CENTEXBEL-VKC

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# FAST FASHION COMES AT HIGH ENVIRONMENTAL AND SOCIAL COSTS

Although the availability of cheap garments seems, at first glance, to be a "great equalizer" by giving people around the globe a fair opportunity to dress fashionably at affordable prices, there is a cost behind each dress, pair of jeans, shirt, and sock that goes unnoticed by most people: the cost to the environment, and to human rights.

**FASHION ON CLIMATE[1]: How the fashion industry can urgently act to reduce its Greenhouse Gas Emissions** (published August 26, 2020) by McKinsey shows that the global fashion industry produced around 2.1 billion tons of GHG emissions in 2018, equalling 4% of the global total. This is equivalent to the combined annual GHG emissions of France, Germany and the United Kingdom. Around 70% of the fashion industry's emissions came from upstream activities such as materials production, preparation and processing. The remaining 30% were associated with downstream retail operations, the use-phase and end-of-use activities. Adding to the challenge of reducing its GHG footprint is the expectation that the fashion industry will continue to grow as a result of shifting population and consumption patterns. If no further action is taken over the next decade beyond measures already in place, the industry's GHG emissions will likely rise to around 2.7 billion tons a year by 2030, reflecting an annual volume growth rate of 2.7%.


According to previous McKinsey report[2], *"clothing production doubled from 2000 to 2014, and the number of garments purchased per capita between 2000 and 2014 increased by about 60 percent. By compressing production cycles and turning out up-to-the-minute designs, these businesses have enabled shoppers not only to expand their wardrobes but also to refresh them quickly. Across nearly every apparel category, consumers keep clothing items about half as long as they did 15 years ago. Some estimates suggest that consumers treat the lowest-priced garments as nearly disposable, discarding them after just seven or eight wears."*

## THE FASHION INDUSTRY EMITS MORE CARBON THAN INTERNATIONAL FLIGHTS AND MARITIME SHIPPING COMBINED

According to figures from the United Nations Environment Programme[3] (UNEP), it takes 3,781 litres of water to make a pair of jeans, from the production of the cotton to the delivery of the final product to the store. That equates to the emission of around 33.4 kilograms of carbon equivalent.

The following statistics, published by the UNEP and the Ellen MacArthur Foundation[4], give an idea of the entire environmental cost:

- Every year the fashion industry uses 93 billion cubic meters of water — enough to meet the consumption needs of five million people.
- Around 20 % of wastewater worldwide comes from fabric dyeing and treatment.
- Of the total fibre input used for clothing, 87 % is incinerated or disposed of in a landfill.
- The fashion industry is responsible for 10 % of annual global carbon emissions, more than all international flights and maritime shipping combined. At this pace, the fashion industry's greenhouse gas emissions will surge more than 50 % by 2030.
- If demographic and lifestyle patterns continue as they are now, global consumption of apparel will rise from 62 million metric tons in 2019 to 102 million tons in 10 years.
- Every year a half a million tons of plastic microfibers are dumped into the ocean, the equivalent of 50 billion plastic bottles.

1 you can download the study: https://www.mckinsey.com/industries/retail/our-insights/fashion-on-climate
2 https://www.mckinsey.com/business-functions/sustainability/our-insights/style-thats-sustainable-a-new-fast-fashion-formula
3 http://web.unep.org/es
4 https://www.ellenmacarthurfoundation.org/

## TOO MUCH, TOO COMPLEX AND TOO LOW-QUALITY WASTE TO RECYCLE OR RE-USE

Textile waste is an unintended consequence of fast fashion, as more people buy more clothes and don't keep them as long as they used to. The international expansion of fast fashion retailers exacerbates the problem on a global scale. Wardrobes in developed nations are saturated, so to sell more products, retailers must tempt shoppers with constant newness and convince them the items they already have are no longer fashionable.

**Some thrift shops are flooded with flimsy synthetic clothing. Discarded clothing is shipped overseas. Last year, a mountain of discarded clothing outside the Ghanaian capital Accra produced so much methane that it exploded. It smouldered for months afterwards[5].**

Increasing disposable income levels over recent generations means there is less need to "make do and mend", as it's often cheaper and more convenient to buy new than have an item repaired. Busy lifestyles make many people more time-poor than previous generations, and with the loss of sewing and mending skills over time, there is less impetus to repair our garments. The rise of supermarket fashion that can be purchased alongside the weekly shop and the regular occurrence of seasonal sales make clothing seem "disposable" in a way it didn't used to be.

**Around 85% of all textiles thrown away in the US – roughly 13 million tons in 2017 – are either dumped into landfill or burned. The average American has been estimated to throw away around 37kg of clothes every year. And globally, an estimated 92 million tons of textiles waste is created each year and the equivalent to a rubbish truck full of clothes ends up on landfill sites every second. By 2030, we are expected to be discarding more than 134 million tons of textiles a year[6].**

Much of the problem comes down to what our clothes are made from. The fabrics are complex combinations of fibres, fixtures, and accessories. They are made from hard to separate and to recycle blends of natural yarns, man-made filaments, plastics, and metals.

Sorting textiles into different fibres and material types by hand is labour intensive, slow and requires a skilled workforce. Growing use of modern fabric blends in clothing also makes it hard to do this mechanically too, although European researchers have been developing techniques that make use of hyperspectral cameras – as the one recently installed by Centexbel - to better identify different fabric types. Once sorted, the dyes and other chemicals that have been applied to the fabrics need to be removed in order for yarns to be reused. Currently, however, very few of the clothes that are sent to be recycled are actually turned into new clothing – a process known as "material to material" recycling. Old wool jumpers, for example, can be turned into carpets, cashmere can be recycled into suits.

**But as of 2015, less than 1% of used clothing was recycled in this way.**

The **EU Circular Action Plan**[7] including the goal to separately collect textiles by 2025 will automatically increase the supply of used textiles, shoes, and accessories without addressing current issues linked to poor circular textiles' design and low-quality materials which directly impact preparing for re-use and recycling of used textiles.

A recently published report by the **Danish Environmental Protection Agency**[8] comparing textile collection and treatment in 6 European counties estimates that over the next 5 years an additional 1.4 million tons of non-reusable textiles will be collected annually in Europe.

Once no longer in use, unwanted clothes are usually brought to a collection point, from where they are transported for industrial sorting. The best-quality garments that could be worn again are skimmed off and sent to second-hand markets for re-use. However, the global market for re-used clothing is also crumbling under the pressure of growth-obsessed fast fashion retail offering low-quality clothing. The remaining clothes, the non-wearables, are considered waste requiring technologies and vast systems to handle such a huge amount of collected waste.

## UNSAFE AND UNHEALTHY WORKING CONDITIONS

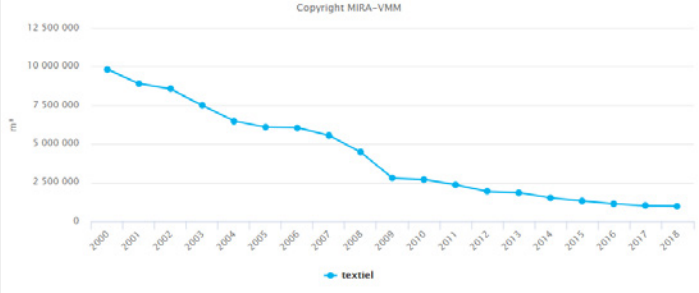
The rise of fast fashion was made possible by moving production to countries where labour costs are kept low. This often went hand in hand with poor working conditions (safety, hygiene, labour rights, etc.). The alarming situations only attracted international attention when the 'Rana Plaza', an eight-storey factory in Bangladesh, collapsed in April 2013. The disaster in the factory, which mainly produced clothing for brands such as Benetton and Primark, cost the lives of 1,134 people.

5 https://businessam.be/de-dure-prijs-van-goedkope-kledij-10-zaken-die-u-niet-wist-over-fast-fashion/
6 https://www.bbc.com/future/article/20200710-why-clothes-are-so-hard-to-recycle
7 https://ec.europa.eu/environment/circular-economy/
8 https://mst.dk/service/publikationer/publikationsarkiv/2020/jul/towards-2025-separate-collection-and-treatment-of-textiles-in-six-eu-countries/ https://www2.mst.dk/Udgiv/publications/2020/06/978-87-7038-202-1.pdf

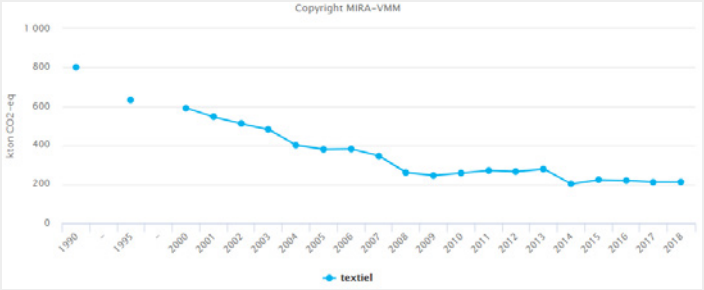
# TEXTILES VS FAST FASHION

**In the press, public opinion and even in public policy, little or no distinction is made between textiles and clothing, let alone between the environmental and social efforts and positive results of the European textile industry and those of the fast fashion industry.**

The graphs below show for example the efforts of the Flemish textile industry with regard to the use of ground water and the emission of greenhouse gases between 2000 and 2018:




Ground water use in the Flemish textile industry




Emission of greenhouse gases by the Flemish textile industry

The European textile industry and clothing sector (manufacturers, importers) are strictly regulated by various pieces of European legislation.

The most important legislation on chemicals is REACH (Registration, Evaluation, Authorisation and Restriction of Chemical substances) (Regulation (EC) No 1907/20069). For textiles produced in Europe, substances incorporated in textiles need to be registered. For imported (outside of the EU) textiles, importers need to notify ECHA if the textiles they import contain SVHC (substances of very high concern) in a concentration > 0,1% (w/w) if the total annual volume in all products imported is greater than 1 tons. Consumers also have the possibility to ask retailers if products contain SVHC in a concentration above 0,1%.

Other pieces of legislation include the Biocides Regulation (Regulation (EU) No 528/2012), which establishes the regulatory framework for the making available on the market and use of biocidal products.

Unlike REACH and the Biocides Regulation, the Waste Framework Directive (Directive 2008/98/EC) specifically refers to textiles. Besides defining the waste hierarchy i.e. prevention, preparation for re-use, recycling, energy recovery and disposal, the directive also calls for end of waste specific criteria for textiles to be developed.

For textiles, a number of different voluntary environmental labelling schemes exist on the market. They include the ISO 14024 “Type I” EU Eco-label, Nordic Swan and Blue Angel. Other standards address environmental and social criteria along the supply chain e.g. OEKO-TEX®, and Global Organic Textile Standard (GOTS).

Other public and private initiatives establishing environmental and social standards have also been set up and taken up both by producers and retailers.

## IS CHANGING OUR BUYING BEHAVIOUR ENOUGH?

1.7 billion people worldwide now belong to the ‘consumer class’ otherwise known as “people characterized by lifestyles devoted to the accumulation of non-essential goods” (Hillary Mayell[9]). Large corporations encourage **consumerism**[10] by convincing people that in order to be happier they have to have more stuff. Moreover, globalization is a driving factor in making goods and services previously out of reach in developing countries much more available. Items that at one point in time were considered luxuries—televisions, cell phones, computers, air conditioning—are now viewed as necessities.

While recycling and more sustainable fabrics will be a key part of the solution, it is commonly suggested that consumers too will need to change their behaviour if we hope to lessen the environmental impact of the fashion industry.

However, most people don’t have the (financial) option to buy exclusively from ethical brands. Unethical clothing will continue to dominate the market, no matter how many people can choose to buy slow fashion for as long as this lucrative fast fashion business model is not checked by a globally binding legislation.

**ON THE NEXT PAGES WE WILL PRESENT SEVERAL INITIATIVES AND RESEARCH PROJECTS ADDRESSING THESE ENVIRONMENTAL AND SOCIAL ISSUES**

9 https://www.nationalgeographic.com/environment/article/consumerism-earth-suffers

10 Consumerism is the idea that a constant increase in the number of goods and services bought by customers is beneficial to the economy. However, this does not account for the resources needed to be continuously increasing production, including human resources - the workforce

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# EMPOWERING LOCAL, CIRCULAR & BIO-BASED TEXTILES

Today, a large amount of clothing are produced in low cost countries, sometimes far away from the brands creating them, under poor labour conditions and with few concerns for the environmental impact. The vast majority of clothing is made of two types of fibers; polyester and cotton. These, however, have considerable disadvantages and shortcomings. Polyester is oil-based and mainly sourced in the Middle East, whilst cotton is mostly grown in e.g. India, with a large environmental impact because of pesticides and high water consumption. Moreover, small fiber fractions are released from the garments, especially from polyester fibers, during washing and wearing. These microplastics end up and accumulate in soil and water, and thus contribute to the well-known plastic soup. The textile sector is considered the second largest contributor of microplastics.

The HEREWEAR project aims at the creation of an EU ecosystem for locally-produced circular textiles and clothing made from bio-based resources. This will be realised by a holistic approach covering all necessary levels. On the technical side, emerging sustainable technologies for wet and melt spinning of cellulose and bio-based polyesters, for yarn and fabric production and for coating and colouring will be developed and piloted at semi-industrial scale. Further, we aim to significantly reduce the microfiber release via measures along the textile manufacturing process. Further, we will maximize the sustainability and circularity of our clothing via connecting regional micro factories and by platform-supported, networked production resources. Guidelines will be provided to support the design of fashion goods; with focus on bio-based materials and reuse/recycling. Garment prototypes for streetwear and corporate clothing will demonstrate the HEREWEAR circular bio-based concept.

HEREWEAR is a Horizon 2020 project and is co-funded by the European Union. It will last 48 months and started on October 1st, 2020. It is coordinated by Centexbel, the Belgian research centre for textiles and plastics.

The Belgian company Finipur participates in the project.

## PROJECT WEBSITE

**https://herewear.eu/**

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101000632.

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# INNOVATION TOWARDS A CIRCULAR FUTURE FOR TEXTILES

By using 17 million tonnes of non-renewable input materials per year, the textiles industry is one of the most polluting industries in the North-West Europe (NWE) region. As a response, NWE policies promote the transition to a circular economy. However, to achieve this goal, it is necessary to develop the proper technologies first.

CircTex focuses on the development of recycling and production technologies in a closed-loop process chain for PET workwear to decrease non-renewable input materials and the ecological impact of NWE textiles.

Workwear is the ideal starting point for an industry-wide innovation, because this sector has a high need of input materials as reuse is not allowed. Thus, many public tenders ask for circular production. Moreover, higher quality demands are set for workwear, and the use phase severely decreases recyclability.

The following technologies and processes for **circular PET workwear** will be developed:

- Mechanical and chemical recycling
- Spinning and weaving
- No-waste production
- Wear2 yarn and industrial microwave for assembly and disassembly
  **---STATUS---** Partner Wear2Go is now producing the first test batches.The yarn will be processable and have the same properties as normal stiching yarn with the extra feature of disintegration under the influence of microwaves.
- Recyclable laminates, logos and accessories
  **---STATUS---** The chemical recycling lab trials of high-VIS colored polyester in yellow and orange show that the colorant can be removed upto a certain extent and that the properties of the obtained polyester are good. The upcoming large scale trials with end-of-life garments must validate the lab results in a next stage. The first samples of the Eco designed garments are produced and reviewed. Some improvements are now being discussed and implemented.
- Collection and sorting systems

These technologies and processes will be tested and developed in a closed loop process chain, where the effects of usage on the recyclability will also be taken into account. To increase the knowledge and the number of SMEs and enterprises actively working to achieve circularity in textiles, the results of CircTex are actively communicated to the NWE textiles industry.

To ensure a long-term effect, CircTex will set up an innovation network to activitely involve the stakeholders in the entire NWE region. An international standard for circular textiles will be initiated to stimulate the further development of the circular process chain for other textiles and textile products.

AS A RESULT, CIRCTEX WILL STIMULATE THE GROWTH OF THE NWE TEXTILES INDUSTRY AND CREATE NUMEROUS JOBS IN THE FUTURE. BECAUSE OF THE TRANSNATIONAL NATURE OF THE TEXTILES INDUSTRY, THE TERRITORIAL COOPERATION WITHIN THE NWE REGION IS CRUCIAL TO CREATE A SIGNIFICANT IMPACT.

https://www.nweurope.eu/projects/project-search/circtex-innovation-towards-a-circular-future-for-nwe-textiles/

CircTex is a Interreg North-West Europe (NWE) project. Interreg NWE is a European Territorial Cooperation Programme funded by the European Commission with the ambition to make the North-West Europe area a key economic player and an attractive place to work and live, with high levels of innovation, sustainability and cohesion. It invests EUR 370 million of European Regional Development Fund (ERDF) in activities based on the cooperation of organisations from eight countries: Belgium, France, Germany, Ireland, Luxembourg, The Netherlands, Switzerland and the United Kingdom.

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For recycling purposes, textile waste streams can be divided into 2 major categories: end-of-life textiles (E.O.L.), also referred to as "post-consumer", and industrial textile waste (I.W.), consequently also referred to as "pre-consumer". Both types of waste can, if properly selected and sorted by the recycling process, form valuable waste streams where the raw materials are recycled into fibres or granulate which, in turn, is the raw material for the production of spun yarns or filaments.

## OVERVIEW E.O.L. TEXTILE WASTE STREAMS

The E.O.L. textile waste streams contain largely, but not exclusively, clothes of the most diverse types and qualities. A very important part of these clothing waste flows is collected via the small containers that adorn the streets in many places.

The most recent figures show that in Belgium, approximately 8.3 kg of clothing per person are collected in this way on an annual basis. This means approximately/nearly 100,000 tonnes per year. The largest part of the clothing ends up in (commercial) sorting centres that sort out the reusable clothing for sale in the second-hand circuit (mainly Africa and Eastern Europe). The reusable fraction is approximately 50%. This means that approximately 50,000 tonnes per year are not reused as clothing and are therefore available for recycling. Most of this fraction is currently recycled by fibre producers (into short fibres for the production of nonwovens) and by producers of industrial cleaning cloths. However, for an (important) part of the raw materials from this fraction, this means a clear form of "downcycling", as their quality would allow a higher form of recycling (e.g. into spinnable fibres). An important stumbling block for this is the lack of tools to select and sort these raw materials in function of recycling (instead of in function of reuse).

## THERMOPLASTIC RECYCLING OF POLYESTER TEXTILE WASTE STREAMS

During the RETEX project, we have carried out several experminents to evaluate the technical feasibility of thermoplastic recycling of polyester textile waste streams. Although these experiments led us to conclude that the thermoplastic recycling of polyester textile waste streams into granulate is technically feasible, we need to do more than shredding, melting and solidifying to obtain qualitatively acceptable polyester granulates with a good processability and good properties of the final products.

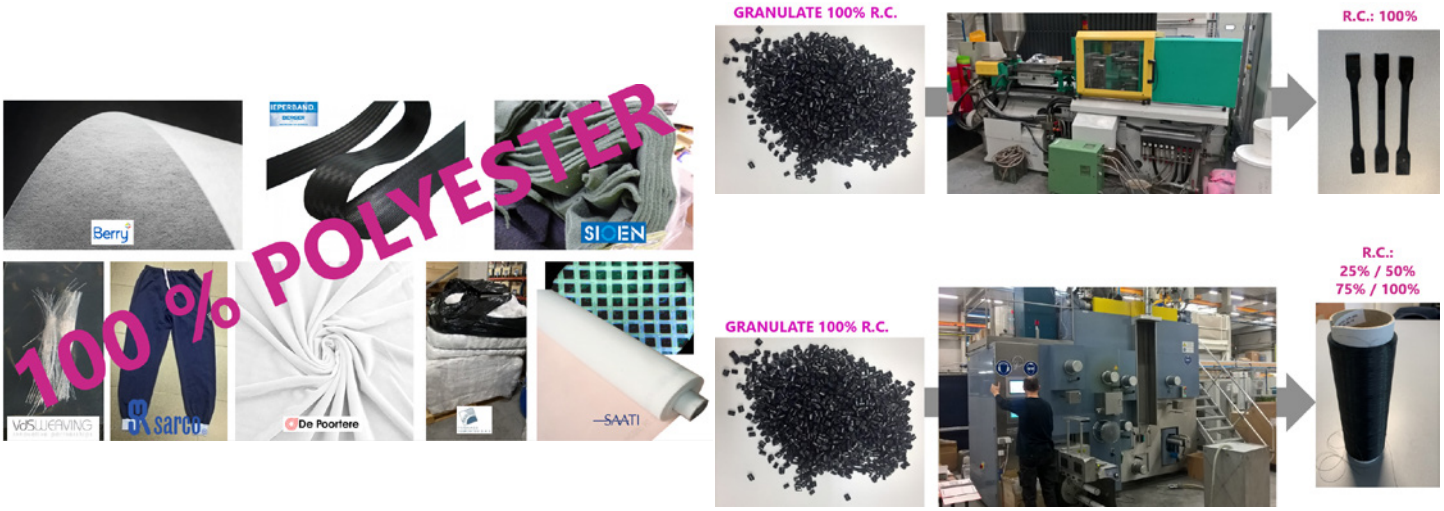
The (chemical) properties of the granulate need to be upgraded because:

- Waste streams are used, of which the raw material may have undergone a certain degradation (this is less the case with production waste than with end-of-life waste products).
- Heating and melting during the recycling process causes an additional degradation (shortening of the polymer chains).
- The presence of impurities on and between the fibres of the waste materials (spin oils, paraffins, soiling, etc.) will not always be automatically removed (e.g. by evaporation during the heating process) and can also cause contamination and clogging of filters and spin plates
- The presence of additives in the fibres (dyes, finishing products, etc.) can cause additional disturbance of the properties/quality of the end product (granulate).

Due to molecular degradation, the viscosity of the melt decreases, but our experiments have shown that it is not sufficient to compensate this by adding a viscosity booster. The viscosity booster does improve the processability, because the molten material is less fluid and therefore more controllable during the extrusion process, but the booster has little or no influence on the properties/quality of the end product, which consequently shows a too high brittleness (too low elasticity).

The upgrade should therefore ensure:

- removal of components that adversely affect the properties
- improved chemical quality of the material
- improved rheological properties of the material




Systems that provide a (quasi-)chemical upgrade are therefore recommended. However, to date these machines appear to be used mostly or exclusively to recycle polyester packaging waste (PET bottles), and there appears to be little or no experience with treating polyester textile waste. In terms of thermoplastic recycling, polyester textile materials clearly differ from polyester plastic materials in that most polyester plastic materials (PET bottles) have a higher degree of purity (fewer impurities on the materials, easier to clean, and fewer additives in the materials) than polyester textile materials (greater diversity of additives).

Textile materials are generally much more flexible and lighter (lower packing density, greater airiness) than plastics. This difference obviously plays a role primarily in the mechanical phase of the recycling process (shredding and compacting).

The shredding of textile waste materials with shredders that are used for grinding plastics (foil shredder, shaft shredder) is clearly not always a good method for reducing textile raw materials. In most cases, such shredders generate very "fluffy" material, which is very difficult to compact into pellets. Fibrillating the textile materials on a classic unravelling line could offer a solution. However, unlike mechanical recycling, this would have to be done in short fibres. Such short fibres (too short for spinning) could then be well compressed into compact and integral pellets.

## MECHANICAL RECYCLING OF POLYESTER - COTTON TEXTILE WASTE STREAMS

The RETEX experiments with industrial EOL waste streams have shown that

- It is important to keep the waste stream as homogeneous as possible, and thus preferably to collect the waste in the laundry responsible for the maintenance (or in the company or hospital itself) and thus to prevent the EOL garments from ending up and being mixed with garments from other waste streams.
- A high homogeneity of the waste flow allows a good (read: resulting in enough chippable fibres) unravelling (even on a large, less flexible unravelling line)
- It is preferable to remove hard and non-extractable parts (press studs, zips, tags, printed or coated labels) beforehand to optimise the fraying process on the one hand, and to prevent hard parts (or remnants thereof) from ending up in the card.
- In the case of a polyester/cotton composition, it is mainly the polyester fibres that are recycled (although part of the polyester fraction is also eliminated during the recycling process), as the cotton fraction is so degraded by the industrial washing that the cotton fibres are largely destroyed (to very short fibres and dust) during the recycling process.

Therefore, it seems appropriate that only polyester/cotton blends containing at least 50% polyester (and preferably more) be considered for mechanical recycling.

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Many textile and plastic products are assembled out of or composed from a multitude of materials and layers, resulting in very effective products for the goal they were designed for (e.g. breathable, yet watertight rain clothing, etc.). However, at their end-of-life, these products are particularly hard to recycle and mostly end up in landfills or are incinerated. Centexbel coordinates a H2020 project to improve the separation of these different components in order to improve their recyclability rate.

# DECOAT - RECYCLING OF COATED AND LAMINATED MATERIALS

Up until today, the linear take-make-waste approach is still predominant, in which raw materials are taken to make a product and then disposed of as waste at the product's end-of-life (EOL).

Most products are coated, painted or laminated to ensure a good performance and look. The presence of these coatings and the impossibility of separating them from the underlying bulk material, results in the fact that EOL products often end up in landfill or are incinerated. Most consumer goods are not designed to be recycled. However, if the product design is adapted to allow the separation of the different materials at the EOL of the product, these materials can be recycled as monomaterials and reused in the same or different applications.

**The aim of the DECOAT project is to introduce the 'design for recycling' concept leading to a more efficient recycling of coated materials allowing the industry to make a shift from a linear to a circular economy.**

## DECOAT PROJECT APPROACHES

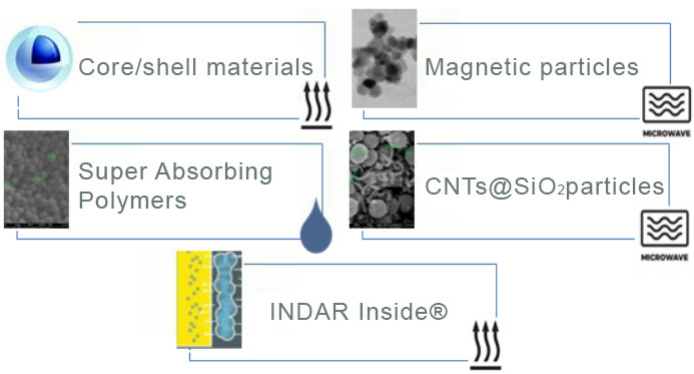
1. Incorporation of newly developed additives in-between the coating and the underlying substrate that responds to a certain trigger and enable debonding of the coating from the substrate. These additives can be placed in the adhesive layer in-between the aforementioned layers. The triggers can be microwaves, steam, heat or others, depending on the additive.
2. Dissolution of the coating with green solvents through the CreaSolv® process, which is developed by DECOAT partner Fraunhofer IVV. This last approach does not need the addition of debonding additives.

The DECOAT project envisions a recycling loop consisting of the following steps:

- the products are disassembled into the respective different parts at their EOL;
- the different materials are optically sorted from one another, based on the presence or lack of certain additives, and directed towards
- the corresponding debonding step or device (e.g. the CreaSolv® process, an oven for thermal triggering or a microwave that triggers certain additives). In this step, the coatings will be removed from the base material and then be separated through physical or chemical processes.

Once separated, the bulk material is fed to an extruder that produces secondary raw material pellets to make a similar product as the original one.

In the course of the previous 2 project years, multiple triggers have been developed by the Technical University of Athens (NTUA) and the company Rescoll. The core/shell materials (NTUA) and the Indar technology of Rescoll are triggered by heat, while the magnetic particles and the carbonanotubes (CNT) on silica particles will be activated by a microwave device. Super absorbing polymers (SAPs) need humid/wet conditions to be triggered. The experiments show that not all activated triggers lead to debonding and that the type of binder also has an influence on the debonding efficiency. Due to the impact of Covid-19 on our planning, we have been unable to screen all triggers yet.




Overview of the synthesized triggers

## CONCLUSION

The Indar Inside® technology succeeded in preliminary debonding the coating from both textile and plastic substrates. The Creasolv® process generated promising results in obtaining nicely debonded textile and plastic substrates. Both debonding - as well as other - technologies will be further explored in the project.

DECOAT is funded by the European Union's Horizon 2020 research and innovation program under Grant Agreement number 814505.

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EUROPESE UNIE

# Ecy-Twin

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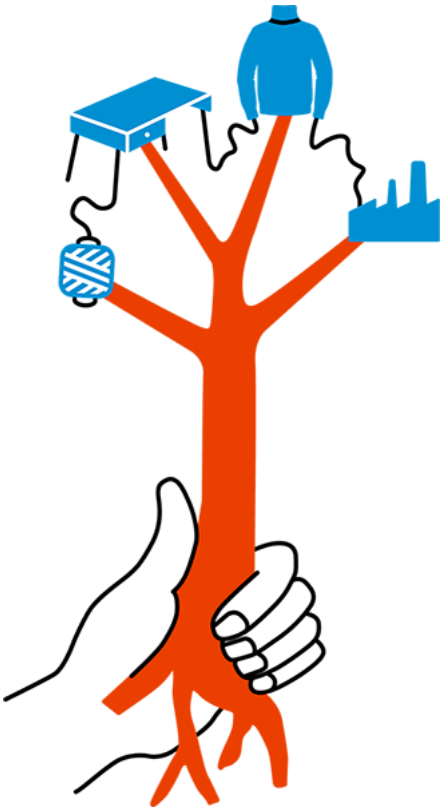
Companies in the textile, clothing, wood and furniture sectors are faced with the same challenges of combining environmental impact control and economic development. They also face strong competition from low-wage countries where environmental constraints are often less severe than in Europe. This environmental issue particularly concerns small and medium-sized companies, which do not always have the financial and human resources to address it in a comprehensive manner.

## CHALLENGES

- Conquer new markets that are sensitive to the consumption of eco-friendly products.
- Raise awareness among the general public and convince them to buy environmentally friendly products
- Linking creation and sustainable development.
- Anticipate the recyclability of manufactured products.
- Develop new business models by embarking on the economy of functionality.



## OBJECTIVES

- Raise awareness of eco-design, ecodesign and the functionality economy among companies and the general public.
- Develop demonstrators accompanied by tools for scientifically founded and proven environmental claims to convince the general public and consumers. Promote them (fairs, exhibitions, conferences, scientific articles, etc.).
- Thesaurize knowledge on the project's themes and disseminate it in the area for the benefit of the target audience.

## ACTIONS

- Market, environmental, technical and regulatory watches.
- Organisation of meetings and seminars.
- Creation of 8 working groups & support towards the development of product/service demonstrators based on eco-innovation concepts.

The Ecy-Twin project is an Interreg V France Wallonia Flanders cross-border project. The Interreg V FWVL programme is part of a desire to promote economic and social exchanges between four border regions: the Hauts-de-France and Grand Est regions in France; Wallonia, West and East Flanders in Belgium. It aims to combine common competences while enhancing the wealth of each region concerned, for the benefit of the populations of the area. As such, Ecy-Twin is supported by the European Regional Development Fund and the regional authorities of Wallonia and Flanders. Within the framework of this cross-border spirit, the companies in the textile, wood and furniture sectors have important convergences of interest and skills so that their joint action creates real added value. http://www.ecytwin.eu/nl/het-project/.

RESEARCH

# transTEX!

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# SUSTAINABLE EMPLOYABILITY IN THE TEXTILE SECTOR IN A CONTEXT OF DIGITAL TRANSFORMATION

Together with project leader COBOT vzw (sectoral training centre for the textile industry) and the Antwerp Management School, Centexbel participates in this project to strengthen the sustainable employability of workers in the textile sector in a context of digital transformation, not only by learning the necessary technological skills, but above all by focusing on social skills to ensure the employability of the target group. Fedustria follows the project as a representative of the interests of the sector.

## CONTEXT OF DIGITAL TRANSFORMATION

The digital transformation is profoundly affecting the ways in which people contribute to societies, live and work, including in terms of the number and types of jobs available. While worries of widespread technological unemployment may be overstated, the impact of digital transformation on the nature of work and the skills required is very real and already upon us.

Many new, productive and rewarding forms of work and jobs are being created as part of the digital transformation, but at the same time, many jobs have disappeared and more are likely to go in the future. The impact of digitalisation on the workforce depends on technological innovations and uptake of these new technologies but OECD estimates suggest that some 14% of workers face a high risk that their tasks will be automated. Another 32% face major changes in the tasks required in their job and, consequently, the skills they would need to do their job (Nedelkoska and Quintini, 2018). These workers will need to significantly adapt to succeed in the new digitally enabled work environment.

With this transformation comes the rare opportunity to fundamentally improve work and the nature of employment. Dangerous, dirty and dull work can be drastically reduced while jobs that celebrate creativity, flexibility and purpose can be enhanced. There is currently a window of opportunity to shape the future of work with foresight so that inequalities are reduced and well-being is bolstered. To achieve this, all stakeholders, but especially policy makers, need to be aware of the shifts underway, formulate a vision of the desired outcome and plan so that the opportunities are seized and the problems that emerge are addressed.[1]

## OBJECTIVES

To address the impact of the digital transformation and to strengthen a sustainable employability of textile workers, the transTEXT project will focus on social skills and the development of a tailor-made trajectory for textile workers. Different methods to transfer knowledge will be investigated and the development of competences will be stimulated. The project also aims to develop a company management policy on the employability of textile workers.

Duration : 01/01/2020 - 30/07/2022

Acknowledgement: Project ID: 8966

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1 source: Organisation for Economic Co-operation and Development
https://www.oecd.org/going-digital/changing-nature-of-work-in-the-digital-era.pdf

RESEARCH

# STUDY ON THE TECHNICAL, REGULATORY AND ENVIRONMENTAL EFFECTIVENESS OF TEXTILE FIBERS RECYCLING (GROW/2020/OP/005)

**Contracting authority:**

European Commission, the Directorate General for Internal Market, Industry, Entrepreneurship and SMEs (DG GROW)

**Contacted consortium:**

Centexbel (Belgium), Ecologic Institute (Germany), VITO (Belgium)

To improve circularity in the textile industry, in line with the European Green Deal, the EU commission wants to put in place new legislations, policies and support the industry with R&D and investment funding. The EU DG GROW therefore commissioned VITO, Ecologic and Centexbel to investigate the current state of recycling technologies, to make sure that the taken measures will maximally support the change towards a circular textile industry.

## THE STUDY AIMS TO

- improve knowledge about opportunities and challenges related to textile waste recycling technologies
- identify promising areas for future research and innovation projects
- provide policy makers with an in-depth analysis of existing regulatory barriers and presenting alternative policy options

## TEXTILE RECYCLING STAKEHOLDER SURVEY

All stakeholders are kindly invited to participate in this study by answering a set of questions on fibres and textile products with a recycled content and on the recycling techniques. Your answers will help advising the necessary policies and legislation to facilitate the shift to a circular economy.

The researchers will investigate the insights, potentials, hurdles, and recommendations.

ALL INFORMATION YOU WILL PROVIDE IN THIS QUESTIONNAIRE WILL BE ANONYMIZED AND TREATED CONFIDENTIALLY.

Open and fill in the online questionnaire:

**https://www.survio.com/survey/d/J8A2Y2I5G8I6B3E5E**

**Thank you very much for your input!**

**Edwin Maes** em@centexbel.be : **Philippe Colignon** pco@centexbel.be

RESEARCH


# DESIGN CRITERIA FOR CONSUMER TEXTILES

## (ACTION A3-C-MARTLIFE)

**Edwin Maes** em@centexbel.be

OVAM identified the aspects on which to focus in the coming years to make the textile chain more circular, and agreed on this with stakeholders at a round table at the end of October 2020. One of the important actions is the formulation and implementation of European product criteria for circular textiles put on the European market.

The objective of this study - assigned to Centexbel in collaboration with VITO - is to elaborate these product criteria/standards for circular fashion fashion & textiles tailored to the European policy and this in consultation with the stakeholders (project steering committee).

The result of this study will provide input for the new European framework for sustainable textile products; the circular economy action plan (CEAP). These product criteria must take into account and encourage a long life span, reuse, dismantling, repair, upcycling and high-quality recycling. They must help in the transition to a transparent textile chain.

In this study, textiles are understood to be household textiles and similar business textiles (clothing, bed and kitchen textiles, interior textiles, etc.). These products consist of natural or synthetic fibres and usually a mixture of the two.

The results of the study will be grouped in the final report and include the following components:

- Scope of the formulated criteria
- Subdivision of product groups relevant for product standards
- Proposal for a standards framework for implementation and enforcement
- Proposal of criteria/standards with minimum requirements per product group
- Determination of time required for companies to adapt
- Concrete recommendations for implementation and actors
- Possible bottlenecks or requirements to get the standards adopted
- Indication of further research
- Proposal for a legislative framework (Flanders, Federal, European)

The results are compiled so that they can be used to support the policy of the Federal Government and the European Commission.

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# ACTIVE ENGAGEMENT, KNOWLEDGE TRANSFER, CONSULTING

**Stijn Devaere** sdv@centexbel.be

Centexbel actively supports the Green Deals initiated by Vlaanderen Circulair and Circular Wallonia. Centexbel is taskforce leader for the textile value chain within Circular Wallonia. A specific taskforce per value chain is in charge of mobilising the key players and pioneers on which to rely to reinforce or initiate projects and identify the measures to be developed and the financial levers (public and private) to be mobilised.

## PUBLICATIONS AND STUDIES

OVAM study on recycling routes for professional clothing (2017)

Monthly newsletter "Milieufacts" (Dutch) on environmental issues and legislation impacting the textile industry

## KNOWLEDGE TRANSFER

Recurrent information sessions and international conferences addressing the theme of the circular economy open to all stakeholders.



## CONSULTANCY

The following highly specialized consultants assist the industry in making the shift to a circular economy:

- Edwin Maes: Clothing textiles consultant (em@centexbel.be)
- Stijn Steuperaert: REACH consultant (sst@centexbel.be)
- Dirk Weydts & Erik Wuyts: Environmental issues consultant (dw@centexbel.be & ewu@centexbel.be)
- Philippe Colignon: Circular economy consultant (pco@centexbel.be)

## TESTING AND PROTOTYPING

Investments in pilot and lab equipment for material sorting, extraction of legacy chemicals and for the characterization of recycled materials.

1. Hyperspectral camera recycling & waste management and material characterization
2. Cryogenic mill to grind and homogenise recyclate
3. Dynamic Headspace GCMS for VOC/SVOC determination
4. Supercritical $CO_2$ extractor to remove unwanted chemicals from recyclate




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**Filip Govaert** fgo@centexbelservices.be / **Dirk Weydts** dw@centexbel.be / **Erik Wuyts** ewu/centexbel.be

# OEKO-TEX® CERTIFICATION, ANALYSIS & TRACING TOOLS

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DETOX TO ZERO

DETOX TO ZERO by OEKO-TEX® is a verification system for the textile and leather industry to implement the criteria of the Greenpeace DETOX Campaign within production facilities. It is not a certification system but an analysis tool to optimize and monitor the management of chemicals and wastewater quality.

DETOX TO ZERO is based on the DETOX campaign launched by Greenpeace in 2011 that aims at excluding hazardous chemicals from textile production. DETOX TO ZERO by OEKO-TEX® provides textile and leather producers with a practical analysis and assessment tool which creates transparency and control in the use of hazardous substances, emphasizing:

- **Wastewater and sludge conformity** in accordance with the **DETOX TO ZERO Manufacturing Restricted Substance List (MRSL)**
- **Conformity of chemicals** used in the company in accordance with the **DETOX TO ZERO MRSL**
- **General management** with a focus on **chemicals** and **environmental performance**

DETOX TO ZERO implies a **continuous improvement process**. The situation is also analysed in the production facilities and a robust action plan is prepared to obtain a gradual reduction in harmful substances in production processes.

The DETOX TO ZERO verification system supports textile **producers** and their **suppliers** to achieve the campaign goals. DETOX TO ZERO is also designed for buyers and suppliers who are proactively working to comply with the Greenpeace DETOX goals.

## DETOX TO ZERO CAN BE FULLY INTEGRATED WITHIN THE STEP BY OEKO-TEX® PRODUCTION FACILITY CERTIFICATION

OEKO-TEX®
CONFIDENCE IN TEXTILES
STeP

STeP by OEKO-TEX® stands for Sustainable Textile & Leather Production and is a modular certification system for production facilities in the textile and leather industry. The goal of STeP is to implement environmentally friendly production processes in the long term, to improve health and safety and to promote socially responsible working conditions at production sites. The target groups for STeP certification are textile and leather manufacturers as well as brands and retailers. STeP includes a comprehensive analysis and assessment of the production conditions by analysing all important areas of a company using 6 modules:

- Chemical management
- Environmental performance
- Environmental management
- Social responsibility
- Quality management
- Health protection and safety at work

**The aim of STeP is the long-term implementation of eco-friendly production processes, social working conditions and optimum health and safety.**

STeP focusses on the certification of the entire production chain in the area of textile and leather. Textile manufacturers from all processing levels can be certified, from fibre manufacturing to spinning and weaving/knitting to finishing and making up. In the leather industry, all processes such as tanning, retanning, dying, fatliquoring, finishing and making up can be certified. Logistics centres and manufacturers of accessories, foams and mattresses can also apply for STeP certification.

Contact Dirk Weydts to join the following STeP certified companies:

Veramtex
Sioen Confection
Utexbel
Belgotex (Nyobe)
EElabels
Alfa Tapijtfabriek
Vebe Floorcoverings
Tibro (Poland)
DesleeClama Eastern Europe


MADE IN GREEN by OEKO-TEX® is a traceable product label for all kinds of textile (e.g. garments, home textiles) and leather products (e.g. garments, finished and semi-finished leathers) including non-textile/-leather components (e.g. accessories).

The MADE IN GREEN label verifies that an article has been **tested for harmful substances**. This is carried out through certification in accordance with **STANDARD 100 by OEKO-TEX®** or **LEATHER STANDARD by OEKO-TEX®**. It also guarantees that the textile or leather product has been manufactured using sustainable processes under **socially responsible working conditions**. This is carried out through certification in accordance with **STeP by OEKO-TEX®**.

## THIS UNIQUE PRODUCT ID ON THE LABEL CAN BE USED TO TRACE THE COUNTRIES AND PRODUCTION FACILITIES IN WHICH THE LABELLED ARTICLE WAS PRODUCED.

Each item labelled with MADE IN GREEN can be traced using a unique product ID or QR code. The label gives access to information regarding production facilities in which the textile or leather article was produced, the stage of production to which the facility belong and the countries in which manufacture took place.

## THE MADE IN GREEN LABEL GUARANTEES THAT THE PRODUCT IS MADE:

WITH MATERIALS THAT HAVE BEEN TESTED FOR HARMFUL SUBSTANCES

IN ENVIRONMENTALLY FRIENDLY FACILITIES

IN SAFE AND SOCIALLY RESPONSIBLE WORKPLACES

OEKO-TEX® enables consumers and companies to make responsible decisions which protect our planet for future generations. The testing and certification process on which the standards are based guarantees maximum consumer safety.

## CENTEXBEL IS AN OEKO-TEX® CERTIFIED TESTING LAB AND CERTIFICATION INSTITUTE OFFERING ALL OEKO-TEX® TESTING AND CERTIFICATION SERVICES.

**https://www.centexbel.be/en/certification/oeko-tex-certification**

# Standardisation

**Karin Eufinger** ke@centexbel.be

The Dutch Technical Agreement (NTA) Circular Textiles describes categories of circular textile products and sets requirements for input streams and applied circular strategies to report on circular textile products. The NTA 8195:2020 nl 'Circular textiles - Requirements and categories' is available[1]. This standard is the basis for the new project approved within CEN/TC 248 - "Textiles and textile products". The European experts will study the proposal and further develop this document.

THE INTENTION IS TO UNAMBIGUOUSLY DEFINE WHAT CIRCULAR TEXTILES ARE AND HOW THEY CAN BE DECLARED.

In order to follow up this standard development, Centexbel launched the **mirror committee CENTEXBEL/B Circular Economy & Sustainability for textile & plastic products** with co-financing from the Intereg project ECY-TWIN (see above)

The mirror committee will also follow up the standards developed in ISO/TC 323 - "Circular economy":

- ISO/WD 59004 "Circular economy - Framework and principles for implementation"
- ISO/WD 59010 "Circular economy - Guidelines on business models and value chains".
- ISO/WD 59020 "Circular economy - Measuring circularity framework"
- ISO/CD TR 59031 "Circular economy - Performance-based approach - Analysis of cases studies".

In addition, the standard ISO/AWI 5157 "Textiles - Environmental aspects - Vocabulary" from ISO/TC 38/WG 35 - "Environmental aspects" and the design standard prEN 17615 - "Plastics - Environmental Aspects - Vocabulary" are developed in CEN/TC 249/WG 24 - "Environmental aspects".

The Dutch NEN working group on 'Circular Textiles' is now developing a certification scheme for circular textiles to guarantee the declared proportion of recycled content.

ALL THESE STANDARDS UNDER DEVELOPMENT WILL HAVE A GREAT IMPACT ON THE TEXTILE INDUSTRY IN EUROPE AS THEY SET THE SCENE FOR THE CIRCULAR TEXTILE INDUSTRY WHICH IS DEVELOPING RAPIDLY UNDER THE EUROPEAN GREEN DEAL.

## CALL FOR ACTION

If you would like to follow the CENTEXBEL/B mirror committee "Circular Economy & Sustainability for textile & plastics products", please register at ke@centexbel.be.

THE NEXT MEETING IS SCHEDULED FOR 22 APRIL 2021 FROM 2 TO 4.30 PM.

1 https://www.nen.nl/nta-8195-2020-nl-269944


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# SUSTAINABLE PRODUCTS INITIATIVE

## EC PUBLIC CONSULTATION OPEN 17 MARCH - 09 JUNE 2021

This initiative, which will revise the Ecodesign Directive and propose additional legislative measures as appropriate, aims to make products placed on the EU market more sustainable. Consumers, the environment and the climate will benefit from products that are more durable, reusable, repairable, recyclable, and energy-efficient.

The initiative will also address the presence of harmful chemicals in products such as:

- electronics & ICT equipment
- textiles
- furniture
- steel, cement & chemicals

The aim is then to develop a proposal for a directive.

More information and link to participate in this initiative:

https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12567-Sustainable-Products-Initiative/public-consultation

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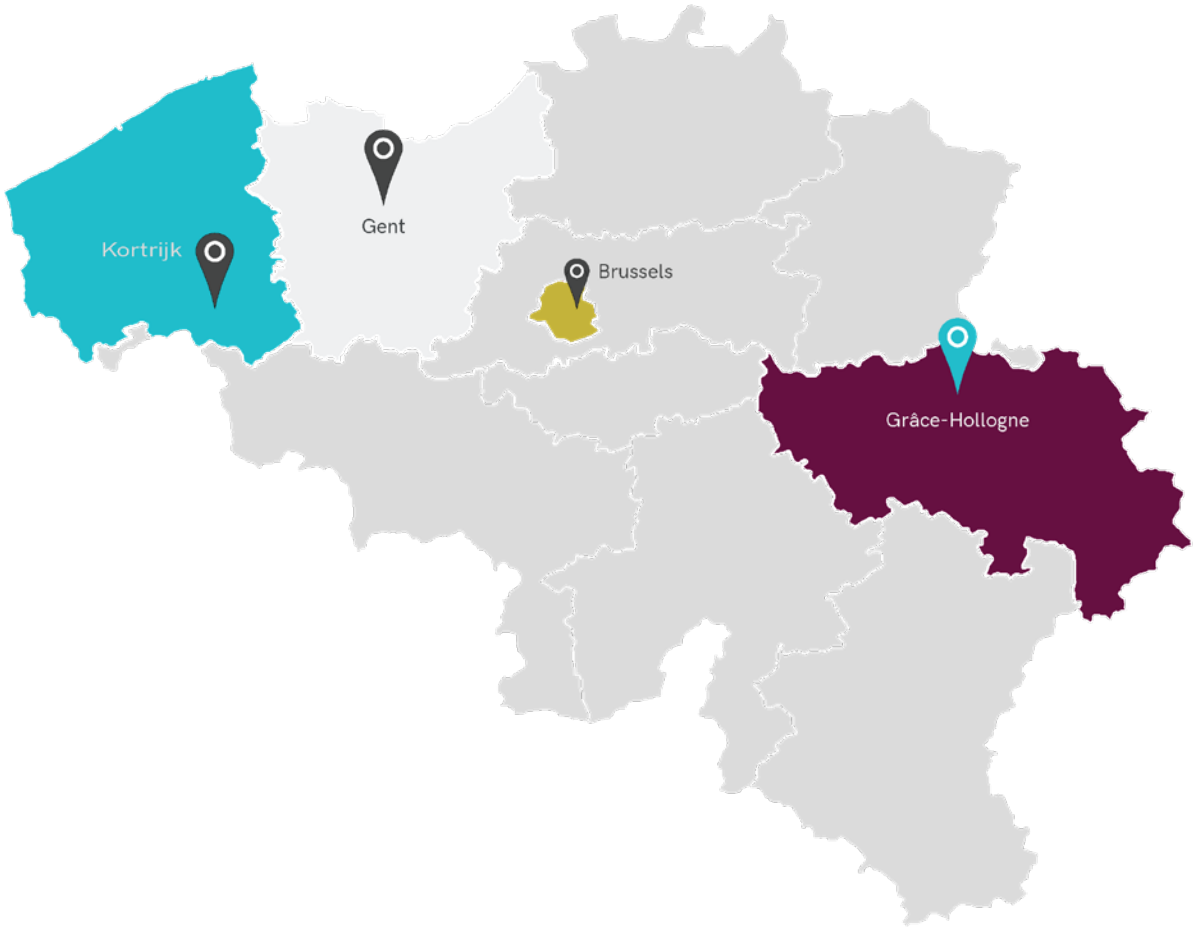


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