

# The Impact of the Textile Industry

Process book

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# The path

## The initial situation

When we first got together, we had to start by choosing the topic that we will work on for our project. We explored several datasets on various themes: diseases, politics, sport, and many others. Although many of them seemed interesting to us to explore, we agreed on a subject that affects the entire planet and its inhabitants: the impact that we, human beings, have on the Earth.

## The trigger

After finally choosing the subject in the broad sense of the term, we had to focus our project on one aspect of our activities. To do this, we once again surveyed the datasets available to us. We then discovered a dataset entitled "Plastic based Textiles in clothing industry" which, for five fast-fashion brands, gave greenhouse gas emissions, pollutants emitted, water and energy consumption as well as the generation of waste for different plastic-based materials. We then created our story around this dataset which, ironically, we will not use in the end (but that's a twist for later!).

## The adventures

Numerous studies, figures and information are available on the textile industry, but we quickly realized that they are difficult to compare and especially aimed more at scientists or associations already aware of the problem of this industry than at the public. So, we first thought that readers of our site needed to feel involved in what we were presenting to them. To do this, after a general introduction to climate change, their causes and consequences, we decided to start with a visualization of the average carbon footprint of a person living in Switzerland, which is the approximately equivalent of the reader's. This also shows that their consumption of clothes and shoes is not negligible and that it is one of the largest productions that is easily changeable on an individual scale.

Subsequently, inspired by the dataset presented previously, we had the idea of comparing the different materials so that this choice could then be made consciously and informed by the people who had seen our project. However, the dataset in question only presented plastic materials and figures for 5 brands which did not necessarily represent the entire industry.

## The resolution

We therefore abandoned this dataset to create our own based on scientific research reports on the subject. Each visualization represents a different dataset. This seemed obvious to us when we returned to our initial desire: to present in a public understandable way the different problematic ecological aspects of this industry in which we are obliged to take part.

## The final situation

This gives us a site that we want to be visually pleasing, easy to navigate, and which we hope meets all the points on our list of requirements.

# The challenges

## Narrowing the scope of our subject

As explained previously, this subject is very broad and a lot of information on each part of it is already available. We wanted a final result which gave not a complete vision but an idea of the range of problems which arise. But we didn't have time to be exhaustive and so we had to make a choice about what we were going to talk about and what we were going to leave aside. We ultimately chose to give the information that we thought was most useful while still telling a coherent story.

## The coding process

In our group, 2 of the members had never coded in html, JavaScript or CSS. Therefore the initial learning process and the beginning of the website creation were difficult and particularly slow. This caused many errors and lots of hours of work over small problems but the final result is a strong website and a new mastered language.

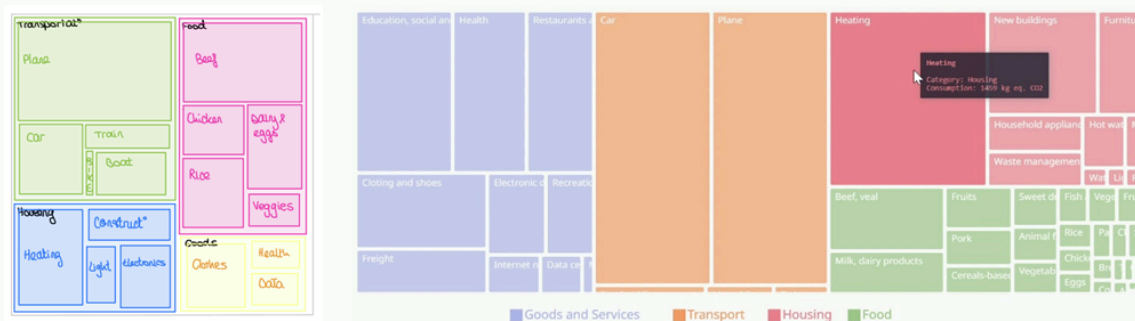
## The layout implementation

Once our plots were working, the layout implementation turned out to be more complicated than expected. Indeed, the finalization of one part of the website influenced other pages, and caused some texts, titles and labels to not align correctly. The initial choice of colors and fonts didn't match our choice of plots and didn't make an agreeable visualization. We also realized that some pages were quite empty when only filled with text, so we opted for some handmade image to add content and artistry. And finally, we also had to make sure that the layout was working across different navigators and screen sizes.

## The sketches

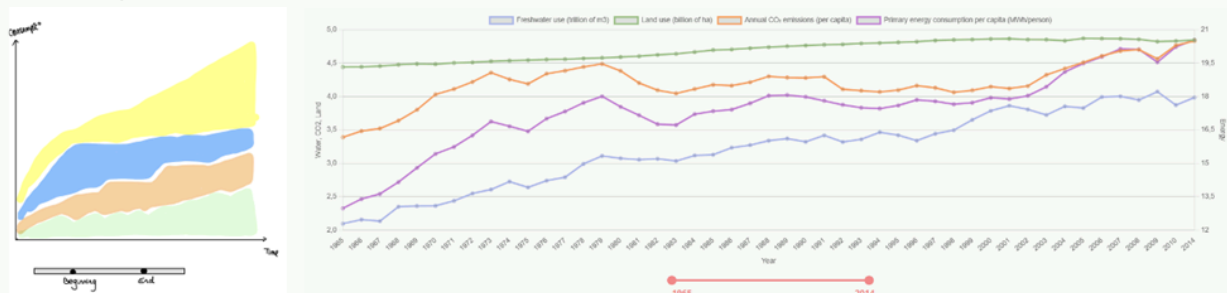
### The carbon footprint of a Swiss resident

We created this graph from a D3 treemap. This allowed us to stick to the design we wanted to give to this visualization from the start. To present the raw data corresponding to each domain, a box containing the quantity in kilograms of carbon equivalent appears when you hover over it with your mouse. This avoids overloading the visual of the tree map while allowing the reader to have details of the average carbon impact of a person living in Switzerland.



### Overall pollution over time

We succeed to create the time plot as we wanted, and to add a slider to focus on a certain period.



### Pollution components of fashion

On one hand, this visualization allows to have the 4 main areas of impact of the textile industry presented in such a way that it stands out, unlike if they had been buried in a text. On the other hand, it links to pages detailing these four areas. Indeed, each of the four pages appears when you click on the corresponding part of the t-shirt.

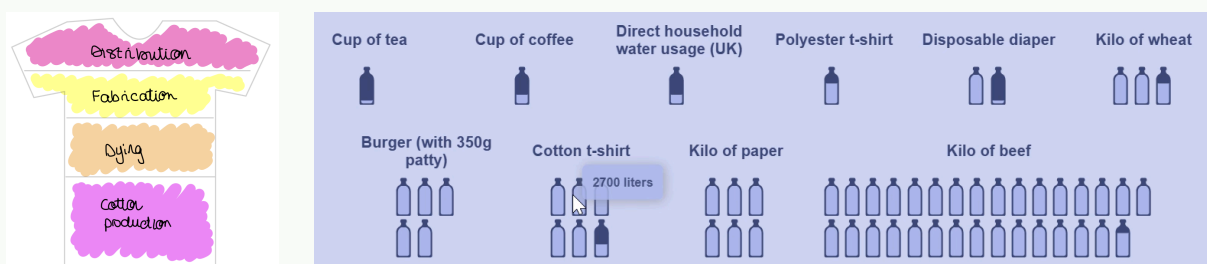


## CO2 production and water consumption for a cotton T-shirt

We created the visualization for CO2 equivalent production as we wanted. And like the treemap, the raw data is displayed when the mouse hovers it.

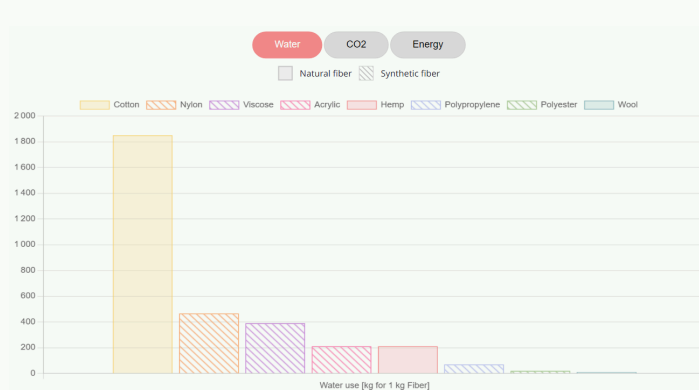
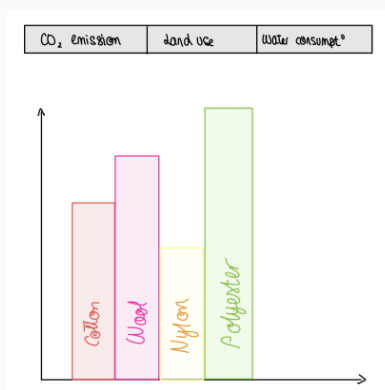
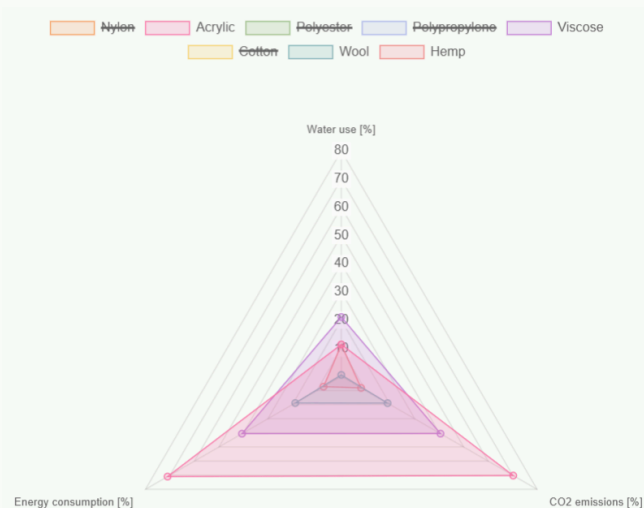
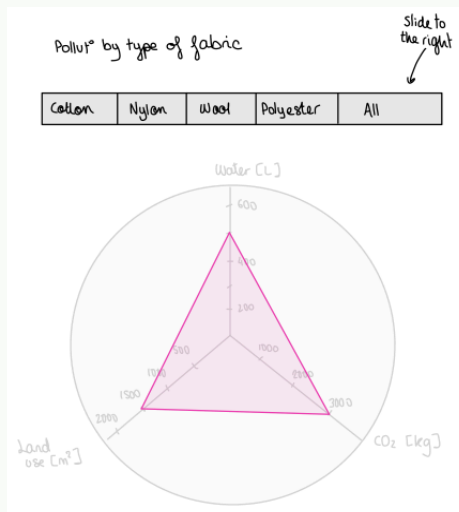


However, for water consumption, the data was much too unbalanced (79.6%, 0.5%, 2%, 17.9%) and therefore this choice of visualization was not optimal. Thus, we completely changed our idea by opting for a visualization of the water required for different products such as a kilogram of beef, a cup of coffee in comparison with a synthetic or natural t-shirt.



## Pollution by type of fabric

The question of whether to keep the 2 different graphics arose. The two graphs present the same data: CO<sub>2</sub> emissions and water and energy consumption for several materials. The basic idea was to be able to see the three data at the same time for the same material with the radar plot, and to be able to compare one data for several materials with the second. But by creating the first, we made it possible to overlay several radar plots and therefore to compare the materials. So, we first decided to remove the histogram. However, since the scales of the 3 comparison criteria are not the same, we had to normalize the data for the radar plots. The second graph was therefore ultimately kept in order to allow the absolute values of the data presented to be visualized.



For this last plot, we also added a way to know if the fabric is natural or synthetic, to allow a comparison between these two fabric groups.

## Textile waste counter

We finally created a counter which shows the number of clothes (in tons) thrown away since the person opened our site. Presented at the top right of the page, it allows a numerical representation of the reality behind the textile industry.

Worldwide textile waste since you opened this page:  
4545.15 tons

## Peer assessment

For the first milestone, we mostly worked together. For the other two milestones, we separated the work more clearly. For milestone 2, we separated the main tasks into three: creating the skeleton of the website, writing the report, and drawing the sketches of the plots. For milestone 3, we also listed and attributed the tasks but did many checkpoints to see where everyone was and if a reassignment of tasks was needed. We all worked on our own on the first draft of our plots, then did some cosmetic adjustments to create a harmonious website. Finally, everyone contributed to finishing the small details, such as adjusting color intensity, changing the space between text, cleaning the code, or organizing the GitHub repository.

### Clara

For milestone 2, Clara created the skeleton of our website and added some effects, such as the apple animation in the land use pop-up. For milestone 3, she created the annual carbon footprint of a swiss tree map, finished the t-shirt with the 4 pollution components she started for milestone 2, and did the plots for the water and carbon pop-ups. Then, she wrote this report.

### Julie

For milestone 2, Julie wrote the report. For milestone 3, she created the two plots from the *Which fabric is the best?* section: the radar and bar plots. This also includes the button for the bar chart selection. She also added the *Worldwide textile waste* counter. Then, she wrote the textual content of the website.

### Louise

For milestone 2, Louise conceptualized and drew the sketches. For milestone 3, she created the timeline plot with the slider. She was in charge of the graphical design of our website, choosing the color scheme, font families, and making other artistic choices, such as adding images to structure our site. Then, she handled the creation of our video presentation, scripting and editing it and wrote the README.md.