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A REFLOW CASE STUDY

Wasted Efforts in Amsterdam?

Transitioning Towards Circular Textiles by Mending Amsterdam's Citizen Behaviours

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement number 820937.

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Figure 1: Photo by Lena Varzar on Unsplash

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"If we take responsibility in shifting our own behaviour, we can trigger the type of change that is necessary to achieve sustainability for our race or this planet. We change our planet, our environment, our humanity, every day, every year, every decade, and every millennia.

Yehuda Berg

In late March 2020, the Amsterdam team, made up of four organisations whose expertise ranged across business and technology development, design and technology, cultural innovation and creativity, and sustainability at the municipal level found themselves at a roadblock. **They needed to decide which key activities they should be focusing on to incite behavioural change in Amsterdammers to meet both short-term targets and generate long-term impact**. As a pilot city in the three-year European Horizon 2020 project, REFLOW, the Amsterdam team tackled the long-term goal of transforming their textile material stream in the city from linear[1] to circular, with the citizens of Amsterdam at the heart of this transition. Amsterdam planned to concentrate on empowering citizens and stimulating behavioural change across two key aims to reach this goal: (1) discarding of fewer textiles by extending their life through reuse, repair, revaluing, and reducing; and (2) increasing the collection of home textile waste at the city-level by informing and engaging citizens to discard correctly. Through inducing changed behaviours and by empowering citizens as changemakers, the Amsterdam team aimed to extend the lifecycle of textiles, decrease the amount of incinerated textile waste, and to increase the stock of correctly discarded textiles that could be brought back into a circular resource loop. Concretely, the team were also obliged to meet the following short-term targets by May 2022:

1. 20% of textile waste has been diverted from incineration at the neighbourhood level;
2. There has been a 20% reduction in textile waste found in mixed waste at the neighbourhood level;
3. 45,000 kilograms of textiles have been given a second life within Amsterdam.

The team had devised a diverse collection of 9 promising outreach, awareness raising, educational, and knowledge-sharing activities that could spur their sought-after behavioural change in Amsterdammers, but due to limited resources and time, the team could only focus on a maximum of 5 until May 2022. Since, Amsterdam was vibrant and full of people from different walks of life, of which exhibited diverse behaviours when it came to textile waste, with some neighbourhoods in Amsterdam displaying better behaviours than others. This complicated the team's decision-making process. Leading up to this moment of decision, the Amsterdam team had carried out extensive research. The starting point of this research began with unpacking the current state of the textile industry to get to the bottom of the reality they were up against.

[1] Linear refers to an economic model following the principles of 'take-make-waste'. In this system, value is built up from producing and selling as many products as possible. Production of these products follow the linear steps of extracting often finite supplies of raw materials, transforming these into products, using these products, and then discarding these products as waste.

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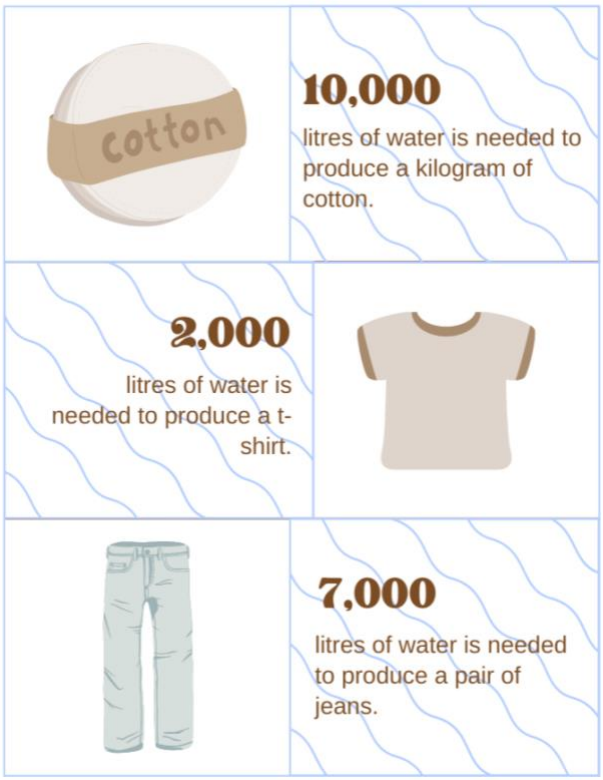
Linearity in the Global Clothing and Textile Industry

The Amsterdam team recognized that they were facing a colossal and complex challenge in their transition towards circular textiles. They were up against a long tradition of environmentally, socially, and economically degrading textile industry practices and problematic consumption behaviours, deeply engrained by a chronic linear culture of make, use, and dispose. Textile and clothing production was known to have one of the most complex global value chains at the time. It was the norm that the majority of textile and clothing products consumed in the European Union (EU) were manufactured outside the EU often under exploitative and unsustainable conditions that generated a series of knock-on effects across the world's environmental and social health.



For decades, the global industry had been reliant on utilising raw materials to produce textiles and clothing. The use of raw materials was often associated with environmentally degrading processes during its cultivation, use of harmful pesticides during the growing of raw materials such as cotton. Vast amounts of water and chemicals were also used during the production process to spin, weave, and dye fabrics. To put this into perspective, around 10,000 litres of water were needed to yield 1 kilogram of cotton, 2,500 litres of water to produce just one t-shirt, and over and above 7,000 litres to manufacture a pair of jeans[ii].

For consumers, the story of linearity in the textile and the clothing industry continued along its disparaging journey. At the supranational level, annual EU purchases of clothing had skyrocketed, with the amount of clothing bought per person increasing by 40 percent between 1996 and 2012[iii]. This trend continued and in 2015, it was estimated that EU citizens had bought 6.4 million tonnes of new clothing (12.66 kg per person) just in that year[iv]. On top of that, it was found that more than 30 percent of these items were being used[v]. To make matters worse, textiles were being undervalued and lived a short life, ticking off an average 4-year lifespan in the Netherlands, 5 years in Denmark, 3.8 years in Germany and Italy, and only 3.3 years in the UK[vi].

Meanwhile, piles of textile waste were adding up. In 2015 alone, it was estimated that EU citizens generated around 16 million tonnes of textile waste with less than half of this being collected for reuse or recycling due to improper discarding[vii]. Further, improperly discarded clothing often ended up in mixed household waste and were subsequently sent to incinerators or the landfill. While the demand for second-hand clothing was brewing across the EU, there was a still an overwhelming supply of discarded clothing with about 50% of this stock being exported to other countries to be sold at local markets[viii].

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Under an umbrella of problematic industry and consumer practices, textiles and clothing had racked up a hefty global environmental bill, with clothing adding between 2% to 10% of environmental impact based on EU consumption patterns[ix]. Additionally, most of this impact was felt in third countries[2], where the majority of this production was taking place. With mounting pressures to address the list of global challenges such as climate change, biodiversity loss, and increased waste and pollution, the destructive state of consumer behaviours and the lack of value that consumers associated with their textiles and clothing had reached a worrisome level for many cities across the world, including Amsterdam. Against this international backdrop of textile challenges, the Amsterdam team quickly turned their attention to their local situation. What was already being done in the city's circular transition? What was the current state of the local textile industry?

Circularity in Amsterdam

Amsterdam had been no stranger to the concept of circularity. In 2015, Amsterdam became the first city in the world to develop a circular vision and roadmap[x]. They were leaders in circular economy transitions at the time, setting out the ambitious goal to become a fully circular city by 2050[xi]. At the time of the project, the city already had over 70 circular projects completed, mostly focused on the construction and biomass and food value chains, with only 7 projects at the time exploring consumer goods[3]. These projects, mostly tackled by frontrunners, set out to pave the way for circular economy to be more widely accepted in the city.

While most of these projects focused on construction and biomass and food, for the few concentrating on consumer goods, the municipality learned that there was a strong need for awareness creation amongst its citizens to change their consumption and waste behaviours[xii]. Additionally, awareness creation was needed for citizens to become acquainted with alternative consumption models, including sharing, renting, and repairing products rather than buying and owning them. It was further found that primary education had an important role to play in pursuing behavioural change of Amsterdam's citizens, as these young Amsterdammers were going to be the future producers and consumers in the city[xiii].

To address these findings, the municipality had released an evaluation report of 73 circular economy projects in Amsterdam. Next steps towards circularity suggested that education and the provisioning of information facilitated by the municipality would be important avenues for tackling circular transitions in the consumer goods value chain, which included clothing and textiles[xiv]. Through education and the provisioning of information, it was said that awareness could be raised, and the concept of circularity could be mainstreamed. For instance, this could be done through integrating circular economy into primary school curriculums, at public events, or the like. Further, there was a recognition that future circular initiatives should take place at the neighbourhood level to include the everyday citizen and get them involved in the idea of and transition to a circular economy. With an

[2] Third countries refer to any country outside the European Union.
[3] This value chain consists of the use, application and high-value reuse of consumer products, their parts, and materials. Consumer goods includes goods such as kitchen tools, furniture, and clothing.

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already impressive list of circular economy projects and some direction of where to focus their efforts, the team dove deeper into understanding the textile stream in Amsterdam.

Textiles in Amsterdam

Rooted in the global channels of textile production, the pilot team discovered that 98% of textiles in Amsterdam were coming from abroad. On average, this voyage covered 10,000 kilometres by way of cargo ship and another 600 kilometres by truck before these textiles reached the city limits. Once in Amsterdam, most of these textiles were used by private households, making up 65% of textile consumption and not surprisingly, private households were also the main producers of textile waste[xv].

At the time of the project, the City of Amsterdam was collecting around 12.9 million kilos of textiles annually, with 69% of this waste being captured in municipal residual waste, 24% collected through city textile containers, and 7% being collected through private or municipal companies. Of the textiles that were sorted into city textile containers, 18% of these textiles were contaminated by having other residual waste being mixed in or being ruined by rain or groundwater seeping in[xvi].

Out of the total amount of collected textile waste, around 70% of this was being incinerated and 18% exported to other countries[xvii]. Avoidable improper sorting of textiles that ended up in residual waste and the contamination of separated textile waste drove up the incineration rate for Amsterdam. While the high incineration rate was discouraging for the team, they saw a glimmer of potential in their textile waste stream. Out of the 70% of textile waste being incinerated, over half (51%) of this stock could be re-used as materials and 28% could be re-used as clothing. In the end, only 21% of this stock would need to be incinerated[xviii]. On top of this, many of the textiles that were being thrown out because of bad fit, damages, being out of style, and the like, could have been easily repaired, repurposed, or reused, thereby prolonging their lifespan.

Bringing down the incineration rate and the amount of textile waste being created became a top priority for the pilot team. Since private households were the main consumers of textiles and producers of textile waste, the team affirmed their initial decision to put citizens at the heart of this dilemma. There was no question for the Amsterdam team that targeting their interventions

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towards shifting the behaviours of Amsterdammers to discard not only less, but also correctly, would be crucial to their circular transition. To further unpack this challenge the team turned their attention over to what they deemed as the core of their circular undertaking: understanding the real attitudes and behaviours of citizens.

What They Said

At a general level, the team uncovered that Amsterdammers were well-aware of their environmental footprint associated with consumption patterns. Concepts such as circular economy were known to most Amsterdammers, with terms such as reuse, waste, products, and raw materials being associated with it[4][xix]. Additionally, Amsterdammers were positive (60%) towards the idea of purchasing fewer new products to lessen their environmental impact[xx]. In fact, women and those who were highly educated showed a higher eagerness toward shifting their consumption behaviours.

When it came to making consumption decisions for the Dutch, just over half of consumers were willing to purchase more sustainable goods, even when faced with a premium price tag. Positively, 64% of Amsterdammers also stated that they paid attention to whether they really needed a new product, therefore challenging themselves to avoid unnecessary purchases and to decrease their waste contribution[xxi]. When it came to second-hand clothing, it was found that 67% of consumers stated they would be willing to buy second-hand but required that the price of the clothing item be 43% lower than it would be for new purchases[xxii]. For the young female city dweller, it was, in fact more likely for her to buy second-hand clothing, with 33% of female millennials showing willingness to buy second-hand[xxiii].

The Amsterdam team became increasingly curious to know whether citizens had thought about alternative consumption behaviours such as swapping, renting, and repairing. To their disappointment, only 13% of consumers were willing to go through renting channels, with most stating that they perceived this method to be more expensive[xxiv]. On the plus side, the team were faced with a more positive outlook. 78% of consumers had good intentions to keep using their clothing for a prolonged period of time, with 66% indicating that they had the knowledge needed to ensure its longevity[xxv]. For clothing that needed to be repaired, 38% had intentions of figuring

[4] Based on a survey of 841 Amsterdammers.

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out how this could be done, and 45% knew how to do it[xxvi]. For clothing at the end of its life in Dutch wardrobes, 61% had intentions of giving it away to others, with 81% knowing how they would make sure this would happen[xxvii].

The Amsterdam team pondered, if these citizens were positive towards creating change, what were they willing to change to ensure that Amsterdam would be a thriving and sustainable city in the future? When Amsterdammers were asked about one change that was needed for the sake of the environment, the most common answer related to waste[xxviii]. Common actions that citizens believed would help the environment included separating waste better, having better access to waste containers for separation, creating less waste on the street, implementing the post-separation of waste, and fostering more reuse.

While these ideas were steps down the right path, for the citizens of Amsterdam, a crucial first stride towards circularity entailed solutions that would make it easier for them to separate waste, so those discarded materials could be salvaged and brought back into the resource streams. On top of that, a large majority of the citizens (87%) believed, that while they would be willing to change their behaviours, producers should also be mandated to incorporate circular repair principles into the design of products[xxix]. With these insights in mind, the team moved onto the next part of their research: investigating if some of these good intentions translated into positive behaviours.

What They Did

The team quickly found out that, while there were some positive intentions brewing amongst Amsterdammers, the concrete facts associated with textile waste and consumption did not always correlate with these intentions. Behind closed doors, the average Dutch wardrobe contained around 173 items of clothing, while only 7 of these items were second-hand purchases[xxx]. 50 of these pieces had not been touched in the past year. Additionally, it was found that those aged between 18 to 30 tended to have the biggest wardrobes, with most of this demographic being women. Simultaneously, the Dutch were adding 46 new purchases of clothing, shoes, and accessories to their wardrobes every year[xxxi]. Shopping patterns among the Dutch population occurred every 6 months, with 44% saying that they shopped for clothing twice a year and just over a quarter stating that they bought clothing every month[xxxii].

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While wardrobes were being filled with new clothing items, citizens were concurrently throwing out 40 pieces every year per person. Of these 40 pieces being discarded, only 9 were fit for reuse[xxxiii]. The remaining items were either poor quality, or worse, not being separated correctly when discarded. Digging deeper into understanding why people were getting rid of their clothing, the Amsterdam team began to uncover some of the underlying reasons why Dutch citizens were discarding their clothing. The number one reason (69%) was that the clothing did not fit them anymore. 56% said that the clothing was damaged, 49% said they wanted to help others, and 38% were simply bored with what they had[xxxiv].

When it boiled down to textile waste sorting behaviour of citizens in Amsterdam, the team needed answers. They enlisted the help of the material flow experts who were partners in the REFLOW project to undertake an analysis at the city-level across the Amsterdam's seven districts. As the most culturally diverse city in the Netherlands, it was no surprise for the team to know that the city districts within Amsterdam were also ladened with diversity, including distinct types of behaviours when it came to textile discarding.

The team needed to firstly understand where most of the 12.9 million kilos of textile waste generated every year in the city was coming from. The city district, Nieuw West, turned out to be the largest producer of textile waste, making up almost a quarter of all textile waste generated in the city. They were followed by Zuid and West, which accounted for 18% and 17% respectively. Within the Centrum district, the team was happier to find lower waste contributions, which accounted for only 8% of the total amount.

City District	Amount of Textile Waste (kton)/year	Percentage of Textile Waste in AMS/year	Amount of textiles sorted correctly/year	Amount of textiles incorrectly sorted/year
Nieuw West	2.60	22%	19%	81%
Zuid	2.20	18%	32%	68%
West	2.12	17%	25%	75%
Oost	1.64	14%	33%	67%
Noord	1.26	11%	24%	76%
Zuidoost	1.14	10%	23%	77%
Centrum	0.91	8%	33%	67%

Table 1: Overview of textile waste generated per year across Amsterdam's districts[xxxv].

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The team began to string a few pieces of their investigation together. For the Nieuw West district, a predominately residential area and home to 65 of the city's 235 textile bins, they quickly discovered that not only were they the largest producers of textile waste, but they also had the lowest sorting rates in the city. In Nieuw West, only 19% of all textile waste being generated in the district was being discarded correctly. While Zuidoost, a mixed-use area[5] with 38 textile bins, had produced the second lowest amount of textile waste, their proper sorting rate was relatively low compared to the other districts (23%).

The team attempted to draw a red thread through the areas with low rates of textile waste separation. They noticed that a series of socio-economic factors including low housing value, a higher number of children in the household, low average income, and a higher household size correlated with the lowest shares of textile waste separation. This included the two city districts, Nieuw West and Zuidoost. However, the story looked a bit different for areas with higher sorting rates in districts such as Centrum and Zuid, who generally had higher incomes and higher rates (33% in Centrum and 32% in Zuid) of correctly sorted textiles.

The Options

There were clearly many factors at play for the Amsterdam team and they needed to decide quickly on how they wanted to move forward with solving their dilemma. The team reminded themselves again of their aim of inciting behavioural change in citizens that would lead to fewer textiles being discarded, and more being discarded correctly. The team knew they had to pick the activities that they thought would create the long-term impact across the city's textile stream and that would generate concrete results within the project timespan. Moreover, due to increasing time pressure and limited financial and human resources, the team had decided to pick a maximum of 5 activities to carry out intensively. To complicate matters even more, the lingering threat of the global pandemic[6] had the potential to jeopardize the short-term outcome and impact of their activities. With all this in mind, the team went over the list of potential activities.

Option 1: Educational Programmes

For future generations, the Amsterdam team knew that investing their time and energy into developing and facilitating educational programmes that promoted circular textiles would be beneficial not only in the short-term but would also create long-lasting impact and a generation of changemakers. Through educational programmes, the team would focus their efforts on the educated population, concentrating on students who were attending fashion schools and universities. This included bachelor programmes at the art school, and master programmes in

[5] 44% residential, 17% office space, 10.5% healthcare sector, 8% industrial.

[6] In March 2020, the World Health Organization declared the novel coronavirus, COVID-19, a pandemic. Following this declaration, communities across the globe began to lockdown and strict social distancing measures were put into place. As the world began to adjust to a new normal, it meant that face-to-face interaction and large gatherings were not deemed safe practices. Thus, societies began to look for alternatives where social life, work, education, and the daily activities could still take place resulting in the move towards the online sphere with many events, workshops, lectures, and meetings being migrated onto digital platforms.

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industrial design. They hoped to incorporate circular textile knowledge into the existing curriculums and programmes to inspire this future generation as they forged out their future career paths. While these educational programmes were designed to increase awareness and knowledge amongst Amsterdammers, these future city builders, were also the ones who were receiving a higher degree of education. The team knew that their main goals were to increase proper discarding habits and decrease the overall discarding of textiles, but from their background research, they also knew that much of this problem was caused by those who had a lower degree of education.

Option 2: Workshops

Providing a hands-on experience for citizens to come and learn how to manipulate and upcycle their textiles was something that the team thought would help bridge the repair knowledge gap across Amsterdammers. They hoped that this would lead not only to increased awareness, but also provide the necessary skills to repair and upcycle clothing items that were damaged or unused. They planned to host online workshops in English where participants would receive a DIY textile kit to their homes. Along with this, they planned to include a how-to guide and a video recording of each session so that those who could not attend the workshop could still have access to the materials. While this idea was a great way to kickstart and empower citizens to make changes within their own wardrobes at home, they deliberated over if they were reaching the right audience. Moreover, they wondered if these skills should be supplemented by other avenues, such as increasing vocational training to increase jobs within the field of circular textiles, repair, and tailoring.

Option 3: Swapshop

Having a concrete, brick and mortar place to not only drop off clothing, but also pick up second-hand clothing seemed like a great idea to the team. They hoped that this solution would tackle the issue of bringing the amount of textile waste down. The team toyed with the idea of setting up a Swapshop in the Centrum city district. This area had the lowest amount of textile waste and highest rate of correctly sorted textiles but was also home to the demographic who were most likely to be consumers of new textiles. They knew that building upon best practices would help to further empower and build momentum across the rest of the Amsterdam citizens, but they wondered if this would actually reach other districts of the city whose low rates of proper sorting and high amounts of textile waste were crucial to reaching the project targets required.

Option 4: How-to Guides

Having information about the impacts of textile consumption and the side effects of a linear economy was a sure way for the team to raise awareness amongst citizens. Using how-to guides in the form of short chapters consisting of no more than 10 pages, they planned to publish these guides in English layman terms so that they could reach an audience not only in Amsterdam, but also in other cities in Europe and beyond. They planned for the guides to follow the entire lifecycle of textiles, from production, to design, to use and finally to disposal. This meant that the target audience would be broad, ranging from private households, to manufacturers, producers, and designers. While the guides were designed to be filled with expert information that was easy to digest by

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everyday citizens, the team were concerned about who would actually read this, find it beneficial, and use this information in real life.

Option 5: "Stadpas" - The City Pass

The team knew that there were many citizens who didn't have the skills to repair their own clothing, didn't have the time to do this, or lacked funds to get this done professionally. They thought that introducing a "Stadpas" (city pass) provided to citizens who had a lower income in the city would be a great way to make these citizens more aware and kickstart more circular behaviours. With this pass, lower income citizens would be able to receive discounts related to the rental of clothing and free tailoring services when they needed to repair their clothing. The team believed this was an excellent way for them to target the most vulnerable areas not only socioeconomically but also in regard to the textile waste problem.

Option 6: Social Media Campaign

In order to reach mass crowds across borders, the Amsterdam team sketched out their idea to create a social media campaign. With many users already on apps such as Instagram, LinkedIn, Youtube, and Twitter, they thought they could reach a wide audience across age groups, ethnicity, professions, and income. They planned to have a campaign that would be visually appealing, with small bites of statistics on the problems of the textile industry and solutions that the everyday citizen could make along their journey towards behavioural change. While social media platforms were great for disseminating information, the team was concerned with how they were going to create a momentum of followers. No matter how many visually appealing and eye-catching posts they created, this information would not make a difference if they didn't have any followers.

Option 7: Online Meetups

Using online meetup platforms to engage with citizens was thought to be an inclusive way for the team to interact with not only Amsterdammers, but also industry professionals and other citizens curious about circular economy. With the help of one of the Amsterdam team members, who operated a cultural meeting place, the team planned to host meetups for whoever wanted to join. They decided that a non-targeted approach for this activity would work best. The meetups would allow for participants to become part of the conversation during formal presentations where experts would discuss a topic concerning circular economy and textiles, mostly in Dutch. The meetups would be longer sessions, roughly around an hour and a half, but the idea was that citizens could join online when they could. Moreover, these sessions would be recorded and uploaded onto the Amsterdam team's YouTube page so that those who could not join, could still access the content.

While the idea to engage with citizens through these online meetups was a great way to get the conversation flowing, there was still a large portion of the population that didn't find themselves ready for such conversations. For many, and which was reflected in the high amounts of textile waste being generated and incorrectly disposed of, it was about learning the basics at a more introductory level. As such, the team was concerned that these online meetups would be targeting audiences that already knew something about the issues associated with

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linear textiles, but they also felt it was important to further empower the frontrunners and to help develop their conversations further.

Option 8: Textile Race

Children were the future of Amsterdam and were incredibly important for ensuring change that would be carried across generations. The team came up with the idea of gamifying textile collection and turning it into a race. The game consisted of children going around their neighbourhoods and collecting textiles which would then be used in school projects. In their earlier analysis of textile waste in Amsterdam, the team knew that households that tended to have more children were more likely to generate the most waste. This seemed like the perfect opportunity for the team to shoot two birds with one stone. Not only would they be educating children in primary schools about circular textiles and the importance of textile sorting, but they also hoped that they could empower these youngsters to relay the message back to their homes and neighbourhoods. While this seemed appealing in writing, in reality, would children really be able to influence others and make a difference in the textile stream? And would this idea of targeting a population which currently had no part of lowering the amount of textile waste today, but only in the future, be worth investing energy in now, considering that the team still had to deliver concrete results within three years?

Option 9: Increasing Textile Discarding Sites

With under a quarter of textiles being discarded into the proper textile bins, the team assessed if they could increase the amount of properly sorted textiles by adding more city textile collection bins. There were already 235 municipal bins across the city which could be found either at street-level or underground. 28% of these bins were located in the Nieuw West neighbourhood, while 16% were located in the Zuidoost neighbourhood, the two most problematic areas when it came to the proper discarding of textiles. Also paying mind to high contamination rates of collected textiles, the team thought that placing bins in indoor spaces such as libraries and stores, would protect the textiles from contamination by rain or residual waste being mixed in. In many cases where textiles were ruined by other mixed waste being thrown into the textile bins, their locations were in vulnerable areas, such as being close to restaurants or markets, where citizens were looking for a quick place to toss out their trash. While the idea of having an additional 10 to 15 indoor sites would ultimately help to bring the rate of contamination and perhaps increase the likelihood of proper sorting, many of these facilities would close after working hours, meaning that 24-hour access was not available and thereby restricting the times that people could use the bins. Moreover, they were unsure of where they should place these bins across the city.

Assessing and Choosing

With their months of extensive research in mind, the team had started to weigh the pros and cons of each potential activity. The team wanted to ensure that their activities would be able to reach a range of different citizen groups who found themselves at different learning entry points. This included citizens who were just beginning to learn what circular textiles were, citizens who were already engaged in circular conversations, Amsterdammers who already understood how they could change, those currently in the process of changing their

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behaviours, and for those citizens who were leading the pack as changemakers, looking to inspire others. Moreover, the team wanted their activities to cater to and reach Amsterdam's different neighbourhoods and their associated challenges based on the material flow analysis conducted. From this analysis, it was clear that there were certain neighbourhoods who were more problematic than others. But the bottom line for the Amsterdam team was that the five activities needed to lead to concrete results. It was now decision time.

Should they focus their activities on the most problematic areas and demographic groups in Amsterdam or look toward frontrunners who showed more promising behaviour towards circular textile transitions? Which activities would truly lead to impactful behavioural change and ultimately, a circular transition within their textile stream? More specifically, which activities would lead to a shift in the behaviour of Amsterdammers to discard fewer textiles and correctly? And which of these activities should they prioritize? Lastly, how could they ensure to meet the project targets at the end of the allotted three-year project cycle? The success of their pilot depended on which activities they chose to go with, and only time would tell if they had chosen wisely, or if they were just wasted efforts.

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Notes

[i] Photo taken by Lena Varzar on Unsplash.

[ii] See Teurlings' article, Circular textiles are on the rise in the Amsterdam Area.

[iii] From Šajn's European Parliamentary Research briefing: Environmental Impact of the Textile and Clothing Industry.

[iv] From Šajn's European Parliamentary Research briefing: Environmental Impact of the Textile and Clothing Industry.

[v] From Šajn's European Parliamentary Research briefing: Environmental Impact of the Textile and Clothing Industry.

[vi] From WRAP and Gray's report Mapping clothing impacts in Europe: the environmental cost.

[vii] See CBI's article on *The European market potential for recycled fashion*.

[viii] See CBI's article on *The European market potential for recycled fashion*.

[ix] From Šajn's European Parliamentary Research briefing: Environmental Impact of the Textile and Clothing Industry.

[x] From the Doughnut Economics Action Lab's report: *The Amsterdam City Doughnut: A Tool for Transformative Action*. Read the report for more information on Amsterdam's circular vision.

[xi] See the Amsterdam Circular 2020 – 2025 Strategy to read more about the five-year road map towards circularity in Amsterdam.

[xii] More in-depth evaluation can be found in the Circle Economy's report: *Amsterdam Circular: Evaluation and Action Perspectives*.

[xiii] More in-depth evaluation can be found in the Circle Economy's report: *Amsterdam Circular: Evaluation and Action Perspectives*.

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[xiv] More in-depth evaluation can be found in the Circle Economy's report: *Amsterdam Circular: Evaluation and Action Perspectives*.

[xv] Urban Metabolism Analysis: Initial Assessments by Corbin et al., provides an in-depth material flow analysis of textiles in Amsterdam.

[xvi] Urban Metabolism Analysis: Initial Assessments by Corbin et al., provides an in-depth material flow analysis of textiles in Amsterdam.

[xvii] C Urban Metabolism Analysis: Initial Assessments by Corbin et al., provides an in-depth material flow analysis of textiles in Amsterdam.

[xviii] Urban Metabolism Analysis: Initial Assessments by Corbin et al., provides an in-depth material flow analysis of textiles in Amsterdam.

[xix] See more information on behaviours of Amsterdammers in Bicknese and Tepic's report *Amsterdammers en de R-Ladder: verkorte rapportage*.

[xx] See more information on behaviours of Amsterdammers in Bicknese and Tepic's report *Amsterdammers en de R-Ladder: verkorte rapportage*.

[xxi] See more information on behaviours of Amsterdammers in Bicknese and Tepic's report *Amsterdammers en de R-Ladder: verkorte rapportage*.

[xxii] Leinenga's *Thesis* on *Dutch sustainable clothing consumption* provides further information on consumption behaviours in the Netherlands.

[xxiii] From Shahbandeh's statistic *Share of women open to buying resale items worldwide as of 2019, by age*.

[xxiv] See Hofstede's Report "Waroom nieuw kopen als het anders kan" for more information on Dutch consumer behaviours.

[xxv] See more information from Bot and Keuchenius' presentation on sustainable perspectives of young Dutch citizens.

[xxvi] See more information from Bot and Keuchenius' presentation on sustainable perspectives of young Dutch citizens.

[xxvii] See more information from Bot and Keuchenius' presentation on sustainable perspectives of young Dutch citizens.

[xxviii] From Bicknese and Tepic's report *Amsterdammers en de R-Ladder: verkorte rapportage*.

[xxix] From Bicknese and Tepic's report *Amsterdammers en de R-Ladder: verkorte rapportage*.

[xxx] From Circle Economy's article *What's in your closet? AUAS research aims to reduce the Dutch "Clothing Mountain"* citing a study undertaken by AUAS.

[xxxi] From Circle Economy's article *What's in your closet? AUAS research aims to reduce the Dutch "Clothing Mountain"* citing a study undertaken by AUAS.

[xxxii] See Farsang et al's article on fashion consumption and sustainability among young consumers in Germany, the Netherlands, Sweden Uk and the US 2014.

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[xxxiii] From Circle Economy's article *What's in your closet? AUAS research aims to reduce the Dutch "Clothing Mountain*" citing a study undertaken by AUAS.

[xxxiv] See Farsang et al's article on fashion consumption and sustainability among young consumers in Germany, the Netherlands, Sweden Uk and the US 2014.

[xxxv] From Corbin et al.'s material flow analysis of Amsterdam's textile stream. See Urban Metabolism Analysis: Initial Assessments for a full overview.

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