Singapore Fashion Council

Textile Recycling Study

Executive Summary
October 2023

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Singapore's role in the textile value chain

SGD 3.5 BILLION

Worth of textiles was imported and distributed by Singapore in 2022 , with the involvement of about **151 apparel importers/brands**

24,000 to 41,000 tonnes

The estimated amount of ***targetable*** textile waste generated in Singapore

Price & Convenience vs. Green Efforts

To advance recycling efforts in the fashion sector, addressing **consumers' price-conscious and convenience-oriented mindset is crucial**

The future of Singapore's post-use textile value chain

An ecosystem characterised by **enhanced consumer awareness** and a well-established, **tech-enabled infrastructure** for post-use textile collection

Opportunities for Singapore to implement:

1. Investments into **collection and centralised sorting infrastructure** to enhance efficiency of recycling processes
2. Consumer **education to drive awareness** on both sustainable textile and improve textile disposal practices leading to better consumer choices and reduction in textile waste
3. Lastly, but equally important, government policies such as **reporting and labelling requirements in the early stages**, and **financial levers when recycling ecosystem matures**

On average, **9** pieces of clothing are discarded per year, per person

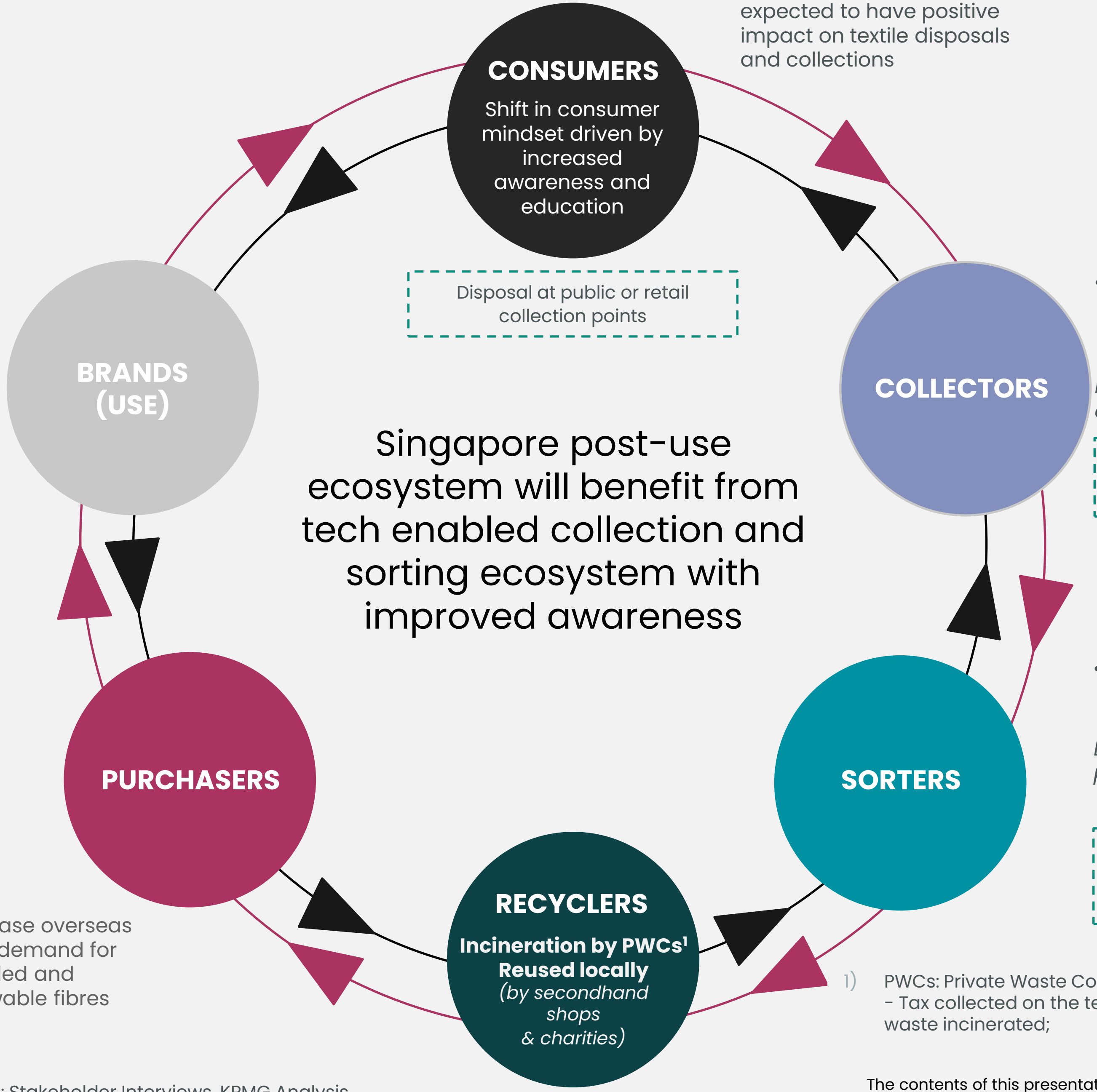
The amount of textile waste in Singapore is predicted to increase by **2%** annually over the next **5 years**

People under the age of **45** are becoming more mindful of their textile consumption

Secondhand shops experienced a rise of **20-60%** growth in users & transactions post-covid

Source(s): Stakeholder Interviews, KPMG Analysis

HOW CAN THIS CIRCULARITY WORK?



- Consumer education is expected to have positive impact on textile disposals and collections

Legend:
- Textile waste flow
- Money flow

- Smart bins with **sensors (with ultrasonic and IoT technology), inbuilt compressor and weight machine**

E.g. AI powered smart bins are currently being deployed in China

Deployed locally with an aim to **track** and **optimise operations**

- Pre-sorting and material sorting conducted with the help of **technology**

E.g. Automated NRI sorting technology piloted by Fibersort and Siptex

Deployed locally with **centralised** operations to increase the scale and quality of textile waste feedstock

GOVERNMENT

Reporting and labelling requirements as priority and financial levers where needed

Government initiatives (restriction on incineration, recycled content level) are expected to re-direct textile waste to environmentally friendly disposal methods (re-use, recycling) and support the business case for collectors

- Purchase overseas
- Drive demand for recycled and renewable fibres

1) PWCs: Private Waste Collectors - Tax collected on the textile waste incinerated;

Source(s): Stakeholder Interviews, KPMG Analysis

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For recycling to progress in fashion sector, consumers' price-conscious and convenience-oriented mindset are key areas to address

	Point of Sales	Point of Use	Post Use
Trends	Brands are **increasingly adopting sustainable & natural fibres** **Increased openness amongst the younger generation** to explore and purchase second-hand clothes	**Rising awareness amongst the younger generation** on ways to reuse, recycle and sustainably dispose of textile waste	**Decline in textile recycling** **Growing number of donation events and outlets** for second-hand clothes
Challenges	Consumers are **price-conscious** and are **unwilling to pay premiums** **Limited visibility** to the post-use supply chain and all the ecosystem players	Consumers are **convenience-oriented** and do not favour segregating waste regularly before disposal **Limited disposal options** for damaged or non-reusable textiles	**Limited emphasis from government** organisations for textile waste collection **Rising operational costs** driven by inflation and labour shortages

Source: KPMG analysis

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Singapore's path forward needs to encompass shift in consumer mindset, supported by adequate infrastructure and regulations

Vision/ Objective: To improve consumer awareness and provide key infrastructure/facilities for post-use collection

Pillar	Regulation	Financing and Taxation	Public/ Consumers	Private Investment	Collaboration
Initiative(s)	Manage/minimise the textile waste in incineration/landfill To facilitate establishment of dedicated organization to implement the following: • Environmental labelling ✓ • Sorting/ disposal rules ✓ • Post-use waste reporting ✓ • Eco-design rules and requirements ✓ • Recycled content target • Methodology to calculate environmental impact	Using financial means to disincentivize usage of landfill/ incineration To work with the dedicated organization to implement the following: • Dedicated fund for R&D ✓ • Incentives for recycling and collection • Disincentives for use of virgin materials	Work with the dedicated organization to implement the following: • Consumer education on sustainable textiles and practices ✓ • Eco-branding ✓ • Dedicated agencies for communication • Communication budget	Facilitate the following: • Establishment of centralized sorting facility ✓ • Network expansion for collection points • Adoption of technologies in collection • Partnership with recycling facilities in close proximity	Encourage institutional collaborations (public/private and sector specific) for technologies and products To work with the dedicated organization to launch the following: • Grants for GUI • Competitions for applications of technology

✓ Key initiatives to be implemented by dedicated organization based on key learnings from the benchmarked countries

Source: KPMG analysis

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HOW ARE OTHER COUNTRIES DOING IT?

China

Secondhand export market drives the textile recycling market supported by tax breaks from government.

Denmark

Market is driven by strong domestic re-use/donation mindset with dual collection system* being implemented.

France

Initiatives are driven by EPR# with most of the clothing used domestically or exported overseas for recycling.

Netherlands

EPR is being implemented with concentrated market structure with a pool of strong players and automated sorting in place.

Japan

Recycling technology players play significant role in ecosystem along with consumer education and engagement.

- * Dual collection systems is a combination of **charity waste collection stations** and **private waste collection stations**
- # **EPR:** Extended Producer Responsibility

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