Sustainability in the Carpet Industry: To what extent is Extended Producer Responsibility (EPR) a successful piece of legislation as a sustainability initiative?

This case study will examine the introduction of Extended Producer Responsibility; a tax scheme based on modulated fees; which puts the responsibility of what happens to a product at the end of its life back onto the manufacturer. Focussing on the carpet industry, this study analyses EPR currently in a planning phase for the UK. Exploring the changes already happening and hypothesises those that are soon to come to conclude the successful effects of the legislation being introduced in the UK as a government managed sustainability initiative. Specific examples around change in product design from British company Brintons Carpets Ltd are referenced and insights given from interviews with Greg Harrison, Technical Manager at Brintons and Adnan Zeb-Khan from Carpet Recycling UK. Theories on the use of recycled materials versus bio-based materials are taken from Cradle to Cradle, Remaking the Way we Make Things by William McDonough and Michael Braungart. Traditional Axminster carpet manufactures in the UK have seen little change since the 1950's and producers now find themselves on the cusp of a shakeup, being pushed for change in order to stay relevant as well as in line with incoming government laws.

EPR in the carpet industry has thus far been dominated largely by US manufacturers adopting voluntary EPR schemes as a means to "enhance competitive advantage" (Fishbein, 2000, p.26). A mandatory government led scheme hopes to result in making "the overall system of collection and recycling more efficient and economical" (Fishbein, 2000, p.35). The problem with voluntary schemes is they are unregulated. Companies which were once hailed as leaders of environmental policy and now finding themselves under criticism as Europe implements new Greenwashing laws and further environmental regulations. "In 2015 the European Commission started working on regulations, these are now being brought in at high speed and it's a lot more than Carbon Footprints" (Tan, 2023). Environmental laws across Europe and the UK are being tightened and extended, forcing manufactures to rethink processes and products in a way that has not been seen before.

Whilst American companies have used the scheme as a marketing tool this study will review its use as a sustainability initiative. An important aspect of EPR is its ability to put the responsibility of disposal of product back onto the country of origin in order to counter the worry that developed countries will "continue to exert power over developing countries" (Kilbert, 2004, p. 509). Concluding that government led EPR schemes will help to ensure that "developed country recycling and material recovery is not contributing to environmental degradation in the developing world" (Kilbert, 2004, p. 523). Interviews will be used to give qualitative data around the topic with industry

experts as “well informed interviewees can provide important insights into such affairs or actions” these will be corroborated with “data information from other sources” (Yin, 2014, p.113).

Extended Producer Responsibility (EPR) is currently in a period of phased implementation across the UK. Since 2006 all vehicles in the UK had to undergo some sort of recovery when reaching the end of their life encouraging that “producers design vehicles with recycling in mind” (Bhamra, 2007, p.31). The scheme puts responsibility and cost of an end of life process back onto the producer. There are ongoing government plans to introduce EPR legislation across all categories with the most recent having been implemented for packing in 2023 making it law for all companies responsible for packaging to report their data during 2023 with fees being charged from 2024. As a legislation it aims to reduce “the environmental burden by imposing financial and physical responsibility on manufactures to recycle their products” (Choi, 2017, p.1) This shift means that manufactures are currently having to make plans around the disposal route of their products or be prepared to face paying additional taxes on their products.

In order to measure the success of the Extended Producer Responsibility (EPR) legislation as a sustainability initiative it is first necessary to define what is meant by the term ‘sustainability’ in this case. Prior to 1987 the term ‘sustainable’ in business largely meant that a company had steady growth in earnings. (Werbach,2009, p.8) Only after Norwegian president Gro Harlem Brundtland used it in what has since become termed ‘the Brundtland report’ did the word sustainability come to be used in an environmental context. Brundtland “defined *sustainable development* as ‘meeting the needs of the present without compromising the ability of future generations to meet their own needs’” (Werbach,2009, p.8). Recent over use of the word has somewhat diluted it’s meaning and convoluted its definition, the term sustainability has become a greenwashing tool for companies looking to present themselves to be green rather than focusing on the improvement of their practises. In this case we will refer to sustainability in its definition formed by Brundtland and therefore a sustainable initiative as; something which does not have lasting damage to future generations or environments.

In 2020 the UK government “reviewed and assessed the suitability of carpets and underlays, as a sub-category of bulky waste…with the majority of environmental hotspots situated at End-of-Life (EoL), it was decided that an EPR would be an effective instrument to encourage better EoL management by transferring the full-net cost to producers” (Judge, 2021). For reasons that this study will explore, carpet is a particularly challenging area in regards to end of life routes, which manufacturers are beginning to think about, some for the first time, in the light of incoming EPR legislations.

In their 2021 EPR risk assessment for the industry, Oakdene Hollins estimated that the cost implications of an EPR scheme to carpet manufactures in the UK to be £0.20 per square metre, as broken down in the chart shown in figure one. Considering that the main disposal route for broadloom carpets currently is landfill or incineration, manufacturers are considering how product might be designed differently with a more sustainable disposal route in mind.

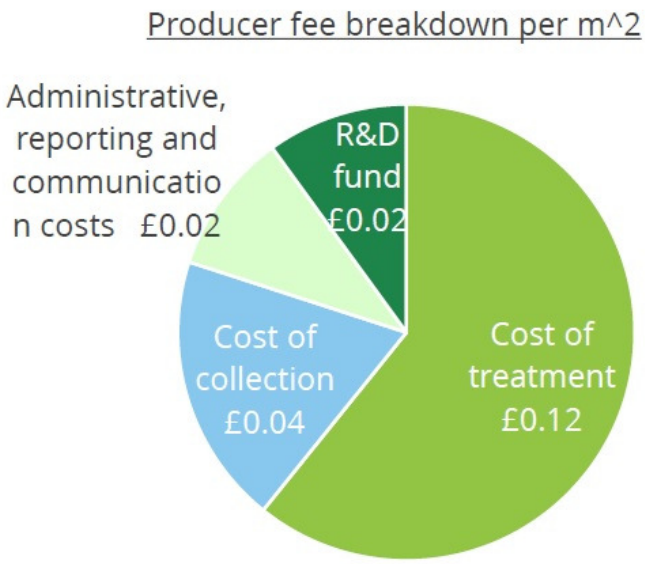

Figure One

Estimated EPR cost implication to carpet manufacturer

The UK legislations being implemented around sustainability are being closely modelled on the European Commissions' introductions. Companies in the UK are yet to know exactly what specifics the UK legislation will bring but it seems clear that product end of life will be a key focal point, meaning traditional Axminster carpet companies manufacturing in the UK could be set to make big changes. One such company is Brintons Carpets Ltd., established in 1783, Brintons pioneered the blend of fibres which is now widely used in Axminster carpets in the 1950's (Brintons, 2024). Using a blend of 80% wool and 20% nylon has become an industry standard. Once a fibre has been blended in this way the materials are, thus far, impossible to separate again. Therefore the more sustainable end of life routes available for this type of carpet are limited to reuse or downgraded recycling. "Most recycling is actually *downcycling*; it reduces the quality of the material over time." (McDonough, 2002, p.56). The main disposal route for wool blended carpets is incineration or landfill but it is also possible to return the fibre to the ground in the form of land feed, "a study was conducted by the research team of WRONZ to investigate the effect of disposal of used woollen carpet on dry matter yield of grasslands after using it as landfill. The growth of the grass was monitored after a period of 10 weeks, and it was found there was a significant improvement in the elemental composition of the soil of that landfill area. The growth rate of grass was also found to be significantly high" (Mishra, 2018, p.326). The idea that the wool is put back into the ground to recover the earth is supported by the idea that "nature operates according to a system of nutrients and metabolisms in which there is no such thing as waste" (McDonough, 2002, p.92). There is an argument that biodegradable products can become '*biological cycles'* and return nutrients back to the Earth in order to close the loop and "continually circulate as valuable nutrients for industry" (McDonough, 2002, p.104).

Due to the challenges around the re-separation of blended fibres many companies in the UK have been preparing for incoming legislations by experimenting with the removal of nylon from woollen carpets. Brintons have recently launched their new range trademarked Purely Naturals by Brintons (figure two). It is a woven carpet range made with 100% undyed wool pile yarn, cotton and jute backing and a natural latex taken from a rubber tree. This is the first externally verified 100% bio-based carpet (Brintons, 2024). In contrast, the sustainability messaging in the market place for the last decade has been flooded with the reuse of plastic materials such as fishing nets.

Figure Two

Purely Naturals by Brintons

Sedna carpets, as shown in the advertisement in figure three, are produced by Associated Weavers, a UK carpet brand since 1964 (Invictus, 2024). Sedna carpet range is produced using Econyl, a trademarked regenerated nylon yarn which is fully circular in that the products can be reclaimed and turned back into Econyl yarn. (Econyl, 2024) Although a fully circular product certainly goes a long way towards a suitable environmental solution and complying with EPR, recycled yarn it is not without its critics. In their book Cradle to Cradle, McDonough and Braungart explore that problems arise from creating new product from things which were never designed with further use in mind and "wrestling them into this form has required as much energy- and generated as much waste- as producing a new carpet" (McDonough, 2002, p.4). They further discuss that the shortening of the fibres in the regeneration processes can create health issues as it releases an increased amount of particles into the air (McDonough, 2002, p.58).

Figure Three

Advertisement for carpet made from recycled fishing nets

However current EPR plans seem to be lacking in the differentiation of product targeting synthetic, bio-based and blended carpets all with the same legislations, this is arguably the right way to go if we "consider that the same manufacturer could be producing different products such as carpet tile, broadloom and artificial garden lawn. For the same manufacture to have to comply with different schemes for each different product is too difficult and too confusing (Zeb-Khan, 2024)." Taxing bio-based product at the same rate as synthetic could be fair "because we still have to treat it at the end of its life. The tax is to pay for the treatment process. Having a bio-based product is only part of the story, the question is where does it go?" (Zeb-Khan, 2024)

With the legislation not due to be put into effect in the UK until 2025 it's possible to gain some forth sight into what is to come by observing how EPR has effected carpet manufactures in France. "France's EPR scheme has been in place for more than a decade" (Beard, 2023). The French government implemented an EPR for all construction and demolition products (including flooring) from the 1st January 2022. The law decrees that all products being installed permanently into a building will be taken back free of charge at the end of its life (Valobat, 2024). France has split its EPR for carpets into sectors with only commercial carpet sitting under construction and demolition and carpet for a residential setting being categorised under Interiors. There may be "clearer justification" for a similar segregation of materials in the UK due to manufactures of synthetic carpet tiles having "been using recycled materials in their commercial products for years and years" (Zeb-Khan, 2024). However separating product into sectors is not necessarily the most important aspect, "it is not where it is sold but the waste sources which need to be considered as to how this is managed" (Harrison, 2024). In order for EPR to be a success there needs to be clear "infrastructure (for disposal) regardless of if it is commercial or residential" (Harrison, 2024).

Clearly there remains a long way to go before UK carpet manufactures can achieve what EPR is asking for; a sustainable end of life option. As to its success or failure it may be too early to draw a clear conclusion but managed correctly the EPR scheme should ultimately finance its own success. Whilst historically environmental policy, in the general sense, "can claim some success considering the state of the environment in the 1980's…contemporary environmental policy is characterised by a shift from governments to governance, meaning that institutions and actors outside the state become more important" (Bleischwitz, 2007, p.3). Carpet Recycling UK are working hard to ensure that the EPR scheme in the UK is industry led under the belief that the additional tax gathered should "go back to the industry that invested though the scheme so that they can invest it back in to research and improvements" (Zeb-Khan, 2024). This needs to be balanced with the risk that the scheme could fail as a sustainability initiative if product groups are not targeted in synchronisation, the estimated £0.20 per sqm cost (figure one), will inevitably be passed from manufacture to

consumer and if all flooring is not targeted by a modulated fee scheme in unison there is a risk that consumers could switch from carpet purchases to other flooring such as vinyl or laminate. This would not only result in a lack of investment to the EPR scheme as a result of a loss of sales but would also fail as a sustainability initiative by increasing the sale of product which is not necessarily environmentally friendly. As with all governance the success of EPR will depend on the correct parameters being drawn following a period of consultation and negotiation with those in the industry; “policy making, and even more particularly policy implementation is a matter of negotiation rather than authoritative implementation” (Adger, 2009, p.60).

It could be concluded that just the fact that these discussions are now happening where they may have been missing before proves EPR an early success. Where synthetic carpet manufactures have been considering recycled materials and end of life for a substantially longer amount of time, the introduction of EPR has encouraged traditional wool based carpet manufactures to begin to do the same. This is evident in Brintons new Purely Natural product (figure two), “design decisions, like many others, often exclude any real consideration of social and environmental value because many of these values are hard to price” (Thorpe, 2012, p.68), in this case with the ongoing governance discussions and looming tax levy’s EPR seems an early success in the encouragement of focus on the design of product with sustainable consideration rather than a focus solely on profit margins. At the 2023 Sustainable Design Summit it was noted by one speaker that, in contrast to previous years, “bio-based kept coming up again and again which I thought was fascinating and refreshing” (Grandos, 2023). So whilst it may be too soon to draw a clear reflective conclusion to the success of EPR certainty anything that prompts new thinking into becoming more environmentally friendly has to be a positive thing.

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Zeb-Khan, A (2024) Conversation with Jodie Hatton 26th January

Images

Figure One- Judge, O, Bell, N and Hughes, J (2021) ‘EPR Risk Assessment’ [Presentation] Source: *Carpet Recycling UK.* (Accessed: 22/01/2024)

Figure Two- Hatton, J (2023) *Brintons Carpets’ Stand Showcasing new Purely Natural Products* (photograph)

Figure Three- Sedna Carpet (2024) *Advertisement for Carpet Made from Recycled Fishing Nets.* Source: https://sedna-carpet.co.uk/home (Accessed: 22/01/2024)

Appendix: Interview Transcripts

Appendix One: Interview with Adnan Zeb-Khan by Jodie Hatton via Zoom 26th January 2024

(J=Jodie Hatton, Author. A= Adnan Zeb-Khan, Carpet Recycling UK)

J: Is there a need for a government implemented EPR scheme in the UK?

A: Trouble with voluntary schemes is that not everyone participates, leading company's lead and invest and are then followed by others. With compulsory schemes regardless of size you have to get involved. So the scheme has to be mandatory.

J: Do you think it is likely that UK EPR will differentiate between synthetic product and bio-based product?

A: I hope not. Consider that the same manufacturer could be producing different products such as carpet tile, broadloom and artificial garden lawn. For the same manufacture to have to comply with different schemes for each different product is too difficult and too confusing. There is a clearer justification to segregate residential sectors and commercial sectors because residential is further behind. The likes of Tarkett have been using recycled material in their commercial carpet tiles for years. In France the EPR is split into categories so Commercial carpet tiles sit in construction and demolition and residential products sit under Interiors.

J: Do you think it is fair for bio-based product to be taxed with the same levy?

A: Yes because we still have to treat it at the end of its life. The tax is to pay for the treatment process. Having a bio-based product is part of the story, the question is where does it go?

J: Is it likely that EPR compliance will ask for part of the product to be recycled back into the same product?

A: No because there is too much product which you can't do that with. Latex can't be reused, backing can't be used. Circularity doesn't exist at the moment. EPR should create pots of money to enable the research and development design for recycling. Chemical recycling might become an option which will separate the components but we are way off that is why EPR is needed so we can pay for this research.

J: Do you think EPR in the UK will be a success?

A: Any EPR needs to be led by industry because they are required to pay into it so they should benefit from it. It should go back to the industry that invested through the scheme so we can invest it back in to research and improvements.

J: How might EPR in the UK fail?

A: If we have to pay 20p per sqm that cost will be passed down to the consumer, are we in danger of losing the market to other flooring? An EPR should be all flooring not just carpets- we need clarification because carpet was specifically mentioned but no other flooring. CRUK is lobbying to get in front of Defra to get clarity because we don't think it's clear enough.

Appendix Two: Interview with Greg Harrison by Jodie Hatton via Zoom 29th January 2024

(J=Jodie Hatton, Author. A= Greg Harrison, Technical Manager at Brintons Carpets)

J: What do you think the purpose of an EPR scheme is?

G: To have producers responsible for their end of life of product.

J: The French EPR scheme splits product into different categories dependent on Commercial or Residential sectors, do you think the UK should follow suit?

G: It is not where it is sold but the waste sources which need to be considered as to how this is managed.

J: If the UK did follow suit, how would this effect Brintons given the product which they sell cross sector?

G: As long as you know where the product is going and the scheme has a way to access the waste, I think that is the key. It is having the infrastructure regardless of if it is commercial or residential.

J: Do you think the UK EPR scheme should split product differently? For example Bio-Based vs Synthetic?

G: It depends, the government will have a view on what they want to incentivise. It gets very difficult to segregate, everyone will have their own view. Generic is probably better in general.

J: Are there anyways in which you think the UK EPR scheme could fail/create harm rather than good?

G: It is having the facilities to deal with the carpet at end of life, if there isn't the technology to deal with the product it will default to incineration which is better than landfill. Again, it's about segregation, different carpets are going to have different routes available. The best option currently viable is waste to energy which is better than landfill. Higher value recycling options are shredding into underlays, if the concept is that it's a closed loop then that is the only option for Brintons' product.

J: Are there any other points you would like to raise?

G: I think we have to think about designing product for recycling, thinking about end of life from the beginning to the technologies available. We have thought about that with Purely Naturals, taking the nylon out. Single polymer is the synthetic solution. Logistics is another point, which is going to be a huge challenge, where the collect points are and how the product would get to them.