- FMCG PERSONAL CARE ANALYSIS -

Good Refill System

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Good Refill System

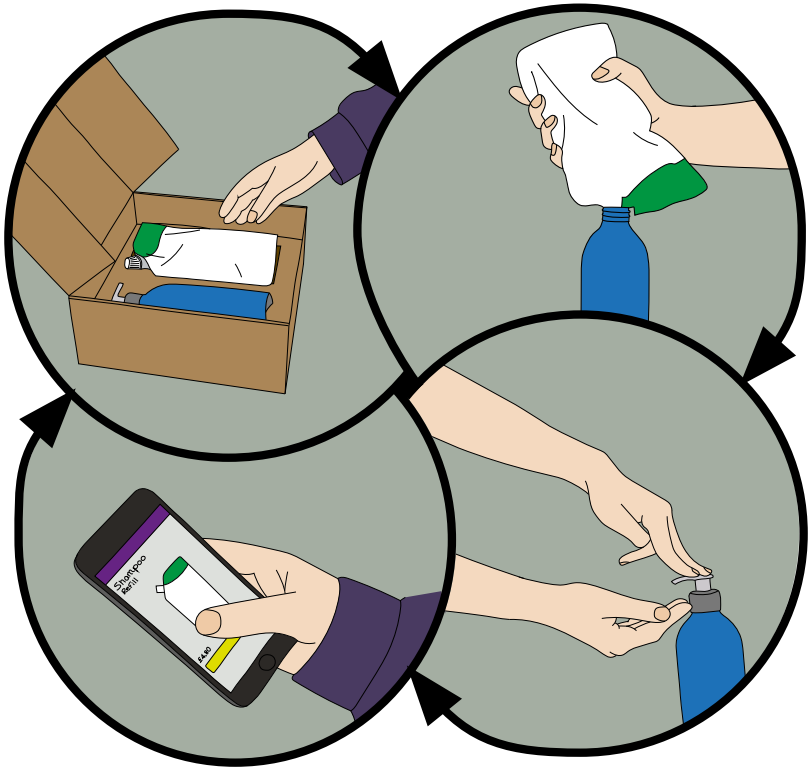
With an estimated 30.09 billion USD market, liquid shampoo is key in personal care. Unfortunately, their plastic bottles often end up in landfills when empty. The Good Refill System, using refillable aluminium bottles, has been implemented as a solution.

1 - Receive

Arrives in a fully recyclable cardboard box

The box is two times the size of the product as space is lost within to avoid product movement

Fewer quantities can be transported together which is negative for the environment



2 - Refill

Empty the pouch into the reusable empty aluminium shampoo bottle

How recyclable are the pouches?
Can they be dropped off at certain locations only?

3 - Use

The bottle is a "very pleasant eye-catcher" said Christian Kass on Amazon. The bottle is considered decorative and could even be given as a gift.

User won't be as willing to get rid of it and will reuse it instead of recycling it

4 - Order new

Buy refill pouches online or in some shops when the bottle is finished

Bulk transportation could improve sustainability

Resource specification

User Analysis

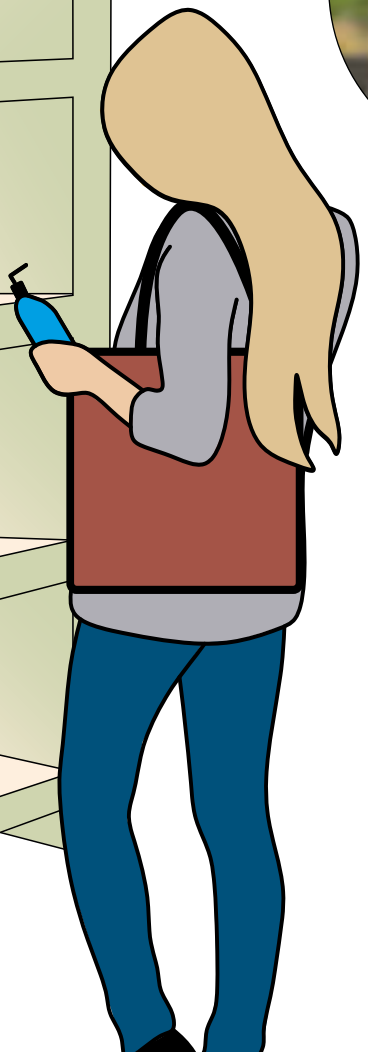
Basic personal care products such as shampoo can be found in every developed world household. However, this system aims to satisfy the needs and desires of users cautious of their environmental impact, engaging them through social media.

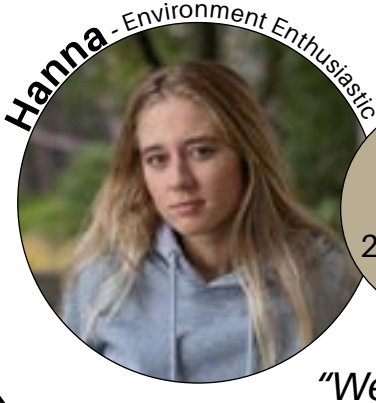
We produce
300 000 000 t
of plastic waste every year

On average each year, we use
10 shampoo bottles

57% are willing to change for the environment

50% of adults suffer of dandruff





Hanna - Environment Enthusiastic

23 years old Female

In London, UK

Marketing Analyst

Eco-aware

"We need to balance between helping the environment and indulging ourselves"

Traits

Likes to take care of her appearance.

Prefers shopping online.

Goals

Have a smaller impact on the environment

Get luscious hair

Influences

Likes to follow ongoing trends on Instagram, Tiktok and Snapchat.

Often intrigued by products seen on social media and buys them to test them out.

Obstacles

Suffers from dandruff issues

Finds it hard to be eco-friendly in London due to the recycling limitations

Attempts

Head and Shoulders
The formula has solved her dandruff issues in the past but it wasn't in an eco-friendly product.

Shampoo bars
They tend to irritate her scalp and leave a mess on the side of the shower.

Various Shampoos

Liquid shampoo is not the only type on the market. Each kind operates differently with varying methods and product-service systems. These were compared, in regard to sustainability and convenience in order to observe their attractiveness.

Cradle

Solid Bar/Cube
Doesn't require liquid-proof packaging

Refill pouches
60% less plastic used per mL of shampoo

Dry Shampoo
Can be found in the kitchen (corn starch / cocoa powder)

Regular bottle
Made with 40% recycled plastic

Use

Regular bottle
Only kept as long as it contains shampoo

Refill pouches
Very quickly discarded, allows for reuse of the bottle

Dry Shampoo
No water needed when used

Solid Bar/Cube
Shampoo is concentrated so lasts longer

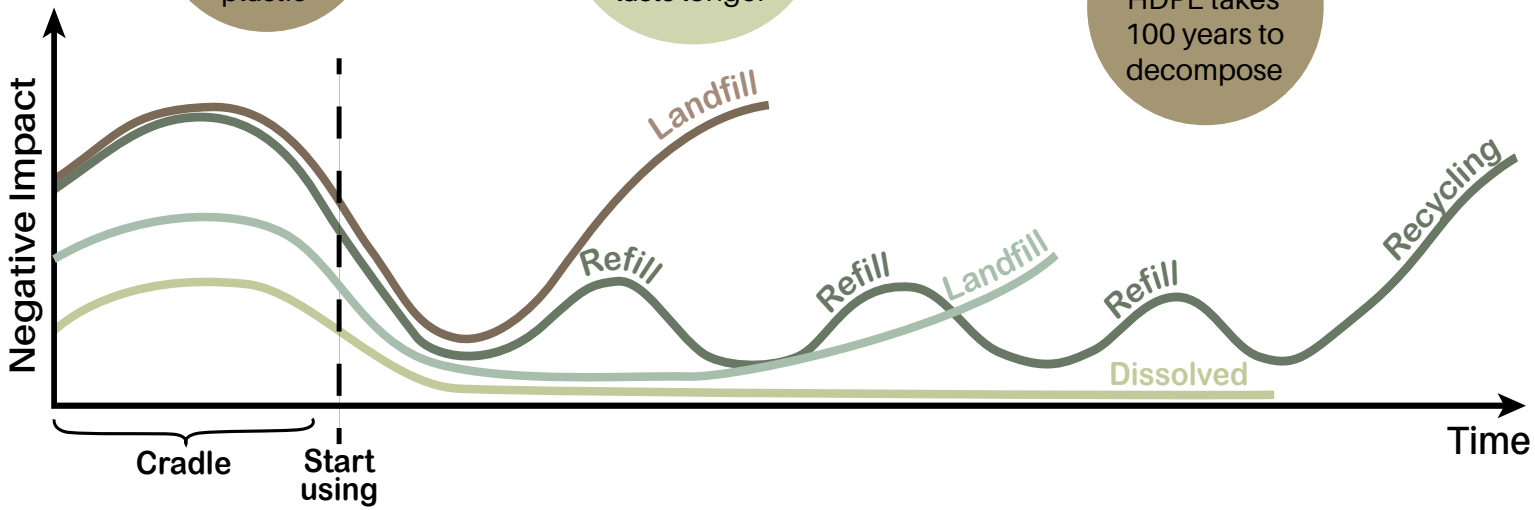
End of Life

Dry Shampoo
Different types of packaging with varying recoverability

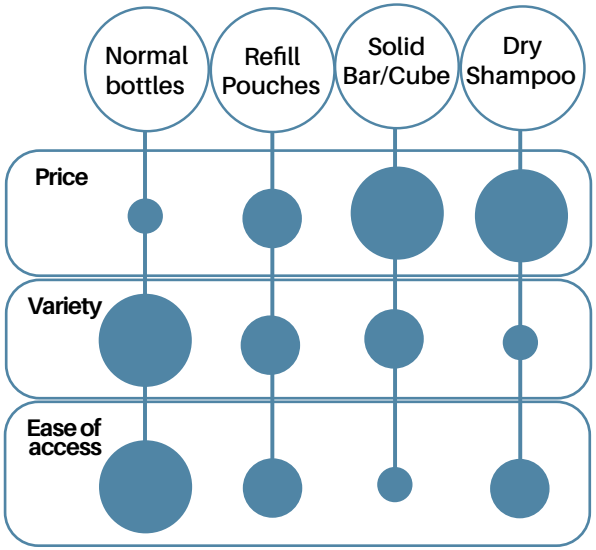
Refill pouches
All components are recycled but the pump can't, so gets reused

Solid Bar/Cube
No waste when the product is finished

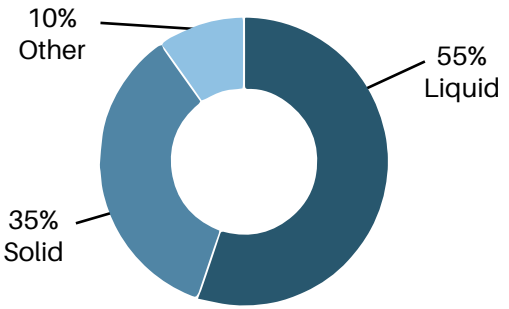
Regular bottle
HDPE takes 100 years to decompose



Product Market



Global market shares in 2020 by shampoo form



https://www.fortunebusinessinsights.com/shampoo-market-103432

Brand Analysis

The Good Refill System has been implemented by P&G (owner of Head & Shoulders), however several other brands also have commercialized refill pouches systems. To stand out, marketing strategies are elaborated using sustainability as a core argument.

Head & Shoulders

Created in 1961
Owned by P&G

#1 shampoo brand
110 units sold every minute

Aim to remove 100% of dandruff to help customers "feel confident and enjoy life at it's fullest"

Clinical testing to validate scientific innovation

Fiils

Created in 2019

Aims for sustainable beauty - only use pouches

Ouai

Created in 2016

Aims to produce what the customers want and offer adapted products to each

L'Oreal

Created in 1909

Aims to make the best of luxury beauty available to everyone

Leading personal care brand in 2020

Sustainability achievements

Head & Shoulders
Since 2017, beaches have been cleaned and the plastic recycled into 1 million shampoo bottles

Fiils
5 404 trees planted with the Ecologi program

L'Oreal
At the end of 2020, 72 sites out of 110 were carbon neutral

H&S and Fiils
Refill pouches can be sent back to TerraCycle for recycling

Fiils
27,680 plastic bottles have been diverted from landfill thanks to the pouches

Head & Shoulders
70% of producing plants send zero waste to landfills

Ouai
Bottles and caps are PCR (recycled plastic) and 100% recyclable

L'Oreal
59% of the raw materials are from renewable sources.

Product Teardown

In this system, three items co-exist, the refillable bottle, the pouches and the cardboard packaging. To observe each component of the items in more detail, they were taken apart and analysed. Most elements were firmly attached making the dissassembly and recycling laborious.

Pump mechanism

Not recyclable !

- Mix of different materials (HDPE, LDPE, Steel)
- Quite hard to disassemble (Force required) (A lot of little pieces)

This pump seems quite sturdy.

- No permanent fasteners were used so disassembly remains possible and broken elements can be replaced
- Made to last longer and be reused rather than disposed

Reusing can be more sustainable than recycling after one use as no extra energy is needed in between uses

Aluminium bottle

Reusable

- Meant to keep as long as possible so ornamented to remain attractive

Recyclable

- 100% aluminium so no contaminations

Cap and Seal

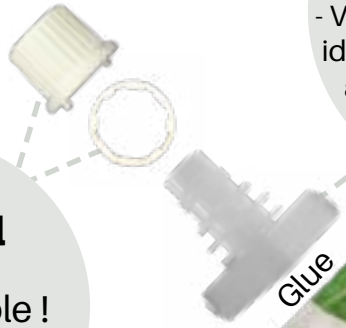
Not recyclable !

- Not the same plastic as the pouch and size issues

Spout

Glued to the pouch

- Very hard to separate, not ideal for recycling as they are treated as one and lower the resultant properties



Flexible plastic pouch

TerraCycle program

- Collected in drop-off locations
- Plastic shredded, washed and pelleted then transformed into other objects

Not a closed loop economy

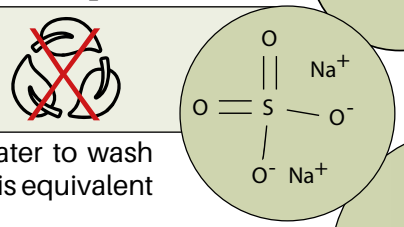
Material Analysis

Upon identification of the components' material (written on the elements or online), the eco-audit tool in Granta EduPack was used to evaluate their environmental impact. Although all the materials present are recyclable, their mixed state makes it impossible to do so.

Made in France

Shampoo

This shampoo formula contains sodium sulphates which grants the product a longer shelf life but they aren't biodegradable and contaminate the water.



The average user also spends 5 minutes of running water to wash their hair (the longer the hair, the longer this takes) which is equivalent to 12.5 gallons of water.

HDPE

1.08 - 1.12 GBP/kg	$4.7*10^7$ tonne/yr	1.77 - 1.95 kg/kg	Recyclable	Not biodegradable

Although it is 100% recyclable, only a small portion is actually recycled
- It is often contaminated by other materials, like in our product
- HDPE products often finish in landfills or oceans, causing further nuisance to the environment, as more HDPE is created to replace the discarded components

LDPE

1.08 - 1.12 GBP/kg	$4.7*10^7$ tonne/yr	1.77 - 1.95 kg/kg	Recyclable	Not biodegradable

LDPE Is very similar to HDPE, but has less branched bondings, hence a lower strength. This contaminates the other polymers lowering the recycled product's properties. The different polymers would need to be separated which makes the overall product harder to recycle.

Aluminium

1.55 - 1.68 GBP/kg	$4.7*10^7$ tonne/yr	11.8 - 13 kg/kg	Recyclable	Not biodegradable

Aluminium can be recycled without losing it's properties
- Cheaper and easier to recycle than to start with virgin material

Aluminium has an excellent durability when in contact with water, allowing for a long product life-time in the bathroom.

Cardboard

0.762 - 0.931 GBP/kg	$3.5*10^8$ tonne/yr	1.11 - 1.23 kg/kg	Recyclable	Biodegradable

The most recyclable and easy access packaging material
- Recycling requires 75% of the energy needed for virgin cardboard and no trees need to be but down
- Only recyclable if it hasn't been contaminated by any liquids
- Can be added to the compost pile to decompose

Pouch

Uses 1.389 MJ and 0.05881 kg of CO_2

Bottle

Uses 0.964 MJ and 0.0717 kg of CO_2

Box

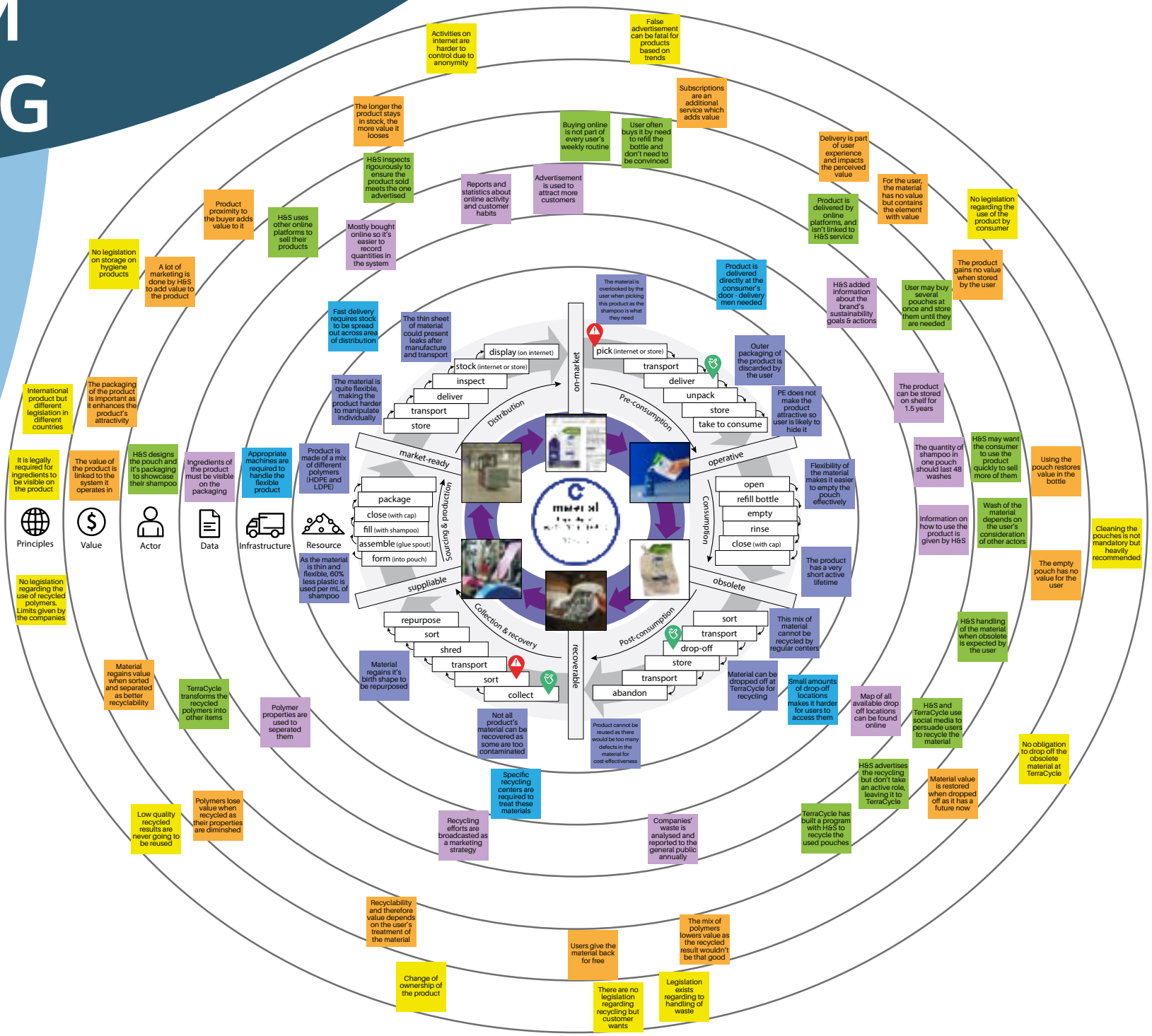
Uses 8.348 MJ and 0.4411 kg of CO_2

The element with the biggest consumption is the cardboard packaging of the product...

System Mapping

Among the different items acting in the Good Refill System, the pouch stood out as the central element, as it enables the narrow resource flow of the product-service system.

The pouch is made of two polymers, HDPE and LDPE. The circularity of these materials was tested and shown with the flow mapper diagram, to reveal the strengths and weaknesses of the system.



Opertunities & Risks

From the previous description of the material circularity, five key points were uncovered. These insights of the current system predominantly concern the post-consumption, collection & recovery phases of the product as areas of improvement.

Pick
(internet or store)

Several other options are on the market and companies must 'compete' to attract customers

Nowadays, users are heavily influenced by what happens around them with trends being a powerful economic tool

Advertisement is used to attract more customers	Reports and statistics about online activity and customer habits
The packaging of the product is important as it enhances the product's attractiveness	H&S designs the pouch and it's packaging to showcase their shampoo
User often buys it by need to refill the bottle and don't need to be convinced	False advertisement can be fatal for products based on trends

Deliver
(pre-consumption)

The product is directly brought to the user's door

The double packaging of the product (shampoo), the pouch and the cardboard box are quickly discarded after initial opening

Outer packaging of the product is discarded by the user	Product is delivered by online platforms, and isn't linked to H&S service
H&S designs the pouch and it's packaging to showcase their shampoo	In the parcel, H&S added information about the brand's sustainability goals and actions
Product is delivered directly at the consumer's door - delivery men needed	User may buy several pouches at once and store them until they are needed

Drop-off

Users can drop off the used pouches on accredited locations for them to be recycled

This can be considered a bother by most users and cause a rupture in their routine

Material can be dropped off at TerraCycle for recycling	Map of all available drop-off locations can be found online
No obligation to drop off the obsolete material at TerraCycle	H&S and TerraCycle use social media to persuade users to recycle the material
Small amounts of drop-off locations makes it harder for users to access them	Material value is restored when dropped off as it has a future now

Collect

Key moment in the life of the material as it determines what happens after

The obsolete product has no value for the user, so a cheap source of material for companies

The empty pouch has no value for the user	For the user, the material has no value but contains the element with value
User give the material back for free	Change of ownership of the product
No legislation regarding the use of recycled polymers. Limits are given by the companies	Material value is restored when dropped off as it has a future now

Sort
(collection & recovery)

The mix of polymers must be separated and sorted to be recycled efficiently

It is often hard to separate the polymers and quite energy-consuming, therefore not sustainable. But it is essential to get a reusable result.

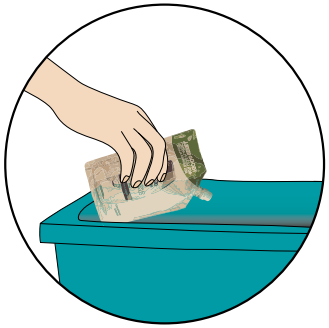
The product is made of a mix of different polymers (HDPE & LDPE)	Specific recycling centres are required to treat these materials
Polymer properties are used to separate them	Material regains value when sorted and separated as better recyclability
No legislation regarding the use of recycled polymers. Limits are given by the companies	Low quality recycled results are never going to be reused

Product-Service System

The greatest obstacle to the material circularity regards the strain user and companies face to amass the obsolete products in order to grant the material another life. An option has been found by Fiils to facilitate collection and ameliorate the product-service system.

GOOD REFILL SYSTEM

USE



Subscriptions can be bought for the pouch's repetitive purchasing. They lower the cost of this product and motivates users to continue using this system.

A TerraCycle program has been funded by Head & Shoulders (P&G) to recycle the pouches. These are collected in accredited locations and recycled into other items.

This could be a closed loop system, but users often find it too difficult to go drop off the pouch in one of the few accredited locations and the material is not recycled.

Another company, Fiils, has found a solution. They provide a recycling pouch to post back the obsolete polymer elements for free.

The unrecyclable bottle pumps are reused

The pouches are sent to TerraCycle for recycling

Not the most sustainable option :

Additional transport of the material is required. (Fiils to user, user to Fiils, Fiils to TerraCycle)

Cardboard packaging consumes a lot of energy and CO_2 as seen in the material analysis

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