THE FASHION PULPIT

Measuring Our Impact

2018-2022

FOREWORD

We are doing things a little differently in the first instalment of our impact report. Instead of looking solely at the past year, we are taking stock of the lessons, opportunities, and challenges we faced in the past four years.

We want to do more besides accounting for the company's growth and milestones. By examining clothes-swapping's social and environmental impact, we envision this report contributing to fashion sustainability issues in Singapore.

Since the company's conception in 2018, The Fashion Pulpit has evolved and adapted with a growing understanding of our position as a sustainable fashion business.

This report is a culmination of four years of hard work. We invite you to step into our minds as we map out what role clothes-swapping has in the wider fashion industry and your wardrobe.

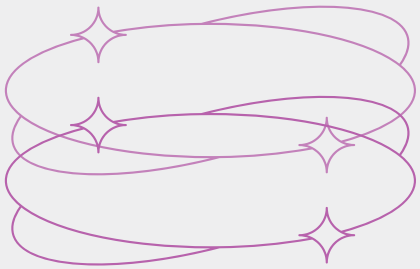
ABOUT US

The Fashion Pulpit is an **independent**, **circular** fashion hub that aims to **advance sustainable thinking and practices** through our four branches: swapping, upcycling, thrifting, and broadening narratives with education.

Maintaining a clothes-swapping business is only possible with the labour of love. It is *essential* to recognise the physical, mental, and emotional labour that volunteers and employees have contributed to the initiative-turned-business over the years.

As of November 2022, The Fashion Pulpit team is seven people strong. As a lean team, individual employees take on various tasks beyond their assigned roles to keep the shop open and platforms running.

OUR GUIDING PRINCIPLES



Minimise islandwide post-consumer textile waste via the **extension and expansion** of clothing lifespan

Advance **circular thinking and behaviour** around clothing consumption and our collective love for clothes

Create a **safe** and **judgment-free** space for all to enjoy fashion, style and self-expression

Publish open-source fashion sustainability material to **promote socio-environmental education and awareness** in the field of fashion

CONTENTS

1

Clothes-swapping @ The Fashion Pulpit

Inside an alternative economy

We run an unconventional fashion business. Since 2018, we began to develop a unique business model catered to harnessing our operations and growing with our community. Figure 1 depicts the four pillars of The Fashion Pulpit.

'Clothes-swapping' wholly encompasses the **business** (logistics, manpower, growing the platform), **process** (i.e., taking a trip to the swap shop with items to swap in, trying on clothes and swapping them out with points), and the **usage** of swapped-out items.

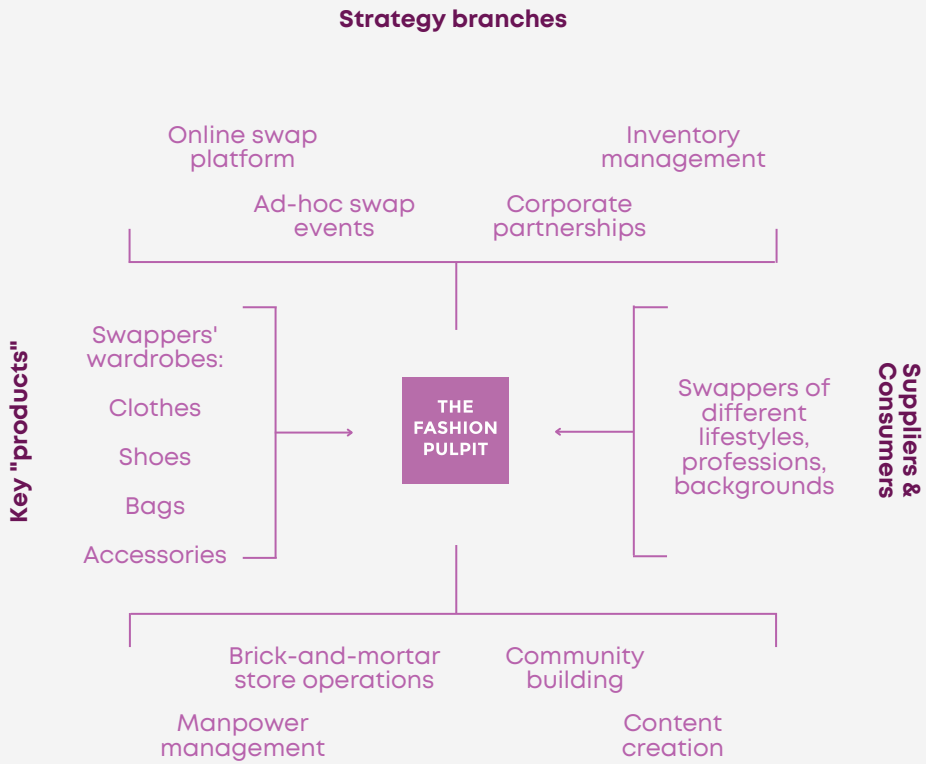
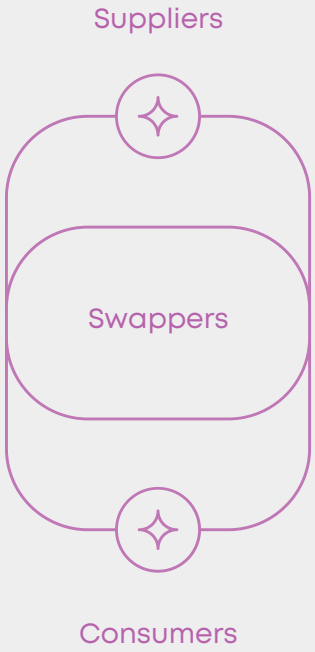


Figure 1: Our framework

WHY WE MADE IT *OUR* BUSINESSS



EXTENDS CLOTHING LIFESPAN

Swapping directly contributes to a fashion item's lifespan extension. The process of idle clothes being redirected into a fellow swapper's wardrobe, known as rehoming, means that clothes are given multiple chances to be loved again. Wear-per-item increases as the rotation of items amongst swappers increases.

EXPANDS POSSIBILITIES

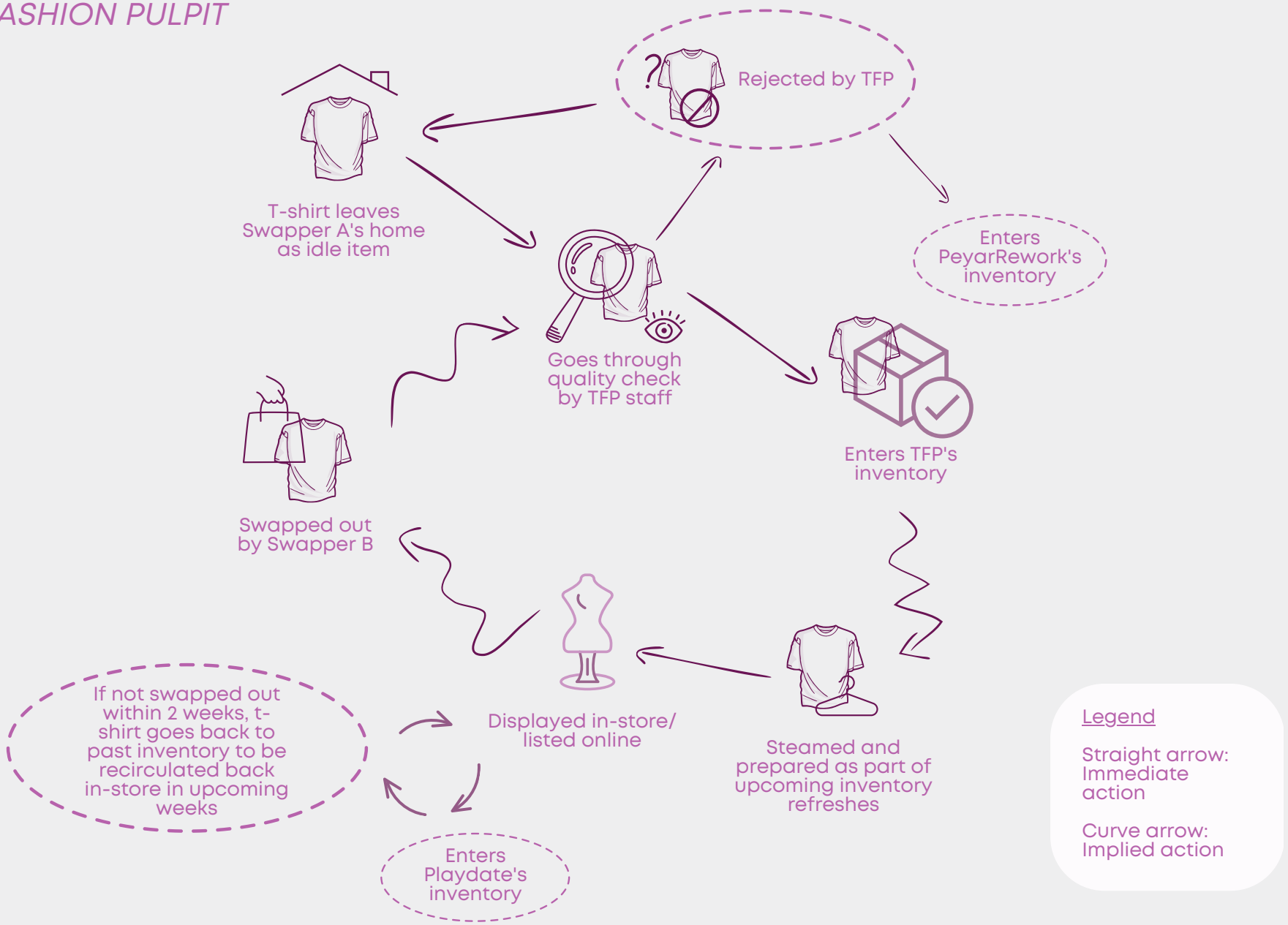
A staggering 100 billion clothing items are produced yearly, nearly 14 items for every human (Clean Clothes Campaign, 2022). Besides introducing new ways of wearing and appreciating a garment, swapping allows the garment to pass through the hands of more than one wearer. In the long run, swapping enables clothing consumption and ownership to be viewed as expansive and abundant, starkly different from the scarcity mindset that mainstream fashion is based on.

WHERE CONSUMERS BECOME SUPPLIERS

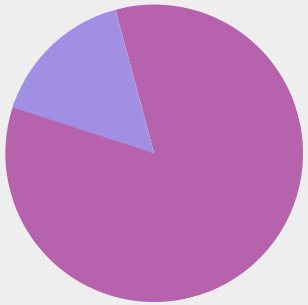
Clothes-swapping creates a web of interconnected and interdependent supplier-consumer relationships. At any one point, a swapper is either a supplier or consumer, or both. This process interestingly presents a unique opportunity of taking ownership of what is supplied. Swappers are sharing our platform as much as they are sharing clothes.

LIFECYCLE OF A T-SHIRT
@ THE FASHION PULPIT

Figure 2: Lifecycle of a TFP t-shirt



OUR INVENTORY



84% of our inventory comprises the fashion items our swappers bring in, while the other 16% consists of retail dead stock, public donation and items we get from ad-hoc swap events.

With an ever-growing inventory, our primary goal is for all of them to be given a new lease of life.

2,046,063 pcs and counting...

*As of 17 Nov 2022

INVENTORY MANAGEMENT

At TFP, strategy branches are more than revenue channels. They are a natural solution to increase the reusability of clothing.

With limited storage and display capacity, we need alternative routes to maximise the lifespan and usability of items that are not swapped out after some time.

Playdate and PeyarRework are two such solutions as shown in figure 2 (pg. 04).

CONTENT CREATION & COMMUNITY BUILDING

Content creation and community building are the roots of our operations, each relying on the other to flourish. As of Nov 2022, we have **17,434** tags on Instagram (and counting)!

Our vlogs and first podcast series, 'The Power of Swapping,' shaped our vision for fashion sustainability in Singapore.

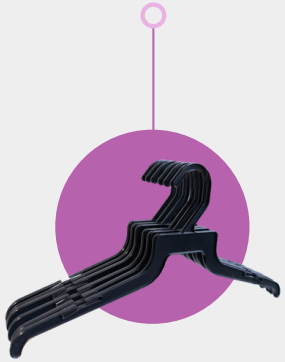
As we evolved, so did our community. Harnessing their creativity and asking their 'whys' became our priority. 'Swappers' Roll Call', 'Swap Stories' and 'The Journal of Wear' are ongoing projects that spotlight their relationship with clothes-swapping and stories with their clothes.

As part of publishing open-source fashion sustainability material, we produced a new podcast series, 're:wear', and published our first research study, 'Inside Our Wardrobe'.

THE SMALL BITS THAT *MATTER*

Labelling in pencil allows us to reuse our garment tags

Most of our hangers are donations from individuals, and companies like For the Love of Laundry (donated 5,000 hangers)



In the beginning, we made a conscious decision to not make TFP paper bags so as to not create extra waste.

Instead, we re-use paper/canvas tote bags given to us by swappers.

Our in-store swap bags and changing room drapes are repurposed from old curtain fabric

Our plant babies are gathered from our friends and family. They are as much used to decorate the store as our plant sanctuary.

Our ecelectic furniture collection is a constellation of generous gifts from swappers, and loans from local furniture store, Gallery 278

2

Why Swap?

The value of swapping

WE ARE PRESENTING A **SOLUTION**

According to Inside Our Wardrobe (2022), a wearers-focused, collaborative study report we co-published with Singapore Sustainability Academy in June, most of our clothes are *not* used to their fullest potential. While they might sometimes result from an impulse purchase, dormant (not worn but still in good condition) clothes sit in our wardrobes due to ill-fit, lack of occasions to wear them, or simply because we have outgrown them.

A shift in self-perception resulting in a mismatch between personal taste and clothes inevitably occurs over time. Swapping presents a straightforward solution by getting better wear out of existing clothes and potentially changing how we engage with fashion and the industry.

From a macro view, clothes-swapping is an alternative to conventional retail models and consumption patterns. In a world where brands chase the largest profit margins with cheap costs and overproduction, and clothing purchases are based solely on a per-transaction retailer-buyer relationship, clothes swapping posits a different value system altogether.

Instead of exchanging money with singular goods, we place value on the 'swapability' of swapped-in items via an accumulative points system. Membership fees account directly for rent (shop and storage), manpower engagement, day-to-day operational costs, and funding upcycling workshops and education initiatives.

The findings in this report prove that the 'business of swapping' achieves these theoretical possibilities.

A GROWING COMMUNITY

We have garnered over 6,000 members in four years

Our membership sign-ups have steadily increased over the years, with an exception of 2020 when Singapore was under the pandemic lockdown for several months.

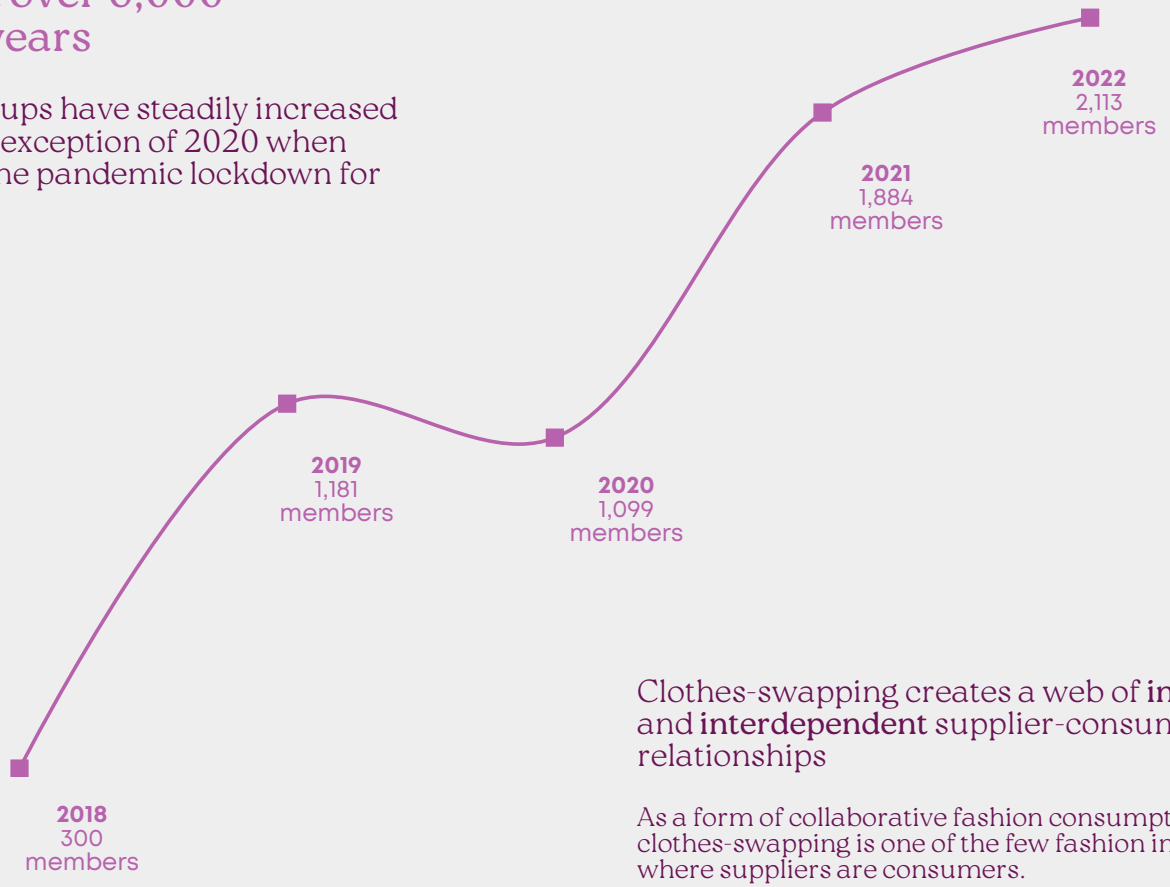


Figure 3: TFP membership growth (2018-2022)

Clothes-swapping creates a web of **interconnected** and **interdependent** supplier-consumer relationships

As a form of collaborative fashion consumption method, clothes-swapping is one of the few fashion industry models where suppliers are consumers.

This process interestingly presents a unique opportunity of taking ownership of what is supplied. Swappers are sharing this platform as much as they are sharing clothes.

OUR SWAPPERS TELL US

In October 2022, **7** swappers participated in a semi-structured focus group, and **350** swappers responded to an online survey to speak about their swapping habits and motivations.

1

The Fashion Pulpit's presence increased the **reusability** of clothes, *reducing* **post-consumer textile waste** in Singapore

- **53%** of swappers began their first swap to re-home their clothes
- **88%** of swappers say they are satisfied with their wardrobe after swapping
- **35%** of unworn clothes would have been directed to donation channels* if The Fashion Pulpit did not exist

**Poor donation practices can lead to clothing being dumped in landfills eventually*

2

Swapping results in a fundamental shift in the **mindset** and **behaviour** of fashion consumers in Singapore

- **38%** of swappers started swapping in search of a more sustainable way to enjoy fashion

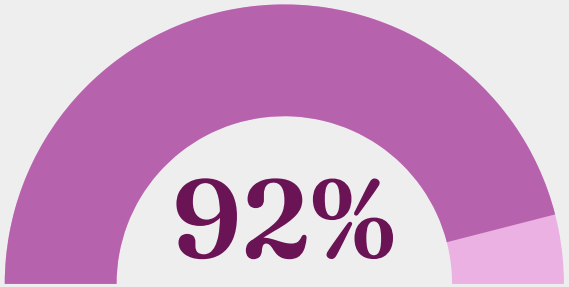
  Most swappers stated that they continue to swap because swapping aligns with their intention to be more conscious of consumption

- **72%** of swappers state that swapping is now their first choice often/all the time when considering getting a new fashion item

- **51%** of swappers indicated that their participation in swapping changed how people around them perceived secondhand clothing

3

Swapping clothes proves to be effective in *reducing* the likelihood of **buying new**



of swappers indicated that swapping has helped them avoid buying new to a certain extent.

Of the majority, **24%** no longer buy new. **57%** still buy new but will look to swap *first*.

Notable responses:

"I now think twice before buying"

"I only buy staples and items that are hard to swap and choose to swap fashionable styles"

"Only will buy new when traveling/during festive occasions"

"After swapping I become more discerning of brands to support/styles to buy that will stand the test of wear and time."

"I still buy, but only secondhand."

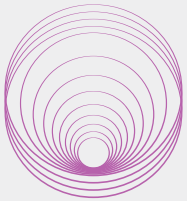
4 The *value* of clothes-swapping is **generated** amongst swappers and then subsequently **captured** by members of society and the fashion system.

1. Swapping is a socially and environmentally conscious way of consumption
2. The Fashion Pulpit environment creates a safe, judgement-free space to enjoy fashion, and experiment with styles freely
3. Clothes swapping extends the lifespan of unworn clothing, reducing post-consumer waste
4. The act and process of swapping help consumers repair our relationship with fashion consumption
5. For some, swapping's lower transactional cost helps with transitioning out of purchasing fast fashion items
6. Swapping facilitates a limitless journey of discovering ever-evolving identities (fashion or not)

Figure 4: The value clothes-swapping creates

Since the beginning, we have been searching for the value that clothes-swapping brings to the industry, the community, and the individual. We asked our swappers how they would define the value of swapping, which The Fashion Pulpit brings to them.

Figure 4 is a consolidation of responses* to the question, **'In your opinion, what value does swapping create?'**



When swappers engage in the mutual sharing of clothes, value is conveyed, broadened, and deepened within a larger community. *Value*, herein, lies in the beneficial outcomes that a clothes-swapping platform brings to an individual and the larger community.

From our standpoint, *value* is heightened when we understand that our desire for expression and style affects and intersects with greater systemic issues.

Clothes-swapping reinstates agency to consumers as they have liberty over how value is created and subsequently captured.

3

Measuring Our Impact

Our value proposition

SO WE ASKED...

ARE WE MAKING REAL IMPACT?
ARE WE MAKING REAL IMPACT?
ARE WE MAKING REAL IMPACT?

Swapping generates *unique* emotional value that traditional retail models cannot emulate. This satisfaction is immeasurable and intangible.

Still, in a world where governments and corporations only speak of targets, money, cost, and benefit, this chapter sets out to understand what tangible impact clothes-swapping measures up to.

Additionally, given that current post-consumer waste processes are nascent, many believe that for end-of-life infrastructures to be more robust and better equipped than they are now, it is helpful to perceive clothing as waste once they are produced.

Note: In this chapter, we look at data points from Jan - Dec 2021 for consistency's sake unless otherwise stated.

In 2021, **84,993** articles of clothing, shoes, bags, and accessories were swapped-in

Amongst all swapped-in items, clothes took up 82% of our inventory, reflecting the larger production volumes of clothing in the first-hand market* compared to bags, shoes, and accessories.

*According to Common Objective (2018), it is estimated that around the world, about 107 billion units of apparel and 14.5 billion pairs of shoes were purchased in 2016.

We *saved* **10,100kg** of fashion waste

According to the National Environmental Agency, **189,000 tonnes** of textile waste were *generated* in 2021 in Singapore. seven tonnes were *recycled*, and **182,000 tonnes** were *incinerated*.

10,100 kg is 0.005% of textile waste generated in 2021. This clothing waste was not in the incinerator or unreliable donation channels.

10,100 kg is a drop in the ocean in contrast to what we send to landfills and incinerators, but it is significant.

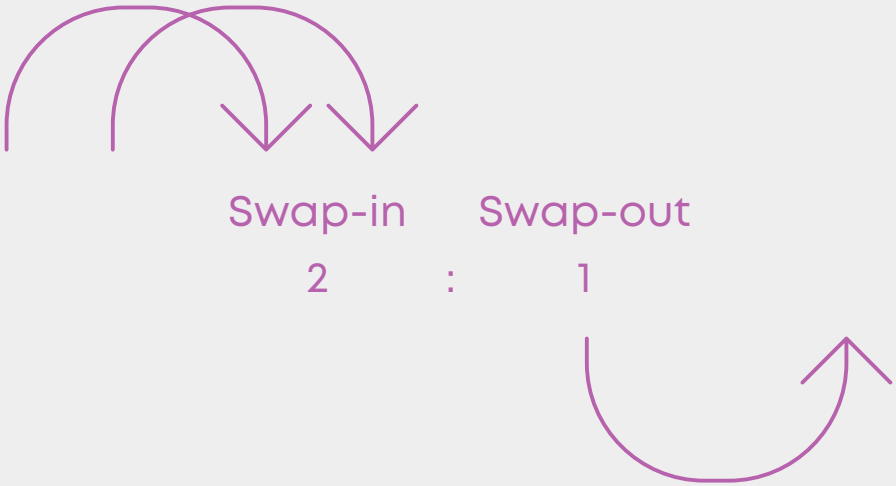
All we can save counts.

According to the Changing Markets Foundation (2021), to stay below 1.5 degrees of global heating, the energy sector needs to **decarbonise** entirely.

Incineration is not viable for Singapore to manage textile waste in the long term. It cannot be our sole reliance.

We need rapid but considered diversion from incinerators, landfills, and donation channels with overwhelmed capacities.

Re-homing through swapping



At The Fashion Pulpit, the average swap-in to swap-out rate is **2:1***.

*This is not an absolute ratio, given that swappers can re-swap in the same items they had previously swapped out (as long as they remain in good condition)

As swap-in quantities increase yearly, swap-out quantities growing in tandem show efficacy in rehoming the items in our inventory.

Items not swapped out after displaying in-store for some time are sold through Playdate or upcycled via PeyaRework to maximise lifespan and reusability.

Figure 5 shows *the current* lifecycle of **Greenhouse Gas (GHG) emissions of a new product purchased in Singapore** along its value chain (Singapore Fashion Council, 2022)

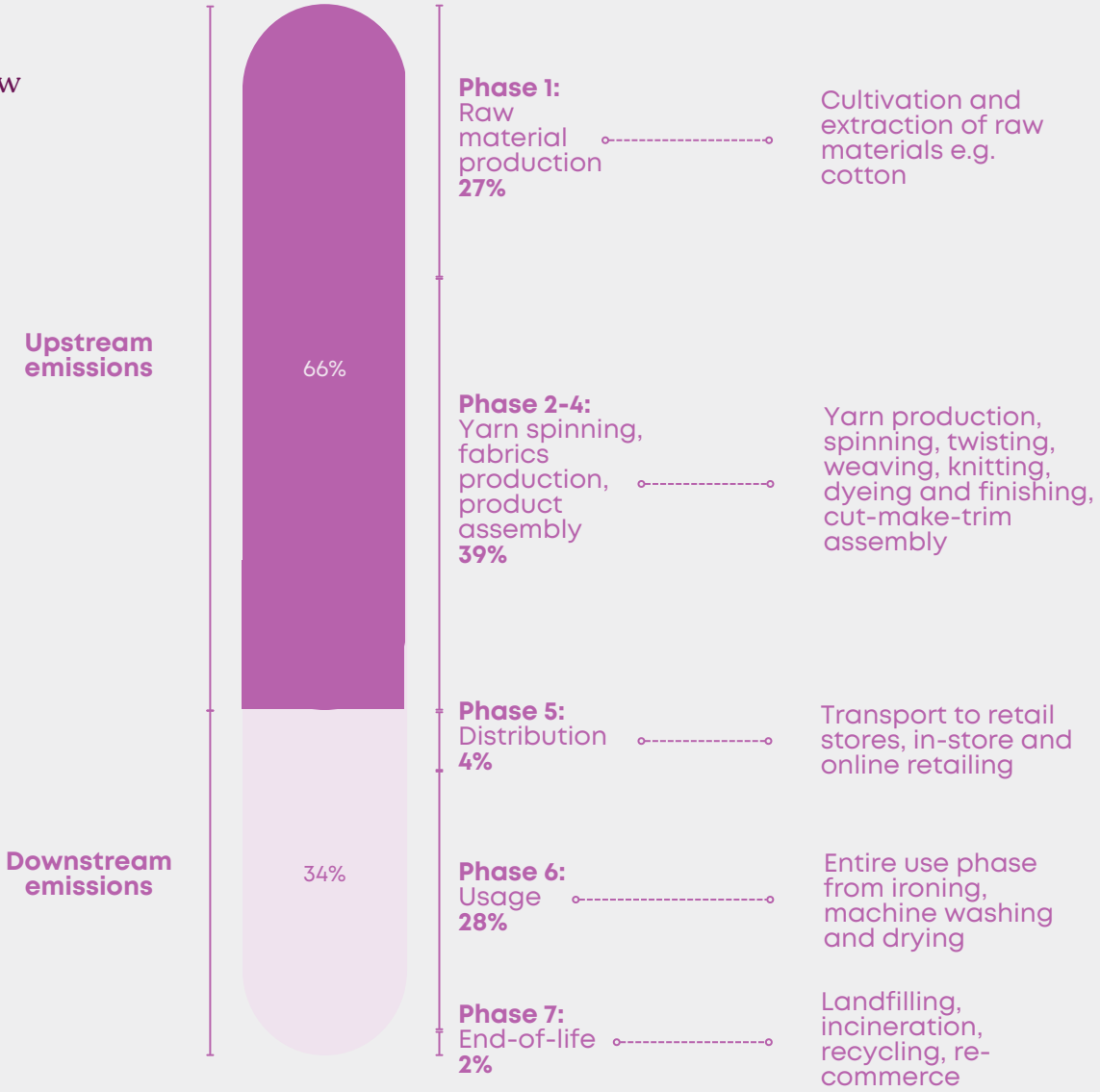


Figure 5: Lifecycle of GHG emissions of a new product purchased in Singapore (SFC, 2022)

SFC (2022) found research to prove that:

"Singapore's [GHG] emissions would need to decrease by **1,846 kilo-tonnes** (50% from 2019 levels) to align with the global 1.5°C pathway scenario."

SFC (2022) further estimated that an increase in the use of local re-commerce models and the promotion of repair and refurbishment of fashion products will bring about **7% of GHG emissions abatement**. Additionally, *Fashion on Climate* (2020) reported:

"Circular approaches could deliver around **143 million tonnes of GHG emissions savings** in 2030, with every percentage point increase in market share saving around 13 million tonnes."

Clothes-swapping *is* a **feasible decarbonisation solution** to *reject* current global heating trajectories

Why?

- Clothes-swapping promotes alternative fashion consumption behaviour and circular business model innovation, aligning with abatement initiatives proposed by leading organisations
- As a business, clothes-swapping has high abatement potential and level of accessibility as it does not require new technologies
- Tapping into idle resources, our efforts drastically reduce the need to extract new and finite resources for upstream production

How?

Based on the Greenhouse Gas Protocol and using the allocation-by-classification method, we are attempting to report our carbon emissions as a company for the first time.

CALCULATING OUR CORPORATE CARBON FOOTPRINT (CCF)

We want to acknowledge the assumptions this calculation builds upon. A list of assumptions (detailed on pages 27-29) was made to analyse our CCF, ensuring we err on our carbon footprint's conservative side. This compensates for the need for primary data on the actual breakdown of clothing materials we collected in 2021, air-conditioning usage and electricity emission factors, etc.

The following pages show a tabulation of

- The Fashion Pulpit's CCF based on relevant Scope 3 emissions
- A hypothetical scenario comparing our carbon emissions with a fictional fashion company.
  - This hypothetical scenario illustrates the benefits of adopting a second-hand fashion business model, or in our case, a clothes-swapping business model, versus a fashion company that produces new products to sell.

What this means for us

Before embarking on this exercise, we asked ourselves what calculating our CCF meant for us. Despite lacking primary data, this calculation lays the foundation for more comprehensive data quality and reporting in the future.

At the same time, knowing our CCF also acts as a guide for implementing better practices within the company. For instance, our calculations inform us that we can look into stronger stakeholder engagement to ask for switches in alternative renewable energy sources and actively participate in tenant discussions with building management to incite change. All of this is as we acknowledge that we are doing nearly the best we can with the emissions at our current capacities.

It is equally important to know where we can reduce emissions beyond our scope of responsibility according to the Greenhouse Gas Protocol. This could look like more education on the use phase of clothing, which takes up a sizable 28% of total emissions based on product lifecycle (figure 5). Advocacy around fabric care, washing techniques, and mending and repairing skills can further prolong the lifespan of clothing.

THE FASHION PULPIT'S CCF

According to the Greenhouse Gas Protocol, most of The Fashion Pulpit's carbon emissions* are generated from the End-of-Life treatment of products (78%). This refers to emissions produced from the eventual landfilling, incinerating, and recycling (given existing textile waste management infrastructure) of clothes swapped-in and out at TFP.

Other emissions are generated from refrigerant usage (air-conditioning), purchased electricity, employee commute, waste, and purchased goods and services (in this case, this refers to water used to steam clothes displayed in the shop).

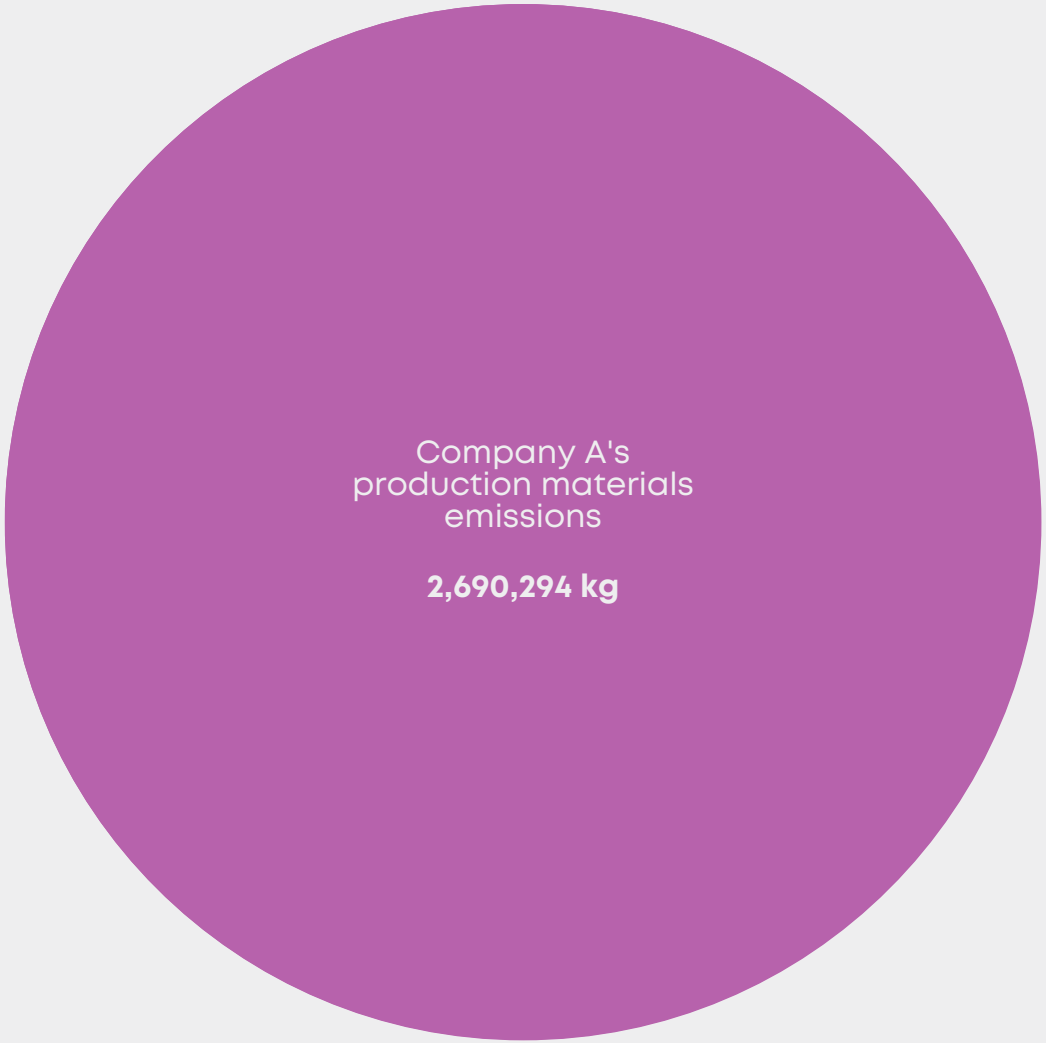
This brings The Fashion Pulpit's total emissions in 2021 to an estimated **98,373 kg**.

*Refer to page 27 for further elaboration on reporting limitations and respective assumptions made to arrive at numbers in figure 6

	Emissions category	Carbon emissions/kg
Scope 1: Direct emissions	Refrigerant	16,257
Scope 2: Indirect emissions	Purchased electricity (location-based approach)	4,719
Scope 3: Upstream emissions	Purchased goods & services (water usage)	3
	Production materials	NA
	Employee commuting	416
Scope 3: Downstream emissions	Transport & distribution	NA
	Waste generated	112
	End-of-life treatment of products	76,866
Total emissions	**98,373 kg of carbon emissions**	

Figure 6: The Fashion Pulpit's carbon emissions in 2021

CARBON EMISSIONS IN 2021 (Scale 1: 27)



The Fashion Pulpit's emissions

98,373 kg

Considering the assumptions, should we compare our total emissions with a hypothetical company 'A' that produces 10,100 kg of clothing in the same year (33% cotton, 67% polyester plain, white t-shirts), A's total 'production materials' emissions, independent of other emission categories, would amount to 2,690,294 kg in a single year*.

This is 27 times the size of our total emissions in 2021. In other words, if The Fashion Pulpit had produced and sold 10,100 kg of brand-new clothing – instead of operating on our current business model – our carbon emissions would be much greater than 27 times of what we currently emit. This shows that there is high abatement potential in reducing carbon emissions.

Additionally, our water usage in 2021 generated 3kg of carbon emissions. These emissions come from using 254 liters of water to steam an average of 33,800 garments displayed last year. To put things into perspective, it takes 2,700 liters of water to grow enough cotton to make a cotton t-shirt (Better Cotton, 2014).

*Refer to page 29 for Company A's CCF calculation

WE ARE FILLING A GAP

Clothes-swapping fills a gap in the fashion industry's road to decarbonisation.

We would argue that by **running a swap shop** and **promoting better practices** with clothing consumption, The Fashion Pulpit has been contributing to the road to -1.5°C and will only continue to. Our efforts and expertise in **expanding and extending clothing lifespan** dovetail with Singapore's sustainable development strategies, and are relevant to the larger fashion and sustainability landscape.

Having done our reflecting, data collecting, and carbon footprint accounting, we now have a more robust grounding over our value proposition. This allows us to strategise and better allocate our energy and time to future projects.

Right now, the fashion industry needs urgent reinterpretation and re-imagination. **Clothes-swapping enables an alternative system to flourish**: one where value is created and captured by an activity that **keeps clothing in circulation longer**.

A NOTE FROM THE FOUNDER

Dear reader,

It has been a challenging yet rewarding ride.

In four years, we moved three times and just made our recent move in June. While moving is always bittersweet, as it is running a sustainable fashion business, our obstacles prompt us to explore new opportunities. As we navigate through tangible and intangible spaces, we form new relationships and rekindle old ones. Our OG swappers grow alongside us as they enter new stages of their lives, and we meet new faces every day. We hold this spirit very close to our hearts.

Working on this report felt like a good way to account for these past four years and prepare for more to come. From having deep conversations with our swappers and receiving feedback through the survey, we slowly began to understand the value that The Fashion Pulpit creates. Nowadays, we are conditioned to focus on how big, significant, and newsworthy an impact is. But you remind us that there is no impact too small. It all started when we looked at our wardrobe. Thank you for being on this journey with us.

When growth and scale become indulgent dreams to chase, this report is our anchor to focus on our purpose. As for you, this report catalyses many more conversations on how we can make fashion better. Let this not be an indicator of how far or big we can be, but an invitation for everyone to stay curious and never get tired of exploring possibilities to make the most of what we have. For us, it all started with wanting to create a positive impact for the greater good of everyone.

Cheers for the wonderful four years, and let us continue to make fashion a force for good.

Love,
Raye

ACKNOWLEDGEMENTS

Measuring Our Impact by The Fashion Pulpit
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& last but not least, ALL clothes-swappers!

APPENDIX **METHODOLOGY**

1.1 SWAPPER BEHAVIOUR

To ensure that Chapter 2 is researched deeply and widely (not based on confirmation bias), we first began understanding how TFP's existence resulted in behavioural changes amongst our swappers. We ran two semi-structured focus groups with seven participants in September 2022 to find common themes that emerge before using them to inform the construction of our online survey. Over a period of 3 weeks, 350 responses were gathered from the community.

Below are the questions we asked and the responses we received. They categorised thematically:

- Motivations to swap
- Impact on behavioural/mindset shift

***What motivated you to start swapping at TFP? Please pick the most compelling reason.**

To "rehome" clothes and give them a second lease of life [53%]
To explore sustainable fashion consumption activities [38%]
Curiosity for the activity [4%]
Influenced by friends/family [2%]
Other reasons [3%]

What drives/would drive you to continue swapping at TFP? Please pick your Top 2.

Sustainable consumption [72%]
Lower transactional cost [62%]
Wardrobe extension [52%]
Judgement-free way of shopping [20%]
Social belonging [4%]

How would you say swapping has affected your frequency of buying-new fashion items (this excludes athleisure wear, lingerie, and other items TFP does not carry)?

No longer buy new [24%]
Still buy new, but will look to swap first [57%]
Swapping hasn't changed frequency [8%]

If TFP did not exist, what would you otherwise do with the clothes you bring to swap?

Donate [35%]
Resell on resale platforms [27%]
Still kept in wardrobe/storage [15%]
Give away to friends [13%]
Organise my clothes swap to circulate the clothes to other people [6%]
Throw away [3%]

Do you think your swapping behaviour has changed how people around you perceive secondhand clothing?

Yes [51%]
Maybe [38%]
No [11%]

On a scale of 1 to 5, 5 being the most satisfied, how would you rate your satisfaction level with your wardrobe after swapping?

Most satisfied [41%]
Satisfied [47%]
Somewhat satisfied [11%]
Not satisfied [1%]

1.2 CARBON EMISSONS REPORTING

Reporting limitations

This report follows Greenhouse Gas Protocol's technical guidance on calculating Scope 1, 2, and 3 emissions. It is self-reported and not audited by a third-party company. Due to a lack of primary data (product material composition collected in 2021, air-conditioning usage, electricity emission factors, etc.), this report references open-source, public information, and academic journals for carbon emissions factors. It should be noted that our emissions calculator is a preliminary estimate of our actual carbon footprint. Factors considered are helmed by assumptions to avoid discrepancies and misrepresentations to the best of our ability.

Assumptions made:

All calculations are made based solely on 2021 operations. Our calculation excludes production materials and consumables (e.g., sewing machines) as they were bought before or after 2021. No packaging materials were bought new in 2021, as all are reused from swappers' donations. We did not account for emission factors under 'Transport and Distribution' as most event set-ups did not require vehicle transportation. All logistics from Playdate pop-up markets were transported by foot as they were within walking distance.

We also chose not to calculate emission factors from our website hosting service as it is negligible in emission intensity. However, they will be accounted for in future reports since we launched our online swap service in the second half of 2022.

Unit of measurement - All emission factors are of CO2 equivalent, which encompasses all GHG emissions (including Methane, Nitrous Oxide, and other gases)

Base product - White, plain, unprinted t-shirts

Total production weight - TFP received 10,100kg of fashion items in 2021. We are assuming that all 10,100kg are t-shirts.

Material distribution - We do not have internal records on the material breakdown of items swapped-in. Therefore, the next best alternative was to reference this segment to the market trends. [According to Changing Markets' *Fossil Fashion: The hidden reliance of fast fashion on fossil fuel* report, the world's fiber production of polyester to cotton is 2:1 in 2020.] Hence, taking this estimation, we assume that TFP's inventory consists of 67% polyester t-shirts (weighing 6,767kg) and 33% t-shirts (weighing 3,333kg).

Weight per product - A cotton t-shirt weighs 0.175kg (Taskin et al., 2017), and a polyester t-shirt weighs 0.150kg (Wu, 2020). Due to the lack of open-source information, this report takes carbon emission factors from academic journal articles that have pre-determined the weight of cotton and polyester t-shirts. [In Taskin et al., 2017, one cotton T-shirt weighing 175 grams was found to be 8.46 kg CO2-eq. In Wu, 2020, one polyester t-shirt weighing 150 grams has a global warming equivalent to 81.62 kg of CO2].

System boundary - Cradle-to-grave lifecycle assessment was examined

Hypothetical Company A - Company A is an apparel company that produced 10,100kg of brand-new t-shirts in 2021. Of these, 67% are polyester, and 33% are cotton t-shirts. These figures are based on the total weight of products collected by TFP (10,100 kg) and follow the same material breakdown (67% polyester, 33% cotton) assumption as that of TFP.

In this hypothetical scenario, we looked exclusively at Company A's emissions from purchased goods and services in Scope 3, specifically from production materials. Figure 5 on page 19 shows that production materials emissions account for 70% of total emissions (Raw material 27% + Production 39% + Distribution 4% = 70%).

No usage, operational, or non-product-related emissions (e.g., fuel, electricity, heating for office, employee commuting) were included.

TFP carbon emissions calculator	Emissions category	Data source	Usage in 2021	Carbon emissions/ kg	Assumptions (if applicable)
Scope 1: Direct emissions	Refrigerant	According to a Channel News Asia (2021) article, a standard 2 kilowatt AC unit which can cool a room of up to 20 sq m produces about 1.4 tonnes of carbon emissions/year	Marina One shop space - 229 sq m	16,257	Estimated based on the national average of carbon emitted per square meter to cool down a building in Singapore
Scope 2: Indirect emissions	Purchased electricity	United States Environmental Protection Agency's GHG equivalencies calculator	10,908 kWh	4,719	NA
Scope 3: Upstream emissions	Purchased goods & services	Water usage - 200 garments require 1.5L of water to steam (based on our data)	253.5L of water	2.66	Every cubic meter of water consumed generates 10.5 kg of carbon emissions (WWINT Water Intelligence, 2022)
	Production materials	NA for TFP as we do not undergo any clothing manufacturing processes			
	Employee commuting	We calculated the commute distance between home and Downtown MRT station (closet train station to TFP in 2021) of every employee who worked more than 4 days a week in 2021. 6 employees' commute footprint were calculated based on the number of days they worked in 2021 and the combined distance of a two-way commute	NA	416.26	1. To-and-fro distance travelled from Downtown MRT to home is the same daily, excluding employees' personal travels after work hours 2. Carbon emissions are based on how much carbon emissions are generated by the MRT only, as all employees take the MRT to work
Scope 3: Downstream emissions	Transport & distribution	NA for 2021			
	Office waste generated	Based on internal records, 1.8 kg on average/week and according to IPCC (2003), 1 Mg of municipal waste in MSW incinerators is associated with the production of about 0.7 to 1.2 Mg of CO_2 output	93.6kg of waste	112.32	Most waste come from broken plastic hangers, cardboard shoe boxes, food waste and disposable food packaging
	End-of-life treatment of products	According to academic journal articles, one cotton T-shirt weighing 175 grams was found to be 8.46 kg CO_2-eq (Taskin et al, 2017) and one polyester T-shirt weighing 150 grams contributes to global warming equivalent to 81.62 kg of CO_2. (Wu, 2020)	**2%** of 161,127 kg CO_2-eq of CO_2 emissions produced over the lifecycles of 3,333kg of cotton t-shirts that TFP amassed in 2021 **2%** of 3,682,150 kg of CO_2-eq of CO_2 emissions produced over the lifecycles of 6,767kg of polyester t-shirts that TFP amassed in 2021	76865.54	2% of end-of-life emissions is assumed based on the life cycle [cradle-to-grave] carbon emissions of a new product purchased in Singapore (SFC, 2022)
Total emissions in 2021				**82,116 kg of carbon emissions**	

Company A carbon emissions	Emissions category	Data source	Usage in 2021	Carbon emissions/ kg	Assumptions (if applicable)
Scope 3: Upstream emissions	Production materials	According to academic journal articles, one cotton T-shirt weighing 175 grams was found to be 8.46 kg CO2-eq (Taskin et al, 2017) and one polyester T-shirt weighing 150 grams contributes to global warming equivalent to 81.62 kg of CO2. (Wu, 2020)	**70%** of 161,127 kg CO2-eq of CO2 emissions produced over the lifecycles of 3,333kg of cotton t-shirts that Company A produced in 2021 **70%** of 3,682,150 kg of CO2-eq of CO2 emissions produced over the lifecycles of 6,767kg of polyester t-shirts that Company A produced in 2021	**2,690,294**	We assume that Company A produced 3,333kg of cotton t-shirts and 6,767kg of polyester t-shirts in 2021. 70% [Raw material 27% + Production 39% + Distribution 4% = 70%] of emissions is assumed based on the life cycle [cradle-to-grave] carbon emissions of a new product purchased in Singapore, according to SFC (2022).
Difference between Company A and TFP's emissions				**2,690,294/98,373 ≈ 27 times**	

APPENDIX **REFERENCE LIST**

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