

FMCG Packaging and Plastic/Glass Waste in Nigeria – A Comprehensive Report

1. Environmental Landscape in Nigeria and West Africa

(<u>File:Waste Plastic Bottles.jpg - Wikimedia Commons</u>) Figure: Workers collecting used plastic bottles for recycling in Ogun State, Nigeria. Poorly managed plastic waste often ends up in streets and drainage channels, contributing to flooding and pollution.

 *Plastic and Glass Waste Issues: Nigeria faces significant challenges with packaging waste, especially plastics. The country generates over 2.5 million tonnes of plastic waste annually, and more than 70% of it ends up in landfills or leaking into the environment (Nigeria to ban single-use plastics next year | Reuters). In urban centers like Lagos (population ~20 million), discarded single-use packaging is ubiquitous - an estimated 50-60 million used water sachets are thrown out on the streets of Lagos every day** (Nigeria to ban single-use plastics next year | Reuters). These thin polyethylene sachets (popular for drinking water) alongside PET plastic bottles clog storm drains and waterways, exacerbating flash floods and sanitation problems. Glass bottle waste is less voluminous but still present, primarily from beverages; broken glass in open dumps can pose safety hazards. In many West African countries, similar waste issues are emerging with urbanization - for example, Ghana and Senegal report plastic litter in drains and coastal areas, prompting policy responses.

• *Government Policies and Bans:** Nigeria's government has begun to respond to the plastic pollution crisis with new policies and regulations. A National Policy on Plastic Waste Management was adopted in 2020, which envisioned phasing out certain plastics by 2025 (Nigeria to ban single-use plastics next year | Reuters). In June 2024, authorities announced an impending nationwide ban on single-use plastics (such as plastic bags, straws, cutlery, disposable bottles, and sachet water packets) to take effect from January 2025 (Nigeria to ban single-use plastics next year | Reuters) (Nigeria to ban single-use plastics next year | Reuters). As a prelude, government offices have already been directed to stop using single-use plastics (Nigeria to ban single-use plastics next year | Reuters). Lagos State, which had earlier banned Styrofoam food containers and is piloting a plastic bag ban, also declared a comprehensive ban on single-use plastics and foam containers starting 2024 (Nigeria to ban single-use plastics next year | Reuters). The intent of these bans is to force a shift toward reusable or biodegradable packaging and reduce the flow of waste into streets and the Gulf of Guinea. Enforcement remains a challenge, but policymakers argue a phased ban is "long overdue" for Nigeria (Nigeria to ban single-use plastics next year | Reuters). Elsewhere in West Africa, countries like **Senegal, Côte d'Ivoire, and Mali** have instituted bans or restrictions on plastic bags in recent years, although enforcement success varies. Nigeria is also developing extended producer responsibility (EPR) regulations to make manufacturers accountable for post-consumer packaging waste (Plastic waste: ERA/FoEN wants soft drink bottling companies to take responsibility - Tribune Online) (Plastic waste: ERA/FoEN wants soft drink bottling companies to take <u>responsibility - Tribune Online</u>). The National Environmental Standards and Regulations Enforcement Agency (NESREA) advocates for full implementation of EPR whereby companies must facilitate take-back or recycling of the packaging they put into the market (<u>Plastic waste:</u> ERA/FoEN wants soft drink bottling companies to take responsibility -Tribune Online) (Plastic waste: ERA/FoEN wants soft drink bottling companies to take responsibility - Tribune Online).

 *Active Environmental NGOs and Initiatives: A number of environmental organizations and social enterprises in Nigeria are tackling plastic and bottle waste. One notable example is Wecyclers, a Lagos-based social enterprise that uses a fleet of bicycle-powered collectors to pick up recyclable waste (plastic bottles, sachets, cans) from households in low-income communities (Unilever aims for 100% recyclable plastic packaging by 2035 | Sustainable Packaging Middle East & Africa - The No.1 Paper, Packaging & Recycling Industry Magazine & Website). In partnership with companies like Unilever, Wecyclers has collected over 13,000 tonnes of plastic in Lagos since 2014, while also creating green jobs for over 1,000 people (Unilever aims for 100% recyclable plastic packaging by 2035 | Sustainable Packaging Middle East & Africa - The No.1 Paper, Packaging & Recycling Industry Magazine & Website). Another **initiative is** RecyclePoints**, which operates collection centers where citizens can exchange PET bottles and other recyclables for cash or household items in a reward program (often called "Cash for Trash"). Government agencies have also launched programs: the Lagos State Waste Management Authority (LAWMA) runs campaigns for waste separation and recently the Lagos Environmental Protection Agency (LASEPA) rolled out a "Trash for Cash" program with private partners. For instance, in 2023 LASEPA and Pepsi's local bottler launched the Trash for Cash initiative to encourage residents to bring in recyclables in exchange for cash rewards, with the goal of reducing litter and boosting recycling rates (Pepsi and LASEPA Collaborate on 'Trash for Cash' Initiative | See Event Highlights! | BellaNaija) (Pepsi and LASEPA Collaborate on 'Trash for Cash' Initiative | See Event Highlights! | BellaNaija). Such programs raise public awareness and incentivize waste recovery.

Prominent NGOs include **Sustainable Research and Action for Environmental Development (SRADev Nigeria)** – which provides technical support on waste policy and has applauded the single-use plastic ban as a positive step (<u>Nigeria to ban single-use plastics next year</u> |

Reuters) – and Environmental Rights Action/Friends of the Earth
Nigeria (ERA/FoEN), which has been actively campaigning for corporate
accountability in plastic waste. In October 2023, ERA/FoEN organized a
"Return-to-Sender" brand audit in Benin City, collecting thousands of
discarded plastic bottles and returning them to the producers (Coca-Cola's
and 7-Up/Pepsi's facilities) to demand they take responsibility (Plastic
waste: ERA/FoEN wants soft drink bottling companies to take responsibility
- Tribune Online) (Plastic waste: ERA/FoEN wants soft drink bottling
companies to take responsibility - Tribune Online). Their audit found that
Coca-Cola (Nigerian Bottling Company) and Seven-Up Bottling Company
were the top contributors to plastic pollution locally - accounting for about
33% and 23% of the plastic waste found by brand, respectively (Plastic
waste: ERA/FoEN wants soft drink bottling companies to take responsibility
- Tribune Online). This kind of advocacy pressures manufacturers to invest
more in recycling and container take-back programs.

• *Bottle Deposit and Reuse Practices: Formal bottle deposit schemes (where consumers pay a deposit and refund for returning containers) are not yet national policy in Nigeria, but an informal deposit system has long existed for glass beverage bottles. Major beverage companies use refillable glass bottles for beer and soft drinks, which consumers return in exchange for a small cash deposit or as a swap for new purchases. This has led to high return rates for glass bottles in the formal sector; for example, Coca-Cola's local bottler reported that a large share of their products were sold in returnable glass bottles (RGBs), which are collected and reused multiple times (Coca-Cola System's Role in Pioneering Waste Management in Nigeria | **Business Insider Africa). This reuse practice significantly** extends the life of glass packaging (an average beer bottle might circulate for 5-10+ refill cycles before being retired) and has traditionally kept a lot of glass out of landfills. However, in recent years there has been a consumer shift toward more convenient disposable PET plastic bottles and aluminum cans, reducing the prevalence of refillable glass (Coca-Cola System's

- Role in Pioneering Waste Management in Nigeria | Business Insider Africa). As a result, companies are now exploring formalized deposit or buy-back systems for plastic as well.
 Some pilot projects have installed reverse vending machines** in malls where consumers can insert PET bottles and get rewards, but these are early-stage.
- *Corporate Sustainability Efforts: Many large FMCG companies in Nigeria are beginning to implement sustainability initiatives to manage packaging waste. In 2018, the leading food and beverage firms formed the Food and Beverage Recycling Alliance (FBRA) - a coalition including Coca-Cola Nigeria (and its bottler NBC), Nestlé Nigeria, Nigerian Breweries (Heineken), Seven-Up (Pepsi bottler), and others - to pool resources in tackling post-consumer packaging waste (Coca-Cola System's Role in **Pioneering Waste Management in Nigeria | Business Insider** Africa). Under the FBRA, member companies conduct community cleanup drives (e.g. beach clean-ups in Lagos), support recycling infrastructure (like donating boats to Lagos Waterways Authority to collect floating waste (Coca-Cola System's Role in Pioneering Waste Management in Nigeria | Business Insider Africa)), and liaise with government on recycling policy. The Coca-Cola system (NBC and Coca-Cola Nigeria Ltd) has been especially active, aligning with the global "World Without Waste"** vision. Back in 2005, Coca-Cola partnered with a local recycler, Alkem, to launch one of Nigeria's first PET buy-back and recycling programs, which over 8 years collected nearly 26,000 metric tonnes of PET bottles and processed them into polyester fiber (Coca-Cola System's Role in Pioneering Waste Management in Nigeria | Business Insider Africa) (Coca-Cola System's Role in Pioneering Waste Management in Nigeria | Business Insider Africa). Although that specific partnership ended, Coca-Cola and others have since scaled up their commitments - Coca-Cola pledges to "collect and recycle the equivalent of every bottle or can it sells by 2030" in Nigeria (We're committed to invest on planet, recycling — Coca-Cola) (Coca-Cola System's Role in

 Pioneering Waste Management in Nigeria | Business Insider Africa), and has introduced fully recyclable clear PET for Sprite to improve recyclability (<u>Coca-Cola System's Role in Pioneering Waste Management in Nigeria | Business Insider Africa</u>).

Unilever Nigeria has also made notable strides, achieving "plastic neutrality" in 2024 (collecting more plastic waste than it sells in products) (Unilever aims for 100% recyclable plastic packaging by 2035 | Sustainable Packaging Middle East & Africa - The No.1 Paper, Packaging & Recycling Industry Magazine & Website). Unilever supports collection initiatives such as the **Recycling Exchange Program** (drop-off kiosks for recyclables) and has set up at least 26 franchise collection centers through impact investment programs (Unilever aims for 100% recyclable plastic packaging by 2035 | Sustainable Packaging Middle East & Africa -The No.1 Paper, Packaging & Recycling Industry Magazine & Website). This reflects a broader trend: companies are investing in recycling startups, public awareness, and package redesign. Despite these efforts, the recycling rate in Nigeria remains low - a large portion of recyclable material still ends up discarded. The presence of active waste-picker networks and an emergent recycling industry (for example, several PET recycling plants that turn bottles into flakes for export or into new products) is growing, but challenges like inadequate waste collection infrastructure and low public compliance persist. Overall, the environmental landscape is at a turning point: government bans and policies are tightening, civil society is active, and both local and multinational companies are stepping up sustainability programs to curb the mounting plastic and packaging waste crisis.

2. FMCG Packaging Market in Nigeria

Nigeria is one of Africa's largest Fast-Moving Consumer Goods (FMCG) markets, with a broad array of local and international companies selling packaged beverages, foods, personal care products, and pharmaceuticals. This section outlines the major players and how they utilize plastic and glass packaging, and profiles certain key companies (especially those

affiliated with the Pulpex paper-bottle initiative) in detail. Packaging in Nigeria's FMCG sector is dominated by **plastics** (such as PET bottles, HDPE containers, flexible sachets and pouches) and **glass bottles**, with some use of metal cans and composite cartons. The choice of packaging often aligns with price-sensitive consumer preferences – for example, many products are sold in small single-use sachets or mini bottles to achieve low unit prices, unfortunately contributing to plastic litter. Below we identify the largest companies and brands by category, and their packaging footprints:

• *Beverages (Non-Alcoholic): The beverage industry is a huge user of packaging, especially PET plastic bottles for soft drinks and water, and glass bottles for carbonated drinks. The Coca-Cola system is a dominant player - Coca-Cola Nigeria and its bottling partner Nigerian Bottling Company (NBC) produce popular drinks like Coca-Cola, Fanta, Sprite, and Schweppes. NBC operates multiple bottling plants nationwide and packages these drinks in both PET bottles (ranging from 50cl up to 1.5L for retail, which are single-use) and returnable glass bottles (typically 35cl and 50cl sizes that are collected in crates for reuse) (Coca-Cola System's Role in Pioneering Waste Management in Nigeria Business Insider Africa). Coca-Cola's operations in Nigeria also include the recently acquired CHI Limited, which produces Chivita juices and Hollandia dairy beverages (mostly sold in Tetra Pak cartons and sachets). Rival soda bottler Seven-Up Bottling Company (SBC) manufactures PepsiCo's beverage brands under license - including Pepsi-Cola, 7Up, Mirinda, Mountain Dew, and the Aquafina water brand. Seven-Up has several plants (e.g. in Lagos (Ikeja), Abuja, etc.) and likewise uses PET and glass bottles. Industry audits indicate Coca-Cola and Pepsi brands together constitute over half of plastic beverage litter by count (Plastic waste: ERA/FoEN wants soft drink bottling companies to take responsibility - Tribune Online), reflecting their market share. Both companies have begun initiatives to use more recycled PET and encourage bottle collection (as noted,

- Pepsi's bottler partnered with LASEPA on recycling incentives (Pepsi and LASEPA Collaborate on 'Trash for Cash' Initiative | See Event Highlights! | BellaNaija)). Aside from these two giants, Nigeria has indigenous soft drink firms like La Casera Company (makers of La Casera apple soda, which comes in PET bottles) and Rite Foods Ltd., which produces Bigi soft drinks and Fearless energy drinks primarily in PET and cans. Bottled water** is another big segment: brands like Coca-Cola's Eva Water, Nestlé's Pure Life (formerly in Nigeria), and numerous local brands use PET bottles of various sizes, contributing to plastic waste if not recycled.
- *Alcoholic Beverages: Nigeria has a robust beer and alcoholic drinks industry, which heavily relies on glass packaging. The market leader Nigerian Breweries Plc, part of Heineken, operates multiple breweries and produces beer and malt drinks such as Star Lager, Gulder, Heineken, and Maltina. These are mostly packaged in brown or green glass beer bottles (typically 60cl and 33cl), which are sold on a deposit-return basis - consumers return empty bottles in crates, and the brewery cleans and refills them many times. Nigerian Breweries alone handles tens of millions of glass bottles in circulation, making it one of the largest users of glass packaging in West Africa. Competitor Guinness Nigeria Plc (part of Diageo) produces stout (Guinness Foreign Extra), Harp Lager, and spirits like Orijin bitters; Guinness also uses primarily glass bottles for beers and ready-to-drink beverages, and metal cans for some products. A third major brewer is International Breweries Plc, which is an AB InBev subsidiary brewing brands like Trophy Lager and Hero Lager - again largely in refillable glass bottles. Thanks to these systems, glass bottle recovery rates in the alcohol sector are high and relatively little beer packaging ends up as waste compared to plastics. However, the spirits market has a different dynamic: there's a thriving industry of low-cost gins, liqueurs, and bitters often sold in small plastic sachets or 100ml PET bottles for as little as #100. Companies like Intercontinental

- Distillers Ltd **and** Nigerian Distilleries** mass-produce these sachet alcohol products (commonly known as "ogogoro" or dry gin sachets), which have become a notable source of plastic litter in both urban and rural areas. Efforts are underway to regulate or phase out alcohol sachets due to both public health and waste concerns.
- *Food and Dairy Products: The food processing sector includes multinationals and local companies that generate significant packaging waste through plastics, composites, and some glass. Nestlé Nigeria Plc is a leading food company - it produces culinary products (Maggi stock cubes, sold in foil packets and boxes), breakfast cereals, baby foods, and powdered beverages (like Milo). Nestlé uses relatively little consumer plastic packaging aside from sachets (e.g. for Milo single servings) and the wrapping of Maggi cubes, but one major plastic contribution is bottled water; Nestlé's Pure Life water brand was sold in Nigeria (typically in PET bottles) until the company divested that business in recent years. Cadbury Nigeria Plc (part of Mondelez) makes Bournvita chocolate drink powder (packaged in plastic jars or refill bags) and candy/chocolates (wrapped in plastics). FrieslandCampina WAMCO is a key player in dairy - they produce Peak Milk and Three Crowns Milk, which are sold in both tin cans (evaporated milk in steel tins) and sachets (powdered milk in single-use laminate sachets). Friesland also has introduced refillable jar packaging for powdered milk and does limited UHT milk in Tetra Pak. Another prominent dairy/beverage firm is CHI Ltd (Coca-Cola Nigeria), whose Hollandia brand sells yoghurt and juice in laminated cartons and sachets - so while they avoid plastic bottles, the multilayer carton packs are themselves a recycling challenge. Promasidor Nigeria (known for Cowbell Milk**) relies almost entirely on sachet packaging - small portion sachets of milk powder, chocolate drink (Cowbell Choco), and seasoning powders, which target low-income consumers but contribute to the pervasive sachet waste issue.

- *Detergents and Home/Personal Care: This category sees heavy use of flexible plastic packaging and some rigid plastics. Unilever Nigeria Plc** is a major manufacturer with brands like OMO and Sunlight (laundry detergents, sold in both plastic pouches and cartons), Close-Up and Pepsodent (toothpaste in plastic tubes), Lux and LifeBuoy (soaps in plastic wrappers), and Vaseline lotion (in plastic bottles). Unilever's packaging footprint spans millions of units of sachets - e.g. single-use shampoo and detergent sachets are popular – and bottles for home cleaning agents. The company has pledged to collect half of the plastic it puts out by 2025 and to integrate recycled plastics in packaging (Unilever aims for 100% recyclable plastic packaging by <u>2035</u>). **PZ Cussons Nigeria** (a British-Nigerian consumer goods firm) produces Morning Fresh dish soap (in PET bottles), Imperial Leather soaps (paper wraps), and detergent brands like Canoe and Zip (often in sachets or poly bags). Procter & Gamble Nigeria has a manufacturing presence too (producing Always sanitary pads, Pampers, and some Ariel detergent), largely using plastic packaging for these products. A notable local player is **Aspira Nigeria** (based in Kano), which manufactures detergents and personal care items for the northern market, also using plastic pouches and bottles. The vast range of small, low-cost personal care sachets (shampoo, toothpaste, creams) sold in Nigeria means flexible plastic packaging is by far the main format in this segment.
- *Pharmaceuticals: Pharmaceutical packaging in Nigeria ranges from glass and plastic bottles for liquids to blister packs for pills. Leading indigenous pharma companies include Emzor Pharmaceutical Industries, Fidson Healthcare, May & Baker Nigeria, Neimeth and others. They package medicines in plastic HDPE bottles (for tablets, capsules), PET/Glass bottles for syrups and pediatric medicines, and glass vials for injectables. Most of these are smaller volume in terms of packaging waste compared to foods and beverages, but still significant for medical waste streams. Notably, Nigeria has seen growth in sachet packaging for herbal remedies and OTC powders**, which adds to plastic litter. On the flip side, some pharma products use glass vials which are often not

recycled and can end up in waste dumps (though their volume is low).
 The pharmaceuticals sector is subject to regulation for packaging quality, but not much in terms of post-consumer waste management yet.

Profiles of Pulpex-Affiliated Companies in Nigeria

Pulpex is an international consortium and technology platform developing sustainable **paper-based bottles** made from molded pulp. Several major global FMCG companies are partners or investors in Pulpex – including Unilever, PepsiCo, Coca-Cola, Diageo, Kraft Heinz, Estée Lauder, and Castrol (BP) – with the aim of rolling out recyclable fiber bottles as an alternative to plastic or glass. Below are profiles of the Pulpex-affiliated companies and their operations in Nigeria, detailing their packaging footprint, local distribution or license partners, and sustainability initiatives:

• Unilever Nigeria: Unilever has been operating in Nigeria for over 95 years, manufacturing home care, personal care, and foods products. It has two main production facilities (in Lagos and Ogun States) producing well-known brands like OMO detergent, Sunlight soap, Close-Up toothpaste, Dove personal care, Knorr seasoning, and Pepsodent toothpaste. Packaging Footprint: Unilever uses a mix of plastics, paper, and metal for its product packaging. Many of its products are in flexible plastic sachets or pouches (especially low-unit detergents and shampoos for affordability), as well as rigid plastic bottles (for lotions, dish soap, etc.). The company has been grappling with the environmental impact of these single-use plastics. In response, Unilever Nigeria has set ambitious goals - for example, it aims to collect and recycle 50% of the plastic packaging it puts into the market by 2025 (Unilever aims for 100% recyclable plastic packaging by 2035), and globally Unilever plans to make all packaging recyclable or reusable by 2030. Local Operations and Distribution: Unilever Nigeria Plc is a publicly listed subsidiary of Unilever Plc, and it handles local manufacturing and distribution directly (it doesn't need a licensee since

- it owns its operations). Its products reach consumers through widespread distributors, open markets, and retail chains. Sustainability Initiatives: Unilever Nigeria is a leader in corporate sustainability - it partnered with Wecyclers as early as 2014 to enable community recycling, and by 2024 this partnership had helped Unilever offset its plastic footprint, achieving "plastic neutrality" (collecting more plastic waste than it produces) (<u>Unilever aims for 100% recyclable</u> plastic packaging by 2035 | Sustainable Packaging Middle East & Africa - The No.1 Paper, Packaging & Recycling Industry Magazine & Website) (Unilever aims for 100% recyclable plastic packaging by 2035 | Sustainable Packaging Middle East & Africa - The No.1 Paper, Packaging & Recycling Industry Magazine & Website). The company has supported recycling kiosks and introduced a "Shakti" program empowering women entrepreneurs to collect waste and resell products in reusable containers (reducing sachet use). Although Unilever is part of the Pulpex consortium globally, fiber-based bottles are not yet in use in its Nigeria product portfolio (most of Unilever's Nigerian product mix are not beverages – they are detergents and personal care where Pulpex bottles might not apply directly). However, any future introduction of Pulpex technology (say, for a fabric softener bottle or dish soap bottle made of molded fiber) in Nigeria would benefit from Unilever's existing local supply chain and its advocacy for better packaging standards.
- Kraft Heinz (Heinz Nigeria): The Kraft Heinz Company's presence in Nigeria is relatively modest compared to some other FMCG giants, but the company's brands are known in the market. Products and Packaging: Heinz's flagship products in Nigeria have traditionally included Heinz Tomato Ketchup, canned baked beans, and infant cereals often imported. However, Heinz also pursued local manufacturing in the tomato value chain: through a local partner, it launched packaged tomato paste and sauces tailored for Nigerian cuisine. Notably, H. J. Heinz Company Nigeria Ltd works with Vital Products Plc as a contract manufacturer to produce Heinz Tomato Paste, Heinz Mixed Peppers Paste, and Heinz Jollof Mix for the Nigerian market (Contract Manufacturing Vital Products PLC). These

- products are packaged in sachets and small sachet-in-box formats to meet local cooking needs. Vital Products operates factories in Lagos and Ibadan and co-packs these Heinz-branded products, meaning the packaging (typically flexible laminates or small tins) is sourced and printed locally under Heinz specifications (Contract Manufacturing - Vital <u>Products PLC</u>). This indicates Heinz has a *footprint in packaging* through these locally packed products (sachets of tomato paste are common in Nigerian markets). For ketchup and other sauces, Heinz products are often sold in plastic squeeze bottles or glass jars, but those are mostly imported finished goods via distributors. Local Distribution: There is no wholly owned Kraft Heinz Nigeria subsidiary handling all products; instead, distribution is done by local partners/importers. For example, historically Heinz ketchup was distributed by a local company with an exclusive license (it is noted that the father of a prominent Nigerian businessman once held the import license for Heinz products in Nigeria (David Hundeyin on X: "Peter Obi's dad had the exclusive licence to ...)). Today, supermarket importers and e-commerce platforms sell Heinz canned foods and sauces that come from Europe or North America. **Packaging Sustainability:** Kraft Heinz globally is exploring Pulpex technology (especially for bottles like ketchup bottles or condiment packaging). In Nigeria, if fiber bottles become available, they could replace some plastic sauce bottles. Currently, however, the key sustainability effort by Heinz in Nigeria has been engaging in local sourcing (using local tomatoes to make paste, reducing the need for imported canned paste) which can cut down packaging waste from imports. The volumes remain relatively small: Heinz's presence is dwarfed by local competitors in condiments, but it's notable for introducing packaged solutions for traditional recipes (e.g. Jollof mix) in convenient sachets.
- PepsiCo (Seven-Up Bottling Company): PepsiCo itself does not directly manufacture drinks in Nigeria; instead, it operates through its licensed bottler, Seven-Up Bottling Company (SBC). SBC is one of Nigeria's largest beverage companies, established in 1960 and responsible for PepsiCo's carbonated soft drinks and water. Packaging

• Footprint: Seven-Up Bottling produces Pepsi, Mirinda, 7Up, Mountain Dew (all carbonated soft drinks), as well as Aquafina water and local brands like Teem soda. These are packaged in **PET plastic** bottles of various sizes (commonly 50cl and 150cl PET for Pepsi, and 75cl/150cl for Aquafina water) and also in **glass bottles** (Pepsi and 7Up are available in returnable 35cl glass). Additionally, SBC produces soft drinks in aluminum cans for some premium SKUs. The majority of PepsiCo beverage volume in Nigeria is now in PET bottles, which contributes to plastic waste - Pepsi bottles and caps were found to be among the top plastic debris in urban litter studies (Plastic waste: ERA/FoEN wants soft drink bottling companies to take responsibility -<u>Tribune Online</u>). **Local Operations:** Seven-Up has 9 bottling plants and a nationwide distribution network. It is a privately held Nigerian company (recently majority owned by Jagal Group after a buyout) but exclusively licensed by PepsiCo. Besides beverages, PepsiCo's other product lines like snacks (Lay's chips, Cheetos) and breakfast cereals (Quaker Oats) are present via imports or third-party local production. In 2020, PepsiCo acquired Pioneer Foods (South Africa), which has a Nigerian subsidiary making cereals like Weet-Bix, potentially increasing PepsiCo's local food packaging footprint in future. **Sustainability** Efforts: Seven-Up Bottling Company has begun engaging in environmental initiatives. It is a member of the FBRA industry recycling coalition, and in 2023 it collaborated with the Lagos State EPA on the "Trash for Cash" program to encourage community recycling (Pepsi and LASEPA Collaborate on 'Trash for Cash' Initiative | See Event Highlights! | BellaNaija). The company's Managing Director has publicly committed to "ensure Nigerians live in a cleaner environment" by supporting waste collection drives (Pepsi and LASEPA Collaborate on 'Trash for Cash' Initiative | See Event Highlights! | BellaNaija). Practical steps include placing recycling bins, running school education programs on recycling, and lightweighting their PET bottles. As a Pulpex partner globally, PepsiCo is interested in developing paper bottles (they've tested a paper outer bottle for Tropicana juice in other markets). In Nigeria, such innovation could one day replace some plastic bottles - for example, a paper bottle for Aquafina water - but this is likely a few years away. In

- the meantime, PepsiCo's focus is on improving PET recycling. SBC has introduced some "Green" campaigns internally to reduce plastic usage (e.g. promoting the use of glass bottles and cups within company events and encouraging consumers to return PET for recycling). The snack division of PepsiCo (if it grows in Nigeria) would involve flexible plastic packaging (potato chip bags), another area where the company may seek recyclable or biodegradable material.
- Coca-Cola (Nigerian Bottling Company): Coca-Cola has a long-established and extensive operation in Nigeria. Local Structure: The Coca-Cola Company operates in Nigeria through Coca-Cola Nigeria Ltd (which oversees marketing) and the **Nigerian Bottling Company** (NBC) which is the bottling and distribution partner (Coca-Cola System's Role in Pioneering Waste Management in Nigeria | Business Insider Africa). NBC is a subsidiary of Coca-Cola Hellenic Bottling Company and runs 8+ bottling plants (Lagos, Abuja, Port Harcourt, Kano, etc.). Packaging Footprint: As of the mid-2010s, Coca-Cola's product mix in Nigeria was split between returnable glass bottles (RGB) and non-returnable PET. Traditionally, glass Coca-Cola, Fanta, and Sprite bottles (reusable) were very common, and even today a significant percentage of sales are via these glass bottle "crates" especially in small retailers (Coca-Cola System's Role in Pioneering Waste Management in Nigeria | Business Insider Africa). However, PET plastic bottles (ranging from 35cl to 1.5L) have grown to dominate Coke's volume due to consumer demand for resealable, on-the-go drinks (Coca-Cola System's Role in Pioneering Waste Management in Nigeria | Business Insider Africa). Coca-Cola also sells drinks in aluminum cans (though cans are a smaller share). Beyond soft drinks, NBC bottles Bonaqua water (recently rebranded Coca-Cola Water) in PET and is now distributing the Chi Ltd portfolio (Chivita juice in Tetra Pak cartons, Hollandia yogurt in sachets, etc.). Therefore, Coca-Cola's Nigeria packaging spans glass, PET, cans, cartons, and sachets, making it one of the largest contributors to packaging waste by sheer volume. On the positive side, the **reuse and recycling systems** the company employs mitigate some impact: the glass bottles are

 recollected at rates over 90%, and Coca-Cola reports that all its primary packaging types in Nigeria are 100% recyclable (Coca-Cola System's Role in Pioneering Waste Management in Nigeria | Business Insider Africa) (meaning the materials can be reprocessed if collected). **Local Distribution:** NBC leverages a vast distribution system of depots, distributors, and retail outlets reaching deep into both urban and rural areas - ensuring Coca-Cola products (and their packaging) are found in every corner of Nigeria. They also export some products to neighboring West African markets from Nigerian plants. Sustainability and Innovation: Coca-Cola Nigeria is heavily invested in sustainability programs. It co-founded the FBRA coalition (Coca-Cola System's Role in Pioneering Waste Management in Nigeria | Business Insider Africa) and has piloted various recycling initiatives such as the PET collection centers with Alkem (which turned collected bottles into synthetic fiber) (Coca-Cola System's Role in Pioneering Waste Management in Nigeria | Business Insider Africa). In recent years, NBC has set up "Recycling" Bank" drop-off points in cities like Lagos and Abuja in partnership with recyclers (e.g. Chanja Datti in Abuja) to encourage consumers to bring back bottles (Nigerian Bottling Company introduces recycling banks in Abuja and ...). Coca-Cola's "World Without Waste" strategy goal in Nigeria is to recover the equivalent of 100% of packaging by 2030 (Coca-Cola System's Role in Pioneering Waste Management in Nigeria | Business Insider Africa). Some concrete steps include: switching Sprite from green to clear PET to improve recyclability (Coca-Cola System's Role in Pioneering Waste Management in Nigeria | Business Insider Africa), lightweighting bottles and caps to use less plastic, and running awareness campaigns. Coca-Cola is also exploring alternative packaging materials globally - it has trialed a paper bottle prototype via Pulpex in Europe. If Pulpex technology matures, Nigeria might see something like a paper-based bottle for Coca-Cola's Dasani or Chi juices, which would significantly reduce plastic use. In summary, Coca-Cola's Nigeria operations epitomize the scale of FMCG packaging usage and also the efforts to create a circular economy for bottles: they produce billions of bottles annually, but also collect tens of thousands of tonnes for recycling (Coca-Cola System's Role in Pioneering Waste

- <u>Management in Nigeria | Business Insider Africa</u>). Their local bottler's CEO has acknowledged the responsibility to lead on waste management given Coca-Cola's market position (<u>Coca-Cola System's Role in Pioneering Waste Management in Nigeria | Business Insider Africa</u>).
- Estée Lauder Companies: Estée Lauder is a global leader in cosmetics and luxury skincare, known for brands like MAC, Clinique, Estée Lauder, Bobbi Brown, and its fragrances. In Nigeria, Estée Lauder has a smaller presence focused on high-end urban consumers, but it has been expanding steadily. Local Operations: Estée Lauder does not manufacture in Nigeria; instead, it operates through distributors and retail partnerships. In 2013, the company launched its first MAC Cosmetics store in Lagos and followed up with additional MAC outlets (Estee Lauder eyes buoyant cosmetics demand in Africa | Reuters). Clinique and Estée Lauder products entered the market around the same time through select retailers and dedicated counters in malls (Estee Lauder eyes buoyant cosmetics demand in Africa | Reuters). They also partnered with e-commerce platform Jumia in 2018 to sell officially online (The Estée Lauder Companies Partners with Jumia Online Retailer to ...). **Packaging Footprint:** The cosmetics sector uses a variety of packaging - typically high-quality glass bottles for perfumes and foundations, plastic tubes and bottles for lotions and creams, and **compacts** or **glass jars** for makeup and skincare. All of Estée Lauder's products sold in Nigeria are imported already packaged, so while the company doesn't directly generate packaging waste through local manufacturing, its products (empty perfume bottles, cosmetic jars, etc.) do become part of consumer waste. Given the premium segment, volumes are limited compared to food/beverage FMCGs. However, there is virtually no recycling system for cosmetic packaging in Nigeria; empty glass perfume bottles or plastic cosmetic jars often end up in general waste. **Distribution:** Estée Lauder's brands are available through its own branded stores (e.g. MAC), franchise cosmetic shops (like Essenza or Montaigne Place which carry designer fragrances and Estée Lauder perfumes), and online. For instance, Clinique and Estée Lauder skincare can be found at upscale shopping

- centers in Lagos and Abuja, often through authorized distributors. **Sustainability:** Estée Lauder globally has initiatives for sustainable packaging (such as using more recycled material and refillable containers), but these are not yet specifically rolled out in Nigeria. One relevant effort is that MAC's parent company (ELC) has a "Back-to-MAC" program in some countries where customers can return empty MAC containers for recycling and get product rewards; this program is not formally in place in Nigeria currently. As a Pulpex consortium member, Estée Lauder is interested in innovative packaging – perhaps in the future we might see paper-based bottles for cosmetics or fragrances. For now, their Nigeria strategy is centered on growth. The company sees Nigeria as a high-potential market with a growing middle class interested in luxury cosmetics (Estee Lauder eyes buoyant cosmetics demand in Africa | Reuters), so it has been opening new points of sale. Any future local packaging initiatives (like collection schemes for empties) would likely be done via their retail partners. In sum, Estée Lauder's direct packaging footprint in Nigeria is small but composed of high-value packaging (glass and plastic of premium quality). The challenge remains that there's little incentive or system for reusing those cosmetic containers once a product is finished.
- Castrol (BP) Lubricants: Castrol is a global brand of lubricating oils and automotive fluids, part of the BP group. In Nigeria, Castrol products are present through a long-standing alliance with Eterna Plc, an indigenous oil marketing company. Local Production and Distribution: Eterna Plc is the exclusive distributor and official licensee of Castrol in Nigeria, and since 2017 it also locally blends and packages Castrol lubricants at its facility in Sagamu, Ogun State (Eterna Oil Plc Secures Right To Produce And Distribute Castrol Lubricants). This was a significant localization step previously Castrol oils were mostly imported, but now Eterna manufactures several Castrol grades domestically under BP's quality control. The Castrol products blended in Nigeria include popular engine oils like Castrol GTX, Castrol Magnatec, and Castrol Edge, among others (Eterna Oil Plc Secures Right To Produce And Distribute Castrol Lubricants). Packaging Footprint:

• Lubricants are typically packaged in **HDPE plastic containers** (for retail engine oil, common sizes are 1 liter, 4 liters) and metal drums/pails for bulk or industrial customers. In Nigeria, Castrol GTX and other retail oils come in plastic bottles and jerry-can style containers. These are durable, thick plastics due to the nature of the product. Once used, however, many of these containers end up discarded improperly (oil containers can be seen littering mechanic workshops or repurposed to hold other liquids). Glass is not used for lubricant packaging; it's all plastic or metal. Castrol, via Eterna, thus contributes to plastic packaging waste in the automotive sector, although some informal reuse happens (empty oil bottles are often reused by roadside oil sellers to measure and resell recycled oil). Local **Operations:** Eterna Plc markets Castrol through petrol stations, auto part shops, and distributors across Nigeria. The partnership dates back to the 1990s and was strengthened with the local blending license (Eterna Oil launches Castrol GTX Essential made in Nigeria for the ...). By producing in Nigeria, Eterna has reduced the cost and presumably also optimized packaging for local conditions (e.g. making smaller sachets or pouches for engine oil is not common due to the product, so plastic bottles remain standard). **Sustainability:** The lubricant sector is not often highlighted in packaging sustainability discussions, but Eterna and Castrol have an interest in safe disposal of used oil and packaging. Eterna is part of initiatives to collect used engine oil for recycling (to prevent environmental contamination). As for packaging, there haven't been public initiatives like take-back of empty oil bottles yet. Castrol globally has explored bulk refill stations and metal can packaging in some markets to cut plastic. In Nigeria, the immediate step taken was local production (which can ensure that packaging is right-sized for the market and potentially reduce over-packaging). If Pulpex technology were to be applied, one could imagine a paper-based bottle for motor oil, but given oil's chemical nature and storage needs, this is likely a long-term prospect. For now, Castrol's Nigerian strategy under Eterna is focused on growth and market penetration with its branded packaging. The **packaging footprint** includes thousands of plastic oil bottles yearly, and addressing their end-of-life will require industry-wide

• collaboration (perhaps through Nigeria's waste oil management regulations in the petroleum industry).

3. Retail and Distribution Networks in Nigeria

The distribution of FMCG products in Nigeria is split between a vast informal market (open markets, street vendors, small kiosks) and a growing formal retail sector. While the majority of Nigerians still purchase daily goods from traditional markets, **modern supermarkets and retail chains** have expanded in major cities, providing controlled environments for FMCG sales (and potential hubs for recycling initiatives, like store drop-off points). Here we identify the major supermarket chains and formal retail networks in Nigeria:

- Shoprite Nigeria: Formerly a subsidiary of South Africa's Shoprite Holdings, it has been one of the largest supermarket chains in Nigeria. As of 2021, Shoprite operated about 26 stores across the country (Nigeria's Supermarket Giants: Top 10 Retail Chains Dominating the Industry | by From Lagos To The World Powered By TTT Media | Apr., 2025 | Medium), including large outlets in Lagos (Ikeja, Lekki, Surulere), Abuja, and several state capitals. In 2021, Shoprite's South African owner sold its Nigerian operations to a local investor (Ketron Investment), but the stores continue to operate under the Shoprite brand. Shoprite stores are typically located in malls and offer a wide range of FMCG products (groceries, household items, produce). They serve as an organized distribution channel for many packaged goods and often import some specialty products. Shoprite's presence introduced many Nigerians to formal retail and they remain a key player, though competition is rising.
- **Spar Nigeria:** Spar is an international franchised retail brand (originating from the Netherlands) that has been adopted in Nigeria by the Artee Group (which originally ran Park 'n' Shop). Spar operates hypermarket-style stores in major cities. There are about **12-14 Spar stores** in Nigeria (Top 10 Supermarket Chains in Nigeria by Store Count

- <u>Dominating</u> ...) (<u>List of supermarket chains in Nigeria Wikipedia</u>), including locations in Lagos, Abuja, Port Harcourt, and Enugu. Spar stores are usually large-format and cater to middle and high-income shoppers, carrying extensive FMCG product ranges (including imported goods). Spar Nigeria was among the pioneers of modern retail, and continues to expand gradually.
- Market Square: Market Square is a fast-growing Nigerian supermarket chain, part of the Sundry Markets group. It has approximately 36 stores in Nigeria (Nigeria's Supermarket Giants: Top 10 Retail Chains Dominating the Industry | by From Lagos To The World Powered By TTT Media | Apr. 2025 | Medium). Market Square started in Port Harcourt and has spread to Lagos, Abuja, and other cities. These stores are mid-size supermarkets offering groceries, baked goods, and household products at relatively competitive prices. Market Square's growth reflects the rise of indigenous retail brands meeting the demand that Shoprite's partial exit left. They often anchor new shopping plazas in secondary cities, expanding formal retail's reach.
- Justrite: Justrite is an indigenous supermarket and department store chain with around 30+ outlets (Nigeria's Supermarket Giants: Top 10 Retail Chains Dominating the Industry | by From Lagos To The World Powered By TTT Media | Apr. 2025 | Medium), concentrated in South-West Nigeria (Lagos, Ogun, Oyo states). Justrite stores typically combine a supermarket (for FMCG goods) with sections for clothing and electronics targeting suburban towns and city outskirts. They are popular in places like Lagos's outskirts and smaller cities where larger chains hadn't reached. Justrite's pricing and product mix cater to a broad audience, making formal retail more accessible.
- Addide: Addide is a local Lagos-based supermarket chain known for its convenience-store-sized outlets. With about 40-45 stores in Lagos neighborhoods (Nigeria's Supermarket Giants: Top 10 Retail Chains Dominating the Industry | by From Lagos To The World Powered By TTT Media | Apr. 2025 | Medium), Addide focuses on quick shopping for groceries and essentials. The stores are smaller than Shoprite or Spar, but their sheer number across the city gives them significance. They

- typically stock popular FMCG brands and refrigerated drinks, often serving as last-mile retailers for products in residential areas. Similar to Addide are other mini-mart chains like **Ebeano Supermarkets** (which operates a handful of large stores in Lagos/Abuja known for imported items) and **Prince Ebeano** (around 8 stores), catering to upper-middle-class shoppers.
- **FoodCo:** FoodCo is a homegrown chain that started in Ibadan and has expanded in the Southwest. It has around **20+ stores** (Ibadan, Lagos, Abeokuta) (Nigeria's Top 10 Supermarket Chains by Store Count These retail ...). FoodCo distinguishes itself by also having in-house bakeries and quick service eateries in its outlets. As a formal retailer, it's one of the oldest continuously operating (over 3 decades). FoodCo stores provide another avenue for FMCG distribution formally, and they often champion local products.

Other notable formal retail players include **Grand Square** (a supermarket in Abuja and Lagos known for imported goods), **Shoprite's competitor Game (Massmart)** – which had a few stores selling general merchandise and some groceries, and regional chains like **Roban Stores** (East Nigeria, ~9 stores), **Jendol Superstores** (Lagos, ~14 stores), **Jara Superstore** (a newer chain focusing on discount retail, backed by an investment firm, operating a few stores in Lagos/Kano), and **Bokku Mart** – a very recent entrant positioning itself as a hard-discount grocery chain. Bokku Mart claims to have opened dozens of small-format stores (reportedly up to 124 as of 2025) (Nigeria's Supermarket Giants: Top 10 Retail Chains Dominating the Industry | by From Lagos To The World Powered By TTT Media | Apr. 2025 | Medium), aiming to be Nigeria's equivalent of Aldi with rock-bottom prices. If this model succeeds, it could quickly become a major formal outlet for packaged goods, especially for price-sensitive consumers.

• *Role of Formal Retail:** These supermarket chains, while still a fraction of total retail, are significant because they provide a controlled supply chain for FMCG companies. Products on their shelves are more likely to be genuine and properly stored (as opposed to some informal markets), and these stores can serve as partners for initiatives like

- recycling collection points (for example, some Shoprite stores hosted recycling kiosks in Lagos, and Spar has participated in environmental days). Additionally, formal retailers often influence packaging – requiring barcodes, smaller pack sizes, or promotional packs to suit their customers. The rise of supermarkets is slowly introducing bulk packaging as well (buying larger family packs instead of many small sachets), which could reduce waste per unit of product if the trend continues.
- *Distribution Networks:** Beyond the supermarkets, Nigeria's distribution network for FMCGs relies on distributors and wholesalers who link manufacturers to tens of thousands of open-market traders and neighborhood kiosks. Companies like Coca-Cola and Nestlé have their own distribution fleets and depots across the country. Some large distributors (e.g. Zeno, CASAP, etc.) handle multiple non-competing FMCG brands, ensuring products reach even remote areas. Pharmaceuticals have separate distribution (with licensed pharmacies and open drug markets for over-the-counter items). For glass bottle beverages, manufacturers use a **crate distribution system** - trucks deliver full crates to retailers and collect empties, which is a very efficient reverse logistics model that formal retail also leverages (supermarkets like Shoprite return beverage crates to suppliers). Increasingly, e-commerce and delivery services (like Jumia, Konga, and various grocery apps) are also part of the FMCG distribution landscape for urban, tech-savvy consumers, but they still represent a small portion of sales.

In summary, Nigeria's formal retail sector is characterized by a mix of international players (Shoprite, Spar), well-established local chains (Justrite, FoodCo), and rapidly expanding newcomers (Market Square, Addide, etc.). These outlets collectively provide channels for FMCG companies to sell products in more organized settings. While still not as dominant as open markets, their growth is a positive sign for supply chain modernization – and they could play a future role in initiatives like deposit-return schemes or dedicated recycling collection, which are easier to manage in a formal retail environment.

4. Pulpex Material Supply Chain: Pulp and Fibre Providers for Sustainable Packaging

Pulpex's vision of paper-based bottles relies on sourcing quality wood fiber pulp. For Nigeria and West Africa to adopt such technology at scale, a robust **pulp and fibre supply chain** is needed, particularly sustainable sources of **eucalyptus and pine fibers** (common raw materials for paper packaging due to their favorable pulp qualities). This section identifies key pulp and fiber providers operating in or supplying Africa, especially those relevant to packaging materials, and their processing capabilities and export reach.

 *South African Pulp Producers (Sappi and Mondi): The largest pulp and paper producers on the African continent are in South Africa, leveraging extensive pine and eucalyptus plantations. Sappi Limited, a global pulp/paper company, operates massive mills like Sappi Saiccor in KwaZulu-Natal, which produces about 890,000 tonnes per year of dissolving wood pulp from eucalyptus - mostly for export (Saiccor Mill | Sappi Global) (Saiccor Mill | Sappi Global). While dissolving pulp is used for textiles, Sappi also produces kraft (packaging) pulp at its Ngodwana Mill (which uses pine and eucalyptus) and paper products. Sappi's South African pulp is exported worldwide; the company confirms it exports the majority of its production, serving customers in Europe, Asia, and the Americas (Saiccor Mill | Sappi Global). This means Sappi's fiber could theoretically supply a Pulpex bottle plant in Africa or be imported to Nigeria (though distance is a factor). Mondi Group is another major player - it operates the Richards Bay Mill** in South Africa which produces ~720,000 tonnes annually of bleached hardwood kraft pulp (BHKP) from 100% eucalyptus fiber (Mondi Richards Bay | South Africa) (Pulp Industry Statistics in Africa - SME Blue Pages). Mondi's pulp is integrated into its own packaging products and also exported. Indeed, South Africa is a net exporter of pulp, sending about 1.2 million tons of pulp to global markets in 2022 (Pulp Industry Statistics in Africa - SME

• <u>Blue Pages</u>). These companies have well-developed supply chains: they manage plantations (ensuring sustainable fiber supply of eucalyptus grandis, eucalyptus dunnii, and pine), have chipping and pulping facilities, and have ports infrastructure to ship pulp bales or rolls. They also sell some pulp within Africa – for example, South African pulp is used in paper mills in Nigeria, Ghana, Kenya etc., or converted to paper which is then shipped.

For Nigeria's interest, sourcing pulp from Sappi or Mondi could be viable. The fibres (eucalyptus) they produce are high quality for packaging – eucalyptus pulp gives strength and good printability in paper packaging. If Pulpex bottles (which require a moldable pulp slurry) were to be made in Nigeria, these South African suppliers could send dry pulp rolls to feed the process. The processing capabilities of Sappi/Mondi include producing bleached chemithermomechanical pulp (BCTMP) and kraft pulp suitable for molding applications. Both companies also have R&D; on new fiber products, which could support innovation like Pulpex.

- *Emerging West/East African Fiber Projects:** Several other African countries are developing pulp and fiber sources, especially eucalyptus plantations, though on a smaller scale than South Africa:
- Mozambique (Navigator/Portucel Project): A notable project is by The Navigator Company (formerly Portucel) from Portugal. Its subsidiary Portucel Mozambique has secured rights to 356,000 hectares of land in Mozambique, planning to plant about 240,000 hectares of eucalyptus for pulp production (Mozambique's pulp fiction Oxpeckers). As of 2025, large eucalyptus plantations have been established in Zambézia and Manica provinces. The project's current mode involves harvesting eucalyptus logs and exporting woodchips and logs to Navigator's pulp mills in Portugal (e.g. shipments from Beira port to a mill in Aveiro, Portugal) (Mozambique's pulp fiction Oxpeckers). Ultimately, Navigator had plans to build a pulp mill in Mozambique, but progress has been slow. Still, this initiative shows an integrated supply chain effort: growing eucalyptus in Africa to supply global packaging needs (Mozambique's pulp fiction Oxpeckers). If a pulp mill comes online in Mozambique, it could supply bleached

- eucalyptus pulp within Africa (and nearer to Nigeria). Even now, Mozambique is exporting pulpwood – though primarily to Europe, some could be redirected regionally. The fiber (eucalyptus grandis and urophylla clones) from these plantations is suitable for making high-strength pulp for paper bottles.
- East Africa: Countries like Kenya, Tanzania, and Uganda have eucalyptus and pine plantations originally for timber or fuelwood that are being eyed for pulp. Kenya had the Pan African Paper Mills (PANPAC) in Webuye, which used a mix of bamboo and hardwood (including eucalyptus) for paper production until it closed in 2009. That mill has been revived in part by new investors and may consume local fiber. Tanzania has substantial softwood (pine) plantations in the Southern Highlands (e.g. Sao Hill) and some are exploring pulp. Likewise, Uganda and Zimbabwe have pine/eucalyptus forestry that could feed small pulp operations (in fact, in Zimbabwe, a pulp mill at Mutare used to export fluff pulp decades ago). These are not large-scale yet, but indicate potential African sources.
- West Africa: Ghana and Nigeria have some private and public forestry plantations. In Ghana, a Norwegian company was reported to be establishing eucalyptus plantations for biomass energy (Ghana: Eucalyptus plantations for producing energy) - while that is for energy, the existence of eucalyptus stands could also be tapped for pulp if processed properly. Nigeria itself once invested in pulp: in the 1970s-80s, Nigeria set up three pulp and paper mills (at Jebba, Oku Iboku, and Iwopin) and planted Gmelina arborea (a fast-growing hardwood similar to eucalyptus) on tens of thousands of hectares for fiber. Those mills (Nigerian Paper Mill, NNMC, and Iwopin Pulp & Paper) unfortunately collapsed due to mismanagement and privatization issues (Nigeria's Paper Mills Shut Down from Faulty Privatization, Sabotage). As of today, Nigeria produces very little pulp or paper domestically (less than 10% of its demand) (Nigeria, missing out on the \$350 billion global paper industry - Nairametrics). The country imports about 500 billion Naira (over \$1.2 billion) worth of paper and pulp products annually (RMRDC saving Nigeria over N500bn from importing paper products)

- (Nigeria, missing out on the \$350 billion global paper industry Nairametrics). This includes importing pulp from sources like Canada, Scandinavia, and Asia for local converters. So Nigeria has latent potential in plantations but currently lacks active pulp mills. Reviving one of those with modern tech (perhaps using eucalyptus or other wood) could be strategic if demand for molded fiber packaging grows (like Pulpex bottles or molded fiber trays).
- *International Suppliers to Africa: Given Africa's pulp deficit (South Africa aside), many packaging manufacturers on the continent rely on imported pulp or paper reels. Key global suppliers include Brazilian companies (like Suzano, which is the world's largest pulp producer from eucalyptus they ship to markets worldwide including some to North Africa or Europe which then gets to Africa), Scandinavian producers (Stora Enso, UPM, Södra mostly softwood pine pulp, and some eucalyptus from Iberia), and Asian producers**. If a Pulpex packaging facility were set up in Nigeria today, it might import bleached eucalyptus kraft pulp from Brazil or Portugal to use as feedstock, since that pulp is readily available and designed for high quality packaging. However, a more sustainable approach long-term is to source within Africa to reduce shipping emissions and encourage local industry.
- *Processing Capabilities and Export Reach:** To summarize the key suppliers and their capabilities:
- Sappi (Southern Africa): Operates large-scale pulp mills (capacity ~800k+ tpa dissolving pulp at Saiccor (Pulp Industry Statistics in Africa SME Blue Pages) plus other paper pulp at Ngodwana). Exports globally; known for high-purity cellulose and also produces paper packaging boards. Sappi can provide ECF (elemental chlorine free) bleached pulp from eucalyptus, which could be used in molded packaging. Its export reach includes Asia (China is a big buyer), Europe, and the rest of Africa via agents. Sappi Trading could supply pulp to Nigeria if needed.

- Mondi (Southern Africa): Richards Bay mill produces ~720k tpa of bleached eucalyptus pulp (market pulp known as Baycel) (Mondi Richards Bay | South Africa) (Pulp Industry Statistics in Africa SME Blue Pages). Mondi uses much of it internally for making linerboard and paper; exports the rest. Mondi's reach is global as well; it could supply pulp or even ship semi-finished paper material to converters in Africa. Mondi also has converting plants (though not in West Africa) but none in Nigeria currently. They do export finished sack kraft and carton papers to West Africa which Nigerian packaging companies then use.
- Navigator/Portucel (Mozambique & Portugal): Current: exporting eucalyptus logs/woodchips from Mozambique to Portugal. Future: plans a 1.5 million tpa pulp mill in Mozambique (one of the largest in the world if built). If built, much of that pulp would likely be exported to Asia/Europe, but some could serve Africa. Navigator (in Portugal) already exports a lot of bleached eucalyptus kraft pulp (BEKP) a common grade for tissue and paper some of which could be sold to African converters. Their Mozambique plantations are growing, meaning a steady fiber supply in-region in coming years.
- Other African producers: Small or niche producers like Phoenix Pulp Botswana (makes kraft paper from locally grown reeds, small scale), Ethiopia has some straw pulp mills, Egypt uses sugarcane bagasse in a couple of mills to produce paper (bagasse pulp is another fiber source that can be used for packaging; for instance, bagasse is used to make biodegradable food containers). In West Africa, Ivory Coast has Socapalm which makes palm fiber paper, though that's limited. Ghana and Nigeria primarily import recycled paper or virgin pulp to feed their cardboard/packaging industry for now.
- Recycled Fiber in Africa: While not eucalyptus/pine, it's worth noting that recycled paper is also a key fiber source. In Nigeria, companies like Nigerian Carton and Packaging or Bel Papyrus operate recycling mills that turn waste paper (including old corrugated cartons and newsprint) into pulp to make new paper products like tissue or cardboard. This is domestic "urban forest" fiber. For Pulpex bottles, virgin long-fiber pulp is typically needed for strength, but

supplementary recycled fiber might be used if quality allows.

Given the above, the supply chain for Pulpex in Africa might involve importing high-grade pulp from South Africa or abroad initially, and in parallel developing local fiber sources. For example, if a Pulpex plant were in Nigeria, one strategy could be to partner with the Raw Materials Research Institute or forestry departments to plant eucalyptus or pine in Nigeria for a dedicated pulp supply. Eucalyptus grows well in Nigerian climates and can be harvested in 6-8 years for pulp. A processing plant could even use agricultural residues (like bagasse from the sugar industry) as additional fiber, similar to how some packaging companies create fiber trays from bagasse.

In conclusion, the current key fiber providers relevant to Africa are:

- Sappi and Mondi (South Africa): With large capacity, exporting eucalyptus and pine-based pulp, capable of supplying packaging-grade fiber (Pulp Industry Statistics in Africa SME Blue Pages) (Pulp Industry Statistics in Africa SME Blue Pages). South Africa leads Africa in pulp production and export (Pulp Industry Statistics in Africa SME Blue Pages).
- Navigator (via Portucel Mozambique): Building a future supply of eucalyptus fiber in Southern Africa, already exporting raw fiber material (Mozambique's pulp fiction Oxpeckers).
- Local emerging producers: Small-scale pulp initiatives in East Africa (Kenya, Tanzania) and revived mills in West Africa could come online, though timelines are uncertain.
- **Global imports (Brazil/Europe):** Likely interim suppliers for any immediate high-volume needs as Africa's pulp market is still developing albeit growing ~5% annually (<u>Pulp Industry Statistics in Africa SME Blue Pages</u>).

Notably, **Nigeria is a major importer of pulp and paper** (<u>Pulp Industry Statistics in Africa – SME Blue Pages</u>), which implies a ready market if local pulp production can be increased. Should Pulpex or similar sustainable packaging scale up, it might justify investments in **new pulp processing**

in West Africa – for instance, a modest pulp mill using Nigeria's agricultural or forestry residues to supply molded fiber packaging manufacturers regionally.

• *Processing Capabilities & Export Reach: The suppliers mentioned have advanced processing: producing bleached kraft pulp (suitable for food-grade packaging) and are experienced in logistics (shipping in bales by sea). The fiber (eucalyptus especially) provides the strength and smoothness needed for molding into bottles that can hold liquids. As Pulpex technology evolves, they will likely require specific pulp specifications (e.g. certain fiber length, moisture content, no contaminants); companies like Sappi and Mondi can meet these specs given their sophistication. Additionally, these companies have the export reach** to deliver pulp to wherever needed: for example, South African pulp can be shipped to the port of Lagos with relatively short transit compared to shipping from South America.

Finally, beyond wood pulp, **alternative fibers** could play a role in Nigeria's sustainable packaging supply chain – such as bamboo (which grows in Nigeria and can be pulped, though more for paper than high-strength packaging) or kenaf (a fibrous crop once trialed for pulp in Nigeria). But wood (eucalyptus/pine) remains the main proven source for strong paper packaging. Aligning Nigeria and West Africa with the global pulp supply chain will be crucial if the region is to adopt innovations like Pulpex bottles and significantly reduce reliance on plastics.

• *Summary:** South Africa's Sappi and Mondi currently anchor Africa's pulp supply with large eucalyptus and pine based outputs exported worldwide (Pulp Industry Statistics in Africa – SME Blue Pages). Projects like Portucel in Mozambique promise future local supply for packaging fiber (Mozambique's pulp fiction - Oxpeckers). Nigeria and neighbors, while currently import-dependent, have suitable agro-climates to grow eucalyptus and pine; developing that and possibly building regional pulping capacity will create a more resilient supply chain for sustainable packaging. In the interim, Nigeria will continue importing pulp and paper (over \$680 million in 2021 (Nigeria, missing out on the \$350

- <u>billion global paper industry Nairametrics</u>)) from global markets to meet its packaging needs. Pulpex and similar initiatives can catalyze investment in Africa's fiber supply chain, linking the continent's untapped forestry resources with the demand for eco-friendly packaging solutions.
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