Vol.-3 , Issue-1, Nov-Dec 2023

TESS TALK

Technology | Environment | Safety | Standards

A Newsletter of **Indian Tyre Technical Advisory Committee**

It gives me immense pleasure to inform that we have resurrected TESSTalk which had to be discontinued during Covid. True to its promise, TESSTalk will keep you updated on key developments in the domains of **T**echnology, **E**nvironment, **S**afety & **S**tandards within the tyre industry.

We have tried to compensate for our absence through insightful and lucidly written edits in all the four domains which will help you update your knowledge base as also frame an informed opinion on some of the widely debated topics.

In this all-connected mobility ecosystem, smart tyres are all the rage today. Our Technology section gives you a comprehensive view of the smart tyres, their functionality, and emerging requirements from Auto OEMs. Tyres for EVs represents another area which has drawn much interest from auto aficionados. What goes into making an EV tyre is an area that has been imparted due attention.

Is ELT (end of life tyre) a waste product? The answer is a resounding No. Circularity and sustainability are no more buzz words but critical for the very survival of the planet. The Environment section takes into its sweep the ELT management, overview of global practices and regulations regarding Extended Producer Responsibility (EPR). A pragmatic approach considering the existing eco system will play the key role in effective implementation of EPR regulation in India.

Regulatory standards for tyres are being constantly redefined in alignment with the larger cause of greening of transport. Existing global tyre performance regulations with special reference to key geographies of Europe, Japan and Korea have been dealt with succinctly in our Standards section. Tyre labelling and Star Rating program in India provides a comprehensive update.

Promotion of Tyre safety continues to be central to ITTAC's activities. The ongoing financial year (FY24) has witnessed a significant escalation in tyre safety programme with wide outreach to schools, colleges, corporates and especially a large number of commercial drivers associated with Indian Oil. Just a glance will provide a glimpse into the painstaking efforts that have gone into sensitising people on tyre care & safety.

Trust you will find the compilation informative. *Here is wishing you and your loved ones a very Happy New Year.*

V. K. Misra
Chairman, ITTAC

INSIDE THIS ISSUE

About ITTAC

Indian Tyre Technical Advisory Committee (ITTAC) is a specialised resource of Indian tyre industry comprising technical representatives drawn from all member companies. ITTAC came into being as an outcome of a dialogue amongst key stakeholders to set up, establish, support & develop for India, a competent body for dealing with Technical aspects of pneumatic tyres, tubes, rims and valves used in automotive vehicles.

ITTAC ensures that member companies representing 95% of the tyre industry in India are able to offer common basic dimensions for tyres and related products thereby ensuring that these items are dimensionally interchangeable, irrespective of "make" or "brand". ITTAC brings out a Standards Manual which is one of the most trusted reference documents on standards for Tyre, Rim and Valve. ITTAC also publishes Tyre Guides for different category of tyres as a comprehensive compilation of different types of tyre damages, their appearances and recommendations which reflect the consensus of the members of ITTAC.

Smart Tyre Technology

Challenges towards requirements of Smart Tyres

Introduction

Smart tyres are an emerging technology able to turn tyres into sensors able to provide information about tyre-road contact. It is straightforward to understand how this technology can promote the development of new active control strategies and/or improve the present ones through the enhancement of estimation of unknown quantities, such as tyre-road friction coefficient and vehicle sideslip angle which are crucial for stability and safety control systems (ABS, ESP, etc.)

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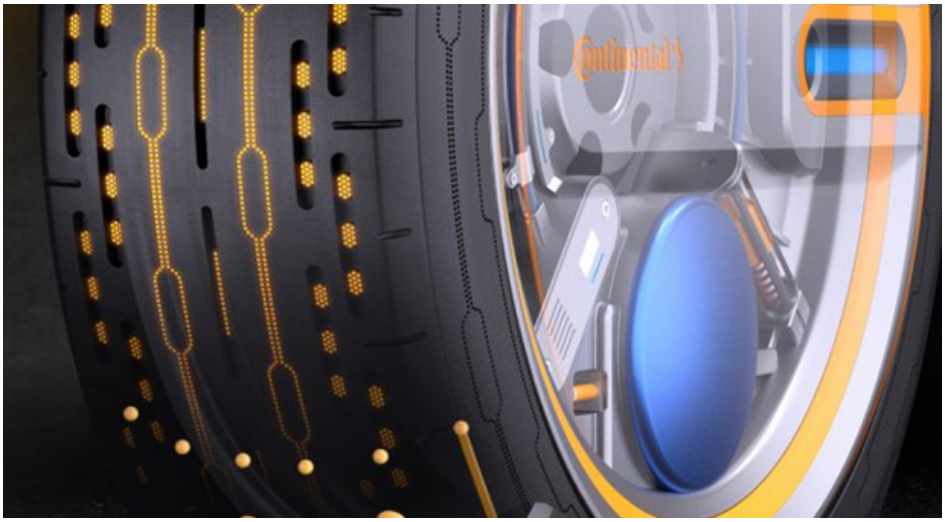


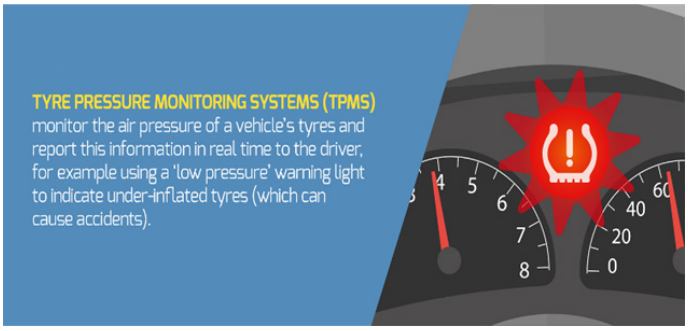
A smart tyre is embedded with several sensors to enhance the safety of the vehicle, improve the overall performance of tyres and also provided new opportunities for the business. This is achieved by the embedment of smaller, faster and energy-efficient chips into the tyre. Hence the development speed of smarter tyre is dependent upon the development of chips and network technology.

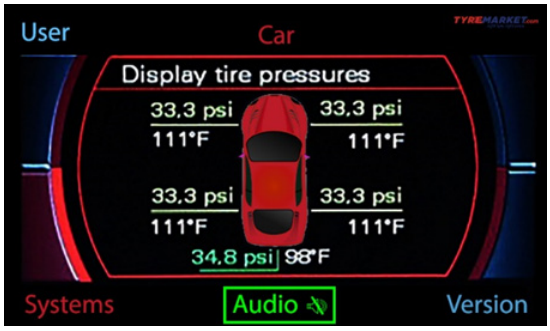
Smart Tyre Technology

Challenges towards requirements of Smart Tyres

The identification of a smart tyre is done by RFID. The embedded RFID tyre allows operators to track tyre inventory, tyre identification and tyre rotation. It also provides warranty information and protection against tyre theft. The health of smart tyres can be monitored by pressure, temperature, and acceleration sensors. These sensors are based on Micro Electromechanical Systems (MEMS) technology and all the above three sensors are integrated on a single chip.

The Tyre Pressure Monitoring System (TPMS) is built using this chip. The TPMS sensor uses Bluetooth Low Energy (BLE) technology to transfer tyre health data to the dashboard (in-vehicle) and as well as to the cloud using network





The MEMS-based accelerometer and gyro sensors data helps to estimate tyre speed, tyre grip, vehicle load and road conditions. The tyre grip and vehicle load are vital for estimating braking distance. The tyre grip and road condition knowledge are important for safety. The road condition sensing helps to determine driving conditions and warn the driver about harsh braking, harsh acceleration, and harsh cornering.

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The above development is possible, only if an organisation is prepared to invest a large amount of money in research and development, develop multidisciplinary human resources, collaborate with capable sensor and chip manufacturers and subject the tyre for exhaustive indoor and outdoor evaluation. This is a vital development that is essential to support automobile industry growth.

Smart tyre enables the operator to keep the **performance of the tyres at its optimum point** and allow the tyres to be used until the real end of its life. Hence **smart tyres are more sustainable as well.**

Current challenges as well like battery power supply that lasts long enough during the life of the tyre, the collaboration between OEMs and tyre industry is essential for the success of the tyre.

Requirements for tyres from EVs

Automobile industry has been evolving for more than a century now and one major component which simultaneously evolved with automobiles is tyre. Many developments in automobile functionality would not have been possible without the support from developments in tyre technology. Current shift from ICE to EV is nothing short of a disruption and this will demand major enhancements in tyre performance. ***Tyre industry will need to make significant investments to develop technology and manufacturing which will support tyre performance on EVs without compromise on safety, durability, and longevity.***

While most Electric Cars look similar on the outside to their fuel Powered counterparts, underneath the body things are very different. Also the functional elements of the electric vehicle may look conceptually similar to that of a traditional car, but in reality, the demand of performance, particularly from tyre is very different. Broadly the requirements from tyre to EVs are explained below, together with their implication to technology development and manufacturing.

> One compelling reason to go for EVs is green energy argument. However, the energy density for current batteries is very low, necessitating heavy battery pack to attain an appreciable range

One compelling reason to go for EVs is green energy argument. However, the energy density for current batteries is very low, necessitating heavy battery pack to attain an appreciable range. Also, the position of batteries may result in unusual vertical load distribution and changes in CG which can cause stresses on tyre during acceleration and cornering. Also, tyres will need higher load carrying capacity and better durability and a bigger tyre size could become a possible solution in this case.

Requirements for tyres from EVs

> Investment is needed in upgrading manufacturing system to manufacture such a tyre with excellent ride and handling characteristics.

For some EVs the solution might be a change in the tire's dimensions. Cars must be adapted to cater for a high rim and an optimized tread width, which alter the driving performance through lateral stiffness and other performance characteristics. This calls for a design change in tyres. Moreover, investment is needed in upgrading manufacturing system to manufacture such a tyre with excellent ride and handling characteristics.

In cases, where tyre size change is not possible due to design restriction, the tyre needs to have higher load carrying capacities than an Extra Load version of the tyre. These are the HL version (high load version) and are defined by ETRTO as follows.

"High Load Capacity Tyres are Extra Load Tyres that are designed to carry a higher load at the same reference pressure. The prefix "HL" must be stamped on the sidewall in front of the tyre size designation. "Tyre industry needs to develop **new material and design technologies** to meet this new requirement.

Another requirement is **enhanced road grip**, as an electric engine provides full power immediately. High grip level can potentially cause wear issues and reduction in tyre mileage. In order to achieve higher dry, wet, and snow grip we may have to adopt silica and resin technology, this calls for changes in mixing technology from physical mixing to reactive mixing. Silica is an abrasive material hence wear and tear of the equipment will be very high and hence we must improve wear and tear characteristic of several process equipment to increase its longevity through modernisation.

Requirements for tyres from EVs

Tyres consume **energy to roll and reducing the rolling resistance of the tyres to save battery power to offer maximum range** per charging will be a major requirement. Also, the tyre needs to be lightweight and this can reduce damping properties of the tyre and raise concerns of comfort in terms of noise and vibration. This will be further complicated for the fact that electric engines are almost soundless, and tyre will be the major source of in-cabin noise. In order to achieve this conflicting requirement, we may be forced to adopt **new generation steel cord, low density high reinforcing fillers, and nano material** which calls for huge development because majority of the above materials not fully industrialised in tyre components and compounds.

As motors in EVs does not make any noise unlike the IC engine vehicles, the only noise heard by the customer inside the car is the tyre noise. Hence **developing tyres with reduced noise is critical**. Industry may also need to design and develop additional technologies to cancel the noise generated by various mechanisms in tyre. This is completely new to Indian Tyre Industry and this calls for development, manufacturing facilities to apply these new technologies into the finished product. One such example is the **application of foam inside the tyre**.

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All the above performance requirements and associated trade-offs necessitate major research to **develop new tyre designs & tread compound** which as a result, may lead to **changes in the manufacturing process**, particularly in terms of mixing, extrusion. Tyre building and curing. This will also call for **major investment in tyre research, development and manufacturing.**

We may fast wear as a concern in terms of environment pollution as well which needs to be addressed through the tyre design and compound development.

ELT Management

Economic, Environmental, and social awareness are the key elements of the sustainable tire industry. A remarkable increase in tire production has been recorded in recent years, due to increase of vehicles in the world. End-of-life tire (ELT) is an important environmental problem worldwide since it produces severe air, water, and soil pollution issues.

An "end-of life tire", ELT, means that the tire has ceased to perform its original function, that is, to complete the wheel of a vehicle to enable mobility in a safe condition. It cannot no longer be used on vehicles after having been re-treaded or regrooved.

> ELTs are being managed through a variety of regional activities led by government agencies, the tire industry, and individual manufacturers. "Used tires" is a broader term.

According to the World Business Council for Sustainable Development (WBCSD), more than one billion end-of-life tires are expected to be produced per year. This number has been continuously increasing, and the trend is projected to continue. ELTs are being managed through a variety of regional activities led by government agencies, the tire industry, and individual manufacturers. "Used tires" is a broader term.

When an ELT is removed from a vehicle, it is not a waste; instead, it is a valuable resource with properties such as slow bacterial growth, excellent resistance to mildew, heat, moisture, and sunlight, and resistance to oils, acids, and other chemicals; they also have elastic properties and good impact resistance and can promote circular economy.

> The concept challenges the principles of "use & throw" and instead finds or creates value in the "end-of-life" product that was otherwise considered as waste or scrap.

The circular economy rests on the principles of creating opportunities wherein the **'end-product'** becomes the raw material for either the same product or a new or alternate product. Therefore, circular economy is based on the premise that with a judicious mix of appropriately **"modified end-product"** along with conventional raw material, the overall life cycle of the products gets extended. It recognizes and formalizes a set of activities that were hereto being conducted in an unorganized, unstructured & informal manner.

The concept challenges the principles of "use & throw" and instead finds or creates value in the "end-of-life" product that was otherwise considered as waste or scrap. In practice, it implies reducing waste to a minimum - thereby addressing the concerns regarding "waste disposal" and associated environmental implications.

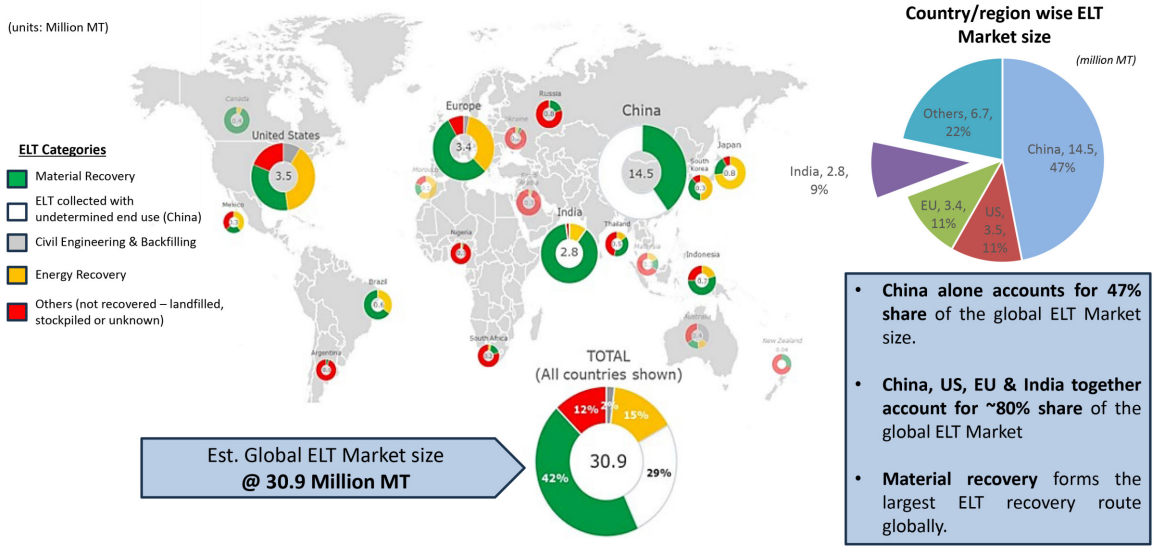
At the same time, it helps in reducing the consumption of fresh resources, being extracted from nature, thereby honouring the principles of intergenerational equity.

ELT Management

Overview of Global practises

- The end-of-life tire market encompasses the handling of **disposed tires**. Method varies greatly between regions and existing infrastructure –from energy recovery and refurbishing to landfills. Scrap tyres consists of materials that are not degradable by nature and create immense waste problems if not recovered. Tires also contain valuable materials such as reclaim rubber, crumb rubber, rubber-based polymers, carbon black, pyrolysis oil and steel.
- Majority of ELT volume is recovered globally and used as energy **(large portion for cement kilns)**, or used as mix with other material or landfill, Through the process of recycling tires, valuable components can be recovered.
- Industry players have called for access to **sustainable raw materials**, supporting demand for a more sustainable solution to better **capture the resources from End-of-life tires.**
- Globally, an estimated "1 billion" ELTs are generated every year. Disposal of ELT's is high priority for both tyre manufacturers and Governments all over the world. ELT's is considered as a of **Cost Effective and Environmentally sound Energy Source** for several industries.
- ELT's are alternatively used in Civil projects and can reduce burden on several natural resources. Other innovative ideas of converting ELT from "Waste to Resource" are being developed. Environmental issues are pushing Tyre industry to evolve from "Linear to a Circular" Economy.

Global End of Life Tyre (ELT) Market Size

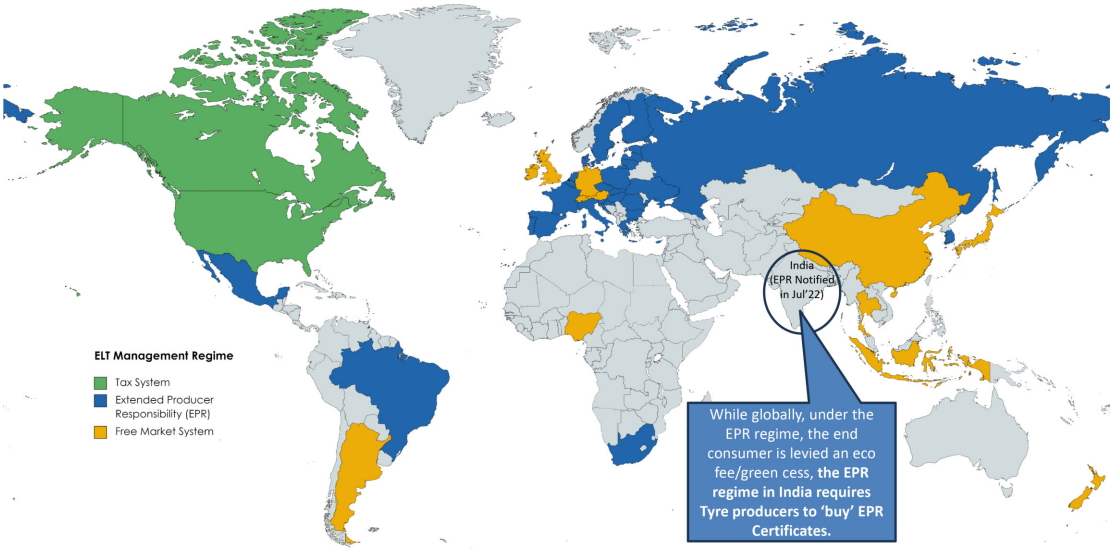


Source: world business council for sustainable development (wbcsd), 2019

Environment

ELT Management
Overview of Global practises

ELT Management Regimes (Global Landscape)



ELT Management Practices followed Globally

Extended Producer Responsibility (EPR)

- Management of Waste Tyres (recovery, recycling or disposal) is **the responsibility of Tyre manufacturers.**
- Funding is via. a **eco-fee/green cess** charged on the original sale
- The system is usually **administered by a non-profit organisation**

Coverage

Most EU countries, Brazil, South Africa, South Korea, Russia, Ukraine, India

Tax System (Govt. Responsibility)

- **Producers pay the government** a disposal duty added to the cost of new tyres.
- The **management of the used tyres is a responsibility of recovery organisations** directly financed by the government.

Coverage

Canada, Croatia, Denmark, Latvia, Slovak Republic

Free Market System

- Legislation sets the objectives to be met but **does not designate responsible bodies**.
- **Specialized enterprises operate independently** in accordance with qualitative objectives and specific legislations on the transport, use, disposal and storage of ELTs.

Coverage

Austria, Germany, Ireland, New Zealand, Switzerland, UK, US, Thailand

Environment

ELT Management
Overview of Global practises

The Circular Economy (CE) model is gaining traction in the tire industry, particularly in India, for a variety of reasons, including the convenience of opening new opportunities in the sustainable market, pure survival in an increasingly demanding environmental legal context, or true conviction of companies that are more conscious of the need to minimise their environmental impact

Extended Producer Responsibility (EPR) Regulation for Waste Tyres in India : Background

In April, 2021 Government of India, constituted a **high-powered Committee** (comprises of Members from NITI Aayog, UNDP, Central Pollution Control Board, CSIR & ATMA) **on Circular Economy in Tyre and Rubber Recycling** Industry to prepare an action plan for transformational change in Tyre & Rubber Recycling Industry. Additional Secretary, Ministry of Environment, Forests & Climate Change (MoEF&CC), Govt. of India was the Chairman of this committee.

Based on the received inputs from all the Stakeholders including ATMA/ITTAC, Committee for Circular Economy in Tyre and Rubber Recycling Industry prepared a **Report on Tyre Scrap: Circular Economy**, which was sent to Niti Aayog after approval from competent authority.

Based on the Tyre Scrap report, **MoEF&CC** issued a draft EPR Regulation dt. 13.12.2021 on waste tyre followed by Gazette (Draft) Notification dt. 31.12.2021 on Extended Producer Responsibility for Waste tyres for the comments from all the stakeholders.

Ministry of Environment, Forest and Climate Change (MoEF&CC) issued the Gazette (final) notification **No. G.S.R -593(E) dated 21.07.2022** on Regulation on E**xtended Producer Responsibility (EPR) for Waste Tyre.**

- **Date of enforcement** of the issued (Final) Gazette Notification is 21.07.2022

ELT Management
Overview of Global practises

Some Salient points on issued EPR Regulation by MoEF&CC, GoI:

- **Tyre Manufacturers, Tyre Importers including OEMs, Recyclers& Tyre Re-treaders** are considered on the EPR Regime.
  - Above said parties/entities need to register themselves on the **CPCB portal** under the process implementation.
- **EPR Certificates need** to be purchased by the **Tyre Producer** from the **authorized Recyclers** against the production tonnage/tyre in a period of 02 years.
  - **20% tonnage will be reduced due to wear & tear.**
- **Recyclers** will be accountable through an audit mechanism on following information to be shared on CPCB portal (on monthly basis)
  - Quantity of waste tyres used.
  - End product produced.
  - EPR Certificate sold.
- Entire activities to be processed **through online mode**.
- **Modalities of EPR Regime:** The extended producer responsibility obligation for tyre manufacturers is as under:

Proposed EPR Model in Regulation

Producer (Buyer of EPR Certificate)

- Tyre Manufacturer
- OEM
- Tyre Importer
- Tube +Flap producer
- Scrap Tyre Importer

User/Application (Seller of EPR Certificate)

- Reclaim Rubber (Recycling weightage **1.30**)
- Recovered Carbon Black (RCB) (Recycling weightage **1.25**)
- Crumb modified Bitumen (CRMB) (Recycling weightage **1.10**)
- Crumb Rubber (Recycling weightage **1.00**)
- Pyrolysis (Recycling weightage **0.8** for continuous and **0.5** for batch process)

Target (Based on tyre production/tonnage)

- FY 2022-23 **(35% of manufactured or tyres imported in 2020-21)**
- FY 2023-24 **(70% of manufactured or tyres imported in 2021-22**
- FY 2024-25 **(100% of manufactured or tyres imported in 2022-23)**
- 2025 onwards (100% **manufactured or tyres imported in** in Y-2)
- **New units** After 2 years, Y-2

Waste importers

- **100% of Y-1**

Re-treading

- Deferred one year for tyres retreaded

Other provisions

- Registration on CPCB portal.
- The import of waste tyre for the purpose of producing **pyrolysis oil or char is prohibited.**
- CPCB to generate EPR certificate through the portal in favor of a registered recycler.
- **Steering Committee** to review and revise the **targets, weightage and permissibility of modes of recycling.**
- The **validity of the extended producer responsibility certificate** is two years.

ELT Recycling Processes in India

Mode of ELT Processing	ELT Recovery Route (est. % Share)
Pyrolysis	80-85 %
Crumb Rubber (For Tiles, Turf, Mats, Sheets, Misc)	10 %
Reclaim+ CRMB + RCB	5%

Source: Tyre and Rubber Recyclers Association of India, TRRAI

Key recommendations/submissions of ATMA/ITTAC for effective implementation of EPR Regulation for Waste Tyre Management:

- **Tyre Producers should be 'exempted' from their Year 1 (FY23) & Year 2 (FY24) EPR Obligations** on account of no clarity on the supply chain of EPR Credits/Certificates on Portal.
- **Strict / Mandatory requirements need to be in place for onboarding recyclers of waste Tyres** on the **CPCB Portal** (with the objective of ensuring use of efficient and non-polluting technologies in recycling of ELT).
- Recyclers to be made eligible to issue EPR certificates only to the extent of their use/ consumption of **domestically sourced ELT/Waste Tyres.**
- EPR Obligations of Tyre Industry should be **reduced to the extent of recycled/reclaimed raw materials used in manufacturing of new tyres.**
- Plants / entities registered with CPCB, for issuance of EPR certificates, should be open to **third party inspection** and verification.
- **Waste Tyre / ELT Imports** into India should **not be encouraged / should be banned.**
- **ELT practices and regulatory framework to be followed,** as it exists in other emerging economies

An established ELT management and a positive environmental impact of using ELTs as a resource will evolve the Tyre industry from "Linear to a Circular" Economy.

Global Scenario on tyre performance regulation

Sustainable mobility is a major challenge facing the Community in the light of climate change and the need to support the Greening Transport. It is known fact that the tyres play a significant role in the vehicle's performance. There has been tremendous pressure on automotive OEMs to improve the performance of the vehicles. In last few years, performance of tyres has started playing a significant role because of change in requirements of automotive OEMs and end users.

Tyre ratings & labelling programs are steps towards improvement of tyre efficiency because this gives option to the customers to select the brand with these choices. Tyre labelling and rating/grading is a key enabling factor to allow consumers to identify higher performance tyres and help them to take informed decision. Until recently, consumers in the replacement market have had limited ability to differentiate between tyre performance.

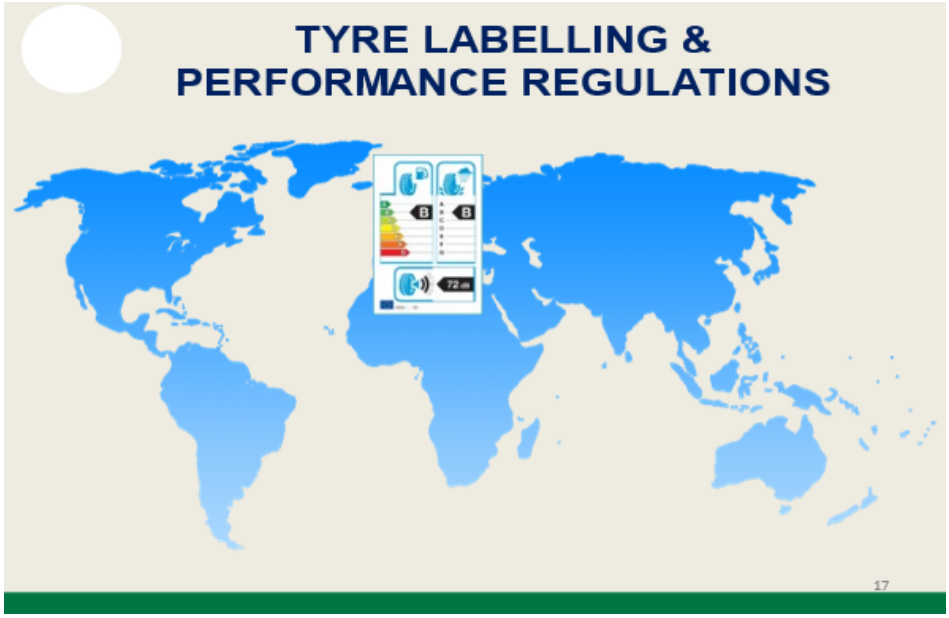
Tyre energy labels provide a clear and common classification of tyres performance for rolling resistance, braking on wet surfaces and external noise. A reduction in the rolling resistance of tyres would therefore contribute significantly to the fuel efficiency of road transport and thus to the reduction of greenhouse gas emissions and to the decarbonisation of the transport sector.

The labels help consumers make informed decisions when they are buying tyres as they can easily set their priority choice based on the 3 parameters. At the same time, the labels drive manufacturers to innovate to make their tyres appear in the top classes by being more fuel efficient, safer and quieter.

- **Rolling resistance (RR)** is one of the important parameters of the tyres under optimum conditions of use to rate the performance of the Tyre/Vehicle for fuel economy.
- **Wet grip measures** the performance of the tyres when a vehicle is braking on a wet surface. Apart from the wet braking resistance, Durability and Safety of the tyre is also dependent on the Wet grip. Wet grip is one of the most important safety characteristics of tyres. Tyres with excellent wet grip will have shorter braking distance on wet road.
- **Rolling Sound Emission** means the sound emitted from the contact between the tyres in motion and the road surface.

Global Scenario on tyre performance regulation

Tyre Labelling in Europe



Europe was first in the World to bring out the regulation on the labelling of tyres and other essential parameters. Since 2012, all manufacturers supplying or selling tyres in the EU must comply with new labelling requirements, which provide information on parameters such as tread resistance, break efficiency and noise level. The initiative is part of the EU's Energy Efficiency Action Plan, which is designed to reduce the energy consumption of various products and services. Stage 2 limits are in place wef Nov 2016.

European Commission has reviewed **Regulation (EC) No 1222/2009** of the European Parliament and of the Council and has identified the need to update its provisions to improve its effectiveness.

- It is appropriate to replace Regulation (EC) No 1222/2009 in order to clarify and update some of its provisions, taking into account technological progress with regard to tyres.
- The transport sector accounts for a third of the Union's energy consumption. Road transport was responsible for about 22 % of the Union's total greenhouse gas emissions in 2015. **Tyres, mainly because of their rolling resistance, account for 20 to 30 % of the fuel consumption of vehicles.**

Global Scenario on tyre performance regulation

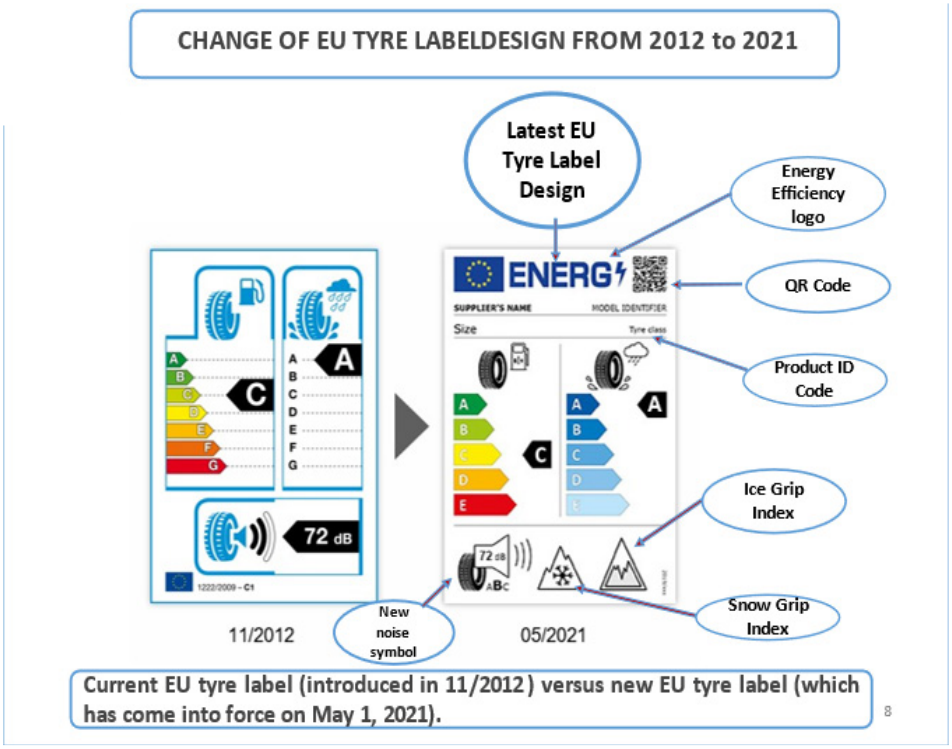
This new regulation coming into effect wef 1st May 2021 has added following additional parameters:

Snow Grip

- Snow A tyre which satisfies the minimum snow grip index values set out in UNECE Regulation No 117 shall be classified as a tyre for use in severe snow conditions and the following pictogram shall be included on the tyre label.

Ice grip

- The ice grip performance shall be tested in accordance with reliable, accurate and reproducible methods, including, where appropriate, international standards, which take into account the generally recognised state of the art.
- The tyre label of a tyre which satisfies the relevant minimum ice grip index values shall include the following pictogram.



Global Scenario on tyre performance regulation

New Certification limits

In line with European strategy on Green deal and road safety

Tyre Class	Existing RR2 Max. Limit (N/kN)	Revised RR2 Max. Limit (N/kN)
C1- Passenger Car	10.5	9.0 (for L.I. ≥ 87) 10.0 (for *others)
C2 - Light Truck, Light Commercial	9	9.0 (Traction tyres) 8.5 (non-traction tyres)
C3 – Truck & Bus	6.5	6.5 (LTR) 6.0 (TBR)

For Snow tyre that is classified as tyre for use in severe snow conditions, the limits shall be increased by 1 N/kN.

* Load capacity index <87, Tyres with nominal aspect ratio ≤40 and suitable for speeds ≥300 km/h, Run flat tyres or extended mobility tyres & Special Use tyres

Wet Grip (New & Worn Tyres)

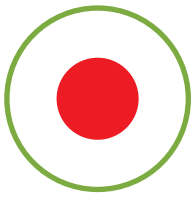
Tyre Class	Wet Grip (G) Existing value	Wet Grip (G) Revised value	Wet Grip (G) On Worn out Tyres
C1 - Passenger Car	1.1 1.0 for 3PMSF (SI ≥ 160 Kmph) 0.9 for 3PMSF (SI ≤ 160 Kmph)	1.2 1.1 for 3PMSF (SI ≥ 160 Kmph) 1.0 for 3PMSF (SI ≤ 160 Kmph)	0.88 0.80 for (SI ≥ 300 Kmph and AR≤ 40) 0.80 for 3PMSF (SI ≥ 160 Kmph) 0.70 for 3PMSF (SI ≤ 160 Kmph)
C2 - Light Truck, Light Commercial	0.95 For Summer & M+S (Excl. Traction)	1.1 for Summer & M+S (Excl. Traction)	0.82 for Summer & M+S (Excl. Traction)
	0.85 All others	1.0 for All others	0.74 for 3PMSF and traction
C3 – Truck & Bus	0.80 For Summer & M+S (Excl. Traction)	0.95 for Summer & M+S (Excl. Traction)	0.66 for Summer & M+S (Excl. Traction)
	0.65 All others	0.8 for All others	0.54 for 3PMSF and traction

Global Scenario on tyre performance regulation

UN R117.04 Implementation Timelines

Category of tyres	Implementation timeline		
	RR (stage 3) / WG (stage 2) / PBN (stage 2)	WG on Worn Tyres	New Traction Definition
C1, C2 & C3 (New Tyres)	7th July 2024	7th July 24	NA
C1 (Existing Tyres)	7th July 2026	7th July 2026	
C2 & C3 (Existing tyres)	1st Sep 2028	7th July 2026	1st Sep 2030

New limits stages, Additional marking on tyres, Track certification, Additional test (wet grip testing on worn tyres) and Tyre classification and qualification criteria in European Regulation demand **Extensive Research & Development**, which involves huge investment/cost to meet the new regulatory requirements.



Tyre Labelling in Japan

The purpose of this guideline is to label on tyres based on tyre grading system for both tyre rolling resistance and wet grip performance and start providing information step by step.

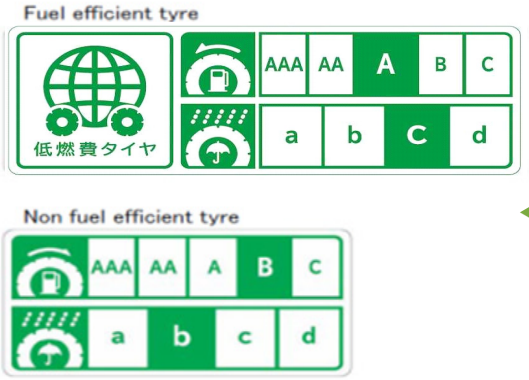
- **The commencement of the voluntary program is since January 2010.**
- The scope of the regulation covers summer-use tyres for passenger vehicles that are purchased as replacement tyres by consumers at tyre dealers etc.

Japan focused only for Summer Passenger car tyres that are purchased as replacement tyres at a tyre dealer etc and has developed unique fuel-efficient tyre concept in their label design.

Global Scenario on tyre performance regulation

Tyre Labelling in Japan

Please see the label design of Japan given as under



Japan developed Unique Design for this system

RR ➜ AAA or **AA** or **A**

Wet Grip➜ a or **b** or **c** or **d**

Limits for Japan Labelling

A) Rolling Resistance Coefficient

Tyre Class	Unit(N/kN)	Grade
C1	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

Tyre Class	Wet Grip Performance	Grade
C1	1.55≦G	a
	1.40≦G≦1.54	b
	1.25≦G≦1.39	c
	1.10≦G≦1.24	d

Japan refers the C1 tyre grade band of **EU Grading of Stage 1** except Noise

The tyres with a grading of **A** and above for rolling resistance performance and grading a to d for wet grip performance are defined as **"Fuel Efficient Tyres"**.

Global Scenario on tyre performance regulation

Tyre Labelling in South Korea

- South Korea is the second Asian nation, after Japan in 2010, to introduce **mandatory tire labelling** starting from **November 2012**. **Ministry of Trade, Industry and Energy of South Korea** has issued the notification regarding "Tyre Fuel Efficiency Rating System". ECE R117-02 Supplement 13 ("New Wet Grip test method" was introduced by this supplement may not be included).
- The issued mandatory notification **w.e.f. November 2012** covers minimum requirements of **rolling resistance and wet grip properties** and is appliacble for pneumatic tyres for passenger car (C1) and light commercial vehicels (C2). Registartion of all products is needed under implemented labelling program.
- There is no additional marking required on the tyres
- **C3 tyres marked with M+S and 3PMSF (i.e., severe snow tyres) have been added to the scope.**

Please see the **label design of South Korea** as under:

Limits of RRc and WGI

Tyre Class	RRc (N/kN)		
	Until 31st Dec 2019	After 1st Jan 2020	After 1st Jan 2022
PC	≤12.0	≤10.5	≤10.5
LT	≤10.5	≤9.2	≤9.2
T/B			≤7.0

Tyre Class	WGI	
	Until 31st Dec 2021	After 1st Jan 2022
PC	≥1.10	≥1.10
LT	≥0.95	≥0.95
T/B		≥0.80

Global Scenario on tyre performance regulation

Standard and Labelling Program for Tyres in India

The government of India has taken cognizance of the need for introducing fuel efficiency measures in the country and therefore planned to roll out several policies such as CAFE norms for passenger cars, Fuel economy norms for light, medium and heavy commercial vehicles etc. to tap in the fuel saving potential of the sector. The technology to reduce RR is already proven to work and is being followed in other countries. Further, tyre manufacturers in India already have the capability to produce such tyres as there are already a few low RR tyres available in the Indian market.

The frontrunners in developing labelling programmes for passenger car tyres considering rolling resistance coefficient (RRC) as an indicator for fuel efficiency include the European Union (EU), Japan and South Korea. The programmes developed in the EU, Japan and South Korea are based on UNECE R117.02 (globally accepted standard), the regulation on tyres' rolling resistance, rolling noise and wet grip, which described the test procedures to calculate tyre RRC, wet grip performance (G) and rolling noise performance, and sets requirements for these parameters.

Bureau of Energy Efficiency (BEE) constituted a technical committee consisting of the stakeholders from ATMA/ITTAC, MoRTH, Petroleum Conservation Research Association **(PCRA)** & Test Agencies for the development of standard and labelling program for tyres in India.

Global Scenario on tyre performance regulation

Standard and Labelling (S&L) programme for Tyres

Schedule 30 (revised) published by BEE dt 29.12.22 covers the requirements of Standard and Labelling program for tyres.

Salient points of S&L program for tyres by BEE

- Specifies requirements for participating in energy labelling program for C1, C2 & C3 tyres covered under **scope of AIS:142**, meant for **manufactured, imported and sold in India.**
- Covers the terminology, general guidelines and **method of tests** to be conducted on tyres as per AIS: 142 particularly the methodology for testing of **rolling resistance coefficient & wet grip index.**
- Specifies the **tyres star rating band**, which is based on Rolling Resistance Coefficients
- Laboratories accredited by agencies such as NABL in India or any other accreditation bodies, who are signatory to MRA with APAC and/or ILAC in India as well as overseas/other countries accredited as per ISO/IEC 17025 can test the tyres and issue the certificate to comply with this program.
- Tyre Manufacturers are required to test the tyre performance based on RRc and Wet Grip criteria. Based on the test report a manufacturer needs to apply for a label through an online portal launched by BEE. Based on the RRc grading, manufacturer can label the tyre provided the minimum **threshold limits of Wet grip** are met.

Note: **BEE advisory dt. 26.10.2023** states that existing star rating table for tyres has been extended up to 31st Dec 2024, the revised sample label validity period is from 1st Jan 2022 to 31st Dec 2024.

Global Scenario on tyre performance regulation

Star Rating Plan for Voluntary Phase

(Two Year From the date of Launch)

Table-1 (Limits for RRC values)

C-1 tyres (Rim Dia < 14")		
Star	Lower Limit	Upper Limit
*	12.6	13.5
**	11.6	12.5
***	10.6	11.5
****	9.6	10.5
*****	0	9.5

C-1 tyres (Rim Dia ≥ 14")		
Star	Lower Limit	Upper Limit
*	11.1	12
**	10.1	11
***	9.1	10
****	8.1	9
*****	0	8

C-2 tyres (Rim Dia ≤ 14")		
Star	Lower Limit	Upper Limit
*	11.1	13.5
**	10.1	11
***	9.1	10
****	8.1	9
*****	0	8

C-2 tyres (Rim Dia > 14")		
Star	Lower Limit	Upper Limit
*	10.6	13.0
**	9.6	10.5
***	8.6	9.5
****	7.6	8.5
*****	0	7.5

C-3 Tyres		
Star	Lower Limit	Upper Limit
*	7.6	10
**	6.6	7.5
***	5.6	6.5
****	4.6	5.5
*****	0	4.5

Table-2 (Wet Grip Limits)

- **For Class C1 tyres:**

Category of use	Wet grip index (G)
Normal tyre	≥ 1.1
Snow tyre	≥ 1.1
"Snow tyre for use in severe snow conditions" and with a speed symbol ("R" and above, including "H") indicating a maximum permissible speed greater than 160 km/h	≥ 1.0
"Snow tyre for use in severe snow conditions" and with a speed symbol ("Q" or below excluding "H") indicating a maximum permissible speed not greater than 160 km/h	≥ 0.9
Special use tyre	Exempted

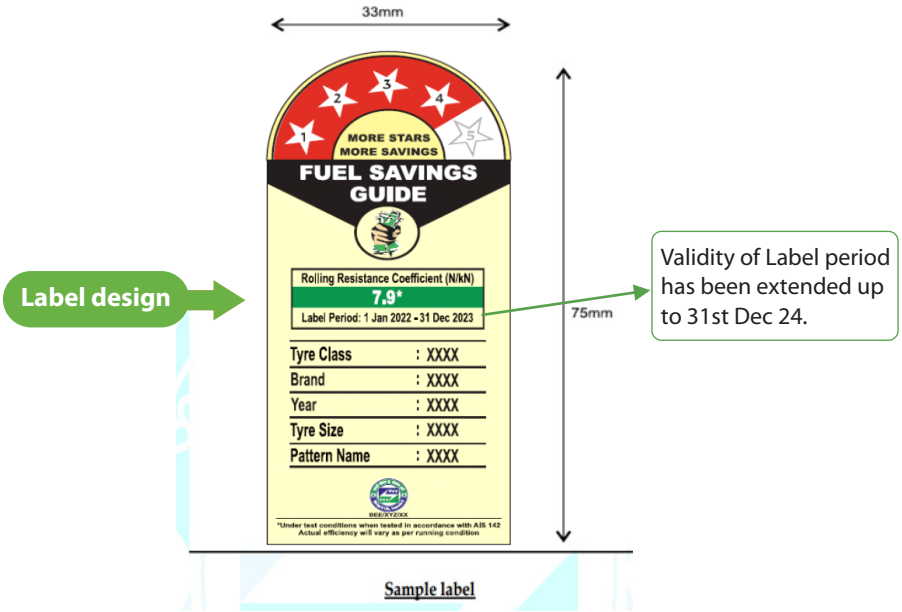
Global Scenario on tyre performance regulation

Star Rating Plan for Voluntary Phase
(Two Year From the date of Launch)

- **For Class C2 and C3 tyres:**

Category of use	For C2 tyres		For C3 tyres	
	Others	Traction Tyres	Others	Traction Tyres
Normal tyre	≥ 0.95	≥ 0.85	≥ 0.80	≥ 0.65
Snow tyre	≥ 0.95	≥ 0.85	≥ 0.65	≥ 0.65
Snow tyre for use in severe snow conditions	≥ 0.85	≥ 0.85	≥ 0.65	≥ 0.65
Special use tyre	≥ 0.85	≥ 0.85	≥ 0.65	≥ 0.65

There is no tolerance for the upper limit for RRC value of the corresponding Star Rating Band. All tested products must meet the minimum threshold for each Star Rating Band. The scope of manufacturing tolerance and other variations shall be accounted by the manufacturer or permittee, while determining the Star Rating of a particular tyre model.



Sample label

The labelling program for tyres in India is bound to provide necessary push for tyre market to move towards fuel efficient tyres. Also, there is a need to create awareness among the consumers about fuel saving in their vehicle through fuel efficient tyres. Standard & Labelling program will provide them an informed choice about the energy saving and thereby the cost saving potential in their operation through different type of tyres.

Safety

Tyre Care & Safety programme by ATMA and ITTAC touched a new benchmark during the ongoing fiscal year with one of the widest footprint of tyre safety activities across the country.

Besides tyre safety campaigns/ roadshows (both in physical and digital space), the programme had its vast outreach to educational institutions (universities/ colleges/ schools), Government and Corporates. Aligned with the physical activation, social and digital media was effectively used to widen the outreach and promote tyre safety. At another level, the campaign propagated inclusion of roadworthiness of tyres as a mandatory condition for insurance claims. During tyre clinics, surveys were also done on the extent of tyre damage, TWI etc.

Schools & Colleges

An engaging presentation and activity-filled approach was used to engage school students so as to enhance awareness of Road and Tyre Safety.

In case of college students who are also aspiring drivers, imparting essential Tyre Care and Maintenance knowledge was undertaken via an informative presentation, complemented by a Quiz to gauge fundamental Safety Awareness regarding tyres.

Eventually, 27 schools and two colleges were covered during this period, entailing nearly 10000 students.

Safety

Government

Reaching out to Government and Public Sector was another key highlight wherein commercial drivers engaged in the transportation were educated through a presentation and practical training to inculcate safe driving habits. In one of the most abiding partnerships aimed at creating awareness on the vital aspect of tyre safety, ATMA and ITTAC collaborated with Indian Oil (IOCL) for pan India reach out to CV drivers.

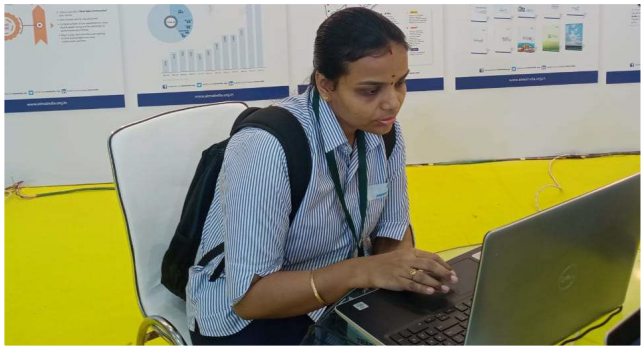
Over 750 commercial drivers linked to IOCL supply chain in the states of Bihar, Gujarat,Jharkhand, Karnataka, Madhya Pradesh and Maharashtra participated in the in-depth tyre safety training programme and benefitted from the interactive session with experts.

Other Government departments included State Express Transport Corporation, Indian Road Traffic Education, Rajasthan State Road Transport Corporation (RSRTC), Delhi Police 3rd Battalion and Central Institute of Road Transport (CIRT)

Safety

Expo/ Roadshow

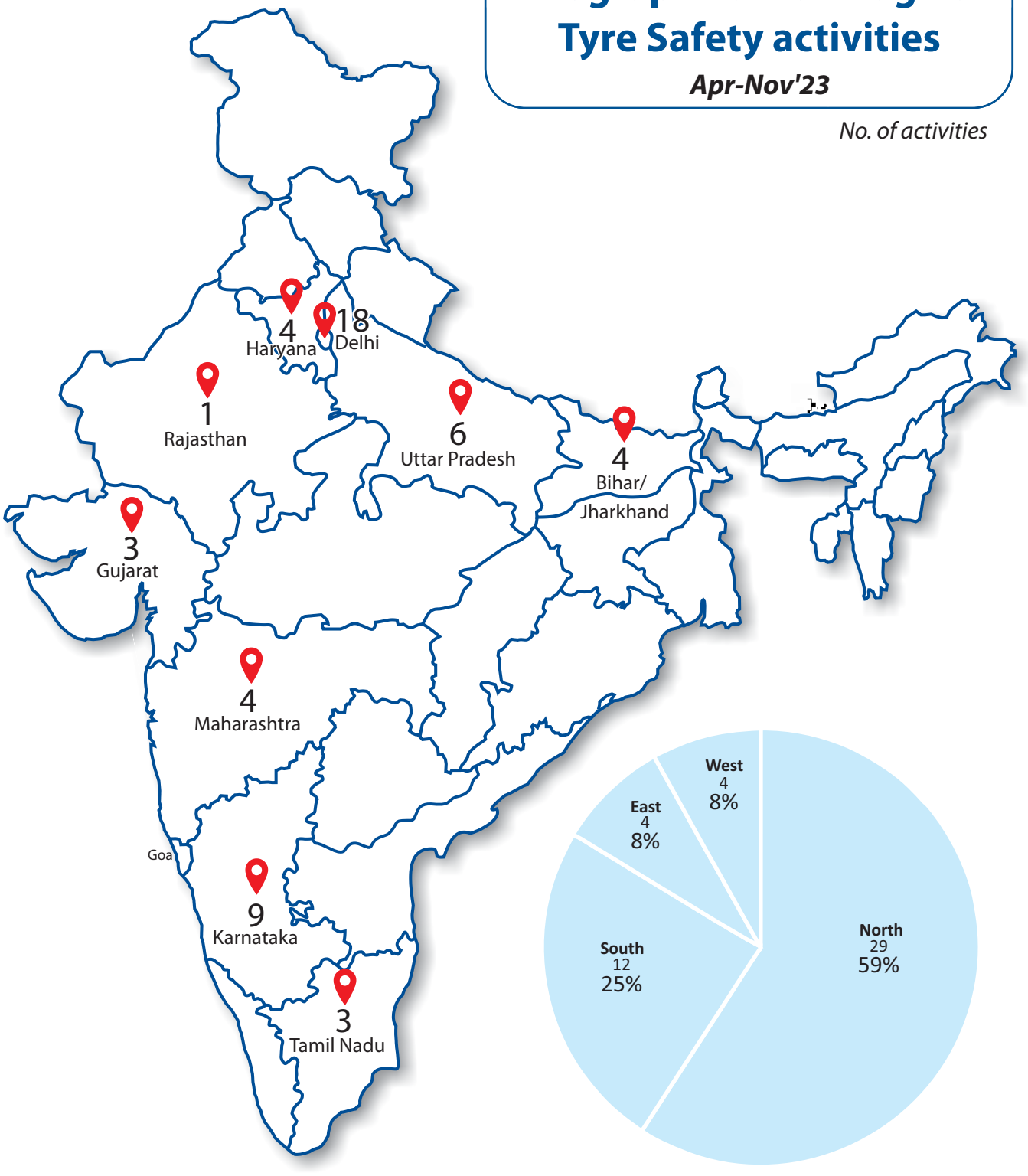
ATMA/ ITTAC Booth at IRMRA Expo at Chennai in Sept this year came alive with a large number of visitors frequenting the pavilion. Comprehensive Tyre Health Assessment through a mobile app developed inhouse,covering tread depth, inflation pressure, and overall condition of the tyre and rim assembly, coupled with insightful discussions with owners/drivers regarding optimal tyre care and maintenance practices escalated the engagement levels.



Geographical coverage of Tyre Safety activities

Apr-Nov'23

No. of activities

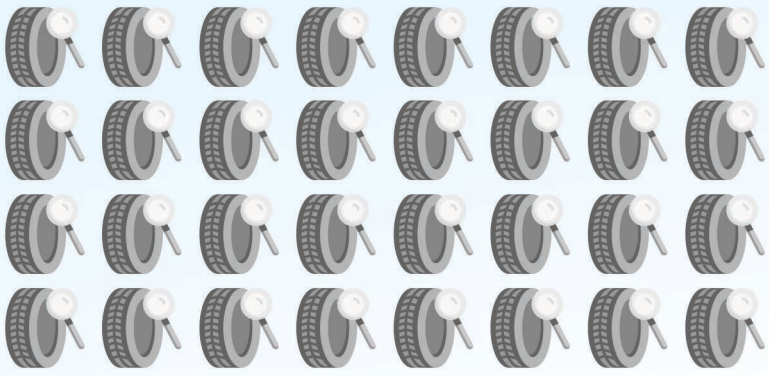


Tyre Safety Activities
Universe

(Apr-Nov'23)

School Children
9119

Drivers (IOCL)
750



Tyres Checked
930

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INDIA'S LARGEST RUBBER STAKEHOLDER MEET IN **GUWAHATI ASSAM**

INDIA RUBBER MEET 2024

GUWAHATI, ASSAM, INDIA. 23&24 FEBRUARY 2024

IRM 2024

Theme:
Natural Rubber - Changing Landscape, Emerging Trends and Insights for Tomorrow

Registration fee*

	INDIAN DELEGATES		OVERSEAS DELEGATES
	Small growers#	Others	
Registration upto 21 February 2024	**Rs. 4,130** *(Rs. 3,500 + GST @ 18 per cent)*	**Rs. 8,850** *(Rs. 7,500 + GST @ 18 per cent)*	**US$ 236** *(US$ 200 + GST @ 18 per cent)*
Spot registration at the venue	No spot registration	**Rs. 11,800** *(Rs. 10,000 + GST @ 18 per cent)*	**US$ 295** *(US$ 250 + GST @ 18 per cent)*

(*Registration fee does not include travel and accommodation;
To be applied through and certified by the Rubber Board Regional Office concerned.)

VENUE
Hotel
Kiranshree Grand
Guwahati, Assam

DATE
23 and 24
February 2024

creativemindsktm.com

ORGANISERS | The Rubber Board (Ministry of Commerce & Industry, Govt. of India) | All India Rubber Industries Association (AIRIA) | Association of Latex Producers of India (ALPI) | Automotive Tyre Manufacturers Association (ATMA) | Block Rubber Processors Association of India (IBRPA) | GRP Ltd. | Harrisons Malayalam Ltd. | Indian Cycle and Rikshaw Tyre Manufacturers Association (ICRTMA) | Indian Rubber Dealers Federation (IRDF) | Indian Rubber Institute (IRI) | Indian Rubber Manufacturers Research Association (IRMRA) | Reliance Industries Ltd. | Rubber, Chemical & Petrochemical Skill Development Council (RCPSDC) | The Cochin Rubber Merchants Association (CRMA) | United Planters Association of Southern India (UPASI) |

For correspondence: **India Rubber Meet Forum** (Reg. No. KTM/TC/282/2019), Rubber Board, Keezhukunnu, Sub Jail Road Kottayam-686 002, Kerala, India. Ph: 91-481-2301231 (Extn.307), Email: indiarubbermeet@gmail.com • **www.indiarubbermeet.in**

Editorial Team
Mr Niteesh K Shukla-**ITTAC**, Mr Renji Issac-**CEAT,** Dr. Rinkel Jindal-**Apollo**, Mr S Gusain-**Bridgestone**.

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Indian Tyre Technical Advisory Committee (ITTAC)

PHD House, 4th Floor, Siri Institutional Area, Opp. Asian Games Village, New Delhi-110 016. India

Office Tel.: +91 93118 99445 *(Mon.-Fri 9:30AM – 6:00PM IST)*

Website: www.ittacindia.org.in