CARBON CONVERSION TECHNOLOGY LTD

CONNECTING THE CIRCULAR ECONOMY

Wayne O'Connell
Founder & CEO

Guinness Enterprise Centre
Taylors Lane
Dublin 8

+353 1 533 1838
Wayne.OConnell@carbonconversiontechnology.com

CCT Vision

Implementation of a system for the reputational, environmental & financial management of waste tyres to facilitate **circular economy** principles in the global tyre supply chain

Low Volatility Power Generation

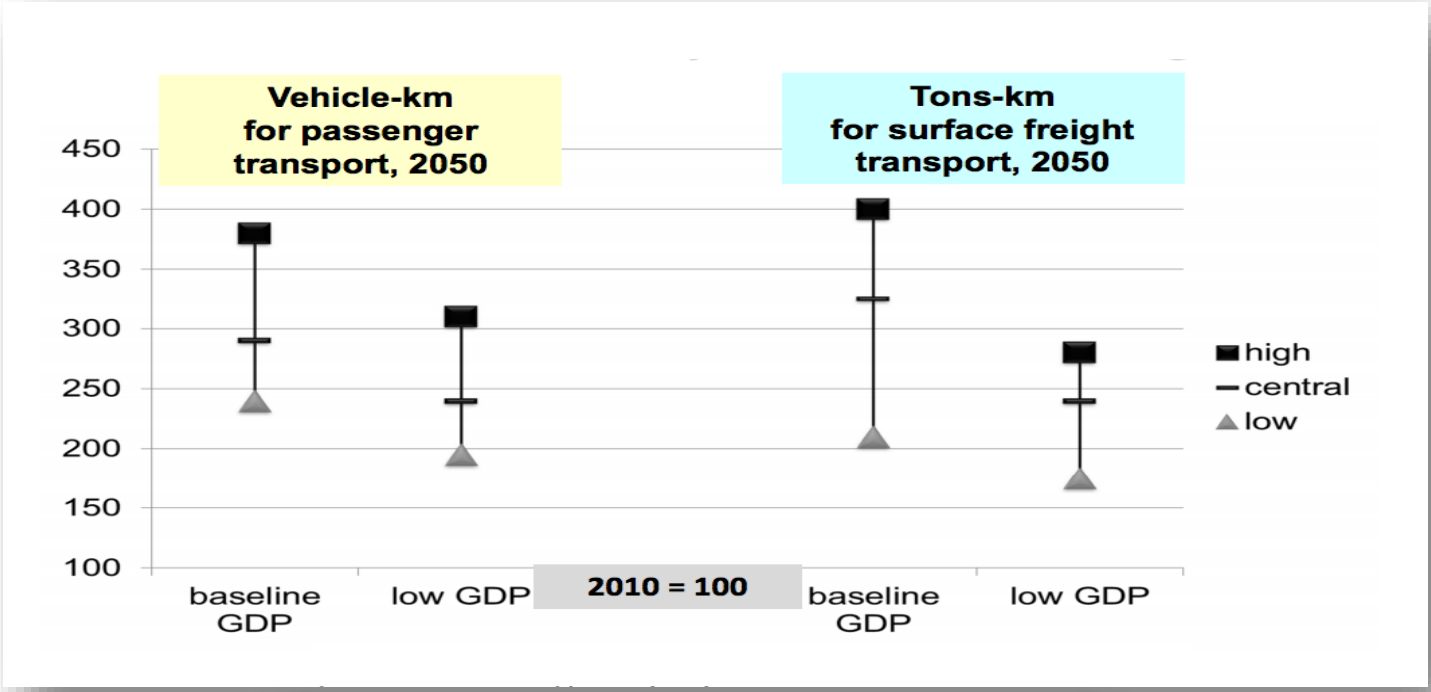
High Value Material Recovery

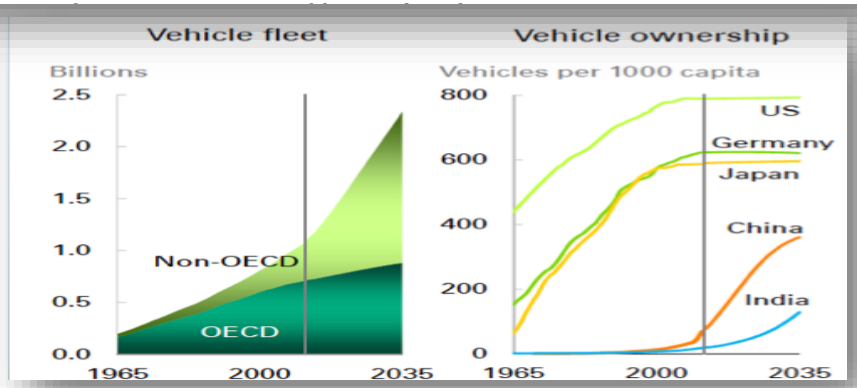
“Post-Use” Reputation Protection

Supply Chain Cost & CO_2 Reduction

CARBON CONVERSION TECHNOLOGY LTD

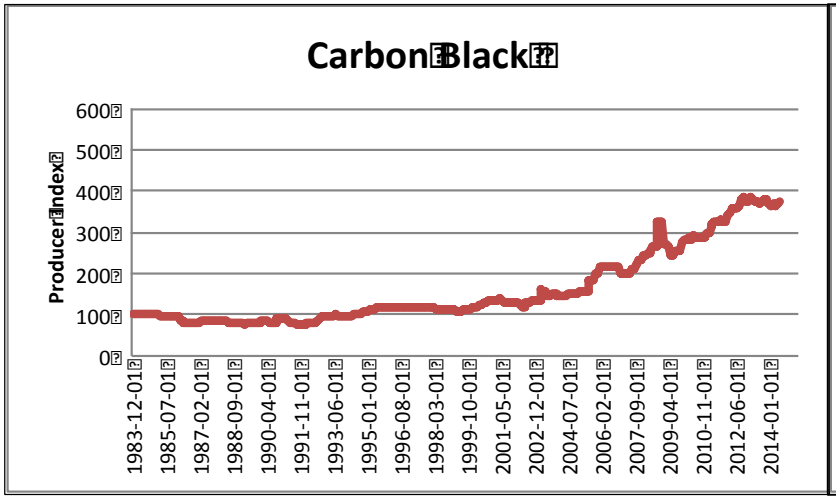
Mobility is forecast to quadruple by 2050, driving demand for new tyres

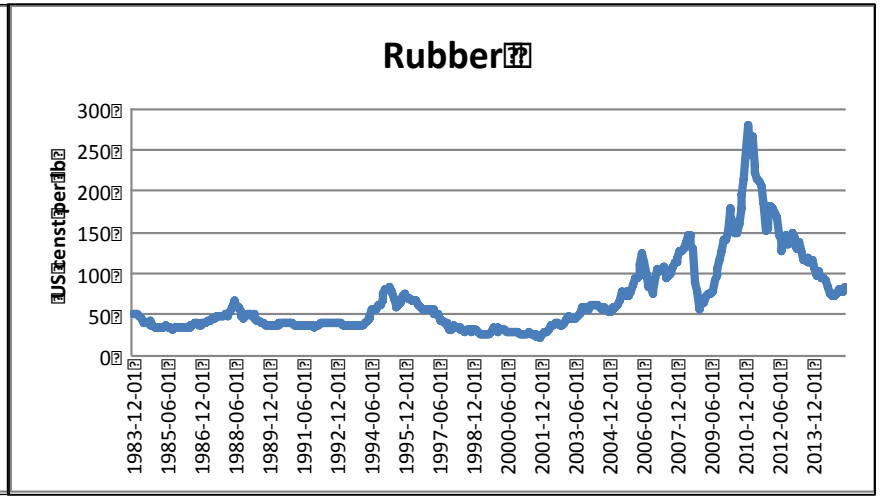




BP 2035 Outlook
Michelin, 2015

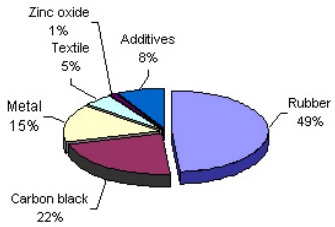
driving supply chain price and volatility



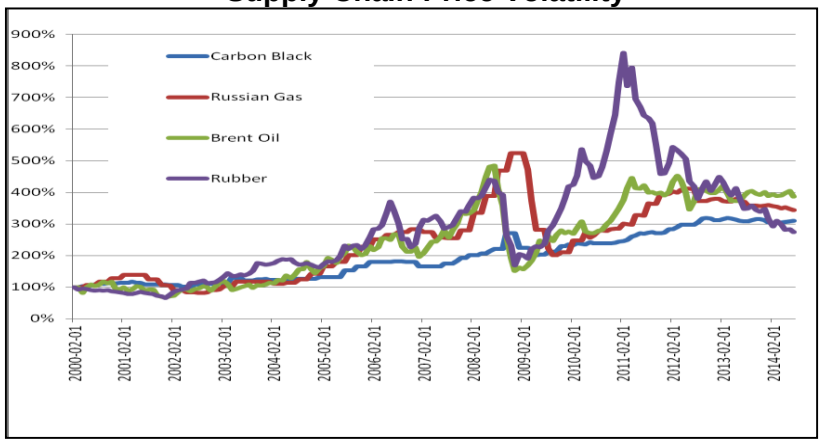


Presently, 70% of Global Production of Carbon Black and 75% of Global Production of Natural Rubber is used in the Tyre Industry

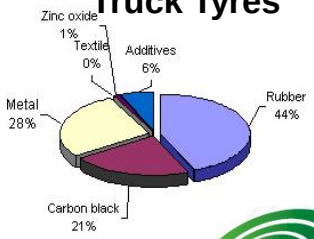
Car Tyres



Supply Chain Price Volatility

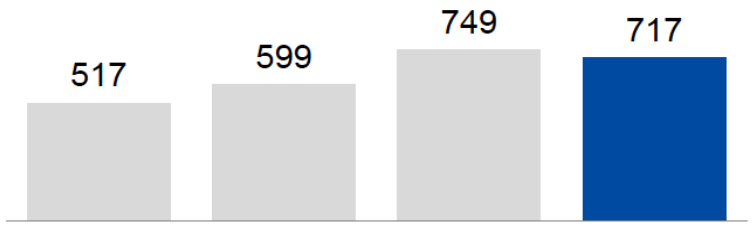


Truck Tyres



CARBON CONVERSION TECHNOLOGY LTD
RECOVERING TYRES SUSTAINABLY

Impacting manufacturers' bottom line



In € millions	2011	2012	2013	2014	Total
Reported free cash flow (1)	(19)	1,075	1,154	**322**	**2,532**
WCR impact of raw materials costs (2)	(739)	21	405	**177**	**(136)**
Year-end volume effect on WCR (3)	(200)	344	nm	**(172)**	**(28)**
Non-recurring items (4)	403	111	-	**(400)**	**114**
Structural free cash flow (1) – (2) – (3) – (4)	517	599	749	**717**	**2,582**

MICHELIN
A better way forward

Raw Material Price Volatility
Free Cash Flow

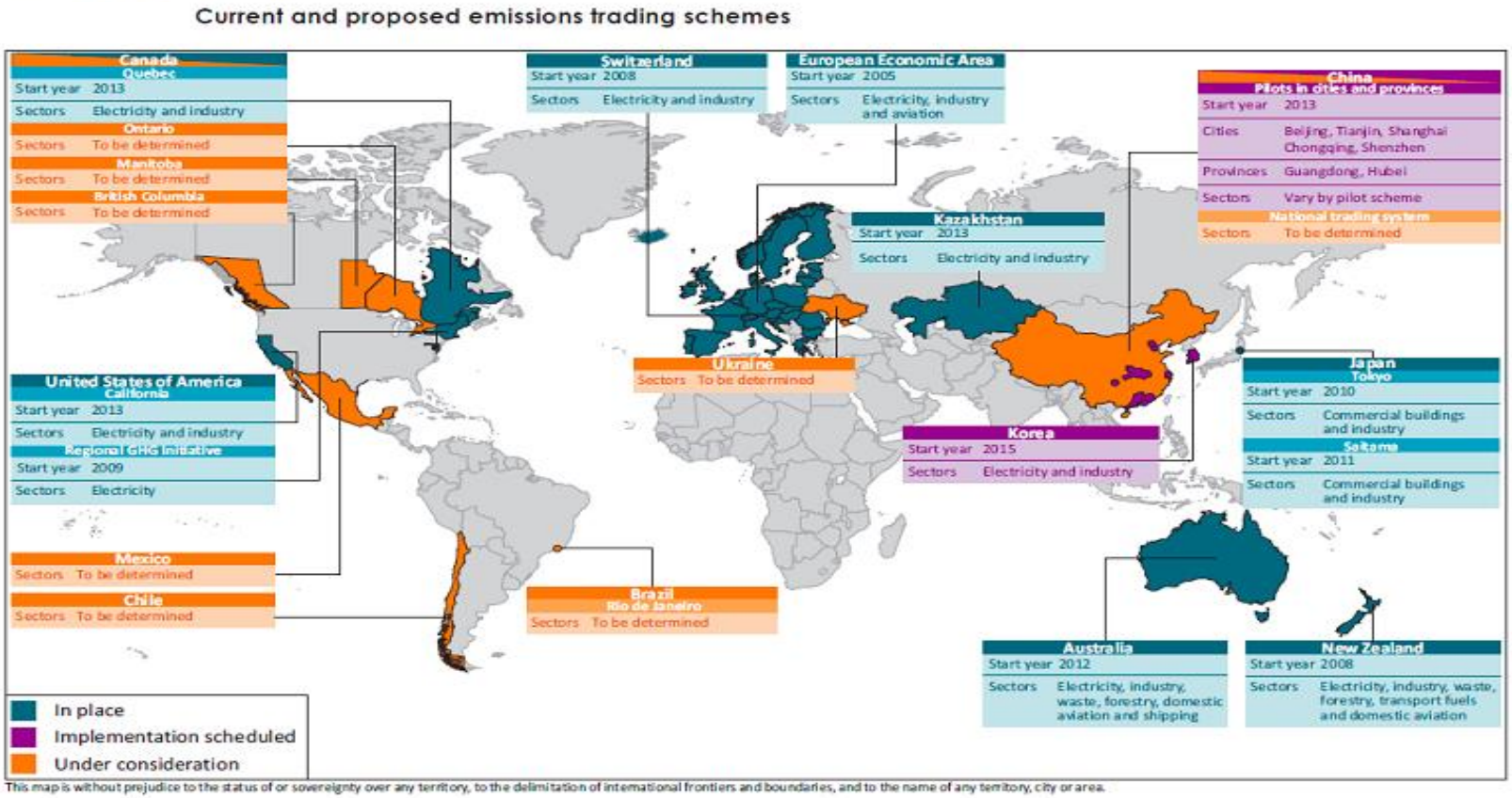
-3800%	1.9%	35%	35%

Year to Year material price variability can be of similar order to yearly profit

* Michelin 2014

CARBON CONVERSION TECHNOLOGY LTD

Facing a future of commodity volatility and widespread CO_2 emissions pricing



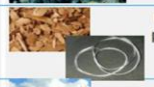
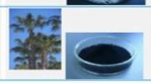
CARBON CONVERSION TECHNOLOGY LTD
RECOVERING TYRES SUSTAINABLY

The industry is innovating with technology to increase supply chain sustainability

MICHELIN

BRIDGESTONE

4R

Today	Sustainable Materials			
Natural Rubber from Para Rubber Tree	Expand the range of renewable resources	Conventional Natural Rubber + Guayule		Guayule grown in arid regions will diversify the source of natural rubber.
Rayon (Reinforcing Fiber)		Rayon + New Cellulosic Fiber		General grade pulp can produce the new fibers, resulting in more suppliability.
Synthetic Rubber from Petroleum	Replace fossil resources with renewable materials	Synthetic Rubber from Biomass		Butadiene from bioethanol
Rubber Materials from Petroleum		Rubber Materials from Biomass		Curing agent and anti-aging chemical from biomass
Filler from Petroleum and Coal		Filler from Biomass		Reinforcing carbon black from vegetable fats and oils

pyrolyx

sustainable. efficie

cct

a pyrolyx company

Black Bear

CARBON BLACK

Reclaim™

CARBON CONVERSION TECHNOLOGY LTD

But the existing waste tyre recovery model is inefficient & costly with poor economies of scale

Collection and Manual loading

Unloading (handling) and processing (to shred or bales)

Shred is produced

Shred sold as a commodity

Coupled to Virgin Commodity Market Price

Price Takers

CARBON CONVERSION TECHNOLOGY LTD

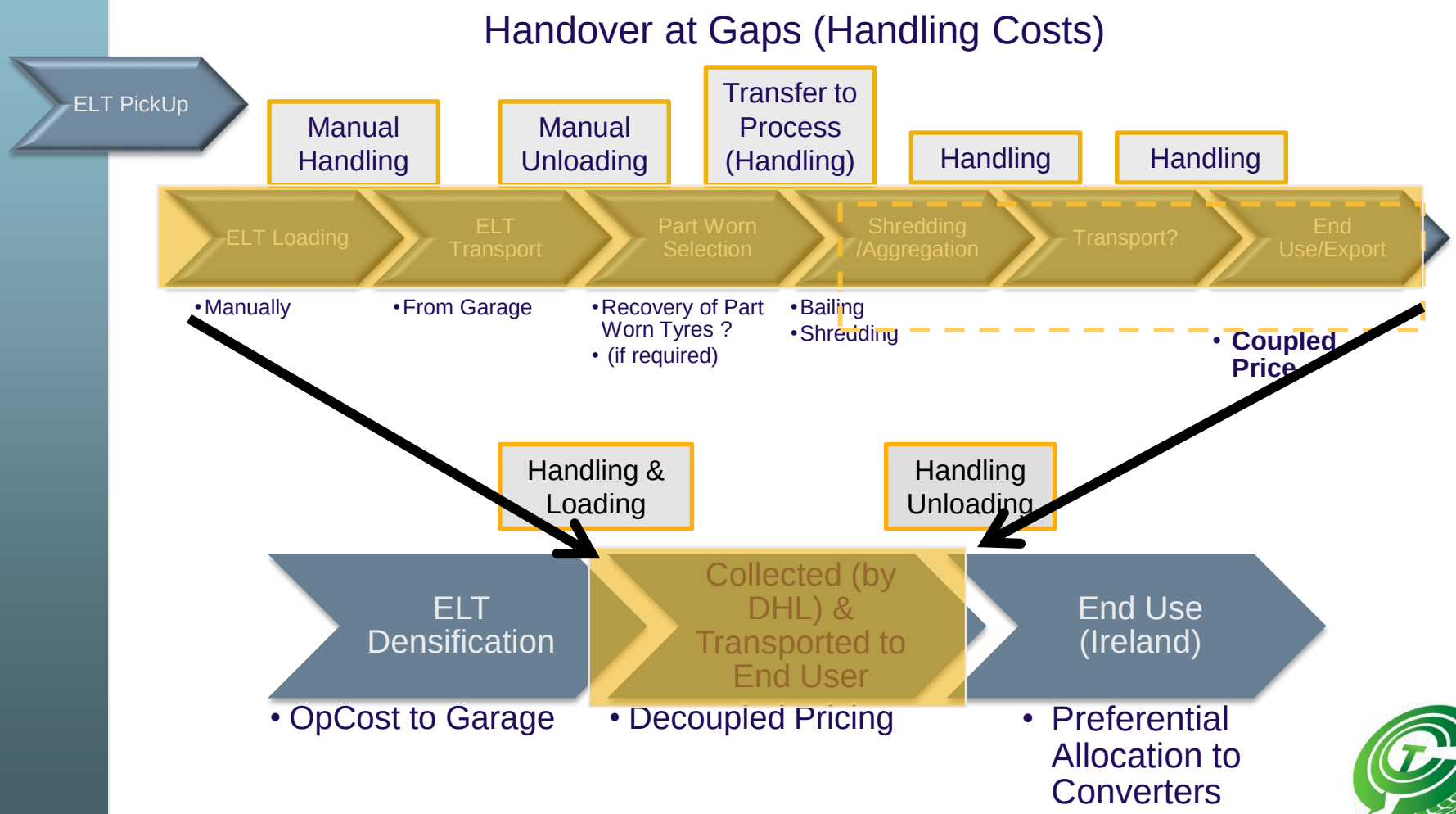
These impacts have been felt industry wide

- 140m tires annually in the US
- Exchanged unsecured notes for $175 million of 11% second lien notes and equity in the company, reducing outstanding debt securities by $50m

- 5 plants, about 35 million tires a year
- In Sept. 2014, PKA wrote down the value of its investment to DKK250m having originally invested around DKK1bn

- 3 plant closures in UK in 2014 – several facilities for sale
- End User Price fluctuations / Market Access / Insurability
- Questions over sustainable profitability?

Re-engineering the collection process to reduce costs and capital intensity

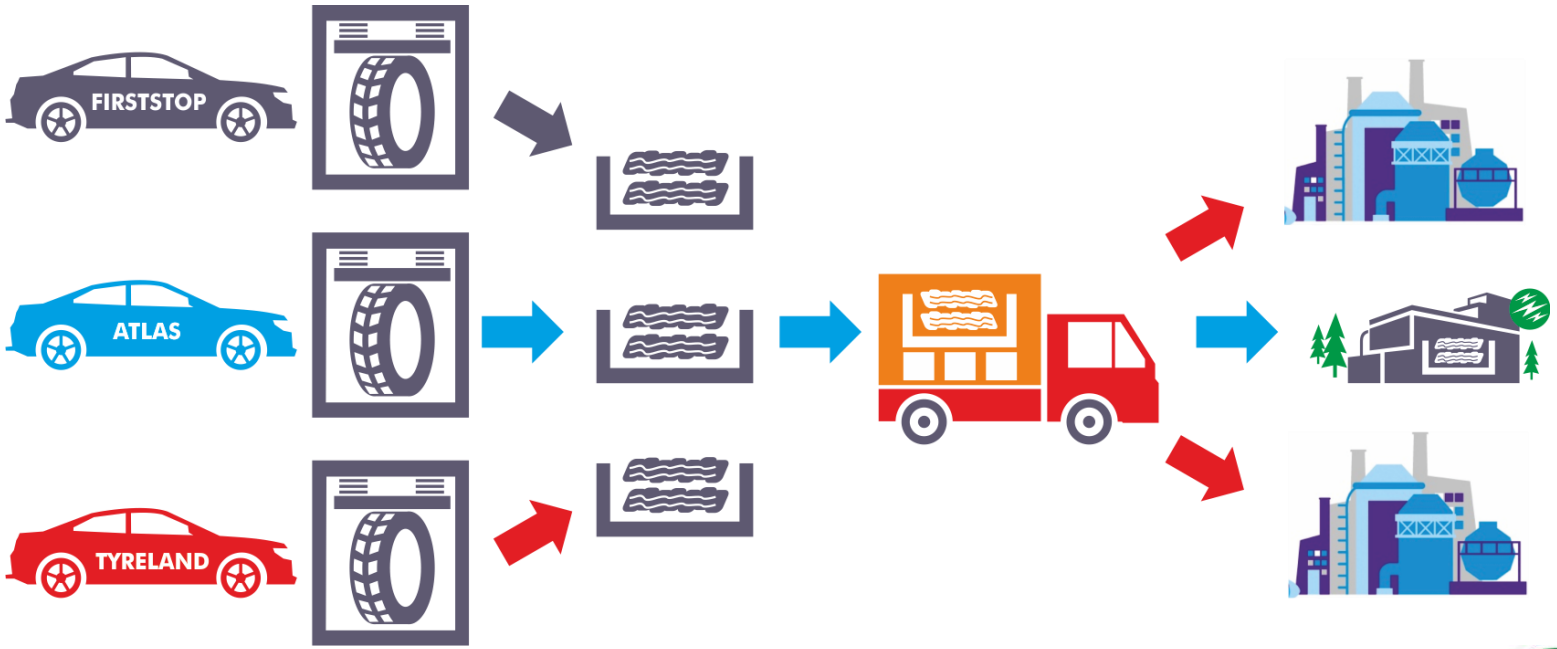


The CCT Waste Tyre Collection Model

In-Situ Densification

DHL SUPPLY CHAIN

Prioritized End Use



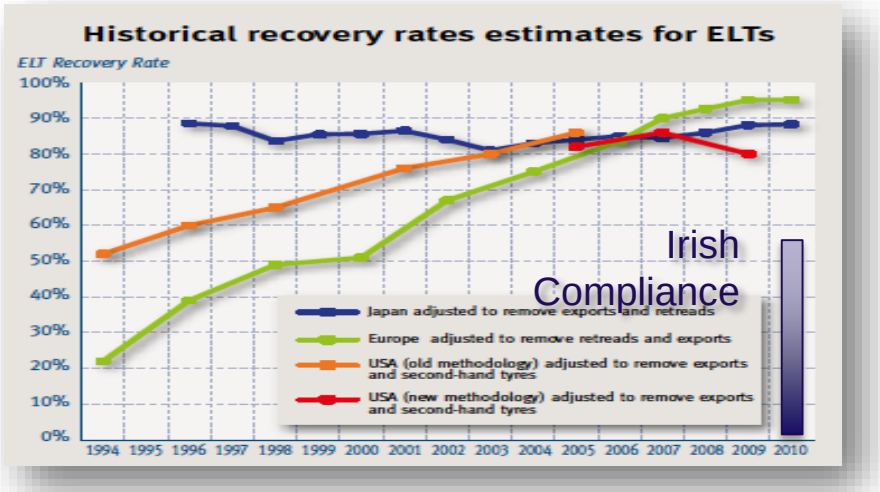
Zero handling & Nett Zero capital

Facilitating the Efficient Transfer of Waste Tyres from Garages directly to End users

CARBON CONVERSION TECHNOLOGY LTD
RECOVERING TYRES SUSTAINABLY

Irish Implementation
Waste Tyre collection in Ireland is broken

600,000 tyres dumped in a field outside Kiltimagh, Co Mayo. (May 2014)
Some estimates suggest up to 15-20m tyres are illegally stockpiled in Ireland (5.4m)



CARBON CONVERSION TECHNOLOGY LTD

3 Stage Process
In-situ densification in garage

- Several patented tyre densification unit installed in several garages in Dublin on trial in early 2015
  - Units used continuously
  - Waste Tyres stored in mobile trolleys
  - Collected by existing collector cohort

CARBON CONVERSION TECHNOLOGY LTD

Tyre Thermolysis Conversion Plant

- Ground Breaking Q3, 2015 / Initial Production Q2, 2016
- Outputs
  - Medical Grade Carbon Black and Hydrocarbon/Electricity
- Nett Energy Positive
  - 12,000 tonnes waste tyre input
  - 4,500 tonnes rCB and 1.5MW$_{(e)}$ / or 4,000 tonnes fuel produced
  - 25 Jobs
- Driver of Local Sustainable Growth

CARBON CONVERSION TECHNOLOGY LTD

CCT “Orchestration”

CARBON CONVERSION TECHNOLOGY LTD