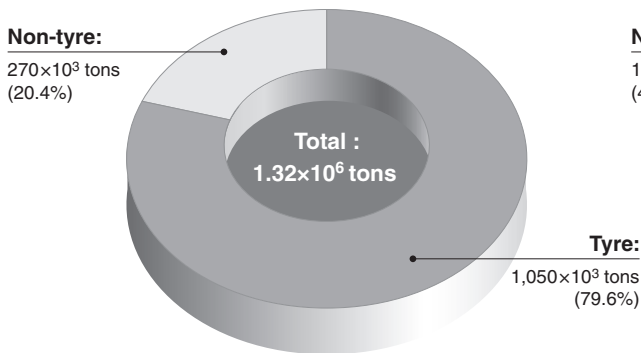
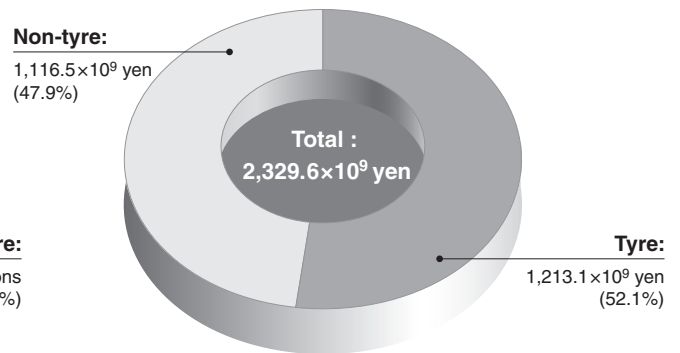
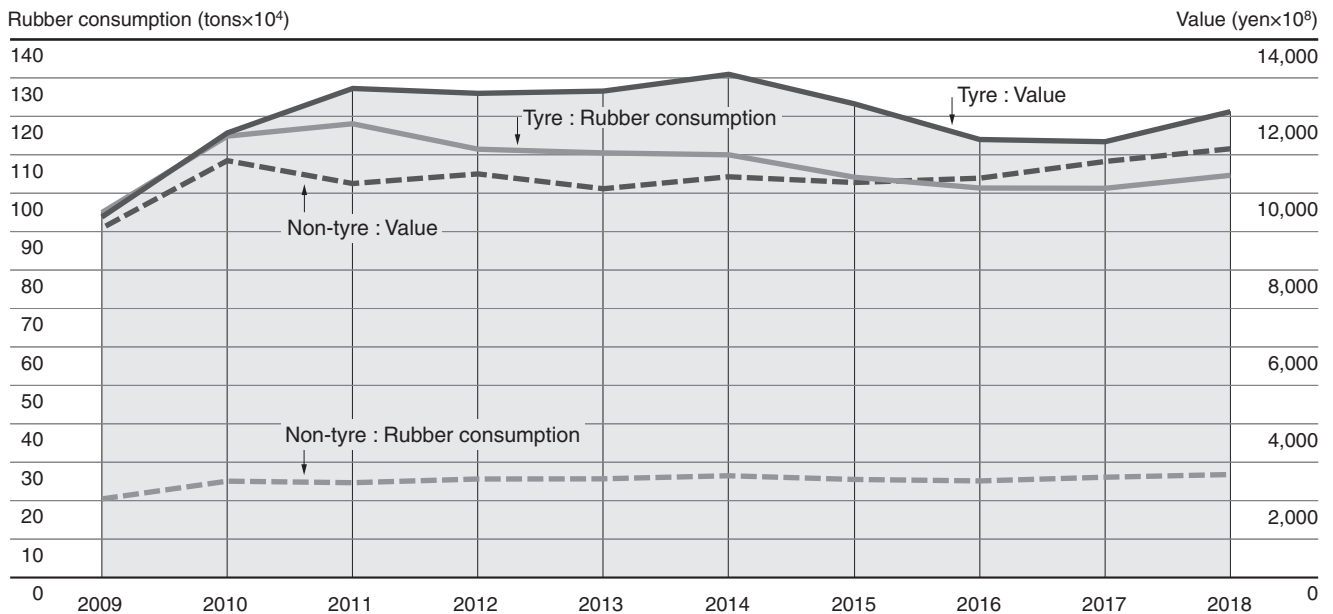


Figure 3: The sales amount



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

Figure 4: Trends 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 increased by 1.3% to 146.75 million tyres in 2018, increased from the previous year for the first time in four years. Due to the increase in export, passenger car tyres increased by 1.4% from the previous year and light truck tyres increased by 1.8% from the previous year due to the increase in domestic. Truck & bus tyres have kept almost the same level as the previous year.

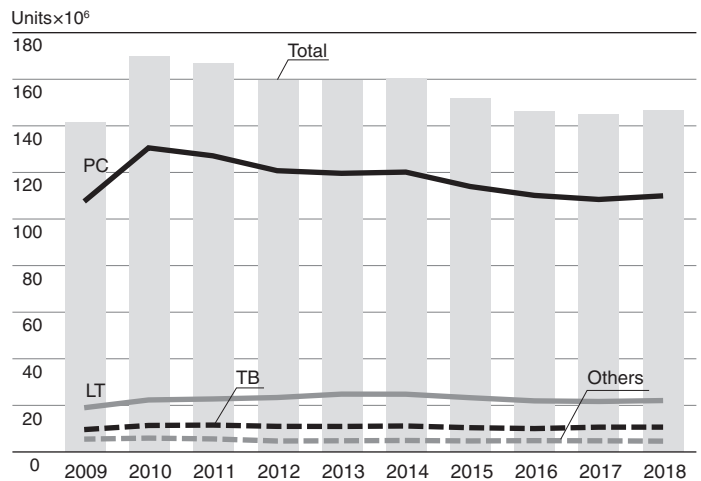
Table 2: Automobile tyre production in 2018

	Production	
	Units($\times 10^3$)	2018/2017(%)
Passenger car tyres	109,816	101.4
Light truck tyres	21,921	101.8
Truck and bus tyres	10,513	100.1
Others	4,499	97.0
Total	146,749	101.3

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 0.6% to 46.23 million tyres in 2018, slightly decreased from the previous year.

Due to the increase in domestic new car sales, the sales volume of light truck tyres increased by 1.0% from the previous year, however, passenger car tyres decreased by 0.6% from the previous year, truck & bus tyres decreased by 4.2% from the previous year.

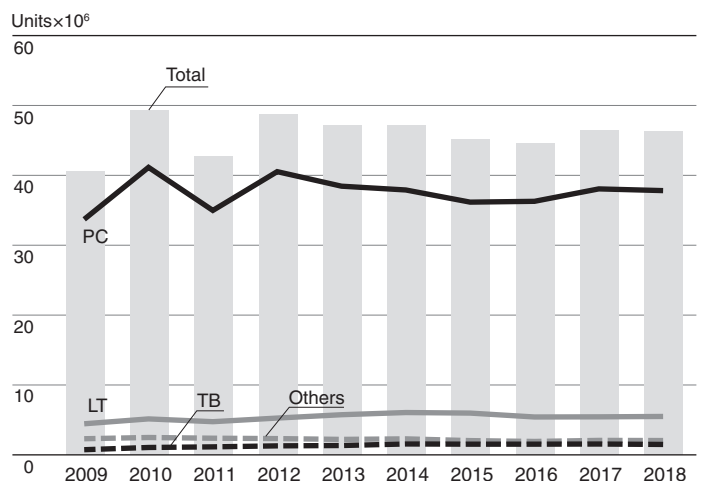
Table 3: Sales of original equipment tyres in 2018

	Sales	
	Units($\times 10^3$)	2018/2017(%)
Passenger car tyres	37,661	99.4
Light truck tyres	5,340	101.0
Truck and bus tyres	1,334	95.8
Special vehicle tyres	821	101.9
Motorcycle tyres	1,072	96.8
Total	46,228	99.4

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

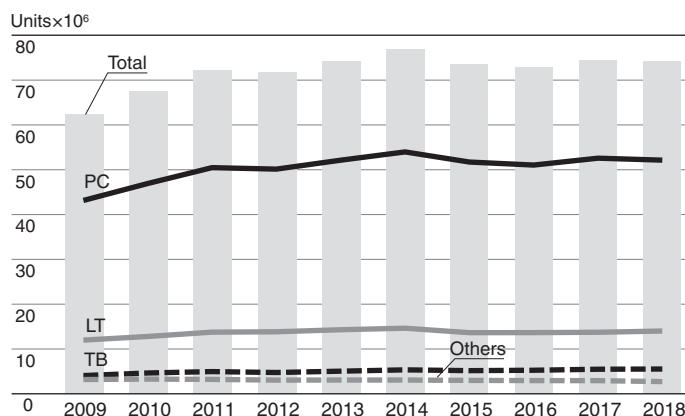
The sales volume of replacement tyres decreased by 0.4% from the previous year to 74.31 million tyres in 2018 and has kept almost the same level as the previous year.

Table 4: Sales of replacement tyres in 2018

	Sales	
	Units($\times 10^3$)	2018/2017(%)
Passenger car tyres	52,119	99.2
Light truck tyres	13,985	102.0
Truck and bus tyres	5,506	100.9
Special vehicle tyres	781	97.6
Motorcycle tyres	1,919	91.0
Total	74,310	99.6

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)

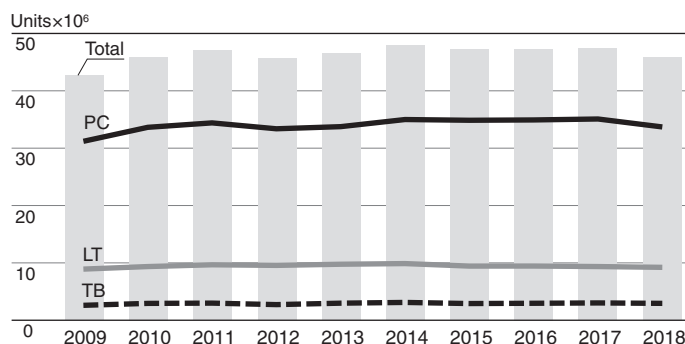
The sales volume of summer tyres (normal tyres except snow tyres) decreased by 3.4% from the previous year to 45.82 million tyres in 2018 and decreased from the previous year for the first time in three years. The sales volume of the all types decreased from the previous year, respectively, passenger car tyres, light truck tyres, and truck & bus tyres decreased by 4.0%, by 1.5%, and by 2.4%.

Table 5-1: Sales of summer tyres for replacement (for four-wheeled vehicles) in 2018

	Summer tyres		
	Units($\times 10^3$)	2018/2017(%)	Summer tyre rate(%)
Passenger car tyres	33,686	96.0	64.6
Light truck tyres	9,208	98.5	65.8
Truck and bus tyres	2,929	97.6	53.2
Total	45,823	96.6	64.0

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 increased by 6.1% to 25.79 million tyres in 2018, increased from the previous year for two consecutive years.

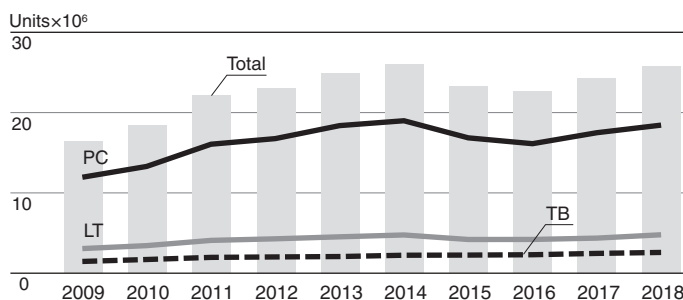
Due to the influence of heavy snow in January, the sales volume of the all types increased from the previous year, respectively, passenger car tyres, light truck tyres, and truck & bus tyres increased by 5.4%, by 9.5%, and by 4.9%.

Table 5-2:
Sales of winter tyres for replacement (for four-wheeled vehicles) in 2018

	Winter tyres		
	Units($\times 10^3$)	2018/2017(%)	Winter tyre rate(%)
Passenger car tyres	18,433	105.4	35.4
Light truck tyres	4,777	109.5	34.2
Truck and bus tyres	2,577	104.9	46.8
Total	25,787	106.1	36.0

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

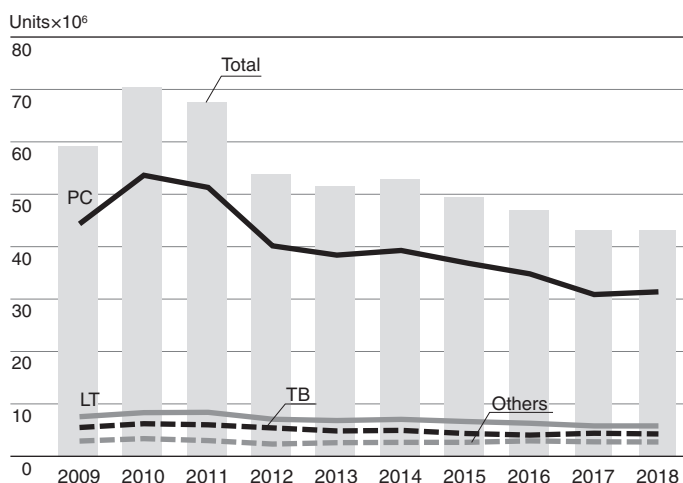
The export volume of automobile tyres increased by 0.1% to 43.35 million tyres in 2018, has kept almost the same level as the previous year. Passenger car tyres increased by 1.7% from the previous year. However, light truck tyres and truck & bus tyres decreased by 5.1% and by 3.2% from the previous year.

Table 6: Sales of export tyres in 2018

	Sales	
	Units($\times 10^3$)	2018/2017(%)
Passenger car tyres	31,176	101.7
Light truck tyres	5,589	94.9
Truck and bus tyres	4,057	96.8
Others	2,530	98.9
Total	43,352	100.1

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 in 2018 (on customs clearance basis of Ministry of Finance) decreased by 0.2% to 44.89 million tyres in quantity basis from the previous year, increased by 3.9% to 547.3 billion yen amount of money from the previous year, and increased by 2.9% to 1.11 million tons in product weight basis from the previous year.

By region (in quantity basis), North America and Europe exports increased but other regions exports decreased, and resulted almost same as the previous year in total.

Table 7: Exports by region of destination in 2018

	Tyre Units($\times 10^3$)				2018/ 2017 (%)	Value (FOB) (yen $\times 10^6$)	2018/ 2017 (%)
	PC	TB<	Others	Total			
North America	11,291	1,556	385	13,232	105.7	141,756	105.0
South & Central America	1,748	870	215	2,833	94.2	60,916	105.1
Europe	10,767	825	1,481	13,073	111.3	120,713	114.7
Middle East	4,475	1,905	40	6,420	82.4	55,811	84.5
Africa	998	921	47	1,966	89.6	28,218	99.8
Asia	4,314	867	332	5,513	99.2	80,361	105.8
Oceania	1,217	516	117	1,850	85.6	59,498	102.6
Total	34,810	7,460	2,617	44,887	99.8	547,273	103.9
Weight(tons)	437,325	308,023	368,019	1,113,367	102.9		

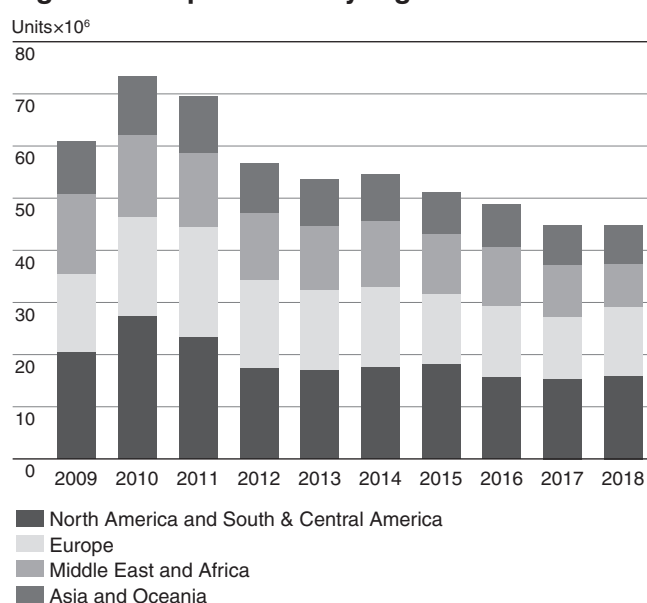
N.B.: 1. Exchange rates are averages of spot rates for Tokyo interbank trade.

2017: 1dollar = 112yen
2018: 1dollar = 110yen

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

Source: Ministry of Finance customs records

Figure 10: Export trend by region



7. Imports by Region of Origin

The import volume of automobile tyres in 2018 (on customs clearance basis of Ministry of Finance) increased by 2.3% to 29.97 million tyres in quantity basis from the previous year, increased by 6.1% to 129.4 billion yen amount of money from the previous year, and increased by 4.1% to 0.27 million tons in product weight basis from the previous year.

By region (in quantity basis), imports from Asia which account for about 90% of the total increased and resulted in increase from the previous year in total.

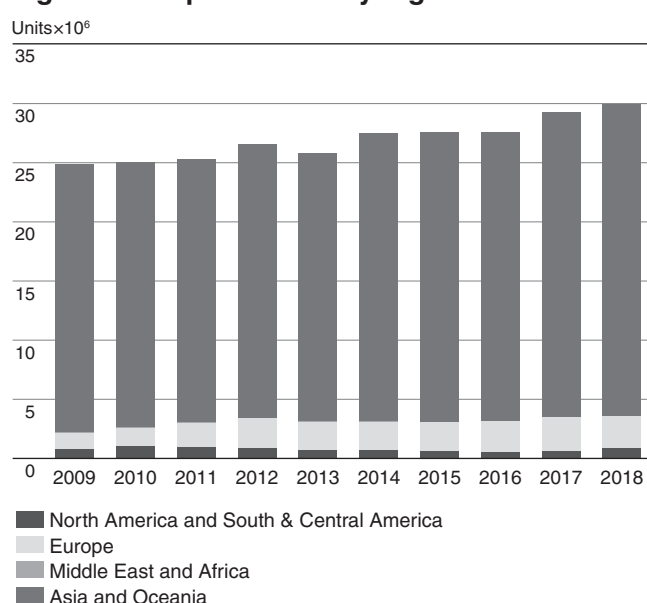
Table 8: Imports by region of origin in 2018

	Tyre Units($\times 10^3$)				2018/ 2017 (%)	Value (CIF) (yen $\times 10^6$)	2018/ 2017 (%)
	PC	TB<	Others	Total			
North America	819	2	22	843	143.8	8,503	137.4
South & Central America	29	2	40	71	91.4	1,222	116.4
Europe	2,367	113	191	2,671	95.6	25,265	99.6
Middle East	41	0	1	42	160.2	633	270.5
Africa	11	0	0	11	222.2	106	222.6
Asia	21,109	2,156	3,066	26,331	102.0	93,667	105.1
Oceania	0	0	0	0	—	10	—
Total	24,376	2,273	3,320	29,969	102.3	129,406	106.1
Weight(tons)	194,285	47,479	29,098	270,862	104.1		

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.

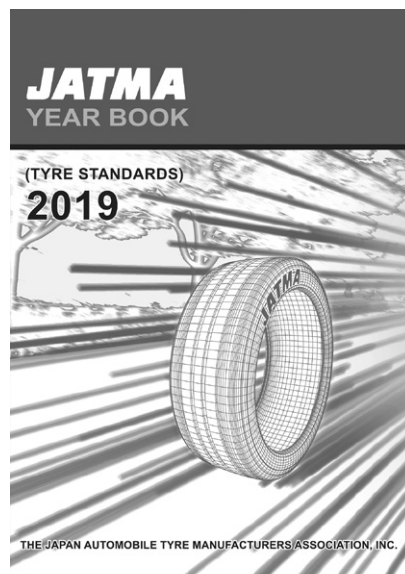
2. Tyre Standards

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 six 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		36 (1.9)
Uneven wear		61 (3.3)
External cuts (reaching the cord)		3 (0.2)
Pins or alien matter		4 (0.2)
Insufficient inflation pressure		344 (18.6)
Others		75 (4.0)

Notes:

1. Multiple tyre defects per vehicle are possible, thus the number of tyre defects does not correspond to the number of vehicles with tyre defects.
2. The defect rate is the number of defects divided by the number of vehicles inspected.
3. Tyre inspections were carried out a total of 35 times (13 times on expressways and 22 times on ordinary roads) in 2018.

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 tyres for passenger car 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)

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

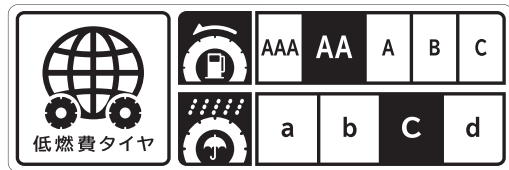
Wet Grip Performance (G)	Grade
155 ≤ G	a
140 ≤ G ≤ 154	b
125 ≤ G ≤ 139	c
110 ≤ G ≤ 124	d

• **Performance requirements for fuel efficient tyres** :

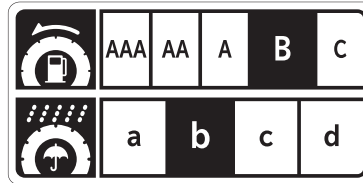
Rolling Resistance Coefficient
9.0 and below (Grade AAA to A)
 Wet Grip Performance
 110 and above (Grade a to d)

• **Labeling method (Display)**

(Fuel efficient tyre)



(Non fuel efficient tyre)



: Uniform mark of fuel efficient tyres

低燃費タイヤ



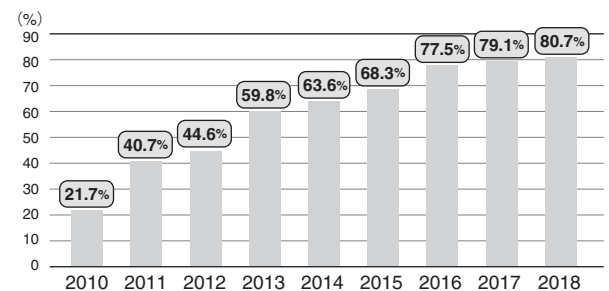
: Rolling Resistance Performance



: Wet Grip Performance

• **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

In the lifecycle of a tyre (raw material procurement, manufacturing, distribution, usage, recycling and disposal), over 80% of CO₂ emissions occur in the usage stage. By decreasing rolling resistance of tyres, fuel efficiency is improved and lead to the reduction of CO₂ emissions of automobile.

According to the results of investigating CO₂ emissions in the usage stage for all passenger car tyres (including both original equipment and replacement tyres, available as summer and winter tyres) sold domestically by JATMA members in 2016, total amount of the reduction in CO₂ emission compared with 2006 was 2,972,000 tons, 34.1kg (13.9%) per tyre.

*Above calculations are made according to “Tyre LCCO₂ calculation guidelines Ver. 2.0”

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

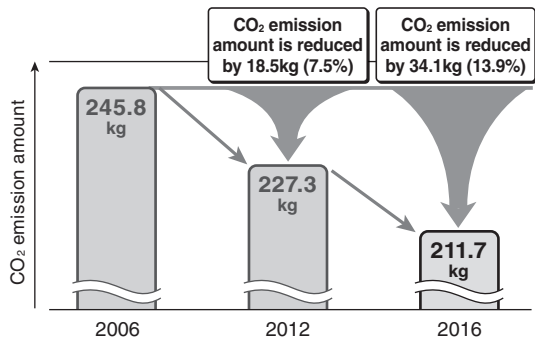
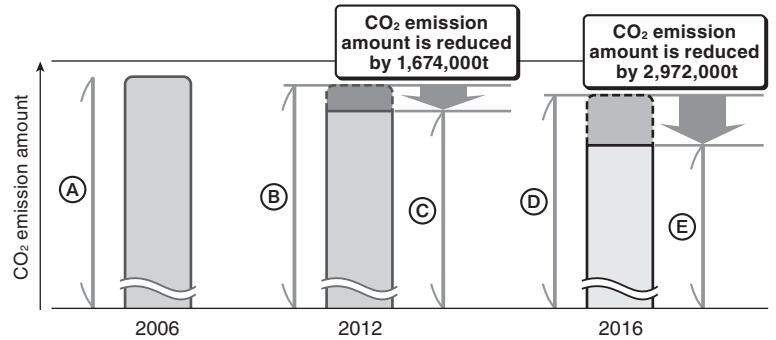


Figure 14: Reduction in CO₂ emission amount during tyre usage stage



- (A) : CO₂ emission amount of tyres sold in 2006 (245.8kg/tyre) × number of tyres sold in 2006
- (B) : CO₂ emission amount of tyres sold in 2006 (245.8kg/tyre) × number of tyres sold in 2012
- (C) : CO₂ emission amount of tyres sold in 2012 (227.3kg/tyre) × number of tyres sold in 2012
- (D) : CO₂ emission amount of tyres sold in 2006 (245.8kg/tyre) × number of tyres sold in 2016
- (E) : CO₂ emission amount of tyres sold in 2016 (211.7kg/tyre) × number of tyres sold in 2016

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 reduction of scrap tyres generation (target 10%, actual reduction of 3-5% is expected) by promoting monitoring of the Re achievement rate.

Table 11: Monitoring of Re Achievement Rates

Category	Monitored Size	Classification	Re Achievement Rate				
			2014	2015	2016	2017	2018
Passenger car tyres	155/65R13	Summer tyres	113	120	111	114	–
		Studless tyres	93	97	100	111	102
Passenger car tyres	175/65R14	Summer tyres	110	104	105	113	95
		Studless tyres	93	97	103	111	103
Passenger car tyres	195/65R15	Summer tyres	119	108	126	107	102
		Studless tyres	93	96	103	111	99
Passenger car tyres	215/45R17	Summer tyres	113	101	123	107	101
		Studless tyres	93	97	102	111	97
Light truck tyres	145R12 (145/80R12)	Summer tyres	96	–	–	126	–
		Studless tyres	152	105	–	–	–
Light truck tyres	185R14 (185/80R14)	Summer tyres	–	–	–	–	–
		Studless tyres	148	104	–	–	–
Light truck tyres	205/70R16	Summer tyres	119	–	125	–	–
		Studless tyres	111	105	–	–	–
Truck and bus tyres	225/80R17.5	Summer tyres	–	100	100	126	118
		Studless tyres	–	–	–	106	87
Truck and bus tyres	245/70R19.5	Summer tyres	104	100	100	122	117
		Studless tyres	–	–	–	100	93
Truck and bus tyres	11R22.5	Summer tyres	–	100	96	119	118
		Studless tyres	–	–	–	100	87

N.B.: 1. Re Index = Wear Life Index (L) ÷ Weight Index (W)

Re Achievement Rate = Re Index × 100

where Wear Life Index (L) = [Wear life on design specification of new product (km) ÷ Wear life on design specification of old product (km)] × 100

Weight Index (W) = [Weight of new product (kg) ÷ Weight of old product (kg)] × 100

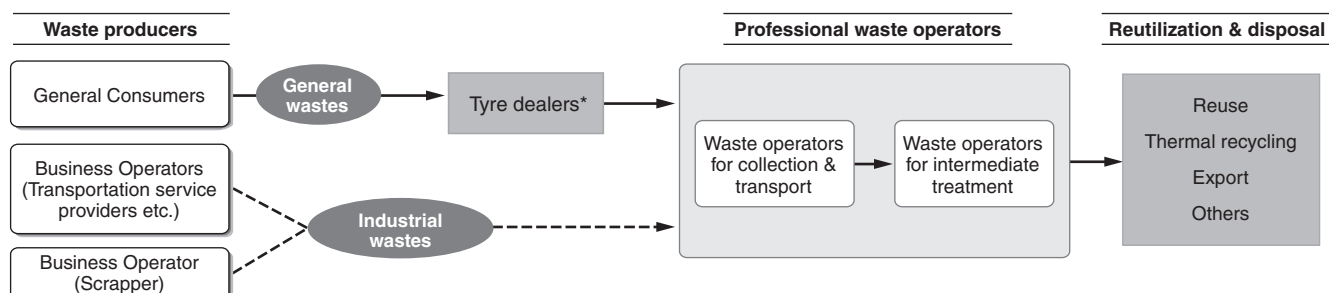
2. Tyres monitored : Representative 10 sizes selected in advance from replacement tyres for the domestic market.

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 2018 (January to December) was 96 million tyres in quantity, 1,032,000 tons in weight, decreased by 1 million tyres from the previous year, decreased by 2,000 tons in weight from the previous year.

① At “tyre replacement”

The volume of newly scrapped tyres at “tyre replacement” was 82 million tyres in quantity, and 892,000 tons in weight, both the unit and the weight decreased compared with the previous year.

This is the effect of decrease in the number of sales of commercial tyres overall.

② At “vehicle scrapping”

The volume of newly scrapped tyres at “vehicle scrapping” was 14 million tyres in quantity and 140,000 tons in weight, and the quantity was flat compared with the previous year, and the weight increased slightly.

(2) Current status of the recycling

The total recycled volume increased by 32,000 tons from the previous year to 997,000 tons in 2018, and the recycling rate was 97%, increased by 4 points.

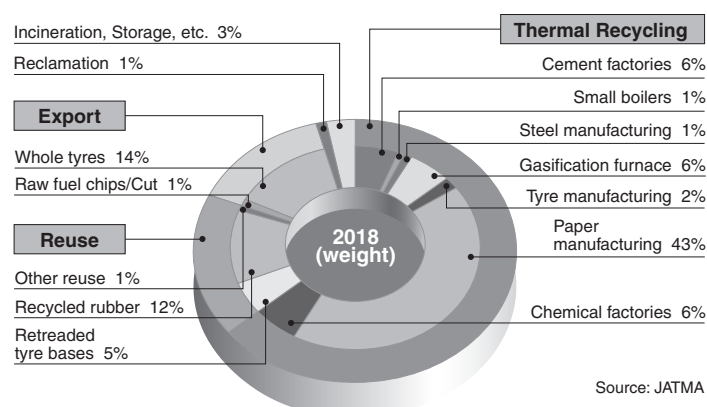
(3) Others

The recycling status provided here is for grasping the status of disposal of scrap tyres generated in Japan, so although it is not included in the tabulation, in recent years, domestic heat users continue to purchase cut / shredded tyres from foreign countries.

The importing volume of 2018 was 90,000 tons increased 2,000 tons from the previous year, which indicates the high demand for scrap tyres as alternative fuels.

However, the price at which domestic heat users purchase cut / shredded tyres as alternative fuels has fallen significantly compared with several years ago due to competition with other waste-derived fuels.

Figure 16: Recycling of scrap tyres in 2018



Source: JATMA

Table 12: Newly scrapped tyres

(Tyres: millions; Tons: thousands)

	2016				2017				2018					
	tyres	tons	distribution (%)		tyres	tons	distribution (%)		tyres	tons	distribution (%)		2018/2017 (%)	
			tyres	tons			tyres	tons			tyres	tons	tyres	tons
At "tyre replacement"	81	879	86	88	83	897	86	87	82	892	85	86	99	99
At "vehicle scrapping"	13	118	14	12	14	137	14	13	14	140	15	14	100	102
Total	94	997	100	100	97	1,034	100	100	96	1,032	100	100	99	100

Source: JATMA

Table 13: Scrap tyre (Used tyre) Recycling

(Tons: thousands)

			2016		2017		2018			
			tons	distribution (%)	tons	distribution (%)	tons	distribution (%)	2018/2017 (%)	
Kind of recycling	Domestic	Reuse	Retreaded tyre bases	53	5	54	5	51	5	94
			Recycled rubber	104	10	118	11	120	12	102
			Other reuse	5	1	6	1	1	1	17
			Subtotal (A)	162	16	178	17	172	17	97
			Paper manufacturing	407	41	436	42	446	43	102
	Thermal Recycling	Chemical factories	58	6	47	5	66	6	140	
		Cement factories	63	6	70	7	64	6	91	
		Steel manufacturing	19	2	17	2	14	1	82	
		Gasification furnace	51	5	58	6	61	6	105	
		Tyre manufacturing	23	2	21	2	20	2	95	
		Small boilers	5	1	3	1	3	1	100	
		Subtotal (B)	626	63	652	63	674	65	103	
	Abroad	Export	Whole tyres	108	11	131	13	148	14	113
			Raw fuel chips/Cut	7	1	4	1	3	1	75
			Subtotal (C)	115	12	135	13	151	15	112
Total recycling (A+B+C)			903	91	965	93	997	97	103	
Reclamation			1	1	1	1	1	1	100	
Incineration, Storage, etc.			93	9	68	7	34	3	50	
Subtotal (D)			94	9	69	7	35	3	51	
Total (A+B+C+D)			997	100	1,034	100	1,032	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 Dumping of Scrap Tyres

As of February 2019 the number of cases of illegal dumping of scrap tyres was 75, and the total weight of scrap tyres was 27,677 tons. Comparing to the statistical research of February last year, the number of cases decreased by 14 and the total weight decreased by 8,094 tons.

One new case has been confirmed as new information, but this is not a new occurrence.

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 dumping of scrap tyres.

In the total of fourteen years, from 2005 to 2018, for 22 cases, JATMA supported 362.13 million yen and removed 2,966,306 units/29,867 tons of scrap tyres.

In 2019, 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

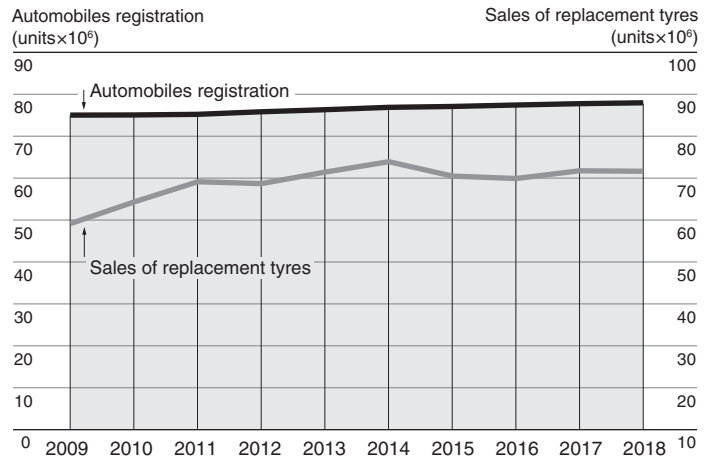
① The number of registered automobiles as of the end of December 2018 increased by 0.3% from the previous year to 77.94 million. The sales volume of replacement tyres (for four-wheeled vehicles) is 71.61 million, which decreased by 0.2% from the previous year.

Table 14: Automobile registrations and sales of replacement tyres in 2018

Automobile	Registrations($\times 10^3$)	2018/2017(%)
Passenger cars	62,026	100.4
Trucks and buses	15,915	99.9
Total	77,941	100.3
Replacement tyres	Sales($\times 10^3$)	2018/2017(%)
Passenger car tyres	52,119	99.2
Commercial vehicle tyres	19,491	101.7
Total	71,610	99.8

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

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



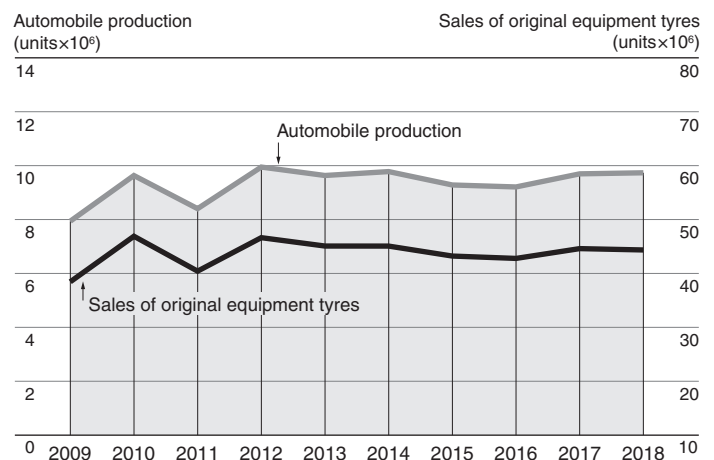
② The volume of domestic production of automobile increased by 0.4% from the previous year to 9.73 million. The sales volume of original equipment tyres (for four-wheeled vehicles) decreased by 0.6% from the previous year to 44.34 million tyres in 2018.

Table 15: Automobile production and sales of original equipment tyres in 2018

Automobile	Productions($\times 10^3$)	2018/2017(%)
Passenger cars	8,359	100.1
Trucks and buses	1,371	102.1
Total	9,730	100.4
Original equipment tyres	Sales($\times 10^3$)	2018/2017(%)
Passenger car tyres	37,661	99.4
Commercial vehicle tyres	6,674	99.9
Total	44,335	99.4

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 2018 is 28.2% for original equipment, 45.3% for replacements and 26.5% for exports.

Figure 19: Distribution channels

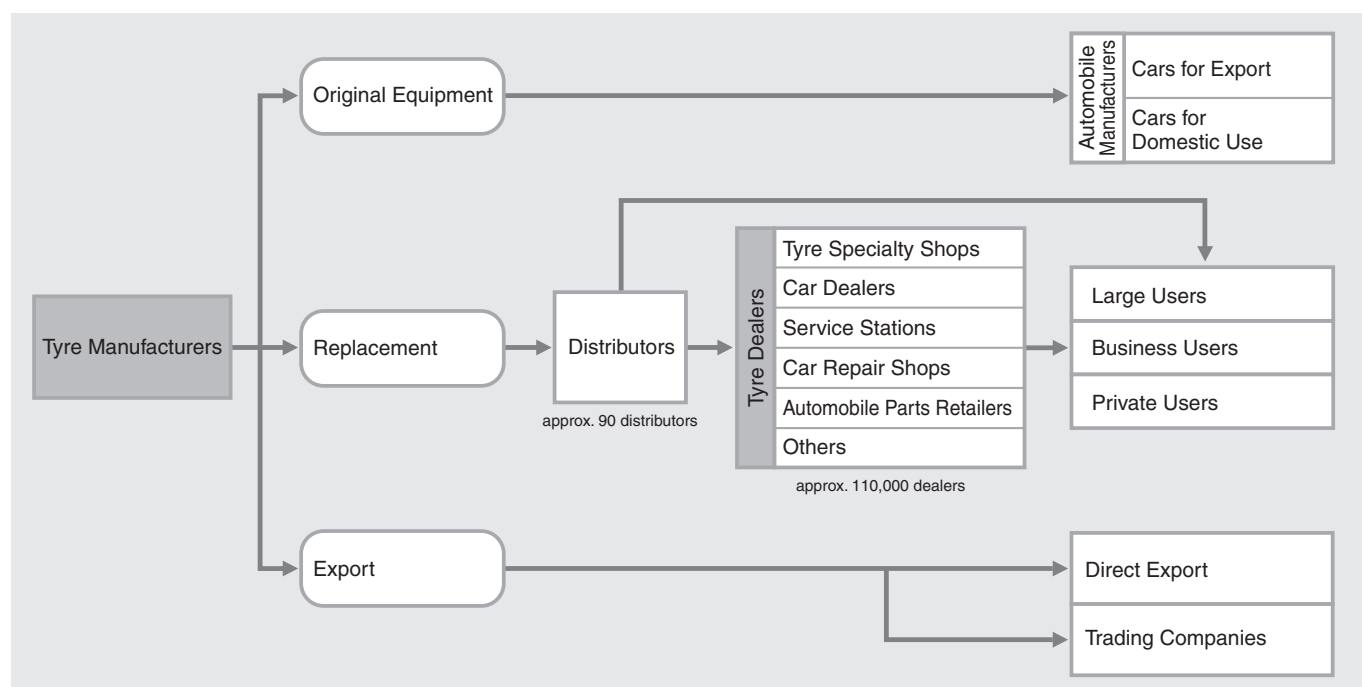
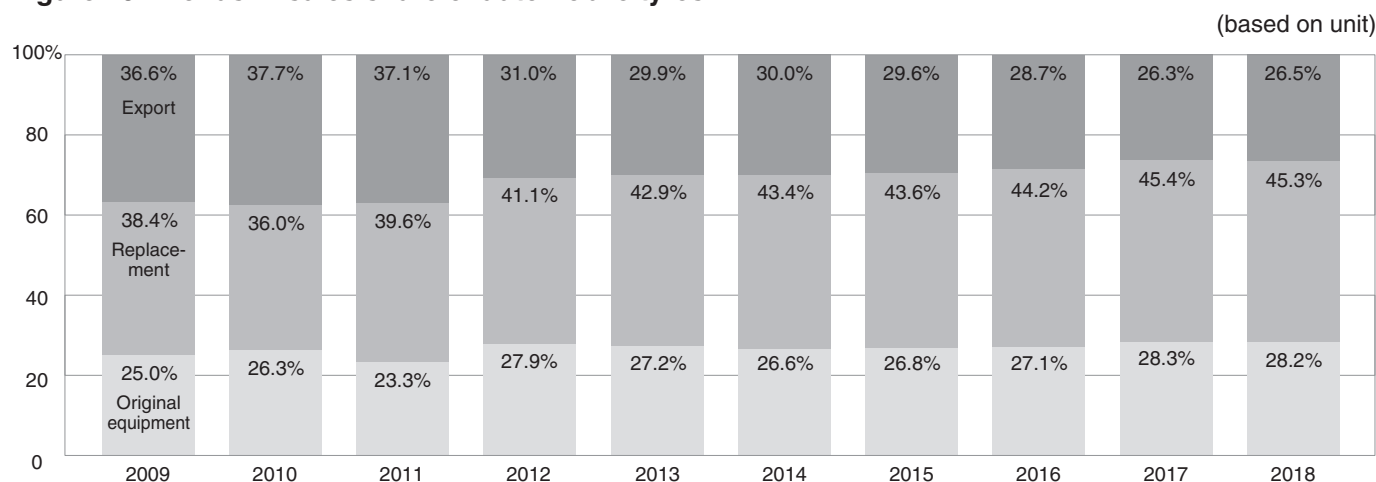


Figure 20: Trends in sales share of automobile tyres



3. Raw Materials

More than 100 raw materials are used in the production of automobile tyres, including rubber, reinforcing agent, tyre cord, compounding ingredients and bead wire.

The percent distribution in weight of raw materials varied depending on the tyre category, it 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 (carbon black) 25%, and then tyre cord 14%.

Table 16: Basic composition

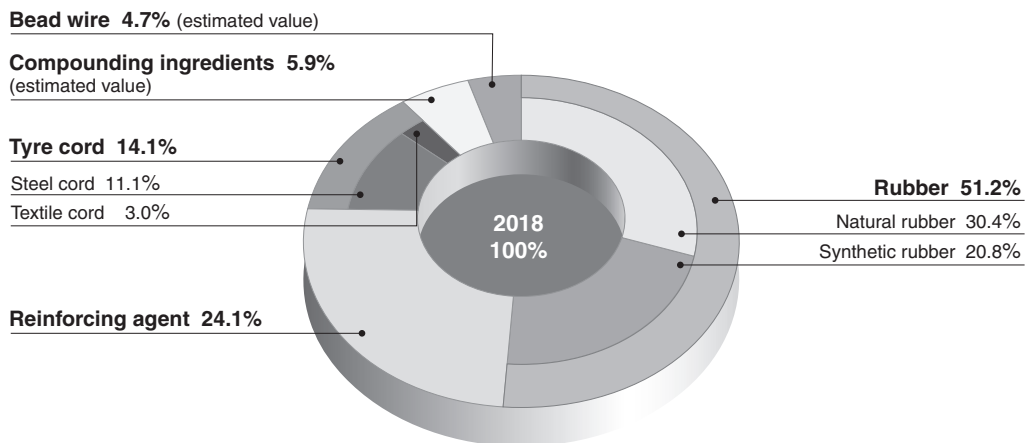
Composition	Examples
Rubber	Natural rubber, Synthetic rubber
Reinforcing agent	Carbon black, Silica
Tyre cord	Steel cord, Textile cord (Nylon, Polyester, Rayon, etc.)
Compounding ingredients	Vulcanizing agent, Vulcanizing accelerator, Vulcanizing accelerator aid, Antioxidant, Filler, Softener etc.
Bead wire	

Table 17: Consumption of main raw materials used in automobile tyres in 2018

Raw Materials	Consumption (tons)	2018/2017(%)		
Rubber	Natural rubber	621,200	104.4	
	Synthetic rubber	424,920	101.8	
	Total	1,046,120	103.3	
Reinforcing agent (Carbon black)	492,329	103.2		
Tyre cord	Steel	227,707	104.6	
	Textile	Nylon	15,460	99.5
		Polyester	41,991	101.7
		Rayon	3,178	85.1
		Others	384	80.7
	Total	288,720	103.6	

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 in 2018 was 17.14 million tons, increased by 3% from the previous year.

By region it is estimated that the Asia and Oceania region takes up 67% of the world production, in which China accounts for 40% and Japan accounts for 6%.

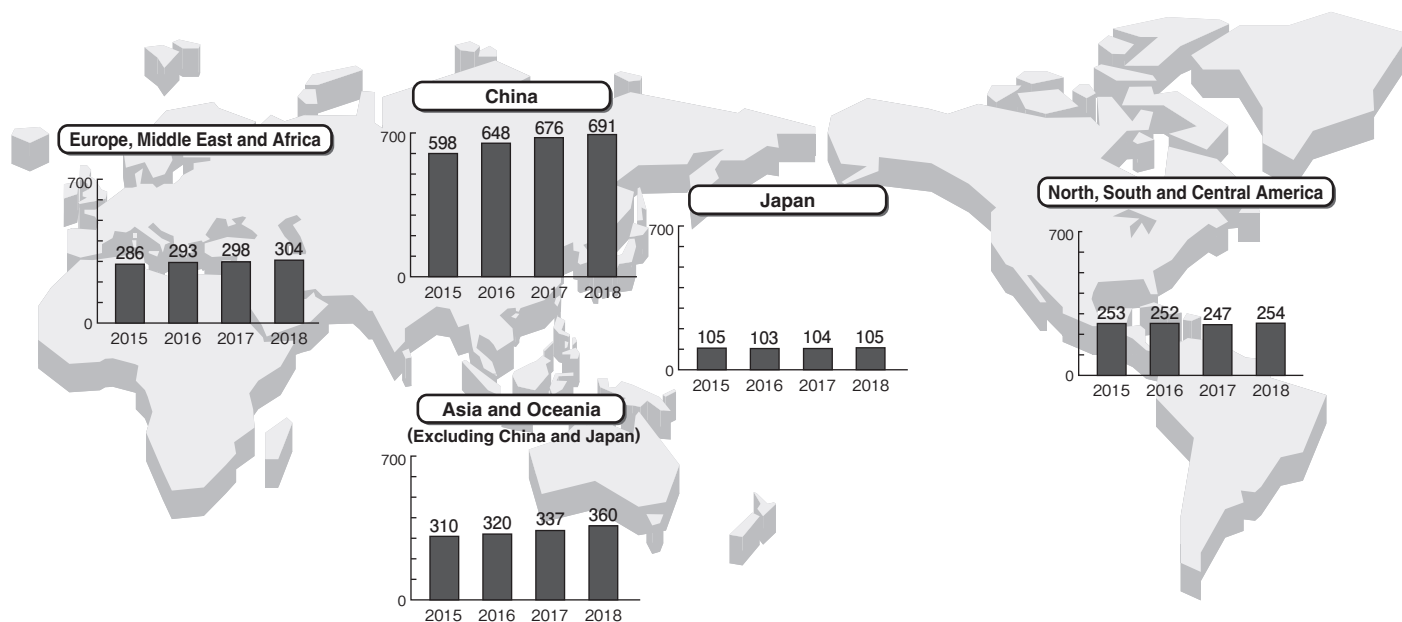
Table 18: Share of world tyre production by geographic region (units×10³ tons (produced rubber))

	2015	2015/2014(%)	2016	2016/2015(%)	2017	2017/2016(%)	2018	2018/2017(%)	composition ratio(%)
Asia and Oceania	10,129	99	10,719	106	11,165	104	11,558	104	67
(China)	(5,980)	(99)	(6,484)	(108)	(6,760)	(104)	(6,909)	(102)	(40)
(Japan)	(1,049)	(94)	(1,032)	(98)	(1,038)	(101)	(1,053)	(101)	(6)
Europe, Middle East and Africa	2,858	102	2,931	103	2,978	102	3,044	102	18
North, South and Central America	2,530	93	2,524	100	2,471	98	2,536	103	15
Total	15,516	99	16,175	104	16,614	103	17,138	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

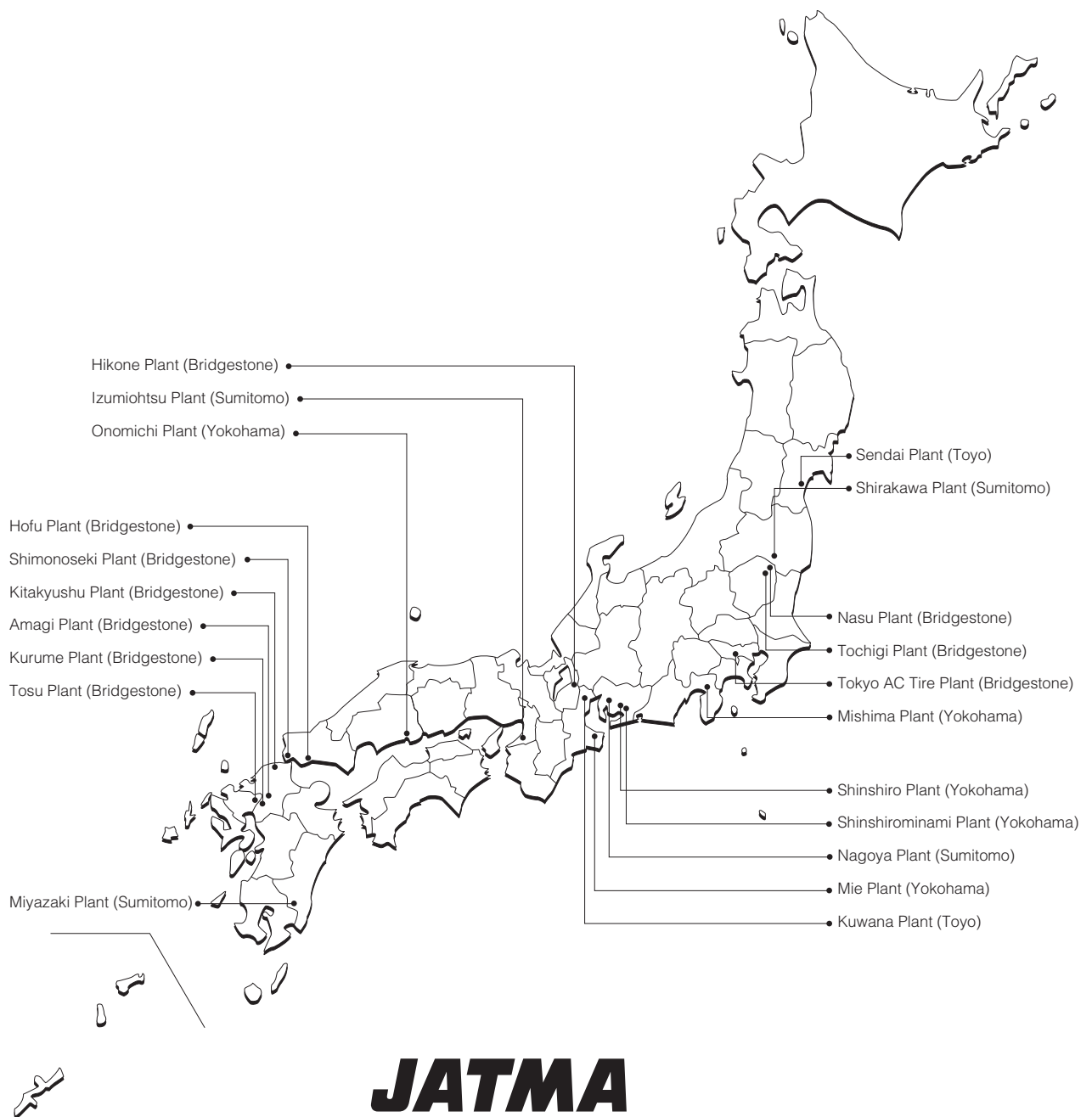


N.B.: 1. Unit: x10,000 tons (produced rubber)
2. Including tyres other than vehicle tyres.

Source: IRSG (International Rubber Study Group)

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

(July 2019)



JATMA

The Japan Automobile Tyre Manufacturers Association, Inc.
<http://www.jatma.or.jp>

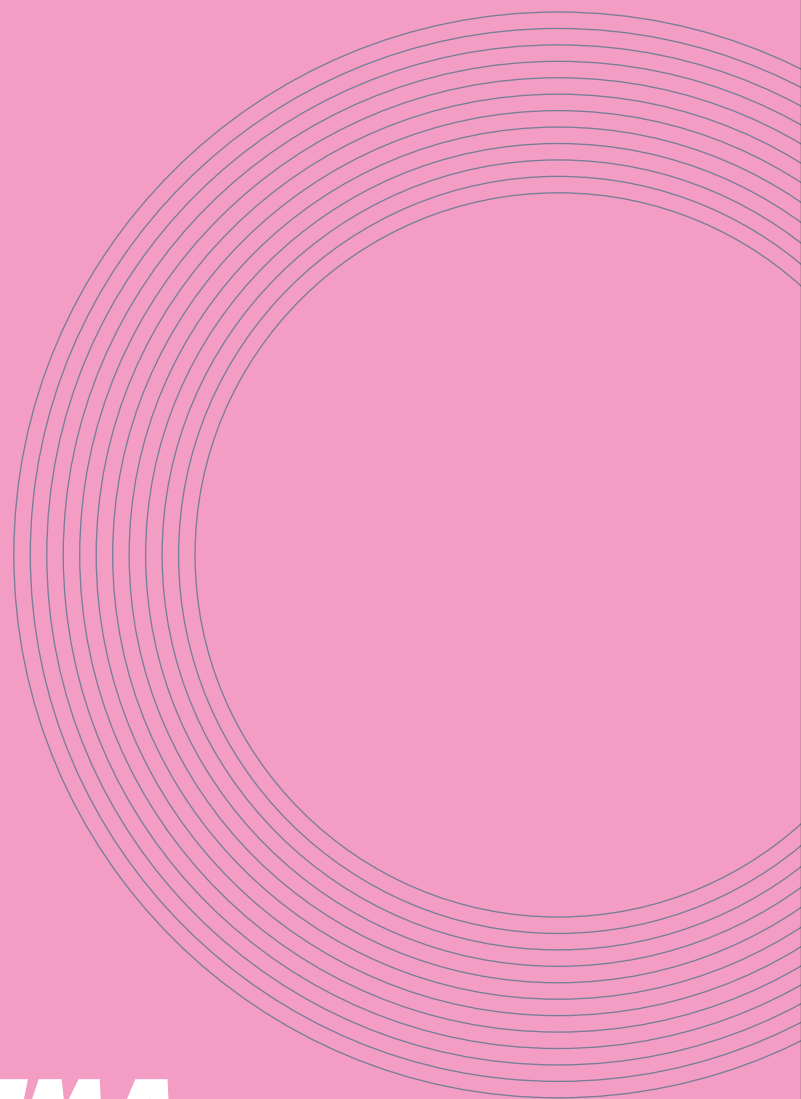
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Technical Department		Phone. 03-3435-9094	Fax. 03-3435-9097
International Affairs Department		Phone. 03-3435-9094	Fax. 03-3435-9097
Environmental Department		Phone. 03-5408-5051	Fax. 03-3435-9097
	FAX for application to the scrap tyre manifest forms		Fax. 03-5408-5053

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

Production of automobile tyres and tubes

tyres : $\times 10^3$, rubber : tons, () : year to year comparison %

		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Truck and bus tyres	Tyres	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)	10,499 (106.2)	10,513 (100.1)
	Rubber	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)	241,319 (105.3)	241,150 (99.9)
Light truck tyres	Tyres	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)	21,527 (98.8)	21,921 (101.8)
	Rubber	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)	127,179 (97.7)	129,239 (101.6)
Passenger car tyres	Tyres	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)	108,258 (98.4)	109,816 (101.4)
	Rubber	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)	471,774 (96.9)	477,617 (101.2)
Off-the-road tyres	Tyres	293 (49.8)	438 (149.5)	525 (119.9)	504 (96.0)	453 (89.9)	479 (105.7)	446 (93.1)	440 (98.7)	459 (104.3)	500 (108.9)
	Rubber	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)	168,892 (108.2)	194,701 (115.3)
Industrial tyres	Tyres	429 (56.2)	449 (104.7)	476 (106.0)	442 (92.9)	399 (90.3)	453 (113.5)	415 (91.6)	429 (103.4)	397 (92.5)	400 (100.8)
	Rubber	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)	5,464 (94.8)	5,586 (102.2)
Others	Tyres	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)	3,783 (98.7)	3,599 (95.1)
	Rubber	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)	11,822 (98.8)	11,385 (96.3)
Total	Tyres	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)	144,923 (99.0)	146,749 (101.3)
	Rubber	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)	1,026,450 (100.7)	1,059,678 (103.2)

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 : ×10³, rubber : tons, () : year to year comparison %

		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Truck and bus tyres	Tyres	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)	6,313 (104.5)	6,424 (101.8)
	Rubber	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)	130,028 (104.3)	132,567 (102.0)
Light truck tyres	Tyres	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)	15,805 (101.5)	16,208 (102.5)
	Rubber	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)	77,367 (100.1)	78,836 (101.9)
Passenger car tyres	Tyres	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)	78,407 (103.2)	78,825 (100.5)
	Rubber	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)	305,837 (102.3)	307,633 (100.6)
Off-the-road tyres	Tyres	102 (53.1)	140 (137.3)	172 (122.9)	169 (98.3)	188 (111.2)	199 (105.9)	194 (97.5)	163 (84.0)	170 (104.3)	175 (102.9)
	Rubber	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)	13,962 (117.9)	15,381 (110.2)
Industrial tyres	Tyres	470 (61.7)	556 (118.3)	608 (109.4)	545 (89.6)	539 (98.9)	568 (105.4)	541 (95.2)	528 (97.6)	538 (101.9)	508 (94.4)
	Rubber	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)	6,125 (101.9)	5,915 (96.6)
Others	Tyres	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)	1,875 (101.0)	1,758 (93.8)
	Rubber	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)	7,472 (99.6)	7,248 (97.0)
Total	Tyres	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)	103,108 (103.0)	103,898 (100.8)
	Rubber	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)	540,791 (102.8)	547,580 (101.3)

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 : $\times 10^3$, rubber : tons, () : year to year comparison %

		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Truck and bus tyres	Tyres	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)	4,192 (109.3)	4,057 (96.8)
	Rubber	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)	112,045 (107.1)	109,036 (97.3)
Light truck tyres	Tyres	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)	5,891 (96.6)	5,589 (94.9)
	Rubber	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)	51,659 (97.6)	50,610 (98.0)
Passenger car tyres	Tyres	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)	30,661 (88.6)	31,176 (101.7)
	Rubber	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)	167,617 (88.5)	168,884 (100.8)
Off-the-road tyres	Tyres	241 (60.1)	350 (145.2)	408 (116.6)	388 (95.1)	335 (86.3)	346 (103.3)	326 (94.2)	324 (99.4)	337 (104.0)	375 (111.3)
	Rubber	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)	155,024 (107.2)	179,128 (115.5)
Industrial tyres	Tyres	108 (91.5)	109 (100.9)	78 (71.6)	59 (75.6)	56 (94.9)	70 (125.0)	65 (92.9)	85 (130.8)	50 (58.8)	57 (114.0)
	Rubber	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)	1,757 (83.2)	1,877 (106.8)
Others	Tyres	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)	2,171 (93.3)	2,098 (96.6)
	Rubber	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)	7,314 (94.6)	6,997 (95.7)
Total	Tyres	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)	43,302 (91.6)	43,352 (100.1)
	Rubber	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)	495,416 (98.8)	516,532 (104.3)

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 : $\times 10^3$, () : year to year comparison %

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Truck and bus tyres	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)	1,393 (101.5)	1,334 (95.8)
Light truck tyres	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)	5,285 (100.4)	5,340 (101.0)
Passenger car tyres	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)	37,907 (104.9)	37,661 (99.4)
Total for four-wheeled vehicle tyres	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)	44,585 (104.3)	44,335 (99.4)
Off-the-road tyres	37 (42.0)	65 (175.7)	83 (127.7)	90 (108.4)	101 (112.2)	108 (106.9)	106 (98.1)	82 (77.4)	92 (112.2)	100 (108.7)
Industrial tyres	149 (36.2)	223 (149.7)	245 (109.9)	248 (101.2)	230 (92.7)	244 (106.1)	238 (97.5)	207 (87.0)	221 (106.8)	234 (105.9)
Agricultural tyres	522 (75.7)	519 (99.4)	566 (109.1)	556 (98.2)	524 (94.2)	537 (102.5)	533 (99.3)	483 (90.6)	493 (100.8)	487 (98.8)
Motorcycle tyres	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)	986 (110.9)	947 (96.0)
Cart tyres	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	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)	46,377 (104.4)	46,103 (99.4)

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.

N.B.: 4. 2017 and following years, cart tyres are included for agricultural tyres.

Sales of replacement tyres

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

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Truck and bus tyres	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)	5,458 (104.3)	5,506 (100.9)
Light truck tyres	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)	13,707 (100.6)	13,985 (102.0)
Passenger car tyres	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)	52,558 (103.0)	52,119 (99.2)
Total for four-wheeled vehicle tyres	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)	71,723 (102.6)	71,610 (99.8)
Off-the-road tyres	76 (65.0)	87 (114.5)	102 (117.2)	94 (92.2)	101 (107.4)	105 (104.0)	103 (98.1)	93 (90.3)	93 (100.0)	94 (101.1)
Industrial tyres	530 (74.5)	593 (111.9)	635 (107.1)	565 (89.0)	583 (103.2)	597 (102.4)	581 (97.3)	580 (99.8)	589 (101.6)	573 (97.3)
Agricultural tyres	110 (91.7)	114 (103.6)	109 (95.6)	103 (94.5)	100 (97.1)	93 (93.0)	86 (92.5)	88 (102.3)	91 (103.4)	89 (97.8)
Motorcycle tyres	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)	1,456 (96.9)	1,334 (91.6)
Cart tyres	33 (94.3)	29 (87.9)	28 (96.6)	27 (96.4)	30 (111.1)	28 (93.3)	29 (103.6)	27 (93.1)	27 (100.0)	25 (92.6)
Total	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)	73,979 (102.5)	73,725 (99.7)

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

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

		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Truck and bus tyres	Total	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)	5,458 (104.3)	5,506 (100.9)
	Summer	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)	3,002 (102.0)	2,929 (97.6)
	Winter	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)	2,456 (107.2)	2,577 (104.9)
Light truck tyres	Total	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)	13,707 (100.6)	13,985 (102.0)
	Summer	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)	9,346 (99.1)	9,208 (98.5)
	Winter	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)	4,361 (104.0)	4,777 (109.5)
Passenger car tyres	Total	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)	52,558 (103.0)	52,119 (99.2)
	Summer	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)	35,072 (100.5)	33,686 (96.0)
	Winter	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)	17,486 (108.5)	18,433 (105.4)
Total	Total	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)	71,723 (102.6)	71,610 (99.8)
	Summer	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)	47,420 (100.3)	45,823 (96.6)
	Winter	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)	24,303 (107.5)	25,787 (106.1)

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 : ×10³, value : FOB dollar ×10³, () : year to year comparison %

		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Asia	Tyres	6,999 (76.7)	7,560 (108.0)	7,827 (103.5)	6,477 (82.8)	5,985 (92.4)	6,356 (106.2)	5,180 (81.5)	5,579 (107.7)	5,556 (99.6)	5,513 (99.2)
	Value	674,912 (84.4)	808,485 (119.8)	1,031,338 (127.6)	1,054,305 (102.2)	962,418 (91.3)	836,093 (86.9)	631,309 (75.5)	597,200 (94.6)	677,938 (113.5)	728,272 (107.4)
Middle East	Tyres	13,412 (91.2)	13,627 (101.6)	12,031 (88.3)	10,606 (88.2)	10,333 (97.4)	10,370 (100.4)	9,180 (88.5)	9,040 (98.5)	7,787 (86.1)	6,420 (82.4)
	Value	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)	672,015 (88.0)	589,771 (87.8)	507,044 (86.0)
Europe	Tyres	15,070 (67.9)	18,908 (125.5)	21,108 (111.6)	17,057 (80.8)	15,392 (90.2)	15,324 (99.6)	13,570 (88.6)	13,507 (99.5)	11,741 (86.9)	13,073 (111.3)
	Value	1,162,604 (62.9)	1,486,981 (127.9)	1,928,789 (129.7)	1,725,179 (89.4)	1,509,561 (87.5)	1,377,041 (91.2)	988,576 (71.8)	967,527 (97.9)	938,779 (97.0)	1,094,734 (116.6)
North America	Tyres	17,352 (83.7)	23,016 (132.6)	19,353 (84.1)	14,152 (73.1)	13,599 (96.1)	13,996 (102.9)	14,972 (107.0)	13,122 (87.6)	12,514 (95.4)	13,232 (105.7)
	Value	1,359,334 (84.2)	1,870,321 (137.6)	2,064,587 (110.4)	1,907,040 (92.4)	1,674,369 (87.8)	1,608,169 (96.0)	1,543,873 (96.0)	1,244,632 (80.6)	1,204,854 (96.8)	1,284,224 (106.6)
South and Central America	Tyres	3,086 (68.4)	4,365 (141.4)	3,993 (91.5)	3,160 (79.1)	3,407 (107.8)	3,556 (104.4)	3,113 (87.5)	2,630 (84.5)	3,008 (114.4)	2,833 (94.2)
	Value	410,729 (93.8)	573,743 (139.7)	727,322 (126.8)	817,381 (112.4)	806,013 (98.6)	675,734 (83.8)	595,299 (88.1)	461,168 (77.5)	517,028 (112.1)	551,739 (106.7)
Africa	Tyres	1,771 (82.8)	2,274 (128.4)	2,085 (91.7)	2,146 (102.9)	1,868 (87.0)	2,284 (122.3)	2,303 (100.8)	2,296 (99.7)	2,193 (95.5)	1,966 (89.6)
	Value	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)	259,719 (85.7)	252,438 (97.2)	255,713 (101.3)
Oceania	Tyres	3,332 (84.2)	3,697 (111.0)	3,243 (87.7)	3,093 (95.4)	3,029 (97.9)	2,747 (90.7)	2,686 (97.8)	2,704 (100.7)	2,160 (79.9)	1,850 (85.6)
	Value	442,356 (90.1)	589,773 (133.3)	763,649 (129.5)	802,393 (105.1)	697,401 (86.9)	537,353 (77.1)	416,188 (77.5)	430,784 (103.5)	517,591 (120.2)	539,035 (104.1)
Total	Tyres	61,022 (78.9)	73,447 (120.4)	69,640 (94.8)	56,691 (81.4)	53,613 (94.6)	54,633 (101.9)	51,004 (93.4)	48,878 (95.8)	44,959 (92.0)	44,887 (99.8)
	Value	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)	4,633,045 (88.4)	4,698,399 (101.4)	4,960,761 (105.6)

Source: Ministry of Finance customs export records

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

tyres : ×10³, value : CIF yen×10⁴, () : year to year comparison %

		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Passenger car tyres	Tyres	19,302 (81.9)	19,346 (100.2)	19,401 (100.3)	20,920 (107.8)	20,267 (96.9)	21,304 (105.1)	21,924 (102.9)	21,918 (100.0)	23,857 (108.8)	24,376 (102.2)
	Value	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)	9,114,454 (115.4)	9,673,978 (106.1)
Commercial vehicle tyres	Tyres	2,880 (91.6)	2,617 (90.9)	2,577 (98.5)	2,170 (84.2)	2,245 (103.5)	2,639 (117.6)	2,322 (88.0)	2,300 (99.1)	1,994 (86.7)	2,273 (114.0)
	Value	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)	1,633,063 (110.1)	1,785,747 (109.3)
Motorcycle tyres	Tyres	2,362 (81.6)	2,595 (109.9)	2,743 (105.7)	2,931 (106.9)	2,841 (96.9)	3,009 (105.9)	2,768 (92.0)	2,889 (104.4)	2,934 (101.6)	2,759 (94.0)
	Value	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)	539,436 (103.5)	496,091 (92.0)
Others	Tyres	401 (78.6)	556 (138.7)	593 (106.7)	557 (93.9)	532 (95.5)	592 (111.3)	584 (98.6)	498 (85.3)	520 (104.4)	561 (107.9)
	Value	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)	674,037 (101.0)	752,549 (111.6)
Tubes	Value	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)	239,755 (96.0)	232,223 (96.9)
Total	Tyres	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)	29,305 (106.2)	29,969 (102.3)
	Value	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)	12,455,506 (114.9)	12,448,752 (99.9)	10,822,529 (86.9)	12,200,745 (112.7)	12,940,588 (106.1)

Source: Ministry of Finance customs import records