SWEPT UNDER THE CARPET

RECOMMENDATIONS FOR THE THE CARPET INDUSTRY IN FRANCE

ZEROWASTE FRANCE

Changing Markets

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Executive Summary

The responsible use of resources is one of the key challenges of our time. Europeans already use 1.5-times the amount of resources that the Earth can regenerate in one year and there is a political consensus that this trend needs to be reversed. For this reason, circular economy has been high on the agenda of French and European environmental policy and is often among the key sustainability commitments of the business sector. Resource-efficient circular economy not only brings benefits to the environment, but also leads to economic benefits and job creation.

This report focuses on the application of circular economy principles to the carpet industry. In 2016, nearly 700 million square metres of carpet were sold in the EU, which makes it the second biggest market, after the U.S. This sector has a significant impact on the environment, not only in the manufacturing process, but also at the end-of-life stage. Each year about 1.6 million tons of used carpet are disposed of in Europe – most of them ending up in landfills and incinerators.

The carpet industry, however, is a sector where circular solutions already exist and could be scaled up. For this reason, the following measures need to be implemented:

1. Carpet manufacturers need to focus on designing carpets with reuse and recyclability in mind.
2. Manufacturers, retailers and municipalities need to provide infrastructure for separate collection of carpet waste to prevent contamination and enable easier reuse and recycling.
3. Carpet companies need to scale up recycling facilities that provide high quality recycling of carpet back to carpet, in a closed-loop system.

The report describes a reality that is still far from this vision, and a sector that is lagging behind its circular economy commitments. After its useful life, almost all French and European carpets are burnt in incinerators or dumped in landfills. In the absence of any transparency on the recycling rates in the sector, the precise amount of recycled carpet in Europe was very difficult to establish. The authors of the report, however, believe that less than 3 percent of carpets sold are collected for recycling, and that part of this 'recycling' is in fact 'down-cycling' - a transformation into a product of an inferior quality that is generally not recyclable at the end of its useful life. **The loop is far from being closed.**

In addition to this, the research carried out for this report highlights that the two leading manufacturers on the EU market (and self-proclaimed sustainability leaders), Interface and Desso, lag behind their own commitments to close the loop:

- **Desso and Interface: discrepancy between environmental claims and reality.** For several years, these two manufacturers have set high environmental targets and sustainability commitments. Interface has committed to producing "zero waste" by 2020, while Desso says it will include all their products into a "Cradle-to-Cradle®" system. These commitments have been very effective, as the two companies are frequently invited to share the lessons on circular economy in the media or at events. However, the research for this report has revealed that Interface and Desso have recycling rates of carpets at the end of life at around 1.5 percent and 3 percent respectively. In the light of this, meeting their own commitments by 2020 seems challenging.

- **Zero level of circular economy in the events sector.** In France, the events sector is particularly problematic, as it treats its carpet as disposable product that is virtually never reused or recycled. Some 1,135 fairs are being held in France every year, representing an exhibition area of almost 6 million square metres, equivalent to more than 65,000 medium-sized homes in France. A large part of the stands, aisles, external spaces or stairs is covered with single-use carpet. The duration of use of the carpet is just a few hours or a few days, after which all this carpet is disposed of, leading to a large amount of unnecessary waste. Better alternatives, such as rental systems that enable reuse, exist and are more largely used in other European countries.

To move the carpet sector towards a true circular economy, immediate actions must be taken by public authorities, carpet manufacturers, consumers and event professionals. Due to the relatively long lifespan of carpets, the impact of these measures will not be visible immediately, but rather several years down the line. Because of this, the report concludes that **the transition must start immediately, with better designed products being sold on the market and a progressive increase in local recycling infrastructure.** Otherwise, the industry will be trapped in an unsustainable linear economic model for another 10 to 15 years.

Recommendations...
(see Chapter 5 for more details)

...carpet manufacturers must design carpets with reuse and recyclability in mind, develop collection and recycling facilities and clearly label the materials used in the carpets to facilitate recycling by other actors.

...French authorities must draft a report about the reuse and recycling potential of carpets - in application of the Energy Transition for Green Growth legislation (Article 101) - and challenge false environmental allegations of companies that are involved in treating carpet waste.

...carpet consumers in the business sector (companies owning offices, hotels, public administration) should request information about the reusability, recyclability and environmental impacts of their carpets and make sustainable decisions when purchasing them. They should also be involved in the take-back schemes for carpets at the end-of-life. Furthermore, they should resort to leasing services instead of purchasing new carpets.

...event professionals should rent re-usable carpet rather than purchase disposable ones. They should also have better flooring maintenance as this might make the use of carpets unnecessary.

Chapter 1
The benefits of moving the carpet industry towards a Circular Economy

What is circular economy?

As the economy grows, we need more raw materials to produce goods, which results in more waste. This current economy of "take-make-use-dispose" is called the linear economy, and it is not a sustainable model. The Circular Economy, in contrast, aims to radically limit the extraction of raw materials and the production of waste. It does this by recovering and reusing products over and over again, creating a 'closed-loop' system. In a circular economy, products are not just used once and discarded as waste, instead they retain value and are brought back into the global economy.

What does the law say?

The Directive 2008/98/EC on waste adopted on 19 November 2008, establishes a legal framework for treating waste in the EU. This law marked a major turning point for European countries with the requirement for member states to recycle 50 percent of household waste and 70 percent of construction and demolition waste by 2020. Furthermore, it established a "waste hierarchy" in which states must apply circular economy principles to their waste management policies. In France, this directive resulted in an amendment to Article L.541-1 of the Environmental Code, which requires priority to be given to:

- **Prevention - reduction of waste produced**, "mainly by the design, manufacturing and the distribution of substances and products and by promoting reuse"[1]
- The collection of waste for **reuse**
- **Recycling**
- Other ways of **recovering**, including energy recovery. It is important to note that energy recovery by incineration is often misrepresented as a form of recycling.
- As a last resort, **disposal** by means of incineration or landfill.

Recently, new reports have furthered the notion of 'circular economy' in France and Europe. On 18 August 2015, France enacted its Energy Transition for Green Growth legislation in which the transition towards a circular economy goes *"beyond the linear economic model, which currently consists of extracting, manufacturing, consuming and throwing away, by calling to a more responsible consumption of natural resources and primary raw materials"*[2]. The European Parliament is currently putting together a proposal for a 'circular economy package' which includes a target of 65 percent recycling and reuse for municipal waste and less than 10 percent discharge of hazardous waste by the beginning of 2030[3]. With no specific target on reuse (which should be

a priority) most waste could, however, be sent for recycling. This is why the European Parliament's Environmental Committee has included in its proposals a separate 5 percent target for reuse of municipal waste.

What are the benefits of a circular economy?

The Ellen MacArthur Foundation studied the environmental, social and economic impacts of transitioning to a circular economy. Based on these studies, the Foundation gave recommendations to policy makers. Its research relating to EU countries concluded that, in addition to reducing CO2 emissions and consumption of raw materials, the circular scenario would have benefits in terms of both economic growth and creating new jobs. The development of a circular economy would increase the income of Europeans by 18 percent by 2030 and enable an increase of 11 percent in the European Union's GDP (+ 27 percent in 2050)[4] - that is, 7-12 points more than in the current scenario. In relation to the creation of new jobs, the Ellen MacArthur Foundation concluded that the transition to a real circular economy would undoubtedly have a positive effect on employment. For example, the current waste disposal system requires only 1 job per every 10,000 tonnes of treated waste, whereas the recycling process would create 20 jobs for the same amount of waste[5].

The industry has a crucial role to play in changing the present economic model, but the solutions to start this transition are currently only being considered on a small scale. The product's design phase is essential in a circular economy, as products must be designed to be durable, reusable, repairable or recyclable, so as not to be consumed and discarded immediately. Today, manufacturers have great flexibility. Only a change in practices, sector by sector, would make it possible to fight globally against the proliferation of waste and to build a more resilient economy.

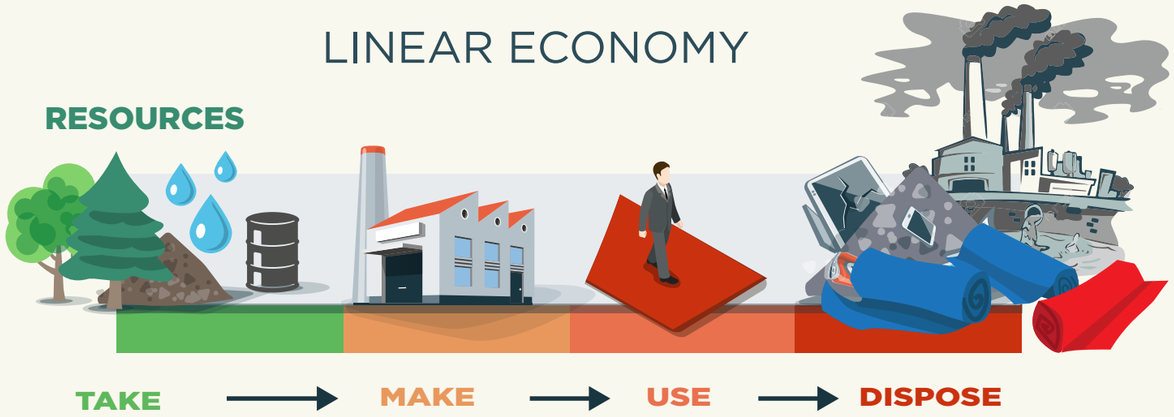
Why should the carpet sector become circular?

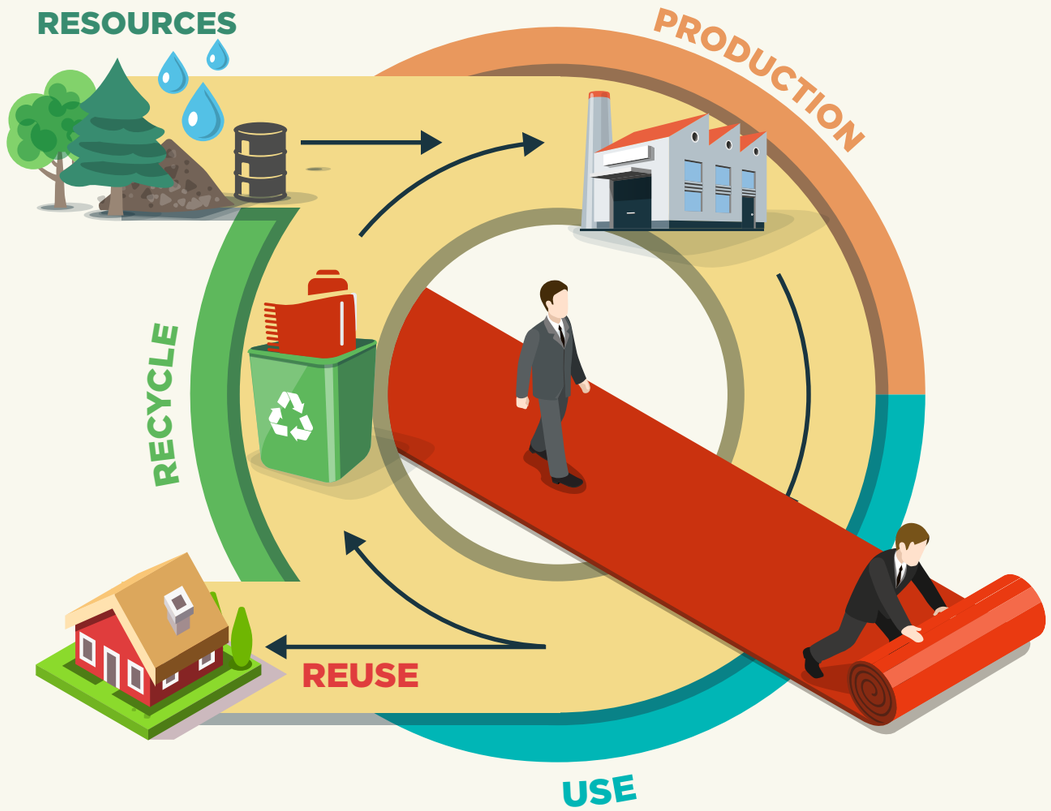
Carpet sales in France are surprisingly high. In 2015, the amount of carpet sold in France, for both households and businesses, totalled 38.5 million square metres[6] - the equivalent of covering the streets of Paris twice.

Carpet production has a significant impact on the environment. The manufacturing process involves using water, energy and non-renewable raw materials (notably oil); it also generates a lot of waste at the end of the process, which requires treating. Around 1.6 million tonnes of used carpet are disposed of each year in Europe[7].

Carpets are frequently thrown away long before they are worn out or damaged. According to manufacturers, a carpet is used for, on average, 8 to 10 years[8], despite the fact that they are under warranty for 15 or 20 years and could still be used and kept in good condition beyond this time[9]. This estimation doesn't take into account the event industry, where carpets are often used only for few hours or days before being discarded. In order to extend the life of carpets, they should be reused – and this is only possible if they are recovered in good condition, and they are designed to be easily cleaned and re-dyed. The use of carpet tiles, rather than broadloom ones, makes it easier to reuse carpets.

CIRCULAR ECONOMY VS. LINEAR ECONONY





Recycling solutions for carpets exist. They can either be recycled in a 'closed loop' system - where products are recycled back into the same product again and again - or in an 'open loop', done mostly through the down-cycling of less valuable materials. It is possible for carpet to be fully recycled in a closed loop; that is, recycled into new carpets. Nylon fibres, for example, can be fully recycled back into face fibre, and polyester (PET) can also be re-incorporated into a new carpet line production. In this case, it is essential that the carpet is designed with recyclability in mind.

There are very few businesses that take advantage of the potential to recycle their products, and recycling remains marginal in Europe, as well as in the rest of the world. In the United States, only 5 percent of post-consumer carpets are recycled, whereas 89 percent are sent to landfill[10]. The scenario is even worse in Europe; research shows that Interface, a leader in sustainability and circular economy, sells 2 million square metres of carpet in France per year and 13 million square metres in Europe. However, according to our investigation it only recycles only 1.5 percent of its total sales[11].

Although carpet manufacturers claim that eco-design and recycling are part of their core business, the reality is quite different. The overwhelming majority of carpet is not reused, and ends up in incinerators or landfills, which has a strong impact on the environment and people's health.

Benefits of Carpet Recycling[12]

Recycling 100 square metres of carpet diverts 243 kg of carpet from landfills; it eliminates 193 litres of oil and it prevents 445 kg of CO2 from being emitted into the atmosphere (the equivalent of 1600 km driven by a car). The recycling of carpets can also create local "green" jobs.

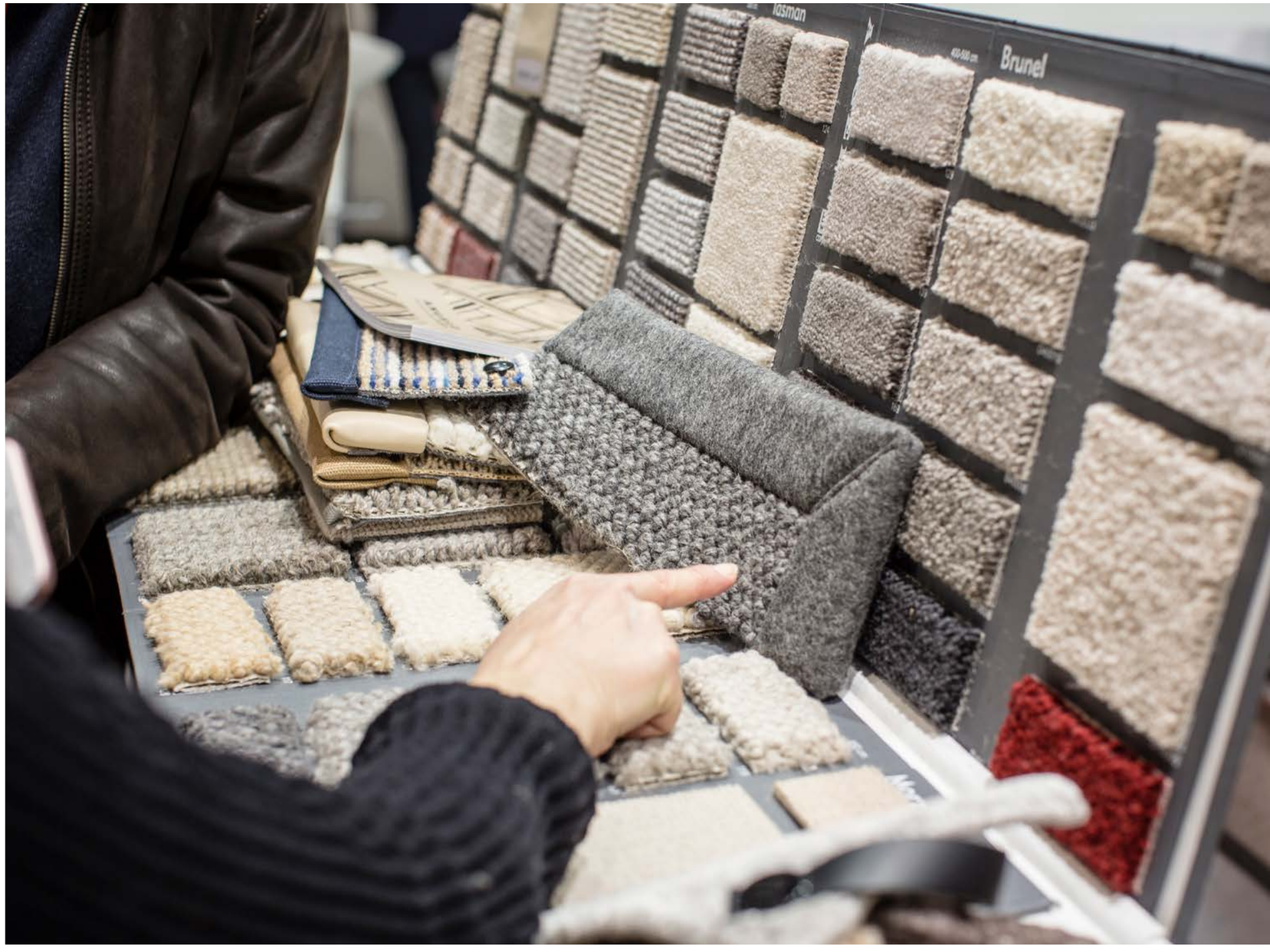


Photo by Les Stone, taken in Dalton (Georgia, USA) the world's carpet capital.

Chapter 2

What happens to carpets at the end-of-life?

Carpets are mostly sent to landfill or incinerators

Landfill

Around 90 percent of post-consumer carpets end up in landfills. Besides being a huge waste of precious resources, landfilling has numerous negative environmental impacts. Synthetic carpet biodegrades very slowly in landfills, and mixed with other types of waste it can lead to the infiltration of liquids, due to the decomposition process (called leachate) into soils that contain concentrated levels of pollutants and toxic substances. The decomposition of mixed waste also releases methane, a greenhouse gas that is 34-times more potent than CO_2[13]. In France, there are 228 landfills for non-hazardous waste (household waste) and 657 landfills for (theoretically) inert waste, mainly coming from construction sites[14]. Depending on how they are recovered, post-consumer carpets can be sent to one of these facilities.

Incineration

In France, post-consumer carpets are also sent to incinerators. The process of incineration is harmful to the environment, even when the heat from combustion is partly reused or recycled. As the manufacturing of carpet involves the consumption of water, energy and raw materials, burning carpet is thus a massive waste of these resources; not least because the loss of resource is not balanced out by heat recovery, nor by the production of electricity from the incineration. Moreover, incineration does not allow waste to be disposed of completely.

Around 20 percent of incinerated waste ends up in the form of ashes, and the unburnt residues (bottom ash) contain many pollutants. The fumes released during combustion are full of toxic materials and so must be filtered and treated. The residue from these filters, called 'Résidus d'épuration des fumées d'incinération des ordures ménagères - REFIOM' (Residues from the Purification of Fumes from Household Waste Incineration) is also extremely polluting, and must be sent to a storage facility for hazardous waste.

Waste incineration is also one of the causes of air pollution, as it releases dangerous molecules into the atmosphere, some of which are not controlled or regulated (persistent organic pollutants, endocrine disruptors, certain dioxins, heavy metals, etc.). In the long term, exposure to these hazardous molecules may present health risks

to the immune, nervous and endocrine systems; they can also cause reproductive problems and respiratory diseases.

Finally, incineration contributes to global warming. Every year in France, the CO2 equivalent of 2.3 million cars is released into the atmosphere by incineration facilities[15]. On the contrary, recycling and reuse reduce greenhouse gas emissions and conserve energy. The new 'circular economy package' currently under consideration in Parliament does not mention limiting the use of incineration. However, in an official communication from January 2017, the European Commission recognised the risks of the overcapacity of incinerators and asked Member States to stop giving public funding to waste incineration. Instead, they recommend using methods that fit within the framework of a circular economy. In conclusion, Member States are advised to introduce a moratorium for construction of new incineration plants[16].

Solid Recovered Fuel, a new generation of incineration plants

In France, efforts to improve recycling and reuse are under threat by the development of a new form of incineration, which consists of transforming Solid Recovered Fuel - SRF (Combustibles Solides de Récupération - CSR). The process consists of selecting waste that has a high calorific value (plastic, wood, cardboard, textiles, etc); this is then shredded and burned in cement kilns or in incinerators or co-incinerator units.

The type of waste that becomes energy is of crucial importance. The waste used for SRF could be 'recycling refusal', where recycling remains the priority, but in some cases, this priority is 'forgotten' and waste that is recyclable is directly transformed into energy. This is already the case for carpet (see examples below); it is highly coveted by producers of SRF since it is made up of plastic and textile, materials that are dry and have a high calorific value. In addition, investments in the production and use of SRF are currently supported by public funds[17] and tax incentive mechanisms. At the same time, the energy produced through SRF plants is currently considered to be 50 percent 'renewable'. This is because of the presence of 'biomass' (cardboard and wood which are recyclable) in the waste. This could ultimately undermine the industry stakeholders' efforts to recycle and reuse carpet, if SRF is more (financially?) advantageous and is also encouraged by public authorities.

Reuse and Recycling - Virtually Non-existent in Europe

The general life span of a carpet ranges between 7 to 20 years, depending on the use intensity and other factors like damage, change of taste or usage purpose[18]. In reality, carpets are used for a shorter period of time. However, extending their lifespan would save resources in the production phase, as less would need to be produced to still fulfil the same function. The quantities of waste produced would also be reduced.

In theory, at their end-of-life carpets could be cleaned, recut and re-dyed for reuse, but in practice, this rarely happens. Reuse initiatives, such as that of *La Compagnie* for the event industry, or Interface's pilot scheme with an organisation working on social integration issues, are at present isolated projects, representing only a very small portion of the market. Of the 13 million square metres of carpets sold by Interface in Europe each year, less than 0.1 percent is collected for reuse[19]. On the other hand, the amount of post-consumer carpet recycled at the end-of-life is no better.

Optimum, the illusion of recycling

In France, the carpet industry is becoming more environmentally conscious because of the program called Optimum. It was launched at the end of 2010 by the French Union of Carpet and Rug Manufacturers (Union Français des Tapis et Moquette - UFTM) and the Professional Union of Finishing Trades (Union Professionnelle des Métiers de la Finition - UPMF). This programme reclaims used carpet tiles, with contractors and construction companies able to request collection directly from construction sites. The used tiles are sent to VanHeede treatment centres, located in Belgium. The carpet is then shredded and converted into "pellets", or plastic granules, that can be used as substitute fuels in cement kilns. The non-combustible materials are transformed into lime and used in cement manufacturing. In 2015, after four years of operation, the program collected 360,000 square metres of post-consumer carpet tiles (about 1,620 tonnes) and announced that they would start collecting carpet remnants in Ile-de- France[20].

Abusing the term 'recycling'

According to its founders, Optimum is a "virtuous alternative to landfills and incineration"[21] and would allow to "fully use waste in the form of energy" [22]. The programme's website and pamphlets even go so far as to present Optimum as a recycling solution for post-consumer textiles. However, the process used is essentially thermal and the post-consumer carpets are never actually reintroduced into the production cycle of new carpets. Solid recovered fuel (SRF) cannot be described as recycling. Optimum's communication programme and that of its operator, VanHeede, are therefore likely to mislead carpet users seeking to actually recycle their used carpet.

CONSUMERS, BE THE CHANGE OUR PLANET NEEDS: RECYCLE CARPETS AND RUGS!

Image: Optimum (2015), www.recyclage-moquettes.fr

Desso, one of the industry's leaders, claims to have collected and recycled 1,342 tonnes of post-consumer carpets in 2015, the equivalent of less than 1 percent of carpet waste in Europe[23]. Moreover, only a small percentage is recycled back into carpet. In most cases, carpets are '*down-cycled*' into other products of inferior quality, such as low-grade engineered plastic.

A New Approach: The Challenge of Eco-Design

Carpet is a complex product, generally consisting of three layers: face fibre (the top layer), a primary backing (to which the fibre is attached) and a secondary backing. The primary backing and the secondary backing are generally glued together. The fibres are made up of millions of small threads.

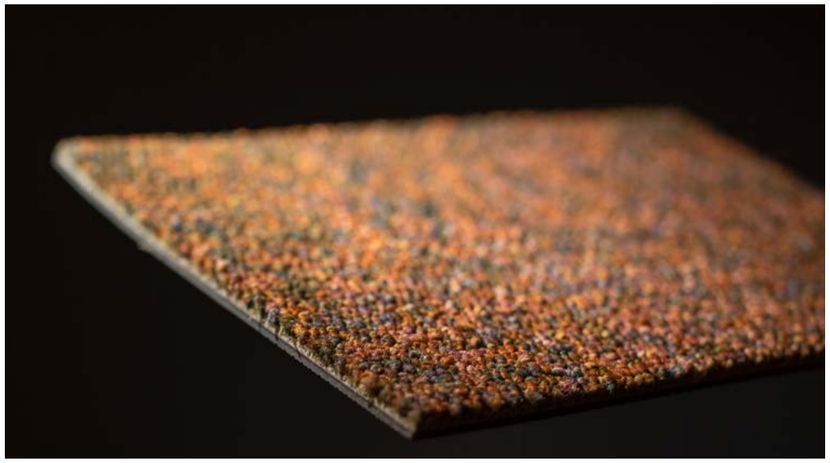
While most carpet is made from synthetic fibres (nylon, polypropylene, PET, etc)[24], there are some that are made of wool. These materials are often mixed with other materials used for the secondary backing. Face fibres can have various qualities and characteristics such as stain resistance, wear and tear, softness and flammability. Sometimes the face fibres are mixed to produce a different look or texture, or to create new characteristics. Carpets can be woven, sewn (needle-punched) or curled (tufted). In addition, they can be produced in the form of rolls or tiles, or used in cars.

These manufacturing characteristics are fundamentally important for the carpet's end-of-life. The choice of materials and production methods affect how the product will be used and its capacity to be reused or recycled. For example, broadloom carpets are generally considered unsuitable for reuse, whereas carpet tiles have the advantage of being easily removed (they are often installed with non-permanent binder) and can be easily adapted to new surfaces. Similarly, carpets can be fully recyclable if the fibres can be easily separated from the different backings to be transformed into new fibres, as the secondary backing can also be recycled.

Currently, most carpets on the market are only partially recyclable, meaning that only the face fibres or the secondary backing can be recycled. Often, the way the carpet components are glued together prevent the fibres from being properly recovered for recycling. Therefore, the process is less economically viable. This also applies to mixed face fibres; since a carpet often contains more than one type of material in its face fibres (for example, nylon 6 and wool), the potential for recyclability decreases and the material can then only be *down-cycled*.

The choice of materials used in carpets is crucial to ensure its recyclability. Today, several face fibres are theoretically recyclable (nylon 6, nylon 6.6 and PET), however, it is only economically feasible to recycle nylon 6. PET and other materials can be recycled or down-cycled into secondary backing or other products, such as synthetic surfaces or low-grade engineered plastic in washing machine parts, hubcaps, flower pots, etc. The table on page 20 and 21 gives an overview of the most commonly used materials for face fibres, secondary backing and filler, and it shows their characteristics and recyclability.

Beyond a carpet's capacity to be reused or recycled, a better product design is also a way to increase the quality, and therefore the lifetime, of a carpet. Eco-design can also



eliminate materials and additives, hazardous to human health and the environment, that are currently in some carpets. This includes certain volatile organic compounds, carcinogens (such as styrene), brominated and other flame retardants, fly ash, lead, cadmium, anti-stain treatments (such as perfluorooctanoic acid - PFOA[25]) and perchlorate used in antistatic treatments[26].

Improvement of Collection Systems for Better Recycling and Reuse

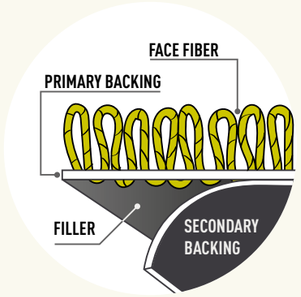
Carpet collection systems are crucial for recycling and reuse. Collection can be done by separating carpets from the rest of waste, or directly on sites where work or demolition is in progress[27]. Some manufacturers also have their own collection programmes in place[28]. In addition to this, collection could take place at resellers, at recycling centres or even via waste collection points.

The lack of infrastructure for collection can be a major obstacle for reusing and recycling carpets. Separated collection is necessary to avoid mixing carpets with other products, which can make them unsuitable for reuse or recycling even when they are of good quality[29]. Additionally, due to the variety of sizes and conditions of carpets at their end-of-life, there can be additional challenges for recycling and reuse.

Why are carpets mostly sent to landfill or incineration?

Despite the existence of real opportunities for recycling and reuse, it is clear that most post-consumer carpets are sent to incineration or landfill. This is mainly because industry professionals are not encouraged to change their current way of doing things, and nothing is done to facilitate the collection of carpets at the end-of-life. In the cases where carpets are actually collected, their in such bad condition that they are not usually suitable for recycling or reuse. Moreover, the recent policy adopted in France to promote the construction of facilities to convert waste into energy is pushing the industry toward more energy recovery than recycling and reuse.

RECYCLABILITY OF CARPET MATERIALS



CHARACTERISTIC	MATERIAL									
	POLYAMIDE 6 (Nylon 6 / PA6)	POLYAMIDE 6.6 (Nylon 6. 6 / PA6.6)	POLYESTER (PET)	POLY-PROPYLENE (PP, Olefin)	WOOL	JUTE	LATEX	CHALK	BITUMEN	PVC
USED AS: FACE FIBER	✓	✓	✓	✓	✓	✓	✗	✗	✗	✗
FILLER	✗	✗	✗	✗	✗	✗	✓	✓	✓	✗
BACKING	✗	✗	✓	✓	✗	✓	✓	✗	✓	✓
RECYCLABLE BACK INTO FACE FIBER										
A. TECHNICALLY POSSIBLE	✓	✓	✓	✓	✗	✗	NOT USED AS FIBRE	NOT USED AS FIBRE	NOT USED AS FIBRE	NOT USED AS FIBRE
B. ECONOMICALLY FEASIBLE*	✓	✗	✗	✗	✗	✗	NOT USED AS FIBRE	NOT USED AS FIBRE	NOT USED AS FIBRE	NOT USED AS FIBRE
RECYCLABLE INTO BACKING:	NOT USED AS A BACKING	NOT USED AS A BACKING	✓ IF USED AS A PURE MATERIAL	✗	NOT USED AS A BACKING	✗	✗	NOT USED AS A BACKING	✓	✓
DOWN-CYCLABLE INTO BACKING:	NOT USED AS A BACKING	NOT USED AS A BACKING	✓ IF MIXED WITH FILLERS	✓	NOT USED AS A BACKING	✓	✗	NOT USED AS A BACKING	✓	✓
IN WHICH MATERIAL ARE THESE MATERIALS BEING DOWN-CYCLED	LOW GRADE ENGINEERING PLASTICS	LOW GRADE ENGINEERING PLASTICS	CARPET BACKING	CARPET BACKING	INSULATION	INSULATION		CEMENT	ASPHALT	CARPET BACKING
			LOW GRADE ENGINEERING PLASTICS	LOW GRADE ENGINEERING PLASTICS	CARPET PADDING	CARPET BACKING		FILLER	CARPET BACKING	LOW GRADE ENGINEERING PLASTICS
								LOW GRADE ENGINEERING PLASTICS	LOW GRADE ENGINEERING PLASTICS	

**The analysis of economic feasibility is based on the current situation and may change depending on the public policies, prices of raw materials, innovative recycling technologies entering the markets, growing fees on landfills and incinerations, etc.*

Chapter 3

Carpet Markets in the EU and the Major Producers

EU carpet market

This section provides information about the EU carpet market, growth projections and end-of-life treatment options in Europe. The European carpet market is the second largest in the world and, as such, also produces a lot of waste: Each year, 1.6 million tonnes of carpet waste ends up in landfills and incinerators[30].

Europe is the second-largest market for carpet after the U.S[31]. In 2016, the European carpet demand was 698 million square metres and is projected to grow 2.7 percent annually, to 821 million square metres by 2022, valued at EUR 56 billion[32]. Carpet accounts for 40 percent of the total European floor covering market. The majority of European carpet is produced in Belgium - with 96 percent of their carpet being exported. Germany has the largest demand for carpet in Europe, followed by France, the UK, Italy and Spain. Unlike in the US, where the carpet market is very concentrated, the European market consists of multiple smaller players, such as Balta Group, Associated Weavers, Egetaepper A/S, Tarkett/Desso, Interface, Modulys, Forbo, Milliken, Balsan, and Burnmatex. The two largest carpet tile manufactures in Europe, Interface and Desso, claim to be the global leaders in sustainability in design and production of carpet and are strong promoters of circular economy and "Cradle to Cradle" approaches[33].

The sustainability leaders?

Policy developments and societal concerns about resource efficiency and waste are driving more and more companies to integrate circularity and Cradle to Cradle[34] principles into their business models. In the carpet industry, Interface and Desso claim to be the leaders in sustainability and circular economy. Compared to other carpet manufacturers, Interface and Desso have set far-reaching and ambitious visions and targets to make their business sustainable and circular, as we will investigate further in this chapter. Their image as leaders in sustainability and circular economy has been supported by positive stories in the media and multiple awards. For instance, both have been praised for sustainable approaches in the Guardian[35].

Interface has been called "a trendsetter in the sustainable business," by the website Greenbiz[36] and won the "Best Company Award" from the Ethical Corporations Responsible Business Awards in 2016. Desso has also won several sustainability awards, such as the Carpet Recycling UK Awards 2016, the Guardian Sustainable Business Award for Waste and Recycling 2012, the Big Tick Award for Sustainability from Business in the Community (BITC) 2013 and the IWA Resource Recovery Award 2015.
However, as this chapter will show, despite both of these companies having made some progress in general sustainability issues, their core business is still unsustainable and far from being aligned with circular economy principles, since both of them collect, reuse or recycle only tiny shares of post-consumer carpet.

CARPET MARKET 2016

EUROPE IS THE SECOND BIGGEST MARKET FOR CARPETS

CARPET DEMAND BY SECTOR

55%

RESIDENTIAL BUILDINGS

39%

NON-RESIDENTIAL BUILDINGS

6%

OTHERS

DEMAND

698

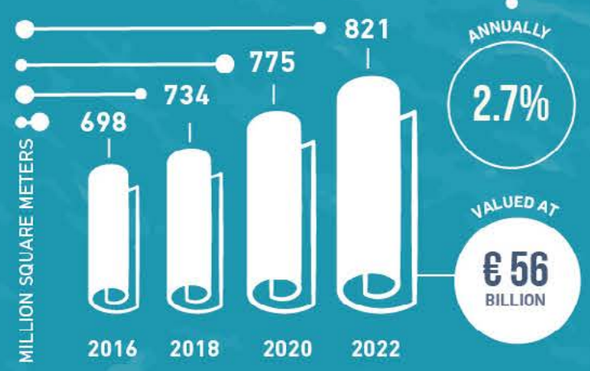
MILLION METRES²

NET REVENUE

€47

BILLION

PROJECTED GROWTH OF THE EU CARPET MARKET



WHAT HAPPENS TO POST CONSUMER CARPETS IN EUROPE?

YEARLY **1.6** MILLION TONNES = AS HEAVY AS **160X** 

60% LANDFILL

37-39% INCINERATION

MAX 1-3% RECYCLED

DESSO — WAALWIJK

Interface — SCHIERPENZEEL

NETHERLANDS

BELGIUM

96% OF THEIR CARPETS ARE EXPORTED

BELGIUM IS THE SECOND LARGEST CARPET MANUFACTURER WORLDWIDE AFTER THE US.

181.4 MILLION M² OF CARPETS

GERMANY

€ 12 BILLION REVENUE

FIBRE SENT FOR RECYCLING

FRANCE

106 MILLION M² OF CARPETS

€ 7 BILLION REVENUE

AQUAFIL — SLOVENIA

AQUAFIL — ITALY

	2015 Interface®	2014 DESSO
SALES GLOBALLY	€940 MILLION	€240 MILLION
SALES IN EUROPE	€208 MILLION	€187* MILLION
RECLAIMED CARPETS FOR RECYCLING	900 TONNES	1342 TONNES
% PERCENTAGE OF SALE	1.5%	3%

*EMEA (includes Middle East and Africa)

DESSO

Desso is a Dutch flooring company that claims to be one of the main pioneers of the Cradle to Cradle (also C2C) approach. Since 2014, it has been part of the Tarkett Group, the third-largest producer of floor coverings in the world[37]. Desso produces 80 percent of its broadloom carpet and carpet tiles for hospitality, marine, office, education, aviation, and residential markets; and 20 percent of artificial turf and reinforced natural grass systems for the sports market. In 2014, the company generated sales of EUR 240 million, with production facilities in Goirle and Waalwijk in the Netherlands and Dendermonde in Belgium[38].

TARKETT[39]

In December 2014, Tarkett SA acquired Desso from Bencis Capital Partners and minority investors. About 90% of Desso's sales are integrated into Tarkett's Europe, Middle East, and Africa segment (Freedonia, 2015). Tarkett was one of the first French companies to join the Ellen MacArthur Foundation's Circular Economy 100 programme. The Group claims to have implemented an eco-innovation strategy and promotes circular economy throughout its organisation and various brands, which include Desso, Tandus Centiva, Johnsonite and FieldTurf.

Sustainability strategy, brand values and goals

> *"As a company, we are committed to managing resources responsibly, developing Cradle to Cradle® capabilities, and supporting the environment and people's health and wellbeing [...] we believe in the power of collaboration to drive forward circular business models. It is at the heart of our sustainability strategy".*[40]

As Desso is part of the Tarkett Group, it operates according to the vision and strategy defined by Tarkett and its four P's strategy: purpose, people, planet and profits. Tarkett and Desso are committed to shaping their business model for a collaborative circular economy, in which "products are designed with good materials for people and the environment and made to be brought back and recycled in closed loop systems"[41].

Since 2008, Desso has embraced Cradle to Cradle (C2C) principles. The Cradle to Cradle idea aims to promote closed-loop material streams. The certification comes in five levels and should serve as a guarantee for consumers. In order to be certified at a certain level, a product must meet the minimum criteria for that level in all five criteria categories, which are set by the C2C Institute. The main criteria are the non-toxicity of the product and the Cradle to Cradle process. The C2C principles are integrated into the Desso's vision and its 2020 roadmap.

The Desso vision is "to be the world leader in making environmentally responsible flooring products that deliver outstanding value in design and functionality and thus contribute to people's health and wellbeing"[42]. Desso has set itself ambitious 2020 circular economy goals and aims to become a full Cradle to Cradle company in all its business units.

Excerpt from Desso's Cradle to Cradle® 2020 Roadmap[43]

- All Desso products have to be designed according to Cradle to Cradle design principles
- 100% of the tiles sold should be embedded in Cradle to Cradle loops
- To collect more than 20,500 tonnes per year for recycling[44]
- To use 75% defined recycled material to produce carpet tiles
- To use 30% of recycled water during production

Desso 2016: www.desso.fr

Desso's brand values[45]

- 1. Customer Focus
- 2. Common Sense
- 3. Integrity
- 4. Entrepreneurial Spirit & Ambition
- 5. Ownership & Empowerment
- 6. Corporate Social Responsibility &
- Cradle to Cradle®

Reported Sustainability achievements

Desso reports to have achieved a number of key milestones. In the field of recycling and recyclability - the core circular topics - achievements are formulated within the C2C framework, and therefore require deeper analysis of the certification criteria and method to be fully understood. For instance, 90 percent of Desso's carpet tile collection is reported to be C2C certified against the following criteria: material health and reutilisation, energy and carbon management, water stewardship and social fairness[46]. Moreover, it is reported that 61 percent of all materials are evaluated as recyclable, meaning the materials can be recycled in a non-toxic closed loop, as assessed by C2C, and that, in 2015, 64 percent of all raw materials were "positively defined"[47]. In the next section, we will take a deeper look at the somewhat opaque C2C certification, in order to analyse the reported achievements and to put them in perspective.

Reality: Little reclamation for recycling and reuse

Desso has developed a take back programme and leasing system to drastically increase collection of post-consumer carpet in Europe. It committed itself to 16,000 tonnes of reclaimed material as of 2013, under the LIFE project, for which it received EU funding, and has set a target of 20,500 tonnes of collected material for recycling in its 2020 Roadmap. However, in 2015, the company only collected 1,342 tonnes of used carpet, a meagre 3 percent of its total carpet sales[48].

In recent years, Desso has made efforts to increase its reclaiming and recycling rates. In 2008, Desso started its Take Back™ programme in 6 European countries (Benelux, France, Germany and the UK) and one year later, developed a separation technique called Refinity®. In 2014, Desso started a leasing scheme for consumers, in which it remains the owner of the carpet, and retains control over maintenance and collection of post-consumer carpet. Despite these efforts, the reclamation rates are still very low and Desso seems to be lagging behind its own target.

The company has recognised that the first hurdle is in the original design of the carpet, as the carpet needs to be taken apart before it can be recycled; therefore, Desso introduced EcoBase® backing. However, the EcoBase® backing is not sold with all its

products, and therefore only an unknown share of carpet can be taken back for recycling.

Through Desso's Refinity programme, post-consumer carpet is taken back (also from competitors provided it doesn't contain PVC) and the yarn and other fibres are separated from the backing. This creates two main material streams: The yarn, which is sent back to Desso's suppliers for recycling, and the bitumen (currently the most common material for carpet backing), which is sold to the road and roofing industry. Bitumen could better be recycled back into carpet backing, and so it seems a waste to down-cycle it to asphalt or roofing material. Since there is no capacity to recycle other types of yarn, only nylon yarn is recycled via Desso's supplier Aquafil.

While only a small amount of carpet can be remade into new carpet, due to low reclamation, Desso currently claims that over 50 percent of its carpet-tile types are produced with recycled yarn, made from post-consumer yarn waste[49]. First of all, this is misleading, as it sounds like the post-consumer waste is carpet, while in reality it comes from other sources such as fish nets. Secondly, it's misleading in that it is not explained what proportion of recycled yarn this 50 percent of their tiles have - it could be that the large majority of this 50 percent only has a small percentage recycled yarn. It would be more transparent to communicate the recycled content of the entire product - rather than just the yarn. Ecostorm approached Desso early this

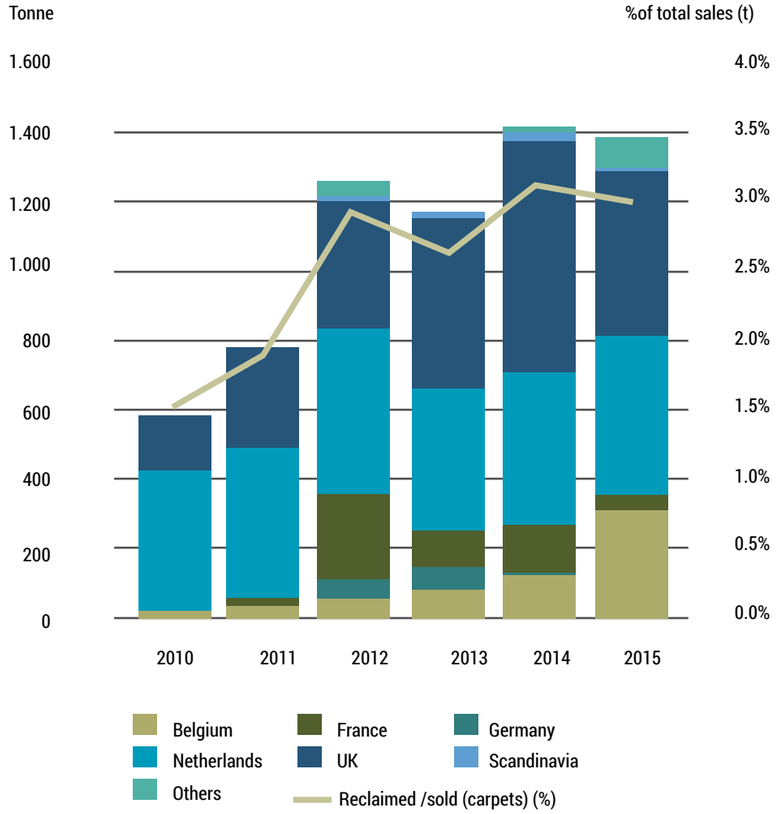
year to find out more about the exact data on recycled content, but Desso refused to provide further information[50].

The success of the leasing system still remains to be seen, as Desso only started it in 2014. However, Desso recognised in its 2015 Sustainability report that "our teams are struggling to encourage end users to return the material waste to suppliers like us, rather than send it to landfill or for incineration"[51].

The commitment to collect 16,000 tonnes by 2013 has not been honoured, and the goal of reclaiming 20,500 tonnes by 2020 seems out of reach - to achieve this, Desso's collection rate would have to increase 15-fold in only three years. The company's collection rate has been increasing very slowly and it has even gone down between 2014 and 2015 (Figure 1). It is clear that the most crucial part of a Cradle to Cradle company is to close the loop of its core product, which is far from being reached, with a 3 percent reclamation and even lower recycling rate (due to the down-cycling of most backing).

Figure 1[52]

Carpet reclaimed per country excluding packaging materials (tonnes) and % of reclaimed carpets as a proportion of total carpet sold
Source: Desso 2016



Cradle to Cradle: Unclear scheme with regards to real closed-loop systems

Desso is the first carpet manufacturer in the world to achieve Cradle to Cradle (also C2C) Gold level certification for a carpet tile backing: EcoBase®. This undercoat, made with polyolefin (polyester derivative), is considered to be better than a PVC or bitumen undercoat, because it can be separated from fibres more easily and, hence, the collected fibres are in a better condition for recycling. While Gold might sound like the highest level of certification for products, in reality, there is another level - Platinum. While 90 percent of Desso's carpet-tile range has Cradle to Cradle certification[53], only one product collection has Gold certification, and it is unclear what level of Desso's sales this collection represents. Furthermore, even within each level of certification, there are different ranges, which are not clearly explained. For instance, for "material health," it is said that the product has been "100% assessed (by weight) using A, B, C ratings," and no materials have been assessed as "highly problematic". However, the problem is that within these A, B, C ratings, there is still a wide variation from A (material is ideal for Cradle to Cradle) to C (moderately problematic properties of the material from a Cradle to Cradle perspective).

For Ecobase, which received a Gold standard certification, Desso claims that "all the ingredients have been assessed as either Green [optimal] or Yellow [tolerable] according to the Cradle to Cradle® assessment criteria". Looking under the surface of C2C certification, this means that the product could either be ideal from a C2C perspective, or that it largely supports C2C objectives, or that it could have moderately problematic properties in terms of quality. Since product design is so crucial to the circular economy, transparency regarding the product's properties is essential to understanding how carpet can be recycled in a closed-loop system. The transparency and quantification of the C2C certification are currently very unclear and potentially misleading to the consumer.

Finally, to achieve Gold certification, a channel of reuse, collecting and recycling has to exist and be efficient, however, there are no standards for precise volumes and no quantifiable targets. The certification bodies check that the materials are collected and that they never become waste using a formula that combines the percentage of recycled products in the final product with the recyclability rate of a product. To get the Gold certification, the rate must be higher than 65 percent. However, this is a theoretical number based on the company's ability to recycle carpet rather than an actual number. Therefore, this criterion has no correlation with actual recycling rates, which makes it impossible to evaluate what proportion of the material is reutilised and recycled for Gold-certified products. In a nutshell, C2C certification is questionable in terms of transparency and sustainability.

C2C certification categories[54]

- Material Health
- Material Reutilisation
- Renewable Energy
- Water Stewardship
- Social Fairness

Conclusions on Desso: Vision vs Reality

Desso has set itself the target to be a fully Cradle to Cradle® (C2C) company in all its business units by 2020[55]. Is this a realistic and true commitment to circular economy principles or just a form of greenwashing to be labelled as one of the world's most sustainable flooring companies? A sustainable company, aiming to close the loop and eliminate negative impact on the environment, cannot disregard its core product business being a major contributor to the problem.

The findings in this report help further analyse the materiality of these issues:

1. It causes a huge negative environmental impact[56]...

As Desso collects only 3 percent of the carpet it places on the market, almost all Desso's carpet end up in incinerators or landfills. These are the least ecological end-of-life options. Incineration emits greenhouse gasses and others toxic particles, while landfilling means that the carpet will stay in the environment almost indefinitely, also leaking toxic substances if it contains them (see chapter 2 for more information).

2. ...it is caused by Desso's core product and core business

Desso's core business is making carpet. Therefore, this is where its core responsibility lies when it comes to sustainability. While Desso has made great progress in reducing the impacts of producing carpet, the end-of-life phase has significant impact that cannot be left untackled.

3. It clashes with Desso's brand values and Cradle to Cradle vision...

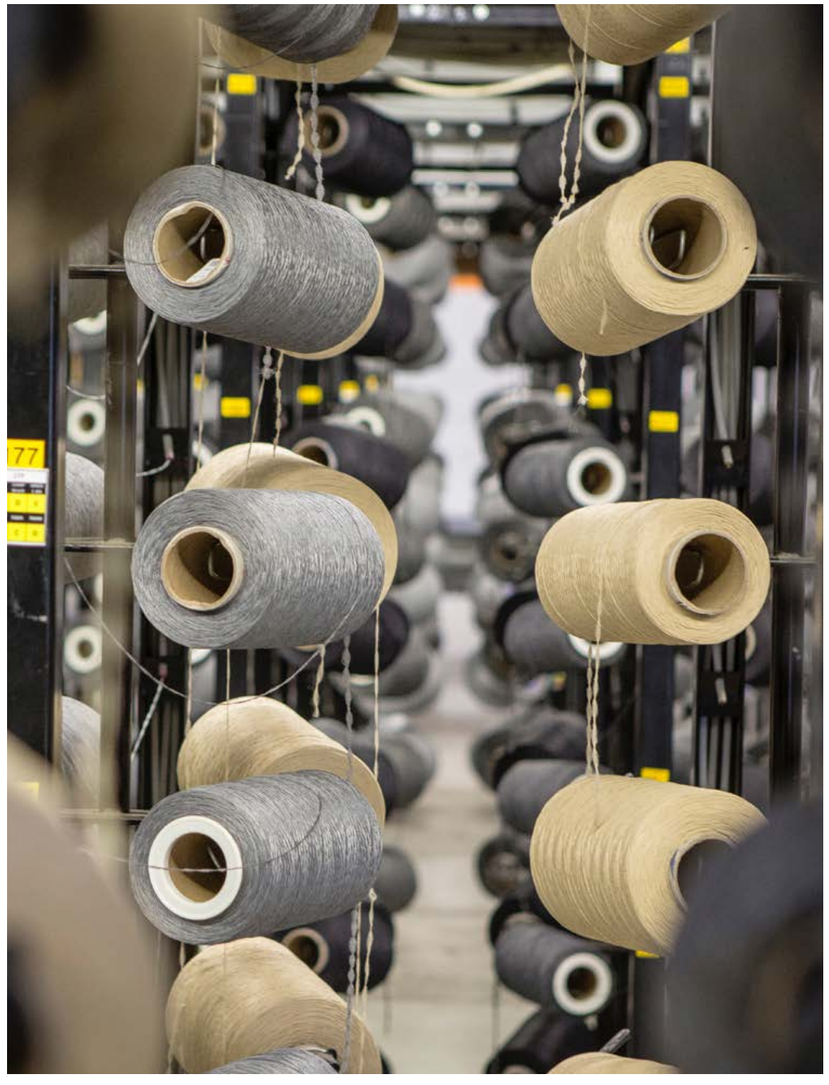
Carpet that ends up in landfills and in incinerators clashes with Cradle to Cradle, which is also one of the Desso's brand values, together with corporate social responsibility. Cradle to Cradle has five categories, among which "material reutilisation" is a key one. The lack of reclamation, and therefore recycling of its carpet, is at odds with material reutilisation. Currently, the focus of material reutilisation according to Cradle to Cradle is in the design - which is a necessary precondition for reutilisation - but it should also include the responsibility of the material after the product has been used. Moreover, transparency and quantification of the C2C system should be improved in order to be clearer about sustainability achievements and gaps, which link to the key value of the certification's integrity.

4. ...it makes Desso's Cradle to Cradle® 2020 Roadmap impossible to reach

Not collecting and recycling more of its own carpet makes it impossible for Desso to reach its Cradle to Cradle® 2020 Roadmap, specifically the goals of "100% of the tiles sold should be embedded in Cradle to Cradle loops" and "to collect more than 20,500 tonnes per year for recycling."

INTERFACE

Interface, an American company, is the largest manufacturer of modular carpet (also known as carpet tiles) worldwide. It sells around 13 million m2 or 56,000 tonnes of its carpet in Europe, worth $262 million, about a quarter of the company's business.



Starting in 1994, under leadership of then-CEO Ray Anderson, Interface established itself as a sustainable brand on the market. Its vision is "to be the first company that, by its deeds, shows the entire industrial world what sustainability is in all its dimensions: People, process, product, place and profits – by 2020 – and in doing so we will become restorative through the power of influence." "Restorative," as explained by Ray Anderson, means "to put back more than we take from the earth and to do good for the earth, not just no harm"[57].

Sustainability strategy and brand values

Since 1994, Interface has raised its sustainability ambitions with each new programme. Key to the sustainability strategy of Interface is that it is integrated across their entire business[58].

Mission Zero is the current sustainability commitment and strategy of Interface. It outlines how the company will have zero negative impact on the environment by 2020. It specifically outlines seven steps, among which is "zero waste," which aims to "eliminate all forms of waste in every area of the business," and "closing the loop," which aims to "redesign processes and products to close the technical loop using recycled and bio-based materials"[59].

The company's brand values also reflect the importance of integrating sustainability in all aspects of their business. 'Commitment' emphasises that the entire company and each of its employees "has a responsibility to do his or her part to help reduce our environmental footprint." 'Stewardship' means that the company believes that it has "an obligation to be good caretakers of our environment. We consider the impact our business and processes have on our environment and communities." Also the value, 'Integrity,' is linked back to sustainability, indirectly through behaving ethically, as it calls to "seek to provide the highest quality product in the most ethical manner possible."

Reported Sustainability achievements

Interface reports that half of the raw materials used to make products globally came from recycled or bio-based sources in 2015[60]. Thus, it has made large improvements, and the focus has been on raw material extraction and production processes as, according to Interface, two-thirds of its environmental impact is caused here.

These are important achievements, but an important issue remains open: Does Interface's carpet move in a closed loop?

Interface claims 50 percent of its products are now made with 100 percent recycled yarn[61]. For 2020, the goal is to extend this to all its products. But what is the source of this carpet with recycled content? One might assume it is made from post-consumer carpet and that Interface does not let their products go to waste at the end of their lives.

Reality: Reclamation for recycling is the missing link

The reality is that only a tiny share of Interface carpet is made from recycled carpet. On-the-ground investigations[62] in Germany, France and Belgium allowed us to estimate that Interface currently only takes back 1.5 percent of its European sales for recycling; they call this ReEntry®2.0. Since there are hardly any other recycling facilities in Europe that can treat post-consumer carpet for recycling, it can be assumed that presently the other 98.5% of Interface's carpet almost always ends up on landfills and in incinerators.

At Interface's recycling and separation facility in Scherpenzeel, the Netherlands, the reclaimed carpet gets separated from the backing. Even at full capacity, only 600,000 m2 or 6 percent of Interface's European sales can be treated at this facility[63]. Only their own carpet is being collected within a radius of 500 to 1000 km from Scherpenzeel. After the carpet is separated, some of the backing (only the vinyl type) is recycled into new backing. The nylon face fibres that are separated are sent off to Aquafil, the major recycler of nylon in Europe. Aquafil's major nylon recycling facility is based in Slovenia. This means that the carpet fibres have to travel long distances all over Europe, to the Netherlands, then to Aquafil, and after that back to one of the manufacturing sites of Interface[64].

While Interface reclaims about 1.5 percent of its carpet, it is not clear which percentage of this actually gets recycled. Publicly, Interface claims that "ReEntry 2.0 reclaims all types of carpet (commercial and residential) regardless of face fiber type or backing used"[65]. Moreover, "separated vinyl backing is recycled into new vinyl backing using our Cool Blue™ backing technology"[66]. It is, however, unclear what happens to backing that is not made of vinyl and what proportion of the collected carpet this represents. Moreover, Interface states, "Through a new patent-pending technology, we can cleanly separate the face fiber and backing of nearly any carpet type". Investigations and interviews have shown that, with current carpet production techniques, separation is difficult due to contamination, mainly because of the adhesives[67]. Therefore, it is unlikely that, from the estimated 1.5 percent of carpet that

Interface's Mission Zero: 7 steps[68]

1. Zero Waste
2. Benign Emissions
3. Renewable Energy
4. Closing The Loop
5. Resource-Efficient Transportation
6. Sensitivity Hookup
7. Redesign Commerce

Interface's brand values[69]

- Service
- Innovation
- Leadership
- Commitment
- Stewardship
- Integrity
- Communication
- Individuality
- Professional growth

is reclaimed, all materials are recovered and thus actually recycled.

As a result of the low collection and recycling rates of their carpet, Interface's products with 100 percent recycled yarn are usually made mainly from either pre-consumer waste (e.g. cut-off carpet pieces from the factory) or from other post-consumer products such as fish nets from the Phillippines and Cameroon, as part of the Net-Works™ program. While this latter initiative delivers a great PR story, from an ecological perspective, local recycling and application is the preferred solution, rather than transporting materials over large distances to the European market. Also, while recycling nylon fishing nets is a good option from the circular economy perspective, it begs the question why more nylon is not reclaimed from the carpet Interface should be collecting.

Interface has been praised for an innovative attempt to collect carpet via its leasing programmes. As early as 1994, Interface started the Evergreen programme, where it remained the owner of the carpet and the lessee paid a monthly fee covering installation, maintenance and, when necessary, replacing carpet tiles. The programme reportedly failed mainly because banks were unwilling to finance the leases. Since then, the company has tried different approaches, working together with carpet dealers and taking over reclamation costs of carpet to make it more attractive to consumers[70]. The rates of collection seem to have gone up since this last improvement, but as reported above, in Europe we can assume that they are still stuck around meagre 1.5 percent.

Conclusions on Interface: Vision vs Reality

Rightfully, the question arises: can Interface be called a sustainability leader if only tiny shares of its carpet are reclaimed for recycling, while the lion's share get burned or landfilled? A sustainable company aiming to close the loop and eliminate negative impact on the environment cannot disregard its core business being a major contributor to the waste problem.

This constitutes a material or critical issue for Interface, because:

1. It causes a huge negative environmental impact...[71]

Almost all Interface's carpet end in incinerators or landfills. These are the least sustainable end-of-life options and a waste of precious resources. Incineration emits greenhouse gasses and others toxic particles, while landfilling means that the carpet will stay in the environment almost indefinitely, also leaking toxic substances (see chapter 2 for more information).

2. ...it is caused by Interface's core product and core business

Interface's core business is making carpet. Therefore, this is where its core responsibility lies when it comes to sustainability. While Interface has made some progress on reducing the impacts of producing carpet, the end-of-life phase has significant impact that cannot be left untackled

3. It clashes with Interface's brand values...

Interface's brand values highlight the importance of integrating sustainability into all aspects of its business and the way the company and its employees communicate and act. Current communication on sustainability does not reveal the fact that most carpet does not move in a closed loop. This is so misleading that it could even be regarded as 'greenwashing'. Moreover, it also stands at odds with the value of leadership to become a "restorative" business, which Ray Anderson defined as putting "back more than we take from the earth and to do good for the earth, not just no harm"[72]

"If we're successful, we'll spend the rest of our days harvesting yesteryear's carpets and other petrochemically derived products, and recycling them into new materials; and converting sunlight into energy; with zero scrap going to the landfill and zero emissions into the ecosystem. And we'll be doing well ... very well ... by doing good. That's the vision".

Ray Anderson[73]

4. ...it makes Mission Zero's commitment impossible to reach

Incinerating and landfilling almost all post-consumer carpet makes it impossible for Interface to reach Mission Zero, i.e. to have zero negative impact on the environment by 2020. This is only three years away, so a drastic and swift change is necessary to bring the target back within reach. The Mission's aspects of 'closing the loop' and 'zero waste' in particular are completely at odds with the current reality of Interface's carpet. The aim of 'closing the loop' can not only be using recycled or biobased materials, but - by definition - needs to ensure the carpet materials are fed back in a closed loop at the 'end of life'. Additionally, the aim of 'Zero Waste' can not merely reflect the internal business processes, it needs to include the core product's waste burden on the environment.

The impact on Desso and Interface's investors

Low collection and recycling rates, together with unrealistic sustainability statements, could harm these self-proclaimed leaders in circular economy. Sustainable investors should be able to rely on and respect companies with an ambitious vision and goals for sustainability. However, when these companies are not able to implement them in their core business, such as the collection and recycling of their own carpets, we can then legitimately question their credibility.

Sustainable investment in Interface and Desso: Really a green decision?

As a material issue, low collection and recycling rates combined with unrealistic statements about the closed-loop business model might damage the brands of these self-acclaimed sustainability leaders. Sustainable investors should be able to rely on companies with a bold sustainability vision and high sustainability targets to actually achieve this vision and these targets. However, when companies can't implement these in their core business, like collection and recycling of old carpet, questions about their complete credibility may arise.

Desso, as part of Tarkett Group, and Interface have been recognised as sustainability leaders not only by the media and with awards, but also by several responsible investment funds. Below is a short list of investors that have selected these companies for their portfolios, specifically because of their sustainability performance. The findings in this report, relating to the current failed performance of Interface and Desso to implement closed-loop and zero-waste systems, should be evaluated.

Sustainable investors in Interface:

- GLS Bank Aktienfonds
- ABN AMRO Multi-Manager Funds Global Sustainable Equities
- DFA US Sustainability Core 1

Sustainable investors in Tarkett, as mother company of Desso:

- LBPAM Responsable Actions Euro
- Sycomore Sélection Responsable

Chapter 4

Events: the scandal of the single-use carpet

The events industry produces waste in vast quantities: food leftovers, disposable cutlery, printed communication materials... and carpets. These carpets are usually used for a couple of hours or days until they are thrown away with other waste, making a re-use or recycling almost impossible.

Millions of square metres of carpet

France has more than 1 million square metres of exhibition space for professional or public events, within the 161 exhibition centres and other areas accounted for by the Ministry of the Economy[74]. The main player in this sector is the company Viparis, which manages 10 sites in the Paris region, welcoming 9 million visitors per year. The total surface of these sites is 630 000 m², equal to 95 percent of all available space for events in the Ile-de-France region[75].

Every year, more than 1135 trade fairs and exhibitions are organised - this represents more than 6 million m² of exhibition space[76], equivalent to 65,000 average housing units in France. Single-use carpets cover most of these spaces, without even counting for the aisles, exterior spaces, or stairs, where carpet is also sometimes used.

Used only for a few hours or days

Carpets used during events are systematically changed after the end of the event - be that after a few hours or days. After each event, thousands of square metres of carpets are simply thrown away, sent to landfills or incinerators.

In France, the entire events sector works in the following way: carpet manufacturers for the event industry produce low-quality 'disposable' carpets; site managers, organisers and installation companies (handling installation, cleaning and dismantling) use this product, that is delivered in large rolls, and cut according to the needs of their customers. At the end of the event, when the product is dismantled, most carpets are thrown away, or given to anyone willing to take them. This happens mainly because the companies involved in this process have not organised proper sorting, collecting or recycling procedures.

With regard to organisers, two industry leaders (Comexposium and Reed Events) seem to not have any major initiatives in place with regards to carpet recycling or reusability. Reed Events does not show any commitment to sustainable development or corporate social responsibility; Comexposium talks about environmental objectives, but has not adopted a system for the sorting or collection of carpets. The company organises large-scale events, such as the Paris trade fair, for which more than tens of thousands of square metres of disposable carpets are used.

KEY PLAYERS IN THE EVENT SECTOR

EXHIBITION CENTRES

⚠ Poor floor maintenance makes it impossible to use any flooring solutions other than carpet

♻ Better floor maintenance would reduce carpet consumption

EVENT ORGANISING COMPANY

⚠ Buy disposable carpets without implementing a sorting systems for reuse or recycling

♻ Should buy less carpets and use more leasing services

CARPET MANUFACTURERS FOR THE EVENT SECTOR

⚠ Provide only disposable/single-use carpets

♻ Should make carpets with better design, to enable reuse and recycling at the end of life. Should also offer rental services for carpets used at events

CLEANING COMPANIES

⚠ Discard the carpets at the end of each event

♻ Should provide carpet sorting in their services

GENERAL INSTALLATION COMPANY

⚠ Responsible for the setting up the exhibition area, including the installment of carpets

♻ Should install carpets in a better way so that they can be easily removed and reused

CLIENTS

⚠ Buy exhibition areas and sometimes use carpets

♻ Could try to reduce amount of carpet used when arranging stand

⚠ ROLE IN MANAGING CARPETS USED AT EVENTS

♻ WHAT SHOULD BE DONE IN ORDER TO MOVE TOWARDS A CIRCULAR ECONOMY

SOMMER

Sommer is a French carpet manufacturer, which claims to be a European leader[77] in the events industry. Its main competitor is the Belgium group Beaulieu, which also claims to hold the same title.

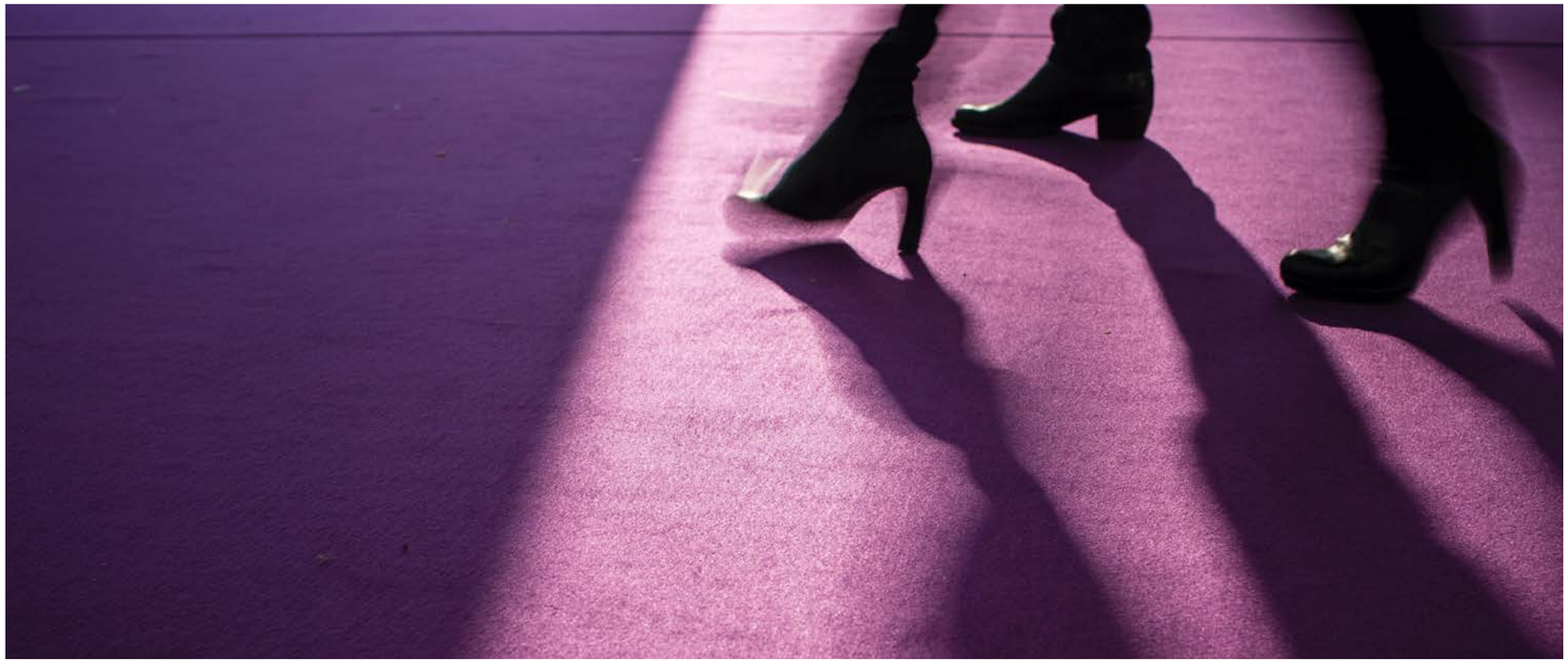
Each event presents an opportunity for these companies to sell a large quantity of carpets: on average, 15,000 to 20,000 m^2 of carpets is needed for 'trade fairs' but surfaces can cover up 140,000 m^2 of space - for example, large exhibition centres such as the one in Frankfurt, the biggest in Europe[78].

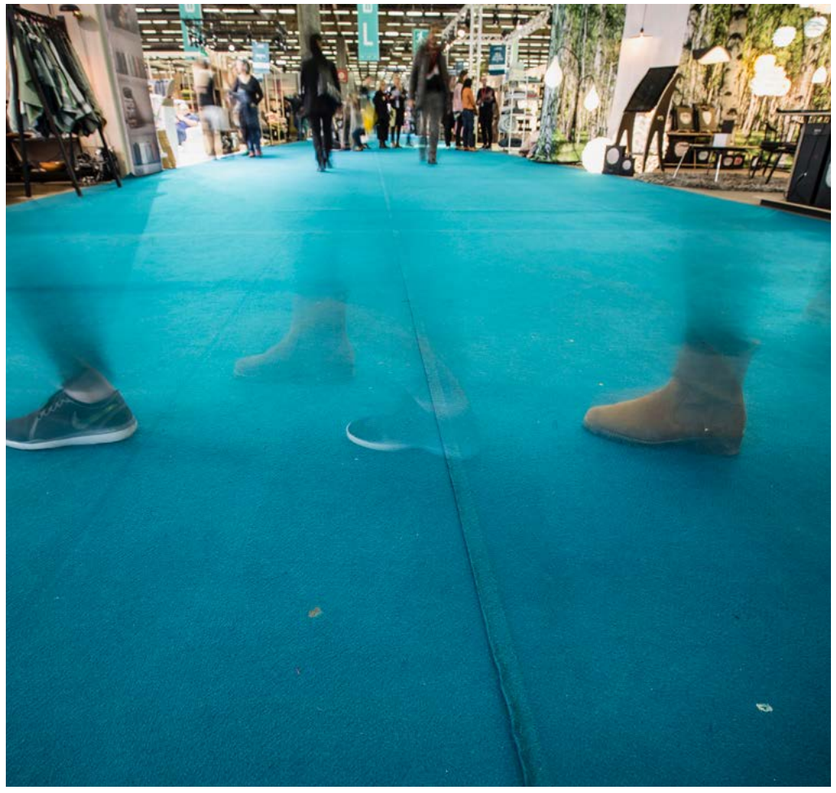
Recyclability does not equal recycling

On its website, Sommer showcases "100% recyclable event carpets to give a second life to short-lived products" through an "advantageous and responsible return/recycling offer"[79]. How does this play out in reality? Sommer exclusively sells single use carpets, whose average duration of use is, according to the Sales Director, one week[80]. They are low-quality products, with a short lifespan, made of polypropylene. Some of the products offered by Sommer can in theory be recycled, or more precisely be 'transformed' into other types of products such as helmets (this is more accurately referred to as down-cycling, since the material loses in quality because of the recycling process). However, in most cases, carpets are simply thrown away after the event has ended. The collection rate for carpets to be recycled by Sommer stagnates at around 8 percent[81].

Dubious environmental allegations

Apart from the low recycling results, Sommer also indicates that it offers "ecological carpets made of plants and not oil." This refers to a carpet model launched in 2006 that is made of polylactic acid (PLA), a polymer that is entirely biodegradable. This carpet received the "cradle-to-cradle" certification because they can be recycled in a closed-loop system. Sommer supplied the environmental summit in Copenhagen in 2009 with this new type of carpet. Since then, the research programme and production have completely stalled; the company explains this change of direction happened due to the difficulty of storing the rolls without them starting to degrade. Crucially, this has led to higher production costs (2,50 euro/m^2 vs. 1,50 euro/m^2 for traditional carpets)[82], thus making 100 percent recyclable carpets not economically viable (unless oil prices go up). Nevertheless, Sommer continues to showcase this product on its website.





Moving from disposable to reusable: what are the solutions?

There are three complementary solutions in the fight against the waste of resources and the levels of waste generated by the use or removal of carpets in the event industry.

1. Don't throw away: rent and re-use instead

To avoid one-time-use of carpets, companies in the events sector could rely more on reusable carpet provided by leasing services. This would be justified given how frequent the demand is, and how concentrated it is in some identified spaces.

In this setting, carpets would be designed to last longer and could be re-used for several events. Once the carpets are closer to the end of their lifetime, it would also be easier to send it for recycling, since their return would be included in the service.

In other European countries, for instance in Belgium and Germany, organisers use this type of service by default, and rental-reutilisation services represent 30 to 40 percent of carpet supplies[83].

2. Challenging the systematic use of carpets

The rental of re-usable carpets is a sustainable supply solution. However, it's also possible to stop the need for carpets altogether by changing some of the habits of organisers and the public attending the events.

LA COMPAGNIE

The French company La Compagnie offers carpet rental services to event, exhibition and trade fair organisers. According to the company, the carpets are adaptable to all room sizes and can be re-used up to 50 times. The carpets are manufactured by the company Tarkett-Desso, based in the Netherlands, which takes them back at the end of their life to be recycled.

La Compagnie states that it installs a million square metres of carpet space per year in Europe. France represents an annual market share of 100,000 m^2 of space; for example, La Compagnie carpets were installed in the 14,000 m^2 Porte de Versailles exhibition centre, at the 24-hour Le Mans du Mans and at the Paris Air Show[84].

La Compagnie indicates that its rental services does not come out as more expensive for organisers compared to the purchase of new carpets, but that it requires more efforts in terms of organisation and preparation.

Not using carpets at all to cover the halls of exhibition centres seems to be an option that only a few organisers have sought to explore, although it may be financially and ecologically beneficial. To explain the reluctance to adopt this system, organisers highlight the fact that customers and visitors would interpret the absence of carpets as a lack of comfort and hospitality. This statement has yet to be proven, especially at a time where citizens are becoming more aware of the need to preserve precious resources, which are squandered on a systematic level at these types of events.

3. Renovate the floors of event spaces

Doing away with carpets means being able to benefit from the high-quality floors in event spaces, which are aesthetically pleasing and simple to clean. The renovation of floors can be perceived as a genuine alternative to the waste of carpets currently taking place at events. Exhibition spaces in Berlin and Dusseldorf have already been renovated, making the use of carpets redundant, and allowing for a reduction of the environmental and economic impact.

Chapter 5

Conclusion and recommendations

The challenges in moving the carpet industry towards a circular economy are similar to those any other industry is facing: manufacturers that do not take into account the end-of-life of products in their design choice, users (craftsmen, resellers, buyers...) that do not take responsibility for what happens to their products at their end-of-life, and public policies that largely promote energy recovery rather than reuse and recycling.

However, it's crucial that we start now to change this linear model which it is responsible for a huge waste of resources. Due to the long lifespan of carpets, the impacts of efforts made in terms of eco-design will not be visible in the short-term, but only in 10 to 15 years' time after these products have been put on the market. **The transition won't happen overnight, but it must start now, or else the carpet industry will lock itself into an unsustainable model for the next 10 to 15 years.**

It is certainly possible to imagine a system in which waste created by carpets would be a distant memory. **Carpet is a product that can easily become fully circular, which will in turn bring many benefits: environmental benefits, green jobs and the creation of new businesses.** The transition to this model involves considering product design as a priority, putting in place collection and recovery systems for reuse, or, when the carpet reaches the end of its life, full recycling (that is, closed-loop recycling where carpets are recycled back into carpets, and not down-cycled into less valuable products.)

The transition to a circular economy in the carpet industry requires immediate action on the part of policy makers, carpet manufacturers and consumers.

Recommendations for carpet manufacturers

- **Carpet producers should redesign carpets with reuse and recyclability in mind.** Today, the choice of materials and manufacturing techniques for carpets is a major barrier to their reuse and recyclability. Manufacturers need to set clear objectives for product use at end-of-life, to bring about immediate changes in the product design. For example, good-quality carpets that are easy to clean and re-dye should be promoted for reuse. To increase recyclability rates of carpet, it is essential to use the same material for the composition of fibre, and to ensure that the fibre is made of recyclable material, such as Nylon 6. Carpets should also be designed in such a way that the face fibres can be easily separated by the backing.

- **Develop collection and recycling facilities.** As shown in this report, the systems of carpet collection and recycling currently in place are too weak to achieve the ambitious targets set out by the two main carpet manufacturers in Europe. If these companies want to keep their sustainability commitments without greenwash, their take-back and recycling systems must be brought on a larger scale.

- **Increase transparency by releasing accurate information about the carpet materials.** Today, the diversity of materials used in the manufacturing of carpets, and the difficulty of tracking these products, make it hard to identify them. This makes it difficult for recyclers to identify which carpets can be recycled. The solution is simply to print on the back of the product clear information, outlining the materials that have been used and whether they are recyclable.

The characteristics of a circular carpet:

- Carpet tiles rather than broadlooms, so that the tiles can be replaced individually if needed
- Made of recyclable material (see summary table on page 20&21)
- One type of material per layer
- Use of glue, to enable separating layers after use
- Back-stamping system, indicating materials used and the recyclability of the carpet
- Should be installed without glue in the location where it will be used
- Use of non-toxic material

Recommendations for policy makers

- **Draft a report about the reuse and recycling potential of carpets.** This should be part of the government's obligation laid out in Article 101 of the Energy Transition for Green Growth legislation, voted in August 2015. This text stipulates that within a year (this timeframe has passed) the government must submit a report to the Parliament identifying *"the products that are not part of the extended responsibility of producers, and that have a potential for reuse and recycling that are insufficiently developed and that are likely to concern activities related to the social economy."*

- **Fight against false environmental allegations** of companies that are involved in treating carpet waste. This report demonstrates that some companies, and even the professional associations representing the sector, speak about "recycling" while they are actually burning waste for energy. To avoid the confusion and stop misleading consumers, the use of the term "recycling" must strictly be reserved to recycling operations. Public authorities must take full responsibility when it comes to controlling and sanctioning the green-washing practices commonly employed by companies in the sector.

Photo: Les Stone

Recommendations for carpet consumers in the business sector

Carpet consumers (companies owning offices, hotels, public administration) have a role to play, as buyers, to help move the carpet industry towards a circular economy.

- **Purchase recyclable carpets**: private and public companies should be identifying recyclability as a key criterion when purchasing carpets; they should also be involved in take-back schemes for the carpets at the end-of-life.

- **Resort to leasing services instead of purchasing new carpets:** Rental systems are already in place for certain uses; for others, rental options can only emerge if large carpet manufacturers make a commitment to offer this as a service and if large clients demand it.

- **Make a commitment to sort and send used carpets to recycling facilities:** when replacing carpet, in the case of renovation or relocation of the company.

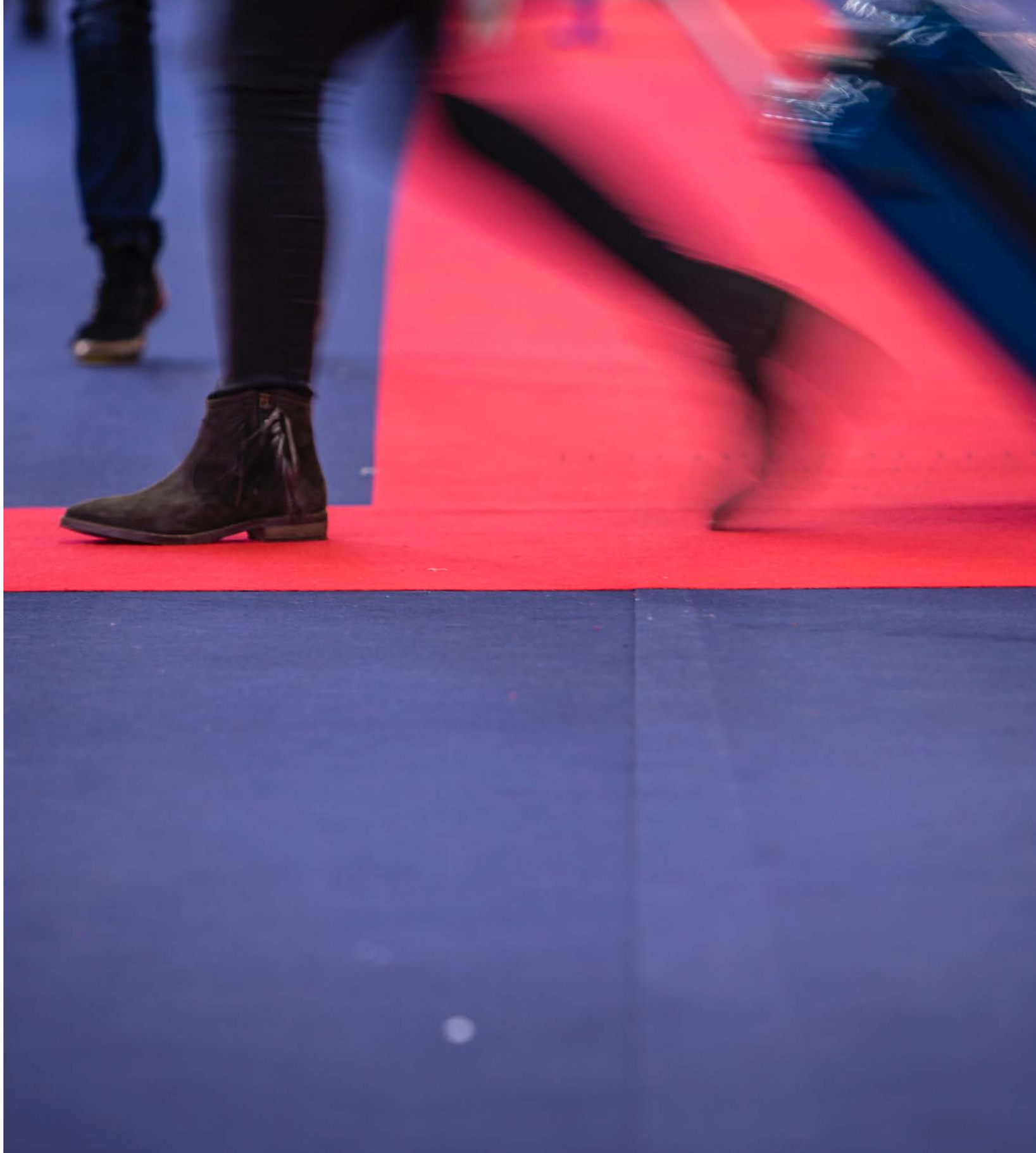
Recommendations to the events industry

The events industry is where waste is most visible and shocking. It is also a sector in which considerable progress could be made immediately and at no extra cost to all the players involved (organisers, site managers, suppliers) by applying the following measures:

- **Rent and re-use carpet instead of throwing it away**: to avoid throwing away carpets after using them for just a few hours or days, events industry players could resort to rental services instead (these already exists, as illustrated in Chapter 4.) According to this economic model, the carpet is re-used for several events until it comes to the end of its life. This model also makes it easier to send the carpets for recycling at the end-of-life, since their return is part of the service.

- **Use bare floors**: carpets are not indispensable for the events industry; therefore, it is possible to simply reduce the use of carpets by changing the habits of organisers and the general public. Not using carpets at all is the most sustainable solution from both a financial and environmental point of view.

- **Renovate the floors of permanent exhibition centres**: not using carpets also means being able to use high quality, easy to clean and aesthetically pleasing floors at event spaces. Site managers should commit to renovate their flooring, and preferably use floors that are sustainable, solid and easy to clean, as this might make the use of carpets unnecessary.



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