

Date: 03.07.2023, responses to questionnaire – Michelin Tyres.

Question 1

Please identify what you consider to be the three most important driving forces behind ELTs applications (e.g. recycled material's market, environmental legislation, technology or innovation, global economic activity, price of substitute products such as oil and coal, etc. Please use these or your own examples).

Response

Understanding that question 1 relates to main driving forces as of today:

- a. Environmental legislation
- b. Economics (prices)
- c. Available technologies (which are limited)

Question 2

What do you think might be the three largest driving forces for changes in the management of ELTs? (Please use examples in question 1 or your own examples).

Response

Understanding that question 2 relates to main driving forces needed for change/improvement towards 100% ELT recovery:

- a. Environmental legislation
- b. Innovation/Technology
- c. Societal acceptance (change in consumers' habits)

Question 3

How might these driving forces you identified in question 2 change the system for ELTs? (e.g. systems like collection, treatment and sales, etc.).

Response

- a. Environmental legislation: by restricting certain existing recovery routes (for instance: ban of energy recovery)
- b. Innovation/Technology: by providing qualitative recycled raw materials made out of ELT
- c. Societal acceptance (change of consumers' habits): by consuming more brands/products which ensure highest rate of renewable materials

Date: 27.06.2023, responses to questionnaire – Engineer O. Umana (Rtd.).

Ford Motors – Climate Control Division, USA

Question 1

Please identify what you consider to be the three most important driving forces behind ELTs applications (e.g. recycled material's market, environmental legislation, technology or innovation, global economic activity, price of substitute products such as oil and coal, etc. Please use these or your own examples).

Response

1. End item cost reduction tasks.
2. Corporate Environmental Sustainability initiatives.
3. Available Technology and Innovation.

Question 2

What do you think might be the three largest driving forces for changes in the management of ELTs? (Please use examples in question 1 or your own examples).

Response

1. Environmental Protection Legislations (EPLs).
2. Health impact of Volatile Organic Compounds (VOCs) emitted by end items from recycled ELTs.
3. Technology and Innovation.

Question 3

How might these driving forces you identified in question 2 change the system for ELTs? (e.g. systems like collection, treatment and sales, etc.).

Response

- a. EPLs force corporate investments in extending tyres “time to End of Life”, as well as processes for collecting and recycling ELTs.
- b. Adverse health impacts might restrict application sectors (e.g. children’s playground applications).
- c. Technology and Innovations has a way of extending applications opportunities; and further simplifying the handling of ELTs.

Date: 19.06.2023, responses to questionnaire – Director/Chief Consultant International (DCCI), ECL.

Question 1

Please identify what you consider to be the three most important driving forces behind ELTs applications (e.g. recycled material’s market, environmental legislation, technology or innovation, global economic activity, price of substitute products such as oil and coal, etc. Please use these or your own examples).

Response

Focusing on Nigeria – a country in the global south, presently few people fully understand the rationale, their role in and benefits of recycling. Until a critical mass of people appreciate the role of recycling in driving environmental sustainability and they can see the benefits for themselves and decide to willingly participate, reducing the increasing numbers of this waste stream i.e. ELTs will remain a challenge. Respectively, I am inclined to think that the three most important driving forces behind ELTs applications are:

1. The nexus between science, policy and governance.

Previously science and policy were considered distinct disciplines set apart by communication gaps and diverging interests. Lately policy formulation supported by scientific knowledge is crucial. A carefully worked out waste management programme requires interactions between various stakeholders. Given that evidence-based research can contribute to meaningful policy formulation, communication at the science-policy interface needs to be strengthened in Nigeria.

2. Environmental legislation.

This aspect is largely a function of governance. The Constitution of the Federal Republic of Nigeria (CFRN) recognises the importance of environmental protection and natural resource conservation. According to section 20 of the CFRN, the State shall protect and improve the environment and safeguard the water, air and land, forest and wild life of Nigeria. These shall be achieved through promulgation and the adoption of necessary laws, policies, regulations and international conventions on environmental protection and natural resource conservation for sustainable development. Moreover, the Constitution grants local government authorities the power to manage among other things, refuse disposal.

The NESREA Act of 2007 is a federal law guiding environmental affairs in Nigeria. It provides for solid waste management and imposes penal sanctions for actions that contravene proper waste disposal procedures. NESREA can review and enforce compliance with laws, guidelines, policies, standards and international agreements on waste management including ELTs, their collection and disposal methods, atmospheric protection, air quality, ozone depletion, water quality, environmental sanitation and pollution control. In 2014 the Federal Government through NESREA adopted and released guidelines for implementation of EPR policy in the country. Being a relatively new concept in Nigeria, limited scientific literature exists on the framework and implementation of the policy in Nigeria (I. A. Ajani, I. O. Kunlere, *Nigerian Journal of Environment and Health* 2 (2019) 44–56).

3. Recycled materials market.

"The devil is in the details" i.e. a catch or mysterious element hidden in the details; indicating that something may seem simple, but in fact the details are complicated and likely to pose challenges. Ideally, three materials are recovered from ELTs, but the price of recovered materials per ton varies widely depending on the end-users requirements or specifications. One major factor affecting price is quality.

Moreover, facilitators or suppliers will need to keep abreast with the global commodities markets, wherein prices may fluctuate daily. Crucially, competition in today's business environment requires building great business relationships and the sharing of accurate real time information to help facilitators work more efficiently. Moreover, the cost benefit advantages of exporting or importing raw unprocessed products must be carefully worked through. Where specialist equipment and facilities are required, suppliers must have surety of payment. This is a sensitive issue because suppliers are risk averse entering new markets, particularly when they have no previous representation in a country.

4. Global economic activity.

Competition for increasingly scarce resources is shaping global development. Reasons for the competition include low to medium and high-level conflicts, population pressure, climate change, inefficient and untenable production models etc.. The good news is circular economic models offer opportunities for a shift from our current and excessively wasteful production models.

The Circularity Gap Report (CGR) is an annual report that measures the status quo on circularity. In 2021, the CGR showed that the global economy was 8.6% circular. To close the circularity gap, sectors with significant potential for change were identified and an ambitious goal of 17% was set for 2030. In December 2015 the European Commission published an action plan titled 'Closing the loop – An EU action plan for the Circular Economy'. Subsequently, new questions about the scope and objectives of a circular economy emerged. Backed by concrete measures to encourage waste prevention and recycling, the circular economy legislation package came into effect in July 2018.

Rather than source for virgin raw materials, secondary raw materials can be used in manufacturing processes. Benefits include increased security of supply, lower manufacturing costs and reduced environmental impacts. In its Environmental Report of 2000, Mercedes-Benz Group AG allocated €1.5 billion to environmental protection in 1999. Of the sum, €870 million went to research and development (R&D) for environmental-benign products and production processes. When production of the Mercedes-Benz E Class commenced in South Africa, the vehicle manufacturer relied on experience and expertise gained via its "Belém Project" in Brazil's Amazon Delta.

Respectively, the E Class' rear parcel shelf was constructed from a mix of sisal fibre and recycled cotton fabrics, which helped to reduce the vehicle's weight and fuel consumption. Unequivocally, a circular economy promotes waste prevention from the onset. It is resilient, good for business, people and our environment.

Question 2

What do you think might be the three largest driving forces for changes in the management of ELTs? (Please use examples in question 1 or your own examples).

Response

One striking feature of the global drive toward sustainable development is the extent to which the agenda has evolved since the 1992 "Earth Summit" in Rio de Janeiro, Brazil.

Driven by mounting pressure to adopt best practice and maintain global competitiveness, today the private sector, civil society organisations (CSOs) and governments are working more closely than ever to merge environmental with economic performance, create more value for business and crucially communities, with less negative externalities.

Extended Producer Responsibility (EPR) is a strategy aimed at reducing the environmental impact of a product. EPR encourages original equipment manufacturers (OEMs) to be responsible for the life-cycle of their products, including take-back, recycling and final disposal. In the European Union (EU), EPR policy:

1. Shifts physical or economic, full or partial responsibility toward the producer and away from municipalities.
2. Provides incentives to help producers factor in environmental considerations when designing their products.

In the EU, EPR has gained traction and is deemed mature. Non-EU countries like Norway, Serbia, Switzerland and Turkey enforce similar legislation developed in line with progress made by EU directives. Moreover, EPR legislation based on concepts and frameworks established in the EU can be found in North and South America (USA, Canada, Chile, Colombia, Peru and Brazil), with comparable laws and collective schemes implemented in Japan, South Korea, Singapore, Israel and India. In Africa, Kenya and South Africa are in the process of implementing EPR systems in some sectors and gradually extending them to others. Countries like Angola, Nigeria and Ghana are looking at ways to implement EPR. In North Africa, relevant legislation is on the way in Jordan and Tunisia.

Question 3

How might these driving forces you identified in question 2 change the system for ELTs? (e.g. systems like collection, treatment and sales, etc.).

Response

A good starting point is how could a tyre manufacturer domiciled in a foreign country bear responsibility for the entire lifecycle of a tyre from concept to design, the choice of production materials and technology, shipment to vendors or consumers and recovery when a tyre is no longer fit for its original purpose?

Tyre manufacturers sell their products across national borders. Where such a manufacturer has no presence in a country or market of interest, it is not uncommon to negotiate an agreement with a local actor. By design or default some of these agreements indemnify a manufacturer, a local agent or partner from legal liabilities. Considering tenets enshrined in the EPR, despite existing laws in Nigeria local waste management authorities/agencies find it very difficult to impose appropriate sanctions against some OEMs, their agents or representatives for breaching environmental laws. This challenge centres on jurisdiction or governing law. Hence, in our increasingly interdependent world EPR needs to be ratified at the global level and reflect global value with strong enforcement across national borders.

Date: 16.06.2023, responses to questionnaire – Dr. Tee Mac Iseli (MFR, Director at ECL).

Question 1

Please identify what you consider to be the three most important driving forces behind ELTs applications (e.g. recycled material's market, environmental legislation, technology or innovation, global economic activity, price of substitute products such as oil and coal, etc. Please use these or your own examples).

Response

To enter the recycled material market with good products and ready available off-takers. Making sure there is adequate working capital available to keep the supply going! Creating a good reputation!

Question 2

What do you think might be the three largest driving forces for changes in the management of ELTs? (Please use examples in question 1 or your own examples).

Response

I don't know about three forces; main force being creating enough income to be able to hire a top quality workforce which will work honestly being well paid!

Question 3

How might these driving forces you identified in question 2 change the system for ELTs? (e.g. systems like collection, treatment and sales, etc.).

Response

Any company which has enough start up capital and a good business plan will succeed. Any company which starts with insufficient capital has a higher risk factor to close down when the first problems start emerging. Remember Murphys Law! Whatever can go wrong will go wrong. Especially in Nigeria.