

the
DISAPPEARING
PACKAGE

a Bachelor Project by
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The Disappearing Package

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LUND
UNIVERSITY

the
DISAPPEARING
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ABSTRACT

As online shopping increases every year, so does the package material that takes from natural resources and ends up as garbage. To be able to save our planet we have to switch to a circular economy, where waste and pollution is designed away. The sector of clothing, shoes and accessories is the most bought online within the EU. These packages are commonly made of soft plastic or biodegradable materials, which aren't often recycled. The aim of this project was to find a more sustainable solution for these garment packages.

Four concepts were developed; 1) using less materials, 2) using compostable materials, 3) finding a second usage and 4) leaving no traces. A combination of the third and fourth concepts were developed – resulting in a package including detergent that will be dissolved in the washing machine. A second hand company, *Sellpy*, has been targeted, as a pre-used clothing can motivate customers to recycle the package in the washer. Different soluble materials have been researched and tested. *Aquapak* makes soluble, eco-friendly washing bags made of polyvinyl alcohol. This material can also be used for packaging. The chosen material is strong, somewhat rain resistant and fully soluble in 40°C. The nudging-theory has worked as an underlay for the layout of the package, making it easy to understand how to recycle it. The project can be seen as an inspiration towards a circular economy.

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INTRO

*“Not a drop in the ocean,
but a part of a bigger solution”*



As a result of the distance learning during the pandemic people are spending more time indoors. Convenience and comfortableness has increased and is probably here to stay. To order things from home is a topic related to comfortableness and saving time. Nowadays people in the west could technically live without ever leaving the home. When a change of behavior occurs in a society new challenges are to be faced and need to be solved.

Awareness of the environment and the care for sustainability among consumers is another thing that is increasing. Lately a hot topic has been the reduction or ban of single use products, especially plastic. Further actions towards using less

single-use products will most likely be taken. Packaging materials are an example of products that only are used once. The initial idea to this problem area came when sitting at home in the student corridor, not being able to see the floor anymore as there was package material of different kinds laying everywhere after opening several Online purchases.

As an individual it often feels like the environmental crisis is difficult to solve. Although realizing that if everyone would think like that, no change towards a sustainable future would occur. This project is therefore seen as not being a drop in the ocean, but a part of a bigger solution.

147^{KG} PACKAGING WASTE /INHABITANT & YEAR (EU)

The package material that was used during the year 2018 was in total 77,7 million ton within the European Union. These amounts can be compared with around 400 thousand blue whales in weight, or to make the numbers even more graspable – 147kg package material per person and year. Far from all these materials are recycled correctly and the mountains of trash are constantly growing.¹

1. Eurostat, *Packaging Waste Statistics*, December 10, 2020, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Packaging_waste_statistics#Waste_generation_by_packaging_material, retrieved February 26, 2021.

In the current situation distributors package things to an extreme extent, more than what's needed for the products to be kept secure during transport.² This project was developed upon the thought for how these amounts of materials could be lessened and how to motivate people to recycle these materials correctly.

2. Victor Papanek. *The Green Imperative*, Singapore: C.S.Graphics, 1995, s. 34-35.



*Rethink packaging design,
either by material choice or structure.
Taking help of nature to find a more
sustainable solution.*

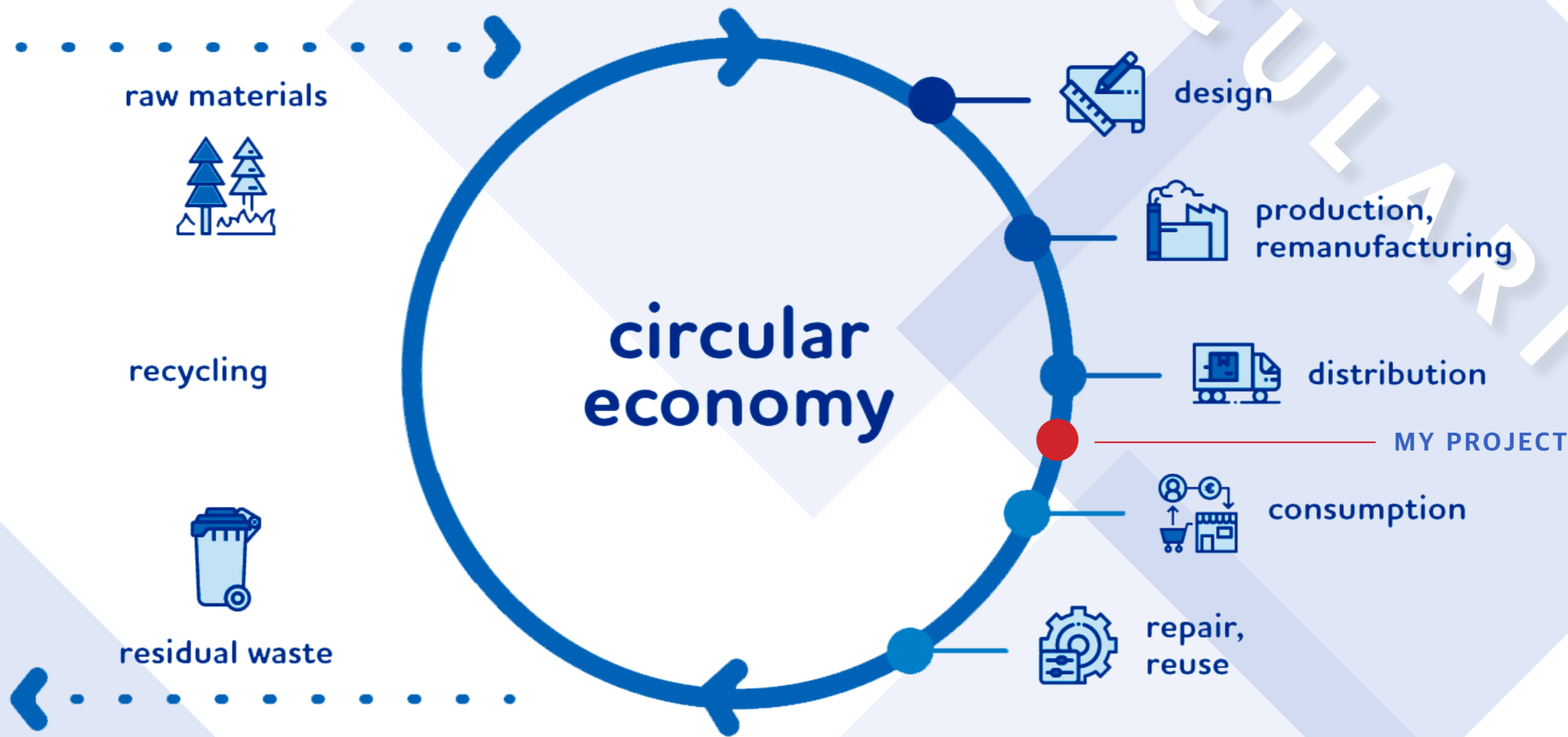
INITIAL BRIEF

WHERE TO START?



The idea of working on making packages more sustainable came from the own experience of companies using an overload of filler material to fill up too big cardboard boxes compared to the products needed to be packed. The picture is an example of a well known company using a great extent of filler material, both in amount and quantity.

The average user will most likely not recycle all these different materials correctly and even if they would, it's not for granted that all materials can become new ones. This would be the focus area of this project, to look over how packages can be more sustainable. A brainstorm was done to find out general requirements for a package and what areas that could be changed.



COMPANY
(Retailer)



PACKAGE



INDIVIDUAL
(Consumer)

To make a change towards a sustainable society it's needed to switch from a linear thinking to a circular one, where waste and pollution is designed out. The life cycle of a product must be analyzed and calculated upon before entering production. Products need to be designed to be recyclable or reusable and energy consumption should be taken into account. A circular economy has to be the new norm. For this to happen laws and regulations has

to be passed for producers and consumers to know how they should act.³

This project is placed in between the distribution and consumption of products, focusing on the packaging design for products that are shipped from retailer to individual.

3. Naturskyddsforeningen, *Cirkulär Ekonomi – Istället för Slängsamhälle*, <https://www.naturskyddsforeningen.se/cirkular-ekonomi>, retrieved April 10, 2021.



DURING 2020 - 40% INCREASE OF

ONLINE SHOPPING

Most popular online purchases of goods and services, EU⁽¹⁾, 2020

(% of people who bought or ordered goods or services over the internet for private use in the previous 3 months)

Clothes (including sport clothing), shoes or accessories	64
Films or series as a streaming service or downloads	32
Deliveries from restaurants, fast-food chains, catering services	29
Furniture, home accessories or gardening products	28
Cosmetics, beauty or wellness products	27
Printed books, magazines or newspapers	27
Computers, tablets, mobile phones or accessories	26
Music as a streaming service or downloads	26



⁽¹⁾ estimates

The increase of Online shopping for goods and services has been linear until the pandemic started. The increase went from 15% each year in Sweden to an incredible 40% during 2020.⁴

Online shopping will most likely be the future way to shop and the increase will therefore continue. As a designer it therefore becomes relevant to look over how this is done – in this case for

how things are packed and shipped.

The sector which is the most bought in the EU is the one for clothing, shoes and accessories. Almost twice as many buy from this sector than any of the other categories stated in the figure above. This would be a great opportunity area for making a bigger change towards a sustainable packaging design.

4. Vetenskapens Värld, 12/19 (2021). *E-handeln: Framtidens shopping* [TV-program]. Sveriges Television, SVT Play, March 28, 2021.



RE-BRIEF

*Rethink clothing packaging.
Find a material that is environmentally
friendly and easy to recycle.*

19%

OF PACKAGE MATERIALS ARE

PLASTICS

41,8%
RECYCLED

39,7%
INCINERATED

18,5%
LANDFILL

In the European Union 19% of all package material that goes to waste is plastics and less than half of all these plastic packages is recycled.⁵ About the same amount is recycled as what is incinerated (burnt). Almost a fifth of all plastic ends up at landfills where they won't degrade for decades.⁶ It's time to start doing something about this problem, as these plastics that end up in the environment are truly harmful and don't make any eye-catching sights.

The fashion industry alone uses five million tons of plastic each year for packaging. Most of these plastic packages are made of soft plastics, more specifically polyethylene, which is harmful for the environment.⁷ The knowledge about plastics among the general public is limited, which is one of the reasons why large amounts of plastics aren't recycled at all.⁸ Soft plastics, especially, tend to be thrown in the regular trash instead of being put in the recycling bin for plastics.

5. Eurostat, Packaging Waste Statistics, Eurostat, December 10, 2020, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Packaging_waste_statistics#Waste_generation_by_packaging_material, retrieved February 26, 2021.

6. Tiseo, Ian. *Plastic Waste in Europe - Statistics & Facts*, November 10, 2020, https://www.statista.com/topics/5141/plastic-waste-in-europe/#dossierSummary__chapter4, retrieved April 22, 2021.

7. Aquapak, *Case Study: Solving Fashion Plastic Pollution Problem*, <https://www.aquapak-polymers.com/fashion/>, retrieved April 22, 2021.

8. Davis, Rebecca & Joyce, Christopher. *What's Recyclable, What Becomes Trash - and Why*, NPR, August 21, 2019, <https://apps.npr.org/plastics-recycling/>, retrieved March 4, 2021.

PLASTIC ALTERNATIVES

Materials which have come to compete against the plastics are the biodegradable plastics. Biodegradable meaning that it can be disintegrated by bacteria, fungi or other biological processes. Regular plastic is technically also biodegradable, but isn't usually considered as one, thus it takes many decades to decompose. Biodegradable plastics are for example made from starch, proteins or cellulose and can either be composted at home or in an industrial compost. How well it's biodegradable depends on several things, such as the structure of the product, the raw materials used, the composition of chemicals and also in what environment it's intended to biodegrade. Often high temperatures are needed, usually only reached in an industrial environment.⁹ Therefore

not all bioplastics are biodegradable in nature, as one might expect them to be.

The market for these biodegradable materials is still quite small, meaning that far from all societies has a working system for industrial composting. The bioplastics will hence be handled as regular trash.¹⁰ With a small demand for plastic alternatives, the expenses for these are quite high compared to regular plastics.

Bioplastics aren't usually as strong as regular plastics, although this might not be needed for a parcel, which has a very short intended life cycle. Adding all these pros and cons up, bioplastics might be an alternative in the future, if recycled correctly.

9. Rujnić Havstad, Maja. *Plastic Waste and Recycling*, March 13, 2020, Chapter 5, <https://doi.org/10.1016/B978-0-12-817880-5.00005-0>, retrieved May 1, 2021.

10. Thomlinson, Isabel. *When Biodegradable Plastics is not Biodegradable*, May 2, 2019, <https://theconversation.com/when-biodegradable-plastic-is-not-biodegradable-116368>, retrieved May 1, 2021.

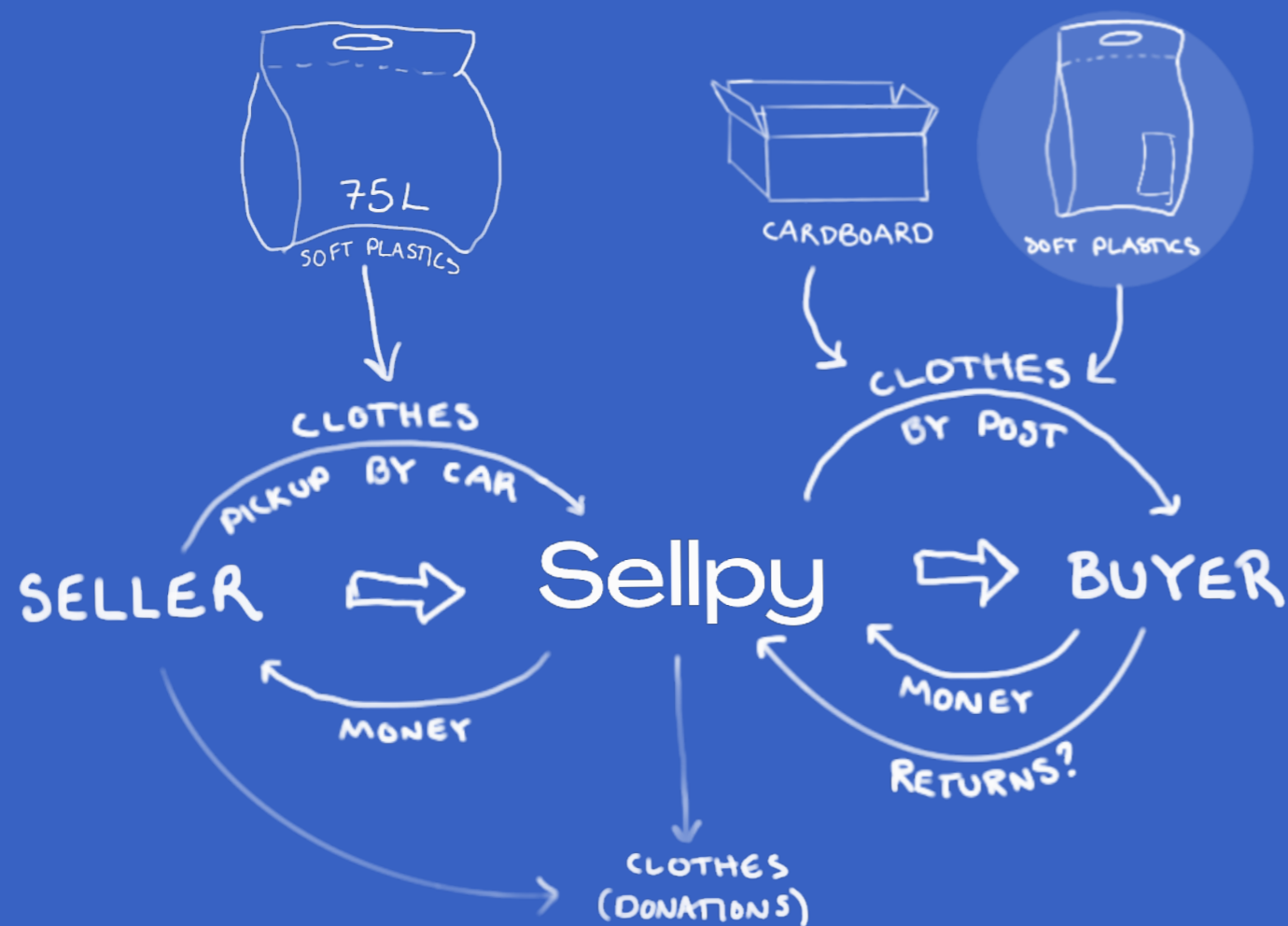


Sellpy

AS A TARGET COMPANY

This project aims for a certain company – Sellpy. The project is not a collaboration, but rather an inspiration for an area of use for the package. Sellpy is a Swedish company that sells second hand items Online, mostly clothing. Their concept is based upon collecting private peoples' things they no longer want, but don't have time and effort to sell by themselves. For every item that Sellpy sells the person gets a percentage of money back. The items are sold on Sellpy's own web page (Sellpy.se) and on Tradera, which is one of Sweden's largest second hand market-place.





The project aims towards Sellpy's soft plastic parcels sent out to customers

Sellpy uses different types of packages for different kinds of services. Large bags of 75 liters can be ordered by customers from Sellpy's web page when turning items in for selling.¹¹ These bags are then filled with clothes by the customer and picked up by a Sellpy car. The items are photographed by Sellpy and put up for sale. When shopping from Sellpy other bags (parcels) are used for shipping. These come in different sizes, depending on the size of order. These parcels are the ones targeted within this project.

Today Sellpy uses plastic for the collecting bags and for most clothing parcels. Cardboard is used for other shipped items. Sellpy also has every item wrapped in its own plastic bag within the shipped parcel. Their plastic bags are made of 80% recycled plastic.¹² As Sellpy's number one priority is the environment, they could probably reduce the amount of package material and do even better on the circularity of their packages.

11. Sellpy, *Så Funkar Det: Beställ och Packa Din Sellpy-Påse*, <https://www.sellpy.se/howlt-Works>, retrieved June 5, 2021.

12. Sellpy, *Hur Jobbar Sellpy För Att Minimera Klimatpåverkan, Tips och svar från Sellpy-teamet*, <https://intercom.help/sellpy/sv/articles/4804877-hur-jobbar-sellpy-for-att-minimera-klimatpaverkan>, retrieved April 14, 2021.

RETRO CONSCIOUS TREND-FOLLOWER NATURE-FRIEND

The target group for this project would be the eco-conscious person, probably younger of age, who's up to date with the latest trends. The person would be willing to try new things and willing to question the way they behave. They are likely a fan of second hand clothing and know how to make the best deals for a unique style. Preferring to order clothes Online for convenience: instead of having to go to several physical second hand shops to find the perfect T-shirt, one Online store with a large selection would do the job.

As mentioned earlier this project targets the packages that are shipped from Sellpy out to customers (not the larger ones that are used for collecting seller's clothes and products).



COMPANY
(Sellpy)



PACKAGE



INDIVIDUAL
(Sellpy customer)



1.
LESS MATERIAL
Less amount and
quantity to recycle



2.
COMPOSTABLE
In a home
environment



3.
SECOND USAGE
Package with
another purpose



4.
NO TRACES
No more trash
contribution

4.

CONCEPTS

DEVELOPED FROM THE BRIEF

Concept 1: using less material for the packaging, either by amount of different materials or less in quantity. This could be done by changing the filler material or the filler material's structure. The concept could also be implicated by changing the outer shape of the box, making it foldable and easy to adjust in size to better fit the content. Difficulties with this concept would be to find a good structure of filler material that will fit different kinds of products. It could also be hard to find a way of folding that reduces the total quantity of material used.

Concept 2: a material with an intention to not be recycled, it would instead be compostable at home and later turned into biogas or become soil. Problems with this concept might be a lack of understanding of how it will be sorted by the receiver of the package. Not all biodegradable materials can be put in a household compost and the material could possibly also be mistaken for plastic.

Concept 3: a packaging that will have another purpose after it has been opened. The materials, or the package itself, can for example have a second usage in people's everyday life. Questions with this concept will rise for how to make people actually use it a second time, as intended. It's needed to have in consideration for how the climate will be affected if not used a second time (whether it can be recycled or not).

Concept 4: a package design that no longer would exist after the customer has received the package. Probably the most desirable solution of all concepts, the question remains for how this could be done.

The third and the fourth concept were the ones chosen to go further with, also as those two fitted the specific package to be chosen when re-briefing.

No ⁴ more
trash
contribution

WHAT IF THE PACKAGE COULD
DISAPPEAR?

WATER SOLUBLE

WATER SOLUBLE MATERIAL

USAGE TODAY.

- BAGS
- FABRIC
- TAPE
- ROPE
- LABELS
- DISHWASHER TABLETS
- FOOD PACKAGING
- GOLF BALLS
- WASHING BAGS

PACKAGING MATERIAL?



“Water is the universal solution, it solves more kinds of substances than any other liquid.”

To be able to answer the question for “*what if the package could disappear*” a brainstorm was done for materials and things that are naturally disappearing. Water is a substance that can seem to disappear when transferring from one state to another. The disappearance of ice when it melts to water and the disappearance of water when it evaporates. Water is also the greatest solvent of all liquids.¹³ When thinking about water as a disappearing substance the water soluble materials around the dish washer tablets came to mind. What makes that material able to just magically disappear and release the dishwasher detergent, even though the material looks like plastic?

A further research was done to find out what this material was made of, as well as if there would be other uses for the material that could be of interest and inspiration for this project.

13. Vetenskapens Värld, 2/19 (2021). H2O - Nyckeln till Civilisationen [TV-program]. Sveriges Television, SVT Play, January 17, 2021.

NUDGING

HELPING PEOPLE TAKE DECISIONS



Would the customer actually be motivated to recycle the package?

Having good intentions regarding environmental questions does not necessarily correlate with taking the most environmentally friendly decisions, even though the individuals might think they do. Nudging comes into the picture in the gap between the will and the action of doing something. One example is the will to recycle, but anyways throwing the plastic packages in the regular trash. The nudging-theory questions whether people make rational decisions in all situations, since many decisions are made automatically, without further reflection. The theory is also used as a concept for how to lessen the gap between the will and the action by making it easy to act accordingly.¹⁴

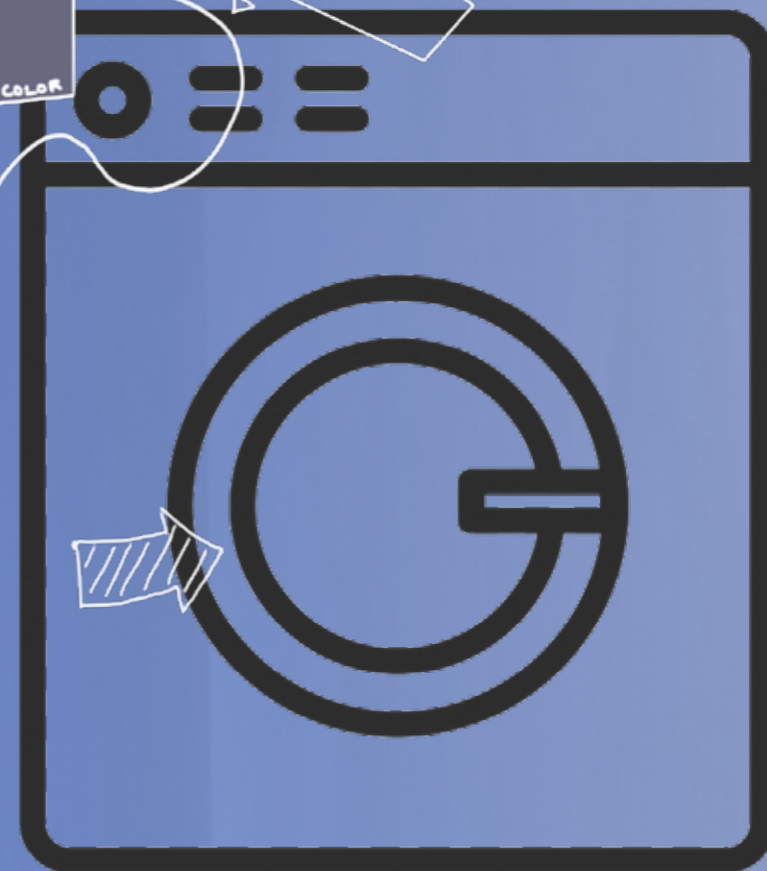
14. Axelsson, Michaela & Gärdin, Helena (2018), *Nudging Inom e-Handeln*. Examen-sarbete, Linköping Universitet, <http://www.diva-portal.org/smash/get/diva2:1245370/FULLTEXT01.pdf>, retrieved March 3, 2021.

WASHING

PACKAGE INCLUDING DETERGENT

What if the whole package could be thrown into the washing machine?

With the nudging in mind, the package must be developed to not be trashed in the regular trash bin by old habit. Something other than a sustainable campaign or marketing is probably needed to change the individuals behavior. As mentioned before there's one thing to be willing to act in a sustainable way and another to actually do it.¹⁵ Therefore it's desirable to have a stronger motivational concept for the consumer to recycle the package correctly – in this case to dissolve it. Here comes the second usage into the picture. When brainstorming, the first thing that was associated with clothes was the washing process. When receiving a second hand garment, it would be desirable for the new owner to wash it, before using it. To make this the easy choice of recycling the package, an eco-friendly detergent strip could be included in the water soluble bag. The customer could then choose whether to throw the package directly into the washer together with the bought purchase, or to save the package (detergent) for later washing loads. One package would be equal to one load and would work for all color types.



WHATS NEEDED FOR CLOTHING WHEN RECEIVED PACKAGE?

3 Package with another purpose

15. Axelsson, Michaela & Gärdin, Helena (2018), *Nudging Inom e-Handeln*. Bachelor's thesis, Linköping Universitet, <http://www.diva-portal.org/smash/get/diva2:1245370/FULLTEXT01.pdf>, retrieved March 3, 2021.

PAPER
BASED

- Natural
- Eco-certified
- Dispersed at room temp.
(not fully dissolved)

PLANT
BASED

- Natural
- Eco-certified
- Non toxic (potable)
- Dissolves in 40-70°C

POLYMER
BASED

- PVOH polymer
- Eco-certified
- Dissolves in 40-70°C
- Micro-plastics?

MATERIAL COMPARISON

OF THREE WATER SOLUBLE MATERIALS

Three kinds of commonly used soluble materials on the market have been researched and compared. Two of the materials are made from almost solely natural raw materials and have starch as a binder. These materials have a base made from pulp, respectively the root from the cassava plant. The third material is the synthetic polymer polyvinyl alcohol (PVOH). The other two materials also include a smaller amount of this synthetic material (PVOH) to be able to get the right chemical properties.

For the paper based material the U.S. based company SmartSolve has been looked into. SmartSolve makes package related products, such as soluble bags, paper, tape, glue etc. One positive thing with SmartSolve's material is the use of natural resources which are available in Scandinavia (wood), meaning that transport doesn't have to be far (given that a factory would be placed here for production). It's also of interest what temperature the bag can be dissolved in, which in this case is at room temperature. This can both be beneficial as it will be dissolved in every washing program, but could also have a negative impact, if the package starts to dissolve in a humid environment. The largest issue with SmartSolve's material is although that the material is not fully dissolved, but dispersed.¹⁶ The material based on the cassava root has similar properties to the pulp

material, but this one is completely dissolved in water. The Indian based company GreenPlast has been researched. GreenPlast's material is made for pellets, films, bags and food packages. The material is strong, durable and environmentally friendly. It's somewhat water resistant and can be dissolved in either cold or hot water (>80°C)¹⁷ The cassava root is grown in warmer climates and would thus need to be shipped a long way to the Swedish market.

The material polyvinyl alcohol seems to be the most commonly used one for soluble packaging. One of the larger companies providing products from this material is Aquapak, which exists in three different continents and has its headquarters in the UK. Aquapak's material has a wide range of usages, for example bags, single-used items and packages. This company also has water soluble washing bags. The material is soluble in water temperatures from 20-70°C. The advantages of this material is the easy production method, as well as it's adaptability. As it's synthetically made, it's possible to change the properties to better fit the area of use.¹⁸ One thing that was a concern during the project was whether this synthetic material would release microplastics when being dissolved in water. This was further investigated throughout the process.

17. GreenPlast, *Switch From Plastic Bags to "Water-Soluble"*, <https://www.greenplastindia.com/>, retrieved April 14, 2021.

18. Aquapak, *A Real Solution To The World's Plastic Pollution Crisis*, <https://www.aquapakpolymers.com/>, retrieved April 14, 2021.

16. SmartSolve, *Water Soluble Material*, <https://www.smartsolve.com/>, retrieved April 14, 2021.

CHEMICAL PROCESS

Microplastics in the oceans increase with alarming numbers. Microplastics are very small pieces (typically <5mm in size) of plastic components that come from fishing nets, plastic bags and other products that end up in the ocean and degrade over time. These plastics are inadvertently eaten by various aquatic animals and solely also eaten by humans, as we eat these animals.¹⁹

To not contribute to indirectly creating more of these microplastics, it's important for designers (and others producers) to think twice regarding the use of different materials and production methods, before entering the production line. Nonetheless when mass producing – as packages do. Therefore it's been important to have a continuous dialogue with different specialists within polymers and chemical processes throughout the project. The material polyvinyl alcohol is, as mentioned earlier, a synthetically produced polymer whose main property is to break down into its original constituents, when in contact with water-molecules.

A skeptical mindset was kept until investigating further for what happens to these particles when drained down the sewage systems. Will these particles get filtered away or will this solution add to microplastics in the water cycle?

After being in contact with specialists and researching further, a thorough understanding was developed for how the polymer material breaks down in water. As it's non-toxic it won't do any harm to the environment. Bacteria will in the sewage treatment system help biodegrade the small pieces that are left when dissolved at home. It's the same process for which would biodegrade this eco-friendly polymer in the environment, although the circumstances are beneficial in the sewage treatment system, where there is a high concentration of microbes. Studies show that at least 20 different types of bacteria, as well as several molds and yeast are using polyvinyl alcohol as foodstuff. What's left after the process is carbon dioxide and water.²⁰

19. European Chemicals Agency (ECHA), *Microplastics*, <https://echa.europa.eu/hot-topics/microplastics>, retrieved April 10, 2021.

20. H2OK, *Why is PVA Biodegradable?*, <https://bolsashidrosolubles.com/>, retrieved May 8, 2021.

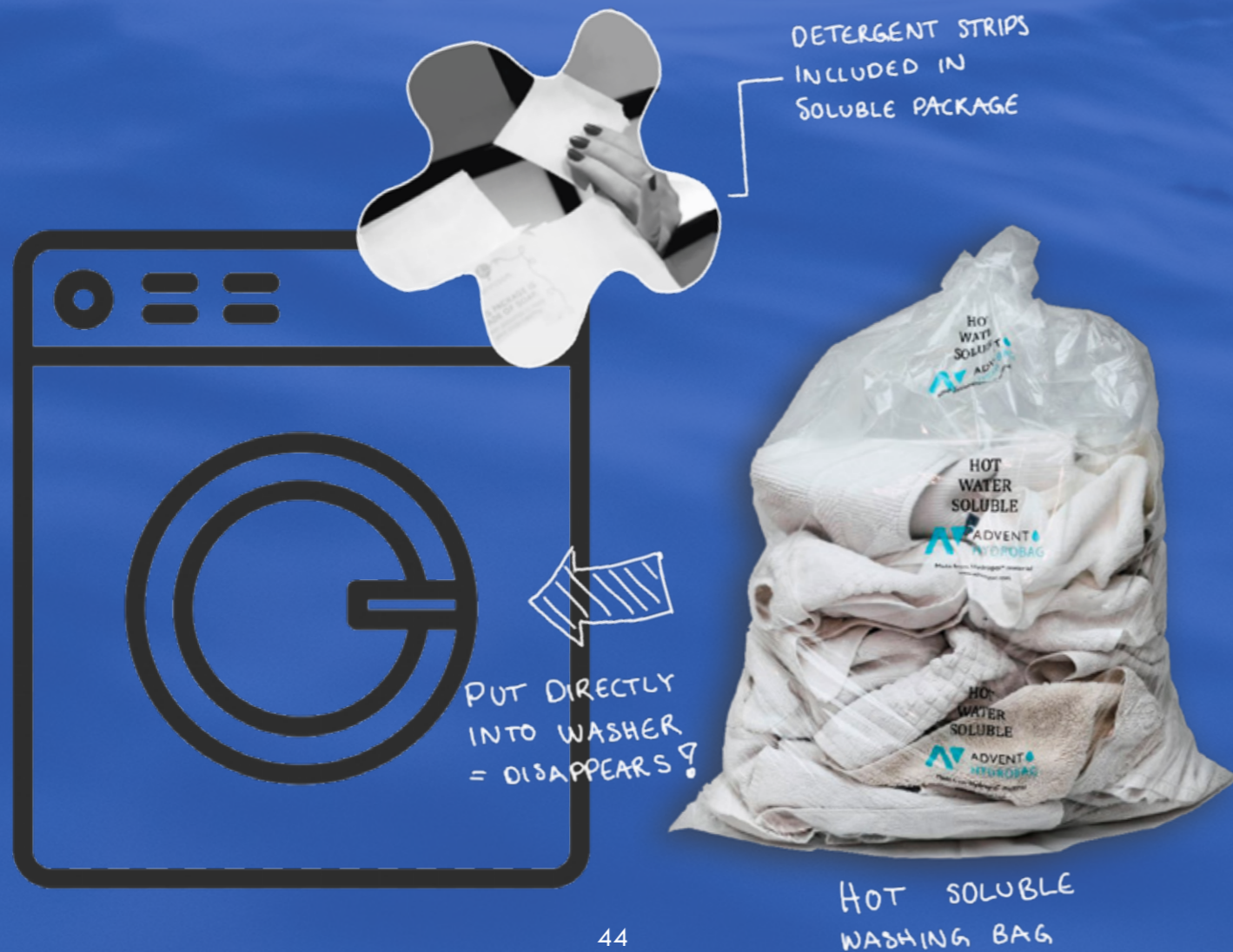
How does the PVOH-particles break down in the wastewater treatment plant?



PACKAGE
(PVOH)



SOLUBLE SOLUTIONS



When researching further for areas of usage of the soluble materials, a finding was made for the hot water soluble bag, for which the main purpose actually is to be dissolved in a washing machine. These bags are mostly used within the medical industry, where contaminated sheets and towels are put directly into the bag, to minimize the risk of getting diseases when handling these items. The whole bag, together with the content, then goes into the washing machine.

This solution of washing bags was of course of great interest for this project. A majority of these washing bags on the market are meant to be dissolved in an industrial washing machine with temperatures that reach above 70°C. Further into

the process a few other companies were found to do washing bags, although solvable in lower temperatures. One of them was in fact Aquapak, making washing bags soluble at three different temperatures: 20°C, 40°C and 70°C.²¹

Another solution for a soluble packaging idea was also found. Bennison are making soluble paper based soap packages for pajamas. Bennison is a nonprofit organization acting as a helping hand for baby care in developing countries.²² This solution is probably not suitable for a washing machine, as it's aimed towards washing by hand. Although the package was an inspiration, earlier in the process, to include eco-friendly detergent sheets in a soluble package.

21. Aquapak, *Laundry Bags*, <https://www.aquapakpolymers.com/laundry-bags/>, retrieved May 4, 2021.

22. Bennison, *Bennison: Baby Care Ware* [Video] <https://www.bennisongives.com/pages/baby-care-ware>, Retrieved May 4, 2021.

MATERIAL TESTING

2x20°C, 40°C, 70°C

POLYMER
BASED

PAPER
BASED
X

PLANT
BASED
?

Materials were ordered to be able to test if the companies hold what they promised regarding solubility at different temperatures. The paper based material wasn't chosen to go further with, as this material likely would clog up the washing machine, due to it not being fully dissolved, but dispersed.

The plant based material was ordered from GreenPlast, based in India. It did unfortunately not arrive on time for the deadline of this project. Otherwise it would have been of interest to test

their material compared to the 100% synthetically made PVOH material.

The PVOH material was ordered from two different companies. Aquapak had three different soluble materials. The solubility ones at 20°C respectively 40°C were bags meant to be put in the domestic washing machine and the one at 70°C was made to be for an industrial washing machine. The fourth material was from the company Carp Spirit and was meant to be filled with fish food and soluble in lake water temperature, around 20°C.

4. TESTINGS

RELATED TO PACKAGE CHARACTERISTICS

Test 1: The first testing was done for whether it was possible to ship a package, using only this material. Two different packages, soluble at different temperatures, were shipped across Sweden. A garment was packed and the package was sprayed with water before entering the mailbox, to imitate a rainfall. One package was double in layer. None of them were affected along the way, although the stamps on one package had fallen off. This could be solved by having a part of the package being cut off (when opening the package), where the label would be attached. This part could for example be trashed, if no other solution for a soluble parcel could be made.

Test 2: This test was conducted to imitate rainfall further. The material was sprayed with water and evaluated for how it was affected over time. None of the PVOH-materials did break, although they got quite sticky and attached to the underlay. Reasonable, the material soluble at 70°C was the one withstanding the water best. The material could probably be modified somewhat to be a bit more water resistant, meaning having the solubility delayed for a couple of minutes.²³

Test 3: To be able to seal the package without using glue or tape the heat resistance of the materials were tested. All of them melted together real quick when using a glue gun or a flat iron. The bags could solely easily be sealed together by Sellpy, when packaging products (or by customers when returning packages).

Test 4: The last, but probably most important test, was conducted for how well the package dissolved in the washing machine and how clean the wash turned out. Several materials were tested at different washing programs and temperatures. The companies clearly kept their promises, as the only bag lasting after the 60°C program was larger pieces of the bag soluble at 70°C. All soluble bags released the included detergent strip in time for the washing load to become clean. No pieces were left in the washing machine after the program, neither had they attached to any garments.

Later on it was also discovered that Aquapak has some newly developed garment parcels, proving the fact that this project idea of shipping a soluble parcel could work.²⁴

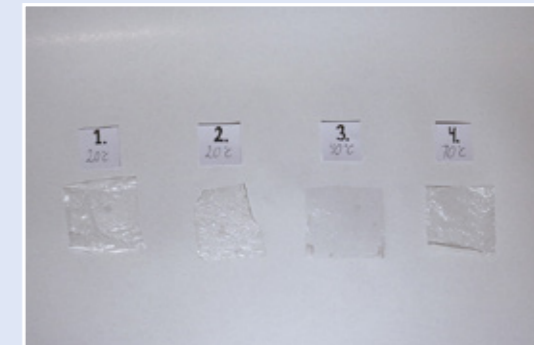
23. Lee, David M. & Zeese, Nicholas & Childers, Jennifer L. & Bullock, Stephen (2014), *Water-Soluble Film for Delayed Release*, Patent U.S. US20160024446A1, <https://patents.google.com/patent/US20160024446A1/en>, retrieved June 4, 2021.

24. Aquapak, *Fashion Garment Bags*, <https://www.aquapakpolymers.com/fashion/>, retrieved May 4, 2021.

POSTING



RAINING



HEATING



WASHING





Sellpy

Sellpy focuses on sustainability and circularity in their commercials and throughout their branding. The plastic packages Sellpy uses today have a playful look and represent a variety of items which can be sold and bought from their web page. The bags are colored in their representative blue and stand out from the great mass of plastic parcels on the market, that mostly are white.

Sellpy also focuses on noticing their customers for how much water usage they save, when buying second hand instead of brand new clothing. The package could also, on the same theme of saving, for example also tell the user how much waste and energy a soluble recycled package will save compared to a regular plastic bag.

BRANDING

ANALYZING SELLPY'S DESIGN LANGUAGE



DESIGNING

TO UNDERSTAND THE SECOND USAGE

WASHABLE



DETERGENT



SOLUBLE



NON-PLASTIC



A brainstorming session for what a new soluble Sell-py-clothing package could look like was done. The message on the package was in focus, as the most important factor of the project was the nudging: to get customers to actually put the package in the washing machine, instead of throwing it in the regular trash bin.

The two concepts “washable” and “detergent” were the most clear ones, as those are the most important aspects of what the package second usage is.

REFINING CONCEPT

What's needed for customers to recycle the package in the washing machine?

The concept was further refined to make the second usage understandable and to represent Sellpy's branding today. The drum of the washing machine was represented as a transparent window of the parcel, thus looking like the garment already is in the washer. The symbol of the washer, together with the clear message 'Wash Me', hopefully will convey the user to wash the package. The package was kept white (instead of Sellpy's blue colored bags today) to make it trustworthy that it actually is soluble and also for using less ink. Sellpy's iconic pattern and colors were used.



Our new eco-bag
dissolves in your
washing machine

Sellpy



WATER SOLUBLE
A warm water soluble
bag (>40°C)



DETERGENT STRIPS
Includes detergent,
1 bag = 1 washing load



ECO-FRIENDLY
Non-toxic bag
and ink used



BIODEGRADABLE
Can be recycled in
the composte



1.
RECEIVING
Clothing in a
water soluble bag



2.
OPENING
The top part strips
off & goes in trash



3.
LOADING
1 package = 1 load



4.
NO TRACES
No more trash
contribution!

Before washing the package the top part of the package would be cut off – this is natural in the process of opening the package and trying the clothing on, before deciding whether to keep it or not. The top part goes in the regular trash, given that the paper shipping label cannot be interchanged to a soluble solution. The same goes for the clothing label - it would also have to be cut off before washing. The result of the package is anyhow a contribution to lessening the trash mountains, which was the goal of the project!

PROCESSES





What would be further developments for this project?

As this project mainly focuses on the innovation processes regarding a new way of contributing less to the trash mountains, further investigation and research would have to be done before the package would be mass produced. Tests could be done to investigate the willingness of people actually putting the package in the washer and how well the material will last during longer shipments. It would also be necessary to follow up how well the material is filtered away in the sewage treatment system, especially if there would be larger concentrations of the PVOH-material in the wastewater.

It would be of interest to contact the target company, Sellpy, to hear their thoughts on the project. Things that could be asked is whether they are willing to try out a new recycling method like this one and if they have suggestions for how the project could be further improved. New trends have to start somewhere and a trustworthy company that already works towards a more sustainable future is a good starting point for a project like this one.

Overall it's been a fun and educational project where nothing could be taken for granted along the journey. The process has been somewhat difficult, especially not having the faintest idea of where it would end up. Altogether the project is a result of being creative, daring to take risks and try new things.

CONCLUSION

FUTURE MARKET

Are soluble materials the future of clothing packages?

Materials are in constant development and it wouldn't be surprising if a solution like this one would be the future of packaging, as we can't continue to waste like we do today. If the further investigations would be successful and the products put on the market, other companies could be inspired and follow the same idea as Sellpy. Thereby a new trend would have been established. One thing is for certain: as we're going towards a more sustainable future we have to rethink, innovate and be willing to change our behavior to make this change able to happen. With that said, more creative projects and wild ideas can be turned into functioning products. As stated in the beginning, this won't be a solution for all packaging or all waste we create, but it questions how we do things today and might inspire others to go further with an idea that at first might sound unrealistic. Maybe there would be other usage areas for the water soluble material to be investigated as well.



One thing is for certain...



...the
**PACKAGE
DISAPPEARED**

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