

Exploring Extended Producer Responsibility for Sustainable Tyre Recycling in Togo and West Africa

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End-of-life tyre (ELT) management remains a significant environmental and socio-economic challenge in West Africa, with Togo exemplifying the region's reliance on imported tyres. Over 90% of tyres within the region are imported as either used tyres or as components of second-hand vehicles. This reliance on imported products creates a critical gap in the management of tyres at their end-of-life stage. A quarter of all tyres in Togo are simply dumped and the majority (65 %) of ELTs are burned. Burning tyres majorly includes the singeing of animal carcasses for food preparation and burning for metal recovery. The pressing environmental and public health challenges associated with the unsustainable use of end-of-life tyres (ELTs) as fuel in West Africa necessitate immediate and innovative solutions. Central to addressing these challenges is the implementation of structured tyre recycling systems that not only mitigate environmental pollution but also improve public health outcomes.

A unique feature of ELTs as waste materials is that each tyre is equipped with a DOT (Department of Transportation) number, also referred to as Identification number or TIN (tyre identification number), in which the manufacturer and the date of manufacturing can be easily identified (see figure 1). A DOT number on a tyre is a standardized alphanumeric code that provides key information about the tyre's manufacturer, plant of origin, and production date.



Figure 1: Example of a DOT number. F1 indicates the Manufacturer as Michelin Tyre PLC in Dundee, Scotland, the last digits explain the manufacturing date. Here 32 refers to week 32 and 05 refers to the year 2005. This means that this tyre was produced between August 08th- 14th in Dundee, Scotland by Michelin Tyre PLC.

Through investigation of the DOT numbers of 3.368 ELTs in Togo, the main producers of ELTs in Togo have been identified. Figure 2 shows the top 10 producers of tyres whose ELTs have been identified in Togo. These tyres result of up to 75% of all analysed ELTs.

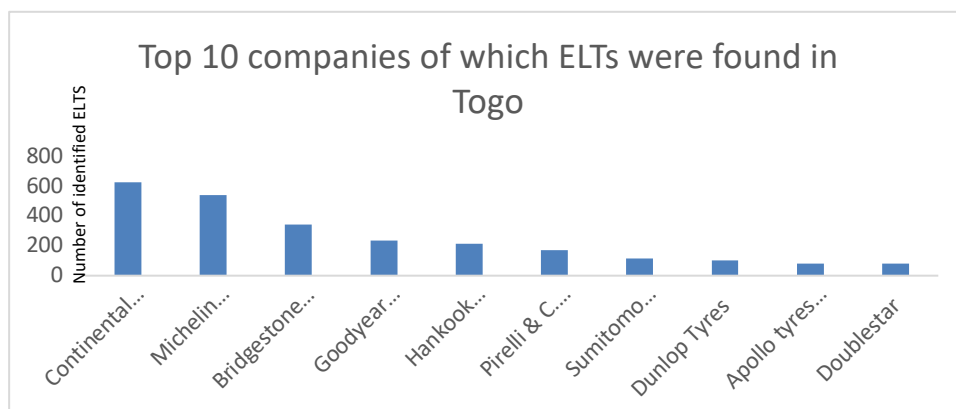


Figure 2: Top 10 companies of which ELTs were found in Togo and their respective numbers of identified ELTs

The three companies Continental AG, Michelin Group and Bridgestone Corporation (including their subsidiaries) have the biggest share of all ELTs identified in Togo.

A cross comparison of end-of-life regulations to which these three main producers adhere in their country of origin (Germany, France and Japan) has been carried out to understand which rules these companies have to follow when it comes to their products. These regulations typically do not transfer to the generated ELTs in Togo and Western Africa. The transboundary movement of tyres means that they are not captured in the regulations of the countries of origin, such as extended producer responsibilities (EPR), and turn into waste materials in their final destinations.

In Togo, which serves as a case study for the whole of West-Africa, a total number of generated ELTs are estimated to be at a total of 30,525.11 t/a. This is a substantial number of tyres for a country with a population of 8.243.094 people. Considering the population of the whole ECOWAS region (approx. 261 million people) and an increasing vehicle fleet, the waste potential of this singular specific waste material of ELTs is enormous and hardly untapped.

Extended Producer Responsibility (EPR) presents a sustainable pathway for addressing the ELT crisis in Togo and other West African countries. EPR shifts the responsibility for the post-consumer phase of a product's lifecycle to the producers, ensuring that mechanisms are in place for effective collection, recycling, or disposal. However, implementing EPR in a transnational context, particularly in regions where tyre production is minimal, necessitates international collaboration and innovative strategies. Three potential frameworks for international EPR are explored:

Export-based Recycling Systems: Under this model, exporting countries/production companies assume responsibility for ELT management by establishing systems to recycle tyres for material or proper disposal. While this approach reduces the burden on importing countries and ensures compliance with stricter environmental standards, it faces logistical challenges and high risks associated with running/funding recycling plants, transportation and reverse logistics of potentially re-usable materials.

Global Tyre Recycling Funds: This model involves establishing a global fund, financed by levies on tyre manufacturers and importers, to support ELT management in recipient countries. Funds could be allocated to build recycling facilities, train local personnel, and develop infrastructure for tyre collection and processing. Although this approach promotes equity and local capacity building, it requires robust governance mechanisms to prevent fund mismanagement and ensure accountability.

Producer Partnerships and Technology Transfer: This strategy encourages collaboration between international producers and local stakeholders to establish recycling initiatives and transfer relevant technologies. Producers could partner with local governments or private enterprises to build recycling plants or introduce innovative recycling methods. This model fosters local employment and capacity building but may require significant initial investment and ongoing technical support.

In addition to EPR, tyre manufacturers can contribute through voluntary sustainability schemes. These initiatives allow companies to demonstrate corporate social responsibility and align with global sustainability goals. Voluntary programs could include commitments to use more recyclable materials in tyre production, funding community recycling projects, or offering financial incentives for innovative recycling solutions. Such schemes not only benefit the environment but also enhance the reputation of participating companies. Consumers are increasingly favouring brands that prioritize sustainability, and by investing in West Africa's recycling infrastructure, tyre manufacturers can position themselves as leaders in environmental stewardship.

This study underscores the urgency of addressing ELT management in West Africa through the implementation of international EPR mechanisms. By fostering a shared responsibility for tyre lifecycle management, Togo and similar nations can mitigate environmental impacts, reduce public health risks, and transition towards a circular economy that prioritizes sustainability and resource efficiency.