



EUROPEAN UNION



NHOP High Level Market Analysis


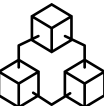


Greening Uganda's Urbanization and Industrialization

February 2022



Abbreviations

- **PET:** Polyethylene Terephthalate
- **rPET:** Recycled Polyethylene Terephthalate
- **PSF:** Polyester Staple Fiber
- **rPSF:** Recycled PSF
- **NHOP:** Nice House of Plastics
- **ELP:** Established Local Player
- **FOP:** Foreign-owned Player
- **EP:** Emerging Player
- **FMCG:** Fast Moving Consumer Goods
- **HDPE:** High Density PolyEthylene
- **GGGI:** Global Green Growth Institute
- **p.a:** Per Annum

Sections	Description
 Context	<ul style="list-style-type: none">• This research is commissioned by GGGI-EU Project: Greening Uganda's Urbanization and Industrialization to support the NHOP/ Replay Project• The 3 key agreements that underpin the NHOP/Replay Project• Executive Summary
 Supply Side	<ul style="list-style-type: none">• Existing and potential suppliers of recycled PET raw material for NHOP• Supply chain risks and mitigants
 Demand Side	<ul style="list-style-type: none">• The market for Polyester Staple Fiber in Uganda• Market risks and mitigants
 SWOT	<ul style="list-style-type: none">• NHOP/Replay SWOT analysis

Context

The Greening Uganda's Urbanization and Industrialization project is funded by GGGI and the European Union

GGGI support for NHOP falls under output 3.5

Expected Project Outcomes and Outputs

GGGI support to NHOP

Outcome 1: Green City Development is pursued and demonstrated in four (4) secondary Cities	
Output 1.1	The National Building Code incorporates green building standards
Output 1.2	Green Growth is mainstreamed in the Masterplans for four (4) Secondary Cities.
Output 1.3	Infrastructure Investment Plans for four (4) Secondary City are finalized
Output 1.4	A knowledge and engagement platform established by Makerere University
Outcome 2: Green Industrialization is pursued and demonstrated at four (4) locations.	
Output 2.1	National Green Industrial Business Parks (IBP) and Free-Zones (FZ) Policy Guidelines are finalized
Output 2.2	National Low-Carbon Industrialization Strategy 2020-2040 is finalized
Output 2.3	Green Growth is mainstreamed in the Masterplans for four (4) selected IBPs and/or FZs
Output 2.4	Infrastructure Investment Plans for four (4) IBP and/or FZ is finalized including Emission Reduction potentials
Outcome 3: Efficient and effective waste management is pursued and demonstrated	
Output 3.1	GKMA Waste Management Strategy Developed
Output 3.2	Two waste sorting and diversion centers designed for the GKMA
Output 3.3	Organic Waste Valorization Opportunities identified including Fecal Sludge Value Chain Solutions in Urban Centers
Output 3.4	Investment opportunities for oil/petroleum waste and e-waste products identified
Output 3.5	Business Development Support for waste management value chain actors/SMEs is provided.
Outcome 4: Green Growth integrated into the National Development Plan's planning and budgeting	
Output 4.1	The Uganda Green Growth Development Strategy (UGGDS) communication strategy was implemented.
Output 4.2	A "Green Growth integration and tracking in planning and budgeting" checklist developed.

Greening Uganda's Urbanization and Industrialization project is implemented by GGGI in partnership with the Government of Uganda, and is funded by the European Union

- GGGI commissioned the **NHOP High Level Market Analysis** to provide NHOP with market information for planning the rollout of Replay Industries
- Replay Industries is a manufacturing initiative aimed at turning recycled PET flake into recycled Polyester Staple Fiber for sale to the regional market
- This report examines **key market trends** on the supply and demand side and identifies risks and mitigants on each side

NICE House of Plastics founded Replay Industries to produce 7,200MT of Polyester Staple Fiber (PSF) per year out of recycled PET (1)



1

A Joint Venture between NHOP & Mecen, a South Korean plastic processor



60%

NHOP: Ugandan manufacturer of household and industrial plastic Items. NHOP will be the manufacturing operating partner



40%

Mecen ipc: South Korean plastics extruder and waste management firm, with several operations (JVs) across Europe, Middle East and Africa. Mecen will provide equity in form of machinery

2

An offtake agreement between NHOP and Plastic Recycling Industries (PRI)



- In February 2021, NHOP and PRI signed a **4-year renewable off-take contract** in which PRI commits to collect, process and sell rPET products to NHOP to produce PSF.
- Key terms:
 - ✓ **Pricing per MT:** Cold washed/Hot washed: \$333/\$402
 - ✓ **Volumes:** These will be agreed upon on a rolling / 2-month basis

3

An MoU between KCCA, NHOP, PRI and Stanbic Bank Uganda (SBU)



Manufacturer: Buys rPET flake from PRI and manufactures rPSF



Recycler: Processes PET waste into rPET flake, the main raw material used by NHOP to make rPSF



Collector: Mandated by Government to collect waste in Kampala. Encourages waste segregation and increases volumes of PET waste collected



Enabler: Facilitates stakeholder discussions and funds CSR programs to promote waste collection and segregation

(1) There is 1:1 average conversion rate from PET (raw material) to PSF (final product); therefore, replay will use 7,200MT of PET per year if operating at capacity

Market challenges & opportunities

- **Over 67,000 tons of PSF were imported into Uganda** in the last 4 years, mainly by furniture makers and textile manufacturers. Therefore, recycled PSF (rPSF) could be an import substitution opportunity ⁽¹⁾
- High cost of transportation from Mombasa to Kampala has traditionally prevented local textile manufacturers from using PSF and led to a single focus on cotton; local production of rPSF may spur additional demand for PSF in Uganda as it allows local textile manufacturers to use rPSF in production of blended fibers, whose global demand is increasing steadily due to rapid expansion of the apparel market
- **A shift towards sustainably sourced fibers** is expected to drive the growth of recycled PSF with international chains like IKEA are now pushing suppliers to use recycled PSF for its products
- Locally, competition from imported virgin PSF will remain significant but cost volatility of virgin PSF tied to oil price fluctuations will partially offset; In addition, there are only a few big potential buyers of rPSF which increases buyer power and poses a threat to the NHOP business model

Supply chain challenges & opportunities

- rPET is the main raw material used in production of rPSF therefore, its availability and cost is a key component of NHOP's business model. At full capacity, NHOP requires 7,200MT of rPET to produce the same amount of rPSF⁽²⁾; **Uganda produces an average 12,330MT of rPET annually**
- rPET production in Uganda has contracted 47% over the last 4 years due to shrinking export markets and Covid19 related supply chain disruptions; processing is expected to pick up as economies recover and firms gain access to new markets. This presents a window of opportunity for NHOP to negotiate offtake contracts with rPET producers
- **Average rPET production is expected to grow 91% to 23,600MT in 2022-2025**; Small emerging players contribute have capacity to increase production by 3,600MT if Ecobrixx doubles its capacity as planned and Green Africa plans materialize (50% probability weighted to reflect significant delays). Conversely, an increase in the capacity of manufacturers who make end products out of rPET could decrease supply
- Foreign-owned recyclers may have strategic preference to export rPET as opposed to selling locally; However, global trends indicate that exports of PET waste are becoming challenging as incumbents (e.g., China and India) ban imports

Recommended actions

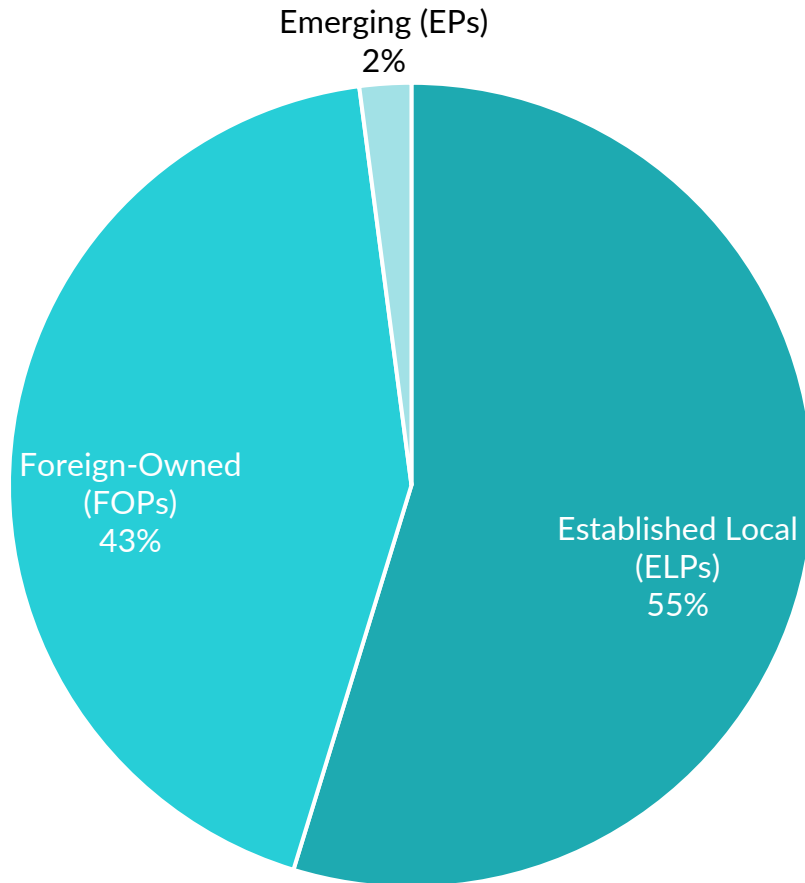
- Prioritize serving the textile and furniture industries, involve buyers early in product development, secure long term off-take contracts, market products regionally (especially Kenya), seek enabling government policies for the local PSF industry, increase speed to market to leverage first movers' advantage and brand towards the end consumer (B2B2C)

⁽¹⁾ East Africa imports 150,000-250,000 MT of polyester which has a higher cost of production than recycled polyester

⁽²⁾ 1:1 ratio of conversion from rPET to rPSF

Supply Side

rPET suppliers are grouped into three segments – established local players, established foreign players and emerging players



Established local players (ELPs) are local PET recyclers that have been in the business for 5+ years

- PRI, Aquila and Standard Manufacturing
- ELPs produce an average 6,045MT or 55% of total rPET per year in Uganda

Foreign owned players (FOPs) are Asian-owned firms that operate in Uganda purely for export

- FOPs are notoriously private, but we know of three such firms – Feng Huang and two unlisted Asian-owned firms
- FOPs produce 5,997MT or 43% of total rPET per year; it is assumed that FOPs have a strategic interest in exporting all their rPET as opposed to selling it locally

Emerging players (EPs) are recyclers who have been in the business less than 5 years but have potential to scale

- EcoBrixs and Green Africa Recycling
- Currently, Eco Brixs is the only active EP, producing 288MT of rPET or 2% of total per year
- Green Africa manufacturing has had an ambitious goal of setting up a large-scale factory but has experienced significant delays. We have thus applied a 50% probability of launch to account for uncertainty

ELPs are operating at 55% capacity⁽¹⁾ but can ramp up production to meet demand, given their robust waste collection infrastructure



		Installed capacity (2021)	Average production/ year (2018-2021)	Production forecast/ year (2022-2025)
Established Local Players (ELPs)	1 PRI	6,000 MT per year	• 2,875 MT (48% utilization)	6,000 MT per year – Assume PRI can reach full capacity, given NHOP contract ⁽²⁾
	2 Standard Manufacturing	3,600 MT per year	• 2,400 MT (67% utilization)	2,880 MT per year – Assumes the company reaches 80% capacity utilization
	3 Aquila Recycling	1,400 MT per year	• 770 MT (53% utilization)	1,152 MT per year – Assumes the company reaches 80% capacity utilization
Established Foreign- Owned Players (FOPs)	4 Feng Huang	6,000 MT per year	• 3,997 MT	6,000 MT per year – Assumes last two years' average producing at capacity ⁽³⁾
	5 Unlisted Asian-owned Cos	N/A	• 2,000 MT	4,000 MT per year (two companies producing 1,000MT each) – Conservative estimate that they have the same output as Aquila Recycling
Emerging Players (EPs)	6 Eco Brixs	600 MT per year	• 288 MT (48% utilization)	Company target is to reach double capacity and produce 1,200 MT per year by 2024
	7 Green Africa Recycling	None	• Currently aggregating PET from TZ and Algeria for export to Turkish client; Setting up local production in 2022	3,600 MT per year - Targets to manufacture 7,200MT per year to meet a Turkish client's annual demand; However, we assume only 50% probability of launch




(1) Total capacity of ELPs is 11,040MT per year versus 6,045MT average output; Therefore, excess capacity of ELPs alone is ~5,000MT per year

(2) PRI has an offtake / supply contract with NHOP

(3) Production capacity number extracted from news dated article; capacity may have been expanded since, especially since exports in the last 2 years indicate full capacity levels of production

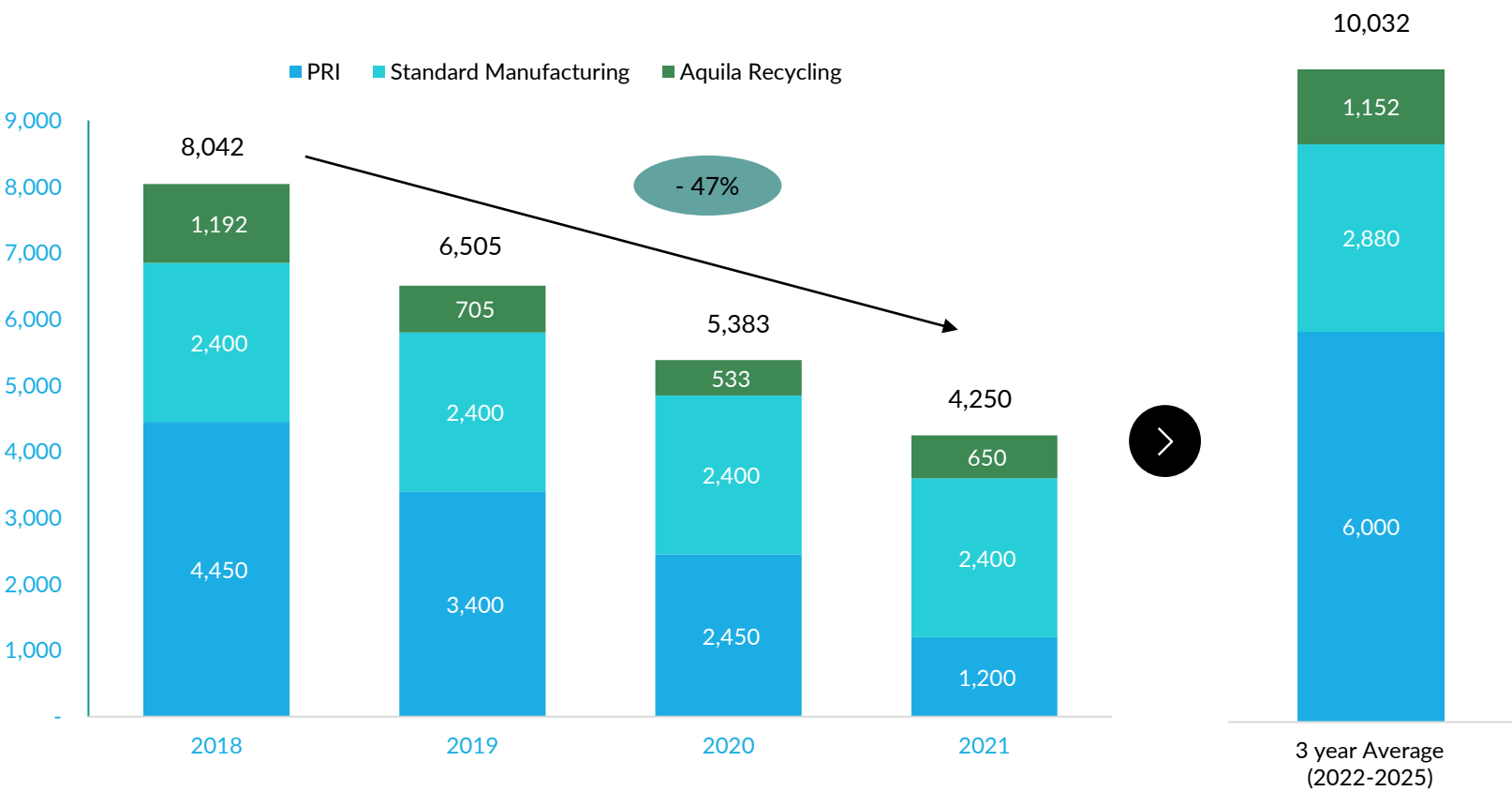
Potential to significantly increase rPET supply in Uganda

Established local players (ELPs) have varying business models and export to different markets

Company	Business model	Export markets	Pricing and terms	Challenges
1 PRI 	<ul style="list-style-type: none"> Coca-Cola initiative collects PET waste from over 120 waste brokers and private waste collection companies Procures PET waste at \$222/ ton Produces hot washed rPET Does not hold inventory; exports 100% of produced rPET Signed offtake agreement with NHOP in 2021 	<ul style="list-style-type: none"> USA, Pakistan, UAE 	<ul style="list-style-type: none"> Sells at \$650 per ton of rPET Long term purchase contracts from 6 to 12 months 50% payment is made for proforma invoice and 50% upon sending bill of lading 	<ul style="list-style-type: none"> Price fluctuation Inconsistent inflow of material especially because suppliers do not have sufficient cash to purchase from waste pickers Outdated technology High transportation costs especially to USA
2 Standard Manufacturing 	<ul style="list-style-type: none"> Standard Manufacturing Company collects PET waste from dumping sites (70%) as well as street waste pickers (30%) Procures plastic waste at \$250 per ton Produces hot washed rPET Does not hold inventory 	<ul style="list-style-type: none"> Malaysia, Philippines, Europe 	<ul style="list-style-type: none"> Sells at \$600 - \$700 per ton of rPET 	<ul style="list-style-type: none"> Collection is expensive
3 Aquila Recycling Plant 	<ul style="list-style-type: none"> Aquila Recycling Plant collects PET raw material from waste brokers (80%) and street waste pickers (20%) Procures plastic waste at \$222 per ton Produces cold washed rPET Currently, the company holds some inventory due to the worldwide shortage of containers 	<ul style="list-style-type: none"> Pakistan and Vietnam 	<ul style="list-style-type: none"> Sells at \$450 - \$550 per ton of rPET Long term purchase contracts of 3 to 6 months 30% payment is made for proforma invoice and 70% upon sending bill of lading. 	<ul style="list-style-type: none"> Price fluctuation as rPET prices are tagged to the price of oil High transportation costs Very high competition for PET with increasing recycling plants being established in Uganda Collection is informal therefore the company cannot appropriately project volumes to be collected beyond 6 months

Established local players produced 6,045 tons of rPET on average per year; volume dropped 47% (2018-2021)

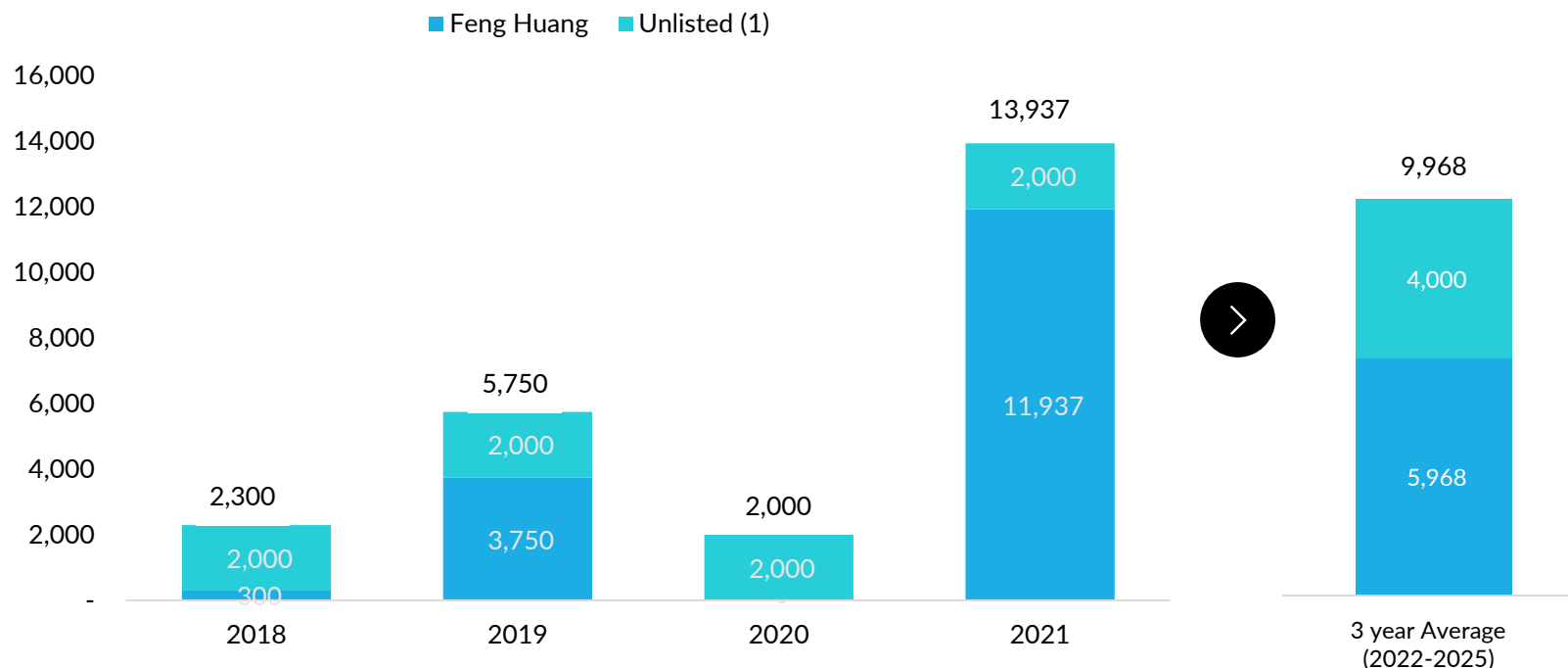
Established local players - PRI, Standard Manufacturing and Aquila



- ELP production volumes **contracted by 47%** mainly due to the following
 - **Shrinking export markets** as incumbents, China and India, banned the importation of foreign waste
 - **supply chain disruptions** caused by Covid-19
- ELPs are expected to ramp up production as they gain access to new export markets and the Covid-19 situation improves globally
 - Forecast an average of 10,032MT of rPET per year over the next 3 years (up 26%)
 - The increase is driven by companies returning to pre-covid levels of production and new export markets including the NHOP partnership for PRI and higher demand from Europe

There are 3 established foreign owned players producing an estimated ~6,000 tons of rPET annually

Foreign-owned players are Feng Huang and two Asian-owned companies




(1) Two Unlisted companies reportedly owned by Chinese investors






Source: rPET Producer interviews and Uganda Revenue Authority (HS code: 39159000)

- Established Foreign-Owned Players (FOPs) have more secure export markets than ELPs but information on their production is sparse
- The most established one is the Chinese owned **Feng Huang, which exported \$11,937MT of rPET in 2021**
- There are two unlisted Chinese owned FOPs operating near Kiteezi landfill
 - Direct competitors estimate that they produce **2,000MT** of rPET each per year, similar to Aquila; this may be a conservative assumption
- FOPs have more secure export markets than ELPs
 - It is possible that they manufacture on contract for international buyers/ strategic partners; this would mean that their supply is not available to local buyers such as NHOP
 - However, Feng Huang expressed interest in selling rPET to the local market

Emerging Players (EPs) can significantly increase the local supply of rPET

Company	Business model	Export markets	Pricing and terms	Challenges
1 Eco Brixs 	<ul style="list-style-type: none"> Produces consumer products e.g., pavers, tiles, furniture from mostly HDPE Requires only 5MT/month of PET therefore processes and exports excess PET Exports 50MT/ month of cold washed rPET Plans to double PET processing capacity to 100MT/ month in 2023 	<ul style="list-style-type: none"> UK, Turkey 	<ul style="list-style-type: none"> Sell at \$300/ MT FOB from Masaka Secured 6 month renewable supply contracts with buyers Terms: 25% down-payment and 75% on delivery 	<ul style="list-style-type: none"> High cost of transport and logistics Price fluctuation
2 Green Africa Manufacturing	<ul style="list-style-type: none"> Aggregating rPET from Tanzania and Algeria and exporting to one large client in packaging industry in Turkey; Price of rPET from TZ is lower than UG due to cost of transportation 2022 plans to commission factory producing 7,200M p.a of hot washed rPET Given major delays, we assigned only 50% probability of this supply coming online in the next 3 years 	<ul style="list-style-type: none"> Turkey only Single client needs 18,000MT of rPET / year 	<ul style="list-style-type: none"> \$650/ MT FOB from Kampala \$725/ MT FOB Dar-es-salaam Client willing to pay advance payment 	<ul style="list-style-type: none"> Low rates of waste collection

Competition for PET waste is as intense as that for the PSF market

Company		Description	Target PET demand (MT p.a)	Details
Shree Modern Textile		<ul style="list-style-type: none"> Part of Nile Agro Industries, a manufacturing conglomerate Plans to manufacture PSF in 2022 for internal use in making textile and apparel consumer products 	20,000	<ul style="list-style-type: none"> Leverage paper waste collection infrastructure i.e. agents in UG, DRC and South Sudan to collect PET Manufacturing polyester textiles e.g. blankets and apparel May sell excess PSF to the regional textile industry
Mukwano Industries		<ul style="list-style-type: none"> Leading plastics manufacturer Interested in setting up PSF manufacturing plant 	n.a	<ul style="list-style-type: none"> Direct competition for local and regional PSF market Direct competition for rPET raw material
Ecoplastile		<ul style="list-style-type: none"> EcoPlastile works with youth and women to collect and process waste plastics into construction products Recycles 35MT/month 	1,200	<ul style="list-style-type: none"> Processes HDPE and PET into durable roofing tiles, Ecopoles, plastic lumbers, and paving slabs Community collection centers run by women and youth in Kampala; goal is 100MT/month
Ecobrixx		<ul style="list-style-type: none"> Community recycler in Masaka collects 50MT/month of PET and adds value to mostly HDPE Exports cold washed PET flake 	60	<ul style="list-style-type: none"> Manufacture fence posts, pavers, benches, PPE etc. Collects 50MT/month of PET from Masaka and beyond; use only 5MT/month; export the rest
Taka Taka Plastics		<ul style="list-style-type: none"> Recycling pilot project in Gulu recycles 1MT/mo (all plastics) Fabricates recycling equipment e.g. crushers and injection molding 	84	<ul style="list-style-type: none"> Manufactures tiles, face shields, furniture, flower pots, etc. Collection: Sets up waste banks at markets, schools, hospitals etc; partnership with Gulu city council Goal is to expand nationally and recycle 84MT/year in 2022

Supply chain risks and mitigants

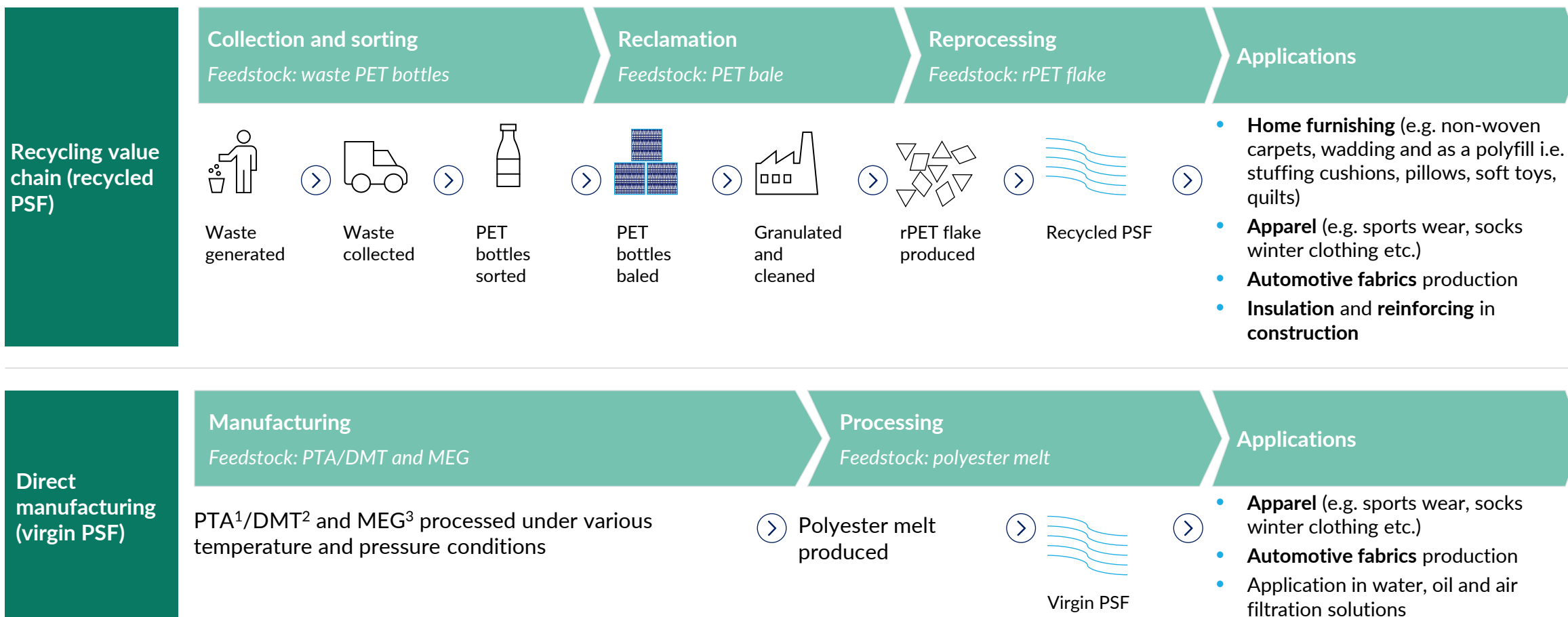
Insufficient raw material/ rPET poses a significant risk to the NHOP business model

- **Growing international demand:** Regulatory pressure in the UK and EU is increasing demand for rPET, which may apply upward pressure on rPET prices
 - ✓ Consider a regional sourcing strategy for rPET albeit high costs of transport
 - ✓ Provide more stable and binding long-term contracts with recyclers to incentivize supply
 - ✓ Invest in and support KCCA efforts to incentivize waste segregation at source; this will increase upstream PET waste collection
- **Competition with strategic exporters:** Foreign-owned rPET producers in Uganda may have a strategic preference for exporting their rPET
 - ✓ Lobby government for policy measures that protect local industry e.g., an export levy
- **Competition with other manufacturers:** Producers of consumer products out of rPET e.g., Shree Modern Textile Ltd, Taka Taka Plastics may absorb a significant portion of collected waste
 - ✓ Negotiate binding off-take agreements with existing PET recyclers



Demand Side

PSF manufacturing occurs in two ways; either by recycling PET or directly manufacturing from PCA / DMT and MEG

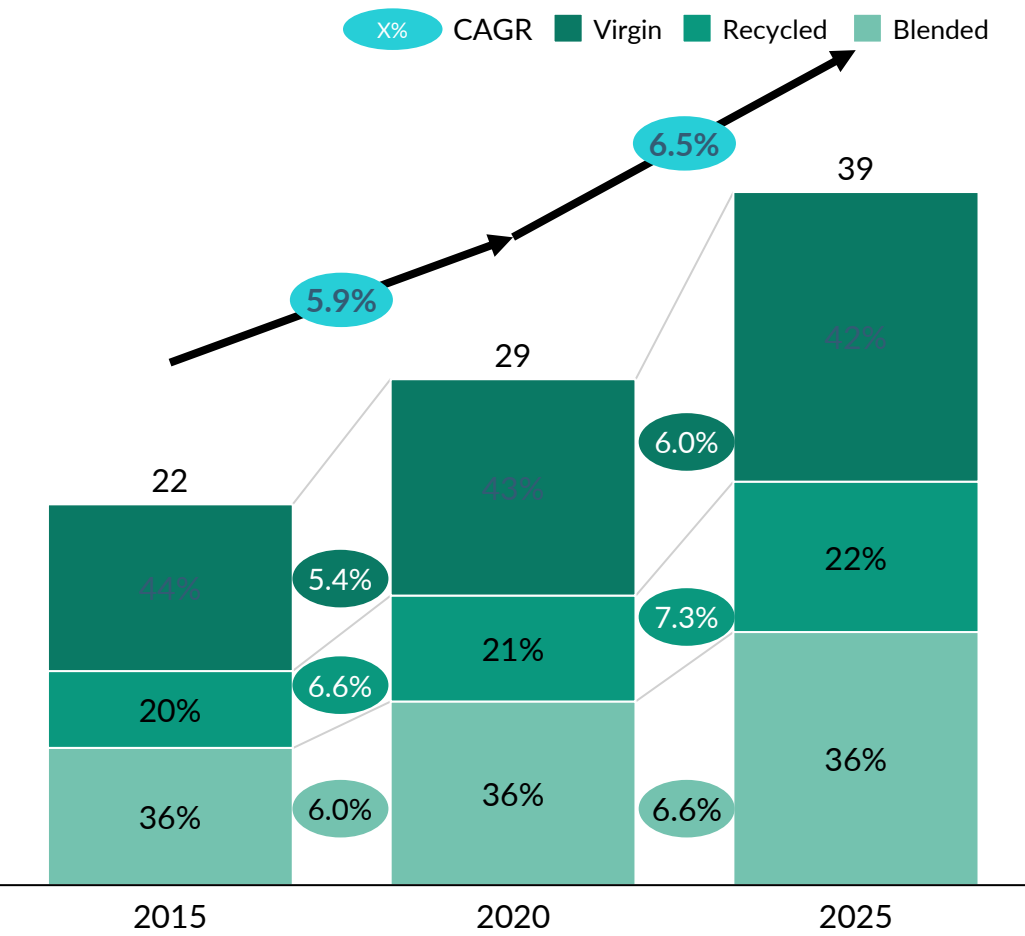


1. Purified Terephthalic Acid; 2. Dimethyl Terephthalate; 3. Mono Ethylene Glycol

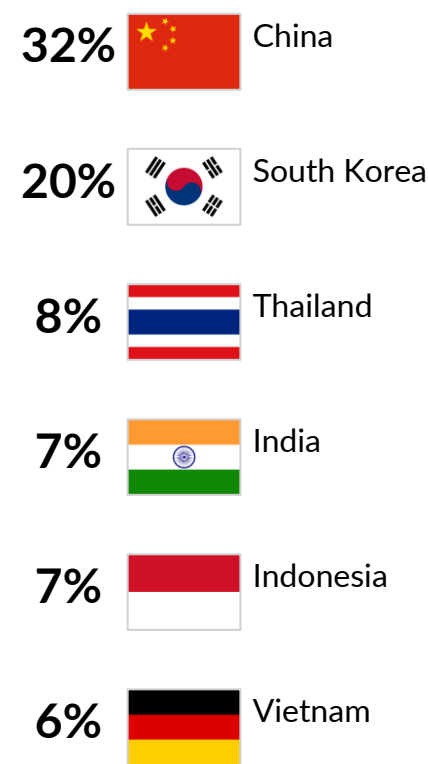
The global demand for PSF is valued at USD 29B in 2020 and is expected to reach USD 39B by 2025 with majority of production from China



Global PSF demand,
USD B, 2015 – 2025



Main source markets by
share of exports



China and South Korea account for 50%+ of global PSF production value

Growth drivers

Rising demand for sustainable textiles: higher demand for sustainable textiles due to increasing awareness for environmental protection is expected to drive growth for recycled PSF

Growing application in other industries: increased application in home furnishing, automotive, filtration and construction industries expected to drive growth for PSF

A shift towards sustainably sourced and eco-friendly apparel is expected to drive the growth of recycled PSF



Apparel industry is highly resource intensive, big polluter and wasteful

Resource intensive: The apparel industry accounts for 4% of global fresh-water withdrawal, causing extreme water scarcity in many locations

Polluter: Apparel contributes to 10% of global greenhouse gas emissions yearly

Wasteful: 73% of fibres end up in landfills, are incinerated or dumped in the oceans. Unsold items are incinerated because of defects or to avoid price effects and brand dilution

Consumers are demanding products with a sustainable value chain

The industry is facing increasing public criticism due to its perceived resource-intensiveness and wasteful practices

Rising awareness towards environmental protection is driving customers to switch to sustainable textiles, which are made of recycled materials



*The big buyers are **willing to pay up to 20% more for recycled yarn/fabric** than normal (unrecycled) yarn/fabric...if you have the GRS certificate*

*Recycled fabric is fetching **a premium of about 10%** compared to conventional fabrics*

**Chief Textile Officer,
Cotton textile plant in India**

**Senior VP Technical,
Leading textile company in India**

As a result, manufacturers are shifting towards sustainable raw materials

Varieties of polyester fabrics are being manufactured from recycled plastic, e.g. Repreve – a fabric made from recycled plastic bottles used in swimwear and sportswear

Manufacturers such as Eco Intelligent Polyester are shifting towards recycling plastic bottles to create new polyesters

Growth in home furnishing and the automotive industry in Asia Pacific is expected to drive growth of the global PSF market



Global demand drivers for PSF



Home furnishing

- Home furnishing was **the second-largest application segment**, accounting for 26% of the global market revenue in 2016
- PSF demand for home furnishing industry expected to **grow at a CAGR of 6.7% from 2020 to reach ~11 billion USD by 2025**, with **80% demand expected from Asia Pacific**
- **Cost efficiency of PSF** as compared to other fibres and **demand for environment-friendly products** are expected to drive growth



Automotive

- Automotive demand for PSF expected to **grow at CAGR of 5.7% from 2020 to reach ~4 billion USD by 2025**
- Rapidly **growing auto manufacturing industry, particularly in China and India**, coupled with rising per capita income are the key factors anticipated to drive market growth



Filtration

- Demand for filtration industry for **virgin PSF** expected to **grow at CAGR of 5.4% from 2020 to reach ~3 billion USD by 2025**
- Growth is driven by the need to **reduce overall production cost** by modern filtration system manufacturers is expected to drive




Construction

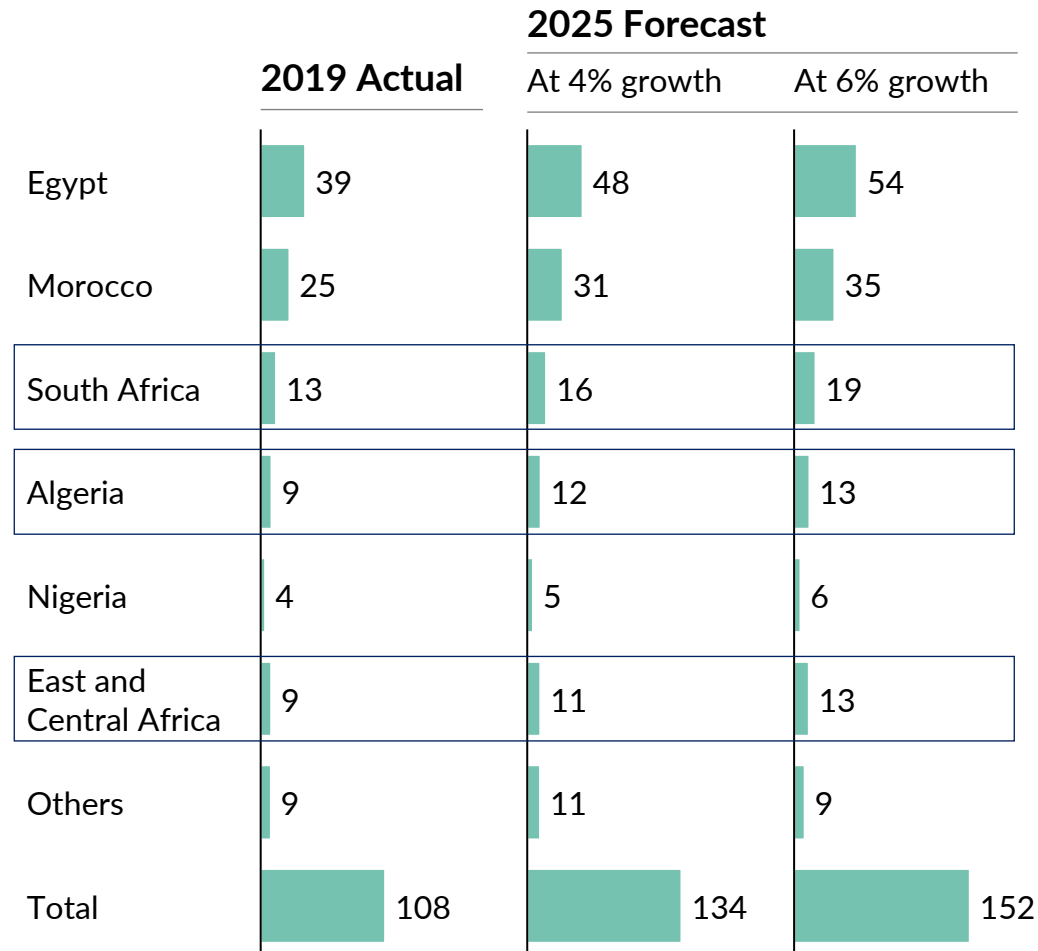
- PSF is used to fill up cracks, enhance the overall quality of walls, and other pre-casted products such as tiles, manhole covers, and blocks
- Rising construction activity and spending in light of urbanization, population growth, and government infrastructural plan is anticipated to drive the growth of the industry
- Growth of construction in North America, Middle East, Africa and Asia expected to drive growth

Currently, Africa imports ~USD 110M of PSF and demand is expected to grow by 4-6% p.a. to reach USD 130-150M by 2025

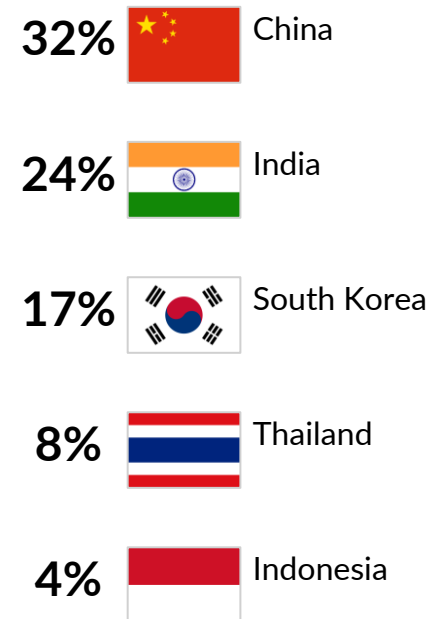


Total PSF imports to Africa, USD M, 2019 – 2025

 Potential target markets



Main source markets by share of imports



China, South Korea and Thailand account for ~70% of total PSF imports to Africa

Growth drivers

Investment into the apparel industry in East Africa targeting export market in the United States and Europe










Growing automotive production in Africa (particularly in South Africa) to propel demand for interiors in automotive application

Continued growth of the construction sector given rapid urbanization and investment in transport infrastructure

Increased local production of home and office furniture driven by increasing disposable income and high import duties on imported finished goods (e.g. Tanzania imposed high import duties on imported furniture to boost local production)

Within East Africa, the main application of PSF is in fabric production for durable garments (e.g., bedding, uniforms)

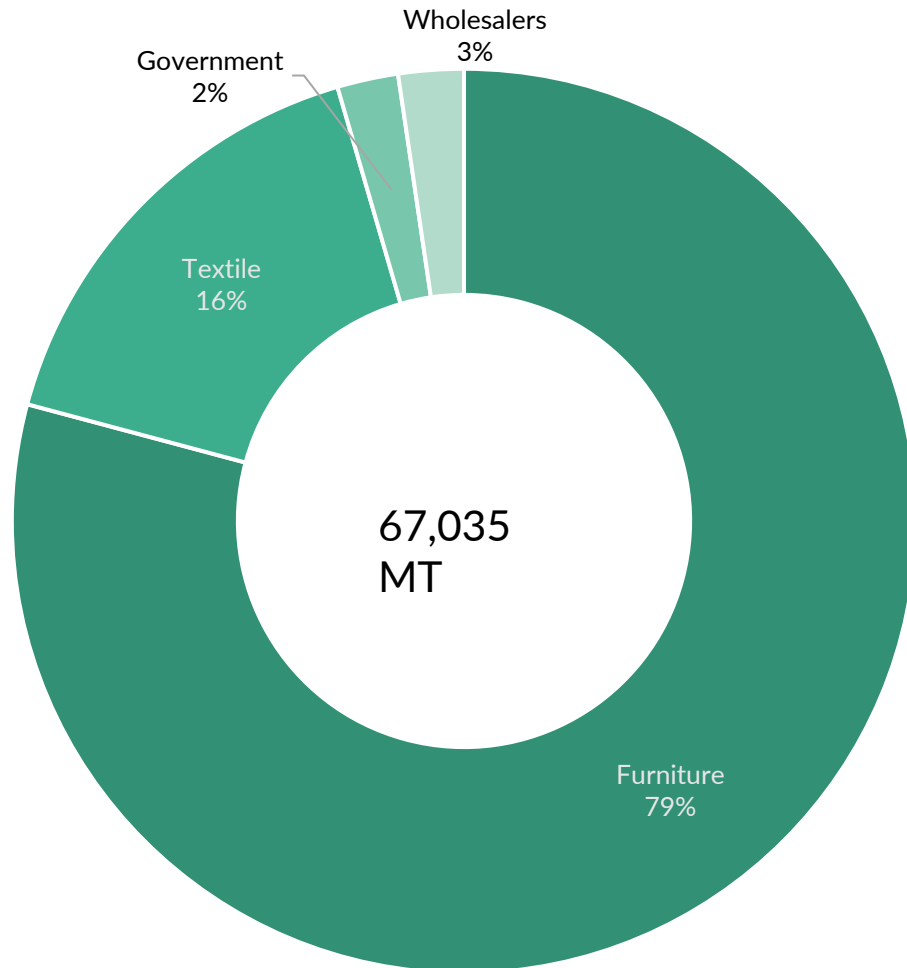


Application	Estimated share of total imports, % of total	Example end products	Example buyers in East Africa
Fabric production	80-90%	<ul style="list-style-type: none"> Blended fabrics (i.e., 50-60% polyester and 40-50% cotton), used to manufacture durable garments (e.g., bedding, uniforms) 	<ul style="list-style-type: none">  Fine Spinners Uganda  SunFlag Tanzania  Bedi Industries, Thika Cloth Mills, Rivatex East Africa
Mattress and home furniture	5-10%	<ul style="list-style-type: none"> Pillow and cushions Structural support for mattresses Mattress covers 	<ul style="list-style-type: none">  Euroflex, Megha Industrial, Tuffoam Uganda, Crest Foam  Vitafoam (TZ), Tanfoam  Tuffoam Mattresses, Superfoam, Bobmill, Jumo Foam, Vitafoam (KE)
Other industries	<5%	<ul style="list-style-type: none"> Ropes and towing cables Shoe laces 	<ul style="list-style-type: none">  Africa Polysack Industries  Tancord Ltd  Rieratex, Devsons Industries

- End products target the domestic and regional market (East and Central Africa) there is limited export to international markets
- Buyers source directly from suppliers in China, South Korea, India and Thailand
- There is currently no regional production of PSF (virgin or recycled) and buyers may be willing to switch to regional suppliers should quality and quantity requirements be met (given the lead time and cost implications of regional sourcing)

67,305 tons of virgin Polyester Staple Fiber (PSF) were imported into Uganda in 2018-2021

PSF is imported mainly by furniture and textile companies



Assuming a landed price of \$2.65⁽¹⁾, Uganda imported \$178M worth of PSF in the last 4 years

PSF in Uganda is imported by four types of businesses and institutions

- **Furniture makers** – e.g., Biplous, Zing Zing
- **Textile manufacturers** – Nytil, Sunbelt and Fine Spinners
- **Wholesalers** – local traders who supply PSF to local artisanal furniture makers and retail market sellers
- **Government** – sporadically imports on behalf of tax-exempt entities or projects; one off transactions

The furniture segment imported 53,063 tons of PSF over the last four years

The furniture segment is dominated by one importer, Biplous (U) Ltd.

Annual imports, MT		% of furniture	% of total
Biplous (U) Ltd	13,205	99.5%	78.8%
Ideal Household Goods	33	0.2%	0.2%
Zing Zing	28	0.2%	0.2%
Dreamline Furniture	0.1	0.0%	0.0%

Biplous imported 52,806 tons in 2019

Furniture companies are the largest importing segment

- 53,063 tons of PSF imported in 2018-2021; on average 13,266MT p.a
- Dominated by Biplous (U) Ltd, which imported 52,806 tons in 2019 alone; at \$2.65 per kg⁽¹⁾, that's PSF worth \$140M
- Removing the large Biplous consignment in 2019, Furniture segment annual imports would be 66MT valued at \$174,000 per year

(1) Nytil's stated landed cost is \$2.65 per kg
Source: Uganda Revenue Authority; HS code: 550320

The textile segment imported 10,945 tons of PSF over the last four years

The key importers in the textile industry are Nytil, Sunbelt and Fine Spinners

Annual imports, MT		% of Textile	Price/kg	
Nytil	1,581	57.8%	\$2.60 - \$2.70 ⁽¹⁾	Interested in sourcing locally based on quality
Sunbelt	1,151	42.1%	n/a	
Fine Spinners (U) Ltd.	5	0.2%	\$1.47 - \$2.00 ⁽²⁾	FS Uganda would use locally sourced PSF
Fine Spinners Kenya	324		\$1.46 - \$5.20	FS Kenya interested in sourcing from UG

- Purchase trends in the textile segment are **less volatile** than furniture and government segments, making it the **most attractive segment**
- 3 major textile companies imported 10,945 tons** imports of PSF in 2018-2021 – Nytil, Fine Spinners and Sunbelt
 - Nytil uses virgin PSF in its cotton/polyester blend; **keen to try rPSF** but skeptical about whether it can achieve quality as high as virgin PSF
 - Fine Spinners Uganda focuses on 100% cotton fabrics and uses minimal PSF due to **high cost of transportation from Mombasa**
 - Fine Spinners Kenya imports **324MT of PSF annually** and is **open to sourcing from Uganda** if price competitive
 - Sunbelt is a Chinese-owned bedsheet manufacturer






⁽¹⁾ Landed Kampala cost; ⁽²⁾ CIF Mombasa price

Textile companies import \$7.3M worth of PSF into Uganda per year



xx

Annual imports (M USD)

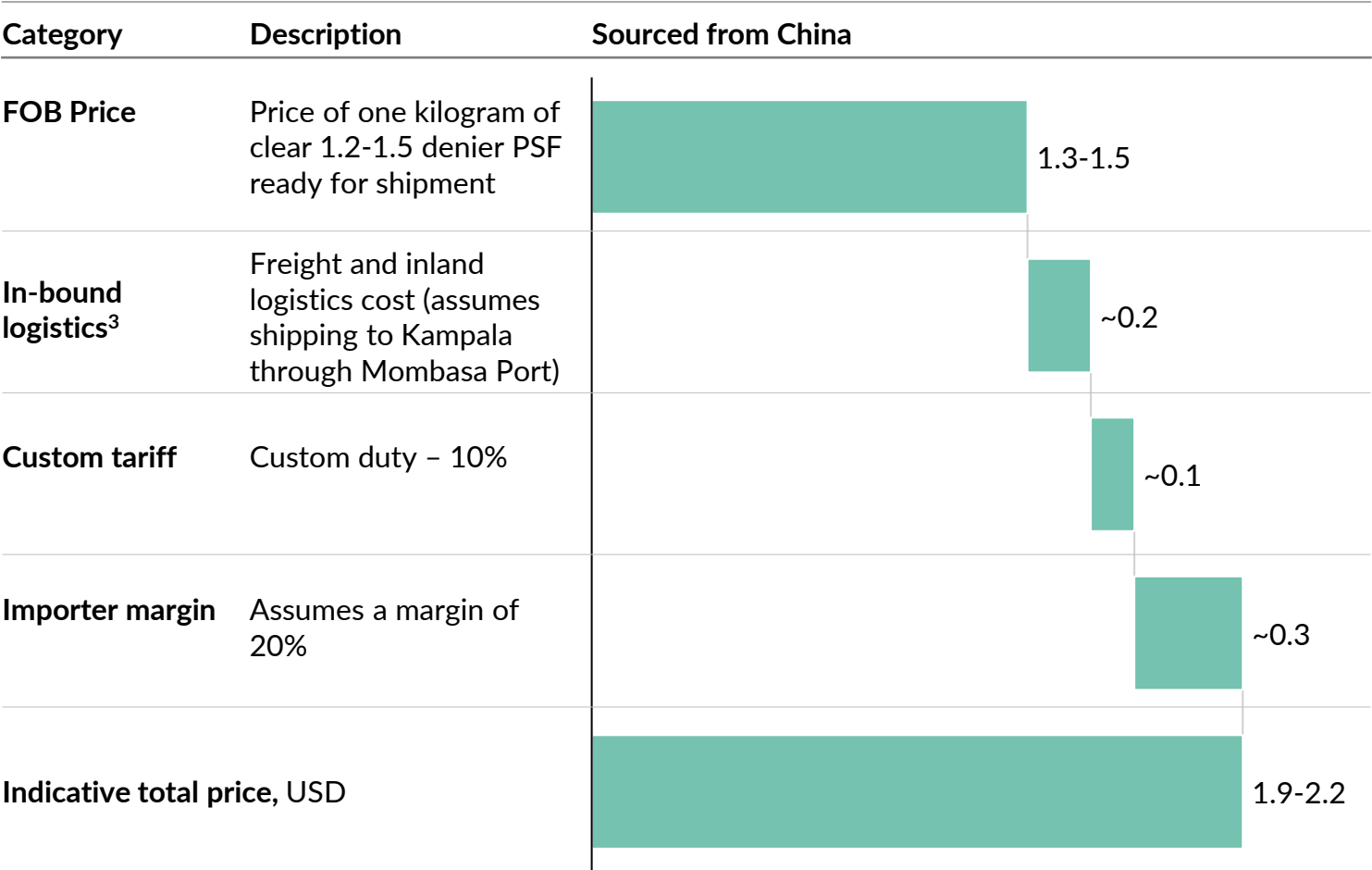
Company	Business Model	Pricing	Challenges
 	<p>Volume: 1,581 MT p.a to blend with cotton; volumes increase 10-15% p.a</p> <p>Specs: 1.4d</p> <p>Sources: PSF from India, Thailand</p> <p>End products: Fabrics and garments</p> <p>Markets: UG Rwanda, DRC, Kenya</p>	<p>Landed price: \$2.60 - \$2.70 per kg</p> <p>Price fluctuation tied to global oil prices; prices have peaked as economies opened up post Covid-19</p>	<p>High cost of inland transportation increases landed cost; Cost of transport from Mombasa to Kampala is \$3,500 per container</p> <p>Highly sceptical about quality of rPSF compared to virgin PSF; Willing to test local rPSF</p> <p>Long cash conversion cycle is now at 5 months, exacerbated by Covid-19 supply chain disruptions</p> <p>Price fluctuation</p>
 	<p>Textile manufacturer with operations in Kenya and Uganda</p> <p>Uganda: Focused on 100% cotton and uses minimal PSF – imports 5MT p.a</p> <p>Kenya: Focused on blends – imports 324MT p.a of 1.5d 44mm PSF; has capacity to process 45MT/mo (540MT p.a)</p> <p>Sources: India, China</p> <p>Products: Fabrics and garments</p> <p>Markets: US and Europe (100% cotton), regional market (blends)</p>	<p>Uganda</p> <p>Landed price: \$2.60 - \$2.70 per kg⁽¹⁾</p> <hr/> <p>Kenya</p> <p>CIF Mombasa: \$1.47⁽²⁾ - \$2.00⁽³⁾ per kg</p>	<p>High cost of inland transportation makes landed price prohibitively high; Uganda operations have hence focused solely on 100% cotton products</p> <hr/> <p>Kenya operations import given proximity to coast</p> <p>Covid-19 supply chain disruptions have increased shipping time from 20 days (pre-covid) to 2-3months</p> <p>Price fluctuation</p>
	<p>Volume: 1,151 MT p.a</p> <p>Products: Bedsheets</p> <p>Markets: Regional</p>	<p>n/a</p>	<p>n/a</p>

(1) Assume same as Nytil since they source from same factories; (2) White PSF, which makes up 59% of total PSF imports; (3) Black PSF

Given freight costs and import tariffs, the landed cost of one kilogram of clear 1.2-1.5 denier PSF ranges between \$1.90 - \$2.20



Price breakdown for 1 kilogram of clear PSF, 1.2-1.5 denier¹, USD



Local recycled PSF may be cost competitive given the lack of customs tariffs for regional trade – however the quality of the local PSF needs to be comparable

Supply chain manager, local fabric manufacturer

1. Varies based on end use application e.g., cushion filling vs fabric production; 2. Assumes sourcing from mainland China and a minimum quantity of 50 tons (approximately two 40 ft shipping containers); 3. Assumes road freight cost of USD 3,000 to USD 4,000 for one 40ft container from Mombasa to Kampala

Source: Desktop research on FOB prices, Expert Interviews, Team analysis

Demand side risks and mitigants

Competition from imports and strong buyer power pose a threat

- **Imported PSF may become more competitive on the market as oil prices fluctuate to make virgin PSF cheaper**
 - ✓ Secure long term off-take contracts
- **The quality specifications required by the market may not be attainable using rPET versus virgin PSF**
 - ✓ Match NHOP/Replay capabilities with market expectations
 - ✓ Consider a co-creation strategy in product development to meet clients needs
- **Significant buyer power given few big buyers with easy access to imports**
 - ✓ Pass on cost benefits of local production to buyers in form of lower pricing
 - ✓ Increase potential universe of buyers by marketing products regionally
- **Competition from new local PSF manufacturers e.g., Shree Modern Textile and Mukwano industries who may invest in PSF manufacturing in the short term**
 - ✓ Increase speed to market to exploit first mover's advantage
 - ✓ Secure buyers with long term off-take contracts
 - ✓ Explore regional market especially Kenya, which has a robust manufacturing sector
- **Local buyers especially textile manufacturers may not see value in creating new products with recycled PSF without market pull**
 - ✓ Brand towards the end consumer or "B2B2C branding" and boost bottom line by increasing sales of NHOP/Replay clients
 - ✓ Development partners can help raise awareness among western brands about the availability of recycled PSF in Uganda



S

Strengths

- ✓ First mover's advantage
- ✓ Off-take agreement with PRI
- ✓ JV with industry leader, Mecen
- ✓ MoU with KCCA
- ✓ Parent company maintains strong government relations (lobby)
- ✓ Can offer long-term buying contracts
- ✓ Existing manufacturing expertise
- ✓ Cost benefits given lack of import duty

W

Weaknesses

- ✓ New to recycled PSF production processes
- ✓ No control over raw material availability

O

Opportunities

- ✓ A shift towards sustainable, eco-friendly apparel
- ✓ Investment into East African apparel industry for export
- ✓ Large market bans on rPET makes raw material more available locally
- ✓ Increased local production of home and office furniture driven by government policy
- ✓ Limited competition in East Africa
- ✓ Significant import substitution opportunity

T

Threats

- ✓ Competitive threat from imported virgin PSF
- ✓ Oil price fluctuation can make virgin PSF more competitive
- ✓ Competition for rPET especially with growing demand from Europe

A black and white photograph of a spiral staircase with a tiled surface and a metal handrail, curving downwards. The image is partially obscured by a teal-colored shape on the right side of the slide.

Backup

Uganda produces 12,330MT of rPET per year (2018-2021); conservative estimates show a 91% increase to 23,600MT per year during 2022-2025

	2018	2019	2020	2021	Average per year	Annual production (2022-2025)	3 Year Forecast	Assumptions
PRI	4,450	3,400	2,450	1,200	2,875	6,000	18,000	Produce at capacity ⁽²⁾
Standard Manufacturing	2,400	2,400	2,400	2,400	2,400	2,880	8,640	Reach 80% capacity
Aquila Recycling	1,192	705	533	650	770	1,152	3,456	Reach 80% capacity
Established Local Producers	8,042	6,505	5,383	4,250	6,045	10,032	30,096	
	2018	2019	2020	2021				
Feng Huang	300	3,750	-	11,937	3,997	5,968	17,905	Simple avg; may be 100% for export ⁽³⁾
Unlisted FOPs ⁽¹⁾	2,000	2,000	2,000	2,000	2,000	4,000	12,000	Similar to Standard Manufacturing
Foreign Owned Producers	2,300	5,750	2,000	13,937	5,997	9,968	29,905	
Eco Brixs	-	-	-	288	288	1,200	3,600	Increasing capacity to 100MT/month by 2023
Green Africa Recycling Company	-	-	-	-	-	3,600	10,800	50% probability weighted goal of 7,200/year
Emerging Producers	-	-	-	288	288	3,600	10,800	
Total rPET (in MT)	10,342	12,255	7,383	18,475	12,330	23,600	70,801	

(1) Reportedly owned by Chinese investors

(2) Highly conservative estimate as company has a goal to produce 30,000MT per year

(3) Feng Huang verbally expressed interest in supplying local market but did not provide further information

According to official export data, Uganda imported 67,035MT of PSF in 2018-2021 with 79% imported by Biplous

	2018	2019	2020	2021	2018-2021		
					Average	Total	% of total
Biplous (U) Ltd	16	52,806	-	-	13,205	52,822	78.8%
Ideal Houeshold Goods	-	-	130	-	33	130	0.2%
Zing Zing	54	57	-	-	28	111	0.2%
Dreamline furniture	-	-	-	0.5	0.1	0.5	0.0%
Total Furniture	69	52,863	130	0.5	13,266	53,063	79.2%
Nytil	352	2,419	1,909	1,642	1,581	6,323	9.4%
Sunbelt	1,368	1,652	1,215	368	1,151	4,603	6.9%
Fine Spinners	10	7	3	-	5	19	0.0%
Total Textile	1,730	4,077	3,128	2,010	2,736	10,945	16.3%
Government	1,463	-	-	-	366	1,463	2.2%
Wholesalers	347	414	464	339	391	1,565	2.3%
Total Other	1,810	414	464	339	757	3,027	4.5%
Grand Total	3,609	57,354	3,722	2,350	16,759	67,035	100.0%



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