

SWEPT UNDER THE CARPET:

EXPOSING THE GREENWASH OF
THE U.S. CARPET INDUSTRY





Changing Markets

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Executive Summary

More Carpet than We Know What to Do With

In 2014, the carpet industry in the United States (U.S.) produced 11.7 billion square feet of carpet and rugs. Approximately 3.5% of all waste disposed in U.S. landfills (4 billion pounds) is carpet discard. Despite the existence of the industry-led Carpet America Recovery Effort (CARE) initiative to responsibly manage carpet waste, an astounding 89% is discarded in landfill, 6% is incinerated, and less than 5% is recycled. Of the 5% that is recycled, only 20% is recycled in a closed loop- i.e. turned back into carpet, the rest is down-cycled into less valuable products. That means that only 1% of carpet discards are recycled back into carpet each year.

The Case for the Circular Economy

The U.S. accounts for five percent of the world's population yet it produces half of the world's solid waste and consumes a quarter of its fossil fuel resources. On a limited planet, it is imperative that big consumers, like the U.S., stop wasting. A shift is needed towards a more circular economy where, at the end of their useful life, products are not disposed of but recovered and restored into other valuable products, creating a closed-loop system. The current system of wasting means society is throwing away billions of dollars of valuable products, while polluting the environment.

At the End of their Life Carpets can re-enter circular economy

In a circular economy, when products reach the end of use, they are reused or recycled, not incinerated or landfilled. Reuse prevents the need for producing more, saving resources and preventing waste. The best opportunities for reuse are with carpet tile. A few companies are offering these products.

Recycling carpet that is currently on the market is technically challenging. This is due to the choice of materials or bad design that prevents easy separation of different layers and components of carpet. For example, carpet materials are often mixed together or glued in a manner in which the backing and the face fibers are difficult to separate and therefore recycling is more challenging. Material choices also determine recyclability. Currently only nylon 6, nylon 6.6 and polyethylene (PET) fibers and backing can be recycled and only nylon 6 face-fiber is currently economically recyclable back into face fiber.

In some policies, incineration is considered third place in the waste management hierarchy - some find it preferable to landfilling because of the energy recovery potential. The organizations that authored this report find it no better than the last option - landfilling. Burning carpet removes the incentive to recycle and harms communities and the environment. It releases persistent organic pollutants, endocrine disruptors, and other hazardous chemicals such as dioxin, mercury, and lead. Many carpets also contain polyvinyl chloride (PVC), which creates dioxin when burnt. Dioxin is among the most dangerous chemicals known and a proven carcinogen.

Greenwashing and Undue Influence of Major Producers

To increase recycling, the carpet industry needs to start with better product design, produce carpets from recyclable materials, and decrease the use of toxic chemicals applied to their products. However, manufacturers have no incentive to design sus-

tainable carpeting if their responsibility ends with selling to retailers. Advocates of Extended Producer Responsibility (EPR) - the idea that the polluter should have physical and financial responsibility for products they put into the marketplace- believe that the carpet industry is ripe for producer responsibility. It's an easily segregated waste stream with significant recycling potential, if designed right. In an EPR model that respects the environment and human health, the carpet industry (not taxpayers or consumers) would finance end of life management and be required to divert carpet waste from landfill and combustion in incinerators or cement kilns to recycling and reuse.

In 2010, California became the first jurisdiction in the world to try to hold the industry accountable for the waste it generates by enacting AB 2398 (J. Perez), a law that made carpet manufacturers responsible for establishing a landfill diversion program for carpets and established reuse and recycling as primary goals for end of life management. However, rather than make the industry fund the management of carpet waste, industry lobbyists succeeded in ensuring that the law allowed collection of fees charged to consumers. Currently, California carpet customers are paying 20 cents per square yard to fund the industry product stewardship program, which amounted to a \$10 million fund in 2015 that was managed by CARE.

However, under CARE stewardship program has failed to provide meaningful advances towards the circular economy. In the first five years in California (2011-2015), carpet recycling increased by a mere 2%, from 28 million pounds to 35 million pounds. The quantity of carpet that went to incinerators for disposal more than doubled (from 15.7 million lbs. to 30.6 million lbs.). The industry set a goal of a 16% recycling rate for carpet in California by 2016 however, in 2014 and 2015, the recycling rate fell from 12% to 10%. The industry is failing to meet its own targeted recycling rates and vast quantities of carpet recovered by the industry in California and the rest of the U.S. are ending up in landfills or being burned.

Far from taking concrete, actionable steps to move towards a circular economy, the largest manufacturers in the carpet industry - Shaw and Mohawk - have focused on maintaining the wasteful status quo. An investigation conducted for this report revealed that the major players in the global carpet industry have purposefully undermined California's program while actively lobbying against any other state passing a similar recycling mandate. Recyclers who participate in the CARE voluntary stewardship program, getting paid a mere \$0.02 per pound of recovered carpet, must sign an agreement that they will not support EPR type programs in any jurisdiction. To date, CARE and its companion, the Carpet and Rug Institute (CRI) - an industry trade group - have managed to kill legislation in Connecticut, Minnesota, Illinois and Washington State.

CARE is firmly under the thumb of the biggest players in the carpet industry. Shaw, Mohawk, CRI all have seats on the organization's board of directors. There is not even an attempt to disguise this obvious conflict of interest. CARE is located in the very same building as CRI in the heart of the U.S. carpet industry in Dalton, Georgia. Not surprisingly, CARE tends to follow the lead of its corporate leadership, which has been more committed to undermining EPR schemes than to increasing recycling.

Recommendations

Carpet production technology is advancing and many companies are investing in technologies that will help to make carpet fully recyclable. Big carpet companies, retailers and policy-makers need to support these kind of technical advances and ensure that they get progressively larger market shares. The report ends with key recommendations on how different actors can facilitate the transition of the carpet sector towards truly sustainable circular economy:

- **Reject the CARE program** In California, regulators should reject the five-year plan put forward by CARE which is unlikely to yield measurable progress and require a new stewardship entity take over- one that is administered by neutral parties.
- **Amend AB 2398** - make producers pay and ensure they pay more for carpet that is landfilled or incinerated.
- **Prohibit shipping carpet overseas, limit landfilling, and ban incineration.**
- **Assure adequate and easy collection** - rural and urban disposal should be provided.



Introduction

Increased consumption and production of consumer goods is resulting in a growing waste problem that must be addressed. The vast quantity of goods that still have value but end up in landfills and incinerators is not only an environmental problem, it is an economic one as well. In the face of climate change and depletion of natural resources, the world cannot keep expanding landfills, polluting the environment and communities with incinerator emissions, and using limited virgin resources, such as fossil fuels, to continue producing consumer goods. As increasing portions of the global population join the ranks of the middle class and are becoming bigger consumers, global production and waste systems must evolve to better recover, reuse, and recycle discarded products and bring them back into the global economy.

This is a challenge in the United States (U.S.), the world's largest economy and consumer market. The U.S. represents five percent of the world's population yet it produces half of the world's solid waste (Scientific American, 2016) and consumes a quarter of its fossil fuel resources (Worldwatch, 2016). One solution to the consumption and waste challenge is to rethink the linear production system of resource extraction, production and consumption of goods, and disposal of waste. Instead, a paradigm shift towards efficiency and designing products not to become waste is needed. A shift is needed towards a more circular economy where at the end of life products are not disposed of but recovered and restored into other valuable products, creating a closed-loop system.

This report focuses on the potential for the carpet industry to pave the way to the circular economy. In this sector, the technology, infrastructure, and legal framework, theoretically, all exist to support this shift. Progress will be needed in terms of more effective carpet recovery systems, and better, eco-designed, fully recyclable carpet, for the carpet industry to make the shift away from a wasteful, linear production system. What is missing is commitment by the primary leaders in the industry to this transition. Although the carpet industry has for many years had a voluntary stewardship program to promote carpet recycling in the U.S., it hasn't had much impact. Legislation enacted in California in 2010 that created a product stewardship framework for the carpet industry was intended to create a paradigm shift towards a circular economy approach. The law made carpet manufacturers responsible for establishing a landfill diversion program for carpets and established reuse and recycling as primary goals for end of life management. However, the carpet industry has failed to provide any meaningful recovery and recycling program.

This report demonstrates the need for a better program in California in order to meet the requirements of the 2010 law but also to lay the groundwork for a circular economy in the carpet industry. It highlights the failure of the U.S. carpet industry to develop an adequate product stewardship program to ensure that the 11.7 billion square feet of carpet and rugs (Freedonia, 2015) they place in the U.S. marketplace every year is responsibly managed at the end of life. The report provides an analysis of the U.S. carpet manufacturers CARE program and its failure to achieve meaningful recycling rates or an increase in the recyclability or recycled content of its products in the U.S. and California. It makes the case for regulators and the carpet industry in California to do a better job of laying the groundwork to move the carpet industry towards truly circular economy.¹

1. Discussion in this report of carpet waste is based on data that includes both rug and carpet waste as data that separates the two is not available.



Chapter 1

The Case for a Circular Economy

What is the circular economy?

The Ellen MacArthur Foundation, a United Kingdom based non-profit organization, has defined the circular economy as one ‘that is restorative and regenerative by design, and aims to keep products, components and materials at their highest utility and value at all times’ (Ellen MacArthur Foundation, 2015). This means that resources are not disposed of, but recovered and restored, creating a closed-loop for products - and much less waste.

The idea of a circular economy respects existing environmental boundaries by reducing consumption of raw materials, energy, emissions and water. In a circular economy, products are not just used once and discarded as waste, instead they retain value. They are returned to the economy through various forms of recovery.

Like European national solid waste laws, California’s solid waste statute ranks different options for dealing with waste, placing reuse at the top, followed by reduction, then recycling and composting. The law says that after maximizing the use of all feasible source reduction, recycling, and composting options, transformation (California’s term for so-called “waste to energy” incineration) is the next choice, followed by disposal (California Stats. 1989). While U.S. federal law and regulations defer to the states to establish solid waste programs and do not establish any requirements that states follow this hierarchy, the U.S. Environmental Protection Agency (U.S. EPA) has stated a preference for source reduction and recycling in guidance.

In a circular economy for carpet, the highest priority is waste prevention, including avoiding toxic materials. After waste prevention, the next priority action is reuse of a product, which requires the least amount of additional inputs or processes. After reuse, the priority action is recycling. Recycling can be “closed loop,” where waste is turned into a material that is used to remake the original product, such as glass bottle to glass bottle. It can also be “open loop,” or “down-cycled,” where the waste is used to make a lower value product. Usually, lower value means the waste is incorporated into some other product that is not 100% recycled content, such as plastic bottles incorporated in plastic lumber. Waste used in a lower value product is also referred to as a secondary material.

Minimizing carpet waste has many life cycle benefits. It leads to reductions in the use of water, energy, and natural resources (oil and gas) and the release of greenhouse gases (GHG) and other air and water contaminants associated with manufacturing carpet. But waste is not just an environmental issue; it is an economic one. The current system of wasting means society is throwing away billions of dollars of valuable products. That’s because the current economy relies on linear “take, make, dispose”

models of production, where goods are produced at the lowest cost, and then disposed of with little regard to either the value of the good itself, or its long-term impact on the environment. It's a system focused on resource consumption and grossly inefficient use and waste of resources. It is a broken system that is unsustainable in a world of rapidly growing demand and finite resources.

Product design is essential in a circular economy where products are designed to be durable, re-usable, repairable, or recyclable. When products are designed to be consumed and then thrown out, it's an impediment to the circular economy. Often manufacturers intentionally design products with a short useful life in order to promote replacement (i.e. more buying), it is called "planned obsolescence." Similarly, when manufacturers design products without regard to how they are managed at the end of their useful life, they are not focusing on reuse, repair, recycling, and are failing to participate in a circular economy.

Why should the carpet sector become circular?

The carpet industry is incredibly wasteful. In the U.S. today, an astounding 89% of discarded carpet goes to landfill, while 6% is incinerated, and less than 5% is recycled (CARE, 2015). Only 20% of the 5% recycled is recycled into carpet (i.e. closed loop), the remaining 80% is down-cycled into other less valuable products (CARE CCSP, 2015). That means that only 1% of carpet waste in the U.S. is recycled into carpet.

As with the carpet industry, circular economy type solutions are only being utilized at very small scales in most industries. Scaling up circular economy solutions to the global waste epidemic requires focusing on implementation in an industry-by-industry approach.

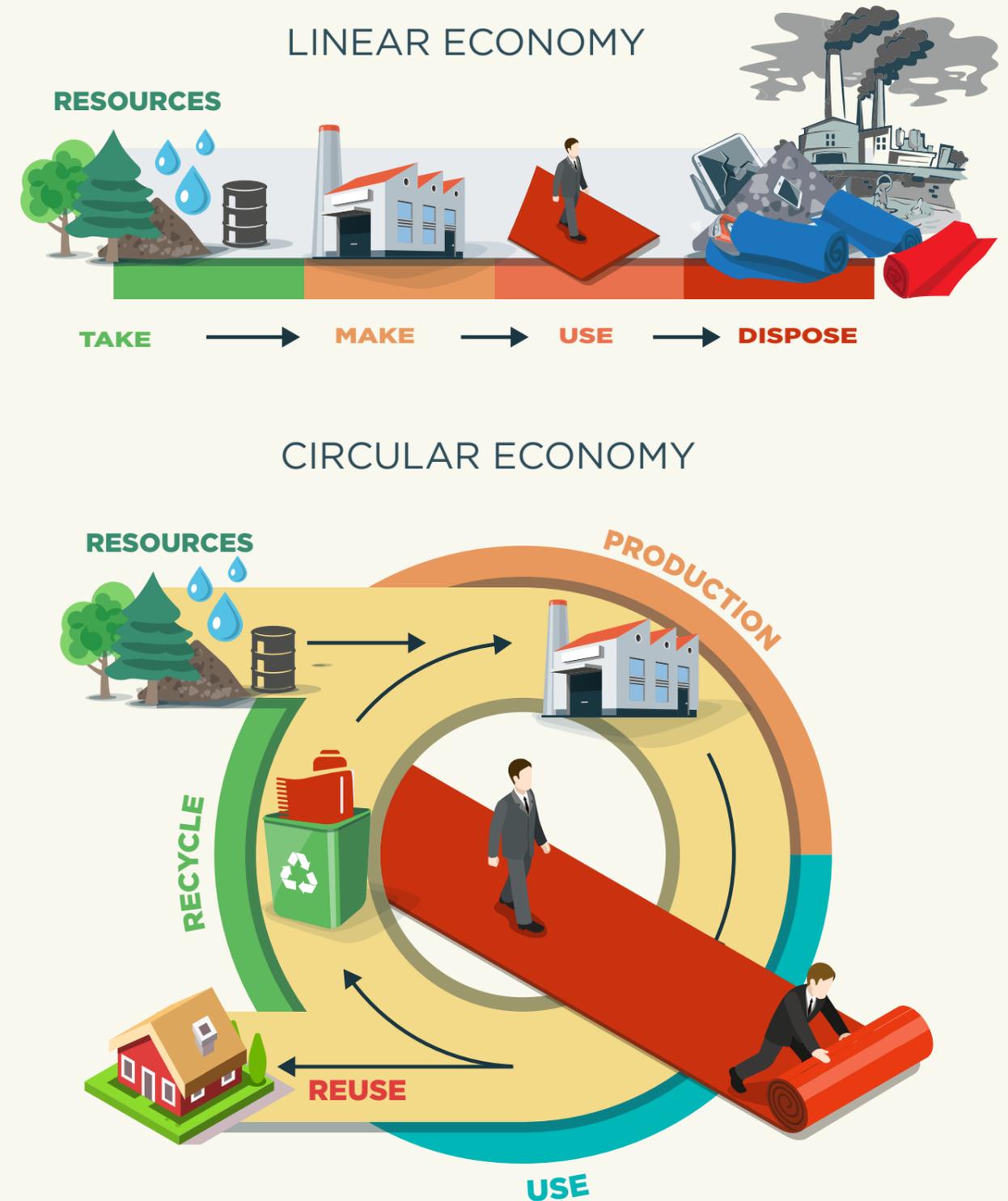
The carpet industry is a prime sector in which to scale the circular economy approach because it is possible to design carpets that are fully recyclable. Nylon fibers, for example, are fully recyclable back into face fiber, while polyester (PET) backing can be recycled back into backing.

-  Carpet is a petroleum based product² and accounts for over 3.5% of all the waste disposed of in U.S. landfills (4 billion lbs per year)
-  Recycling 1000 square feet of carpet and pad diverts 500 lbs. of carpet and padding out of landfills; eliminates 48 gals. of petroleum oil; and prevents 913 lbs. of CO2 from being emitted into our air (the equivalent of 950 miles driven by a car)
-  Recycling of carpets can create local "green" jobs

Figure 1. Examples of the Benefits of carpet recycling (Greenwaste, 2015)

² Carpeting is manufactured from a wide range of materials, including wool, but the vast majority is petroleum-based. The focus of this report is on petroleum-based carpeting.

CIRCULAR ECONOMY VS. LINEAR ECONOMY





Chapter 2

Wasted Opportunities: what happens to carpets at end-of-life?

Different Treatment Options for Carpet

There are different options for treatment of post-consumer carpets. The general life span of a carpet is about 7 to 20 years; depending on the use intensity and other factors like damage, change of taste or change of the facility's owner or usage purpose. There are different end-of-life treatment options for post-consumer carpets. Currently the majority of post-consumer carpets are either landfilled or burned in incineration plants or cement kilns. In order to divert end-of-life carpets from landfill or incineration, each of which presents significant environmental burdens, there are other circular options. Carpets can be reused, refurbished or recycled, either down-cycled to other products with lower value or ideally recycled through a closed-loop system back into carpet.

Reuse

Extending the lifetime of products by reuse leads to resource savings in the production phase because fewer products have to be produced in order to fulfil the same functionality. At the same time the generation of waste can be reduced if products are used for longer periods of time. Even reused carpets should ideally be recyclable in order to prevent waste from going to landfill and ensure a closed loop system (Sas, 2015). In 2015, the total amount of post-consumer carpets sent for reuse in the U.S. amounted to 13 million pounds and 602,000 pounds in California. This means that out of 345 million pounds of carpet discards in California, less than 0.2% was reused (CARE, 2015).

Carpets can be trimmed and cleaned, even re-colored for resale or redistribution by charities, such as Good Will, or sold in secondary markets. There are few companies that provide a reuse option. Milliken and Interface, for example, both take back their carpet tiles to be refurbished. However, the generally poor quality of post-consumer carpets makes reuse an infrequent option.

The most important factor in determining whether a carpet can be reused is the type of carpet - e.g. broadloom versus tiles. Due to the difficulties of ensuring the carpet has the required dimension for the second location, broadloom carpet is generally deemed unsuitable for reuse. In most cases, the highest option for broadloom carpet in the end-of-life hierarchy is recycling (WRAP, 2014). The great advantage of carpet tiles is that they can be taken up and reused. Carpet tiles will usually be installed using a non-permanent bond, which enables tiles to be uplifted easily. Reuse is a key opportunity for carpet tiles as shown by several case studies in the United Kingdom



(Carpet Recycling UK, 2013). Carpet tiles have a design life of more than 15 years but in practice are replaced much earlier - after 7 to 10 years (e.g. due to aesthetic reasons). Therefore, the carpet has another 5 to 8 years of life, which is why the opportunities for reuse could be better utilized.

Recycling

Currently, only a small percentage - about 5% - of carpet is recycled in the U.S. Of that, just 13% is recycled back into carpet face fiber, and 8% into backing. That means that just 1% discarded carpet is actually recycled back into carpet in a closed loop (CARE, 2015).

A carpet usually consists of three layers: the face fiber (which is the top), a primary backing (what the fiber is connected to) and a secondary backing. The primary and the secondary backing are usually glued together. The fibers are composed of thousands of small threads. In the U.S., most carpets are made using synthetic fibers. The most popular face fiber, currently, is nylon, followed by polypropylene (PP), and PET. Backings are often made from mixed materials, including polyvinyl chloride (PVC) or PP (Freedonia, 2015).

Carpet face fiber materials range from woollen to a variety of synthetics, typically nylon, PP and PET. Frequently these are combined with different materials for the backing. Each face fiber is associated with varying quality and characteristics such as stain resistance, wear, feel, and flammability. Sometimes face fibers are mixed to create different look, feel or other characteristics. Carpets can be produced either as woven, needled, tufted and other carpets. In addition, they can be made in forms of broadloom, vehicular, and carpet tiles. Tufted carpets are the most common (80%) and carpet tiles are increasing in popularity.

A carpet is fully-recyclable when the fibers can be easily separated from the backing and recycled back to carpet and the backing is also recycled. Currently most carpets on the market are only partially-recyclable, which means that only face-fibers or backing can be recycled while the rest finds another use, or ends up in incinerators



or landfills. Often, the way the carpets are glued together prevents the harvesting of the full face-fiber for recycling, making it less economically viable to engage in the collection and recycling efforts. The same is true for mixed face fibers. As soon as a carpet contains more than one face fiber material type (e.g. nylon 6 and wool) the recyclability fails and the material can only be down-cycled.

Carpet recycling processes rarely address the entire carpet. More often, recycling processes address specific components of the carpet. Only nylon 6, nylon 6.6 and PET fibers and backing can be recycled but only nylon 6 face-fiber is currently economically viably recycled back into face fiber. PET and other materials are often recycled or downcycled to carpet backing or into other products such as artificial surfaces, low grade engineering plastics such as washing machine parts and wheel trims, and plant pots or buckets.

The following table provides an overview of the materials most used for face fibers, backings and fillers in their pure form and show their characteristics, recyclability etc.

Incineration

Currently, about 6% of U.S. carpet is incinerated in conventional municipal solid waste incinerators and cement kilns. In 2015, an astonishing 206 million pounds of carpet was incinerated (CARE, 2015). Instead of redesigning carpets to make them



easily recyclable, the carpet industry often avoids these necessary changes by pushing used carpets into incinerators and cement kilns. In California, the CARE stewardship program has resulted in more than doubling the quantity of waste sent to incinerators, at the same time that recycling has basically stagnated.

Burning waste releases persistent organic pollutants, endocrine disruptors, and other hazardous chemicals such as dioxin, mercury, and lead. A 2009 study in New York State found that more total mercury was emitted from the state's ten trash incinerators than its eight coal plants, despite the coal plants being far larger facilities (NYSDEC, 2011). Many carpets also contain PVC, which creates dioxin when burnt. Dioxin is among the most dangerous chemicals known and a proven carcinogen (WHO, 2016). Dioxin is released into the air from incinerators and cement kilns, and is concentrated in the toxic fly ash that is landfilled after incineration. Even the most modern and expensive pollution control devices cannot prevent the escape of many hazardous emissions such as ultra-fine particles and nanoparticles (Howard, 2009). Ultra-fine particles (including polychlorinated biphenyls (PCBs), dioxins, and furans are produced from burning waste and are smaller in size than what is currently regulated or monitored by the U.S. EPA. These particles can be lethal, causing cancer, heart attacks, strokes, asthma, and pulmonary disease. The health impacts of this pollution are felt first and worst in the places which border these facilities, in the U.S. largely low-income communities and



communities of color.

In the case of cement kilns that burn waste in the U.S., the emissions may be worse as they are not subject to the same monitoring and regulations as traditional incinerators, and neighboring communities may not even know that a cement kiln is burning waste. Following a recent U.S. EPA decision, the environmental law group Earthjustice has found that there is now no requirement of public notice to burn waste at more than 1.5 million boilers and other facilities nationwide, and ninety-nine percent of industrial power plants are not subject to any emissions testing (Earthjustice, 2014).

In addition to health concerns, waste burning is a poor choice for the climate. Burning waste releases high levels of greenhouse gases – per unit of energy produced, the carbon emissions are even higher than burning coal (Energy Justice, 2014). For most materials, recycling has been proven to reduce greenhouse gas emissions and conserve significantly more energy than incineration, and can produce creates 10-20 times as many jobs as incineration (Tellus Institute, 2011). A recent study found that cement and fossil fuel companies are the top companies contributing to climate change (Science Magazine, 2016).

Landfill

Eighty-nine percent (89%) of post-consumer carpets ends up in landfills across the country. In fact, carpets account for 3.5% of all the waste disposed in the U.S., about four billion pounds per year (Greenwaste, 2015). Besides being a waste of precious resources, landfilling has numerous negative environmental and economic impacts. Synthetic carpets biodegrade very slowly in landfills, contribute to methane emissions, take up space, and can leach dangerous chemicals. In a truly circular economy, materials and products would only end up in landfills in very rare instances.

Recycling starts with the design

The key to a circular economy lies in better design. The overwhelming majority of a product's environmental impacts are set at this stage. Design determines the choice of materials, usage patterns, the ease of recovery, the potential for material reuse and recyclability. This means that whether a carpet could be usefully recovered at the end of its life depends mostly on how it is designed. It is therefore essential for carpet designers to develop products using materials and production methods that enable carpets to be recycled. Material choice can create a design impediment to recycling. For example, most carpet backing is made materials mixed with fillers. The materials are not separable and therefore the backing is not recyclable in a closed loop.

One of the biggest challenges to recoverability lies with the fastest growing type of carpet in the U.S. today. These are carpets made with fibers using reclaimed PET, one of the most common types of consumer plastic because it's used in beverage containers. This use of reclaimed PET is being heavily promoted by carpet manufactures, as this material is seen as environmentally friendly. Moreover, reclaimed PET fibers are less expensive than other fibers, an important consideration for many manufacturers. They are also used in green buildings, and for government procurements that require products with a certain amount of recycled materials. There is one big



METRIC	2011	2012	2013	2014	2015
RECYCLING GOAL	7%	10%	13%	14%	15%
RECYCLING RATE	8% 28 million pounds	10% 36 million pounds	12% 44 million pounds	12% 43 million pounds	10% 35 million pounds
INCINERATION (WTE+KILN)	4% 15.7 million pounds	3% 11.5 million pounds	6% 20.4 million pounds	8.6% 28.5 million pounds	9% 29.6 million pounds

Figure 2. Recycling vs. Incineration under the CARE program in California (CARE CCSP, 2015)



problem, however, with PET carpet fibers - it is currently not economically viable to recycle PET fibers back to fibers. The only option is to downcycle these fibers back into backing or into other low grade materials, but even this often does not happen, because there is not enough recycling capacity in place. Thus, these carpets are, for the most part, either sent to landfills, or incinerated (Freedonia, 2015). This means that instead of increasing circularity, PET often becomes a dead-end road for the truly closed loop system.

Avoiding hazardous materials is also an important element of design. Carpets should be redesigned to eliminate materials and additives that cause harm to human health or the environment, including volatile organic compounds (VOCs), carcinogens like styrene or PVC, brominated flame retardants and any other harmful flame retardants, fly ash, lead, cadmium, stain-resistant treatments like perfluorooctanoic acid (PFOA) (Consumers Digest, 2015), and perchlorate used in anti-static treatments (Pharos Project, 2015).

Right now, eco-design is not yet being pursued with the necessary rigor in the carpet industry. Some manufacturers are redesigning their carpet to be more recyclable. However, due to the long lifetime of a carpet, benefits from these efforts will not be seen until ten or more years from the introduction of such carpet to the market on a large scale. Transition has to start immediately or the industry is locking itself in another 10-15 years of unsustainable carpets.

Most manufacturers lack the motivation to change the design of carpet solely to promote recycling. A change in design and production habits must have additional benefits, such as lower production costs, higher general savings, or perhaps to provide a lower-cost feedstock than virgin material. In the future, higher oil prices or policies that increase costs for landfilling or incineration could set additional incentives to focus on design for recycling (Wuppertal Institute, 2016).

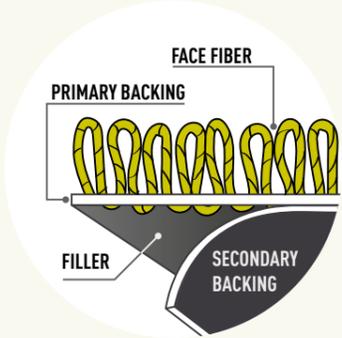


Increased recycling requires improving collection systems

One major part of the recycling process is the collection of post-consumer carpets. The collection can be achieved either by sorting them from the general waste, collecting them at commercial and industrial premises, retail sites, household waste recycling centers or even specialized centers. Some manufacturers even offer take-back programs (Wuppertal Institute, 2016).

The lack of necessary infrastructure for collection of carpets can be an important barrier at the end of the use phase. Separate collection for carpets is important to avoid mixing with other waste streams, which often leads to contamination. If not correctly collected even high quality carpets become unsuitable for recycling (Sas, 2015). Furthermore, the post-consumer carpet parts come in various sizes and conditions, which may be a challenge for recycling.

RECYCLABILITY AND MARKET SHARE OF CARPET MATERIALS



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
CURRENT SHARE IN THE US CARPET MARKET	43.8%		41.8%	12.2%	2.2%		?	?	?	?
CHARACTERISTIC										
USED AS:										
FACE FIBER	✓	✓	✓	✓	✓	✓	✗	✗	✗	✗
FILLER	✗	✗	✗	✗	✗	✗	✓	✓	✓	✗
BACKING	✗	✗	✓	✓	✗	✓	✓	✗	✗	✓
RECYCLABLE BACK INTO FACE FIBER										
A. TECHNICALLY POSSIBLE	✓	✓	✓	✓	✗					
B. ECONOMICALLY FEASIBLE*	✓	✗	✗	✗	✗	NOT USED AS FIBRE	NOT USED AS FIBRE	NOT USED AS FIBRE	NOT USED AS FIBRE	NOT USED AS FIBRE
RECYCLABLE INTO BACKING:			✓ IF USED AS A PURE MATERIAL	✗			✗	✗	✗	✗
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 		CARPET BACKING 	CEMENT 	CEMENT 	CARPET BACKING 
			LOW GRADE ENGINEERING PLASTICS 	LOW GRADE ENGINEERING PLASTICS 			LOW GRADE ENGINEERING PLASTICS 	CARPET BACKING 	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.



“They can't be claiming that they're sustainable companies when 92.5 percent of their products are being wasted. That's astounding. And not wanting to engage in it, and to only consider voluntary solutions, is outrageous.”

(Scott Cassel, Product Stewardship Institute, CM investigation 2016).

Chapter 3 Greenwashing and Undue Influence of Major Producers

The carpet industry is dominated by a few giant manufacturers that control the majority of the U.S. carpet market. On their websites and in public communication, they all claim to be sustainable and say they are making progress on carpet recycling. The facts speak otherwise, as approximately 90% of carpets in the U.S. end up in landfills. Obviously, something is not adding up. This chapter analyzes the sustainability claims of the Big Five and compares them to the reality on the ground.

The U.S. carpet market - big and wasteful

The U.S. matters because it is the world's largest carpet market, measured by both the consumption and production of carpets. With factories and production located mostly in the state of Georgia, the U.S. carpet industry produces 45% of the world's carpet, significantly more carpet than any other country in the world. A small town Dalton in Georgia calls itself the carpet capital of the world, as most of the U.S. carpet is produced there. In 2014, this amounted to an astounding 11.7 billion square feet of carpet and rugs, a number that is projected to grow at 4.5 percent annually to 14.6 billion square feet by 2019 (Freedonia, 2015).

Most of the demand for, and growth in, carpets comes from the residential market, which currently accounts for 61.9% of carpet demand. The replacement of carpets and rugs - due to age, or desire for new styles - is the most significant determinant of this demand. Other factors that affect demand include the construction of new housing units, sales of existing homes, consumer confidence, and the existence of a favorable or unfavorable lending environment.

New housing is entering the market at a double-digit rate, while lending rates remain low. This means significant growth in carpet demand for the foreseeable future. Low domestic energy prices also are playing a role, as it encourages carpet manufacturers to expand plants and “re-shore” overseas production facilities back to the U.S.. Low oil prices also mean that raw materials for carpets are easily economically accessible.

The 5 giant manufacturers dominating the carpet market

The Big Two

Shaw and Mohawk alone account for more than half of all carpets produced.

Shaw

Shaw's footprint is huge, as their carpets and rugs are sold via a network of more than 35,000 retailers, distributors, and commercial users, as well as through a network of over 2,000 company sales personnel. Shaw is the leading supplier of carpets in the



CARPET MARKET

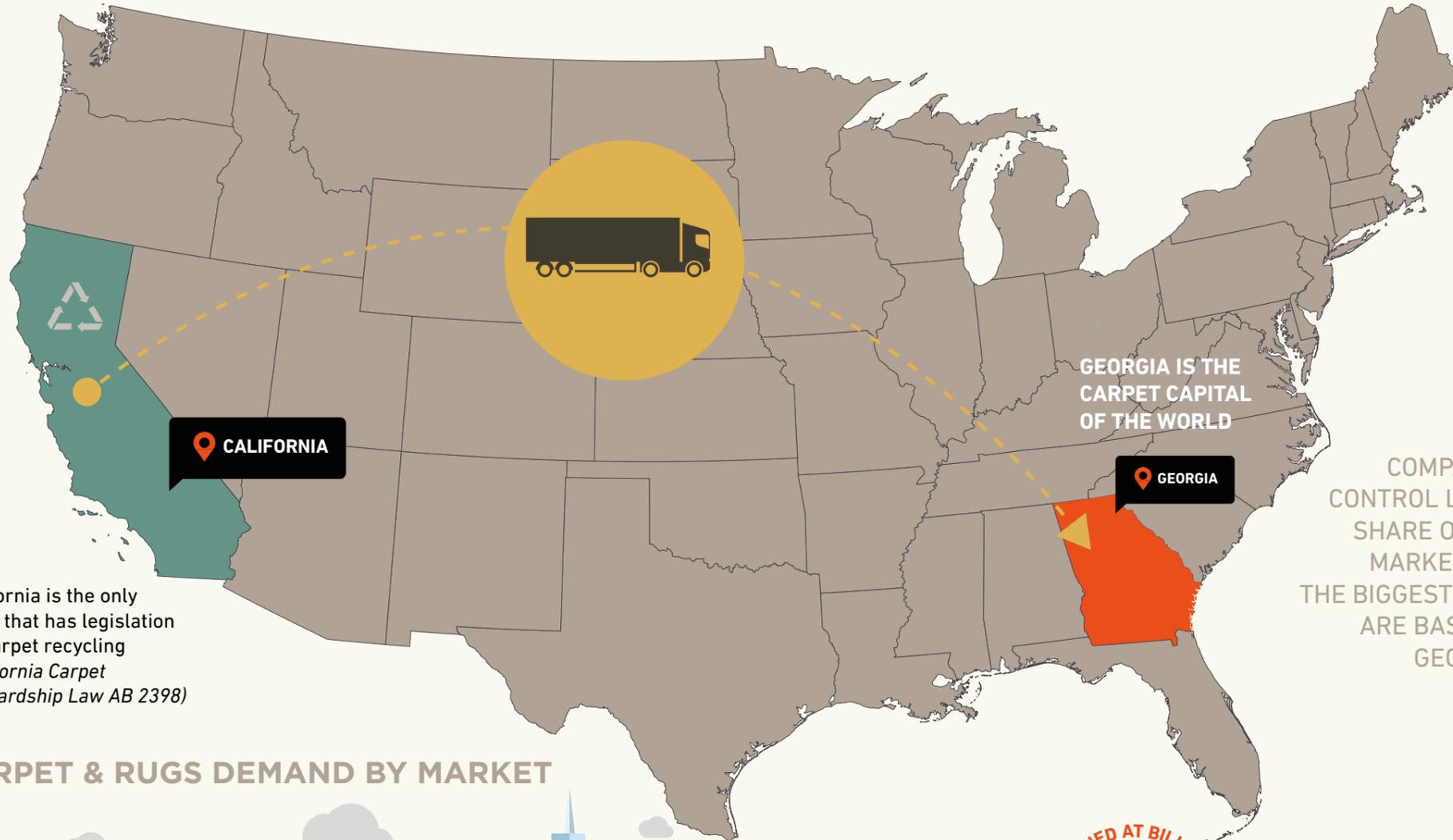
THE UNITED STATES ARE THE SINGLE BIGGEST MARKET FOR CARPETS



6M

MILLIONS OF POUNDS

SHIPS OF CARPET WASTE GOING TO INDIA



CALIFORNIA

GEORGIA IS THE CARPET CAPITAL OF THE WORLD

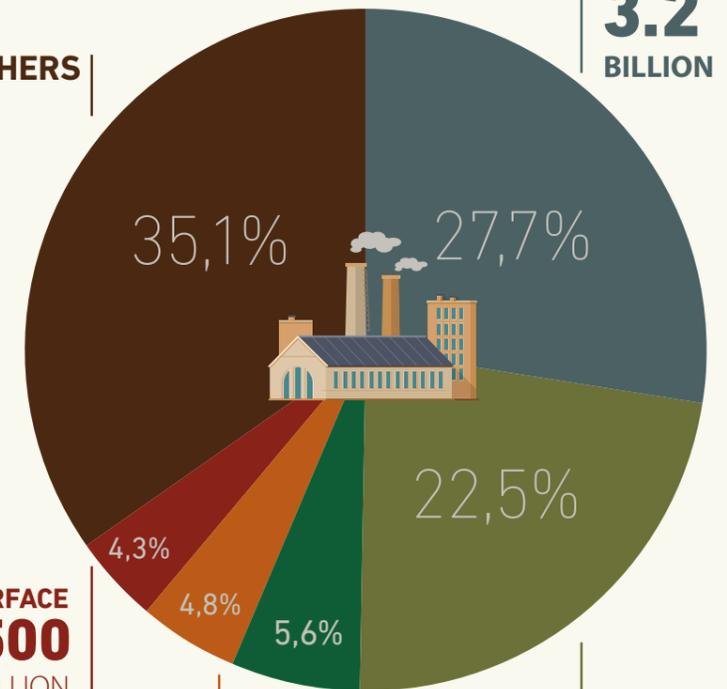
GEORGIA

California is the only state that has legislation on carpet recycling (California Carpet Stewardship Law AB 2398)

OTHERS

SHAW
3.2
BILLION

FEW COMPANIES CONTROL LARGE SHARE OF THE MARKET AND THE BIGGEST ONES ARE BASED IN GEORGIA.



INTERFACE
500
MILLION

TARKETT
550
MILLION

BEAULIEU
650
MILLION

MOHAWK
2.6
BILLION

CARPET & RUGS DEMAND BY MARKET



61.9% RESIDENTIAL BUILDINGS

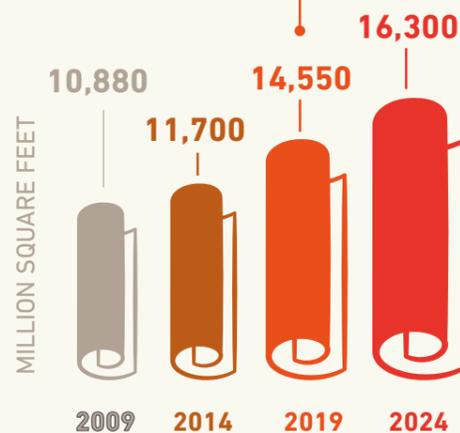
28.8% NON-RESIDENTIAL BUILDINGS

9.3% TRANSPORT



VALUED AT BILLION

\$16



11.7 BILLION SQUARE FEET OF CARPET & RUGS

4.5% ANNUALLY IS PROJECTED GROWTH OF THE U.S. CARPET & RUG MARKET



U.S. market, accounting for 27.7% share equivalent to \$3.2 billion in sales (Freedonia, 2015).

Sustainability

Unfortunately, one place where Shaw is not a leader is sustainability. They claim on their bare-bones sustainability page that recycling old carpet is simple, though they rely on the carpet seller itself, or CARE, to assist with recycling. They also claim to recycle, on average, 100 million lbs. of carpet per year (Shaw, 2016), which is a 9% of the 1.1 billion pounds of fiber that they and their subsidiaries produce a year (Freedonia, 2015). This statistic includes the backing and all parts of carpet, not just face fibers.

The company could do better than 9% but recently it has moved in the opposite direction. Shaw recently shut down the Evergreen Augusta recycling plant in Georgia, which was able to recycle nylon 6 face fiber into nylon 6 fiber. They replaced it with a new recycling plant, Evergreen Ringgold, which recycles nylon 6 as well as nylon 6.6 and PET, but is no longer able to produce nylon 6 face fibers back into new nylon 6 face fibers (Floor Daily, 2015). Therefore, its purpose is down-cycling, a step in the wrong direction. Furthermore, the plant also incinerates carpet waste in what they call “carpet to energy and waste to energy” facilities. This boosts their “recovery” rates, but recovery via burning is not a preferred end of life option.

Mohawk

The second largest carpet company in the U.S. is Mohawk, with 22.5 percent market share, equivalent to \$2.6 billion in sales (Freedonia, 2015). Like Shaw, Mohawk is part of a vast network that markets its products through authorized distributors and independent carpet retailers, as well as mass merchandisers, home center retailers, and even department stores.



Sustainability

According to their sustainability site, “Mohawk is the largest recycler in the flooring industry. We use recycled content in more than 500 of our products and offer our customers accessible ways to recycle their carpet through our ReCover carpet recycling program” (Mohawk, 2016). This is not the full story - they don’t use post-consumer carpets in their products, instead, their chief recycling offering is PET bottles-to-carpets. Mohawk claims it is leading the charge toward a sustainable world by recycling 250 million pounds of bottles, which get made into PET carpets, and by reducing what it calls its “waste to landfill intensity” through a Zero Landfill program (Mohawk, 2016). The unsavory thing about PET—which has taken over the market - —is that this carpet made with PET is mostly incinerated or in rare cases downcycled into other lower value products (see chapter 2). Most of the PET carpet recycled in California is used by Alliance Carpet Cushion to produce carpet cushion but it appears relatively small amounts of these products are being sold at this time. (CM investigation, 2016). Moreover Mohawk, through its membership in CRI, has lobbied against expanding carpet recycling mandates - which would make it easier for consumers to recycle carpets - in states across the country (Maplight, 2014; CM investigation, 2016).

Other Major Players

Due to their vast size and market dominance, any efforts to build a circular economy in the carpet sector have to start with Mohawk and Shaw. Though Shaw and Mohawk dominate the carpet industry, there are other large players who have a large enough market share to make a difference in pushing for a circular economy. Unfortunately, thus far, none of them are doing nearly enough.

Beaulieu

Beaulieu is the third largest producer of carpets and rugs, with 5.6 percent of the mar-

ket with an annual sale of 650 million (Freedonia, 2015). The company also operates seven manufacturing plants in the Southern U.S.

Sustainability

Beaulieu claims to be an 'eco-conscious and family owned company' fully committed to promote the health and well-being of its customers as well as protecting of the environment (Beaulieu, 2013). However, their website provides very little information on the recyclability and design of carpets. Therefore, their lack of transparency together with their direct involvement with CARE and CRI (see discussion of CARE in Chapter 4) raise questions about their true commitment to sustainability and making of 'eco-friendly' carpets.

Tarkett

Tarkett is the fourth largest carpet maker, with 4.8 percent market share with an annual sale of \$550 million (Freedonia, 2015).

Sustainability

Tarkett could be said to be the industry's green leader, and they are the only carpet manufacturer to mention Circular Economy on their sustainability page. They are also a member of the Ellen MacArthur Foundation 'Circular Economy 100' program (Ellen MacArthur, 2015). Tarkett has recently bought Desso, the second biggest company in Europe, and the only carpet company that holds a gold cradle-to cradle (C2C) certificate. Despite owning the current European carpet industry leader in responsible design and recycling, Tarkett, like every other major carpet company, is a member of the dominant industry trade group, the Carpet and Rug Institute, which has lobbied against expanding carpet recycling mandates in several U.S. states.

Interface

Interface is the fifth largest carpet company, accounting for 4.3 percent of the market with an annual sale of \$500 million (Freedonia, 2015). Interface has plants in Georgia and Alabama and maintains a network of showrooms across the U.S.

Sustainability

Interface's sustainability site is filled with lofty commitments - including a claim that the company has been on the path towards 100% recycling since 1994. They state that 44% of their "global raw materials are recycled or bio-based," but it is unclear how much of this consists of recycled carpets (or if it includes down-cycling material as well), and how much consists of other input materials (like PET). It is also unclear how much of their carpet is taken back and recyclable or recycled at the end of life.



Lack of Transparency

One of the reasons that greenwashing is so rife in the carpet industry is the massive lack of transparency. Shaw, Mohawk, and others can make lofty claims and market their products as green, while keeping the wasteful reality a secret. It is impossible to verify how much of the carpets these companies produce is actually made from recycled materials or what share can be recycled back into carpets or other valuable materials. When approached by Changing Markets' investigators for this report, most companies refused to respond to these questions (WI, 2016; CM investigation, 2016). For this reason, consumers know little about both the properties and the end-of-life treatment options for the products they buy. This dilutes consumer power, keeps decision-makers in the dark and enables the big companies to keep the entire industry unsustainable and incredibly wasteful.

Undue Influence and greenwashing

The CARE organization was established to carry out goals and targets documented in the Memorandum of Understanding (MOU) signed on January 8, 2002 by the carpet industry, a number of states, the federal EPA and a small group of non-governmental organizations (CARE, 2016). Though nominally an independent institution, CARE is firmly under the thumb of the biggest players in the carpet industry. Shaw, Mohawk and the dominant trade and lobbying group, the Carpet and Rug Institute (CRI), all have seats on the organization's board of directors. There is not even an attempt to disguise this obvious conflict of interest. CARE is located in the very same building as CRI in the heart of the U.S. carpet industry in Dalton, Georgia. CARE's mission is "to advance market-based solutions that increase landfill diversion and recycling of post-consumer carpet, encourage design for recyclability and meet meaningful goals as approved by the CARE Board of Directors" (CARE, 2016). However, the reality, as uncovered by the investigation conducted by Changing Markets is quite different from its stated goals.

Changing Markets investigation revealed that these same corporations also engage in large lobbying efforts in other U.S. states to kill any legislation that would place responsibility for end of life management of carpet waste on the industry (CM Investigation 2016). The industry feels that complying with a patchwork of different laws across multiple states would be enormously costly and inefficient in terms of trying to keep up with and track and audit a multitude of requirements (CARE's Executive Director, CM Investigation 2016). Thus, due to the cost and effort envisioned by the companies as they consider the impact that producer-responsibility legislation could have on their bottom line, the leaders of the carpet industry have organized themselves, time and again, state by state, to defeat and halt the legislative process in its tracks.

The Power of Big Carpet

Shaw, Mohawk and other carpet companies, along with CARE and CRI, talk a big game about bringing sustainability to the carpet industry by establishing a legitimate market for recycling. Behind the scenes, though, those same players have been steadily working to crush any effort that would establish producer responsibility le-

gislation elsewhere in the country, while, at the same time, ensuring that California's stewardship system (see chapter 4) is as ineffective as possible. They can do this because of the mass concentration of power, particularly in the two giants.

According to Heidi Sanborn of the California Product Stewardship Council, "Shaw and Mohawk are so big that if they decide to turn on you—if they won't buy from you, if they won't work with you—you're in trouble. They have so much influence in CARE and the industry, that [even the] other carpet mills seem to be too afraid of them to break ranks and leave CARE to start a separate stewardship program. That's the problem: when there are so few players in the field and the free market starts to fall apart because everyone else is too afraid" (CM Investigation, 2016).

One way that they assert power is through the weak "Voluntary Stewardship Program." In order to be part of the voluntary program and receive the \$0.02 per pound subsidy for carpet, all recyclers must sign a CARE document stating that they will not support the creation of any EPR legislation, anywhere at any time (CM investigation, 2016).

In essence, if a collection or sorting company signs on to receive money through the voluntary program, and is seen supporting EPR legislation in any state within 18 months of receiving its last payment, that company must return all the money that was paid to it throughout the entirety of the program. CARE's condition for participation in the voluntary stewardship program keep recyclers financially hanging by their fingernails through so-called voluntary payments for recycled carpet content, and meanwhile make it impossible for those recyclers to even contemplate supporting state-mandated legislation. It is a model that perpetuates the status quo - and ensures that Shaw and Mohawk maintain their stranglehold over the industry. It also stifles innovation in providing more sustainable carpets.

This is just the tip of the iceberg, as the carpet industry is also a major lobbyist. Ac-

Language from the agreement to participate in the Voluntary Product Stewardship program

"Company understands that this Program is part of the industry's government relations activities and that the purpose of this Program is to promote and support voluntary market-driven solutions for the diversion of Post-Consumer Carpet, and oppose efforts to enact Extended Producer Responsibility or EPR legislation or regulations. Company agrees that a condition for payment is supporting the purpose of this Program rather than supporting EPR-type legislation or regulation during the term of the Program and for eighteen months after receiving the last payment hereunder. Company specifically agrees and undertakes to refund any payments received under the Program for violation of the preceding obligation." (emphasis added; CARE, 2014)



"We've been fighting EPR legislation...in fact AB 2398 is the only carpet specific EPR bill that has passed in the country. There are other states that have tried to pass that type of legislation, and we have successfully managed to educate legislators. The industry has done a lot to help stop those efforts. They have the voluntary product stewardship program with CARE, and there is a lot of education going on with legislators that are interested in promoting this type of legislation."

Jenn Mendez, the Vice President of Government Relations at CRI, as quoted in a podcast produced on FloodDaily.net 2016

cording to Maplight, at the federal level, CRI has spent \$1.35 million lobbying U.S. Congress on behalf of the carpet industry between 2008 and 2016. In addition, the two biggest companies Shaw and Mohawk, have spent \$900,000, and Mohawk has spent \$330,000 respectively (Maplight, 2014). It is at the state level that the double standard of the carpet industry is most apparent. Since 2010, the carpet industry has successfully derailed EPR legislation in Connecticut, Minnesota, Illinois and Washington State (Floor Daily, 2013). In fact, one of the top lobbyists at CRI, Jenn Mendez, Vice President of Government Relations, has stated in public that the carpet industry is firmly against expanding recycling mandates.

Success for the carpet industry means getting EPR legislation in other U.S. States stopped. They prefer to maintain voluntary programs and their low payouts to recyclers that obviously cannot and do not work. The numbers speak for themselves- a 5% national recycling rate and only 1% is closed loop recycling. Claims of sustainability by these manufacturers are - simply put - a form of greenwashing.



Chapter 4

How CARE undermined California's recycling scheme

In 2010 California adopted a landmark piece of legislation that would, for the first time, put responsibility for recycling on the carpet industry, which would have to progressively increase diversion of carpets from landfills. CARE took this responsibility on board and developed a stewardship program, while Californian consumers were charged a rising fee per square yard of carpet they purchased. However, a close inspection of the CARE industry stewardship program reveals their failure to achieve meaningful results. In fact, despite CARE's growing budget, carpet recycling levels in California have been going down and there has been no significant improvement in carpet design.

Carpet industry stewardship in California

There is a reason that so much carpet waste - four billion pounds - is generated across the country: a lack of strong, enforceable recycling mandates and laws for carpets in nearly every state. A number of states have "voluntary stewardship programs" in which the carpet industry pays recyclers tiny sums of money for the carpet they collect, not nearly enough to sustain the industry. Hence, most old carpet goes exactly where it shouldn't - into waste bins. Even in California, which has the only law mandating the recycling of post-consumer carpet material, the industry is failing to make meaningful strides in recycling, recyclability, or recycled content. In the past five years of implementation they have only met their own target once.

In 2010, California state lawmakers passed AB 2398 (J. Perez), the Carpet Stewardship Act, a move heralded by environmentalists and sustainability advocates across the country. In fact, many expected other states would follow this lead, as often happens. When California leads, other states often follow.

AB 2398 - A Summary of the Provisions of the Law

Purpose: increase the amount of postconsumer carpet that is diverted from landfills and managed consistent with the state's hierarchy for waste management

Key roles: Manufacturers (either individually or through their stewardship organization) design their own stewardship program: they prepare and implement a plan. CalRecycle approves plans, checks progress, and provides oversight and enforcement.

Stewardship Plans to achieve increased recyclability, recycling and diversion; incentivize the market growth of products made from postconsumer carpet; consistency with the state's solid waste management hierarchy, funding that is sufficient to carry out the plan, education and outreach efforts, and a process for independent audits.

Financing: Two funding phases. An initial period, July 1, 2011 to January 1, 2013, where manufacturers assessed five cents (\$0.05) per square yard that could only be used for early action measures. After January 1, 2013, manufacturers added an assessment to the purchase price of carpet that is approved by CalRecycle sufficient to meet, but not exceed, the anticipated cost of carrying out the plan.

Enforcement and Compliance: Civil penalties for non-compliance. Manufacturers must demonstrate continuous and meaningful improvement in recycling rates and other goals included in an organization's plan.

Reporting: Annual reports will be posted at the CalRecycle website with information on amounts of carpet sold, postconsumer carpet recycled, ultimate disposition of collected carpets, program costs, an evaluation of performance.

CALIFORNIA CARPET STEWARDSHIP PROGRAM (2011-2016)



CALIFORNIANS HAVE TO PAY \$0.20 PER SQUARE YARD OF CARPET.



THIS MONEY FINANCES CALIFORNIAN RECYCLING SCHEME MANAGED BY CARE.

\$10M

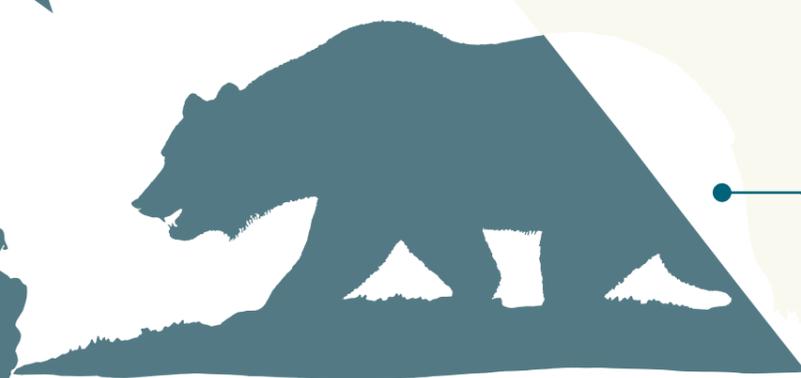
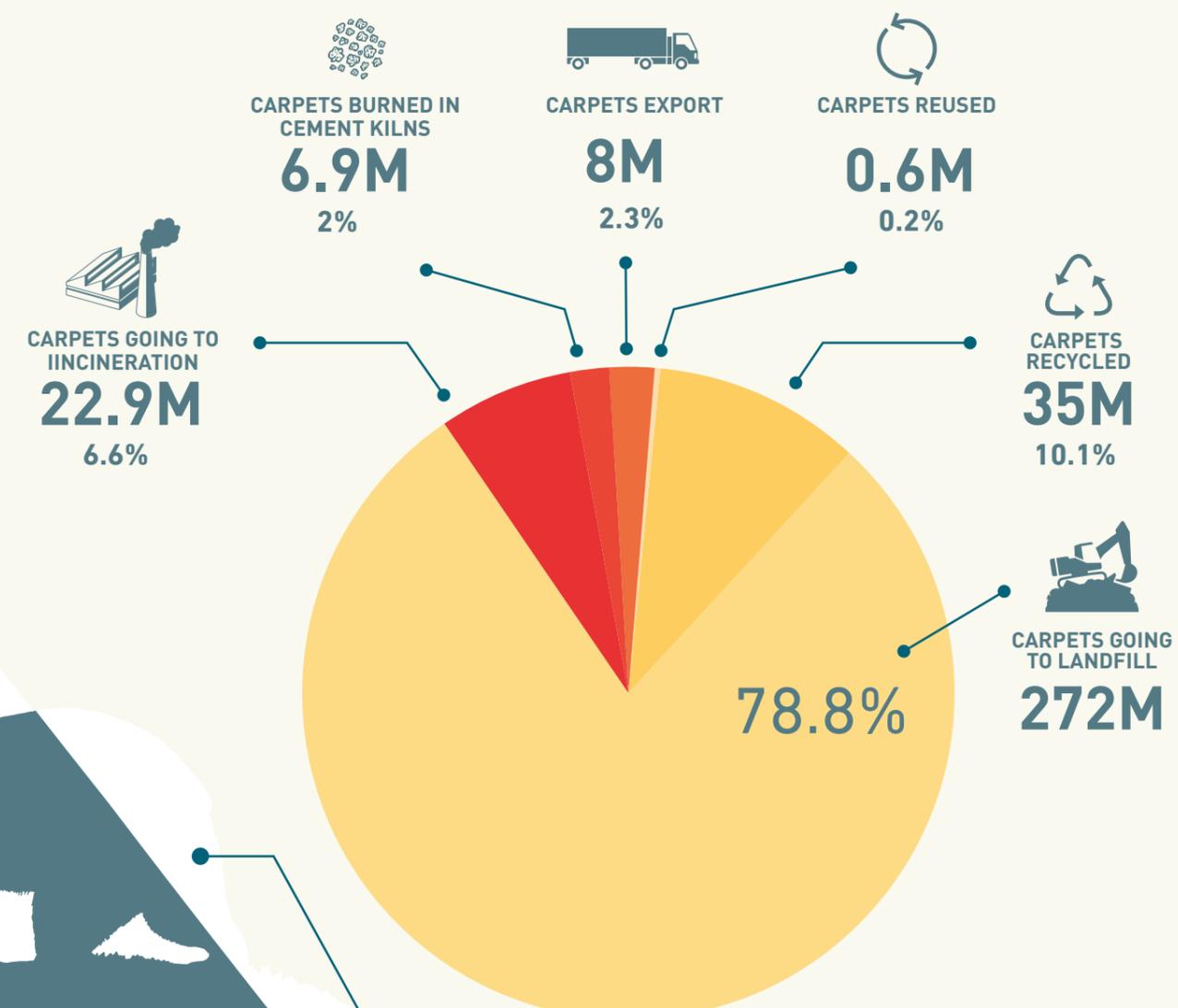
In 2015, CARE had a 10 million budget to increase carpet recycling



CARPET AMERICA RECOVERY EFFORT



WHAT HAPPENED TO POST CONSUMER CARPETS IN 2015? (MILLION OF POUNDS)



CALIFORNIA



Californian consumers are charged an “assessment fee” per square yard of carpet purchased in order to provide funding for the program that is implemented by CARE. It started at \$0.05 per square yard, then rose to \$0.10, then \$0.20 in 2016, and it will be \$0.25 in 2017 (CalRecycle, 2015). With 97 million square yards of carpet sold in California last year, CARE’s 2015 annual budget totalled about \$10 million (CARE CCSP, 2015). Currently, CARE uses funds from the carpet assessment to:

- Support and incentivize the development and markets for products made from recycled carpet.
- Underwrite the collection and transport of carpet to/from drop-off sites.
- Inform and educate stakeholders about the importance, opportunities and challenges of keeping carpet out of landfill.

They do this by providing incentives and grants. For example, in 2016, CARE awarded \$2 million in capital investment grants, most of which is going to California-based companies to establish or expand existing recycling efforts: \$250,000 for product testing; \$500,000 for product procurement; \$400,000 for collectors and sorters;



\$600,000 for marketing, education and outreach; and the rest for accounting, legal and administrative costs (CARE CCSP, 2015).

In terms of incentives, CARE currently provides recyclers in California \$0.10 per pound of nylon carpet they collect and \$0.25 per pound of polyethylene, or PET, which is more difficult and costly to recycle. Collectors additionally receive \$0.17 per pound of calcium carbonate that they’re able to separate from the carpet.

In theory, this could have worked. But it didn’t. Recycling repeatedly failed to achieve stated goals - for 2015 this goal was 15%. With \$10 million spent on the program, the recycling rate went down instead of going up - 10.1% was recycled (35 million pounds), 78.8% (272 million pounds) went to landfill, 0.2% was reused (602,000 pounds), 2% (6.9 million pounds) went to cement kilns, 6.6% (22.9 million pounds) was treated in waste-to-energy, and 2.3% (8 million pounds) was exported (CARE CCSP, 2015).

This failure of recycling was due to some fundamental flaws in the law and in the way the industry has implemented it. In fact, in 2015, CalRecycle found that after failing to show any meaningful improvement in management of the program in 2013 and 2014 CARE was out of compliance with the California law on four counts (Calrecycle, 2015):

- 1. The recycled output of carpets, rather than increasing, actually declined in 2015** by 8 million pounds, a drop from 12 percent to 10 percent recycled content. Out of 345 million pounds of post-consumer carpet discarded in California, 103 million pounds was collected but only 35 million pounds, or 10 percent, was actually recycled; meanwhile, 22 million pounds ended up as processing waste sent back to landfill, 7 million pounds went to cement kiln, and 23 million pounds was burned as Waste-to-Energy, or WTE.
- 2. CARE did not do enough to establish convenient collection sites**, as consumer access to recycling services is inadequate across all California counties, with many of the state’s counties still lacking any carpet collection facilities altogether. CARE currently offers recycling services in 22 of California’s 58 counties, and maintains a goal to have at least one site in all counties by 2017. But even in counties where carpet recycling exists, it is too difficult and inconvenient to access for large populations, like in Los Angeles and San Diego counties where there are a total of four collection sites.
- 3. CARE’s marketing, education and outreach efforts failed to noticeably increase carpet recycling**, as key audiences (installers, retailers, consumers) remain unaware of recycling opportunities, what CARE funds are used for, and what the Carpet Stewardship Program is about.
- 4. CARE was too slow to respond to market changes**, such as the increased use of PET in carpets, in order to make incentive adjustments high enough that they drove markets toward increased recycled output. In essence, the money the program offered is too little to have effective impact on the industry.



Why Implementation of AB 2398 has Failed

Flaws in the Law

At the outset, the carpet industry worked to ensure that California's law would not only fail to spread nationally, but would fail in California itself. They began even before the law was passed by supporting a law that didn't cover all the costs of a full recovery and recycling program. The industry made sure that the law stuck consumers with the cost of the program but made sure the fees would not be high enough to make carpeting less cost competitive with other flooring products. But there wasn't enough funding for recyclers (California Product Stewardship Council, CM Investigation 2016).

The industry also worked to ensure that they would not be financially responsible for the costs of the program. Funding based on fees to consumers failed to place any financial burden or signals on manufactures. The bill completely missed the opportunity to provide manufacturers with financial incentives to design in a way that reduces end of life management costs by choosing more recyclable materials and design for recycling, to use recycled content, or to promote greater reuse. A true producer responsibility program would have created fee per yard or square foot, paid by producers, structured in a way that mimics the end of life hierarchy- the lowest fees would be paid for carpet that gets reused, closed loop recycled carpet would be next lowest, then carpet sent to secondary markets (e.g. downcycled), followed by burned or incinerated, and then landfilled carpet. To incentivize recycled content, the law would have manufacturers pay a fee per square yard of carpet sold that is higher for carpets made of virgin materials and lower for recycled content carpets, higher for recyclable materials and lower for less or non-recyclable materials, higher for non-re-usable and lower for re-usable carpets.

Instead, the law was structured so that the carpet industry determines how it will spend an ever increasing pot of consumer-generated funds, giving them way too much power and no skin in the game. Furthermore, the consumer pays a flat fee on all carpet, whether it is recyclable or not, whether it does or doesn't contain recycled content, and regardless of whether it is reused. There is no price signal to the consumer to choose sustainable carpeting options and the system fails to create increased consumer demand and market share for recycled, recyclable, and reused carpet.

Flaws in the Stewardship Program

A major roadblock standing in the way of proper implementation of AB 2398 was with the organization tasked with administering the program is CARE, which was set up in 2000 by carpet manufacturers themselves, supposedly as a way for the industry to take charge of—and responsibility for—the growing movement to reclaim



and recycle carpets. CARE chose to focus the incentives of the Stewardship Plan to support market based solutions to grow and expand solutions. Incentives are paid to recyclers/ reprocessors of Type 1 materials³ to increase quantities of materials processed and grants are provided to improve technologies for recycling. The payout or bonus for reprocessors is based on quantity reprocessed, not based on an increase in the quantity reprocessed - a missed opportunity to incentivize recyclers to increase the quantity being recycled.

CARE also provides a Tier 2 Non-Nylon incentive to increase processes, products and market outlets for non-nylon (e.g. non-recyclable) post consumer carpets. The payout for processing into secondary markets grew from \$1.2 million in 2014 to \$2.8 million in 2015. Since CARE's 2015 report showed a decreasing trend in the use of nylon - from 42% to 25% of collected fibers between 2011-2014 (CARE CCSP, 2015) - CARE's program is helping to disincentivize the use of more recyclable nylon. A better approach would be to incentivize manufacturers to use more recyclable and reusable materials.

Large swaths of the state remain without access to recycling facilities, despite an assessment fee that has been applied to all carpet purchasers. Rural areas are poorly served. This means that few consumers who pay the fee receive the benefit or service it is intended to provide.

Not only that, but the bill was crafted specifically to bring more recycling jobs to California and, in many cases, it has done just the opposite. At least a half dozen recycling companies have gone under since the law was established, due in part to the way CARE chose to distribute its subsidies and incentives for certain recycling projects and activities—effectively picking winners and losers in the market (CM Investigation, 2016). In fact, the little carpet that is recycled is not even recycled in California - the majority is sent all the way across the country to Georgia, the home of most the big players in the carpet industry. This doesn't make any sense from a sustainability standpoint as recycling should mostly happen locally contributing to local jobs and reducing the costs and environmental impacts of transport.

The current CARE California Carpet Stewardship Plan 2011-2016 expires on December 31, 2016. In October, CARE has submitted to CalRecycle a new Carpet Stewardship Plan for the years 2017-2021. However, it appears that the revised Plan for 2017-2021 continues along similar lines to the previous iteration (2011-2016). The opportunity to revise the flat rate payment structure has not been taken, and the proportion of end of life costs that could be covered by the fee is still very low. Genuine incentives for producers to design for recyclability and incorporate recycled content are absent, and as such, product innovation will not be encouraged to the extent that it could be under a well-designed form of extended producer responsibility.

When responding to the failure of California's law to successfully recover and recycle post-consumer carpets, industry proponents point the finger at outside causes - such as low oil prices, or unfavorable market conditions (CARE CCSP, 2015). But in reality CARE is largely responsible with its badly designed and implemented plan that fails to take into account concerns of other actors and mostly benefits the big carpet manufacturers.

3. Type 1 materials are described as 'carpet fiber and backing to be recycled back into carpet, engineered resins, material for carpet cushion, and other consumer products'.



Chapter 4 Conclusion and recommendations

Economic and technical challenges in moving the carpet industry towards the circular economy are typical of those that every industry is facing - inadequate funding for collection and transportation, technological challenges in recycling certain materials, contamination of the waste stream, lack of markets for recycled materials, etc. But these challenges could be overcome with industry leadership. The real barriers in moving the U.S. carpet industry in a more sustainable direction are complacency, greenwashing, and the lobbying efforts of carpet manufacturers to maintain the status quo. While nearly every carpet manufacturer presents itself as being a green leader, what takes place behind the scenes is quite different. The investigation conducted for this report found that the major leaders in the industry worked in tandem to undermine the success of the California Carpet Stewardship Act (AB 2398), and successfully prevented similar producer responsibility or product stewardship schemes from passing in any other state. This kept recycling rates low and resulted in billions of pounds of carpets ending up in landfills and being incinerated across the country.

The carpet sector must take steps to move towards a closed loop, circular economy. Instead of being a barrier to change, Shaw, Mohawk, the other major carpet producers, along with CARE and CRI need to address the fundamental changes needed to move the entire industry towards a circular economy. Technological solutions exist, as shown by the current albeit small percentage of carpet recycled back into carpet, but collection and recycling infrastructure needs to be scaled up urgently in parallel with improving product design, i.e. ensuring that carpets that are put on the market from now on can actually be recycled. The transition won't happen overnight, but it has to start now or the carpet industry will lock itself into another two decades of unsustainable products.

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

Recommendations for policy-makers

These are specific recommendations for improving the Californian Law AB 3928, but could also apply to upcoming regulations in other states.

CalRecycle should:

Reject the 2017-2021 CARE Stewardship Program. CalRecycle should reject the CARE 2017 plan because it is fundamentally flawed.

Reject CARE as the stewardship organization. CARE has been operating since 2002 nationally, and has had the last five years to develop a program to comply with the California law. To date, the efforts in California have yielded a mere 2% increase in

recycling. The industry giants have not demonstrated competence and have exerted too much influence over recyclers, smaller producers, and those who want to promote sustainability. The stewardship program should be administered by a neutral body with adequate oversight authority.

The Legislature should:

Make the polluter pay - Carpet manufacturers should finance the program. The bill should be amended to become a true EPR model in which producers pay for the take-back program and eliminate the visible fee to consumers. CalRecycle should ask the Governor and Legislature to amend the bill. The current visible fee to consumers provides no economic incentive for changing carpet design and increasing recycling rates. The industry that profits from the sale of carpet should not leave the environmental costs to the consumer and taxpayer to pick up. These costs should be included in the cost of production.

Change the fee structure and create a level playing field - Producers should pay differentiated fees, depending on the end-of-life treatment of carpets. Currently, the cost to recycle carpet is higher than creating non-recyclable carpet from virgin materials. This is because externalities, such as the environmental cost of pollution from burning valuable resources in incinerators, are not included in the price and because consumers are paying a flat fee for non-recycled and recycled carpet.

Remove conflicts of interest. Policymakers must ensure that recycling administrators do not have such blatant conflict of interests, as is currently the case with CARE. They should oversee the implementation of such schemes so that they can operate at the highest level and make it compulsory that Extended Producer Responsibility (EPR) schemes are administered by a neutral body with proper oversight.

Implement take-back obligations. Closely linked to EPR regulations, take-back obligations ensure a separate collection of carpets by enabling consumers to bring them back, or have them removed. One way to do this would be to offer a discount for the new carpets, when a customer brings in their old carpet.

Limit landfilling of carpet. Introduce limits on the landfilling of carpets. In the U.S. there is not an overarching strategy to minimize the landfilling of carpets. However, leaders like California prove that this is important to consumers and such a policy would drive the recycling and reuse of carpet. The European Union (EU) is currently discussing a target to limit landfilling to 10% of all waste collected by 2030. This is a good policy model.

Ban incineration of carpet. EPR programs should ban incineration of carpets in incinerators and cement kilns. Incineration wastes valuable materials, creates pollution that harms communities and the climate, and creates contaminated ash that is commonly landfilled. It is a toxic “quick fix” that disincentivizes reuse and recycling.

Fund local recyclers. Grants, loans, and other incentives to increase recycling opportunities should focus on increasing local (California) recycling. In addition, manufacturers should not be allowed to export carpet waste overseas.



Retailers should be included. Require that retailers who remove old carpet take it for recycling, as in the 2013 mattress take back bill (SB 254- Hancock).

Recommendations for carpet producers

Carpet producers need to focus on designing carpets with reuse and recyclability in mind. This means that they should only use recyclable materials and design for the simple separation of backing from fibers. Carpets should also be designed without harmful components. This includes elimination of harmful components currently used in carpets, such as PVC, phthalates, fluorinated stain resistant chemical compounds, flame retardants containing brominated compounds, and similarly harmful chemicals.

Increase recycling and reuse, decrease incineration and landfill. In the last year, in particular, the U.S. carpet industry moved towards an increase in incineration and landfill for the California waste stream, while recycling of carpet decreased. The industry needs to ensure a progressive and timely transition to increased recycling and reuse and a decrease in incineration and landfill.

Carpet producers should provide adequate and easy collection. Carpet manufacturers should provide adequate and convenient take back locations for ALL consumers and inform them on where to drop off used carpets. They should work with municipalities and collectors to ensure adequate collection facilities that prevent contamination with dirt, dust and rain, making recycling difficult and expensive. In addition, they could set up new business models to lease the carpet instead of selling them, offering services instead of products and keeping in control of collection of post consumer carpet.

Increase transparency via back-stamping of carpets and releasing accurate information about their products. Many of the formulations used to make face fibers are proprietary and this can make it difficult for reclamation specialists to determine the exact composition of collected materials. Back-stamping is a new procedure in the industry in which manufacturers put a “stamp” on the back of the carpets that lets recyclers know exactly what materials it contains (PET, nylon, etc). This is key for transparency and recyclability. Carpet companies should also release accurate information about the quantities of recycled and recyclable carpets they sell and the role of industry in various recycling schemes. This includes informing consumers about which carpets are designed to be recycled easily, which are made from recycled materials, and which are re-usable.

Assume responsibility. Carpet manufacturers should stop lobbying against policies that require them to take responsibility for managing carpet waste. Instead, they should work with authorities to increase recycling rates and assume financial responsibility for take-back of carpet.

Recommendations for carpet retailers

Accountability in the supply chain. Retailers need to demand that producers provide clear and accurate information about recycled content, recyclability, and chemical content of carpet.

Employee training. Retailers should train their staff to present accurate information to customers about the program and how it works (depending on the state).

Demand sustainability and promote reuse and recycling. Progressive retailers should take the lead on this issue and promote the sale of carpets that are less toxic, contain recycled content, and can be reused and recycled. Retailers can provide customers with information on the maintenance, repair and replacement of carpets.

Consumers also have a role to play and should demand transparency from manufacturers and retailers regarding the recycled content and the recyclability of the carpets they buy. This includes both individuals and commercial buildings that account for a large share of the carpet market. Carpet manufacturers and policy-makers have the biggest role to play, but everyone in the supply chain can help the industry in its transition towards the truly circular economy.

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