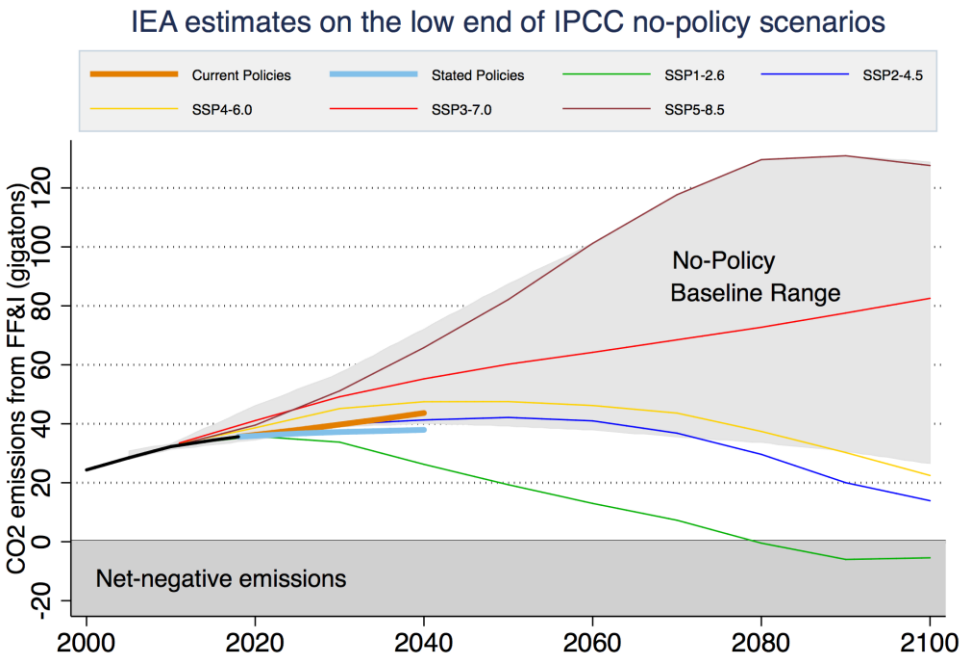
ADDRESS TO CATRA ANNUAL MEETING

Maureen Kline, Vice President, Public Affairs & Sustainability, North America
Chair of the Board, the Tire & Rubber Association of Canada

The Imperative to Decarbonize

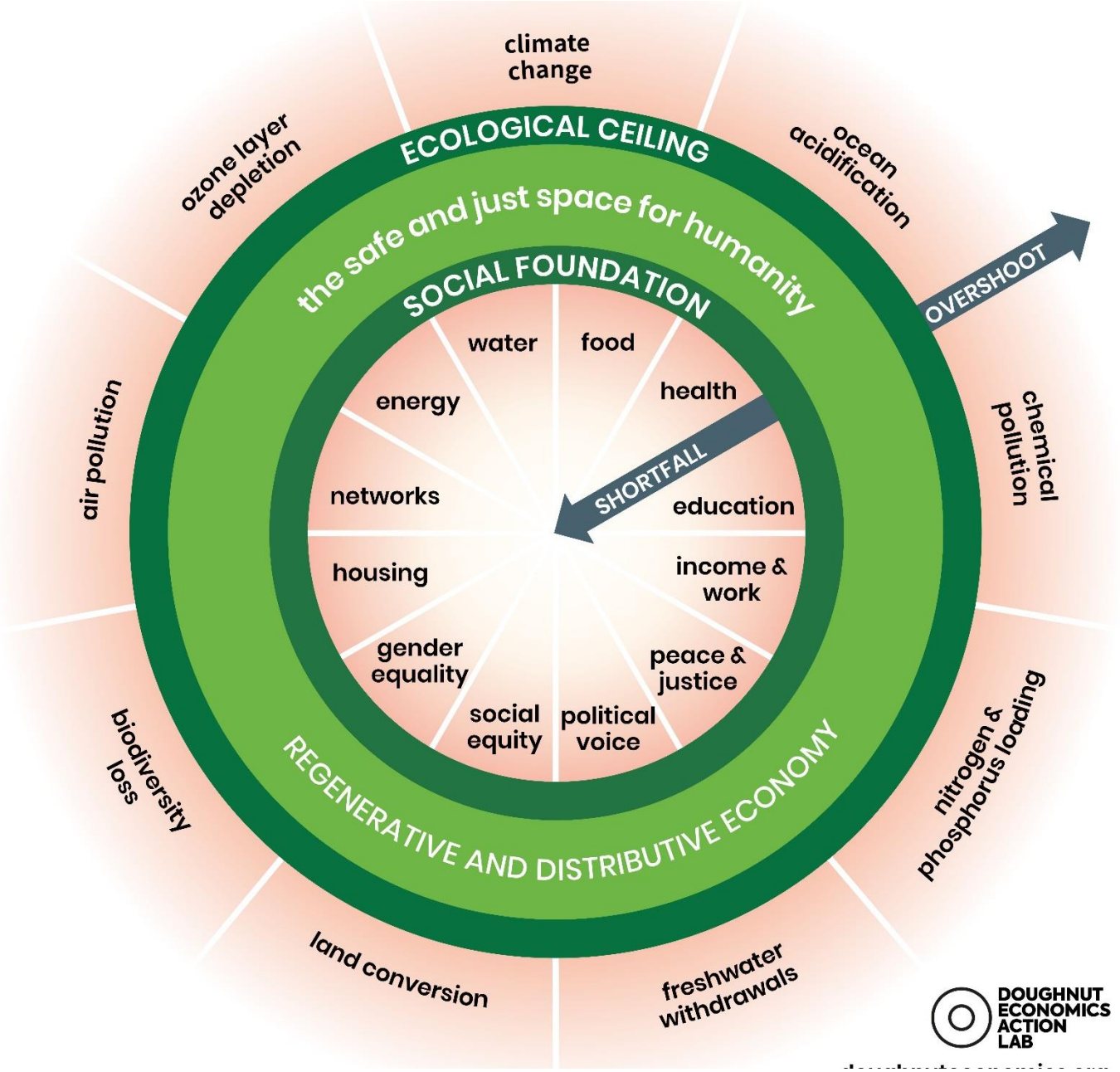
UN CLIMATE CHANGE CONFERENCE UK 2020

IN PARTNERSHIP WITH ITALY



A New Roadmap for Our Collective Future

The Doughnut of Social and Planetary Boundaries



Citation: Raworth, K. (2017), Doughnut Economics: seven ways to think like a 21st century economist. London: Penguin Random House.

How Do We Get to 1.5° C.?

- Transition energy sources to renewables
- Electrify transportation systems
- Circular economy
- Zero deforestation through responsible supply chains
- Energy efficient buildings
- Regenerative agriculture
- And more……

OEMs – MAIN ENVIRONMENTAL TARGETS AND SERVICES as of Sept. 2020

Main environmental targets

VOLVO

By 2025

- 25% recycled and bio-based plastics and materials
- CO2: - 50% from tilepipe; - 25% from supply chain; - 25% from operations
- 50% of sales coming from fully electric vehicles

By 2040

- Climate Neutral Company (incl. Supply chain)
- Circular economy business

VOLKSWAGEN

By 2025

- the share of battery EV in our model portfolio will be between 20 and 25%
- CO2: reduce total life cycle GHG Emissions of passenger cars and light duty vehicles by 30% (vs 2015)

By 2030

- The share of electric vehicles in the Group fleet is to rise to at least 40%

By 2050

- CO_2 neutral company

MERCEDES-BENZ

By 2022

- 100% renewable energy in EU
- Carbon neutral production in EU

By 2030

- -40% of primary raw material for electric drive systems (vs2015)
- >50% of sales by PHEV and BEV

By 2039

- CO2 neutral vehicles

BMW

By 2020

- CO2: Reduced CO2 emissions in the EU new vehicle fleet by at least 50% (vs 1995)
- 100% renewable electricity for all plants

By 2021

- 1/4 of sales coming from electrified vehicles

By 2025

- 1/3 of sales coming from electrified vehicles

By 2025

- 1/2 of sales coming from electrified vehicles

Services

CARE BY VOLVO Subscription service

starting from 700€/month

M is the Volvo global shared mobility venture.

MOIA

fully electric ridepooling system in Hamburg and Hanover

Mercedes-Benz Collection Subscription service

Monthly plans started at $1,095

ACCESS by BMW Subscription service

Starts at $2,000/month, only offered in Nashville

Mobility services in partnership

- SHARE NOW (car sharing)
- REACH NOW (multimodal services)
- CHARGE NOW (e-charging)
- FREE NOW (taxi/ride-hailing)
- PARK NOW (park booking, etc)

Source: web & company annual report

OUR DECARBONIZATION STRATEGY IN LINE WITH THE PARIS AGREEMENT GOALS

LIFE-CYCLE phase: Transversal

	RAW MATERIALS	MANUFACTURING	LOGISTIC[2]	USE	END OF LIFE
GWP[1] impact	Scope 3 **5.8%**	Scope 1 & 2 **2.6%**	Scope 3 0.2%	Scope 3 **91.3%**	Scope 3 <0.1%
	-9% absolute scope 3 CO_2 emissions from purchased raw material by 2025 vs 2018	**-25% absolute scope 1 & 2 CO_2 emissions by 2025 vs 2015** **Carbon neutrality by 2030**	CO_2 emissions reduction	**Rolling Resistance = A/B ≥ 70% by 2025 on new labelled IP Codes**	CO_2 efficiency from materials recycling and energy recovery
	Target approved by the **Science Based Targets initiative[3]** in June 2020, as in line with "well below 2°" scenario		CO_2 efficient logistic providers preferred (logistic is outsourced)	**Improved Rolling Resistance reduces fuel consumption and thus CO_2 emissions of the car**	R&D to support innovation in industrial ecosystems to value ELTs[4] derived materials

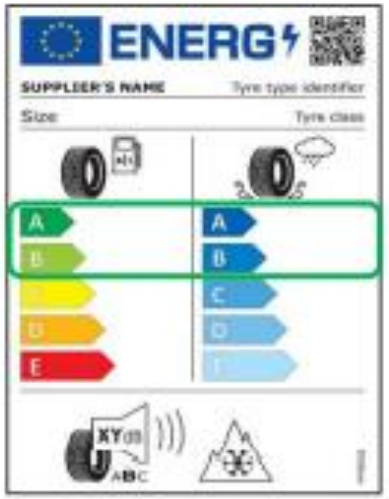
SCIENCE BASED TARGETS

1. Global Warming Potential, data based on Pirelli carbon footprint analysis 2020; 2. logistic is outsourced; 3. Science-based targets are GHG emissions reduction targets in line with the decarbonization level required to meet Paris Agreement goals, limiting global warming to well-below 2°C above pre-industrial levels and pursuing limitation to 1.5°C; 4. End of Life Tyres

OUR PRODUCT PERFORMANCE TARGETS

Eco & Safety Design

- Tyre rolling resistance plays a key role in **reducing fuel and energy consumption** and thus CO_2 emissions.
- Our **Eco and Safety approach** consists on a continuous reduction of rolling resistance without **any compromise on safety in all driving conditions.**

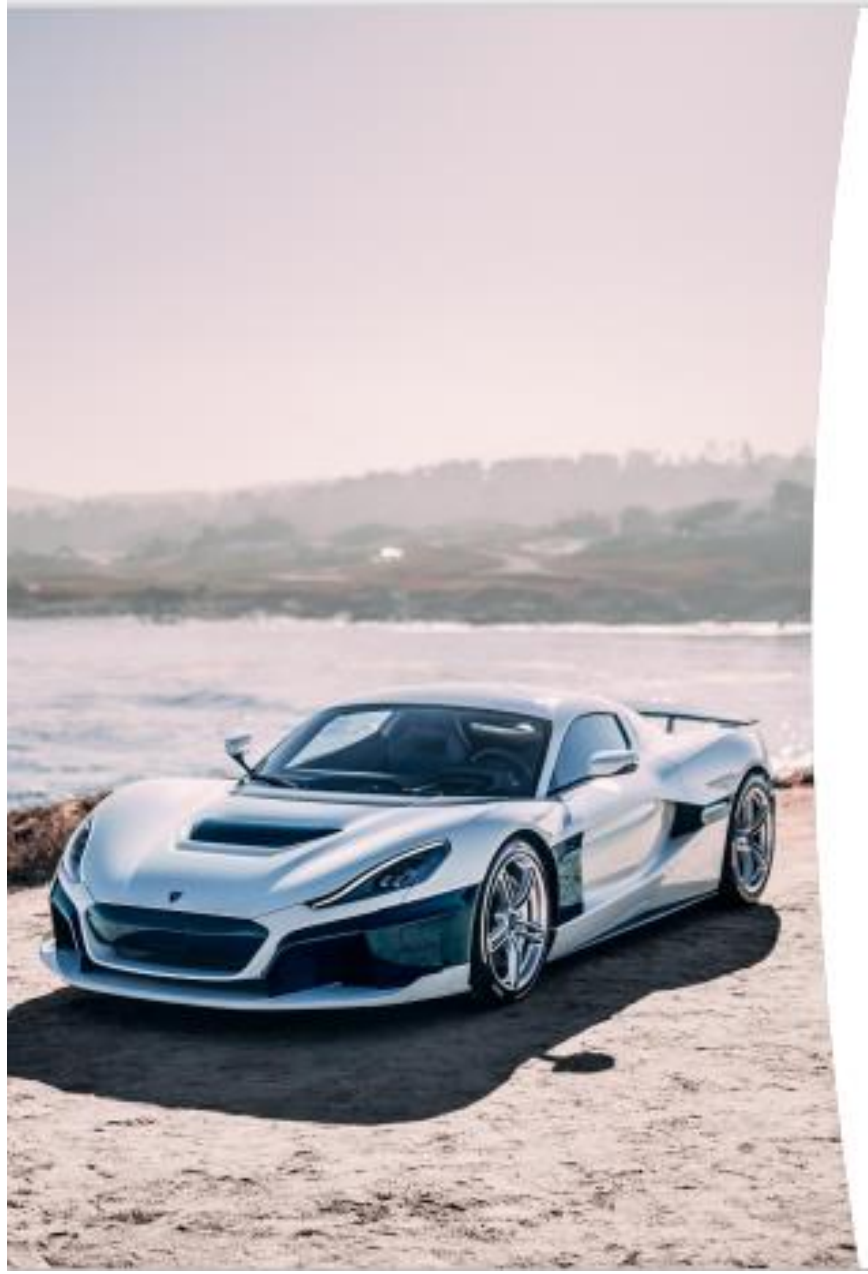


Targets

	2020A	By 2025
Rolling Resistance	A/B=39%	A/B ≥ 70%
Wet Grip	A/B=87%	A/B ≥ 90%

Scope: New products (all new labelled IPcodes)

Note: extra EU labelling scales are converted to EU labelling grades



OUR TECHNOLOGY FOR ELECTRIC VEHICLES

LIFE-CYCLE phase

USE

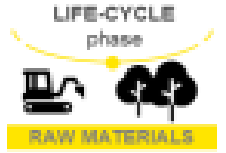
Electric vehicles are key to decarbonize mobility and have specific features that our tyres perfectly match

Elect™ is the answer to the specific needs of Electric Vehicles:

- High load capacity for heavier vehicles
- Ultra low Rolling Resistance to improve battery range
- Lower noise
- Maximum grip for high torque
- Specific development for specific Electric vehicles, following the Perfect Fit Strategy

OUR RENEWABLE AND RECYCLED MATERIALS INNOVATION

Eco & Safety Design



To achieve our targets, we are introducing new polymers, reinforcements, fillers and chemicals including

	What	Why	When
RICE HUSK SILICA	**Silica produced from rice husk**, one of the major by-products of rice production It replaces silica from quartz-sand	▶ **Avoid** new **raw material exploitation** ▶ **Recovering a by-product** of the food industry ▶ **Reduce CO_2 emission** due to less energy-intensive process	▶ Introduction **in 2021** in Pirelli materials' portfolio ▶ **Extensive use in selected categories** in following years
LIGNIN	**Lignin is sourced from paper pulp** and can be used as antioxidant instead of fossil-derived products	▶ Most **abundant bio-polymer** on earth ▶ **Light weight** filler ▶ **Reduced water depletion** and CO_2 emissions vs replaced filler ▶ Pirelli patented process and Trademark	▶ Already in use in normal production for **cycling application** ▶ Extension to top **sustainable selected Car** products in 2022
PYROLYSIS CARBON BLACK	**Recovered Carbon Black (rCB)** is obtained by pyrolyzed end of life tyres	▶ **Favorable CO_2 impact** thanks to energy co-generation during process through pyrolytic gas ▶ Relevant opportunity of **end of life tyres recycling** (circular economy in closed loop) ▶ **Cost advantage** vs standard fossil based Carbon Black	▶ Introduction in **limited application in 2021** ▶ Specific **cooperation with suppliers** to extend the use to a broader range of applications

OUR FOCUS ON 5R[1] CIRCULAR ECONOMY

Re-think: Eco & Safety Design

Design outstanding products, processes and services in terms of performance, environmental impact, health and safety

Refuse

Avoid processes, products, services, materials that can be made redundant

Enhance chemicals safety through substitution

- Anticipation of Raw Material & Chemicals HSE concerns
- Health, safety and hygiene risk prevention
- Phase out of single use plastics

Reduce

Reduce use of resources, especially those not renewable

Reduce waste, air, soil and water emissions

- CO_2 reduction, towards carbon neutrality
- Fossil based / non-renewable materials reduction
- Energy, water, waste reduction
- Tyre Rolling Resistance reduction

Reuse

Reuse resources and products as much as possible

Prevent waste generation and resource depletion

- Acceleration on plant closed loop water cycles
- Plant-scrapped material enhancement and reuse
- Innovative materials based on non-tyre production by-products

Recycle

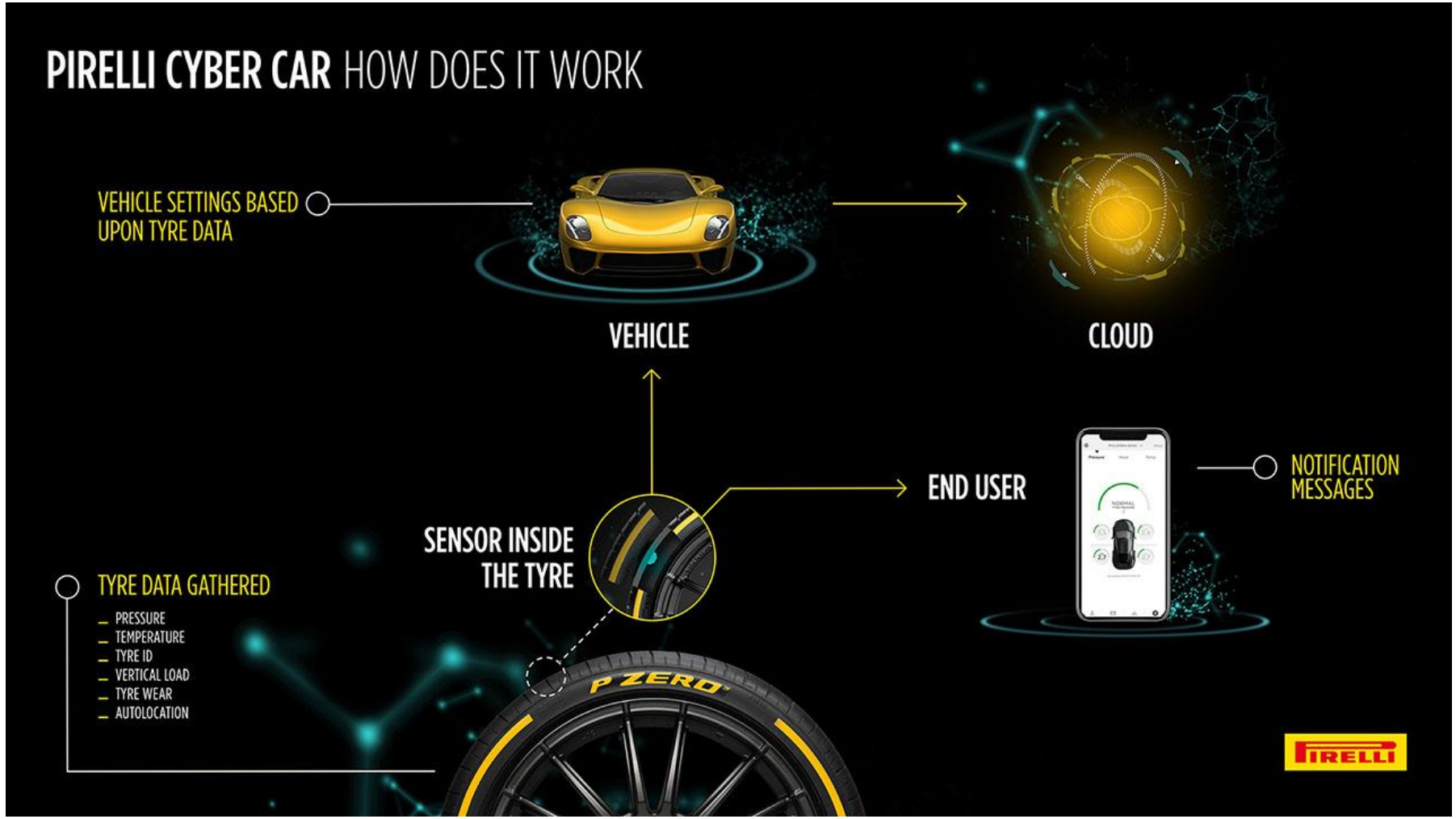
Ensure that ELT[2] are recovered or recycled

Enhance new solutions to maximize ELT secondary raw materials quality and performance

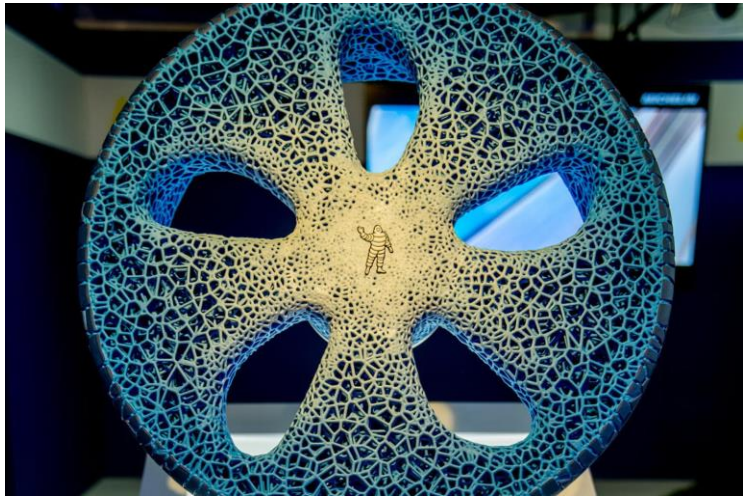
- Increase in use of recycled materials
- Tyre design to improve recyclability either in open or closed loop
- R&D to support innovative industrial ecosystems valorizing ELT derived materials

1. 5R: Re-think, Refuse, Reduce, Reuse, Recycle; 2. ELT: End Of Life Tyres

CONNECTED VEHICLE INNOVATION



OTHER INNOVATIONS



Michelin 3D printed airless concept tire

Michelin Tweel Turf airless radial tire

Goodyear Oxygene concept tire with living moss

Emerging Issues: Materials

NATIONAL GEOGRAPHIC

LOGIN Renew

ENVIRONMENT |
THE STORY OF PLASTIC

Tires: The plastic polluter you never thought about

Because tires are made of natural rubber and plastic, it's easy to miss just how much they contribute to pollution in our oceans.

POPULAR SCIENCE SCIENCE TECH DIY COVID-19 REVIEWS NEWSLETTER SIGN-UP

Salmon are dying off and your car tires might be to blame

Stormwater runoff causes annual die-offs in Pacific Northwest coho salmon.

BY KATE BAGGALEY DECEMBER 04, 2020

ENVIRONMENT

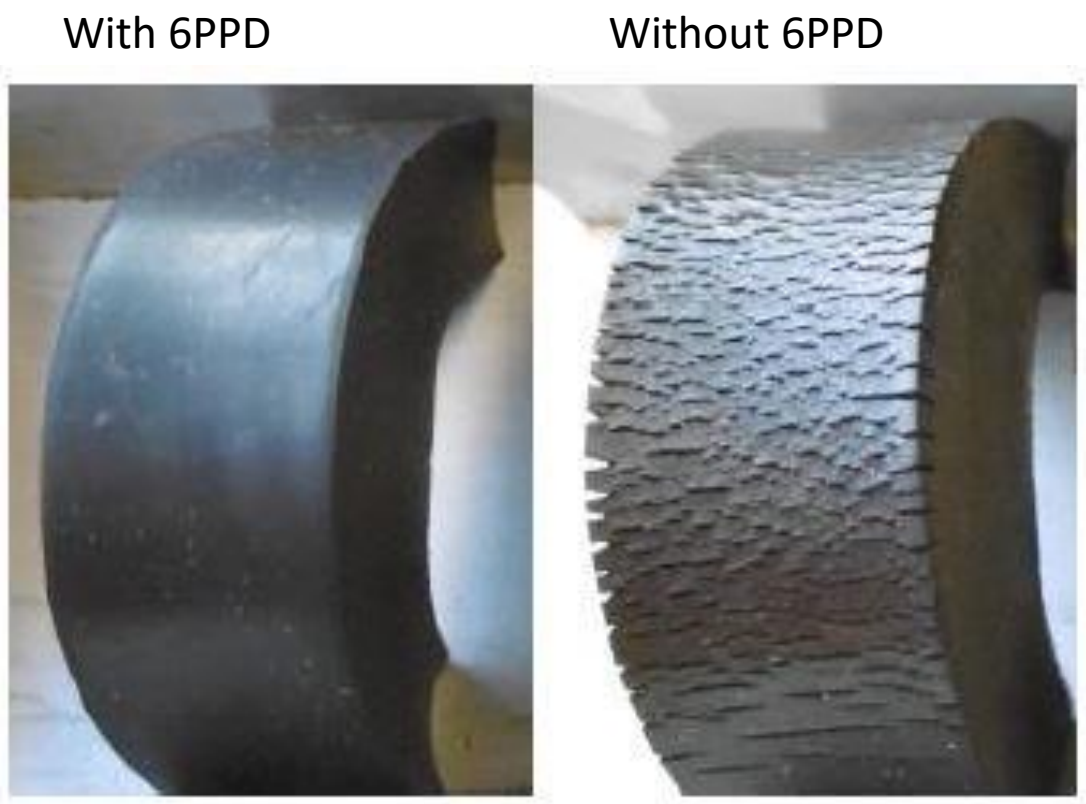
Car tyres are major source of ocean microplastics - study

Wind-borne microplastics are a bigger source of ocean pollution than rivers, say scientists

…but chemicals are necessary

- **Dynamic**
  - **Antioxidants** help to keep rubber from the breaking down due to the effect of temperature and oxygen exposure (Example: TMQ, 6PPD)
  - **Antiozonants** are used to impede the effects of exposure to oxygen and ozone on the surface of the tire (Example: 6PPD)

- **Static**
  - Wax can be used to protect against exposure to ozone under static conditions



Source: USTMA

Emerging Issues: Responsible Sourcing and Supply Chain Management

Growing need for deforestation-free rubber as tire demand destroys native forests

by **Rhett A. Butler** on 18 April 2015

FSC

FSC®-certified natural rubber:
Deforestation free, socially responsible

Global demand for natural rubber, or latex, is growing, driving the expansion of rubber plantations across the tropics. While the production of this important commodity provides income for millions of people in developing countries, it has also had negative impacts on forests, communities and workers. To correct such problems, FSC principles and criteria are being applied for the certification of so and environmentally responsible latex production, which provides businesses ar consumers with options for purchasing FSC-certified natural rubber, or rubberw produced in a way that is good for people and the planet.

Milan, 19 May 2021 | 10:00

Sha

PIRELLI PRODUCES THE WORLD'S FIRST FSC-CERTIFIED TYRE

THE PIRELLI P ZERO TYRE WILL EQUIP THE BMW X5 PLUG-IN-HYBRID USING CERTIFIED NATURAL RUBBER AND RAYON

Alternatives to Natural Rubber

After Decades Of Work, Bridgestone Has Finally Made Rubber Tires From Arizona Shrub

Continental Constructing Tires From Dandelions

Media | News Releases

GOODYEAR USING SOYBEAN OIL-BASED RUBBER IN TIRES

Pirelli tests UHP tires derived from guayule

THE NEED TO MAP ENTIRE SUPPLY CHAINS

Which raw materials are in our vehicles?

In a car around 28.000 parts are assembled of thousands of different raw materials!

Zinc
Use: Corrosion protection, tyres, zinc alloy
Sourcing: East Asia, Australasia, South America
Risk level:

Lead
Use: Batteries, lead wheel weights, solder in electronics
Sourcing: East Asia, Eurasia, South & North America
Risk level:

Cobalt & Graphite
Use: Batteries
Sourcing: Central & East Africa, South & East Asia, Eurasia
Risk level:

Iron & Steel
Use: Car body, car mufflers, decorative trims, exhaust silencers, catalytic converters
Sourcing: South & East Asia, South America, South Africa, Eurasia, Australasia, North America
Risk level:

Copper
Use: Breaking system, electrical driving system, gearbox, vehicle electronics
Sourcing: East & Central Africa, South America, North America, East Asia, Australasia, Eurasia
Risk level:

3TG
Use: board electronics, Fuel cells, fuel tank, sealants, wiring, audio equipment
Sourcing: East & Southeast Asia, Central & Southern Africa, South & North America, Australasia
Risk level:

Glass/Sand
Use: Windows, lamps
Sourcing: North America, Europe, Australasia, Southeast & East Asia
Risk level:

Alumina/Bauxite
Use: Radiator, intake manifold, cylinder heads, engine block, bumpers, wheels, body panels
Sourcing: Australasia, South & East Asia, South America, Eurasia, West Africa, Caribbean
Risk level:

Leather
Use: Car seats, interiors
Sourcing: East & South Asia, South America, Europe
Risk level:

Cotton
Use: Car covers, car seats
Sourcing: Asia-Pacific, Western Asia, South America, North America
Risk level:

Plastics
Use: Seat covers, carpets, bumpers, car batteries, car body, electrical insulators, decorative bezels, optical reflectors, lamps
Sourcing: Depending on type
Risk level:

Platinum Group Metals
Use: Catalyst
Sourcing: Southern Africa, North America, Eurasia
Risk level:

MICA
Use: Car paints, plastic composites, electronic capacitors
Sourcing: East & South Asia, Eurasia,
Risk level:

Natural Rubber
Use: Tyres, wiper blades, engine mounts, seals, hoses, belts
Sourcing: Southeast Asia, South & East Asia, West Africa
Risk level:

Note: Raw materials relevant for car manufacturing are also used in trucks, buses, motorbikes and other vehicles.

drive sustainability

PIRELLI

End of Life Tires and the Circular Economy

wbcsd Overview ▾ Vision 2050 Programs & projects ▾ Sector projects ▾ Hubs ▾

Circular Economy

A circular economy is fundamental to achieving our vision of more than 9 billion people living well within the boundaries of the planet by 2050. Moving towards a

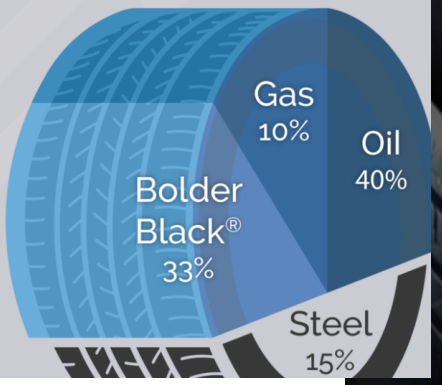
U.S. TIRE MANUFACTURERS ASSOCIATION ECONOMY INNOVATION SAFE

Bolder Industries About Products Locations Resources Investors

Tires as a resource

We take end-of-life tires destined for landfills, or worse, and give the raw materials new life.

Bolder Industries' commercially-tested and proven process enables us to recover materials used in tire production and manufacture countless *new*, valuable outputs. Executed in the most sustainable fashion in the world, our process uses 90% less CO_2, H_2O, and energy than traditional methods.



ELT in Canada: What Vision for the Future?

- What should manufacturers do?
  - design for circular economy?
  - what else?
- What should governments do?
  - incentives on the demand side, to stimulate new markets for ELT?
  - cross-border dialogue and harmonization?

- TRAC has a new ELT Committee. What input do you have for the new committee? How can we partner to achieve common goals?